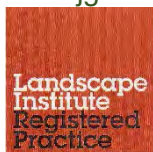


Granary Cottage, Mulberry Green, Harlow

# BS5837 TREE SURVEY, ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT.

Conversion of a listed barn to a dwelling,

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## 1. Introduction

### 1.1 Contacts

Client - Mr. and Mrs Fosh

Architects - DWW Design

Arboriculturalist: Elizabeth Greenwood.

Council: Harlow Council.

### 1.2 Testimonials

- 1.2.1 I am a Chartered Landscape Architect with over 30 years of experience both in Local Government and in the private sector. My practice is registered with the Landscape Institute. I am also an arboriculturalist, holding the professional diploma in arboriculture. I am a Fellow of the Arboricultural Association.

### 1.3 Instruction

- 1.3.1 I have been appointed by Mr Fosh to resurvey and update the arboricultural report.
- 1.3.2 The development proposal is for conversion of a listed barn to a dwelling, with all the necessary improvements.

### 1.4 Scope

- 1.4.1 This report is carried out in accordance with BS5837. This document states the following with regard to scope:

*'This British Standard gives recommendations and guidance on the relationship between trees and design, demolition, and construction processes.*

*It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.*

*The standard is applicable whether or not planning permission is required.'* (The British Standards Institution, 2012)

- 1.4.2 This report is intended to be a working document to be used by the contractor and local authority to ensure the retention of the trees and provide a means of construction for the implementation of the proposed development with minimal disturbance to trees and notable vegetation.
- 1.4.3. The survey is to take the form of a visual assessment of trees recording their measurement, describing their age, amenity, condition and recommending work. Trees have been plotted on plan and full details of survey work are included in the appendices.
- 1.4.4. Limitations of this tree survey would include the lack of visibility of every tree owing to dense undergrowth and the presence of climbing plants such as ivy. There may be restrictions to the access within the site or from neighbouring land, and, in the case of trees growing on the boundary of the site only one side of the tree may be visible.
- 1.4.5. In the case of building within the vicinity of mature trees the owners must be made aware of their responsibility to maintain these trees in a safe condition. Their insurers should be made aware of the implications of the presence of these trees.

- 1.4.6. The report provides some background information on geology and soils; however, it is not within the remit of this commission to provide technical details of the foundations or structural design of the building which would comply with the requirements of building control.

## 1.5 Background

- 1.5.1. This detached property is set along Mulberry Green and its access is through the archway of a listed barn. The proposal is for renewal of planning permission (reference HW/PL/12?00415). This is described as *'Conversion of Grade II Barn/Stable to Provide 2-Bed Living Accommodation, Widening of Access Through Barn/Stable to 3.7m Internally.*
- 1.5.2. I have carried out two previous surveys of these trees, the first in July 2008 and prior to development of the rear part of this former garden. A second survey was carried in July 2020.
- 1.5.3. A site layout plan survey has been provided; ordnance survey maps show the ground levels are in the region of 55 metres above sea level. The ground levels are relatively flat. Since my last survey, a koi carp pool has been excavated within the eastern side of the garden with a single storey pool and garden room.
- 1.5.4. Much of the remaining garden is laid to lawn, with a small greenhouse and vegetable garden on the northern side. Owing to a boundary dispute with the adjacent landowner, a temporary fence is erected along the southern side of the garden with a selection of large and screening trees placed in pots awaiting planting once this dispute has been settled. Brick walls forms the boundaries to the north and east.
- 1.5.5. Two small trees are present within the eastern part of the garden, the other trees surveyed are the four pollarded limes owned by Harlow Council which are growing along the verge of Mulberry Green.
- 1.5.6. The property lies within the Old Harlow Conservation Area and as such the Local Authority has an interest in retaining tree cover as part of the character of the area. An application to the local authority should be made and consent received prior to any tree works being carried out. If poor quality trees are to be removed, then adequate provision should be made for replacement planting as part of the design proposals.
- 1.5.7 Geological Description:  
**Bedrock Geology:** Lewes Nodular and Seaford chalk formation.  
**Superficial Deposits:** Lowestoft Formation of glacial till
- 1.5.8 Soil
- **Soilscape 9:**  
Lime-rich loamy and clayey soils with impeded drainage
  - **Texture:** Loamy.
  - **Drainage:** Freely draining
  - **Fertility:** High
  - **Habitats:**  
Base-rich pastures and deciduous woodlands
  - **Landcover:** Arable and grassland
  - **Carbon:** Low

- **Drains to:** Groundwater.
- **Water protection:** Groundwater contamination with nitrate; siltation and nutrient enrichment of streams from soil erosion on certain of these soils.

