



PREPARED FOR

Louise Willcox

SITE LOCATION

6 Firs Walk, Tewin Wood, AL6
ONZ

ARBORICULTURAL IMPACT
ASSESSMENT

February 2024

#WEAREINNOVATORS



Quality Control

Version	Status	Reviewed by	Review Date	Authorised by
A	Final	Callum Throw	21 February 2024	Callum Throw

Document Details

Document Title:	240221 ARBI-AIA 1007 V1
File Reference:	ARB INNOVATORS LTD\1001-1099\1007\Reports

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1. Introduction

1.1 Terms of instruction

- 1.1.1 Louise Willcox (hereafter the 'Client') commissioned ARB Innovators Ltd ('ARB Innovators') to undertake an arboricultural assessment and prepare an Arboricultural Impact Assessment (AIA) at 6 Firs Walk, Tewin Wood, AL6 0NZ (hereafter referred to as the 'Site').
- 1.1.2 This report accompanies a full, detailed planning application to Local Planning Authority (LPA), East Herts District Council, for a ground floor extension on the southeast elevation of the property, proposed raised patio, first floor extension defined as 'Bedroom 3', and 2no. car parking spaces/turning area off the existing driveway at the front of the property.
- 1.1.3 The proposed first-floor extension will be constructed beyond influencing distance of any trees subject to this assessment and will not be discussed further.
- 1.1.4 This assessment has been prepared by Callum Throw (*N. Dip Arb, PTI, TechArborA*) Managing Director and Principal Arboricultural Consultant at ARB Innovators. Callum is an experienced Arboricultural Consultant possessing over 14 years' experience within the arboricultural industry, with over 10 years of experience as a consultant, including over 5 years at Principal level, providing technical advice on arboricultural issues, with specialism in Urban Forestry and trees in relation to development. Callum is also a LANTRA Certified Professional Tree Inspector (PTI).

1.2 Scope of this Arboricultural Assessment

- 1.2.1 Trees may form a constraint to the Proposed Development and therefore the methodology as set out in *BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations* (The British Standards Institution, 2012), hereafter referred to as 'BS5837:2012', has been adhered to.
- 1.2.2 The scope and level of detail included within this AIA provides sufficient information on the arboricultural features present within the Site, and consideration of the impacts and residual effects of the Proposed Development on the existing arboricultural features and local character.
- 1.2.3 The information provided is compliant with BS5837:2012 (Table B.1) and national standard planning application validation requirements. This report broadly comprises four stages:
1. Undertake a survey of trees on the Site and those within the Study Area (a 15m buffer or "influencing distance" based on the surveyor's discretion) to fulfil the requirements of BS5837:2012.
 2. Provide a Tree Constraints Plan (TCP) demonstrating the above and below-ground constraints; including canopy extents and Root Protection Areas (RPA), of those trees recorded.
 3. Provide an AIA which includes a Tree Retention and Removals Plan (TRRP) to assess the impacts and effects which are likely to arise from the Proposed Development and identify mitigation for retained trees, where necessary.
 4. Provide an Arboricultural Method Statement (AMS) 'Heads of Terms' outlining an overview of how retained trees will be protected and managed during on-site construction activities.

2. The Site

2.1 Site Description

2.1.1 Table 1 provides a description of the Site, which is denoted by a red line boundary presented at Figure 1.

Table 1 Site Location, Description and General Overview

	Description
Site Address	6 Firs Walk, Tewin Wood, AL6 0NZ
Ordnance Survey National Grid Reference	TL 26936 16224
Local Authority	East Herts District Council
Date of walkover Tree Survey	14 February 2024
Site Description	<p>The Site is in Tewin Wood, on the edge of Tewin, a village and civil parish in Hertfordshire, England between the towns of Welwyn Garden City, Stevenage, Welwyn, and the county town Hertford.</p> <p>The Site is best described as a detached, private residence on a private residential road, characterised by the surrounding wooded landscape.</p>
Notable Site features observed during the assessment	Mature tree cover dominates the Site, with mature trees at the frontage and established, mature tree cover forming a woodland garden to the rear. The topography is gently undulating with natural drainage ditches bisecting the woodland floor.

