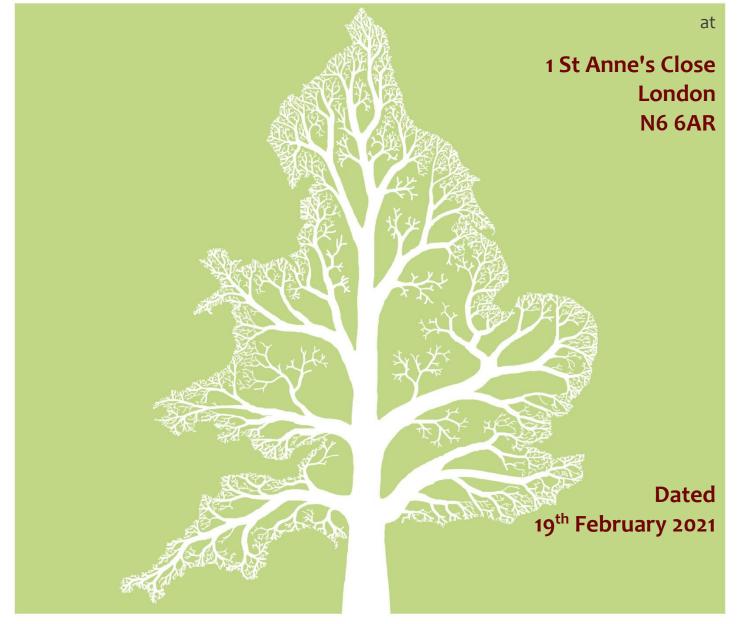
BS 5837 Arboricultural Impact Assessment







Branching out through England and Wales

Arboricultural Report to BS 5837: 2012 for:Daniel SusskindCrown Ref:010715Site:1 St Anne's CloseAuthor:Joe TaylorDate:19 th February 2021	PDF readers select	age-width for detail & page-view for s	crolling
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Author:Joe TaylorDate:19th February 2021	Crown Ref: 010715	Site:	1 St Anne's Close
	Author: Joe Taylo	Date:	19 th February 2021

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Crown Ref: 010715 Author: Joe Taylor for: Daniel Susskind Site: 1 St Anne's Close Date: 19th February 2021

1. Introduction

1.1. Instruction

1.1.1.

We are instructed by Daniel Susskind to:

- Undertake an Arboricultural Survey at 1 St Anne's Close 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 an overview of the site and any management recommendations.
- Determine if any of the trees are growing within a conservation area or are protected by a tree preservation order.
- Provide guidance for architects or developers to enable them to understand and design within the existing tree constraints.
- 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 once the design has been finalised.

1.2. Scope and Purpose of the Report

1.2.1. This report is designed to accompany a planning application for development proposals at the above site. Its purpose is to assist and inform the planning process. It is produced according to the guidance and recommendations within BS 5837: 2012 - Trees in Relation to Design, Demolition and Construction.

1.3. Survey Details and Findings

- 1.3.1.A visual ground level inspection of all trees was undertaken on the 26th of January 2021
by Joe Taylor. No climbed inspections or specialist decay detection were undertaken.
Details of how the survey was undertaken can be found in Appendix 1.
- 1.3.2. The tree locations shown on the accompanying plans which are reproduced in Appendix 6 are based on a measured plan of the site supplied to Crown Tree Consultancy. This plan had the tree positions already plotted. Where applicable, additional trees have been plotted by us according to measurements taken on site.
- 1.3.3. The findings of the survey are presented in The Tree Data Schedule which is provided as a separate document as well as being appended to the end of this document within Appendix 6. The vegetation is further discussed in Section 3.
- 1.3.4. A definition of the Retention Categories can be found in Appendix 1. All other terms used within the Tree Data Schedule are defined and explained in Appendix 2. A more detailed description of the survey method is detailed in Appendix 3.

1.4. Author

1.4.1. This report was compiled by Joe Taylor - FdSc (Arboriculture), M. Arbor A. Details of the author's experience that qualify him to produce such a report are detailed in Appendix 4.

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1 St Anne's Close 19th February 2021

Site Overview 2.

Brief Description 2.1.

- Number 1 St Anne's Close is a detached, residential property with gardens to the front 2.1.1. and rear. The site is a rectangular plot measuring approximately 18 x 25m and slopes gently downwards from north to south.
- At the front of the property grow two Retention Category C trees (T1 and T3), a 2.1.2. Retention Category C hedge (H2) and one Retention Category B Yew tree (T4).
- The garden at the rear of the dwelling contains three Retention Category C trees (T8, T9 2.1.3. and T10) and a Retention Category C hedge (H11).
- At either side of the dwelling, situated on third party land, grow a mixture of Retention 2.1.4. Category C trees and one Retention Category B Ash tree (T12). The roots of these trees may extend into the site.
- The Tree Constraints Plan and Tree Data Schedule (see Appendix 6) should be referred 2.1.5. to for descriptions and locations of all trees.

Coordinates 2.2.

The site coordinates are 51°33'45.47"N 0° 9'1.76"W and the altitude is approximately 60m 2.2.1. above sea level¹.

Survey Extent 2.3.

The area indicated below² shows the extent of the survey. 2.3.1.



¹ To access satellite imagery and street views of the site these co-ordinates may be entered into: <u>http://maps.google.co.uk/</u>

² Image taken from Google Earth and may not be current

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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. The protection status of the trees is also reported in this section.

3.1. Preliminary Management Recommendations

- 3.1.1. The following recommendations are made in order to maintain the trees in an acceptable condition:
- 3.1.2. T7 is an early mature silver birch with loose bark and early signs of decay to its stem at ground level up to 2m. This tree is considered to be in an acceptable condition at present; however, we recommend its condition is closely monitored.
- 3.1.3. T9 is a mature cherry growing within the rear garden of the property. Fungal brackets of the decay fungi *Ganoderma* were found at the base of the stem. The stem was sounded using a plastic mallet to help determine whether any significant decay was present within the stem. The stem was found to be in an acceptable condition and no remedial works are deemed necessary at this time. However, we do recommend that the progression of any decay associated with the fungal brackets are closely monitored.
- 3.1.4. T15 is a mature hybrid black poplar situated on third party land. Significant decay was visible at old pruning wounds and a significant cavity was observed at circa 2m above ground level. This tree is considered to be in a poor structural condition, and we recommend it is removed. Alternatively, a decay detection investigation may be undertaken to determine the full extent of decay within its' stem and potentially retain this tree in the short-term.
- 3.1.5. T16, is a mature ash situated on third party land. This tree was observed to have significant bark wounding throughout its stem from ground level up to circa 2m and a significant cavity at 2m above ground level on its southern side. Similarly to the above, a decay detection investigation may be undertaken to determine the full extent of decay within its' stem and potentially retain this tree in the short-term.
- 3.1.6. All other trees were deemed to be in an acceptable 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	T15
Moderate	Within 1 year	T7, T9 and T16
Low	Within 3 years	None

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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	T7, T9, T15 and T16
1.5	None
3	T1, H2, T3, T4, T5, G6, T8, T10, H11, T12, T13 and T14

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. Tree Protection Status – Site Specific

- 3.3.1. On 20th January 2021, we were informed, by Rav Curry of London Borough of Camden that:
 - The site lies within the Dartmouth Park Conservation Area.
 - There are tree preservation orders affecting trees within the site. Trees affected are believed to be T₃ (our numbering system).
 - There are tree preservation orders affecting trees adjacent to the site. Trees affected are believed to be T5, G6, T7, the mature weeping willow to the north east of the property and T16 (our numbering system).

3.4. Tree Protection – General Notes

- 3.4.1. Before undertaking works to trees protected by a tree preservation order, consent needs to be obtained from the local authority which will provide application forms and advice to potential applicants. The removal of dead wood is exempt.
- 3.4.2. Where the works are proposed for reasons of safety or ill health, a report from a suitably qualified arborist will usually be required. Trees that are dead or imminently dangerous are technically exempt from protection, as are dead branches. If the tree work is not urgently necessary however, at least five working days notice of intention should be given to the local authority. In any case in would be prudent to take photographs before undertaking works without prior consent being granted. Unauthorised works to protected trees may result in a criminal prosecution and a large fine (unlimited).
- 3.4.3. Where trees are located in a conservation area (but not protected by a TPO), works are not permitted without first giving the local authority 6 weeks' notice of intention. 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 6 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.
- 3.4.4. Where planning permission is granted and tree works have been approved as part of the planning consent, no further application is required in respect of protected trees and no further notice is required in respect of trees within a conservation area.

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3.5. Species Present – Additional Information

3.5.1.

The table below contains general information about the tree *species* (rather than the actual tree *specimens*) included in the survey. Its purpose is to assist readers who are unfamiliar with the characteristics of the various species.