## 1.6 Documentation

1.6.1. The following documents were provided by DWW Design.

- Base plan HD 23 0101 101 Existing layout

Previous survey plan 992.20,2B Tree Survey Plan

1.6.2. Plans showing the details as outlined in this method statement are included in the appendix to this report (Appendices G, and H)

## 1.7 Survey

- The site was visited on 8 June 2023
- Clear skies, sunny 16 degrees with a gentle breeze
- With good visibility
- Photographs were taken of the trees, which are included in Appendix A.
- The camera used to take these photographs was a Lumix digital camera with Leica zoom lens.

## 2. Tree Survey Criteria

### 2.1 Outline

2.1.1. Photographs of many of the trees and full details of this tree survey are included on tree survey sheets. (Appendices A and B) The information recorded complies with BS5837:2012, and is outlined as follows: -

- The species (English names), size and position of the trees within the site.
- The majority of large shrubs or trees with stem diameter of less than 150 mm have not been surveyed. According to the British Standard Recommendations. These trees can be transplanted or replaced.
- The dimensions of the trees are the height, and the girth measured at 1.5 metre above ground level. The spread is measured at the four points of the compass, and this is represented on plan. The lowest branch on the trunk is measured from ground level and the crown height is measured from the lowest point of the foliage.
- The maturity is recorded, and details of this classification are included on the tree survey sheets. (e.g., Y = young, SM = semi-mature, EM = early mature, M = mature, OM = over-mature).
- A description of the trees' condition includes any visual defects at the time of the survey. As this survey is conducted from ground level not all defects may be visible, and pathogens may not be apparent because of the season of inspection.
- General recommendations for each tree are outlined, which may need to be reviewed once development proposals are finalized.
- Estimated remaining contribution in years in view of the existing site conditions is classified as (less than 10 years; 10 to 20 years, 20 to 40 years, or more than 40 years).

- 2.1.2. Tree survey information has been added to the site layout plan and details have been amended for the purpose of this report. Appendix [G].
- 2.1.3. It is important to note that the survey and evaluation of trees is only relevant to site conditions at the time of survey. If there is any change in the site conditions, and especially within the root protection area the trees, the site may need to be re-surveyed, and the potential longevity of the trees re-evaluated. In the event of adverse weather conditions, the survey should be repeated or rescheduled.
- 2.1.4. Regardless of the development proposals there should be regular inspection and monitoring of trees at a frequency dependent on their condition and age. **This tree survey is only valid for a 3-year period from the date of the survey.**

## 2.2 Guidance

- 2.2.1. British Standard 5837:2012: 'Trees In relation to design, demolition, and construction – Recommendations'.

### 2.2.2 Categories:

The aim of the guidelines is to provide an assessment of the amenity values of the trees. The recommendations provide four categories in which trees should be placed for assessment purposes. These assessment categories are reproduced in Appendix C, Table 1, "Cascade Chart for Tree Quality Assessment", and simplified as:

- A. Trees of high quality with an estimated remaining life expectancy of at least 40 years
- B. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- C. Trees of low quality, with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150 mm
- U. Trees which have limited prognosis. Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

These categories are subdivided into three sub-groups:

- 1. Trees of arboricultural value, good examples of their species or unusual specimens.
- 2. Mainly trees of landscape value, trees which are primarily of visual amenity.
- 3. Trees with mainly conservational value, for example veteran trees.

### 2.2.3. Root Protection Areas:

The British Standard Recommendations 5837:2012 provide a formula for calculating the Root Protection Area (RPA) required to be protected for existing trees that area to be retained.

- For single stem trees, the RPA (see 3.7) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, one of the two calculation methods below should be used. In all cases, the stem diameter(s) should be measured in accordance with Annex C, and the RPA should be determined from Annex D. The calculated RPA for each tree should be capped to 707 square metres.
- For trees with two to five stems, the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 + \dots (\text{stem diameter } 5)^2}$$

- For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows:  $\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

Root protection areas are indicated as a radius on plan. In the event of root restrictions from, for example, deep foundations or a retaining wall, topography, drainage, soil type, soil structure, or soil disturbance the approximate area is represented by a polygon, as dictated by this British Standard.

#### **2.2.4. Protective Fencing and Root Protection:**

Within development sites the British Standard recommends that trees are fenced off to ensure the root protection area is not damaged by construction works. In compliance with the British Standards, protective fencing should be erected at the edge of the root protection area. If access is required within this area, then the ground should be protected. Construction techniques using geo-web and geo-textile, in accordance with BS recommendations might be used to minimize damage to trees and enable working space for demolition or construction within the root protection area of trees.

Drainage and service runs need to be identified at this stage to ensure that if new service runs are to be excavated, they should be located outside the root protection zone of existing trees.

