BS 5837 Arboricultural Report

& Impact Assessment & Method Statement

at

Land off Greenhead Avenue
Dalton
Huddersfield
HD5 8EA

Dated
23rd March 2021

CROWN
Tree Consultancy
Branching out through England and Wales

Contents

1. Introduction

1.1. Instruction

1.1.1. We are instructed by Bradley Stankler to:

- Undertake an Arboricultural Survey at Land off Greenhead Avenue 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.
- Produce a Tree Protection Plan and Arboricultural Method Statement specifying how the retained trees shall be protected from inadvertent damage by demolition or construction activity.

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 design and planning process. It is produced according to the guidance and recommendations within *BS 5837: 2012 - Trees in Relation to Design, Demolition and Construction.*

1.2.2. The accompanying Arboricultural Method Statement specifies the principles to be adopted during construction and demolition that will minimise any impacts on trees. However, specific construction activities proposed within Root Protection Areas may need to be agreed in more detail if requested by the local authority at the reserved matters stage (for an outline planning applications) or via planning conditions.

1.3. References

1.3.1. We have liaised with the project architect 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 and to specify suitable tree protection measures.

1.4. Survey Details and Findings

1.4.1. A visual ground level inspection of all trees was undertaken on the 11th March 2021 by Sarah Alway. No climbed inspections or specialist decay detection were undertaken. Details of how the survey was undertaken can be found in Appendix 1.

1.4.2. 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.

1.4.3. 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.

1.4.4. 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.

1.5. Author

1.5.1. This report was compiled by Sarah Alway- FdSc (Arboriculture), TechArbor A. Details of the author's experience that qualify her to produce such a report are detailed in Appendix 4.

1.5.2. This report was checked by Joe Taylor – FdSc (Arboriculture), M. Arbor A.

2. Site Overview

2.1.1. The trees surveyed are in a private, gated compound which slopes gently upwards towards the south-west.

2.1.2. The northern part of the site is primarily occupied by a lawn with some occasional Retention Category B and C trees around the perimeter, and a hedge on the north-western side.

2.1.3. The southern end is more overgrown and contains several trees of varying ages.

2.1.4. The Tree Constraints Plan and Tree Data Schedule (see Appendix 6) may be referred to for descriptions and locations of all trees.

2.1.5. The site coordinates are 53°38'32.97"N 1°45'4.82"W and the altitude is approximately 105m above sea level[1].

2.2. Survey Extent

2.2.1. The area indicated below[2] shows the extent of the survey.

2.3. Soils

2.3.1. Geological maps (http://mapapps.bgs.ac.uk/geologyofbritain/home.html) indicate that the underlying geology of the area is Mudstone, Siltstone and Sandstone with no recorded superficial deposits.

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

[2] 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. 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 to maintain the trees in an acceptable condition:

3.1.2. A part perished fungal bracket was observed on the stem of T5, the stem could not be fully inspected due to the presence of dense ivy (See Photograph 8). It is therefore recommended to remove the ivy and re-inspect the stem for decay.

3.1.3. Dense undergrowth prevented access to the stem of T20, it is recommended that the undergrowth is removed so that the tree may be re-inspected.

3.1.4. T8 is twin stemmed at 0.5m and has an unbalanced canopy which leans over the site (See Photograph 10). Where the tree becomes twin stemmed there is a tight union, and some minor included bark was observed. Included bark occurs when bark gets trapped between two stems that are growing at an acute angle, this results in a much weaker union between the stems and is a common cause of structural failure. We have recommended to reduce the overall canopy of the leaning stem by circa 50%, therefore reducing the risk of failure.

3.1.5. All other trees were deemed to be in an acceptable condition at present.

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	T5
Low	Within 3 years	T1, T2, T3, T8, T20, T26

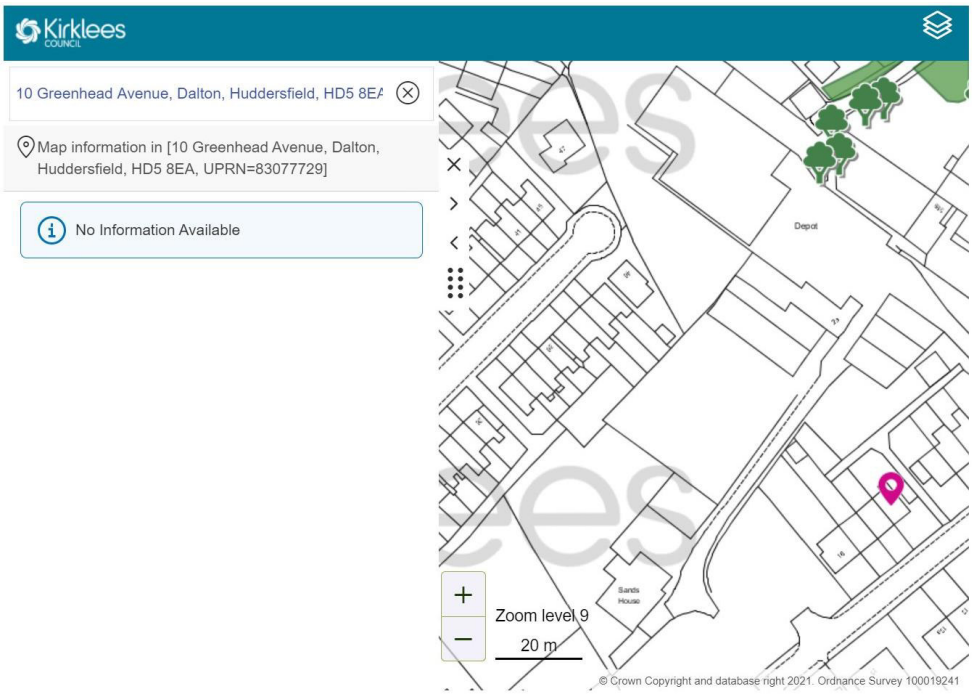
3.2.2. The table below suggests a schedule of future inspections based on the condition and location of each tree:

Inspection Frequency (years)	Tree Number
0.5	None
1	None
1.5	T5, T8, T20
3	T1, T2, T3, T4, T6, G7, T9, T10, T11, T12, T13, T14, T15, T16, H17, G18, G19, T21, T22, T23, T24, T25, T26, T27, T28

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 17th February 2021, we accessed the Kirklees Council website. A screen shot is produced below:



3.3.2. We interpret this to mean that:

- The site is not within a conservation area.
- There are no tree preservation orders affecting trees within the site.
- There are no tree preservation orders on trees immediately adjacent to the site.

3.3.3. However, a felling licence may be required from the Forestry commission unless the grounds are officially classed as a garden. Details of where exemptions apply and how to obtain a felling licence can be found at the following website:

https://www.forestry.gov.uk/forestry/infd-6dfkus

3.4. Tree Protection – General Notes

3.4.1. Heavy fines exist for carrying out unauthorised works to protected trees so we advise that further checks are made before any tree-works are undertaken.