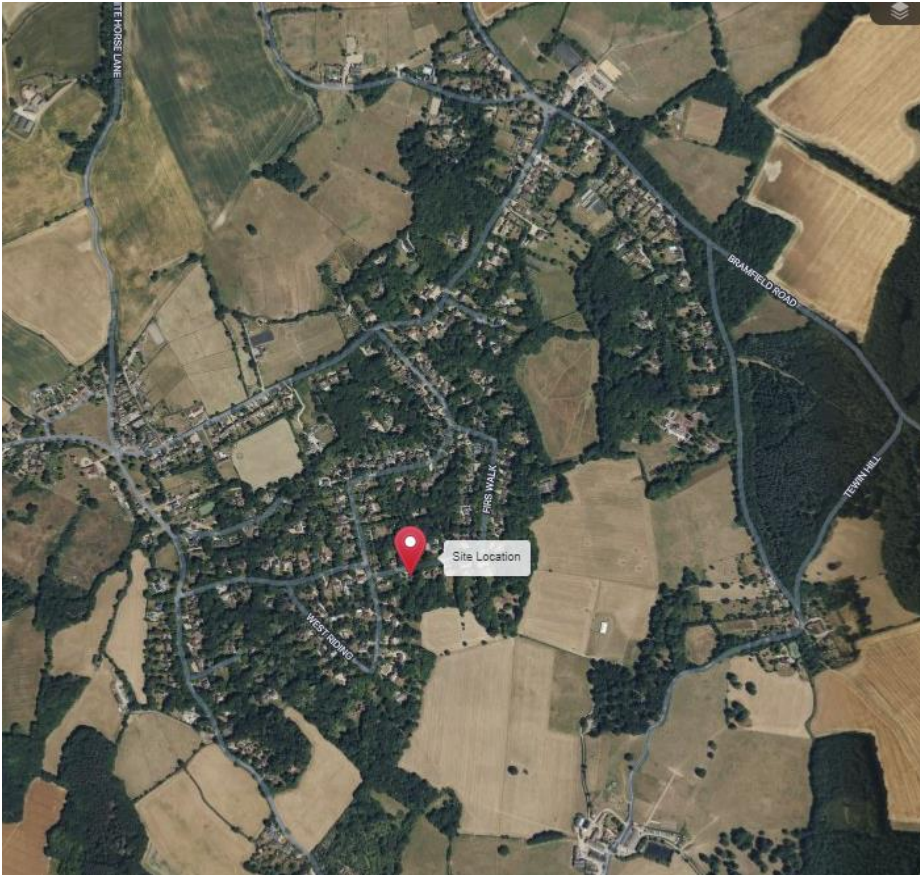


Figure 1 Site location denoted by a red pin (Source: <https://gridreferencefinder.com/>)

3. Summary of Relevant Legislation and Planning Policy

3.1.1 This report has been compiled with reference to the following Legislation and both national and local planning policy.

3.1.2 Full details on the Legislation and planning policy listed below have been provided in Appendix 5.

3.2 Legislation

- The Town and Country Planning Act 1990.
- The Town and Country Planning (Tree Preservation) (England) Regulations 2012.
- The Forestry Act 1967
- The Occupiers Liability Act (1957 and 1984)

3.2.1 Other legislation that affords a lesser or indirect level of protection to trees includes the following:

- The Wildlife & Countryside Act 1981 (as amended).
- Conservation of Species and Habitat Regulations 2017 (as amended).
- Natural Environment and Rural Communities Act 2006 (Section 41 England and Section 42 Wales).
- Hedgerow Regulations (1997).

3.3 National Planning Policy

- National Planning Policy Framework (NPPF), 2023¹

3.4 Local Planning Policy

- East Herts District Plan, October 2018 Policy DES2 Landscape Character, Policy NE3 Species and Habitats, and Policy NE4 Green Infrastructure.²

¹ National Planning Policy Framework (2023) [Online]. Available at < https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf > (Last Accessed January 2024).

² East Herts District Plan (October 2018) [Online]. Available at < https://cdn-eastherts.onwebcurl.com/s3fs-public/documents/District_Plan_Publish_web_view.pdf > (Last Accessed 21 February 2024).

4. Baseline Arboricultural Data

4.1 Arboricultural Desk Study

4.1.1 A Desk Study has been undertaken as a means of identifying if any statutory and non-statutory constraints or designations are present within the Site and Study Area. This Desk Study includes consideration of the following environmental constraints:

- Tree Preservation Orders (TPO).
- Conservation Areas.
- Ancient Woodland
- Ancient, Veteran, or Notable trees.

Presence of Tree Preservation Orders and Conservation Areas

4.1.2 It has been confirmed via East Herts District Council online mapping system³ that a woodland TPO is associated with the Site, namely TPO No. 410, plot reference 410-W1. As such, statutory constraints do apply to all trees forming this assessment.

