

# **BS5837:2012 -Trees in relation to design, demolition and construction. Arboricultural matters in relation to Maystone House, Harringworth.**

**Prepared by: East Midlands Tree Surveys.**

**Date: 05/07/2021**

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## 1. Instructions

This report was commissioned by John Trotter with instruction to carry out an inspection of trees located at the above property in line with *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*.

The objectives of this report are as follows:

- To make an assessment of the trees' condition and identify any faults.
- To provide Tree Constraints along with recommendations in line with BS5837:2012.
- To provide an Arb Impact Assessment with tree protection measures and an Arb Method Statement in line with BS5837:2012.

## 2. Introduction

This document has been prepared to fulfil the requirements for the proposal in accordance with the Department for Communities and Local Government guidance on information requirements and validation and is set out in compliance with British Standard 5837 Trees in relation to design, demolition and construction recommendations 2012.

The initial tree survey is considered to be compliant with BS5837:2012.

All trees considered likely to be affected by the proposal were surveyed and the details are given in Appendix 1 Table.

It is understood that a topographical survey was not carried out, the trees were plotted by the project Architect.

The tree numbers referred to in this report are the same as shown on the tree survey schedule and plan, tags have not been affixed due to low numbers.

The proposed indicative development is for a side extension to the existing building and a pool to the rear.

No detail was provided in relation to the proposed garage and this area was not assessed.

This report addresses the arboricultural issues relating to the proposed development at the above site and identifies the arboricultural implications of the proposed development with a view to protecting the trees during the construction works by setting out the tree protection methods, construction techniques and working practices that are to be adopted on this site.





If all the guidelines and principles outlined in this report are not adhered to, as with all development sites, there is a risk that the construction activities will result in damage to and potentially the death of the retained trees. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

The success of the recommendations set out in this report are dependent on the development adhering to the principles set out within, which are to be approved and enforced by the Local Planning Authority (LPA). If the recommendations contained within this document are acceptable to the LPA then it is suggested that they be controlled by standard planning conditions.

### 3. Site description

The property is set back from Gretton Rd.

At present, the entrance leads to a paved drive with 2 trees to west, there is a single tree at the frontage in the garden and 2 offsite Ash outside the boundary wall. To the rear is an additional small group of trees.

### 4. Tree survey findings

The tree details can be found at Appendix 1.

NT1 is a mature off-site Ash with no significant defects noted however the main unions at approx. 3-4m were hidden due to Ivy. There is an excess of seed pods throughout the upper crown which potentially indicates stress.

NT2 is also a mature off-site Ash with heart rot from 20cm up to approx. 2.2m NE. Whilst there is evidence of reaction growth around the defect resulting in strengthening material, the decay channel is of significance. The tree has also damaged the boundary wall as it has encroached into the client's land which has resulted in the wall being rebuilt, circumnavigating the trunk of the tree.







NT3 is a Weeping Beech in good condition with no significant defects.





NT4 is a semi-mature Crimson King Norway Maple showing typical die back, the main central trunk is dead.

NT5 is a semi-mature Norway Maple in reasonably good condition, other some historic pruning wounds, there are no significant defects.





NT6 is a young Holly with die-back in the upper crown.

NT7 is a young Cherry with no significant defects however the crown generally is thin.

It is advised that discussions are entered into with the owner of the 2 Ash trees to ensure that they have been inspected by a competently trained individual to meet the landowner's Duty of Care under common law. Equally, the encroachment by Ash NT2 needs to be resolved as the main trunk has crossed garden boundary and damaged the wall. This damage is considered to be a civil matter. I would advise however that due to the defect identified, this Ash is felled before further damage or failure occurs.

## 5. Tree Constraints/Arboricultural Impact Assessment.

See Appendix 3 for the Impact Assessment plans, the Root Protection Areas have been added via extrapolation using the scale bar provided on the PDF.

The proposed layout shows that the pair of Maple trees need to be removed.

The Crimson King Maple is a poor specimen that is in decline and should not be seen as constraint to development.

Although no sound Arboricultural justification can be put forward for the loss of NT5, I would suggest that it could be removed to facilitate the build with a replacement tree planted along the frontage.

The wall will need to be rebuilt around NT2.

In terms of NT3, the gate piles have been located as far north as possible and are 500x500mm and the new road incursion at the widest point into the RPA is 14cm. Whilst not ideal and also acknowledging that Beech do not take kindly to root disturbance, with the closest gate post at 3.1m it is unlikely that there will be any significant diameter roots – the root loss is more likely to be fibrous.

Within the RPA work are, anti-compaction measures will need to be employed during the gate installation phase, these are covered in the next section.

The small area of path will be pegged out heavy duty plastic mesh such as [grassmats.co.uk](http://grassmats.co.uk)

There will be no impact on the trees to the rear.

Services will be taken from the existing building with no impact on any of the trees.

There is sufficient space on site for the storage of materials within the driveway.





## 6 Arboricultural Method Statement & Tree Protection detail.

### 6.1 Sequenced Methods of Demolition, Construction and Tree Protection

With reference to relevant published guidance, the methodology of this statement follows a logical sequence essential to the efficacy of the protection measures. Reference may include: British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations; British Standard BS3998:2010 Tree Work. It is essential to the successful implementation of the principles set out in this document that effective supervision and enforcement are put in place from the outset.