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 http://www.pfaf.org/user/Plant.aspx?LatinName=Fraxinus+excelsior for more info.
Hawthorn	6	6	Arguably Britain's most common tree due to its abundance in field and roadside hedges. Deciduous, prickly and one of our most hardy trees, it will tolerate almost all conditions including drought, pollution and coastal winds. Also known as Mayflower because of its abundance of white flowers in May. Red 'haws' ripen from September to November and have only one pip (unlike Midland hawthorn which contains 2 pips). Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Crataegus+monogyna for more info.
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 http://www.pfaf.org/user/Plant.aspx?LatinName=Ilex+aquifolium for more info.
Hornbeam	25	14	Deciduous tree native to Southeast England and across Europe. Bark is smooth and grey on a stem which is often twisted and sinewy. Leaves sharply toothed and deeply veined. Tolerant of heavy clay soils. Formerly coppiced and prized for its durable timber which was used in wheel hubs, piano hammers, mill wheels and chopping blocks. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Carpinus+betulus for more info.
Horse Chestnut	25	18	Deciduous tree native to Albania and N Greece. Naturalised throughout the UK. Iconic landscape tree. Susceptible to attack by Bleeding Canker, as well as Leaf Miner and Leaf Blotch. Should be inspected regularly if located close to high public use areas. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Aesculus+hippocastanum for more info.
Lawson Cypress	40	10	Erect, narrowly conical evergreen tree native to Southwest Oregon and N. W. California. Introduced to Britain in the 1850's and now a common tree in gardens and parks. Makes an excellent dense hedge. Many varieties are available including golden and miniature varieties. Easily distinguished from Leyland cypress by the presence of small cones. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Chamaecyparis+lawsoniana for more info.
Monterey Cypress	40	12	Evergreen, narrow, upright tree native to California. Very rapid growing, especially in W. Britain – may reach mature height in 40 years. Once planted as a hedge but now superseded by its offspring Leyland cypress. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Cupressus+macrocarpa for more info.
Oak	22	18	Deciduous, long lived tree native and common throughout Europe with very durable timber. Excellent habitat tree - provides food and shelter for thousands of native species. Can be very attractive as a mature open grown specimen though not particularly ornamental, having no autumn colour or showy flowers. Responds well to pruning. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Quercus+robur for more info.
Scots Pine	35	16	Evergreen tree native to Scotland Spain and Norway. Distinguished from other pines by an orange tinge to the bark of the upper stem. One of Britain's few native conifers. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Pinus+sylvestris for more info.
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 http://www.pfaf.org/user/Plant.aspx?LatinName=Betula+pendula for more info.
Sycamore	25	16	Deciduous tree native to S. Europe, widely naturalised in the UK. Often regarded as a weed species due to its invasive nature and ability to tolerate most conditions. Responds well to pruning. Not a good tree to park beneath in summer due to the sticky sap secreted by aphids. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Acer+pseudoplatanus for more info

Species	Typical Height at Maturity (m)	Typical Canopy Spread at Maturity (m)	General Notes
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 http://www.pfaf.org/user/Plant.aspx?LatinName=Taxus+baccata 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.

4. Arboricultural Impact Assessment

4.1. Overview

4.1.1. It is proposed to construct a vehicle storage building with a concrete apron slope to the front and a vehicular ramp to its side, 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.

4.1.2. Existing vehicular access from Greenhead Avenue shall remain the same.

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	T20
Tree Removal: Retention Category U	None
Tree Pruning	None
RPA: House Foundations	None
RPA: Other Foundations	None
RPA: New Hard Surface	None
RPA: Replace Existing Hard Surface	None
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	None
RPA: Soil Compaction	None

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.

4.1.3. The accompanying Arboricultural Method Statement (duplicated in Appendix 6) specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

4.2. Tree Removal

4.2.1. 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 one Retention Category C Tree, T20. This tree is located within the footprint of the proposed vehicular ramp that its retention is not possible.

  This is a relatively small yew tree (height 6m, diameter 23cm). It is located on private property and is not visible from any public vantage points; consequently, it is considered to have a low amenity value. Its removal shall not have a significant

impact on the visual amenity of the locality, and it is not considered to be a material planning consideration.

T20 is 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.

4.3. Mitigation Planting

4.3.1. The tree to be removed is of such low amenity value that no mitigation planting is considered necessary.

4.4. Impact on Tree Canopies

4.4.1. The canopies of all retained trees are located sufficiently far from proposed building works and sufficiently high over access routes throughout the site that they shall not be impacted upon by any construction activity. Consequently, no pruning works are required to facilitate construction activity or access throughout the site. Restrictions are placed on activities throughout the site to ensure that no canopies are accidentally damaged – see the accompanying Arboricultural Method Statement.

4.5. Impact on Tree Roots

4.5.1. **Foundations:**

4.5.2. No building foundations are proposed within the Root Protection Area of any retained tree. Consequently, no restrictions on foundation design or implementation are considered necessary from an arboricultural perspective.

4.5.3. **New Surfaces:**

4.5.4. No new surfaces are proposed within the Root Protection Areas of any trees. Consequently, no restrictions on their design or implementation are considered necessary from an arboricultural perspective.

4.5.5. **Underground Services:**

4.5.6. There is ample opportunity for service and drainage provision without the need to pass through the Root Protection Areas of any retained trees. The exact position of services should be agreed, and installation engineers should be made aware of the need to keep trenches outside of Root Protection Areas.

4.5.7. **Changes in Ground Levels:**

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

4.5.9. **Soil Compaction:**

4.5.10. 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.

4.5.11. 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.

4.5.12. 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 as recommended within the accompanying Arboricultural Method Statement.

4.6. Demolition Activities

4.6.1. There are no structures that require demolition or significant surfaces that require removal close to trees.

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. The dimensions between the storage building and the extent of the tree canopies are recorded on the Proposed Layout Plan. The closest canopy's being that of H17 and T27; at distances of 2.2m and 4.2m respectively.

4.10.2. H17 is a Lawson cypress hedge that has been topped at 3m in the past and is maintained as a hedge by cyclical pruning. Given that this is the vegetation to the proposed storage building. Consequently, it is considered that adequate space has been allowed between the trees to be retained and the proposed buildings. Therefore, the proposal shall not result in an increased pressure to remove or prune any of the retained trees.

4.10.3. 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.

4.11. Summary

4.11.1. Only one low quality, relatively young tree is to be removed to enable the build (T20), which is hidden from public vantage points. Consequently, the impact of tree removal on local amenity shall be minimal.

4.11.2. No significant hard surfacing is proposed in Root Protection Areas.

4.11.3. No foundations are proposed within Root Protection Areas.

4.11.4. So long as suitable protection measures are implemented during demolition and construction stages, I see no arboricultural reasons why the proposal should not proceed. Suitable protection measures are specified in the accompanying Arboricultural Method Statement ref CCL/10736 The Method Statement is thorough and enforceable so may be conditioned upon the granting of planning consent.

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:

A1.1.1 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 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.

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.

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 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 that is not likely to compromise the tree's structural integrity.

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.**
Cambium	**A thin layer of actively growing and dividing cells, located between the xylem (sapwood) and bark of a plant; the part 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 stems/trunk	**Are forked branches or trunks of nearly the same size in diameter and lacking a normal branch union.**
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.**
Compartmentalisation	**The physiological process that creates the chemical and mechanical boundaries that act to limit the spread of disease and decay 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 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 characteristics of growth, wood strength, structure, decay, and for species identification.**
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 / raising	**Crown Lift The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance 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 total failure affected parts will snap or tear away completely, Partial failure there is a crack or deformation, which results in an 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.**
Foliage	**The live leaves or needles of the tree; the plant part primarily responsible for photosynthesis.**
Formative pruning	**The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation is aimed at reducing the potential for future weaknesses or problems within the tree's crown.**
Girdling Root	**In woody plants, a root that grows across the buttress, or across other roots, eventually causing constriction of the radial growth.**

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 conifers, 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 Detection	**Non invasive method whereby sound waves are passed through the tree and the speed is measured. Slow speeds indicate decay 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 Assessment (VTA)	**An assessment of the mechanical condition of trees based upon their 'body language'. Trees are dynamic and respond to faults / 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**
Xylem	**Plant tissues with special function of translocation of water and dissolved nutrients.**

Appendix 3: Survey Methodology

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.

Appendix 4: Author's Qualifications

This report was written by arboricultural consultant Sarah Alway who has the following resume:

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 developments in industry knowledge and current best practise 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.

This report was checked by our arboricultural consultant Joe Taylor who has the following resume:

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.

