

# ARBORICULTURAL IMPACT ASSESSMENT

(INC. TREE SURVEY TO BS 5837:2012)

CLIENT - Cedric Fentimen  
PROJECT - 245 Barton Road  
DOC. REF - P3557-1-AIA01 V1  
PLANNING REF - n/a  
CREATION DATE - 19/01/2024

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**PURPOSE OF DOCUMENT**

This document assesses the anticipated impact that the proposed scheme will have on the surrounding tree population, and outlines possible technical design considerations and mitigation measures that should be implemented in order to minimise the overall arboricultural impact.

**ARBORICULTURAL DOCUMENT REGISTER**

Planning Documents		Version Issued	
Document	Ref.	Current Version	Document Date
Arb. Impact Assessment	P3557-1-AIA01	V1	19/01/2024
Arb. Site Plan (Existing)	P3557-1-ASP01	V1	17/01/2024
Arb. Site Plan (Proposed)	P3557-1-ASP02	V1	17/01/2024

# 1. SUMMARY

## 1.1 PROPOSED DEVELOPMENT

1.1.1 Demolition of existing garage and outbuildings, and the erection of a new dwelling with new driveway and site entrance.

## 1.2 TREE SURVEY

1.2.1 The following woody vegetation was considered to be of note in relation to any development of the site: 18 individual trees, 1 group of trees, and 1 hedge.

## 1.3 PROTECTION MEASURES

1.3.1 The implementation of tree protection measures will be required to ensure that the site’s retained trees remain undamaged. Information as to the requirements of such can be found in *Section 3.11*.

## 1.4 TECHNICAL DESIGN CONSIDERATIONS

1.4.1 The design team must consider and implement the design advice provided in *Section 3.12* of this document.

## 1.5 PROVISION OF NEW TREE PLANTINGS

1.5.1 It is recommended that at least 5 tree plantings should be included within the landscaping of the site so as to mitigate against the proposed tree removals.

## 1.6 CONCLUSION

1.6.1 The table below summarises the trees which will be lost, pruned, or protected by special measures during the development project.

	Tree Category			
	A	B	C	U
Trees/groups to be removed (* groups to have sections removed)	-	T2	T3, T4, T5, T6, T7, T14, G1	-
Hedges/shrubs to be removed (* hedges to have sections removed)	-	-	*H1	-
Trees/groups/hedges to be pruned	T12, T17	T1, T8	T9	-

Trees to be subjected to RPA incursions (excl. no-dig techniques)	T17	T1	-	-
Trees to be protected through arboricultural measures / supervision (other than barriers and ground protection)	T12, T17	T1, T8, T13, T16	-	
Trees requiring specialist design considerations (for purposes of minimising arboricultural impact)	T12, T17	T1, T8, T13, T16	-	

1.6.2 Considering the anticipated arboricultural impact from the construction and demolition activities associated with the development of the site, and the implementation of the proposed mitigation measures outlined in this document, the proposed development’s arboricultural impact is considered to be **low**.

## 2 GENERAL INFORMATION

### 2.1 BRIEF

- 2.1.1 Ligna Consultancy Ltd were instructed by the client, Cedric Fentimen, to undertake a tree survey in accordance with BS 5837:2012 and to prepare an arboricultural impact assessment for the proposed scheme at 245 Barton Road.

### 2.2 PROPOSED DEVELOPMENT

- 2.2.1 Demolition of existing garage and outbuildings, and the erection of a new dwelling with new driveway and site entrance.

### 2.3 SITE

- 2.3.1 The site discussed within this report is located at:

245 Barton Road  
 Comberton  
 Cambridge  
 CB23 7BU

### 2.4 PROJECT CONTACT

Role	Name	Telephone	Email
Arboricultural Consultant	Jennifer Sinclair	01284 598008	<a href="mailto:jennifer@lignaconsultancy.co.uk">jennifer@lignaconsultancy.co.uk</a>

### 2.5 SCOPE OF REPORT THIS REPORT CONSISTS OF THE FOLLOWING:

- Appraisal of arboricultural impact
- Outline of tree protection & mitigation measures

- 2.5.1 Appendices included with this report are:

- Tree Survey
- Site Photos
- Arboricultural Site Plan (Existing) (P3557-1-ASP01 V1)
- Arboricultural Site Plan (Proposed) (P3557-1-ASP02 V1)

### 2.6 DOCUMENTS PROVIDED

- 2.6.1 The following documents were submitted to Ligna Consultancy Ltd for consideration:

- Topographical Survey
- Proposed Site Plan (735-P100-Site PLAN AS PROPOSED)

## 2.7 AUTHOR

2.7.1 Jennifer Sinclair is a technician member of the Arboricultural Association. She has worked in arboriculture for over twelve years, including supervisory roles undertaking both domestic and commercial arboricultural work. She possesses a level 3 extended diploma in arboriculture, LANTRA Professional Tree Inspection training and is currently furthering her academic knowledge by undertaking a level 6 professional diploma in arboriculture. A full CV and list of experience and CPD is available on request.

## 2.8 LIMITATIONS

- 2.8.1 Detailed inspections and recommendations relating to tree condition and health are not included within this report.
- 2.8.2 Any engineering solutions presented within this document are recommendations for their suitability from an arboricultural viewpoint. The architect and structural engineers should make the final decision on the suitability of the methods advised.
- 2.8.3 Information provided by third parties, considered in the creation of this report, is assumed to be correct.

## 2.9 PROTECTED TREES

- 2.9.1 Details of trees (if any) that are protected by Tree Preservation Orders (TPOs) or are situated within Conservation Area are available upon request.
- 2.9.2 It is the standard approach of Ligna Consultancy not to obtain this information from the LPA prior to an application, as the LPA will provide details of nearby protected trees as part of the consultation.
- 2.9.3 It should also be noted that granted planning permission that includes tree work specifications overrides Tree Preservation Orders and Conservation Area protections (approved works only).