Building foundations can be specifically designed to reduce the impact of a building if there is a minor incursion into the root protection area of a tree.

#### **2.2.5. Other Considerations:**

In addition, the British Standard takes into account future growth of the crown of the tree, the spatial implications, and its effects on light.

Existing levels within the root protection areas of trees should be retained.

Some tree work might be required to ensure that the crowns of trees are cut back from working space and to provide access for construction vehicles.

There are adequate areas within the site to ensure that handling and storage of materials can be accommodated well outside the root protection areas.

## **3. Tree Survey**

### **3.1 Summary**

3.1.1 Of the six trees surveyed, only two lies within grounds of Granary Cottage. The poor-quality ornamental cherry (T1) has cankers on the trunk and is a small tree 4.5-metre-high of limited prognosis. With this amended development proposals this tree will not be affected by the proposals.

3.1.2. The other tree is a multi-stemmed bay tree (T2) growing close to the northern boundary wall, although of reasonable quality in its position close to the boundary it could be of potential nuisance to the listed wall. Since my survey in 2020 the tree has been pruned back with one of the stems removed and a reduced root protection area of 1.7 metre radius from the trunks and is assessed as being a C2 quality tree

3.1.3. The four lime trees are significant feature in this Old Harlow Conservation area, which enhances the historical context of the list barn and this local environment.

- 3.1.4. All four lime trees have previously been lopped with large diameter severed trunks- they are all now managed as Pollards. The first tree (T3) has extensive decay at the pollard head with hollowed trunk and heavy re-growth. Although formally classified as unsustainable its longevity and safe useful life may be prolonged if pollard management is continued on a regular cycle, and its' condition monitored.
- 3.1.5. The remaining three limes (T4, T5 and T6) are in better condition despite the severed trunks. All three have vigorous re-growth which touches the listed barn, potentially damaging the tiles and roof structure of this building. To prevent damage to the roof of the barn, they should be re-pollarded as a matter of some urgency. The cycle of pollarding should be reviewed to ensure that in future the re-growth of the crowns does not damage the roof of the barn.

### 3.2 Categories

Trees:

Category	No	Tag Number	Species
A			
B	3	T4, T5 and T6	Lime
C	3	T1 and T2 and T3	Cherry and bay and lime (if managed)
U			
<b>Total</b>	<b>6</b>		

## 4. Arboricultural Impact Assessment

### 4.1 Assessment

- 4.1.1 Three of the four limes overhang and have root protection area underlies the barn. They may be adversely affected if works are required to the foundation of the barn.
- 4.1.2 Management of their crowns is a matter of some urgency, as the overhanging branches of the trees are damaging the tiles and structure of the barn.

### 4.2 Mitigation

- 4.2.1. For protection of both tree some ground protection and hand digging will be necessary. A method statement may be required to
- 4.2.2 The impact of these proposals and mitigation requirements are as follows.

No.	Species	Effect	Tree Surgery	Mitigation	
				Foundation design/ method of underpinning	Hand Dig
<b>T3, T4 and T5</b>	Limes	Underlying roots and overhanging branches	Yes- urgency	Yes	Yes

- 4.2.3 If underpinning is required for the barn, then all works are to be carried out from inside the barn with minimum works carried out from the road verge. The design of the new foundations is minimising excavation within the RPA of the limes, with the option of above ground foundation design.
- 4.2.4. Works are to include ground protection and hand digging of the trial holes prior minimal excavations for the underpinning.



## 5. Arboricultural Method Statement

### 5.1 General

#### 5.1.1 Issues Considered

Pre-construction works and site clearance:

- Tree protection
- Tree surgery
- Protective fencing
- Methods of ground protection construction during works

Construction works:

- Hand dig
- Foundation design/ underpinning
- Hard surfacing within the root protection area
- Location of underground services
- Contingency plans
- Site supervision

Post- Construction works:

- Removal of protective barrier etc...
- Remedial works
- Landscape works

### 5.2 Tree Works

5.2.1. As part of the application for planning permission the following tree surgery is outlined. All works will be carried out by a fully insured and competent tree surgeon in accordance with BS3889:2010 "Tree Work". The timing of tree surgery should also be carried out in accordance with the Wildlife and Countryside Act and in view of the nesting season of birds within the sites.

#### 5.2.2 Management:

Tag	Species	Category	recommendation
T1	Prunus sp. Ornamental cherry	C2	Remove suckers
T2	Laurus nobilis (Bay)	C2	No work at present
T3	Tilia X europaea (Common Lime)	C2	Urgent- re-pollard tree- Remove basal growth. re-assess frequency of pollarding
T4	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree-. re-assess frequency of pollarding
T5	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding
T6	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding

5.2.3. No trees will need to be removed as part of this application, however the health and safety of the lime tree T3 must be addressed by the council as a matter of some urgency.