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/

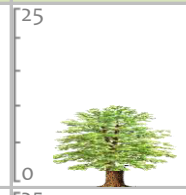
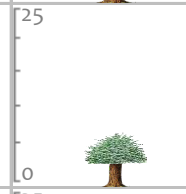
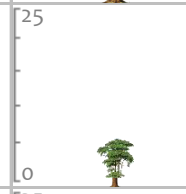
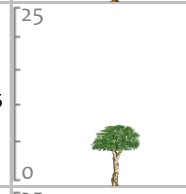
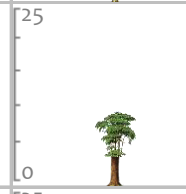
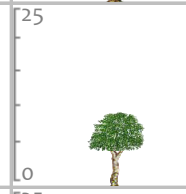
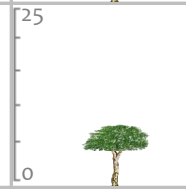
Tree Specific Websites

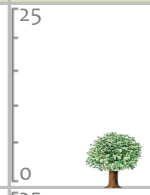
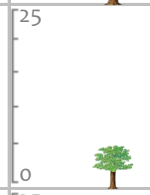
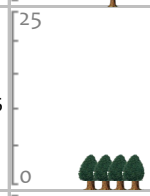
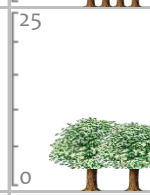
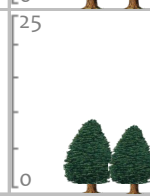
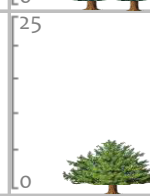
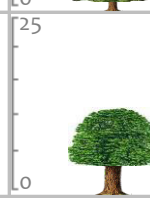
www.crowntrees.co.uk	Crown Consultants site containing useful information
www.trees.org.uk	Arboricultural Association
www.rfs.co.uk	Royal Forestry Society of England, Wales and N. Ireland
www.treehelp.Info	The Tree Advice Trust
www.woodland-trust.org.uk	The Woodland Trust
www.treecouncil.org.uk	The Tree Council

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.

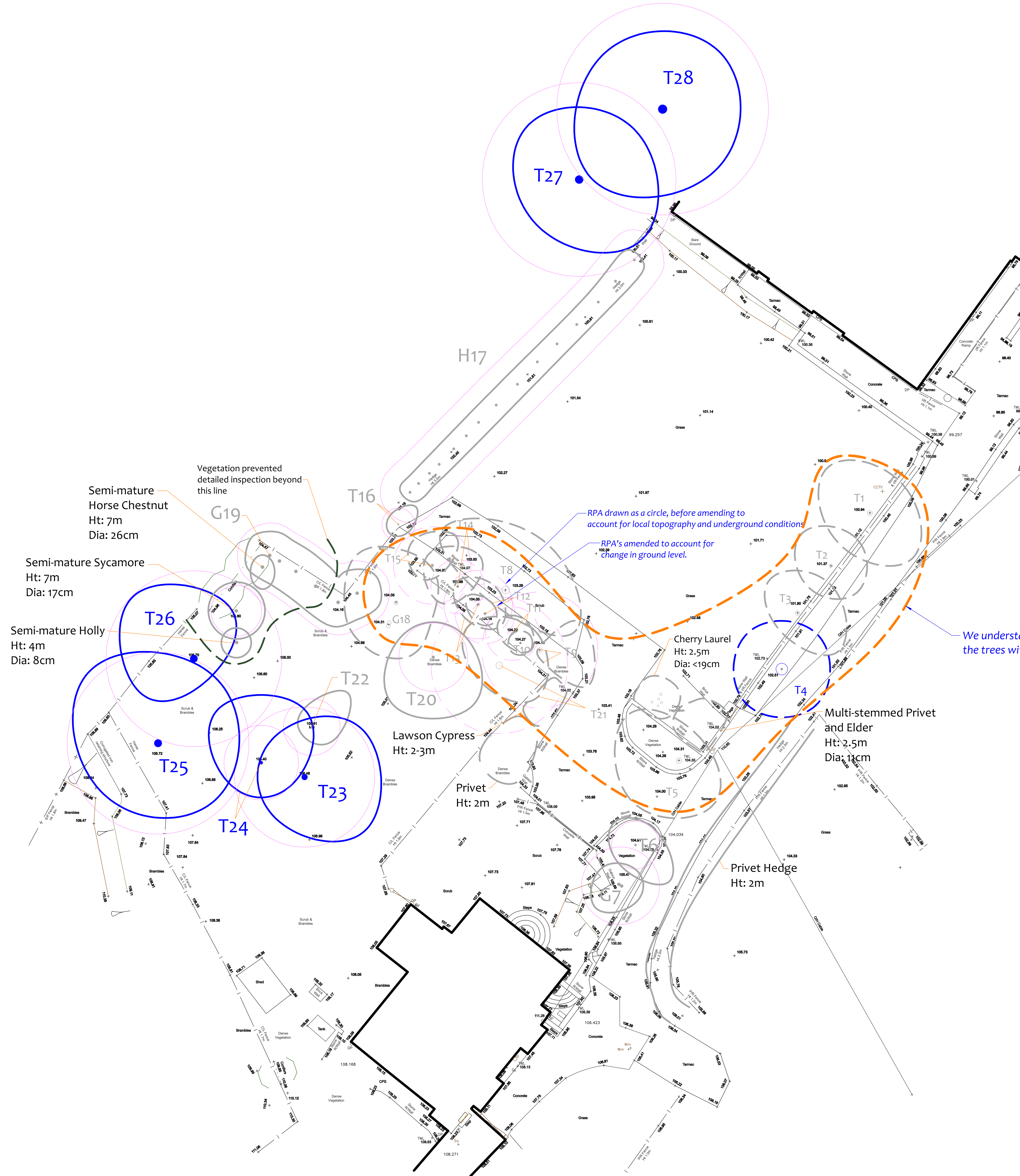
Reference (G = Group, H = Hedge)	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N / W / E / S	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
								Priority	Inspect Freq (yrs)		
T1	Semi-Mature **Silver Birch** Betula pendula.	10	4	41	N 5, W 3.5, E 3.5, S 5		Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: Occasional pruning wounds due to crown lifting. **Defects: No significant defects observed.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.		Moderate Good Fair	Low 20-40 C +
								Low	3		
T2	Semi-Mature **Silver Birch** Betula pendula.	10	4	28	N 3.5, W 2.5, E 3, S 3		Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.		Moderate Good Fair	Low 20-40 C +
								Low	3		
T3	Semi-Mature **Silver Birch** Betula pendula.	10	4	36	N 3.5, W 2, E 3.5, S 4.5		Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.		Moderate Good Fair	Low 20-40 C +
								Low	3		
T4	Early-Mature **Monterey Cypress** Cupressus macrocarpa.	17	0.5	94	N 4, W 4, E 4, S 4		Position: Between boundary all and adjacent road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.		Moderate Good Good	Low 40+ B
								n/a	3		
T5	Early-Mature **Apple** Malus sp.	4.5	2	45	N 5.5, W 5, E 2.5, S 4.5		Form: Twin-stemmed at ground level with an unbalanced crown. History: Regularly crown reduced. **Defects: Minor cavity developing on larger stem at 1m. Decaying limb in the centre of crown, persihed fungal bracket at 2m on larger stem. Acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	Remove ivy and inspect stem for decay.		Moderate Fair Fair	Low 20-40 C
								Moderate	1.5		
T6	Semi-Mature **Ash** Fraxinus excelsior.	6	2.5	16	N 2.5, W 2, E 2, S 4		Position: In raised bed. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.		Moderate Good Good	Low 40+ C +
								n/a	3		
G7	Semi-Mature **Holly** Ilex aquifolium.	av 6	av 0	av 25	N av 2, W 2.5, E 1.5, S 1.5 each		Position: Adjacent garage. Form: Two close growing specimens. History: Previously topped at 2.5 meters. **Defects: No significant defects.**	No action required.		High Good Good	Low 40+ C
								n/a	3		