## 2.10 NESTING BIRDS / BATS

- 2.10.1 Officially, the 'Bird Nesting Season' is between February and August (Natural England). During this time, it is recommended that vegetation works (tree or hedge cutting) or site clearance is avoided if there is a reasonable potential for the disruption of nesting birds.
- 2.10.2 All parties involved in the management and/or development of a site must actively avoid causing disturbance and disruption to nesting birds. Failure to do this may result in an infringement of the *Wildlife and Countryside Act 1981* and the *European Habitats Directive 1992 / Nesting Birds Directive*.
- 2.10.3 When tree or vegetation clearance work has to be undertaken during the nesting season, a pre works survey needs to be carried out by a suitably competent person.
- 2.10.4 Generally, it should be assumed that birds will be nesting in trees, and it is down to the site/project manager that any activities that have the potential to disturb nesting birds are assessed for their suitability and potential impact, and records are kept that show that any works carried out in the

management of trees and other vegetation have not disturbed nesting birds.

## 2.11 SUMMARY OF TERMS

Term	Definition
Species	The type of tree.
Stem	The main woody upright portion of a tree that is supported by the roots and supports the crown.
Branch Spread	The length of a tree's branches from stem to tip measured from the north, east, south and western sides of the crown.
BS 5837	The commonly used name for the official guidance document relating to trees and development ( <i>BS 5837:2012 - Trees in relation to design, demolition and construction – Recommendations</i> )
Canopy / Crown	The branches, leaves, and reproductive structures extending from the trunk or main stems of a tree/trees.
DBH	Diameter of a tree's stem, measured as per BS 5837:2012
RPA	The root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Facilitation Tree Works	Tree pruning/felling required in order to facilitate the implementation of the proposed development.
Tolerance	The relative tolerance the species can show to construction related activities such as root-loss, soil compaction and other development pressures.
Category (Cat.)	Categorisation of the tree's value based on the methodology shown in Appendix 1, A1.4. This rating takes into account the size, quality, condition, estimated remaining life expectancy and legal status of each tree.

## 2.12 COPYRIGHT

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# 3 ARBORICULTURAL IMPACT ASSESSMENT

## ASSESSMENT & APPRAISAL OF IMPACTS

The following section lists and discusses any aspects of the proposed design and its implementation that has the potential to harm nearby trees, and outlines possible mitigation measures:

### 3.1 TREES TO BE REMOVED TO FACILITATE THE PROPOSED SCHEME

**Affected Trees**     Cat. B: - T2 (*Pinus sylvestris*)  
                                  Cat. C: - T3 (*Malus domestica*), T4 (*Malus domestica*), T5 (*Prunus spp.*),  
                                  T6 (*Picea abies*), T7 (*Sambucus nigra*), T14 (*Larix decidua*), G1 (Mixed  
                                  group)

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**Impact Appraisal & Mitigation**     As part of the proposed scheme 1 Cat. 'B' tree is to be removed to facilitate the construction of the proposed footpath and bike store.

Whilst the tree is of moderate value, it isn't visible to the general public as it is currently obscured by the larger trees along the site frontage, and with the existing dense tree population on the site and surrounding area, its removal is considered to be of minimal impact.

*However, to offset the proposed loss of T2, 2 new trees with a height of 3m+ at time of planting must be included within the landscaping of the site.*

6 individual trees and 1 group within Cat. 'C' are to be removed to facilitate the construction of the proposed new dwelling.

Due to their small size and low value, any arboricultural or amenity impact resulting from their loss is considered to be low.

*However, to offset the lost canopy coverage, 3 new trees with a height of 3m+ at time of planting must be included within the site's landscaping.*

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**Significance (with mitigation)**     Low

### 3.2 PARTIAL REMOVAL OF HEDGE AS PART OF THE PROPOSED SCHEME

**Affected Trees**     Cat. C: - H1 (Mixed group)

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**Pruning works**     To facilitate the construction of the proposed new driveway, H1 requires a section measuring ~4.5m in length from its middle. (See ASP02 for exact location). Due to the hedge's low value any associated arboricultural or amenity impact resulting from this removal is considered to be negligible and does not require offsetting.

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**Significance (with mitigation)**     Negligible



### 3.3 TREES TO BE PRUNED AS PART OF THE PROPOSED SCHEME

**Affected Trees** Cat. A: - T12 (*Aesculus hippocastanum*), T17 (*Tilia x Europaea*)  
 Cat. B: - T1 (*Larix decidua*), T8 (*Thuja plicata*)  
 Cat. C: - T9 (*Prunus spp.*)

<i>Pruning works</i>	Ref.	Species	Development Related Tree Works	Cat.
	T1	<i>Larix decidua</i> (European larch)	Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	B1
	T8	<i>Thuja plicata</i> (Western red cedar)	Reduce northern crown by up to 1m.	B1
	T9	<i>Prunus spp.</i> (Plum)	Reduce western crown by ~1m.	C1
	T12	<i>Aesculus hippocastanum</i> (Horse chestnut)	Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	A3
	T17	<i>Tilia x Europaea</i> (Common Lime)	Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	A1

**Significance (with mitigation)** Negligible

### 3.4 DEMOLITION OF EXISTING SHED

**Affected Trees** Cat. B: - T1 (*Larix decidua*)

**Impact Appraisal & Mitigation** The existing shed and the lightweight slab base it is likely situated on is to be demolished as part of the proposed scheme. This will not have a detrimental effect on the tree or its rooting area, however, the process in which it is demolished could cause rooting area disturbance or loss for the tree if done incorrectly.