Species	Typical Height at Maturity (m)	Typical Canopy Spread at Maturity (m)	General Notes
Apple	6	8	Deciduous tree native across Europe and W. Asia. Hundreds of cultivars available due to its popular fruit. Flowers white, pink or red in spring. Some species will self-pollinate. Most species have a relatively untidy habit. Older specimens are susceptible to a variety of rusts, moulds and cankers. Excellent habitat tree. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Malus+domestica for more info.
Ash	25	18	Large deciduous tree with a straight bole and a high open domed crown. Native to Britain and commonly found in woodlands and adjacent roadsides. Not suitable for small gardens. Easily identified by its oppositely arranged pinnate leaves and black buds. Branches are relatively brittle resulting in a fairly high incidence of small branch failure in windy conditions. Visit <u>http://www.pfaf.org/user/Plant.aspx?LatinName=Fraxinus+excelsior</u> for more info.
Bay	12	10	Dense evergreen tree native to the Mediterranean area and used to flavour sauces in cooking. Leaves easily identified by their wavy margin and unique smell. Often managed by regular trimming. Usually found as a small, neat tree with a well-structured crown and a domed canopy. Visit <u>http://www.pfaf.org/user/Plant.aspx?LatinName=Laurus+nobilis</u> for more info.
Beech	25	18	Deciduous tree native to W and S Europe. Does not have resilient heartwood, therefore typically lives for 100 - 150 years before decay may cause structural failure if unmanaged. Can be an extremely attractive tree at maturity due to its size and majesty. Young branches may retain their foliage through winter as is evidenced in beech hedges. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Fagus+sylvatica for more info.
Cherry	8	10	Many cultivars available, bred for their abundance of spring flowers, edible cherries or ornamental bark (e.g. Tibetan Cherry). Usually white or pink flowering, often in very early spring. Usually with a single bole to around 2.5m and multi-stemmed thereafter. Most varieties have excellent autumn colour.
Holly	16	12	Evergreen tree native across Western Europe. Many cultivars available, often with variegated leaves. Females produce bright red berries. Good wildlife value. Visit <u>http://www.pfaf.org/user/Plant.aspx?LatinName=llex+aquifolium</u> for more info.
Hybrid Black Poplar	30	18	May be an upright or a spreading tree - many forms occur. Parents are Black Poplar and N American Cottonwood. Deeply fissured bark, lacking the burrs seen on Black Poplar. Timber is used for crates and boxes. Not suitable for a small garden. Tolerant of heavy pruning.
Silver Birch	16	10	Deciduous native tree. A pioneer species requiring good lighting levels that will readily colonise open ground. Relatively short lived and surpassed in woodland by dominant species such as oak and beech. Attractive white bark and graceful, delicate form make this a popular garden tree. Visit <u>http://www.pfaf.org/user/Plant.aspx?LatinName=Betula+pendula</u> for more info.
Yew	14	12	Evergreen species native throughout Europe. Commonly planted in churchyards. Once revered by ancient Britons and though to be the inspiration for our Christmas tree. Capable of remarkable regeneration and extreme longevity. Poisonous foliage and seeds. Slow growing. Visit <u>http://www.pfaf.org/user/Plant.aspx?LatinName=Taxus+baccata</u> for more info.

3.5.2. The figures quoted regarding typical height and canopy spread should be treated as approximate. Actual heights and spreads vary according to several environmental factors such as soil conditions, climate and presence of competing vegetation. The figures quoted are not the maximum dimensions that the species may attain.

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4. Arboricultural Impact Assessment

4.1. Overview

4.1.1. It is proposed to extend the existing building and modify the landscaping within the garden, as indicated on the plans in Appendix 6. The existing layout is indicated in black, and the footprint of the proposed layout is indicated in green.

4.1.1. 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	T10 and H11
Tree Removal: Retention Category U	None
Tree Pruning	T14
RPA: House Foundations	T4, T9 and T13
RPA: Pergola Foundations	T8, T9 and T12
RPA: New Hard Surface	T9 and T12
RPA: Replace Existing Hard Surface	T12
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	None
RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)

4.1.2. 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.

4.2. Tree Removal

4.2.1.

- .1. All trees to be removed are indicated on the Tree Removal Plan and are listed below:
 - **Retention Category A:** Our survey did not identify any Retention Category A trees.
 - **Retention Category B:** It is proposed to retain all Retention Category B trees.
 - **Retention Category C:** It is proposed to remove the following Retention Category C trees: T10 and T11. These trees are located within the footprint of the proposal and so their retention is not possible.

These are relatively small trees (4.5m height). They are located within the garden of the property and are considered to have a low amenity value. Their removal shall not have a significant impact on the visual amenity of the locality, and they are not considered to be a material planning consideration.

T10 and H11 are not protected by a tree preservation order or considered worthy of special protection.

- Retention Category U: Our survey did not identify any Retention Category U trees.
- 4.2.2. Details specific to each tree can also be found in the Tree Data Schedule.

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4.3. Mitigation Planting

4.3.1. The trees/shrubs to be removed are of such low amenity value that no mitigation planting is considered necessary.

4.4. Impact on Tree Canopies

- 4.4.1. In order to create a clearance distance from the proposal, it is proposed to trim the southwest portion of the overhanging foliage of T4 back to the boundary. This shall require the removal of relatively small secondary branches which should be pruned back to a secondary growth point.
- 4.4.2. Such a small amount of pruning shall have no impact on local visual amenity.
- 4.4.3. All other tree canopies shall be unaffected by the proposals.

4.5. Impact on Tree Roots

4.5.1. **Rooting Habits:**

4.5.2. The Root Protection Area of T13 is shown to extend into the area where foundations are proposed for the extension. However, roots are not likely to proliferate in this area as ground levels are approximately 1m higher than where the tree grows. Rooting conditions are likely to be inhospitable to roots in this area due to compacted soils, anaerobic conditions and lack of rainwater. Instead, the roots are likely to proliferate in within the garden of the neighbouring property in which the tree grows.

4.5.3. Building Foundations:

- 4.5.4. Foundations for the new extension will extend into the Root Protection Area of T4, T9 and T13. However, only a very small portion of each Root Protection Area shall be affected so the potential impact is considered to be negligible.
- 4.5.5. In order to minimise root severance for **T4** and **T9**, it is proposed to excavate the foundations within their Root Protection Areas using hand tools only to a depth of 0.6m. This shall be done under the supervision of the project arborist. Deeper excavation may be undertaken using a mechanical excavator so long as it operates from a suitable load spreading surface or from outside all Root Protection Areas. Excavation for the foundations shall not extend more than 200mm beyond the build line in the direction of the trees. This will keep the extent of excavation towards the trees down to the minimum amount possible. Any roots growing close to the edge of the excavation should be kept intact or pruned by the project arborist. These measures shall ensure that the impact of such a small incursion will be minimual.
- 4.5.6. Given that the roots of **T13** are not likely to proliferate in this area, no restrictions on foundation design are considered necessary here.

4.5.7. **Pergola Foundations:**

- 4.5.1. Post-hole foundations are proposed for the new pergola. Because the foundations are within a Root Protection Area of T8, T9 and T12, the following restrictions shall apply:
 - Post holes shall be kept as narrow as possible.
 - Excavation for the post holes shall be undertaken using hand tools and overseen by the local authority tree officer or an approved project arborist.
 - If any roots in excess of 50mm or an abundance of roots in excess of 25mm are encountered, they should be retained intact and the post hole relocated.
 - Any exposed roots over 25mm diameter shall be sleeved to prevent contact with the posts and cement products.

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4.5.2. By adopting such a sympathetic method of installation, it will be possible to retain all significant roots. Hence it is considered that the proposed pergola shall not result in any long-term detrimental impact on the health of these trees.

4.5.3. New Surfaces:

- 4.5.4. In order to facilitate a new pedestrian surface for the walled garden, it is proposed to lower ground levels over the Root Protection Area of T12 where raised planting beds exists. However, only circa 7% of the Root Protection Area shall be affected, and so the potential impact is considered to be negligible and within tolerable limits.
- 4.5.5. In order to minimise root severance, it is proposed to excavate within the Root Protection Area of T12 using hand tools only and under the supervision of the project arborist. Excavation shall not extend further beyond the footprint of the new surfacing than is absolutely necessary. Any roots growing close to the edge of the excavation should be kept intact or pruned by the project arborist. These measures shall ensure that any potential impact shall be kept to the minimum amount possible.
- 4.5.6. The Impact Assessment Plan indicates where it is proposed to install a new pedestrian surface over the Root Protection Areas of T9 and T12. In order to minimise root severance, the following mitigation is recommended:
 - Where hard surfacing exists, excavation shall not exceed the hard surfacing and its sub-base.
 - Over the existing lawn, excavation shall be limited to 100mm, including any existing vegetation or turf.
 - Any edging structure used shall be installed without excavation below this depth.
 - All excavation should be undertaken using hand tools only.
 - If significant rooting activity is encountered, the finished surface shall be raised to accommodate them.
 - Any sub-base used shall not contain any fines (finely crushed aggregate material).
 - Paviours to be used and dry jointed (i.e. no mortar joints) to permit infiltration of rainwater through to the ground beneath.

4.5.7. Underground Services:

4.5.8. I understand that it is proposed to connect to existing services within the site so no additional trenching is proposed through any Root Protection Areas. This must be confirmed with the local authority. Before any excavation is considered in any Root Protection Area the project arborist must be consulted and a methodology approved by the local authority that will minimise impact on tree roots should any such excavation be permitted.

4.5.9. Changes in Ground Levels:

4.5.10. No changes to ground levels are proposed over Root Protection Areas.

4.5.11. Soil Compaction:

4.5.12. 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.



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- 4.5.13. Healthy soils contain about 25% air space between solid particles. Increased loading of the soils 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.
- 4.5.14. It is important therefore that ground compaction and soil disturbance over Root Protection Areas should be avoided during the construction phase. This may be done by installing protective fencing and ground protection measures.

4.6. Demolition Activities

4.6.1. Adequate tree protection methods should be specified in an Arboricultural Method Statement, and approved by the local authority, before demolition takes place. Areas should be designated for the storage of debris.

4.7. Hazardous Materials

4.7.1. 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 and cement run-off are contained outside of all Root Protection Areas.

4.8. Cabins and Site Facilities

4.8.1. Consideration should be given to the location of any site welfare facilities in terms of potential impact on trees. Where it is proposed to install cabins or site facilities in Root Protection Areas, the project arborist should be consulted, and approval obtained from the local authority.