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)	Notes	Recommendations (Independent of any development proposals)	Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
T8	Early-Mature **Pussy Willow** Salix discolor.	10	1.5	62	N 7, W 1.5, E 5, S 6.5		Form: Twin-stemmed at 0.5m with a slight lean and an unbalanced crown. History: No evidence of significant pruning. **Defects: Tight union at main stem junction with minor included bark.** Other: Tree has been removed since our tree survey on 11th March 2021.	Reduce canopy of stem leaning over the northern part of the site (lawn) by 50%. Priority: Low; Inspect Freq (yrs): 1.5	Moderate / Good / Fair	Low / 40+ / C
T9	Early-Mature **Apple** Malus sp.	6	3	39	N 0, W 0.5, E 4, S 5		Position: In raised bed. Form: Twin-stemmed at 0.5m with an unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Moderate / Good / Fair	Low / 40+ / C
T10	Young **Scots Pine** Pinus sylvestris.	5	1	11	N 1, W 1, E 1, S 1		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Moderate / Good / Good	Low / 40+ / C
T11	Semi-Mature **Silver Birch** Betula pendula.	7	5	18	N 1.5, W 1, E 1.5, S 2		Form: Single stemmed and vertical with with a sparse crown. History: No evidence of significant pruning. **Defects: Significant deadwood throughout canopy, in decline.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Moderate / Poor / Fair	Low / 40+ / C
T12	Semi-Mature **Scots Pine** Pinus sylvestris.	9	4.5	20	N 2, W 1, E 1, S 1		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects observed.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Moderate / Good / Good	Low / 40+ / C +
T13	Semi-Mature **Silver Birch** Betula pendula.	9	5	23	N 2.5, W 1.5, E 2, S 2.5		Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Minor deadwood throughout canopy, acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Low / Good / Good	Low / 20-40 / C
T14	Semi-Mature **Silver Birch** Betula pendula.	7	5	18	N 3.5, W 2, E 3, S 1		Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Minor deadwood throughout canopy, acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required. Priority: n/a; Inspect Freq (yrs): 3	Low / 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)	Notes	Recommendations (Independent of any development proposals)		Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
								Priority	Inspect Freq (yrs)		
T15	Semi-Mature **Hawthorn** Crataegus monogyna.	6	2	26	N 2.5, W 1.5, E 3, S 1		Form: Multi-stemmed at 0.5m with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Smothered in ivy and in decline. Significant deadwood throughout.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a / 3	Low / Poor / Good	Low / 40+ / C
T16	Young **Oak** Quercus robur.	4	2	11	N 1, W 1, E 2, S 1		Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a / 3	Moderate / Good / Good	Low / 40+ / C
H17	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	3	0	20	N 1, W 0.5, E 0.5, S 1		Position: Boundary hedge. Form: Hedge. History: Maintained as hedge. **Defects: No significant defects.**	No action required.	n/a / 3	Moderate / Good / Good	Low / 40+ / C
G18	Semi-Mature **Hawthorn** Crataegus monogyna.	av 9	av 3	av 32	N av 5, W 2.5, E 4, S 3 each		Form: Three single stemmed specimens that are vertical with unbalanced crowns. History: No evidence of significant pruning. **Defects: Ivy smothered with deadwood and broken branches throughout.** Other: Trees have been removed since our tree survey on 11th March 2021.	No action required.	n/a / 3	Moderate / Fair / Good	Low / 40+ / C
G19	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	av 9	av 0	26 @ Base	N av 2, W 2, E 2, S 2 each		Position: Forms boundary screen. Form: Six vertical specimens. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a / 3	Moderate / Good / Good	Low / 40+ / C
T20	Semi-Mature **Yew** Taxus baccata.	6	0.5	23	N 3, W 5, E 3, S 5		Position: In dense brambles. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Vegetation prevented detailed inspection dimensions estimated.	Clear vegetation and re-inspect.	Low / 1.5	Moderate / Good / Fair	Low / 40+ / C
T21	Semi-Mature **Horse Chestnut** Aesculus hippocastanum.	11	4	55 @ Base	N 4, W 2, E 4, S 4		Form: Twin-stemmed at 1m with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Ivy and vegetation prevented detailed inspection, dimensions estimated.	No action required.	n/a / 3	Moderate / Good / Fair	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)	Notes	Recommendations (Independent of any development proposals) Priority	Inspect Freq (yrs)	Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
T22	Semi-Mature **Hawthorn** Crataegus monogyna.	8	3	19	N 1.5, W 1, E 4, S 2		Form: Twin-stemmed at 0.5m with a slightly unbalanced crown. With one dominat stem. History: No evidence of significant pruning. **Defects: Minor deadwood throughout, smothered in ivy.** Other: Two stems acurately measured, one at 17cm and the other 8cm ivy prevented detailed inspection.	No action required. n/a	3	Low / Fair / Fair	Low / 10-20 / C
T23	Semi-Mature **Sycamore** Acer pseudoplatanus.	14	8	47	N 4, W 4, E 6, S 6.5		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Dead branch stubs throughout canopy.** Other: Ivy prevented detailed inspection of stem.	No action required. n/a	3	Moderate / Good / Good	Low / 40+ / B
T24	Semi-Mature **Hornbeam** Carpinus betulus.	10	2	25	N 5.5, W 3, E 5.5, S 3		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required. n/a	3	Moderate / Good / Good	Low / 40+ / B -
T25	Early-Mature **Oak** Quercus robur.	14	8	61	N 8, W 6, E 7, S 6.5		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Scattered dead twigs throughout.**	No action required. n/a	3	Moderate / Good / Good	Moderate / 40+ / B
T26	Early-Mature **Oak** Quercus robur.	14	7	59	N 7, W 5, E 5, S 2		Form: Single stemmed with a slight lean and a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Ivy prevented detailed inspection, dimensions estimated.	No action required. Low	3	Moderate / Good / Fair	Moderate / 20-40 / B
T27	Early-Mature **Sycamore** Acer pseudoplatanus.	14	7	65	N 6, W 5, E 6, S 7		Position: Situated on third party land. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Historic bark wound at 0.5-1m on east side. Significant broken branches throughout (acceptable condition at present).** Other: Vegetation prevented detailed inspection.	No action required. n/a	3	Moderate / Good / Good	Low / 40+ / B
T28	Early-Mature **Oak** Quercus robur.	12	4	71	N 6.5, W 8, E 6.5, S 6.5		Position: Situated on third party land. Form: Single stemmed with a slight lean and a balanced crown. History: Occasional pruning wounds due to crown lifting, healing well. **Defects: Scattered dead twigs throughout.**	No action required. n/a	3	Moderate / Good / Good	Low / 40+ / B