Therefore, the structure and its base must be demolished in an arb. sensitive manner. This must include:

- i) *The Structure can be dismantled manually using hand tools.*
- ii) *The shed is likely situated atop a shallow slab base that is unlikely to be impacting T1 and its rooting area. This base should be carefully broken up into manageable pieces using hand or pneumatic tools and removed from within the RPA.*
- iii) *The exposed rooting area must be covered with a layer of topsoil and cordoned off for implementation of the scheme. (Apart from area that is to have a no-dig 3D Cellular surfacing installed)*

**Significance (with mitigation)** Negligible

### 3.5 REMOVAL OF EXISTING SURFACING

**Affected Trees** Cat. B: - T1 (*Larix decidua*)

**Impact Appraisal & Mitigation**

Areas of existing hard surfacing are to be removed from under the footprint of the proposed development and as part of the landscaping of the site. The process in which surfacing is removed could cause damage to T1 and its rooting area if done incorrectly.

Therefore, to avoid causing damage, Arb. sensitive removal of existing surfacing required within the RPA of T1. This must include:

- i) *Prior to any demolition works, tree protection barriers and temporary ground protection matting must be installed.*
- ii) *Any machinery required must operate externally to the RPA or from atop existing hard surfacing or temporary ground protection matting. The size of the machine must also take the surrounding tree canopies into consideration.*
- iii) *The upper layers of the surfacing should be broken up into manageable pieces and removed. Once the subbase has been reached all mechanical excavations in that area must halt.*
- iv) *Manual techniques utilising hand/ pneumatic tools must be used to remove the subbase/ remaining gravel. Once the native layer of soil or roots has been reached, all excavations in that area must halt.*
- v) *Any exposed roots must be covered with topsoil within 72 hours of exposure.*
- vi) *This activity must be done under the supervision of the scheme's arboriculturalist.*

**Significance (with mitigation)**

Negligible

### 3.6 INSTALLATION OF DRIVEWAY AND FOOTPATH

**Affected Trees** Cat. A: - T12 (*Aesculus hippocastanum*), T17 (*Tilia x Europaea*)  
 Cat. B: - T1 (*Larix decidua*), T8 (*Thuja plicata*), T13 (*Pinus sylvestris*), T16 (*Aesculus hippocastanum*)

**Impact Appraisal & Mitigation**

The proposed driveway and footpath must utilise a no-dig 3D Cellular system (we recommend Cellweb TRP) with a minimum depth of 100mm for the footpath and 150mm for the driveway as their subbases to avoid significant RPA incursions for multiple trees.

*This surfacing has been chosen due to its proven track record when installed within the RPA of a mature tree. This specialist surfacing retains any underlying tree roots whilst protecting against possible soil*

*compaction damage and allows the continuation of gas and water exchange between soil and air.*

*Due to the nature of the no-dig surfacing the FSL will be increased by 100mm-150mm, and this will need to be taken into consideration by the design team.*

*During the implementation of the proposed scheme, a second sacrificial layer may be required to protect the 'base layer' below. (Driveway) Once the scheme has been implemented and all heavy construction traffic are finished on the site, the sacrificial layer may be removed, and the finishing porous upper surfacing applied to the Cellweb.*

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**Significance**  
*(with mitigation)* Negligible

### 3.7 INSTALLATION OF DWELLING

**Affected Trees** Cat. A: - T17 (*Tilia x Europaea*)  
Cat. B: - T1 (*Larix decidua*)

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**Impact Appraisal & Mitigation** Owing to the layout and positioning of the proposed dwelling, T1 will be subjected to a negligible RPA incursion of 0.2% and T17 will be subjected to an incursion of 0.4%.

*Owing to the negligible sizes of both these incursions, mitigation methods are not required as it is unlikely to have any detrimental impact on either tree's long-term health or vitality.*

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**Significance**  
*(with mitigation)* Negligible

### 3.8 INSTALLATION OF BIKE STORE

**Affected Trees** Cat. B: - T1 (*Larix decidua*)

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**Impact Appraisal & Mitigation** Due to the proposed bike store and the foundations/ base it is likely to have, T1 will be subjected to a minor RPA incursion of 2.6%. Owing to the moderate tolerance of *Larix* to root loss and disturbance and the small size of this incursion, and long term impact on the trees health or vitality is considered to be low, therefore, specialist construction methods are not required.

*However, to ensure damage is not caused to T1 or its rooting area during the installation of the build, the following must be adhered to:*

- i) Prior to any construction works being undertaken, tree protection barriers and temporary ground protection matting must be installed.*
  - ii) Any machinery required must operate externally to the RPA or from atop temporary ground protection matting. The size*
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	<i>of the machine must take the surrounding tree canopies into consideration.</i>
iii)	<i>During the excavation of the subbase, should any roots with a diameter in excess of 20mm be unearthed, they must be pruned back past the face of the subbase with purpose made loppers.</i>
iv)	<i>To prevent chemical cement leachate from poisoning surrounding tree roots, prior to the pouring of concrete, an impermeable membrane must be installed.</i>

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<b>Significance</b> <i>(with mitigation)</i>	Low
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**3.9 IMPLEMENTATION OF PROPOSED SCHEME**

<b>Affected Trees</b>	All retained trees
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<b>Impact Appraisal &amp; Mitigation</b>	<p>During the construction process, all retained trees are susceptible to damage from general construction related activities.</p> <p><i>In order to reduce the risk of construction damage to the site’s retained trees, tree protection barriers, stem protection and temporary ground protection must be installed before the commencement of any site works.</i></p>
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<b>Significance</b> <i>(with mitigation)</i>	Negligible
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**TREE RELATED SHADING AND NUISANCES**

**3.10 LONG-TERM IMPACT OF RETAINED TREES ON PROPOSED SCHEME**

**3.10.1 Shading**

3.10.1.1 None of the trees observed are considered to possess a significant potential for a negative shading impact on the proposed dwelling; any tree-related shading of property is expected to be minimal, transient and well within the recommended levels outlined in BRE 209 guidance.