4.9. Boundary Treatments

4.9.1. We are not aware of any changes are proposed to the existing boundary features that might impact on trees.

4.10. Impact of Retained Trees on the Development

- 4.10.1. Adequate space has been allowed between all retained trees and the proposal.
- 4.10.2. The foundations and any new surfaces should be designed to accommodate all potential impacts due to future tree rooting activity. These include potential vegetation related subsidence, vegetation related heave, and lifting of surfaces / light structures due to direct root pressure.
- 4.10.3. The gutters will need occasional maintenance to avoid blockage. Consequently, the dwelling would benefit from the installation of controlled overflow guttering to minimise the impact from leaves.

4.11. Summary

- 4.11.1. Only low quality, small Retention Category C trees are to be removed to enable the build. Consequently, the impact of tree removal on local amenity shall be minimal.
- 4.11.2. One tree (T4) requires minimal pruning to create an adequate clearance from the proposal.
- 4.11.3. All new hard surfacing within RPAs shall be installed sympathetically and with minimal excavation.
- 4.11.4. Foundations are proposed within the Root Protection Area of T8, T9, T12 and T13. However, the small extent of RPA affected, coupled with the sympathetic foundation design, shall ensure no detrimental impact on trees.

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5. Photographs

Photo 1.







Photo 4.



Photo 5.



Photo 6.

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Photo 9.







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Appendix 1: BS 5837: 2012 – Guidance Notes

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 trees in relation to design, demolition and construction to form balanced judgements.

It acknowledges the positive contribution trees may offer to a site, as well as the negative aspects of retaining inappropriate trees. It addresses the negative impacts that construction activity may have upon trees and offers mitigation strategies to minimise these impacts.

The Standard suggests a three stage approach to ensure best practice is followed when developing close to trees:

A1.1 Stage 1: Survey Details and Notes

A ground level visual survey was undertaken. No climbed inspections or specialist decay detection were undertaken. Only trees with a stem diameter over 75mm, which lie within the site boundary or relatively close to it, were included.

Where applicable, trees with significant defects have been highlighted and appropriate remedial works have been recommended. However, this report should not be seen as a substitute for a full Safety Survey or Management Plan which are specifically designed to minimise risk and liability associated with responsibility for trees.

Wherever practicable dimensions were obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third party 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 A1.1.1

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 the categories A, B or C. 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.

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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.

Shade Constraints. The previous Standard (BS 5837 2005) suggested that shade constraints should be indicated on the TCP. This are denoted as a circle-segment drawn northwest to due east with a radius equal to the height of the tree. These do not represent the actual shade pattern which varies through the seasons. Rather, they indicate the area most shaded by the tree throughout the course of the year. Ideally habitable room windows should be located outside of these shade constraints. Where we consider it appropriate, we will include shade constraints information on our Impact Assessment Plan or Proposed Layout Plan.

A1.2 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 upon the proposal. The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees.

A1.3 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.

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Appendix 2: Explanation of Tree Data & Glossary

This section explains the terms used in the **Tree Data Schedule** (see Section 3 and Appendix 6).

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 W4=Woodland 4, S5=Shrub 5.
Age Categories:	
Young Semi-Mature Early-Mature Mature Veteran Over Mature	Usually less than 10 years old. Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy). Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy) Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy) A level of maturity whereby significant management may be required in order to keep the tree in a safe condition. 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 le though usually an indication of the number of stems and average diameter is given, e.g. 3×30 cm.
Crown Height:	Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on 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, overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of 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 for and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are d 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 the following priority scale:
Urgent Very High High Moderate Low	To be carried out as soon as possible. To be carried out within 1 month. To be carried out within 3 months. To be carried out within 1 year. 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 practic consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have 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 Moderate Low Very Low	Having above average vigour. Having average vigour. Having below average vigour. Tree is struggling to survive and may be dying.
Physiological Condition:	
Good Fair	Healthy and with no symptoms of significant disease. Disease present or vigour is impaired.
Poor	Significant disease present or vigour is extremely low.
Very Poor Structural Condition:	Tree is dying.
Good	Having no significant structural defects.
Fair	Some defects observed though no high priority works are required.
Poor Very Poor	Significant defects found. Tree requires monitoring or remedial works.
Very Poor Amenity Value:	Major defects which will usually require significant remedial works or tree removal.
Very High	Exceptional specimen, observable by a large number of people.
High Moderate Low	Attractive specimen, observable by a significant number of people. One of the above factors is not applicable. 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 that is not likely to compromise the tree's structural integrity.

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General Glossary

	•
Aerobic	Conditions in which oxygen is freely available, or to biomechanical processes that depend on the presence of oxygen.
Anaerobic	A condition marked by the absence of oxygen; Generally such areas are unsuitable for normal life and growth of plant tissues.
	These sites tend to be populated by bacteria capable of surviving low oxygen conditions often associated with Slime Flux.
Arboriculture	The culture and management of trees as groups and individuals primarily for amenity and other non-forestry purposes.
Arborist	A person possessing the technical competence through experience and related training to provide management of trees or
	other woody plants in a landscape setting. Generally involved with the development or management of trees for visual amenity
	or land management rather than the growth of trees for product or profit.
Barrier zone	A layer within an annual increment of wood which contains abnormal xylem cells, laid down by the cambium in response to
	wounding or other trauma.
Bracket	A type of fruiting body produced by various fungal species, plate like to hoof like in shape and often a one sided attachment to
	the wood or bark.
Branch bark ridge	A ridged area located at the union of a branch to a trunk or stem.
Branch Collar	Trunk tissue that forms around the base of a branch between the main stem and the branch, or between a main branch and a
	lateral branch. As a branch decreases in vigour or begins to die, the collar usually becomes more pronounced and completely
	encircles the branch.
Brown Rot	Form of decay where cellulose is degraded, while lignin is only modified.
Buttress Root	Roots that emerge from the base of the tree stem, normally large and well developed that rapidly reduce in diameter to create
	the Root Plate this offers structural support for the tree. Buttress roots divide rapidly forming the connection between the stem
	and the transport roots.
Cabling Bracing	Installing cables within the crown of a tree to prevent collapse.
<u> </u>	
Cambium	A thin layer of actively growing and dividing cells, located between the xylem (sapwood) and bark of a plant; the part
<u></u>	responsible for radial growth of a tree stem or branch.
Canopy	The topmost layer of twigs and foliage in a woodland, tree or group of trees.
Canker	A localised area of dead bark and cambium on a stem or branch, caused by fungal or bacterial organisms, characterised by
	woundwood development on the periphery. This may be annual or perennial.
Cavity	An open and exposed area of wood, where the bark is missing and internal wood has been decayed and dissolved.
Chlorotic	Also Chlorosis. A condition of the plant marked by yellowing of normally green foliage, often indicating nutrient deficiency or
	plant dysfunction.
Co-dominant	Are forked branches or trunks of nearly the same size in diameter and lacking a normal branch union.
stems/trunk	
Compacted soils	Soils in which the air-space (oxygen space) has been reduced or eliminated, reducing water infiltration and percolation,
•	reducing root presence and inhibiting new root development.
Compartmentalisati	The physiological process that creates the chemical and mechanical boundaries that act to limit the spread of disease and decay
on	organisms.
Compression Wood	Abnormal wood formed on the lower side of branches and curved stems, with physical properties different from normal wood.
Conservation Area	In Great Britain, designated areas of architectural or historical interest, in which there are special procedures for planning
conservation Area	applications. Additionally tree works cannot generally be undertaken without prior notification (Currently 6 weeks) to the
	relevant local planning authority. See also Tree Preservation Orders.
Core Sample	A sample of wood extracted from a trunk or branch, using an increment borer tool. The resulting core can be analysed for
core sample	characteristics of growth, wood strength, structure, decay, and for species identification.
Cratch	
Crotch	The union of two or more branches; the auxiliary zone between branches.
Crown	The upper canopy of a tree, including upper trunk, scaffold branches, secondary branches, stems and leaves.
Crown lifting /	Crown Lift The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance
raising	underneath for vehicles etc.
Crown reduction	The reduction of a tree's height or spread while preserving its natural shape.
Crown thinning	The removal of some of the density of a tree's crown, usually 5-25% allowing more light through its canopy and reducing wind
	resistance.
Deadwood (noun)	Deadwood is often present within the crown or on the stems of trees. It may be an indication of ill health, however, it may also
	indicate natural growth processes. If a target is present beneath the tree, deadwood may fall and cause injury or damage and
	should be removed, otherwise deadwood can remain intact for conservation purposes (insects, fungi, birds etc.).
Deadwood (verb)	The removal of dead branches from a tree's canopy, usually of a specified size (in diameter).
Decay	Progressive deterioration of organic tissues, usually caused by fungal or bacterial organisms, resulting in loss of cell structure,
	strength, and function. In wood, the loss of structural strength.
Decay Detection	The assessment of decay within a tree has been traditionally difficult, but recent advances have made it possible to achieve
	accurate representations of the internal section of a tree in both 2D and 3D, removing doubt over the condition of the tree and
	allowing accurate management decisions.
Defoliation	The losing of plants foliage.
Dieback	Progressive death of buds, twigs and branch tissues, on individual limbs resulting in Deadwood, or throughout the canopy,
	extreme cases can result in Stag Heading.
Epicormic shoots	Fast growing, weakly attached shoots/branches that often grow as a response to stress factors upon a tree or branch removal.
Failure	In connection with tree hazards, a partial or total fracture within the wood tissue or loss of cohesion between roots and soil. (In
rallure	
	total failure affected parts will snap or tear away completely, Partial failure there is a crack or deformation, which results in an
Faadaa Baat	altered distribution of mechanical stress.
Feeder Roots	Fine fibrous Water and nutrient absorbing roots located in the outer root system.
Flush-Cut	In trees and shrubs, a pruning cut close to the parent stem, which removes the branch bark ridge.
	The live leaves or needles of the tree; the plant part primarily responsible for photosynthesis.
Foliage	The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation
Foliage Formative pruning	
-	is aimed at reducing the
-	is aimed at reducing the potential for future weaknesses or problems within the tree's crown.
-	-