4.1.3 The Site is not positioned within a Conservation Area.

4.1.4 It should be noted that online interactive mapping provided is for reference only and is not intended to be definitive. The LPA should be contacted prior to carrying out any works to trees referenced as being afforded statutory protection, to confirm this status.

4.1.5 Provisional Tree Preservation Orders (TPO) may be made whenever a local planning authority deems it appropriate with only those persons interested in the land served with a copy of the Order. A further search for the presence of TPOs should be carried out prior to commencement of any tree works or removals specified within this report.

Presence of Ancient Woodland

4.1.6 The presence of ancient woodland designation within or bordering the Site was checked using Natural England's Multi Agency Geographical Information for the Countryside (MAGIC) map⁴ on 21 February 2024.

4.1.7 No part of the site is a designated Site of Special Scientific Interest (SSSI). The site does not contain Ancient and Semi-Natural Woodland (ANSW) nor Plantation on Ancient Woodland Site (PAWS). The Site was absent of these non-statutory designations.

Presence of Ancient, Veteran and Notable trees

4.1.8 The presence of Ancient, Veteran, or Notable trees⁵ associated with the Site were checked using Woodland Trust's Ancient Tree Inventory on 21 February 2024. The Site was absent of this non-statutory designation.

4.1.9 It should be noted that this inventory is based on volunteer-submitted records, and its limitations should be acknowledged.

³ East Herts District Council [Online]. Available at < https://ehdc.cloud.cadcorp.com/ehdc_WebmapPublic/Map.aspx?mapName=Planning > (Last Accessed 21 February 2024)

⁴ Magic (DEFRA), 2018. Multi Agency Geographical Information for the Countryside [Online]. Available at: < <https://magic.defra.gov.uk/MagicMap.aspx> > (Last 21 February 2024).

⁵ Ancient Tree Inventory, 2018. Ancient Tree Inventory [Online]. Available at: < <https://ati.woodlandtrust.org.uk> > (Last Accessed 21 February 2024).

5. Arboricultural Walkover Survey

5.1 Brief BS5837:2012 Methodology and Arboricultural Data Collection

- 5.1.1 The arboricultural walkover survey was undertaken by a suitably qualified and experienced Arboricultural Consultant of ARB Innovators. The survey was completed in accordance with BS5837:2012 with an assessment of tree condition made using the Visual Tree Assessment (VTA) methodology (*Mattheck, 2007*), which provides a systematic framework for formal tree inspection, as summarised in Appendix 1.
- 5.1.2 A combination of on-site GPS, Topographical Survey provided by Stamford Topographical, GIS Open Street Map (OSM), and aerial imagery (Google™ Maps) was used to plot the location of trees and their surrounding context.
- 5.1.3 The survey recorded all arboricultural features with a stem diameter greater than 75mm either as individual specimens, groups, hedges, or woodland. The differentiation between individual trees and groups of trees was made where these trees were aerodynamically, culturally, or visually important as groups.
- 5.1.4 The tree numbers associated with each tree are cross-referenced within the BS5837:2012 Tree Survey Schedule and plans at Appendix 2 and Appendix 3 respectively.

5.2 BS5837:2012 Quality Assessment

- 5.2.1 Trees were categorized by quality in accordance with BS5837:2012, section 4.5. The objective of the tree categorisation method is to identify the quality and value (in a non-financial sense) of the arboricultural features recorded to make an informed decision about which features should be removed or retained if development occurs.
- 5.2.2 The quality of each arboricultural feature is defined based on its sub-category. Sub-categories carry equal weight and should not be used to influence retention priority. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.
- 5.2.3 Full details of the walkover tree survey methodology used are provided in Appendix 1.

5.3 Arboricultural Walkover Tree Survey Summary

- 5.3.1 The tree survey identified 15no. arboricultural features composed of 11no. individual trees, 2no. groups of trees and 2no. hedges.
- 5.3.2 Full details of the arboricultural features recorded are provided within the BS5837:2012 Tree Survey Schedule at Appendix 2. A summary of recorded features can be seen below in Table 2.

Table 2 Arboricultural features recorded and quality categories in accordance with BS5837:2012

	Category A Trees that are particularly good examples of their species, especially if rare or unusual.	Category B Downgraded from category A because of impaired condition or lacking the quality necessary to merit category A.	Category C Unremarkable trees of limited merit which could be retained but are not a significant constraint.	Category U Trees in such an impaired condition that they should be removed.
Trees	1	4	6	0
Groups	0	0	2	0
Woodlands	0	0	0	0
Hedges	0	0	2	0
Total	1	4	10	0

5.4 Tree Preservation Orders

5.4.1 The arboricultural features recorded on Site and afforded statutory protection by virtue of a TPO, are listed in Table 3.