### 5.3 Tree Protection

#### 5.3.1. Protective Fencing/Protective Barrier

If protective fencing is required, it is to comply with British standards. All weather notices are to be affixed to this fencing with signage "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

#### 5.3.2. Ground Protection

In the vicinity of the temporary unit working space will mainly be confined to existing hard surfacing. Where additional working space is required for construction within the root protection areas of retained trees, the British Standard specifies the following type of ground protection.

- a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100 mm depth of woodchip), laid onto a geo-textile membrane.
- b) For pedestrian-operated plant up to a gross weight of 2t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150 mm depth of woodchip), laid onto a geo-textile membrane.
- c) For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

### 5.4 Methods of Construction for Development

#### 5.4.1. Hand dig

Hand digging will also be required for all works within root protection areas of trees, including removal of surfacing, trenches, excavation for fence post and for cultivation for soft landscape areas. All hand digging within the root protection areas of trees should be supervised by a competent arboriculturalist.

Within root protection areas all excavation should be hand dug. A trench should be hand dug near the trees to ascertain whether roots are present. If roots over 25 mm are found these should, where possible, be bridged, and surrounded by sand- roots under this dimension should be cut to a clean cut and surrounded by sand. No roots are to be left exposed but covered with damp sand or hessian. The surface level of the path may need to be adjusted to retain these roots.

If on investigation of the hand dug trench there are no roots present mechanical excavation may be possible if a banksman is supervising the excavation to ensure that if roots are unearthed, they can be protected and clean cut and surrounded by sand. Hand digging may need to be resumed to complete the excavation.

This would include exploratory excavation by hand for the foundations of the paths and new hard surfacing within the root protection area of the trees.

#### 5.4.2. Foundation design

Methods to mitigate foundations can be designed with virtually non-invasive techniques using a mini pile and above ground beam and raft construction; specialist companies can construct these foundations and are experienced at ensuring tree protection techniques are

deployed. By inserting gravel filter medium above ground and below the raft foundation some surface water ground filtration can provide moisture to the underlying tree roots.

Hand dig in area where indicated close to trees to minimize damage to tree roots. This is to ensure that large diameter structural roots are not damaged.

All pile rigs in vicinity of trees are to be positioned within the footprint of the building thus avoiding any damage to nearby trees.

If underpinning is required all works are to be carried out from within the footprint of the barn, with minimal excavation and hand digging if trial holes are required.

#### **5.4.3. Surfacing within the Root Protection Area**

Hand digging will also be required for any excavations. The following measures should also be employed to minimise damage to tree roots.

- a) Minimizing excavation within the root protection area by removing surfacing herbage and laying a geo-textile to stabilize the ground.
- b) Infill any irregularities with 50 mm sharp sand.
- c) On this lay a geo web, depth to be specified by the supplier to accommodate the proposed weight load.
- d) This will be filled with no fine's gravel/stone 20-40 mm.
- e) Lay final wearing surface on top of this base- for example permeable paving or porous tarmac.
- f) Use timber edging to avoid excessive excavation to facilitate haunching of edging.

#### **5.4.4. Location of Underground Services**

All drainage and below ground services will be designed to avoid tree protection zones. If there is no alternative but to site these within the root protection area of trees, then trenches excavation should be hand dug and comply with 'Hand dug ' as outlined in section 5.1 or the NJUG regulations.

#### **5.4.5. Contingency Plans**

If vehicular access is necessary within the root protection zone of any of the trees, in response to chemical spillage, collision or emergency access, the ground will be protected by geo-textile or boarding as outlined in the British Standard. Spillage and ground contamination will be prevented, and preparation of material carried out outside the root protection areas of tree.

#### **5.4.6. Site Supervision**

There will be full supervision on site from the site foreman and tree protection methods will be strictly adhered to. An arboricultural supervision schedule, if required by the local authority, is included in the appendices to this report.

### **5.5 Post Construction and Landscaping near Trees.**

#### **5.5.1. Removal of fencing and ground protection**

On completion of works, protective fencing and the ground protection for temporary working space will be removed.

### **5.5.2. Remedial works and soil improvement**

Exposed soils are easily compacted resulting in loss of water and gaseous exchange and leading to root deaths. To relieve ground compaction, which may have resulted from the overrun of vehicles or by storage of materials, the clay soils should be broken up to allow air to penetrate and for the soil structure to be restored.