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Growth Increment	The incremental growth added as new annual ring develops each season over existing wood. This is seen as (growth) rings in cross-sections of wood.
Hazard beam	An upwardly curved branch in which strong internal stresses may occur without the compensatory formation of extra wood (longitudinal splitting may occur in some cases).
Heartwood	Inner non functioning tissues that provide structural support to trunk.
Heave	In relation to shrinkable clay soils, expansion due to rewetting of a volume of soil previously subjected to the removal or water by plant / trees following felling or root severance. Also in relation to root growth, the lifting of pavements and other structures by radial expansion. Also in relation to tree stability, the lifting of one side of a wind rocked root plate.
Included Bark	Bark that becomes embedded in a crotch between branch and trunk or between co-dominant stems, usually found in narrow or tight crotches, and causes a weak structure.
Increment Borer	A tool that cuts and extracts a narrow cylinder of wood from a tree for analysis of the wood tissue and growth increments.
Limb	A large lateral branch growing from the main trunk or from another larger branch.
Lopping	In trees, a general term that related to the removal of branches from a tree.
Mycelium	A mass of growing filaments (hyphae) formed by fungi.
Mycorrhizae	The symbiotic relationship between roots and certain beneficial fungi. Mycorrhizae are the combined root / fungal growth.
Occluding tissue	The general tern of wood, cambium and bark that develop around the site of a wound on a woody plant
Pathogen	A microorganism that causes diseases within another organism.
Phloem	The principle conductive tissue that the products of Photosynthesis are transported around the plant
Pollard	A term for a pollarded tree.
Pollard head	The swollen section of branch / stem that forms behind the pollarding cut.
Pollarding	The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches either for amenity or historically as fodder, repeated management is required cyclically to maintain the feature
Reaction Wood	Wood with distinctive anatomical characteristics, formed in parts of leaning or crooked stems and in branches to provide additional strength / support. In hardwoods, tension wood usually forms. In confers, compression wood is usually found.
Reaction Zone	A zone normally darker than surrounding wood that denoted the boundary often a defensive one between functional sapwood and dysfunctional or decaying wood.
Remedial pruning	The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's crown.
Resistograph	Invasive decay detection technique whereby the resistance offered by the timber to a spinning probe is measured and plotted.
Root Barriers	Both Buildings and services can benefit from the installation of root barriers to protect a soil volume from the ingress of roots.
Root Collar	The basal area of the tree; transition zone from trunk to root. Also sometimes called trunk flare.
Root Plate	The primary support area for the tree; an area of the root system close to the base that structurally anchors the tree to the soil.
Root Zone	The area and volume of soil around the tree in which roots are expected. May extend to three or more times the branch spread of the tree, or several times the height of the tree.
Sail Area	That area or the tree subjected to wind load.
Sapwood	Xylem wood tissue, usually light in colour, representing the outer growth rings of the wood. Usually living, reactive wood tissue, in a healthy tree. See heartwood
Scaffold limbs / scaffold Branches	The branches that from the main network framework of the crown of a tree.
Soft Rot	A kind of wood decay, were a fungi degrades cellulose within the cell wall, without causing overall degradation.
Soil Compaction	The compression of soil, causing a reduction of pore space and an increase in the density of the soil. Air is squeezed out and nutrients become locked. Tree roots cannot grow in compacted soil.
Sonic Decay	Non invasive method whereby sound waves are passed through the tree and the speed is measured. Slow speeds indicate decay
Detection	and a tomography picture representing the inner stem is produced.
Stag Heading	In a tree, a state of dieback were dead branches protrude beyond the current living crown.
Stump Grinding	The removal of a tree stump using a specialist grinding machine.
Subsidence	In relation to vegetation, the removal of water by plant growth resulting in localised shrinkage in the soil volume.
Suppressed	Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.
Target	Any person or object within reach of a falling tree or part of a tree that may be injured or damaged.
Target Pruning	The pruning of a branch were the wound affects only branch material, often result in a target shaped wound.
Tension Wood	Reaction wood typically formed on the upper side of limbs or curved stems; characterized by lack of cell wall lignifications (higher ratios of cellulose to lignin).
Tight Union / Tight Crotch	Also, narrow crotch. A crotch with a narrow angle between branches, often having included bark.
Tomography	The comparison of sound or stress waves through the tree allows the creation of a 2D or 3D representation of the internal structure of a stem or branch section and highlights areas of damage. Virtually non-injurious.
Topping	Cutting large limbs back severely, without regard to form or habit of the tree. Cuts are usually made between lateral branch nodes. This practice is extremely injurious to trees, and promotes decay and structural weakness within the crown.
Tree Preservation Order	In Great Britain, an order made by the local planning authority, were consent must be gained before undertaking all but exempt works to a tree.
Veteran Tree	Veteran trees are often found in large parks or estates and commonly affected by extensive decay or have been subject to extensive works. These trees are retained for historical importance and often pose greater risk than normal, which is generally justified. They need careful management and often propping or bracing to support them, some require fencing to limit access.
Vigour	Active, healthy growth of plants: ability to respond to stress factors.
Visual Tree	An assessment of the mechanical condition of trees based upon their 'body language'. Trees are dynamic and respond to faults /
Assessment (VTA)	decay / environmental factors in various ways, these responses can be indicative of structural integrity.
Wetwood	An infection caused by bacteria living inside the plant tissues. The bacteria ferment the plant fluids, resulting in death of nearby cells, and often causing exudations of fluid from the bark, often referred to as a Slime Flux.
White Rot	A kind if wood decay were a fungi attacks the lignin within the wood matrix
Witches Broom	A deformed or unusual growth of twigs from adventitious buds, caused by insects, disease, or dieback of twigs and buds.
Wood	Secondary Xylem; the main structural support and water conducting tissue of trees and shrubs.
Wound Wood	Wood with atypical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound

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Appendix 3: Survey Methodology

Date:

Ground level visual surveys are carried out using the Visual Tree Assessment technique described by Mattheck and Broeler (1994) and endorsed by the Arboricultural Association (LANTRA Professional Tree Inspection course, 2007).

Structural condition is assessed by inspecting the stem and scaffold branches from all angles looking for weak branch junctions or symptoms of decay. Particular attention is paid to the stem-base. Cavities are explored using a metal probe in order to assess the extent of any decay. If this is not possible further inspection is recommended in the form of a climbed inspection or using specialist decay detection equipment.

The physiological condition is assessed by inspecting the stem, branches and foliage for symptoms of disease. The overall vigour of the tree is also taken into account.

Where significant defects are observed, recommendations are made according to a scale of priority in order to reduce the likelihood of structural failure. The position of the tree and its potential targets are taken into account.

Measurements are obtained using a diameter tape, clinometer, distometer and loggers tape. Where this is not practical measurements are estimated.

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

Finally, a Retention Category is allocated as described in Appendix 1.1.1.

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Author:

Joe Taylor

Appendix 4: Author's Qualifications

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

Date:

Between 1983 and 1995 Ivan worked primarily within the construction industry and received training in a broad range of practical building skills and general construction principles. During this time he obtained a BSc (Hons) at Leeds University followed by a P.G.C.E at The University of Wales.

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In 1995, Ivan obtained a NCH (Arboriculture) at the University of Lincoln and became a member of the Arboricultural Association. He then worked for an Arboricultural Consultancy for one year before establishing a tree surgery and landscaping business in 1998. In 2005 Ivan commenced full time employment with a leading Arboricultural Association approved consultancy and soon adopted a senior role responsible for five consultants.

He obtained a FDSc in arboriculture at the University of Lancashire, which he passed with distinction and is now a Director and Principal Consultant of Crown Consultants Ltd. He is accredited as a LANTRA Professional Tree Inspector. A qualification produced in association with the Arboricultural Association and generally recognised as appropriate for all levels of tree inspection.

Ivan is a professional member of the Arboricultural Association, the International Society of Arboriculture and the **Consulting Arborist Society**

Ivan is trained and licensed in QTRA (Quantified Tree Risk Assessment). He has undertaken professional expert witness training provided by Bond Solon and has been registered as a Sweet and Maxwell Checked Expert Witness from 2008-2017, after which the service was no longer offered.

Throughout 2009 acted as the principal Tree Officer for Barnsley Metropolitan Borough Council.

Ivan has produced several hundred Arboricultural Reports for the purposes of Development, Safety, Management, Mortgage, Subsidence, Mitigation and Litigation.

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 and is a professional member of the Arboricultural Association. 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 practise 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 order to keep abreast of industry best practice.

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.

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Appendix 5: Further Information

Building Near Trees – General

National Joint Utilities Group publication # 10 (1995), Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees. Downloadable at www.njug.demon.co.uk/pdf/NJUG%20Publication10.pdf

NHBC Standards Chapter 4.2., Trees and Buildings.

Horticulture LINK project 212. (University of Cambridge, 2004), Controlling Water Use of Trees to Alleviate Subsidence Risk.

Tree Planting and aftercare

See www.trees.org.uk/leaflets.php# for downloadable leaflets on selecting a garden tree, planting, aftercare and veteran tree management.

British Standards

BS 5837: 2012. Trees in Relation to Design, Demolition and Construction – Recommendations.
BS 3998: 2010. Recommendations for Tree Work.
BS 3936: 1992. Nursery Stock. Part 1: Specification for Trees and Shrubs.
BS 3936: 1992. Nursery Stock. Part 10: Specification for Groundcover Plants.
BS 4043: 1989. Transplanting Root-balled Trees.
BS 8004: 1986. Foundations.
BS 8103: 1995. Structural design of Low-Rise Buildings.
BS 8206: 1992. Lighting for Buildings.
BS 8545:2014. Trees: From nursery to independence in the landscape – Recommendations
BS 3882: 2007. Topsoil.
BS 4428: 1989. General Landscaping Operations (excluding hard surfaces).