### 6.2 Phase 1 - Undertake Arboricultural Works

Fell NT4 & NT5.

Tree work requires skilled operators to perform pruning tasks in order to maintain the health and safe useful life expectancy of the trees, it is strongly recommended that construction staff DO NOT carry out any tree works.

Additional to this, a legal Duty of Care requires that all works specified should be carried out by qualified arboricultural contractors who have been competency tested to determine their suitability for such works in line with Health and Safety Executive guidelines. All works should be carried out in accordance with British Standard BS3998:2010 Recommendations for Tree Work.

Particular care needs to be addressed in dealing with legally protected species such as nesting birds and roosting bats which are protected under the Wildlife and Countryside Act 1981 (as amended) from intentional harm and killing and applies to roosting and hibernating bats and active bird nests. The protection of bird nests applies between mid-February to August inclusive.

### 6.3 Phase 2 - Tree Protection Fencing.

The Tree Protection Plan can be found at Appendix 4.

Essentially, the RPAs of NT6 & 7 are to be marked out on the ground to inform the fence runs as per the TPP and the linear measurements identified in the survey data table.





In terms of NT3, the fence is to be set back 0.5m from the edge of the proposed grass mat to allow for installation space, thereafter, anti-compaction measures such as scaffold boards or hired-in steel sheets such as EveTrakway to be installed as per the Tree Protection Plan – between the proposed installation area and the fencing. Either solution will be laid on top of 4 inches of compressible material – the woodchip from the removed trees would be ideal.

If post holes are to be dug, these works will need to be carried out by hand and the holes lined with polythene to avoid concrete leachate.

The fencing shall remain in place throughout construction and be moved only after completion.

The default specification as per figure 2 of BS 5837:2012 will be used (see Appendix 5) in order to minimise the risk of damage to roots.

Within the fenced zone, no materials or chemicals should be stored at any time, no fires should be lit, no pedestrian or vehicle traffic, and level changes within these areas should be kept to an absolute minimum. Every effort should be taken to protect a maximum possible area of the root system.

Clear notices are to be fixed to the outside of the fencing with words such as  
'TREE PROTECTION AREA – NO ACCESS OR WORKING WITHIN THIS AREA'.

See Appendix 6. These notices shall be A3 in size, laminated and fixed to the fencing using suitable aids such as tie wires.

The site agent, all contractors and other relevant personnel are to be informed of the role of the Tree Protection Fencing and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction.



05/07/21

**John Wilcockson – Director, East Midlands Tree Surveys LTD.**

**Tech Cert (Arbor A), NDF For**



BS5837 Report

Craig Slater  
Maystone House, Harringworth.



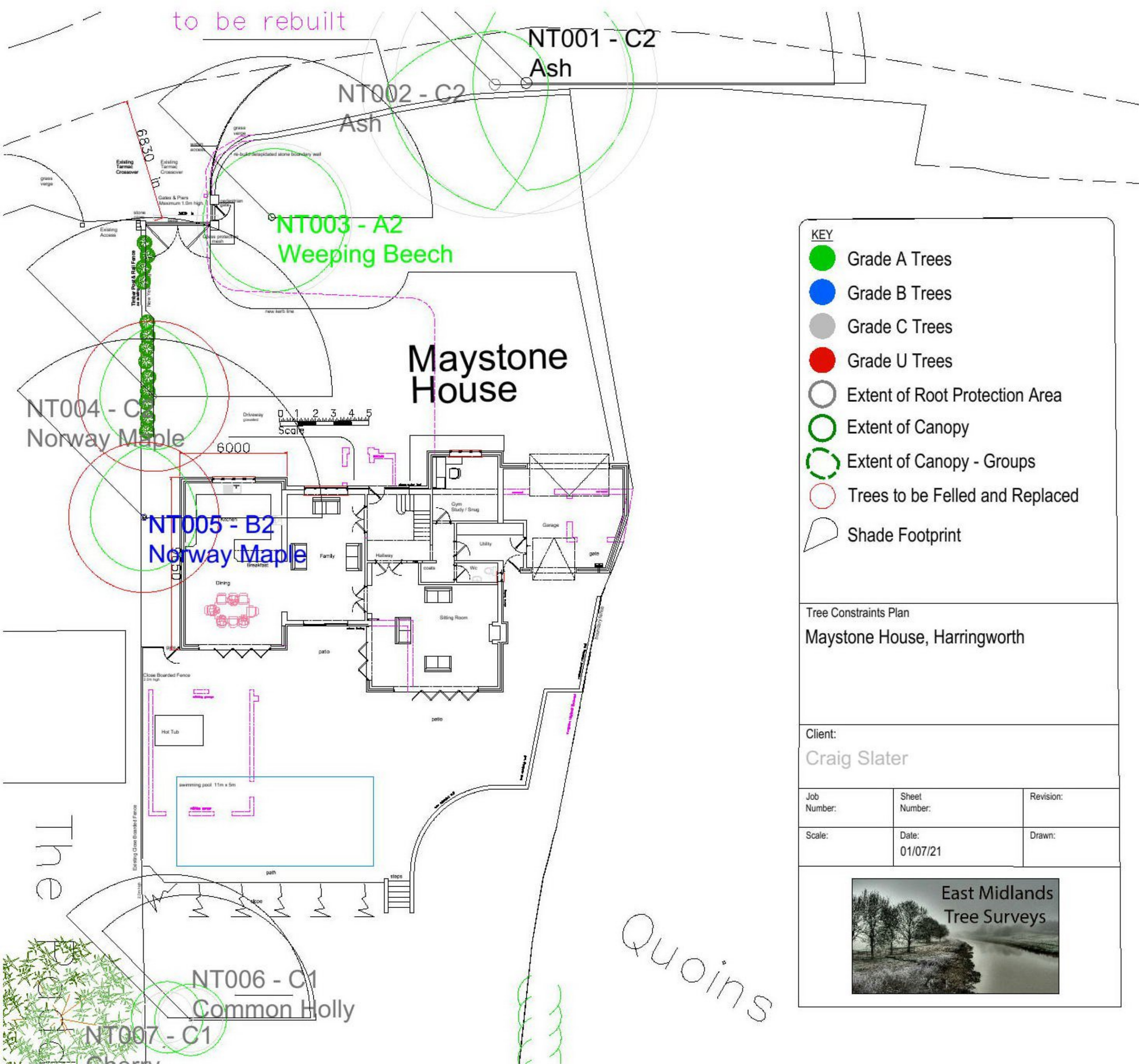
Retention Category	No. trees	Life Stage	No. trees	Rem. Contrib.	No. trees
A	1	Early Mature	3	20+ Years	1
B	1	Mature	2	40+ Years	6
C	5	Semi Mature	1		
		Young	1		
Total		7			