Table 3 Arboricultural Features Subject to a TPO

Reference number on 1st Schedule of the TPO	TPO Name/Reference	TPO Confirmation Date	ARB Innovators Tree/Group/Hedge Reference
Plot reference 410-W1	TPO No/Ref. TPO No. 410	-	All trees subject to this assessment

5.4.2 TPOs covering a woodland protect the trees and saplings of whatever size within the identified area, including those planted or growing naturally after the Order was made.

5.5 Tree Constraints Plan (TCP)

5.5.1 The location of each arboricultural feature and their associated constraints including canopy spread and RPAs are illustrated on the TCP at Appendix 3. The RPA for the trees has been calculated as prescribed by BS5837:2012 and are shown as pink dashed circles on the Tree Retention and Removals Plan. Existing incursions into the calculated RPAs have also been shown.

5.5.2 The purpose of the TCP is to visually identify the current above and below-ground constraints imposed by existing arboricultural features in terms of stem, crown, and roots, along with any other notable constraints or Site features. When determining future land use or compiling an outline or detailed scheme design, this information must be considered.

6. Arboricultural Impact Assessment (AIA)

6.1 Purpose of the AIA

- 6.1.1 This AIA is undertaken with reference to BS5837:2012 and considering the nature of the proposals. The purpose of the AIA is to assess the anticipated direct and indirect impacts and effects associated with construction of the Proposed Development on existing trees, as described and to the best of our knowledge with the information provided at the time of writing.
- 6.1.2 This can include any tree loss required to implement the layout design as well as any reasonably foreseeable potentially damaging activities proposed in the vicinity of retained trees. Where necessary, the AIA further identifies necessary compensation and mitigation measures where these are deemed appropriate.

6.2 Reference Documents

- 6.2.1 As background information, the following documentation set out in Table 4 below, has been referenced. This report should be read in context provided by the following reference material.

Table 4 Reference Document and Plans Provided

Document Description	Reference No.	Prepared By	Date
Proposed Development Scheme Design	20694-P001 OPTION 1-P001-C	Hertford Planning Service	22 January 2024
Topographical Survey	ST0326_6 Firs Walk_Topo	Stamford Topographical	January 2024

6.3 Assumptions and Limitations of the AIA

- 6.3.1 This AIA has been compiled based on the following assumptions and limitations:

Assumptions

- That all proposed site clearance, earthworks, and construction activities will be restricted to the immediate application area (as denoted by the red line boundary) and not into areas of third-party land beyond the development land.
- The proposed rear patio will be raised by approx. 500mm.
- The foundations for the rear extension to the southeast elevation are likely to be piled with a ring beam due to the proximity of the trees and likelihood of clay subsoil.
- Any temporary works compound will be sited away from trees to be retained and will avoid the soft verges and grassed areas.
- Existing areas of hard surfacing will be utilised wherever possible for movement of vehicles, site compounds and material storage.
- No underground services, utilities, cabling, or trenching will be required within the RPAs of retained trees.

- That no access or tree removal on third party land will be required to facilitate the Proposed Development.

Limitations

- Foundation design is subject to further investigation (trial holes) at Building Regulations stage. The extent of earthworks has not been fully disclosed in detail, nor has information on the depths of any foundations/footing.
- Details on enabling works, such as the installation or diversion of services and utilities by statutory undertakers beyond the Site, were not considered during this AIA.

6.4 Anticipated Arboricultural Losses from the Proposed Development

6.4.1 A Tree Retention and Removals Plan is provided at Appendix 3 which illustrates the relationship between the above and below-ground constraints, including the RPAs associated with the trees, and the direct and indirect impacts, conflicts, and residual effects of the Proposed Development. Some tree removal will be required to implement the Proposed Development, as described below.

Table 5 Summary of the features impacted by the Proposed Development

	Category A	Category B	Category C	Category U
Remove			T5, T6	
Partial Removal/Loss			H2	
Total	0	0	3	0
Retain	T10	T1, T2, T7, T11	T3, T4, T8, T9, G1, G2, H1	
Retain using mitigation measures				
Total	1	4	7	0

- 6.4.2 Except for 2no. trees (category C) which will be removed to facilitate 2no. new parking spaces/turning circle, all individual trees assessed will be retained and incorporated into the Proposed Development, including the only individual category A (High Quality) tree, namely T10. All groups of trees will be retained.
- 6.4.3 A section of 1no. low quality (category C) hedge will be removed to facilitate a 2no. new parking spaces/turning circle.
- 6.4.4 Each arboricultural feature to be removed is subject to a TPO.