Permission to do Works to Protected Trees / Tree Law

Forestry Commission (Edinburgh, 2003), *Tree Felling – Getting Permission*. Country Services Division - Forestry Commission. Downloadable at www.forestry.gov.uk/website/pdf.nsf/pdf/wgsfell.pdf/\$FILE/wgsfell.pdf

Transport and the Regions (Department of the Environment, 2000), *Tree Preservation Orders, A Guide to the Law and Good Practice*. Downloadable at www.communities.gov.uk/publications/planningandbuilding/tposguide

C. Mynors, The Law of Trees, Forests and Hedgerows (Sweet and Maxwell, London, 2002)

Communities and Local Government website with numerous downloadable documents, from: http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/

Lighting Levels

P.J. Littlefair, B.R.E. 209: Site layout planning for daylight and sunlight A guide to good practice. B.R.E. Bookshop, London.

British Standards Institution. Code of practice for day lighting. British Standard BS 8206: Part 2 (1992).

Chartered Institution of Building Services Engineers. Applications manual: Window Design (London, 1987).

NBA Tectonics. A study of passive solar housing estate layout. ETSU Report S-1126. Harwell, Energy Technology Support Unit (1988).

I.P. Duncan; D. Hawkes, Passive solar design in non-domestic buildings. ETSU Report S-1110. Harwell, Energy Technology.

P. J. Littlefair, Measuring Daylight, BRE Information Paper 23/93 f3.50. (Advises on measuring daylight under the real sky or an artificial sky, allowing for the changing nature of sky light).

High Hedges

Communities and Local Government website with numerous downloadable documents, from: http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/

Tree Specific Websites

www.crowntrees.co.uk www.trees.org.uk www.rfs.co.uk www.treehelp.Info www.woodland-trust.org.uk www.treecouncil.org.uk

Crown Consultants site containing useful information Arboricultural Association Royal Forestry Society of England, Wales and N. Ireland The Tree Advice Trust The Woodland Trust The Tree Council

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Appendix 6: Tree Data Schedule and Site Plan(s)

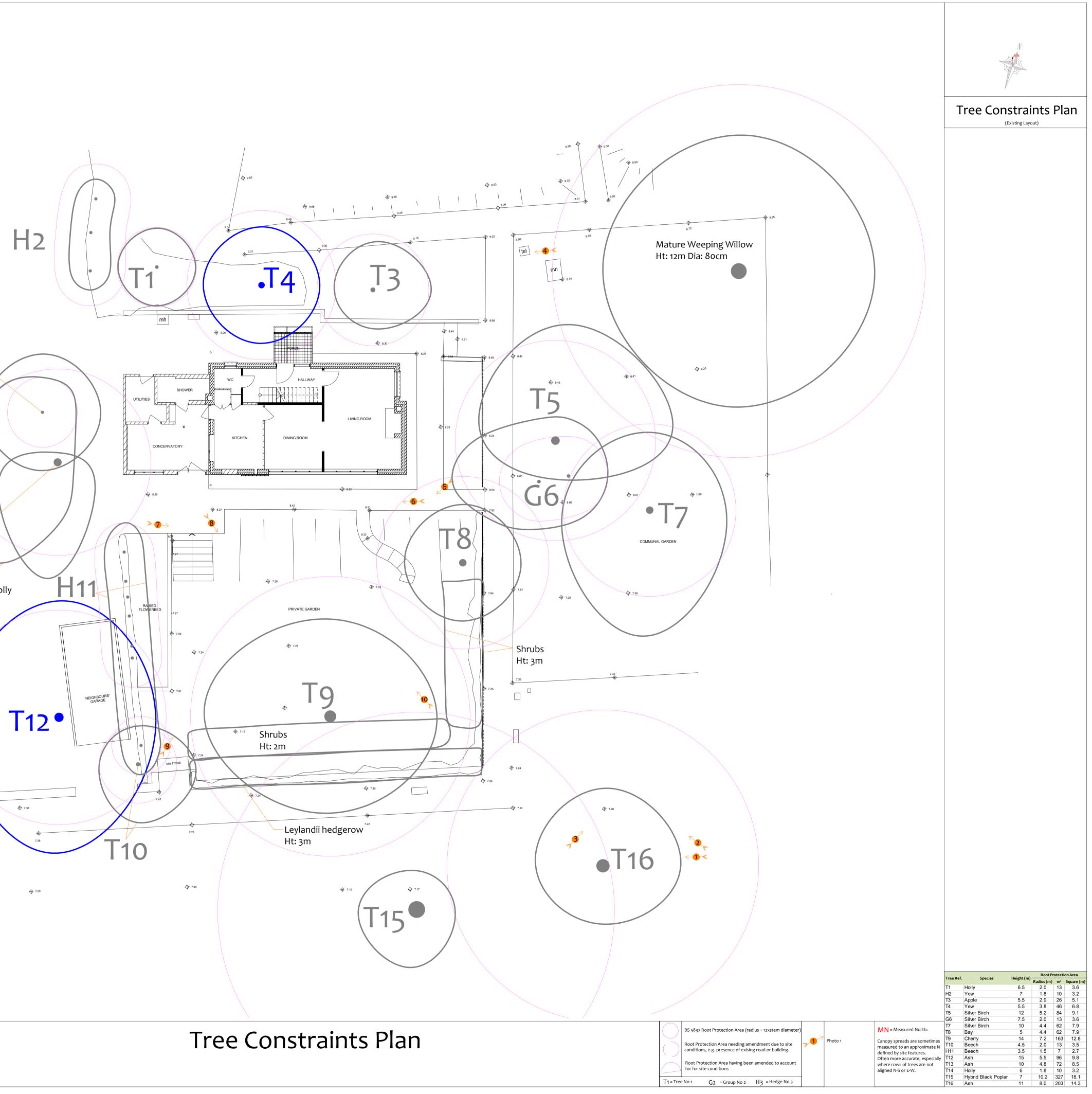
The Tree Data Schedule and any drawings accompanying this report follow this page. They are also provided as separate documents for ease of printing and screen viewing.

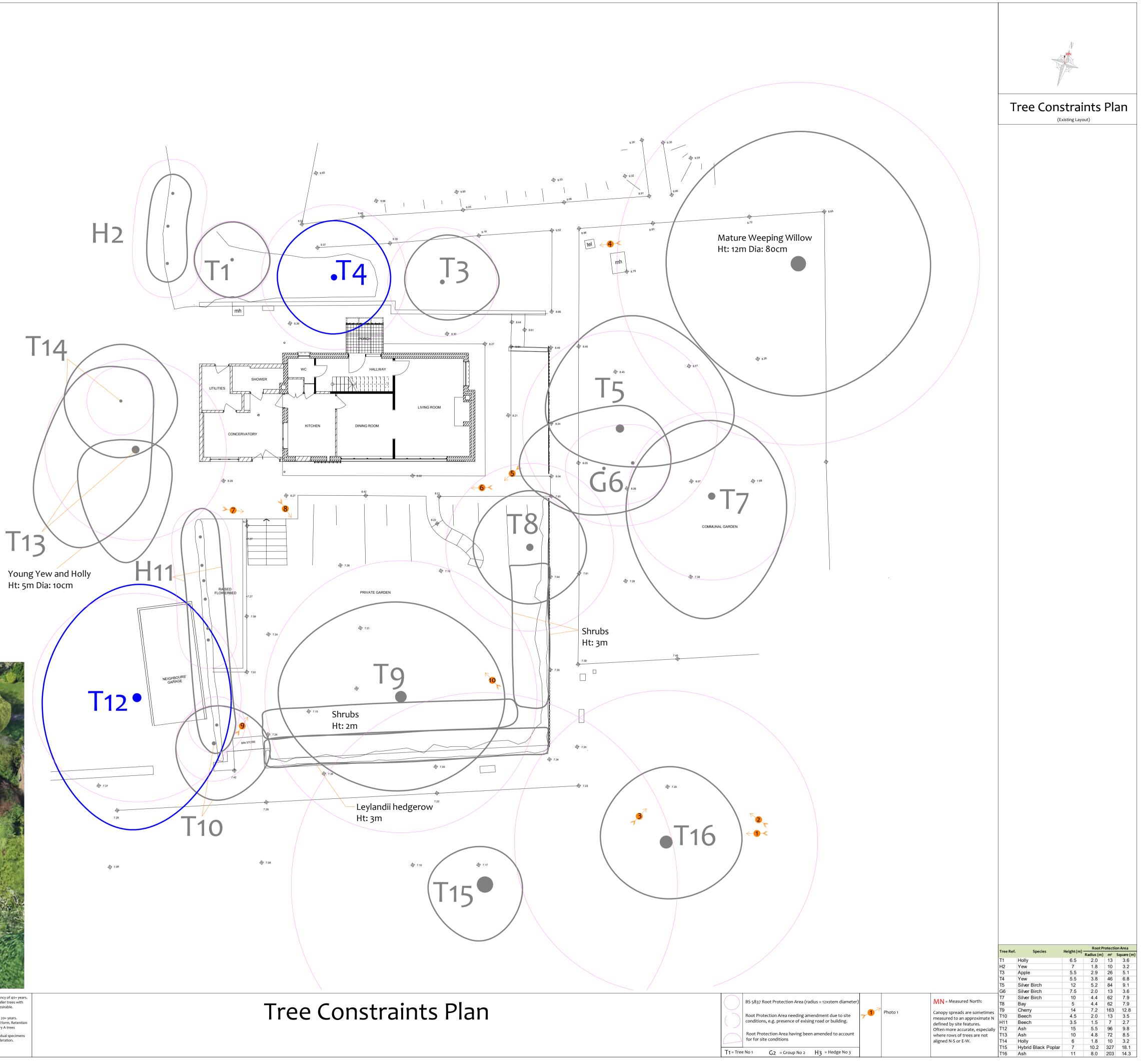
ence oup dge		t (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m)	Scaled Tree Diagram (m)		Notes		ndations ent of any	Vigour	Amenity Value								
Reference G = Group H = Hedge	Age & Species	Height (m)	l nwo	imete	W E					proposals)	Physiological Condition	Life Expectancy (yrs)								
L		-	5	Dia	S	9 0 9			Priority	Inspect Freq (yrs)	Structural Condition									
T1	Semi-Mature Holly	6.5	0.5	17	2 2 2 2	25	Form: History: Defects:	Single stemmed and vertical with a balanced crown. No evidence of significant pruning. No significant defects observed .	No action i	required.	High Good	Low 40+								
	llex aquifolium.					o 🦇			n/a	3	Good	C								
H2	Semi-Mature Yew	7	0	15	1 1 1	[25 - - -	Position: Form:	Situated on third party land. Trimmed hedgerow.	No action i	required.	High Good	Low 40+								
	Taxus baccata.					o			n/a	3	Good	C								
	Semi-Mature					[25 -					Moderate	Low								
Т3	Apple	5.5	2	24	2.5 2 3 2	-	Form: History: Defects:	bry: Multiple pruning wounds due to crown reduction.	No action required.		Good	10-20								
	Malus sp.					o			n/a	3	Good	C								
	Semi-Mature				_	25	Position:	Situated on third party land.			High	Moderate								
T4	Yew	5.5		32	3 3 3 3	3	Form:Single stemmed and vertical with a balanced crown.History:Multiple pruning wounds due to crown reduction.Defects:No significant defects observed.	No action required.		Good	40+									
	Taxus baccata.					o 🌾	Other:	Limited inspection, dimensions estimated.	n/a	3	Good	B -								
	Early-Mature				6	25	Position: Form:	Situated on third party land. Multi-stemmed at ground level with an unbalanced crown.			Moderate	Low								
Т5	Silver Birch12243Betula pendula. </th <th rowspan="2">12 2 43</th> <th rowspan="2">12</th> <th>6</th> <th>-</th> <th>History: Defects:</th> <th>No evidence of significant pruning. No significant defects observed.</th> <th>No action</th> <th>required.</th> <th>Good</th> <th>20-40</th>	12 2 43	12	6	-	History: Defects:	No evidence of significant pruning. No significant defects observed.	No action	required.	Good	20-40									
																2	0	Other:	Recorded stem diameter is equivalent for 4 stems (31cm, 21cm, 15cm, 15cm).	n/a 3
	Semi-Mature				av	25	Desition	Charles days third was to be d			High	Low								
G6	Silver Birch	av 7•5	av 2	av 17	3 4.5 2	-	Position: Form: History:	Situated on third party land. Two close growing specimens. No evidence of significant pruning.	No action	required.	Good	20-40								
	Betula pendula.	7.5	-		2.5 each	o	Defects:	No significant defects observed.	n/a	3	Good	С								
	Early-Mature					25	Position:	Situated on third party land.			Moderate	Low								
Т7	Silver Birch	10	1.5	37	4 4.5 4		Form: History: Defects:	Single stemmed with a slight lean and a slightly unbalanced crown. No evidence of significant pruning. Loose bark and early signs of decay to stem at ground level to 2m -	Moni	tor.	Good	20-40								
	Betula pendula.	la pendula.		acceptable condition at present.	Moderate	1	Fair	C												