*Note - Shading arcs, as discussed in BS 5837, have not been included on the Arb. Site Plans owing to their poor accuracy, and the extreme unlikelihood that the shading will not be within tolerable levels. Ligna Consultancy Ltd have undertaken many detailed shading assessments, and in all situations, light levels have been shown to be well within acceptable levels (BRE 209). Situations where lighting levels may not be suitable are most likely to involve rows of large dense conifers near to dwellings.*

### 3.10.2 Canopy Growth

3.10.2.1 The layout of the scheme has been designed with consideration of the location and growth potential of nearby trees. Owing to such, no noteworthy contention between tree canopies and property are anticipated.

### 3.10.3 Nuisances

3.10.3.1 Owing to the tree species present within and around the site, and the layout of the proposed scheme, additional unreasonable tree-related nuisances, such as leaf and fruit-fall, are not thought to exist beyond what might generally be considered as acceptable limits.

## MITIGATION PROPOSAL

*The following proposals, if approved, should be detailed within an arboricultural method statement and tree protection plan prior to the commencement of any development associated works:*

### 3.11 PROTECTIVE MEASURES

#### 3.11.1 Tree Protection Barriers

3.11.1.1 Barriers shall be erected, and a construction exclusion zone established, to protect all retained trees during the construction of the proposed scheme.

#### 3.11.2 Temporary Ground Protection

3.11.2.1 Ground protection boards shall be installed within parts of the RPAs of T1, T8-T13 and T17 to protect them from soil compaction damage during the construction of the proposed scheme.

#### 3.11.3 Stem Protection

3.11.3.1 T1's stem requires protection. This should consist of plastic drainage pipe (>100mm in diameter) loosely coiled around the stem and tied in position.

3.11.3.2 A freestanding wooden clad framework should then be constructed around the stem. This must not be attached to the main stem directly.

#### 3.11.4 Arboriculturally Sensitive Removal of Surfacing

3.11.4.1 Any surfacing requiring removal should be broken up into manageable pieces utilizing manual techniques and hand/pneumatic tools.

3.11.4.2 It should then be carefully scraped backwards out of the RPA. Once

the subbase or native layer of soil is reached all excavations in that area must halt.

### 3.11.5 Arboriculturally Sensitive Demolition

3.11.5.1 The existing shed is to be demolished manually using hand tools. The slab base must be broken up into manageable pieces using manual techniques and carefully removed from within the RPA.

### 3.11.6 Arboricultural Supervision

3.11.6.1 Where any demolition or construction works are to be undertaken within or in close proximity to an RPA, they must be supervised by the scheme's arboriculturalist.

## 3.12 TECHNICAL DESIGN CONSIDERATIONS

### 3.12.1 Specialist No-Dig Surfacing

3.12.1.1 A 100mm-150mm deep no-dig 3D geocell system (we recommend Cellweb TRP) must be used for all new surfacing within root protection areas.

3.12.1.2 Owing to the nature of no-dig surfacing, the FSL will likely be increased as a result of its use.

3.12.1.3 The driveway may require a second sacrificial layer of the system to protect the base layer below.

### 3.12.2 Routing and Installation of Utility Apparatus

3.12.2.1 Wherever possible, utility apparatus should be routed outside of any RPAs. Failing this, services should be routed together in common ducts, with any inspection chambers being located outside of the RPA.

3.12.2.2 Where it is necessary for underground services to intersect an RPA, specialist excavation methods should be used.

3.12.2.3 In such situations, the design team should consult with Ligna Consultancy in order to establish a suitable services route, and specify the specialist excavation method most suitable.

### 3.12.3 Potential for Subsidence & Heave

3.12.3.1 Where shrinkable sub-soils may be present, the potential for tree related subsidence and/or ground heave (resultant from proposed tree removals) must be considered by a structural engineer prior to the final specification of foundation depth/type.

### 3.13 PROVISION OF NEW TREE PLANTINGS

3.13.1 It is recommended that at least 5 tree plantings should be included within the landscaping of the site so as to mitigate against the proposed tree removals.

## CONCLUSION

### 3.14 SUMMARY OF THE DEVELOPMENT’S OVERALL IMPACT

3.14.1 The table below summarises the trees which will be lost, pruned, or protected by special measures during the development project.

	Tree Category			
	A	B	C	U
Trees/groups to be removed (* groups to have sections removed)	-	T2	T3, T4, T5, T6, T7, T14, G1	-
Hedges/shrubs to be removed (* hedges to have sections removed)	-	-	*H1	-
Trees/groups/hedges to be pruned	T12, T17	T1, T8	T9	-
Trees to be subjected to RPA incursions (excl. no-dig techniques)	T17	T1	-	-
Trees to be protected through arboricultural measures / supervision (other than barriers and ground protection)	T12, T17	T1, T8, T13, T16	-	
Trees requiring specialist design considerations (for purposes of minimising arboricultural impact)	T12, T17	T1, T8, T13, T16	-	

3.14.2 Considering the anticipated arboricultural impact from the construction and demolition activities associated with the development of the site, and the implementation of the proposed mitigation measures outlined in this document, the proposed development’s arboricultural impact is considered to be **low**.

## 4 APPENDICES

### 4.1 APPENDICES

4.1.1 The following appendices are included within this document:

Appendix	Document
1	Tree Survey
2	Site Photos
3	Arboricultural Site Plan (Existing) (P3557-1-ASP01)
4	Arboricultural Site Plan (Proposed) (P3557-1-ASP02)



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# APPENDIX 1 TREE SURVEY

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## APPENDIX 1 – TREE SURVEY

### A1.1 SITE VISIT

- i) A site visit was undertaken by Jennifer Sinclair of Ligna Consultancy, on the 09/01/2024.