Ref	Species	Full Structure	Measurements	Spread	General Observations	Retention Category	RPA	Condition	Recommendations
NT001	Ash (Fraxinus sp.)	Tree	Height (m): 19 Stem Diam (mm): 610 Spread (m): 6N, 6E, 6S, 3W Crown Clearance (m): 2 Life Stage: Mature Rem. Contrib.: 40+ Years	N:6 E:6 S:6 W:3	Off site. Crown - Minor Deadwood < 100mm Heavy ivy obscures main trunk. Excess of seed pods indicates stress. Site - high landscape value	C2	Radius: 7.3m. Area: 167 sq m.	Physiological Cond: Good Structural Cond: Good	Pre construction: No action required.
NT002	Ash (Fraxinus sp.)	Tree	Height (m): 19 Stem Diam (mm): 620 Spread (m): 3N, 3E, 7S, 6W Crown Clearance (m): 2 Life Stage: Mature Rem. Contrib.: 40+ Years	N:3 E:3 S:7 W:6	Heart rot decay channel from 0.5m to 2.2m. Park occluded. Crown - Minor Deadwood < 100mm Site - high landscape value	C2	Radius: 7.4m. Area: 172 sq m.	Physiological Cond: Fair Structural Cond: Fair	Pre construction: No action required.
NT003	Weeping Beech (Fagus sylvatica 'Pendula')	Tree	Height (m): 9 Stem Diam (mm): 360 Spread (m): 4N, 4E, 4S, 4W Crown Clearance (m): 2 Life Stage: Early Mature Rem. Contrib.: 40+ Years	N:4 E:4 S:4 W:4	No significant defects. Site - high landscape value	A2	Radius: 4.3m. Area: 58 sq m.	Physiological Cond: Good Structural Cond: Good	Pre construction: No action required.