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)		Crow read N		Scaled Tree Diagram (m)		Notes		ent of any t proposals)	Vigour Physiological Condition	Amenity Value Life Expectancy (yrs)						
<u>щ</u>		т	Š	Dia		S		9 0	9		Priority	Inspect Freq (yrs)	Structural Condition							
Т8	Early-Mature Bay	5	1.5	37	3	3	 History: Topped at 4m. Defects: No significant defects observed. 		story: Topped at 4m. efects: No significant defects observed.		History: Topped at 4m. Defects: No significant defects observed.		History: Topped at 4m. Defects: No significant defects observed.		required.	High Good	Low 20-40			
	Laurus nobilis.							0			n/a 3		Good	C						
T9	Mature Cherry	3	60	6.5	5	5.5	25	 Form: Single stemmed and vertical with a balanced crown. History: Multiple pruning wounds due to crown lifting and crown reduction. Defects: Ganoderma decay fungi at base to the east. 	Monitor.		Moderate Good	Low 10-20								
	Prunus sp.					5		- 0	Other:	Stem sounded - acceptable condition at present.	Moderate 1		Fair	C						
	Semi-Mature	emi-Mature				2		25	Form:	Single stemmed and vertical with a balanced crown.			High	Low						
T10	Beech	4.5	1	20 @ Base			3	-	History: No evidence of significant pruning. Defects: No significant defects observed.	No significant defects observed.	No action	required.	Good	40+						
	Fagus sylvatica.					3		o 4	Other:	ther: Larger end specimen of hedgerow.		3	Good	C						
	Semi-Mature				15 @ Base							1.5		25					High	Low
H11	Beech	3.5	0.5	1		1	1	-	Form: History: Defects:		No action required.		Good	40+						
	Fagus sylvatica.					1.5		· ·			n/a	3	Good	C						
	Early-Mature							25	Position:	Situated on third party land. Multi-stemmed at ground level with a balanced crown.			High	Moderate						
T12	Ash 15 Fraxinus excelsior.	5	46	5	6	5		Form: History: Defects:	No evidence of significant pruning. No significant defects observed.	No action	required.	Good	40+							
						7	7			Other: Limited inspection, dimensions estimated. Recorded stem diameter is equivalent for 4 stems (30cm, 20cm, 20cm).			– Fair	В						
	Semi-Mature						_	25	Desitien	Situated on third party land.	n/a	3		1						
T13	Ash	10	1	40	_	0.5	-	0 25	Position: Form: History:	Twin-stemmed at ground level with an unbalanced crown. Topped at 9m.	No action required.		High	Low						
113	Fraxinus excelsior.	10	4	40	5	6	2		Defects:	No significant defects observed.			Good	40+						
									Other:	Limited inspection, dimensions estimated.	n/a	3	Fair	C +						
	Semi-Mature					3		- /	Position: Form:	Situated on third party land. Single stemmed and vertical with a balanced crown.	Nacitta		High	Low						
T14	Holly	6	0	15	3		3	-	History: Defects:	No evidence of significant pruning. No significant defects observed.	No action	required.	Good	40+						
	Ilex aquifolium.					3		- o **	Other:	-	n/a	3	Good	C						

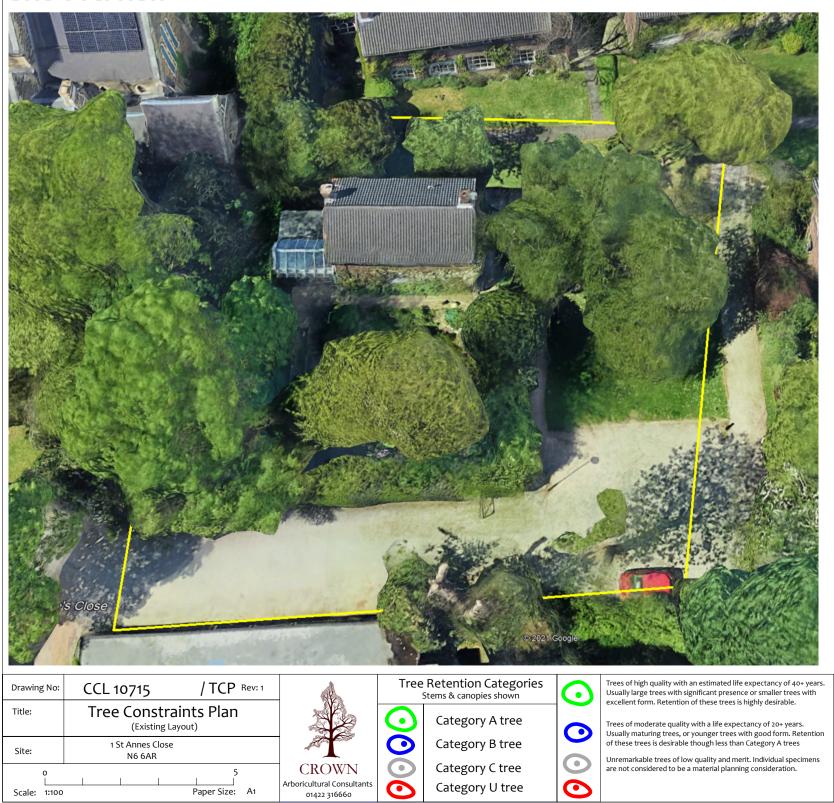
ference	G = Group H = Hedge	Age & Species	Height (m)	wn Ht (m)	eter (cm)	Crown Spread (m) N W E	Scaled Tree Diagram (n		Notes	Recomme (Independe development	ent of any	Vigour Physiological Condition	Amenity Value Life Expectancy (yrs)
Reg			He	Cro	Diamo	S	9 0	9		Priority	Inspect Freq (yrs)	Structura	I Retention
Tı	15	Mature Hybrid Black Poplar Populus sp.	7	4	85	2 3 2 3	[25 - - -	Position: Form: History: Defects: Other:	Situated on third party land. Twin-stemmed at 3m with a balanced crown. Recently topped at 6m. Significant decay visible to pruning wounds. Significant cavity at 2m. Limited inspection, dimensions estimated.	Remove detection	,	Moderate Fair Poor	Low <10
T1	16	Mature Ash Fraxinus excelsior.	11	3	67	4 3.5 4 3		Position: Form: History: Defects:	Situated on third party land. Single stemmed and vertical with a balanced crown. Topped at 6m. Significant bark wounding throughout stem from ground level to 2m above ground level. Significant cavity at 2m to south.	High Decay de requi Moderate	red.	Moderate Fair Poor	Low 10-20