Reference (G = Group, H = Hedge)	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N	E	S	W	Notes	Recommendations (Independent of any development proposals)	Priority	Inspect Freq (yrs)	Vigour	Physiological Condition	Structural Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
T1	Semi-Mature **Silver Birch** Betula pendula.	10	4	41	5	3.5	5	3.5	Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: Occasional pruning wounds due to crown lifting. **Defects: No significant defects observed.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	Low	3	Moderate	Good	Fair	Low	20-40	C+
T2	Semi-Mature **Silver Birch** Betula pendula.	10	4	28	3.5	3	3	2.5	Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	Low	3	Moderate	Good	Fair	Low	20-40	C+
T3	Semi-Mature **Silver Birch** Betula pendula.	10	4	36	3.5	3.5	4.5	2	Position: Adjacent private road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	Low	3	Moderate	Good	Fair	Low	20-40	C+
T4	Early-Mature **Monterey Cypress** Cupressus macrocarpa.	17	0.5	94	4	4	4	4	Position: Between boundary all and adjacent road. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Good	Good	Low	40+	B
T5	Early-Mature **Apple** Malus sp.	4.5	2	45	5.5	2.5	4.5	5	Form: Twin-stemmed at ground level with an unbalanced crown. History: Regularly crown reduced. **Defects: Minor cavity developing on larger stem at 1m. Decaying limb in the centre of crown, persihed fungal bracket at 2m on larger stem. Acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	Remove ivy and inspect stem for decay.	Moderate	1.5	Moderate	Fair	Fair	Low	20-40	C
T6	Semi-Mature **Ash** Fraxinus excelsior.	6	2.5	16	2.5	2	4	2	Position: In raised bed. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C+
G7	Semi-Mature **Holly** Ilex aquifolium.	av 6	av 0	av 25	av 2	1.5	1.5 each	2.5	Position: Adjacent garage. Form: Two close growing specimens. History: Previously topped at 2.5 meters. **Defects: No significant defects.**	No action required.	n/a	3	High	Good	Good	Low	40+	C
T8	Early-Mature **Pussy Willow** Salix discolor.	10	1.5	62	7	5	6.5	1.5	Form: Twin-stemmed at 0.5m with a slight lean and an unbalanced crown. History: No evidence of significant pruning. **Defects: Tight union at main stem junction with minor included bark.** Other: Tree has been removed since our tree survey on 11th March 2021.	Reduce canopy of stem leaning over the northern part of the site (lawn) by 50%.	Low	1.5	Moderate	Good	Fair	Low	40+	C
T9	Early-Mature **Apple** Malus sp.	6	3	39	0	4	5	0.5	Position: In raised bed. Form: Twin-stemmed at 0.5m with an unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Good	Fair	Low	40+	C
T10	Young **Scots Pine** Pinus sylvestris.	5	1	11	1	1	1	1	Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C
T11	Semi-Mature **Silver Birch** Betula pendula.	7	5	18	1.5	1.5	2	1	Form: Single stemmed and vertical with with a sparse crown. History: No evidence of significant pruning. **Defects: Significant deadwood throughout canopy, in decline.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Poor	Fair	Low	40+	C
T12	Semi-Mature **Scots Pine** Pinus sylvestris.	9	4.5	20	2	1	1	1	Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects observed.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C+
T13	Semi-Mature **Silver Birch** Betula pendula.	9	5	23	2.5	2	2.5	1.5	Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Minor deadwood throughout canopy, acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Low	Good	Good	Low	20-40	C
T14	Semi-Mature **Silver Birch** Betula pendula.	7	5	18	3.5	3	1	2	Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Minor deadwood throughout canopy, acceptable condition at present.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Low	Good	Good	Low	40+	C
T15	Semi-Mature **Hawthorn** Crataegus monogyna.	6	2	26	2.5	3	1	1.5	Form: Multi-stemmed at 0.5m with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: Smothered in ivy and in decline. Significant deadwood throughout.** Other: Tree has been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Low	Poor	Good	Low	40+	C
T16	Young **Oak** Quercus robur.	4	2	11	1	2	1	1	Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C
H17	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	3	0	20	1	0.5	1	0.5	Position: Boundary hedge. Form: Hedge. History: Maintained as hedge. **Defects: No significant defects.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C
G18	Semi-Mature **Hawthorn** Crataegus monogyna.	av 9	av 3	av 32	av 5	4	3 each	2.5	Form: Three single stemmed specimens that are vertical with unbalanced crowns. History: No evidence of significant pruning. **Defects: Ivy smothered with deadwood and broken branches throughout.** Other: Trees have been removed since our tree survey on 11th March 2021.	No action required.	n/a	3	Moderate	Fair	Good	Low	40+	C
G19	Semi-Mature **Lawson Cypress** Chamaecyparis lawsoniana.	av 9	av 0	26 @ Base	av 2	2	2 each	2	Position: Forms boundary screen. Form: Six vertical specimens. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	C
T20	Semi-Mature **Yew** Taxus baccata.	6	0.5	23	3	3	5	5	Position: In dense brambles. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Vegetation prevented detailed inspection dimensions estimated.	Clear vegetation and re-inspect.	Low	1.5	Moderate	Good	Fair	Low	40+	C
T21	Semi-Mature **Horse Chestnut** Aesculus hippocastanum.	11	4	55 @ Base	4	4	4	2	Form: Twin-stemmed at 1m with a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Ivy and vegetation prevented detailed inspection, dimensions estimated.	No action required.	n/a	3	Moderate	Good	Fair	Low	40+	C+
T22	Semi-Mature **Hawthorn** Crataegus monogyna.	8	3	19	1.5	4	2	1	Form: Twin-stemmed at 0.5m with a slightly unbalanced crown. With one dominat stem. History: No evidence of significant pruning. **Defects: Minor deadwood throughout, smothered in ivy.** Other: Two stems acurately measured, one at 17cm and the other 8cm ivy prevented detailed inspection.	No action required.	n/a	3	Low	Fair	Fair	Low	10-20	C
T23	Semi-Mature **Sycamore** Acer pseudoplatanus.	14	8	47	4	6	6.5	4	Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Dead branch stubs throughout canopy.** Other: Ivy prevented detailed inspection of stem.	No action required.	n/a	3	Moderate	Good	Good	Low	40+	B
T24	Semi-Mature **Hornbeam** Carpinus betulus.	10	2	25	5.5	5.5	3	3	Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	B-
T25	Early-Mature **Oak** Quercus robur.	14	8	61	8	7	6.5	6	Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Scattered dead twigs throughout.**	No action required.	n/a	3	Moderate	Good	Good	Moderate	40+	B
T26	Early-Mature **Oak** Quercus robur.	14	7	59	7	5	2	5	Form: Single stemmed with a slight lean and a slightly unbalanced crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Ivy prevented detailed inspection, dimensions estimated.	No action required.	Low	3	Moderate	Good	Fair	Moderate	20-40	B
T27	Early-Mature **Sycamore** Acer pseudoplatanus.	14	7	65	6	6	7	5	Position: Situated on third party land. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. **Defects: Historic bark wound at 0.5-1m on east side. Significant broken branches throughout (acceptable condition at present).** Other: Vegetation prevented detailed inspection.	No action required.	n/a	3	Moderate	Good	Good	Low	40+	B
T28	Early-Mature **Oak** Quercus robur.	12	4	71	6.5	6.5	6.5	8	Position: Situated on third party land. Form: Single stemmed with a slight lean and a balanced crown. History: Occasional pruning wounds due to crown lifting, healing well. **Defects: Scattered dead twigs throughout.**	No action required.	n/a	3	Moderate	Good	Good	Low	40+	B



Tree Constraints Plan

(Existing Layout)

Tree Ref.	Species	Height (m)	Root Protection Area Radius (m)	m²	Square (m)
T1	Silver Birch	10	4.9	76	8.7
T2	Silver Birch	10	3.4	35	6.0
T3	Silver Birch	10	4.3	59	7.7
T4	Monterey Cypress	17	11.3	400	20.0
T5	Apple	4	5.4	92	9.6
T6	Ash	6	1.9	12	3.4
G7	Holly	6	3.0	28	5.3
T8	Pussy Willow	10	7.4	174	13.2
T9	Apple	6	4.7	69	8.3
T10	Scots Pine	5	1.3	5	2.3
T11	Silver Birch	7	2.2	15	3.8
T12	Scots Pine	9	2.4	18	4.3
T13	Silver Birch	9	2.8	24	4.9
T14	Silver Birch	7	2.2	15	3.8
T15	Hawthorn	6	3.1	31	5.5
T16	Oak	4	1.3	5	2.3
H17	Lawson Cypress	3	2.4	18	4.3
G18	Hawthorn	9	3.8	46	6.8
G19	Lawson Cypress	9	2.6	21	4.6
T20	Yew	6	2.8	24	4.9
T21	Horse Chestnut	11	5.5	95	9.7
T22	Hawthorn	8	2.3	16	4.0
T23	Sycamore	14	5.6	100	10.0
T24	Hornbeam	10	3.0	28	5.3
T25	Oak	14	7.3	168	13.0
T26	Oak	14	7.1	157	12.5
T27	Sycamore	14	7.8	191	13.8
T28	Oak	12	8.5	228	15.1

Drawing No:	CCL 10736 / TCP Rev: 1
Title:	Tree Constraints Plan (Existing Layout)
Site:	Land off Greenhead Avenue, Dalton, Huddersfield
Scale:	1:200 (0 – 5 – 10m)
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

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.