Within the tree root protection area improve the soil structure by incorporating a compost or mulch within the topsoil, of 75-100 mm in depth. This can be spread over the surface and gently forked into the soil. If bark chip is used as a mulch NPK fertilizer should be added to counteract the nitrogen depletion of the soil. There are options for additives of mycorrhizal fungal which may also improve root function. Ground compaction will be addressed by either lightly forking over the area or by other techniques; for example, use of tree spade `` soil aeration.

### **5.5.3. New planting and soft landscape**

New planting within the root protection areas of trees should be carried out to avoid mechanical cultivation and for plants to be notch planted. Shrub beds are to be mulched, which, in addition to reducing weed growth, will enhance soil conditions round trees. Within grass areas, the height of mower blades is to be set above the level of surface tree roots to avoid damage and soil level raised above surface roots with a sandy composition of topsoil.

**Elizabeth Greenwood C.M.L.I., F. Arbor.A**  
**Re-surveyed and updated June 2023**

## Appendix A: Photographs



**Above left-** the cherry (T1). **Above centre and right –** The twin stemmed bay with the foliage of the lime(T3) overhanging the wall. **Below-** the overhanging foliage of the limes



**Below-** Vigorous and overhanging crown of three of the limes over the barn (T4, T5 and T6)





Above - the amenity value of the line of lime

**Below-** the lime (T1) with basal growth and cavities within the crown



## Appendix B: Tree Survey Sheets

Tag	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Notes	recommendation	RPA radius	RPA sqm
T1	Prunus sp. Ornamental cherry	M	260	4.75	1	C2	2.6	2.1	2.3	2.4	Fair	20+	disproportionate graft at 1.2 m, species cherry, double flower, wilt, suckers at graft, dead wood,	Remove suckers	3.12	30.59
T2	Laurus nobilis (Bay)	M	145	4.5	1.8	C2	1.8	1.2	0.75	1	Good	40+	suckers at base	No work at present	1.74	9.51
T3	Tilia X europaea (Common Lime)	M	655	12	2	C2	4	3.6	4	3.5	Good	40+	pollarded at trunk reduced at 3, pollarded at 5.5 m, regrowth 2-3 m, decay, basal growth, cavities within the trunk with lateral-major basal growth.	Urgent- re-pollard tree- Remove basal growth. re-assess frequency of pollarding	7.86	194.1
T4	Tilia X europaea (Common Lime)	M	390	9.5	2	B2	3	3.1	3.3	4.2	Good	40+	pollarded same as 1, canopy overhangs barn, minor ivy	Urgent- re-pollard tree-. re-assess frequency of pollarding	4.68	68.82
T5	Tilia X europaea (Common Lime)	M	500	12.5	2.8	B2	3.3	3.9	3.8	4.5	Good	40+	pollarded same as 1, canopy overhangs barn, minor ivy, basal growth,	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding	6	113.1

Tag	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Notes	recommendation	RPA radius	RPA sqm
T6	Tilia X europaea (Common Lime)	M	425	11	2	B2	4	3.6	4.5	4.5	Good	40+	basal growth, ivy, pollarded at 5 m,	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding	5.1	81.72