### A1.2 METHOD OF DATA COLLECTION

- i) Data was collected using the recommendations laid out in British Standard 5837:2012 as a guide. All observations were from ground level without detailed or invasive investigations.
- ii) Measurements have been calculated using a laser measurer and diameter tape/calipers. Where this was not possible or reasonably practical, measurements have estimated by eye.
- iii) The trees were surveyed and assessed impartially and irrespective of the proposed development. Management recommendations should be implemented regardless of any proposed development for reasons of sound arboricultural management or safety.
- iv) The method used for categorising the trees can be seen in section A1.3. This is an improved variation of the method suggested in BS 5837:2012.
- v) BS 5837:2012 recommends that better quality (category A and B trees) are retained where possible. Planning permission overrides a Tree Preservation Order and Conservation Area. Furthermore, trees are a material consideration in the UK planning system irrespective of their legal status. Trees in land adjacent to the site are considered where they may be impacted by development; for example, when roots or branches encroach onto the site.
- vi) Trees may be recorded as group or woodland where:
  - The canopies touch.
  - The trees have more group value than individual merit.
  - They are part of a formal landscape feature like an avenue.
  - It is impractical to record them individually.
- vii) Trees within groups or woodlands etc. are recorded individually where it is necessary to distinguish them from others.

### A1.3 SURVEY KEY & GLOSSARY OF TERMS

Term	Definition
Ref.	Tree reference number
Tag	Physical tag attached to some trees with unique identification number (not the same as Ref.)
Species	The trees' scientific and common name
Height	The measured/estimated height of the tree (measured in metres)
Branch Spread	The length of a tree's branches from stem to tip measured from the north, east, south and western sides of the crown.
Crown Clearance	Crown clearance is the measurement of height between the trees branches in the outer third of its crown and the floor. Crown clearance has only been recorded where it is considered to be of relevance to the proposed scheme. The height of the first significant branch is also generally recorded and is discussed where relevant.
DBH	Diameter of a trees' stem, measured as per BS 5837:2012
RPA	The root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Life Stage	A quantification of a trees' state of physical maturity: <ul style="list-style-type: none"> <li>• Young</li> <li>• Semi-mature</li> <li>• Early-Mature</li> <li>• Mature</li> <li>• Late-mature</li> <li>• Veteran</li> <li>• Dead</li> </ul>
Structural	Summary statement relating to the structural condition of a tree: <ul style="list-style-type: none"> <li>• Good (no apparent problems / normal optimal condition for a tree of its species.)</li> <li>• Fair (minor problems, no instabilities)</li> <li>• Poor (major problems, potential instabilities)</li> <li>• Unstable (extreme problems, likely to result in failure)</li> </ul>
Vitality	Summary statement relating to the overall observed vitality of a tree: <ul style="list-style-type: none"> <li>• Good (no apparent problems / normal optimal vitality for a tree of its species)</li> <li>• Fair (minor / temporary reduction in tree vitality)</li> <li>• Poor (major reduction in tree vitality, often with some branch dieback)</li> <li>• Dead / Dying (extreme / total reduction in tree vitality)</li> </ul>
General Management Recommendations	Remedial tree works recommended regardless of whether the site is developed or not.
Facilitation Tree Works	Tree pruning/felling required in order to facilitate the implementation of the proposed development.
Development Related Tree Works	Tree works that are required as part of the proposed scheme.
Tolerance	The relative tolerance the species can show to construction related activities such as root-loss, soil compaction and other development pressures.
Cat.	Categorisation of the tree's value based on the methodology shown in A1.4. This rating takes into account the size, quality, condition, estimated remaining life expectancy and legal status of each tree.

**A1.4 TREE CATEGORISATION METHODOLOGY**

Category and definition	Criteria / Subcategories			Label on plan
	1 – Mainly arboricultural qualities	2 – Mainly landscape qualities	3 – Mainly cultural values/conservation	
<b>Trees worthy of being a material constraint:</b>				
<p><b>Category A</b></p> <p>Trees of high quality, capable of providing a significant contribution to local amenity (usually large in size) and that generally possess an estimated remaining life expectancy of 40+ years.</p>	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Cat. A</div>
<p><b>Category B</b></p> <p>Trees of moderate quality and with an estimated remaining life expectancy of 20+ years, that are capable of providing a notable contribution to local amenity but are lacking the condition of category A trees (usually medium to large in size).</p>	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage); or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Cat. B</div>
<b>Trees worthy of material consideration:</b>				
<p><b>Category C</b></p> <p>Trees of a low quality, small size, or incapability to be protected within the legal framework. These trees generally possess an estimated remaining life expectancy of 10+ years.</p>	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Cat. C</div>
<b>Trees unsuitable for retention owing to condition:</b>				
<p><b>Category U</b></p> <p>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.</p>	<ul style="list-style-type: none"> <li>• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>• 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</li> </ul>			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Cat. U</div>

**A1.5 SUMMARY OF DATA**

- i) The following woody vegetation was considered to be of note in relation to any development of the site: 18 individual trees, 1 group of trees, and 1 hedge.
- ii) The following tables show the category distribution and life stage of the trees distributed within the site:

	Tree Category			
	A	B	C	U
Individual Trees	2	8	8	-
Groups	-	-	1	-
Woodland Groups	-	-	-	-
Hedges	-	-	1	-
Shrubs	-	-	-	-

Table 1 - Table showing category distribution within site.

	Life Stage						
	Young	Semi-Mature	Early-Mature	Mature	Late-Mature	Veteran	Dead
Individual Trees	1	4	1	10	2	-	-
Groups	-	1	-	-	-	-	-
Woodland Groups	-	-	-	-	-	-	-
Hedges	-	1	-	-	-	-	-
Shrubs	-	-	-	-	-	-	-

Table 2 - Table showing life stage distribution within the site.