Excerpts from the Arboricultural Impact Assessment

Overview

It is proposed to construct a vehicle storage building with a concrete apron slope to the front and a vehicular ramp to its side, 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.

Existing vehicular access from Greenhead Avenue shall remain the same.

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	T20
Tree Removal: Retention Category U	None
Tree Pruning	None
RPA: House Foundations	None
RPA: Other Foundations	None
RPA: New Hard Surface	None
RPA: Replace Existing Hard Surface	None
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	None
RPA: Soil Compaction	None

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.

The accompanying Arboricultural Method Statement (duplicated in Appendix 6) specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

Tree Removal

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 one Retention Category C Tree, T20. This tree is located within the footprint of the proposed vehicular ramp that its retention is not possible.

  This is a relatively small yew tree (height 6m, diameter 23cm). It is located on private property and is not visible from any public vantage points; consequently, it is considered to have a low amenity value. Its removal shall not have a significant impact on the visual amenity of the locality, and it is not considered to be a material planning consideration.

  T20 is 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.

Summary

Only one low quality, relatively young tree is to be removed to enable the build (T20), which is hidden from public vantage points. Consequently, the impact of tree removal on local amenity shall be minimal.

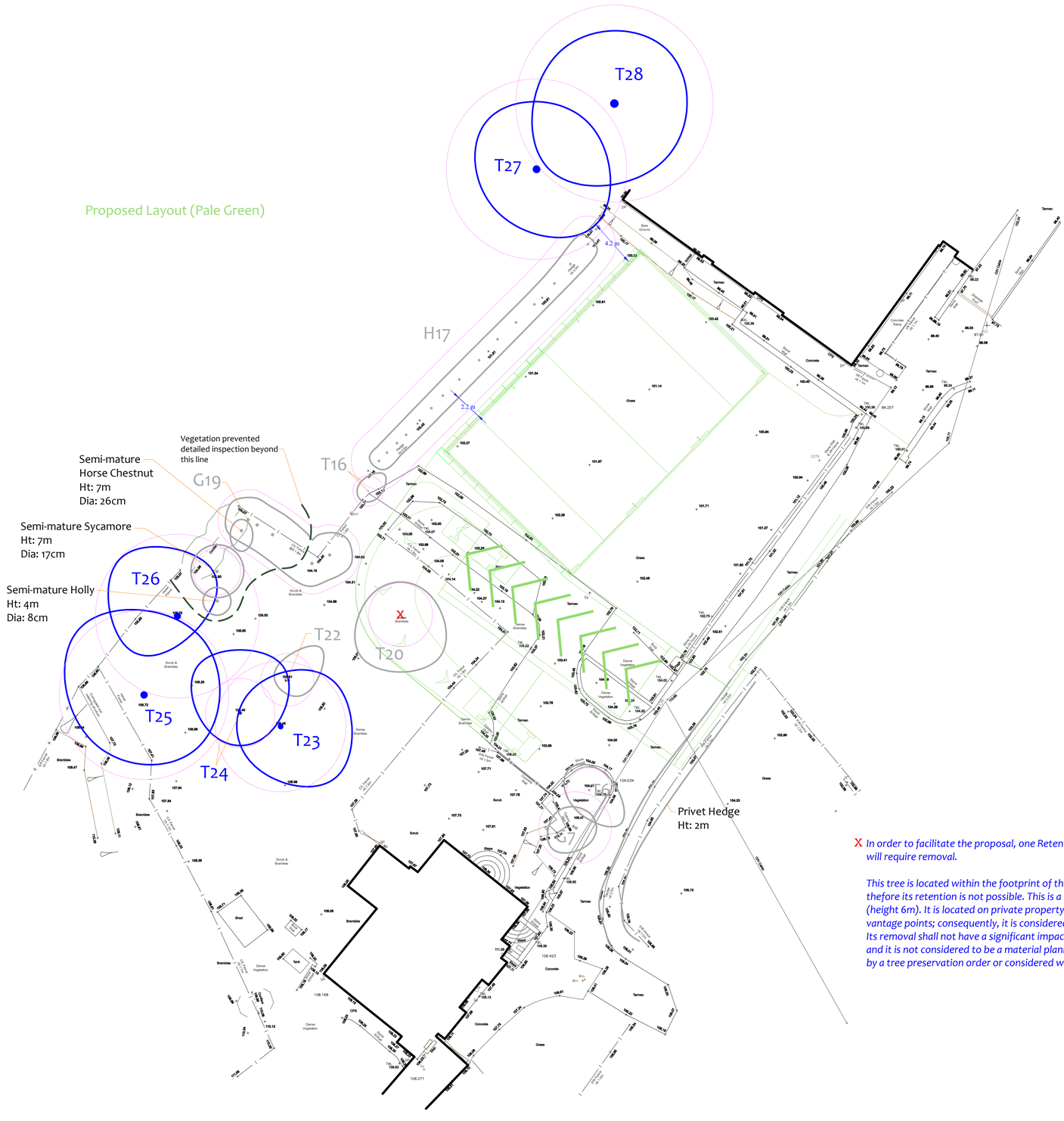
No significant hard surfacing is proposed in Root Protection Areas.

No foundations are proposed within Root Protection Areas.

So long as suitable protection measures are implemented during demolition and construction stages, I see no arboricultural reasons why the proposal should not proceed.

Suitable protection measures are specified in the accompanying Arboricultural Method Statement ref CCL/10736 The Method Statement is thorough and enforceable so may be conditioned upon the granting of planning consent.

See Section 4
for a more
detailed assessment



X *In order to facilitate the proposal, one Retention Catagory C tree (T20) will require removal.*

This tree is located within the footprint of the proposed vehicular ramp and thefore its retention is not possible. This is a relatively small yew tree (height 6m). It is located on private property and is not visible from any public vantage points; consequently, it is considered to have a low amenity value. Its removal shall not have a significant impact on the visual amenity of the locality, and it is not considered to be a material planning consideration. T20 is not protected by a tree preservation order or considered worthy of special protection.

MN

Tree Removal Plan

(Existing Layout with Proposals Overlaid)

Drawing No:	CCL 10736 / TRP Rev: 1
Title:	Tree Removal Plan (Existing Layout with Proposals Overlaid)
Site:	Land off Greenhead Avenue Dalton, Huddersfield
Scale:	1:200 (0, 5, 10m) 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 Removal Plan

(Existing Layout with Proposals Overlaid)

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.

Arboricultural Method Statement

CROWN Tree Consultancy 08000 14 13 30

Site: Land off Greenhead Avenue, Huddersfield

Author: Ivan Button
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Date: 23/04/2021 **Revision:** 1 **CCL ref No:** 10736

Client: John Myers

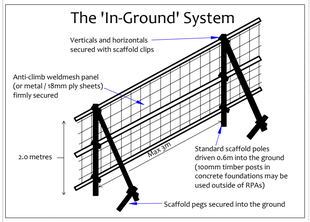
Tree Protection Barriers

The purpose of tree protection barriers is to keep construction activity away from Restricted Activity Zones or Construction Exclusion Zones. They should be appropriate to the nature and proximity of activity within the site. The barriers should be erected prior to the commencement of all activity including demolition, soil stripping and delivery of materials and demolition (except where existing structures require demolition to enable the barriers to be installed). Barrier systems are specified below and should be installed according to the legend on the Tree Protection Plan.