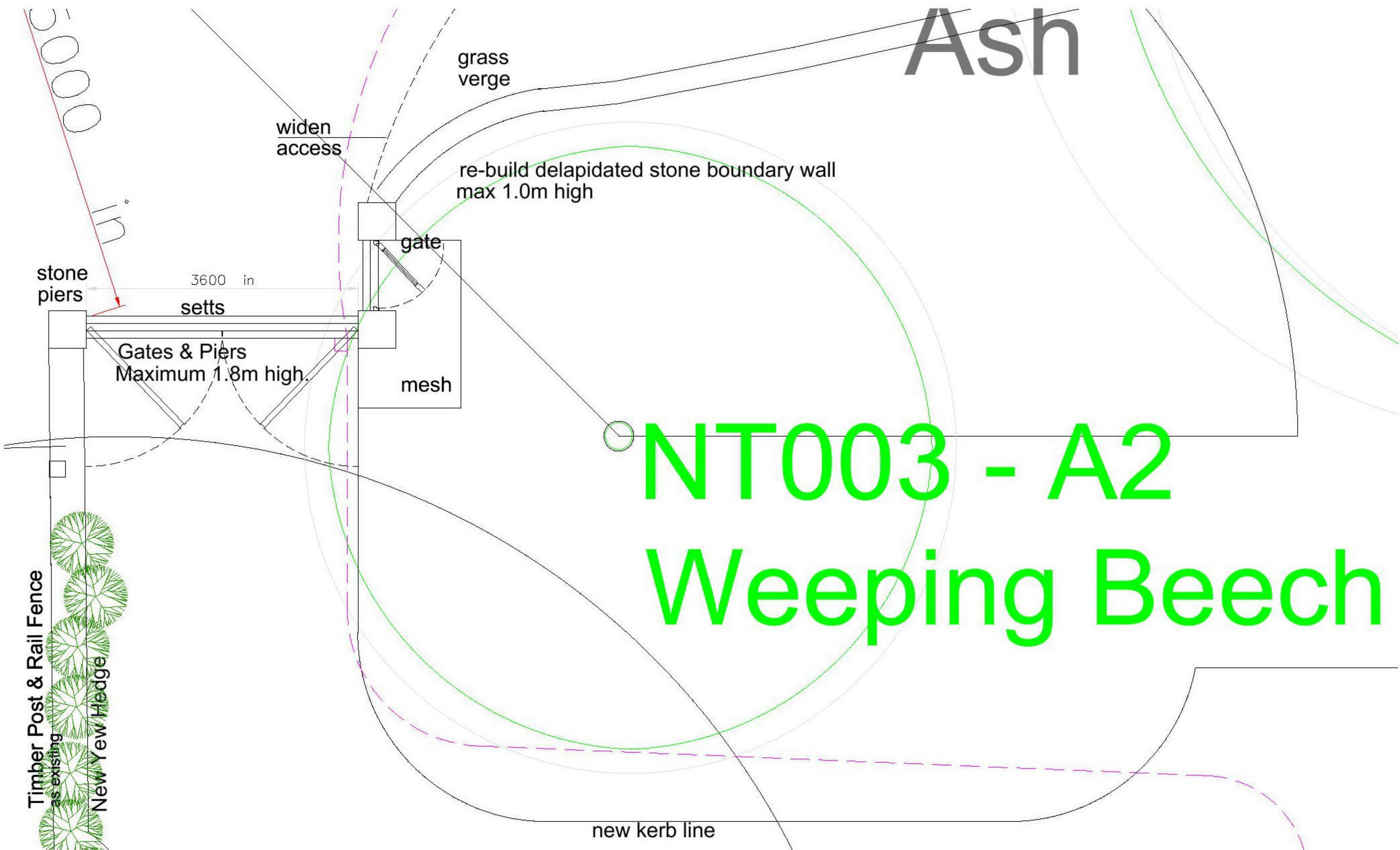


Ref	Species	Full Structure	Measurements	Spread	General Observations	Retention Category	RPA	Condition	Recommendations
NT004	Norway Maple (Acer platanoides)	Tree	Height (m): 10 Stem Diam (mm): 350 Spread (m): 4N, 3E, 3S, 3W Crown Clearance (m): 1.5 Life Stage: Early Mature Rem. Contrib.: 20+ Years	N:4 E:3 S:3 W:3	Site - high landscape value Main central trunk is dead. Crown - Minor Deadwood < 100mm Crown - Large pruning wounds Crown - Dieback	C2	Radius: 4.2m. Area: 55 sq m.	Physiological Cond: Fair Structural Cond: Fair	Pre construction: No action required.
NT005	Norway Maple (Acer platanoides)	Tree	Height (m): 10 Stem Diam (mm): 350 Spread (m): 4N, 3E, 3S, 3W Crown Clearance (m): 1.5 Life Stage: Early Mature Rem. Contrib.: 40+ Years	N:4 E:3 S:3 W:3	Site - high landscape value Crown - Minor Deadwood < 100mm Crown - Large pruning wounds	B2	Radius: 4.2m. Area: 55 sq m.	Physiological Cond: Fair Structural Cond: Fair	Pre construction: No action required.
NT006	Common Holly (Ilex aquifolium)	Tree	Height (m): 7 Stem Diam (mm): 150 Spread (m): 2N, 2E, 2S, 2W Crown Clearance (m): 1 Life Stage: Semi Mature Rem. Contrib.: 40+ Years	N:2 E:2 S:2 W:2	No significant defects Due back in Upper crown. Site - low landscape value	C1	Radius: 1.8m. Area: 10 sq m.	Physiological Cond: Fair Structural Cond: Fair	Pre construction: No action required.
NT007	Cherry (Prunus sp. (Cherries))	Tree	Height (m): 8 Stem Diam (mm): 120 Spread (m): 2N, 2E, 2S, 2W Crown Clearance (m): 1 Life Stage: Young Rem. Contrib.: 40+ Years	N:2 E:2 S:2 W:2	No significant defects Site - low landscape value Crown - Thin foliage	C1	Radius: 1.4m. Area: 6 sq m.	Physiological Cond: Fair Structural Cond: Fair	Pre construction: No action required.