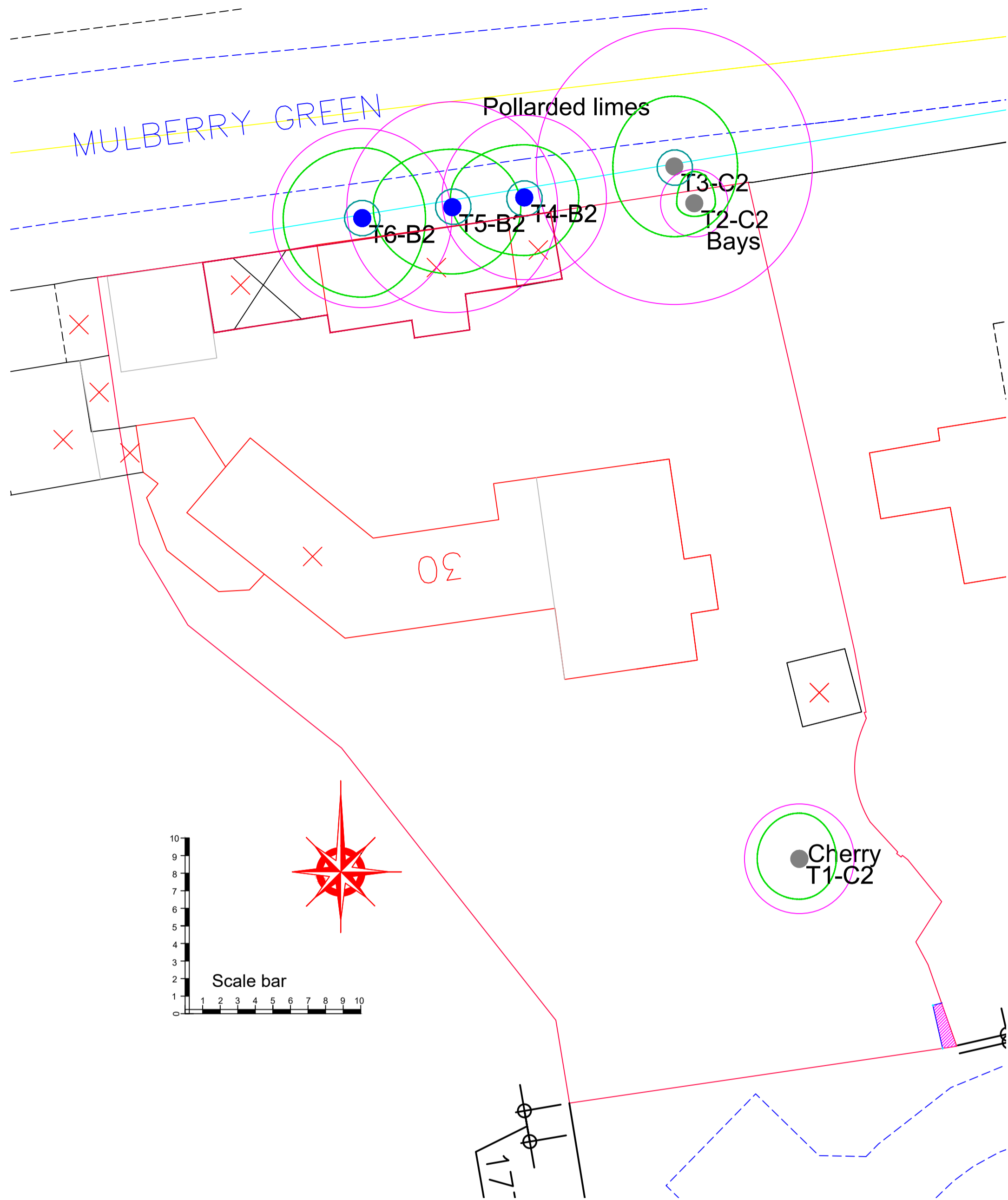
## Appendix C: Copy of BS5837:2012 Table 1 “Cascade Chart for Tree Quality Assessment”

Category	Criteria			Identification on plan (RAB subject to legibility of the plan)
<b>Category U (Formerly 'R')</b>				
Those in such conditions that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such a that their early loss is expected due to collapse including those that will become unviable after removal of other category U trees (e.g. Where for whatever reason, the loss of companion shelter cannot be mitigated by pruning.) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or so safety p of other trees nearby, or very low quality trees suppressing adjacent trees of better quality potential conservation value which might be desirable to preserve NOTE Category U trees can have existing or			Dark red (RAB 127-000-000)
<b>Trees to consider for retention</b>				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly Conservation qualities	
<b>Category A</b>				
<b>Trees of high quality</b> with an estimated remaining life expectancy of at least 40 years	<b>Trees that are particularly good examples</b> of their species, especially if rare or unusual; those that are essential components of groups or formal or semi-formal arboricultural features. (e.g., The dominant and/or principal trees within an avenue	<b>Trees, groups or woodlands of particular visual importance</b> as arboricultural and /or landscape features	<b>Trees, group, or woodlands of significant conservation,</b> commemorative or other value (/e.g., Veteran trees or wood pasture)	Light Green (RAB 000-255-000)
<b>Category B</b>				
<b>Trees of moderate quality</b> with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but downgraded because of impaired cons conditions (e.g., Presence of significant though remediable defects, including unsympathetic past management and storm damage) such as that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit category A designation	Tree present in numbers, usually growing in groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collections but situated a so as to make little visual contribution to the wider locality	Trees with materials conservation or other cultural c value	Mid blue (RAB -000-000-255)
<b>Category C</b>				
<b>Trees of low quality,</b> with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150 mm	Unremarkable trees of limited merit such or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands but without this conferring on them significantly great collective landscape value; and/or tree offering low or only temporary/transient landscape benefits	Trees with no materials conservation or other cultural value	Grey (Rab 091-091-091)