The In-Ground System ——— OR • • •

This system may be installed where indicated by a solid purple line on the Tree Protection Plan. It should be robust enough to withstand occasional knocks by plant machinery and, once installed, shall remain in place throughout the entire construction phase.

Vertical scaffold poles are driven into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Weldmesh panels (or similar – e.g. Heras type fencing panels, or 18mm+ plywood boards) are secured to this scaffold framework using sturdy clips e.g. standard scaffold clips. The system is illustrated in the diagram to the right and is based on BS 5837 guidelines.

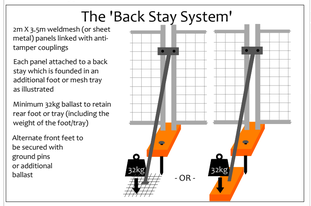


The Back-Stay System ——— OR • • •

This system may be installed where indicated by a solid or dashed purple line on the Tree Protection Plan. It is more practical over existing hard surfaces or where the fencing needs to be moved to enable permitted activities within a Restricted Activity Zone. This system should be able to withstand occasional knocks by machinery and should not be relocated except with the consent of the site manager and the approval of the local authority.

Within this system, weldmesh fencing panels (minimum height 2m) are affixed into rubber or concrete feet and clipped together with anti-tamper couplers. Two couplers should be used, spaced at least 1m apart. Alternate panels should be attached to a diagonal back stay connected to an additional foot or baseplate secured with ground pins or additional ballast. Where ground pins are not used, the total weight of the foot/plate plus ballast should total not less than 32kg.

Where it is not possible to install diagonal struts (such as very close to a hedge) then the front feet shall be secured using ground pins or ballast.



Notices

Suitable weather-proof notices should be displayed to identify tree protection zones. They should state the purpose of the fencing and that it should not be moved, or traversed, other than by authorised personnel.

Removal of Tree Protection Barriers

Removal of protective fencing or ground protection measures shall be done after all major construction work is complete and their removal has been approved by the appointed arborist.

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 shall be reinforced or replaced with adequate ground protection measures.

Unless specified otherwise, ground protection shall consist of 24mm OSB boards laid at double thickness and screwed together to prevent slippage. The ground shall first be made even by raking, or by adding a few centimetres of sand or woodchip. Where only pedestrian traffic will occur boards or planks may be supported by a scaffold framework. The scaffold may 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) sturdier 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 TM).

If a piling mat is required, engineer's specifications should be referred to.

The ground protection measures shall 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.

Construction Exclusion Zones

Within Construction Exclusion Zones the following restrictions shall apply:

- Tree Protection Barriers shall be erected and maintained throughout the entire project as indicated on the Tree Protection Plan and under the header -*Tree Protection Barriers*.
- These shall remain in place at all times except when authorised landscaping works are being undertaken. At such times, adequate ground protection measures shall be installed, and excavation shall be limited to that required for new planting. Furthermore, the project arborist shall be consulted prior to any works being undertaken in these zones.
- No construction activity or excavation shall occur unless agreed otherwise by the project arborist and local authority.
- No vehicles or plant machinery shall be driven or parked.
- No tree works, other than those specified on this document shall be undertaken.
- No alterations of ground levels or conditions shall occur.
- No chemicals or cement washings permitted.
- No temporary structures shall be installed.
- No spoil shall be stored.
- No fires shall be permitted.
- All hazardous materials (including non-essential cement products) shall be forbidden.
- Removal of hard surfaces, structures or turf shall be done using hand operated tools only and supervised by the project arborist.

Tree Works Specification

The following table specifies the tree works which will be required prior to the commencement of construction activity:

Tree Reference	Action Required	Notes
T20	Remove.	N/A

Timing of Operations

Activity within the site shall be phased according to the following chronology

Order	Phase	Activity
1st.	Pre-Construction Phase	Planning conditions relating to trees to be identified and discussed with the Project arborist and site manager.
2nd.		All specified tree removal to be undertaken (see Header -*Tree Works Schedule*).
3rd.		Install the tree protection barriers (fencing and ground protection boards - see Headers -*Tree Protection Barriers* and *Ground Protection Measures*).
4th.		Pre-Commencement site meeting: Tree protection barriers inspected. Additional protection measures to be agreed. Variances to be agreed. Location of underground services to be agreed. Extents of excavation to be agreed. Scaffold restrictions to be agreed. Scope of future inspections / monitoring to be agreed.
5th.		Arboricultural Method Statement to be revised and approved if necessary.
		Protection measures confirmed acceptable by the local authority
6th.	Construction Phase	Install new buildings, hard surfaces and services taking into account restricted activities as specified in this Arboricultural Method Statement.
7th.		Site meeting with project arborist. Landscaping restrictions to be agreed. Condition of retained trees to be assessed and mitigation agreed. Ground conditions to be assessed and ground remediation to be agreed.
8th.	Post-Construction Phase	Remove protective barriers (fencing and ground protection measures as applicable).
9th.		Undertake restricted landscaping operations within Root Protection Areas, including (where applicable) boundary treatments, pedestrian surfaces, decking and any proposed tree planting.

Personnel and Accountability

This table should be completed at the Pre-Start Meeting or earlier

Position	Name	Contact Phone & email	Roles
Project Manager	Insert Details	Insert Details	Liaising with site manager & project arborist regarding any potential issues relating to trees. Scheduling of meeting, excavations and inspections. Overseeing this monitoring schedule. Instructing the project arborist and arranging access. Liaising with local authority regarding discharge of planning conditions and variances to the Arboricultural Method Statement.
Site Manager	Insert Details	Insert Details	Day to day monitoring of tree protection measures. Fortnightly supply of site photographs showing all tree protection measures. Induction of all contractors. Reporting to the Appointed Arborist of any incidents or potential variations to the agreed tree protection measures.
Project Arborist	Crown Tree Consultancy	08000 14 13 30 0203 797 7449 Info@crowntrees.co.uk	Liaising with LPA Tree Officer over all arboricultural matters. Initial inspection and signing off of tree protection barriers including ground protection measures. Monthly site visits and inspections. Oversight of excavation for basement down to 1.2m in Restricted Zones. Reporting to the local authority following site inspections and any variation or incidents.
Local Authority	Kirklees Council	Planning Department (01484) 221000 trees.planning@kirklees.gov.uk	Receipt of reports from the appointed arborist. Liaising with the appointed arborist to agree suitability of tree protection measures and any variations. Enforcement. Advice and assistance with the discharge of planning conditions relating to trees.
Additional Contact	Insert Details	Insert Details	Insert Details
Additional Contact	Insert Details	Insert Details	Insert Details

Restrictions in Specific Zones

Restricted Activity Zone

Within this zone trees roots are likely to be present where access will be required to facilitate construction. The following restrictions shall apply:

- No vehicles or plant machinery shall park or operate unless a suitable load spreading surface is in place. The load spreading surface shall be installed and/or maintained as specified under the heading **Ground Protection Measures**. This shall remain in place throughout the entire demolition and construction phase or until any new permanent hard surfacing is installed. Any pedestrian activity other than very occasional shall also require a suitable load spreading surface.
- Removal of existing structures such as, walls, steps and hard surfaces (where applicable) shall be undertaken using hand tools or a mechanical excavator operating from outside the Restricted Activity Zone and carefully marshalled by the project arborist.
- No excavation shall occur beneath any existing hard surfacing and its sub-base or beneath the foundations of any structure such as wall, steps or patio.
- No further excavation shall occur in this zone without consulting the project arborist and obtaining approval from the local authority.
- Existing ground levels shall be retained undisturbed or raised by no more than 150mm. Ground levels may only be raised using granular topsoil (not rich in clay) or where new surfacing is proposed.
- No new permanent or temporary structures shall be erected other than those shown on the planning application documents unless approved by the local authority.
- Underground services shall not be installed in this area without prior consultation with the project arborist and a methodology agreed and approved by the local authority.
- If roots are encountered in excess of 25mm diameter, they shall be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots in excess of 10mm that need to be severed shall be pruned with secateurs.
- Storage of materials and spoil shall be avoided unless it has been agreed with the project arborist that the ground protection measures are adequate to ensure no soil compaction or contamination occurs. All hazardous materials (including non-essential cement products) shall be forbidden.
- No fires shall be permitted.