u de se		Ē	E	cm		Crow read		Scaled Tree			Recommen (Independer		Vigour	Amenity Value	
Reference G= Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	w	pread (N V		Diagram (m)		Notes			Physiological Condition	Life Expectancy (yrs)	
	Semi-Mature		J	ō		S		[!5			Priority	Inspect Freq (yrs)	Structural Condition	Rete Cati	
	Holly					2		-	Form:	Single stemmed and vertical with a balanced crown.	No action re	equired.	High	Low	
T1		6.5	0.5	17	2	2	2	-	History: Defects:	No evidence of significant pruning. No significant defects observed.			Good	40+	
	llex aquifolium.					2		[, 🌞			n/a	3	Good	C	
	Semi-Mature					1		[<u>1</u> 5					High	Low	
H2	Yew	7	o	15	1	'	1	-	Position: Form:	Situated on third party land. Trimmed hedgerow.	No action re	equired.	Good	40+	
	Taxus baccata.					1		AAAA			n/a	2	Good	C	
	Semi-Mature							[³]			n/a	3	Moderate	Low	
та	Apple					2.5		-	Form:	Twin-stemmed at 1.5m with a balanced crown.	No action re	equired.			
Т3	Mal and	5.5	2	24	2	2	3		History: Defects:	Multiple pruning wounds due to crown reduction. No significant defects observed.			Good	10-20	
	Malus sp.							 [!5			n/a	3	Good	C	
	Semi-Mature					3			Position: Form:	Situated on third party land. Single stemmed and vertical with a balanced crown.			High	Moderate	
Т4	Yew	5.5		32	3		3	-	History: Defects:	Multiple pruning wounds due to crown reduction. No significant defects observed.	No action re	equired.	Good	40+	
	Taxus baccata.					3		, 🍂	Other:	Limited inspection, dimensions estimated.	n/a	3	Good	B	
	Early-Mature							[² 5	Position:	Situated on third party land.		-	Moderate	Low	
T5	Silver Birch	12	2	43	4	6	6		Form: History:	Multi-stemmed at ground level with an unbalanced crown. No evidence of significant pruning.	No action re	equired.	Good	20-40	
.,	Betula pendula.				1	2	0		Defects: Other:	No significant defects observed. Recorded stem diameter is equivalent for 4 stems (31cm, 21cm, 15cm,			Good	20 40	
	Semi-Mature					av				15cm).	n/a	3			
	Silver Birch	av	av	21/		3		*	Position: Form:	Situated on third party land. Two close growing specimens.	No action re	equired.	High	Low	
G6	Silver Biren	7.5	2	av 17	4.5	2.5	2	Mian	History: Defects:	No evidence of significant pruning.	no action i	equil cui	Good	20-40	
	Betula pendula.					each	1	[, 	Defects:	No significant defects observed.	n/a	3	Good	C	
	Early-Mature							[<u>15</u> -	Position:	Situated on third party land.			Moderate	Low	
Т7	Silver Birch	10	1.5	37	4.5	4	4		Form: History:	Single stemmed with a slight lean and a slightly unbalanced crown. No evidence of significant pruning.	Monit	or.	Good	20-40	
	Betula pendula.	ula.				6.5			Defects:	Loose bark and early signs of decay to stem at ground level to 2m - acceptable condition at present.	Moderate		Fair	C	
	Early-Mature							[!5			Moderate	1	High	Low	
Т8	Bay	Bay	4.5			3		-	Form: History:	Multi-stemmed at ground level with a balanced crown. Topped at 4m.	No action re	equired.	High	Low	
	Laurus nobilis.	1.5	37	3	3 3	3	-	Defects: Other:	No significant defects observed. Recorded stem diameter is equivalent for 6 stems (all 15cm).			Good	20-40		
								 [!5			n/a	3	GOOU	C	
	Mature				6.5	5 5.5 5.			Form:	Single stemmed and vertical with a balanced crown.	Monit	or.	Moderate	Low	
т9	Cherry 14 Prunus sp.		3	60			5.5		History: Defects:	Multiple pruning wounds due to crown lifting and crown reduction. Ganoderma decay fungi at base to the east.	Monitor.		Good	10-20	
					5				Other:	Stem sounded - acceptable condition at present.	Moderate	1	Fair	C	
	Semi-Mature							[<u>'5</u>	Form:	Single stemmed and vertical with a balanced crown.			High	Low	
T10	Beech 4.5	4.5	1	20 @	2	2	3		History: Defects: Other:	No evidence of significant pruning.	No action required.		Good	40+	
			Base	е –		3				No significant defects observed. Larger end specimen of hedgerow.			Good	C	
	Semi-Mature							_) **** [!5			n/a	3)	
	Beech			15 @		1.5		-	Form:	Hedgerow of seven specimens.	No action re	equired.	High	Low	
H11		3.5	0.5	Base	1	1.5	1		History: Defects:	Topped at 3m. No significant defects observed.			Good	40+	
	Fagus sylvatica.							, 444			n/a	3	Good	C	
	Early-Mature					6		[15	Position: Form:	Situated on third party land. Multi-stemmed at ground level with a balanced crown.			High	Moderate	
T12	Ash	15	5	46	5		5		History: Defects:	No evidence of significant pruning. No significant defects observed.	No action re	equired.	Good	40+	
	Fraxinus excelsior.					7			Other:	Limited inspection, dimensions estimated. Recorded stem diameter is equivalent for 4 stems (30cm, 20cm, 20cm, 20cm).	n/a	3	Fair	В	
	Semi-Mature							[¹ 5	Position:	Situated on third party land.	,u	5	High	Low	
T13	Ash	10	4	40		0.5	2	-	Form: History:	Twin-stemmed at ground level with an unbalanced crown. Topped at 9m.	No action re	equired.	Good	40+	
115	Fraxinus excelsior.		4	40	3	6	2	200	Defects: Other:	No significant defects observed.			Fair		
					-			> 1 [25	other:	Limited inspection, dimensions estimated.	n/a	3	ralf	C	
	Semi-Mature					3			Position: Form:	Situated on third party land. Single stemmed and vertical with a balanced crown.	Noath	neu de - d	High	Low	
T14	Holly	Holly 6		15	3	_	3		History: Defects:	No evidence of significant pruning. No significant defects observed.	No action re	-quired.	Good	40+	
	llex aquifolium.					3		, *	Other:	Limited inspection, dimensions estimated.	n/a	3	Good	C	
	Mature			85		2		125	Position:	Situated on third party land.			Moderate	Low	
T15	Hybrid Black Poplar	7	4				2		Form: Twin-stemmed at 3m with a balanced crown.		Remove of detection re		Fair	<10	
.,	Populus sp.	Ĺ			,	3	-	-	Defects: Other:	Significant decay visible to pruning wounds. Significant cavity at 2m. Limited inspection, dimensions estimated.			Poor		
	Mature) X			High	1			
	Ash					4			Position: Form:	Situated on third party land. Single stemmed and vertical with a balanced crown.	Decay det		Moderate	Low	
T16	1161	11	3	67	3.5		4	-	History: Defects:	Topped at 6m. Significant bark wounding throughout stem from ground level to 2m	requir	ed.	Fair	10-20	
	Fraxinus excelsior.					3				above ground level. Significant cavity at 2m to south.	Moderate	1	Poor	C	





Site Overview



Excerpts from the Arboricultural Impact Assessment

c	It is proposed to extend the existing building and modify the landscaping within the garden, as indicated on the plans in Appendix 6. The existing layout is indicated in black, and the footprint of the proposed layout is indicated in green.								
Т	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	T10 and H11							
	Tree Removal: Retention Category U	None							
	Tree Pruning	T14							
	RPA: House Foundations	T4, T9 and T13							
	RPA: Pergola Foundations	T8, T9 and T12							
	RPA: New Hard Surface	T9 and T12							
	RPA: Replace Existing Hard Surface	T12							
	RPA: Underground Services	None Anticipated							
	RPA: Change of Ground Levels	None							
	RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)							

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.

Tree Removal

Overview

All trees to be removed are indicated on the Tree Removal Plan and are listed below: • Retention Category A: Our survey did not identify any Retention Category A trees.

- Retention Category B: It is proposed to retain all Retention Category B trees.
- Retention Category C: It is proposed to remove the following Retention Category C trees: T10
- possible. These are relatively small trees (4.5m height). They are located within the garden of the property and are considered to have a low amenity value. Their removal shall not have a significant impact on the visual amenity of the locality, and they are not considered to be a material planning consideration

and T11. These trees are located within the footprint of the proposal and so their retention is not

- T10 and H11 are not protected by a tree preservation order or considered worthy of special protection
- Retention Category U: Our survey did not identify any Retention Category U trees. Details specific to each tree can also be found in the Tree Data Schedule.

Mitigation Planting

The trees/shrubs to be removed are of such low amenity value that no mitigation planting is considered

Impact on Tree Canopies

In order to create a clearance distance from the proposal, it is proposed to trim the southwest portion of the overhanging foliage of T4 back to the boundary. This shall require the removal of relatively small econdary branches which should be pruned back to a secondary growth point.

Such a small amount of pruning shall have no impact on local visual amenity. All other tree canopies shall be unaffected by the proposals.

Impact on Tree Roots

necessary

Rooting Habits:

The Root Protection Area of T13 is shown to extend into the area where foundations are proposed for the extension. However, roots are not likely to proliferate in this area as ground levels are approximately 1m higher than where the tree grows. Rooting conditions are likely to be inhospitable to roots in this area due to compacted soils, anaerobic conditions and lack of rainwater. Instead, the roots are likely to proliferate in within the garden of the neighbouring property in which the tree grows.