## Appendix D: Indicative Arboricultural Supervision

Item	*Site Supervision Visit Number	Estimated Timing	Inspection	Date of Visit
<p>Meet site foremen and discuss works and program.                      Setting out site and protective fencing, ground protection- site organization.</p>	<p>Visit 1</p>	<p>Prior to site clearance and demolition</p>	<p><b>1.</b> Carry out tree removal and tree surgery and listed  <b>2.</b> Fence off all trees to be retained prior to demolition and site work  <b>3.</b> Provide and insert ground protection for the duration of construction works</p>	
<p>Setting out building, foundation excavation, trenches</p>		<p>Prior to construction</p>	<p><b>4.</b> Carry out demolition and site clearance  <b>5.</b> Set up site working area</p>	
<p>Excavations/ changes of soil levels— and foundation and positioning of pile drivers details- inspect</p>	<p>Visit 2</p>	<p>During construction</p>	<p><b>6.</b> Carry out construction  <b>7.</b> If underpinning is required all works are to be carried out from within the footprint of the barn, with minimal excavation and hand digging if trail holes are required.  <b>8.</b> For new surfacing insert ground protection as above for use of site works</p>	
<p>On completion- removal of tree protection, planting, and remedial works- removal</p>		<p>Post completion</p>	<p><b>9.</b> On completion of works remove protective fencing and ground protection  <b>10.</b> Carry out remedial works as listed prior to landscape works  <b>11.</b> Carry out landscape works</p>	

## Appendix E: Plan 1190.23.1 Tree Constraints and Surgery Plan



## SCHEDULE

- A Quality trees
- B Quality trees
- C Quality trees.
- U Quality trees
- Root Protection Areas (RPA)
- Tree surgery- re-pollarding

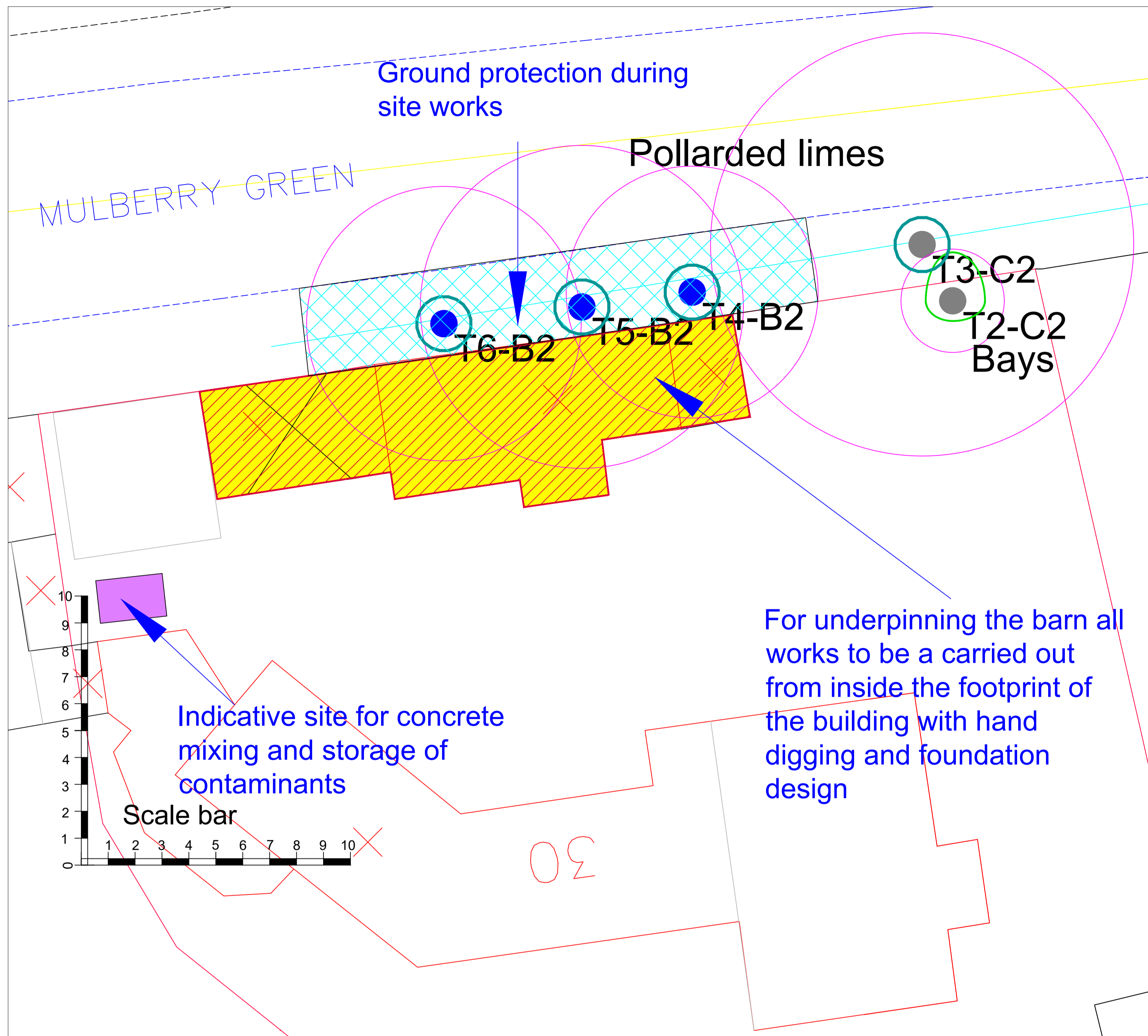
Tag	Species	Category	recommendation
T1	Prunus sp. Ornamental cherry	C2	Remove suckers
T2	Laurus nobilis (Bay)	C2	No work at present
T3	Tilia X europaea (Common Lime)	C2	Urgent- re-pollard tree- Remove basal growth. re-assess frequency of pollarding
T4	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree- . re-assess frequency of pollarding
T5	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding
T6	Tilia X europaea (Common Lime)	B2	Urgent- re-pollard tree- Remove ivy. re-assess frequency of pollarding