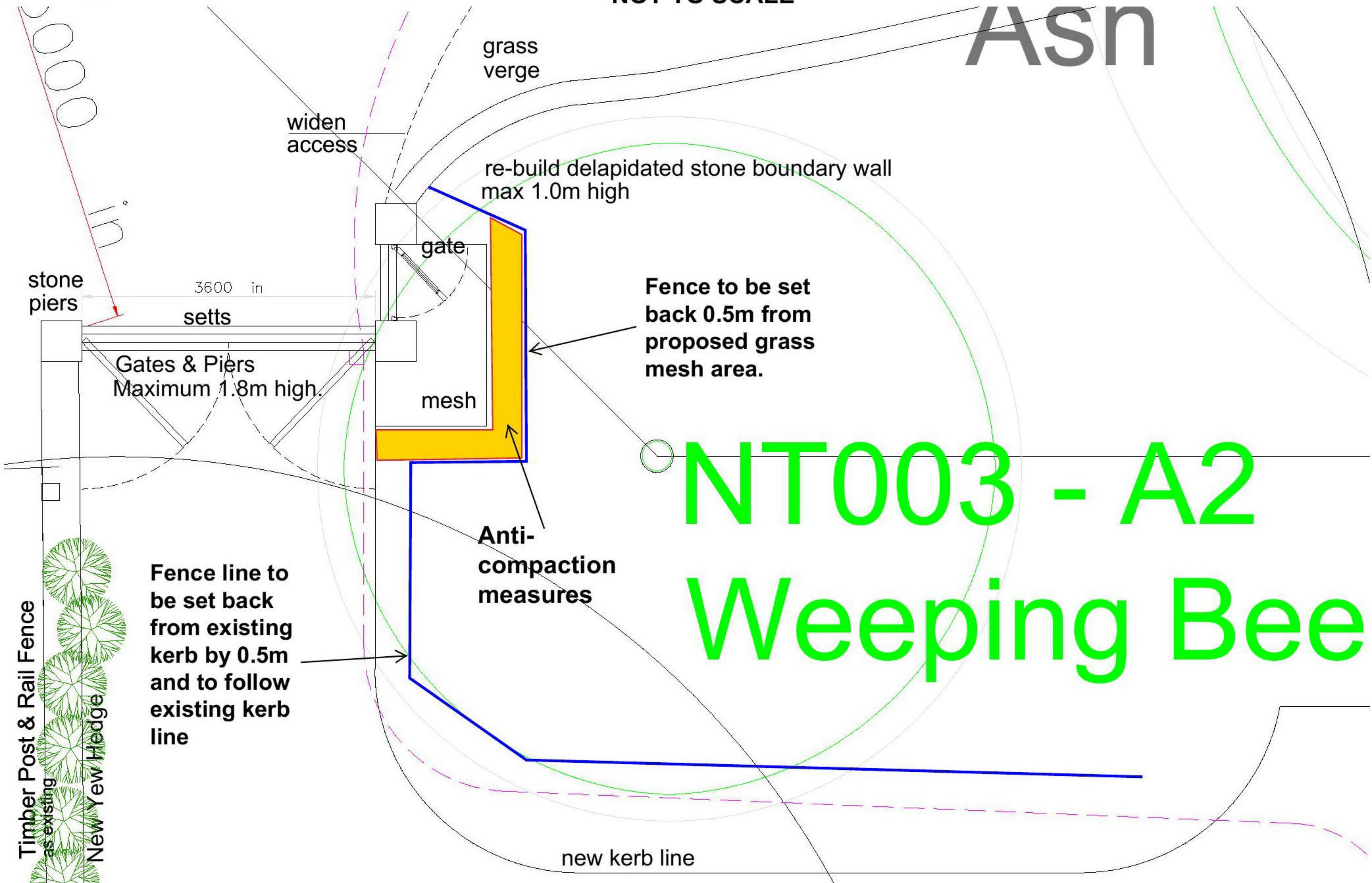




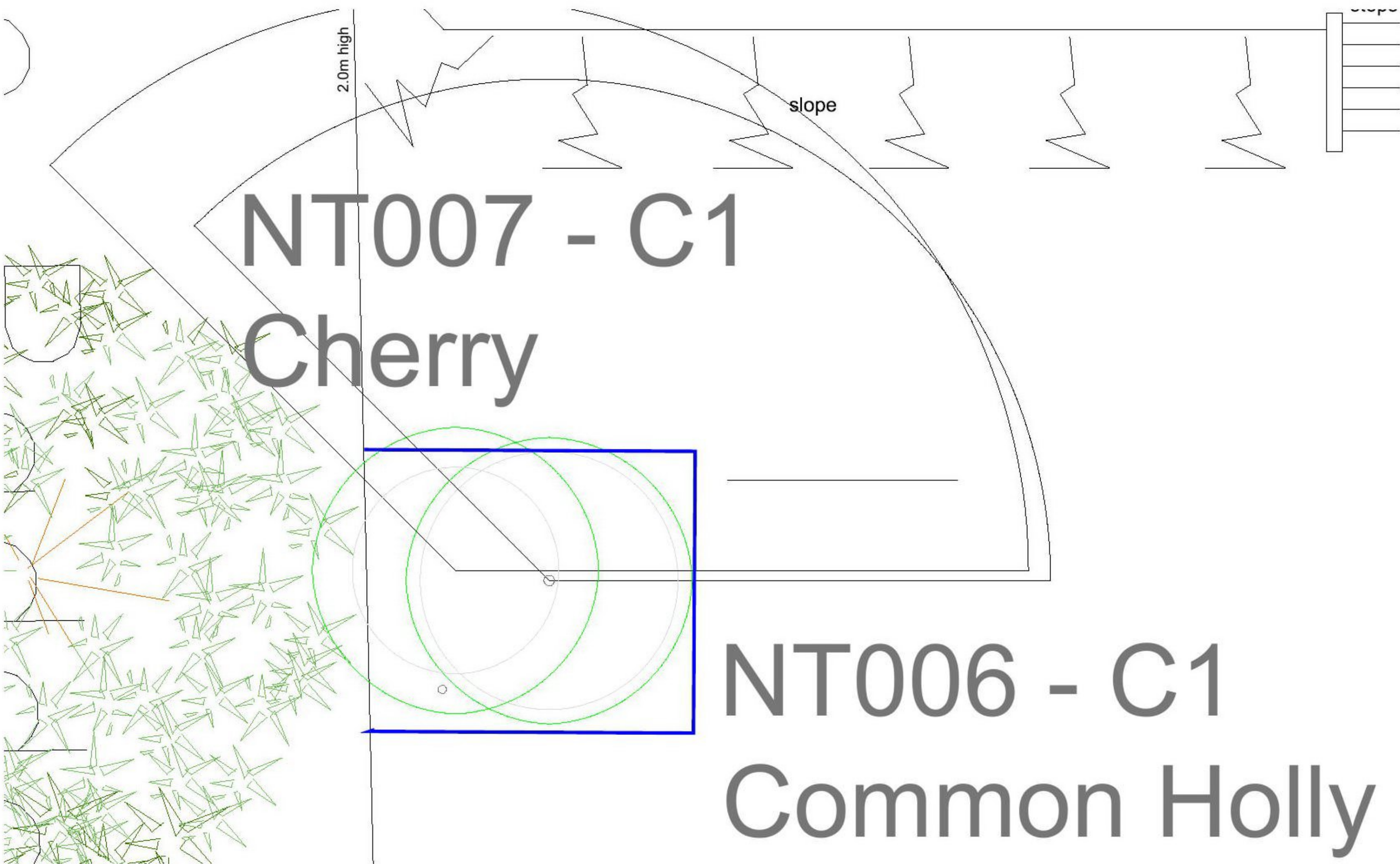