Ref.	Tag	Species	Height (m)	Crown (N/E/S/W)	Crown Clearance (m)	DBH (mm)	Life Stage	Structural	Vitality	Additional Notes	General Management Recommendations	Priority	Development Related Tree Works	Tolerance	RPA Radius (m)	RPA Area (m <sup>2</sup> )	Cat.
T1		Larix decidua (European larch)	16.5	4.5 / 4.5 / 4.5 / 4.5	3	440	Mature	Good	Good				Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	-	5.3	87.6	B1
T2		Pinus sylvestris (Scots pine)	14.5	3.5 / 3.5 / 3.5 / 3.5	4.5	280	Semi-Mature	Good	Good				Remove	Good	3.4	35.5	B2
T3		Malus domestica (Apple)	4	2.5 / 2.5 / 2.5 / 2.5	1.5	233	Mature	Good	Good				Remove	Good	2.8	24.7	C1
T4		Malus domestica (Apple)	5	3 / 3 / 3 / 3	1.5	276	Mature	Good	Good				Remove	Good	3.3	34.4	C1
T5		Prunus spp. (Plum)	7	3.5 / 3.5 / 3.5 / 3.5	1.5	410	Late-Mature	Good	Good	Historic failure of secondary leader on northern side of tree, evidence of wound wood occlusion. Dense inner crown.			Remove	Moderate - Good	4.9	76.0	C1
T6		Picea abies (Norway spruce)	5.5	2 / 2 / 2 / 2		75	Young	Good	Good				Remove	Poor - Moderate	0.9	2.5	C3
T7		Sambucus nigra (Elder)	5	3 / 3 / 3 / 3			Mature	Good	Good	Estimated dimensions used as unable to access tree. Dripline RPA used.			Remove	Good			C3
T8		Thuja plicata (Western red cedar)	13.5	4.5 / 4.5 / 4.5 / 4.5		430	Mature	Good	Good	Tree has been topped to height. Powerline running through western crown.			Reduce northern crown by up to 1m.	Good	5.2	83.6	B1
T9		Prunus spp. (Plum)	7	0.5 / 0 / 2 / 5	1	117	Early-Mature	Good	Good	Sub dominant to adjacent larger trees. Tree heavily leans westward with crown in significant contact with powerline with low risk of damage posed owing to small size of branches.	Prune to give powerline 1m clearance.	24 months	Reduce western crown by ~1m.	Moderate - Good	1.4	6.2	C1
T10		Thuja plicata (Western red cedar)	13.5	4 / 4 / 4 / 4		300	Mature	Good	Good					Good	3.6	40.7	B1
T11		Cupressus spp. (Cypresses)	11	2.5 / 2.5 / 2.5 / 2.5	2	230	Semi-Mature	Good	Good					Good	2.8	23.9	C1
T12		Aesculus hippocastanum (Horse chestnut)	17	7 / 7 / 7 / 7	1.5	670	Mature	Good	Good	Tree growing along edge of water filled ditch.			Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	Moderate - Good	8.0	203.1	A3
T13		Pinus sylvestris (Scots pine)	19.5	2 / 2 / 2 / 2		270	Semi-Mature	Good	Good					Good	3.2	33.0	B3
T14		Larix decidua (European larch)	16	0.5 / 6.5 / 0.5 / 0.5		260	Semi-Mature	Good	Good	Tree heavily leans eastwards. Doesn't qualify for category 'B' despite its height as it possesses no other characteristics normally associated with a tree within this categorisation. Moderate amount of minor size deadwood located on stem predominantly on south western side of stem.			Remove	-	3.1	30.6	C1
T15		Pinus sylvestris (Scots pine)	22	3 / 3 / 3 / 3	16	340	Mature	Good	Good					Good	4.1	52.3	B1
T16		Aesculus hippocastanum (Horse chestnut)	12	4.5 / 5 / 5 / 5	4	740	Mature	Good	Good	Tree reduced to size. Manhole cover on eastern side butting against base of tree. Branch tips in close contact with adjacent telegraph pole. Water filled ditch along edge of stem.				Moderate - Good	8.9	247.7	B1
T17		Tilia x Europaea (Common Lime)	22	9.5 / 9.5 / 9.5 / 9.5	1.8	900	Late-Mature	Good	Good	Exposed roots at ground level have sustained minor cambial damage most likely from lawn mower. Branch tips in contact with powerline on western side - low risk of damage posed. Minor deadwood in crown - negligible risk posed.			Crown lift tertiary branches and tips to provide 4.5m clearance with the ground.	-	10.8	366.4	A1
T18		Aesculus hippocastanum (Horse chestnut)	12.5	4 / 4 / 4 / 4		660	Mature	Good	Good	Tree pollarded to size with bracing north to south at ~5.5 m				Moderate - Good	7.9	197.1	B1

Ref.	Tag	Species	Height (m)	Crown (N/E/S/W)	Crown Clearance (m)	DBH (mm)	Life Stage	Structural	Vitality	Additional Notes	General Management Recommendations	Priority	Development Related Tree Works	Tolerance	RPA Radius (m)	RPA Area (m <sup>2</sup> )	Cat.
G1		Mixed group	2	1 / 1 / 1 / 1			Semi-Mature	Good	Good	Group of well maintained shrubs growing along edge of garage.			Remove	-			C3
H1		Mixed group	2	1 / 1 / 1 / 1			Semi-Mature	Good	Good	Mix of privet and leylandii hedge along site frontage.			Remove ~4.5m section (See ASPO2 for exact location)	-			C3

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# APPENDIX 2 SITE PHOTOGRAPHS

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## APPENDIX 2 – SITE PHOTOGRAPHS

Note - Below is a selection of site photographs intended for general site context. Should you require supplementary site/tree photographs please contact [info@lignaconsultancy.co.uk](mailto:info@lignaconsultancy.co.uk):



*Figure 1 – Looking eastwards at the site and the area for the proposed new dwelling.*

APPENDIX 2 – SITE PHOTOGRAPHS



*Figure 2 – Looking south eastwards at T17. (Cat. 'A')*

## APPENDIX 2 – SITE PHOTOGRAPHS



*Figure 3 – Looking southwards at T1-T5 and the existing garage/ outbuildings to be demolished.*