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Scheme <i>Granary Cottage, Mulberry Green</i>	Date <i>June 2023</i>
Title <i>Tree Constraints and Tree Surgery Plan</i>	Drawn by <i>E.J.G</i>
Scale <i>1:200 @ A2.</i>	Job No <i>1190.23.</i>
Elizabeth Greenwood C.M.L.I., F.Arbor.A. 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email ms.ejgreenwood@gmail.com	Drq No <i>1190.23.1</i> <i>Appendix E</i>

## Appendix F: Plan 1190.23.2 Tree Protection Plan



**SCHEDULE**

-  Barn to be converted
-  Trees to retain
-  Tree surgery
-  Root protection areas
-  Protective /barrier fencing
-  Ground protection & new surfacing
-  Hand dig
-  Concrete mixing and storage of contaminants



**Ground Protection**

In the vicinity of the temporary unit working space will mainly be confined to existing hard surfacing. Where additional working space is required for construction within the root protection areas of retained trees, the British Standard specifies the following type of ground protection.

- a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geo-textile membrane;
- b) For pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geo-textile membrane;
- c) For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

**Hand dig**

Hand digging will also be required for all works within root protection areas of trees, including removal of surfacing, trenches, excavation for fence post and for cultivation for soft landscape areas. All hand digging within the root protection areas of trees should be supervised by a competent arboriculturalist.

Within root protection areas all excavation should be hand dug. A trench should be hand dug near the trees to ascertain whether roots are present. If roots over 50mm are found these should, where possible, be bridged, and surrounded by sand- roots under this dimension should be cut to a clean cut and surrounded by sand. No roots are to be left exposed but covered with damp sand or hessian. The surface level of the path may need to be adjusted to retain these roots.

If on investigation of the hand dug trench there are no roots present mechanical excavation may be possible if a banksman is supervising the excavation to ensure that if roots are unearthed they can be protected and clean cut and surrounded by sand. Hand digging may need to be resumed to complete the excavation.

This would include exploratory excavation by hand for the foundations of the paths and new hard surfacing within the root protection area of the trees

**Underpinning**

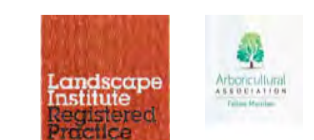
If underpinning is required for the barn, then all works are to be carried out from inside the barn with minimum works carried out from the road verge. The design of the new foundations are to minimise excavation within the RPA of the limes, with the option of above ground foundation design

Works are to include ground protection and hand digging of the trial holes prior minimal excavations of the underpinning.

**Method of working**

- Fencing off the trees as marked on plan with Heras style fencing in accordance with British standard.
- Lay ground protection where required ground protection
- Hand dig within RPA of trees
- If underpinning is required execute all works from within the footprint of the barn and design works with minimal excavation below the existing foundation level of the barn.
- Continue with site works as agreed with the LPA, within the area marked site construction area and exclude any works from the SITES EXCLUSION ZONES.
- On completion of works remove ground protection and protective fencing and carry out additional remedial works.
- Cultivated by hand for all soft landscape works within the root protection areas of trees
- Monitor the condition of trees on an annual basis

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Scheme <i>Granary Cottage, Mulberry Green</i>	Date <i>June 2023</i>
Title <i>Tree Protection Plan</i>	Drawn by <i>E.J.G</i>
Scale <i>1:100 @ A1. or 1:200 @ A3</i>	Job No <i>1190.23</i>
Elizabeth Greenwood C.M.L.I., F.Arbor.A. 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email ms.ejgreenwood@gmail.com	Dwg No <i>1190.23.2</i> <i>Appendix F</i>

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