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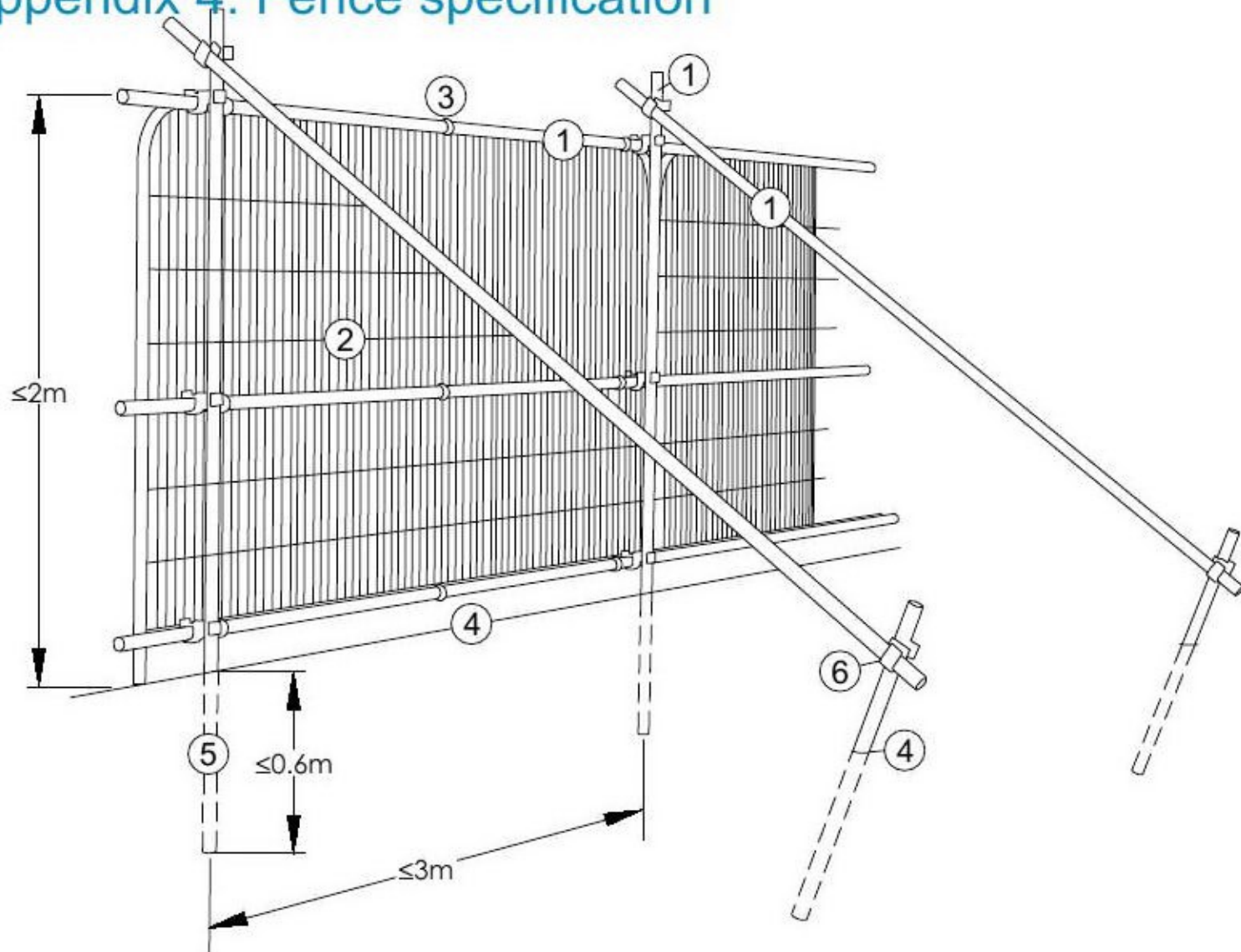