APPENDIX 2 – SITE PHOTOGRAPHS



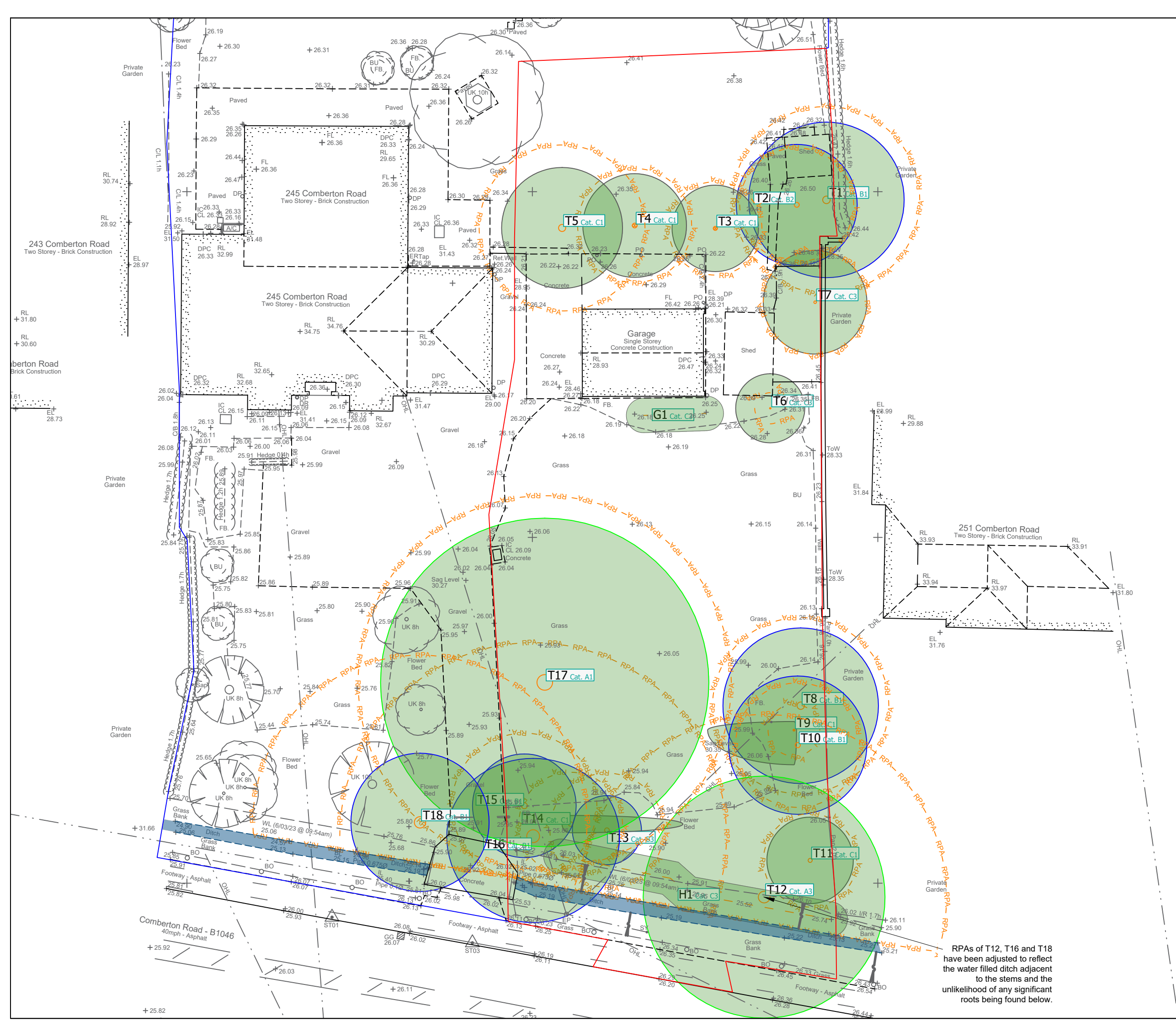
*Figure 4 – Looking southwards at the site.*

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# APPENDIX 3

## ARB. SITE PLAN (EXISTING)

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RPAs of T12, T16 and T18 have been adjusted to reflect the water filled ditch adjacent to the stems and the unlikelihood of any significant roots being found below.

### Use of This Document

This document should be viewed in conjunction with the relevant arboricultural impact assessment and/or tree survey schedule.

### Tree Categorisation & Numbering

The method used for categorising the trees can be seen in Appendix 1 of the Tree Survey/Arboricultural Impact Assessment. The categorisation method used is an improved variation of the method suggested in BS 5837:2012.

BS 5837:2012 recommends that better quality trees (Cat. A & B) are retained where possible. Trees in land adjacent to the site are considered where they may be impacted by development.

The trees considered significant within the context of the development are numbered and assigned a prefix of 'T' or 'G' to describe whether they are an individual or a group, and 'S' or 'H' for a shrub or hedge. Using this identification number, further information for each tree/group can be found within the survey schedule.

	<b>Category A</b> : High or exceptional arboricultural, landscape or ecological value. (Worthy of being a material constraint.)		<b>Category B</b> : Moderate arboricultural, landscape or ecological value. (Worthy of being a material constraint.)
	<b>Category C</b> : Low quality or small in size. (Not worthy of being a material constraint.)		<b>Category U</b> : Such poor quality or condition that renders it unsuitable for retention. (Not worthy of being a material constraint.)

### Root Protection Areas

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Areas (RPAs) should be plotted around each of the category A, B and C trees. This is a notional depiction of the minimum rooting area in m2 which should be left undisturbed around each tree. The RPA is calculated using the *British Standard BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'*, unless otherwise stated within the survey schedule.

Where there appears to be restrictions to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

	<b>Root Protection Area (RPA)</b> : The notional area around each tree which should be left undisturbed during the development of the site		<b>RPA Incursion</b> : Anticipated incursion into the root protection area of a proposed tree which may result in root loss/damage.
	<b>Arboriculturally Sensitive Demolition/Removal</b> : A structure or surfacing is to be removed using special methods to avoid damage to trees.		<b>Specialist Foundations</b> : Low impact foundations to be used to preserve underlying tree roots.