Building Foundations:

oundations for the new extension will extend into the Root Protection Area of T4, T9 and T13. However, only a very small portion of each Root Protection Area shall be affected so the potential impact is considered to be negligible.

In order to minimise root severance for **T4** and **T9**, it is proposed to excavate the foundations within their Root Protection Areas using hand tools only to a depth of 0.6m. This shall be done under the supervision of the project arborist. Deeper excavation may be undertaken using a mechanical excavator so long as it operates from a suitable load spreading surface or from outside all Root Protection Areas. Excavation for the foundations shall not extend more than 200mm beyond the build line in the direction of the trees. This will keep the extent of excavation towards the trees down to the minimum amount possible. Any roots growing close to the edge of the excavation should be kept intact or pruned by the project arborist. These measures shall ensure that the impact of such a small incursion will be minimal. Given that the roots of T13 are not likely to proliferate in this area, no restrictions on foundation design are considered necessary here

Pergola Foundations:

- Post-hole foundations are proposed for the new pergola. Because the foundations are within a Root Protection Area of T8, T9 and T12, the following restrictions shall apply:
- Post holes shall be kept as narrow as possible.
- Excavation for the post holes shall be undertaken using hand tools and overseen by the local authority tree officer or an approved project arborist. • If any roots in excess of 50mm or an abundance of roots in excess of 25mm are encountered,
- they should be retained intact and the post hole relocated. • Any exposed roots over 25mm diameter shall be sleeved to prevent contact with the posts and
- cement products. By adopting such a sympathetic method of installation, it will be possible to retain all significant roots. Hence it is considered that the proposed pergola shall not result in any long-term detrimental impact on the health of these trees.

New Surfaces:

In order to facilitate a new pedestrian surface for the walled garden, it is proposed to lower ground levels over the Root Protection Area of T12 where raised planting beds exists. However, only circa 7% of the Root Protection Area shall be affected, and so the potential impact is considered to be negligible and within tolerable limits.

In order to minimise root severance, it is proposed to excavate within the Root Protection Area of T12 using hand tools only and under the supervision of the project arborist. Excavation shall not extend further beyond the footprint of the new surfacing than is absolutely necessary. Any roots growing close to the edge of the excavation should be kept intact or pruned by the project arborist. These measures shall ensure that any potential impact shall be kept to the minimum amount possible.

The Impact Assessment Plan indicates where it is proposed to install a new pedestrian surface over the Root Protection Areas of T9 and T12. In order to minimise root severance, the following mitigation is commended

- Where hard surfacing exists, excavation shall not exceed the hard surfacing and its sub-base. • Over the existing lawn, excavation shall be limited to 100mm, including any existing vegetation or turf.
- Any edging structure used shall be installed without excavation below this depth. • All excavation should be undertaken using hand tools only.
- If significant rooting activity is encountered, the finished surface shall be raised to accommodate them.
- Any sub-base used shall not contain any fines (finely crushed aggregate material). • Paviours to be used and dry jointed (i.e. no mortar joints) to permit infiltration of rainwater through to the ground beneath.

Summary

Drawing No:

Scale: 1:100

Title:

Site

Only low quality, small Retention Category C trees are to be removed to enable the build. Consequently, the impact of tree removal on local amenity shall be minimal.

One tree (T4) requires minimal pruning to create an adequate clearance from the proposal. All new hard surfacing within RPAs shall be installed sympathetically and with minimal excavation.

Foundations are proposed within the Root Protection Area of T8, T9, T12 and T13. However, the small extent of RPA affected, coupled with the sympathetic foundation design, shall ensure no detrimental impact on trees.

See Section 4 for a more detailed assessment

/ IAP Rev: 1

Paper Size:

CROWN

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CCL 10715

Impact Assessment Plan

(Existing Layout with Proposals Overlaid)

1 St Annes Close

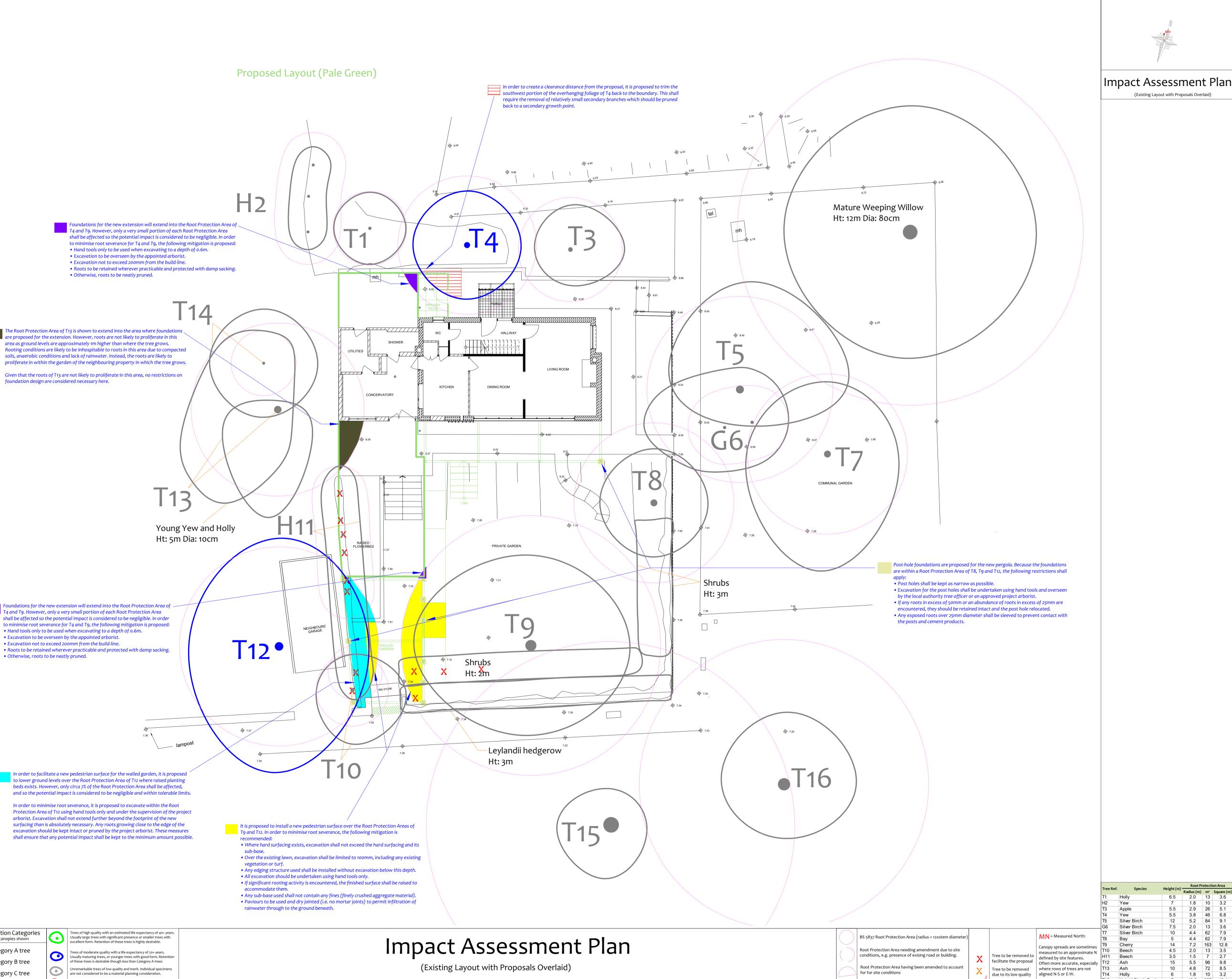
N6 6AR

Tree Retention Categories Stems & canopies shown Category A tree \bigcirc Category B tree (\cdot) Category C tree

Category U tree

Trees of high quality with an estimated life expectancy of 40+ years. \bullet

- considered to be a material planning consideration
- Trees unsuitable for retention due to their very poor condition.



ree Ref.	Consider	11-1-1-1-1-()	Root Protection Area					
ree ket.	Species	Height (m)	Radius (m)	m²	Square (m)			
1	Holly	6.5	2.0	13	3.6			
12	Yew	7	1.8	10	3.2			
3	Apple	5.5	2.9	26	5.1			
4	Yew	5.5	3.8	46	6.8			
5	Silver Birch	12	5.2	84	9.1			
6	Silver Birch	7.5	2.0	13	3.6			
7	Silver Birch	10	4.4	62	7.9			
8	Bay	5	4.4	62	7.9			
9	Cherry	14	7.2	163	12.8			
10	Beech	4.5	2.0	13	3.5			
111	Beech	3.5	1.5	7	2.7			
12	Ash	15	5.5	96	9.8			
13	Ash	10	4.8	72	8.5			
14	Holly	6	1.8	10	3.2			
15	Hybrid Black Poplar	7	10.2	327	18.1			
16	Ash	11	8.0	203	14.3			

T1 = Tree No 1 G_2 = Group No 2 H_3 = Hedge No 3

Proposed pruning

ree Ref.	Species	Height (m)	Root Protection Area					
1	Holly	6.5	Radius (m) 2.0	m² 13	Square (m 3.6			
12	Yew	7	1.8	10	3.2			
3	Apple	5.5	2.9	26	5.1			
4	Yew	5.5	3.8	46	6.8			
5	Silver Birch	12	5.2	84	9.1			
6	Silver Birch	7.5	2.0	13	3.6			
7	Silver Birch	10	4.4	62	7.9			
8	Bay	5	4.4	62	7.9			
9	Cherry	14	7.2	163	12.8			
10	Beech	4.5	2.0	13	3.5			
111	Beech	3.5	1.5	7	2.7			
12	Ash	15	5.5	96	9.8			
13	Ash	10	4.8	72	8.5			
14	Holly	6	1.8	10	3.2			
15	Hybrid Black Poplar	7	10.2	327	18.1			
16	Ash	11	8.0	203	14.3			