## Appendix 4. Fence specification



1. Standard scaffold poles
2. Heavy gauge 2m tall galvanised tube and weld mesh infill panels
3. Panels secured to uprights and cross members with wire ties
4. Ground Level
5. Uprights driven into ground until secure (minimum depth 0.6m)
6. Standard scaffold clamps





**PROTECTIVE FENCING. THIS  
FENCING MUST BE  
MAINTAINED IN ACCORDANCE  
WITH THE APPROVED PLANS  
AND DRAWINGS FOR THIS  
DEVELOPMENT.**



**TREE PROTECTION AREA  
KEEP OUT !**



## Appendix 6. Tree survey

The trees were assessed objectively using 'Visual Tree Assessment' (VTA) techniques from the ground. VTA is a methodology, employed by arboriculturists, to evaluate the structural integrity of a tree, relying on observation of a tree's biomechanical and physiological features; this is the method generally adopted and is appropriate in this instance. The survey includes an individual tree number listed sequentially, tree Species in both its common and botanical name, its height, stem diameter measured at 1.5m from ground level, spread of the radius of the crown by cardinal points, height of the crown above ground level, age classification its general condition and any general conditions structural or biological defects noted during the survey. An estimate of the remaining safe life expectancy (SLE) and the category as defined in BS 5837:2012 Recommendations cascade chart for tree quality assessment.

The root protection area (RPA) will be calculated from the stem diameter and this will identify the area which will require special protection during the works.

Trees on the site have been divided into one of four categories (based on the cascade chart for tree quality assessment). These are classed as A, B, C or U (Section 4 of BS 5837) within the table in Appendix 1, Table 2. This gives an indication as to the tree's importance in relation to the site, the local landscape and, also, the value and quality of the existing trees on site. This assists informal decisions concerning which trees should be removed or retained should development occur. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).

Categories A, B and C cover trees that should be a material consideration in the development process, each with three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural (nature conservation) values. Category U trees may have no significant landscape value, but it is not presumed that there is any overriding need to remove these unless stated otherwise in the description and recommendations. They are for this reason not considered as being significant within the planning process. In assigning trees to the A, B or C categories, and the presence of any serious disease or tree-related hazard is taken into account. If the disease is considered fatal and/or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U with a recommendation for work or even removal, even if they are otherwise of considerable value.

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

- (i) Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);





- (ii) Trees, or groups of trees which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups);
- (iii) Trees or groups of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

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

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

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

- (i) Trees not qualifying in higher categories;
- (ii) Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit;
- (iii) Trees with very limited conservation or other cultural benefits.

Category (U): Trees that are considered to have no significant landscape value, but it is not presumed that there is any overriding need to remove these unless stated otherwise in the description and recommendations. They are for this reason not considered as being significant within the planning process. These trees will be in such a condition that any existing value would be lost within 10 years and which should in the current context be ignored or removed for reasons of sound arboricultural management. Trees within this category are:

- (i) Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees;
- (ii) Trees that are dead or are showing signs of significant, immediate or irreversible overall decline;





(iii) Trees infected with pathogens of significance to the health and or/safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality.

The Soil type was not assessed.

This report is valid for two years from the date of site inspection. The condition of trees can change following severe weather conditions, the effects of diseases and pests, and other abiotic factors.

## Appendix 7. Legal Constraints

Where Local Planning Authorities can assess trees as beneficial to the wider community in terms of their amenity value, they may be protected by a Tree Preservation Order (TPO).

In certain areas classified as Conservation Areas, all trees with a stem diameter of 75mm (measured at 1.5m above ground) are protected by Conservation Area legislation. The LPA must be given notice of any work intended so they can visit the site and then either protect the tree(s) with a TPO or allow the works to go ahead. Their decision must be made within a six-week period. If no decision is made within the six-week period, the work may be carried out, providing it is done within a two-year period.

If trees protected by a TPO or within conservation areas are cut-down, topped, lopped, uprooted or wilfully damaged or destroyed, the owner of the tree(s) and the contractor responsible for the work can both be legally prosecuted. The current maximum fine is £20,000 per tree at the Magistrates Court or unlimited fine at the Crown Court.

Trees that are dead or dangerous are exempt from legislation. It is common good practice to notify the LPA of intention to carry out work to trees that fall into these categories, preferably with some notice (e.g. one working week).

A leaflet produced by the DTLR (Protected Trees), covers the issues raised by this legislation.

Any works prescriptions for protected trees can be dealt with by way of inclusion into a Planning Application for development purposes; this avoids the need to make a separate tree application.

A check with the Local Planning Authority has not been carried out.

Statutory wildlife obligations: The Wildlife and Countryside Act 1981 as amended by the Countryside and The Habitat Regulations 2012 and The Conservation of Habitats and Species Regulations 2017 provide statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions and advice from an ecologist should be obtained before undertaking any works that might constitute an offence.