General Restrictions - Throughout the Site

Preparatory Works

No demolition, removal of surfaces, or soil stripping shall commence until the protective fencing and ground protection measures are installed to the satisfaction of the local authority.

Fires

No fires shall be permitted beneath any tree canopy or within 5m of any tree stem, branch or foliage. No fires shall be permitted within any Construction Exclusion Zone or Restricted Activity Zone. No fires shall be permitted in the vicinity of any exposed tree roots.

Canopy Protection

In order to protect tree canopies the following restrictions shall apply throughout the site:

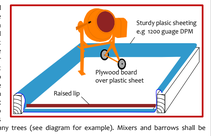
- No machinery in excess of 2m shall pass beneath the canopy of any tree without being carefully marshalled in order to ensure that no branches are damaged.
- If materials require installation or delivery beneath tree canopies, this shall be done without the use of overhead cranes.
- If materials are to be installed or delivered close to tree canopies (but not beneath them) and a crane is required, they shall be carefully marshalled in order to ensure that branches are not accidentally damaged.

Storage of Spoil and Materials

Storage of materials and spoil shall be avoided in any Construction Exclusion Zones and Restricted Activity Zones unless it has been agreed with the project arborist that the ground protection measures are adequate to ensure no soil compaction or contamination occurs. All hazardous materials (including non-essential cement products) shall be forbidden.

Hazardous Materials

Any mixing of cement based materials shall take place outside the Construction Exclusion Zones and Restricted Activity Zones. Where cement is to be mixed at considerable distances from trees and water run-off cannot enter Root Protection Areas, then no further special measures are required. Otherwise, provision shall be made to ensure that the mixing area is contained so that no water run-off enters the Root Protection Area of any trees (see diagram for example). Mixers and barrows shall be cleaned within this area.



All other chemicals hazardous to tree health, including petrol and diesel, shall be stored in suitable containers as specified by current COSHH Regulations, and kept away from Root Protection Areas.

General Restrictions - Continued

Lighting, Bollards, CCTV and associated Cables

If any of the above are to be installed close to tree canopies or within Root Protection Areas of retained trees; installation methods shall be detailed in a specific Method Statement and approved by the local authority. Consideration should be given to the following:

- Pruning of branches to enable sufficient clearance for light and views. Branches should be removed to the branch collar as per British Standard 3998 (2010).
- Post holes must be excavated by hand or using an appropriate sized auger. No other form of mechanical excavation may be used.
- Wherever possible, cables should be routed in a direction directly away from the tree stem rather than tangentially across the rooting zone. The location of all such cables shall be determined after consultation with the project arborist and approval by the local authority.

Use of Heavy Plant

All machinery operatives are to be made aware of any Construction Exclusion Zones and Restricted Activity Zones that apply to this site.

All machinery operatives are to respect these zones and ensure that no damage occurs to trees due to the careless use of machinery.

Mechanical excavators should have tracks rather than wheels to help spread their load. They should be carefully marshalled when working close to tree canopies.

Scaffolding

If scaffolding is required in areas containing ground protection measures, the protective boards shall need to remain in-situ and be strengthened and stabilised to bear the weight of scaffold poles.

Prior to the installation of any scaffolding within 0.5m of any tree branches, the project arborist shall be consulted to specify any pruning works that may be required.

Underground Services

No underground services (including soak-aways) shall be located in any part of the Construction Exclusion Zones or Restricted Activity Zones unless done so in a manner detailed in a specific Method Statement and approved by the local authority.

Site Hoarding

If site hoarding shall be installed over the Root Protection Area of any tree, the following restrictions shall apply:

- Ground levels shall be maintained as existing.
- Post holes shall not exceed 300mm x 300mm.
- No post hole shall be excavated within 1.5m of any tree stem.
- Post holes shall be excavated using hand tools or by a post-hole auger attached to plant machinery sited outside of Root Protection Areas.
- Roots in excess of 25mm shall be retained wherever possible.
- Roots in excess of 10mm shall be pruned with sharp secateurs.
- Pruning shall be minimal and only undertaken where absolutely necessary to facilitate the site hoarding. It shall be undertaken by a reputable tree surgeon working to BS 3998 (2010).

Site hoarding may be installed in place of the specified tree protection measures subject to the approval of the local authority with regard to its location and specification.

Siting of Cabins

Cabins shall be located outside of Construction Exclusion Zones and Restricted Activity Zones unless agreed otherwise by the project arborist. Where this is being considered, the project arborist shall be consulted and specific tree protection measures agreed. The following general restrictions will apply:

- All services to and from site cabins shall be installed above ground through any Root Protection Areas.
- No excavation shall occur within Root Protection Areas to enable cabins to be installed.
- The cabins shall be founded on a suitable load spreading surface.

Fence Posts or Decking Posts

If permanent fencing or decking is to be installed within Root Protection Areas, the following restrictions shall apply:

- All post holes shall be excavated by hand and kept as narrow as possible (maximum diameter 300mm).
- Exploratory post holes shall be dug before committing to post / panel positions. If any roots in excess of 25mm are encountered they are to remain intact and the post hole shall be relocated slightly. The fencing system must permit such flexibility (i.e. where fixed panel widths are used, all post holes must be excavated before committing to the final location).
- Any roots in excess of 10mm which are severed shall be neatly pruned back with secateurs. This will encourage healing and reduce the likelihood of infection.

Walls shall be avoided over Root Protection Areas unless their foundations may be spanned over roots using a beam system.

Hedges may be planted within Root Protection Areas using hand tools to minimise excavation.

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Site Monitoring Schedule

Inspection	Site Attendees	Comments
Pre- Start Desk-top To occur prior to any works taking place on the site.	N/A.	Project Manager and Site manager to study this Method Statement & contact the Project Arborist to agree all protection measures.
Pre-Start Meeting After tree works completed & tree protection barriers / ground protection measures installed. Prior to any other activity, inc. demolition & soil stripping.	Site manager, project arborist. Tree Officer invited.	Tree protection fencing locations & specification checked. Ground protection measures checked. Contractors to be inducted to all relevant aspects of the Arboricultural Method Statement. Responsibilities checked and acknowledged. Adherence to the Arboricultural Method Statement to be discussed and agreed. Report on findings to be sent to the local authority tree officer (see accompanying reporting template)
Monthly Inspection and Reporting To occur once per calendar month throughout the entirety of the project until the local authority agree that tree protection measures may be removed	Site manager and project arborist.*	Tree protection fencing locations & specification checked. Ground protection measures checked. Past month, present and future month – activities and adherence to Arboricultural Method Statement discussed and checked. Report on findings to be sent to the local authority tree officer within 5 working days.
Post-Construction Meeting Post external construction activity but prior to removal of fencing & landscaping operations.	Site manager, project arborist. Tree Officer invited.	Retained trees inspected. Ground conditions assessed and mitigation measures agreed where appropriate. Further landscaping operations and restrictions to be agreed.

* Where agreed with the L.A. it may be acceptable to supply photographs of the fencing to avoid the necessity for a site visit.

Proposals Overview

Tree Protection Plan

CROWN Arboricultural Consultants 01422 316660

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

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Category C tree
Category U tree

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