### Further Object Key

	<b>Tree Stem / Stem Line</b> : Diameter of stem at ~1.5m		<b>Tree Removal</b> : Trees designated for removal will comprise of a red filled canopy.
	<b>Site Boundary</b> : Extent of site boundary (illustrative only)		<b>Buildings/Surfacing to be Removed</b> : Buildings or surfacing to be removed will generally be depicted with a dashed red line



Project:	245 Barton Road		
Client:	Cedric Fentimen		
Drawing:	Arboricultural Site Plan (Existing)		
Drawing Ref:	Rev:	Date:	
P3557-1-ASP01	V1	17/01/2024	
Scale:	1:200 - A3		Drawn By:
			J. Sinclair
Based on:	Topographical Survey		

All dimensions should be checked on site. No dimensions to be scaled from this drawing. Please notify us of any discrepancies found. Ligna Consultancy Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based. This drawing is designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees.

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# APPENDIX 4

## ARB. SITE PLAN (PROPOSED)

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Arb. sensitive removal of existing surfacing required within the RPA of T1. To avoid damaging the tree and its rooting areas, the following must be adhered to:

- i) Prior to any demolition works, tree protection barriers and temporary ground protection matting must be installed.
- ii) Any machinery required must operate externally to the RPA or from atop existing hard surfacing or temporary ground protection matting. The size of the machine must also take the surrounding tree canopies into consideration.
- iii) The upper layers of the surfacing should be broken up into manageable pieces and removed. Once the subbase has been reached all mechanical excavations in that area must halt.
- iv) Manual techniques utilising hand/ pneumatic tools must be used to remove the subbase/ remaining gravel. Once the native layer of soil or roots has been reached, all excavations in that area must halt.
- v) Any exposed roots must be covered with topsoil within 72 hours of exposure.
- vi) This activity must be done under the supervision of the scheme's arboriculturalist.

The proposed footpath must utilise a no-dig 3D Cellular system (we recommend Cellweb TRP) with a minimum depth of 100mm for its subbase to avoid a significant RPA incursions for T1.

This surfacing has been chosen due to its proven track record when installed within the RPA of a mature tree. This specialist surfacing retains any underlying tree roots whilst protecting against possible soil compaction damage, and allows the continuation of gas and water exchange between soil and air.

Due to the nature of the no-dig surfacing the FSL will be increased by 100mm and this will need to be taken into consideration by the design team.

Minor RPA incursion of 2.6% for T1. Due to the small size of the incursion and the moderate tolerance of *Larix* to root loss and disturbance, any long term impact on the health or vitality of the tree is considered to be low. However, to ensure damage is not caused to the tree or it's rooting area, the following must be adhered to:

- i) Prior to any construction works being undertaken, tree protection barriers and temporary ground protection matting must be installed.
- ii) Any machinery required must operate externally to the RPA or from atop temporary ground protection matting. The size of the machine must take the surrounding tree canopies into consideration.
- iii) During the excavation of the subbase, should any roots with a diameter in excess of 20mm be unearthed, they must be pruned back past the face of the subbase with purpose made loppers.
- iv) To prevent chemical cement leachate from poisoning surrounding tree roots, prior to the pouring of concrete, an impermeable membrane must be installed.

- i) The Structure can be dismantled manually using hand tools.
- ii) The shed is likely situated atop a shallow slab base that is unlikely to be impacting T1 and its rooting area. This base should be carefully broken up into manageable pieces using hand or pneumatic tools and removed from within the RPA.
- iii) The exposed rooting area must be covered with a layer of topsoil and cordoned off for implementation of the scheme.

Crown lift tertiary branches and tips of T1 to provide 4.5m clearance with the ground.

Negligible RPA incursion of 0.2% for T1. Mitigation methods not required.

Negligible RPA incursion of 0.4% for T17. Mitigation methods are not required.

The proposed driveway must utilise a no-dig 3D Cellular system (we recommend Cellweb TRP) with a minimum depth of 150mm for its subbase to avoid significant RPA incursions for multiple trees.

This surfacing has been chosen due to its proven track record when installed within the RPA of a mature tree. This specialist surfacing retains any underlying tree roots whilst protecting against possible soil compaction damage, and allows the continuation of gas and water exchange between soil and air.

Due to the nature of the no-dig surfacing the FSL will be increased by 150mm and this will need to be taken into consideration by the design team.

During the implementation of the proposed scheme, a second sacrificial layer may be required to protect the 'base layer' below. Once the scheme has been implemented and all heavy construction traffic are finished on the site, the sacrificial layer may be removed and the finishing porous upper surfacing applied to the Cellweb.

Reduce western crown of T9 by ~1m.

RPAs of T12, T16 and T18 have been adjusted to reflect the water filled ditch adjacent to the stems and the unlikelihood of any significant roots being found below.

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### Tree Categorisation & Numbering

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Where there appears to be restrictions to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

	<b>Root Protection Area (RPA)</b> : The notional area around each tree which should be left undisturbed during the development of the site.		<b>RPA Incursion</b> : Anticipated incursion into the root protection area of a proposed tree which may result in root loss/damage.
	<b>Arboriculturally Sensitive Demolition/Removal</b> : A structure or surfacing is to be removed using special methods to avoid damage to trees.		<b>Specialist Foundations</b> : Low impact foundations to be used to preserve underlying tree roots.

### Further Object Key

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Drawing:	Arboricultural Site Plan (Proposed)		
Drawing Ref:	Rev:	Date:	
P3557-1-ASP02	V1	17/01/2024	
Scale:	Drawn By:		
1:200 - A3	J. Sinclair		
Based on:	735-P100-SITE PLAN AS PROPOSED		

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