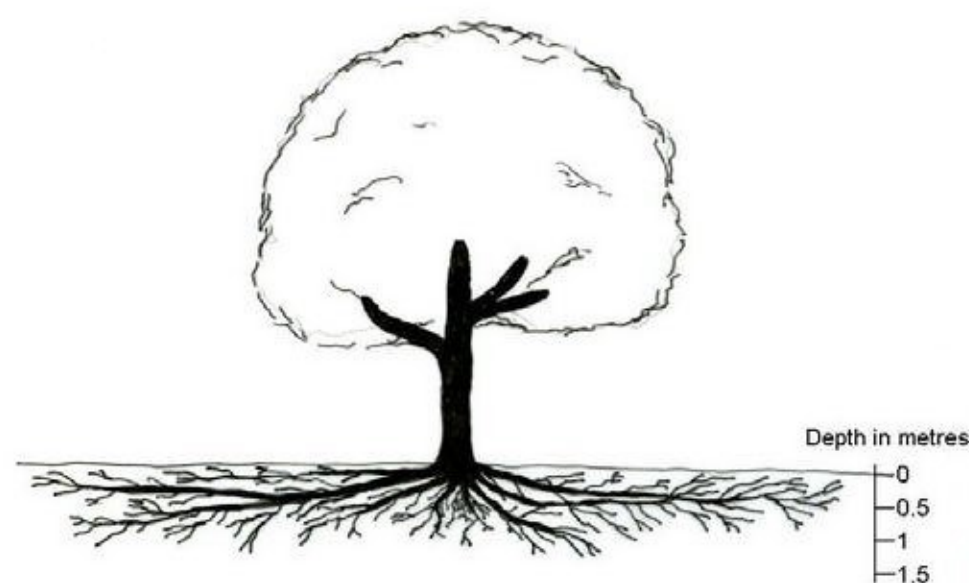
## Appendix 8. Arboricultural considerations in relation to development.

### Rooting structure

Rooting structure is a key issue when dealing with trees and development. To ensure the survival of trees the British Standard Institute has introduced the concept of a Root Protection Area (RPA). The RPA is an area surrounding a tree that contains sufficient rooting volume to ensure the tree's survival and is represented in square metres. (BS5837 2012 discusses the extent and form of a tree's root system.)

The following diagram represents the typical rooting pattern of a tree. Note that 90% of the tree's roots are usually located within the top 1m of soil and that roots may spread well beyond the canopy. Therefore, no works are allowed within the RPA. Even a small trench 0.5 metres deep to accommodate a cable or drain may lead to the loss of the tree. When work is proposed or is absolutely necessary within the RPAs of retained trees the proposals will only be considered if supported by an agreed robust and realistic Arboricultural Method Statement, following recommendations within BS 5837 2012.

### Typical rooting structure of a tree



To successfully integrate trees into a development it will be necessary to allow enough space in the design to allow trees to mature and flourish and to agree protection measures during the entire construction phase. Trees should be considered at the earliest design stage to allow them to be successfully integrated into new development, a survey of trees on and adjacent to the site should be one of the first steps in the design process.



## How can trees be damaged?

### **Compaction of the soil**

When soil is compacted, the soil structure is damaged by removing the spaces between soil particles preventing the exchange of gases and uptake of nutrients by trees. The storage of materials, including bricks, soil, gravel and cement, and the movement of vehicles can cause compaction. One vehicle movement can cause sufficient compaction to damage a tree. Compacted ground may alter soil drainage, resulting in the ground becoming waterlogged. The storage of materials and the movement of vehicles within RPAs will only be permitted when it is shown to be absolutely necessary and supported by an agreed robust and realistic Arboricultural Method Statement.

### **Excavations**

Excavations within the RPA are likely to cause root severance. This may lead to loss of vigor, reduced uptake of water and nutrients, allow access for decay organisms and may compromise the tree's stability. Under exceptional circumstances, where excavation may be justified, hand digging will be required and the presence of an arboricultural consultant to supervise the works will be required on site.

### **Ground level changes**

Both reduction and raising of soil levels can be detrimental even if this is only by a few centimeters. Reducing ground levels may sever roots and can increase the drainage of a site thereby reducing water availability. Raising ground levels can cause compaction and suffocate roots. There will be a presumption against the changing of ground levels within RPAs. Changing of ground levels within RPAs will only be permitted when it is shown to be absolutely necessary and supported by an agreed robust and realistic Arboricultural Method Statement.

### **Impact damage**

This can be caused by machinery and includes torn branches, and damage to bark and trunk. Damaged areas of trees can allow the entry of decay organisms and reduced vigour. There will be a presumption against the movement of machinery and equipment within RPAs. The movement of machinery and equipment will only be permitted when it is shown to be absolutely necessary and supported by an agreed robust and realistic Arboricultural Method Statement.

### **Soil contamination**

This can be caused by the spillage of oil, fuel and chemicals, mixing cement or other materials. To prevent leaching through the soil where significant tree roots can be found, all chemicals should be kept in a safe storage area downhill from trees at least 10m from the RPA. There will be a presumption against the storage of chemicals within 10m of the RPAs of retained trees and storage will only be permitted when it is shown to be absolutely necessary and supported by an agreed robust and realistic Arboricultural Method Statement.





## **Fires**

Conducted and radiated heat as well as flames will damage trees resulting in the loss and damage to both major and fibrous roots, and damage to the trees vascular system under the bark even if the bark does not appear burnt. Keep fires a minimum of 10m from the outer crown spread of any retained trees or vegetation. If this clearance is not achievable, all waste must be disposed of off-site.