6.5 Anticipated Impacts Upon Retained Trees

T7 RPA Incursions from the Proposed Extension on Southeast Elevation

- 6.5.1 The existing footprint of the dwelling will be extended by around 2m to accommodate the construction of a new boot room, an extended utility room, and an integrated kitchen and dining area.
- 6.5.2 There are no new incursions to facilitate this extension. The area of ground currently occupied by the proposed extension falls within the perceived RPA of T7, with a mature oak standing around 300mm lower elevation than the existing footprint of the dwelling. Existing intrusions were discovered within the RPA, with the area defined as hardstanding/paved patio, demarked to the east by a single skin garden brick wall and archway. The construction and style of this patio space suggest that it is a historical component of the house, with a reasonable assumption that it has existed beside the tree for some time.



Figure 2 QR Code: 3D Visualisation of the land use and fall between T7 and the existing footprint of the dwelling and garden brick wall (ARB Innovators Ltd©).

- 6.5.3 Given T7's position at a lower elevation to the developable area, the historic incursion, which is anticipated to comprise compacted and made ground, as well as the existing footprint of the dwelling reasonably assumed to act as an inhibiting barrier to root morphology and extent, the impact arising from the placement of the extension and proposed new patio area is considered minimal.
- 6.5.4 To further reduce the risk of direct or indirect damage to the perceived rooting area of T7, technical solutions are under consideration in accordance with BS 5837:2012, paragraph 5.3.1. It is proposed that the extension and patio area be raised by approximately 500mm above the existing ground level, with the option of using piled foundations with a ring beam, currently being investigated by the Project Architects. This type of foundation design includes the use of steel or concrete lintels which will be installed as a solid base for construction. These steel or concrete lintels will be raised slightly above ground level, sat upon small diameter piles. The use of this foundation design will need to be confirmed by an appointed Geotechnical or Structural Engineer.
- 6.5.5 All works within the perceived RPA of T7 must be undertaken under the direct supervision/guidance of an appointed Arboricultural Clerk of Works (ACoW). The detailed approach to the watching brief will need to be set out in a detailed Arboricultural Method Statement (AMS).
- 6.5.6 During installation of foundations, if any roots with a diameter greater than 25mm are discovered, the Tree Officer will be contacted as recommended within BS5837:2012 clause 7.4.2.7 Note 1 and a discussion will be had with the ACoW and Principal Contractor on how best to proceed.

- 6.5.7 Any tree roots encountered which measure <25mm diameter may be severed using hand tools only (secateurs) and only where necessary. Roots should be pruned to a suitable side shoot. Any exposed roots should be immediately wrapped with wet hessian whilst the excavation is open to mitigate against root desiccation and, as a temporary measure, surrounded with a loose granular infill prior to backfilling with appropriate topsoil. Wherever possible, as much rooting density as possible must be retained.

H1 and H2 RPA Incursions from the Proposed Driveway Widening

- 6.5.8 There will be minor incursions into the RPAs of H1 and H2 to facilitate driveway alterations however, the minor nature of the RPA incursion does not warrant overzealous tree protection measures or alternative means of construction. The impact is considered negligible.

6.6 Anticipated Indirect Arboricultural Impacts to Retained Trees

Spatial Requirements for Contractors during Construction

- 6.6.1 During the extension's construction, contractors may require adequate space to work. The existing access to the eastern extension of the dwelling is limited, consisting of a small strip of grassed amenity lawn with shrub masses and trees constituting the border. It is anticipated that a typical 2m working space will be required for the construction of outside walls and for the movement of construction materials.
- 6.6.2 These spatial constraints limit the usage of Tree Protection Fencing (TPF) around T7, and variations in ground level make it logistically difficult to erect the fencing properly. A different type of tree protection will be required in addition to the conventional default measures defined in BS5837:2012. In this instance, it would be considered appropriate to utilise a combination of stem protection e.g. a wrap-around robust protection barrier such as Trunk Protecta®, and a low-impact temporary ground protection solution in the form of modular panels (GroundGuards MultiTrack) or similar.

Demolition and Site Clearance including Removal of Existing Hard Surfaces

- 6.6.3 A section of the single skin brick wall along the eastern extent of the existing patio is set to be removed and replaced. There are no further existing structures on Site proposed to be removed and so no site clearance is necessary. Existing soil levels within RPAs of retained trees are to be maintained.

Installation of Underground Services and Utilities

- 6.6.4 No detailed service plans have been shared at this stage in the planning and design process. The installation of all services and utilities must be undertaken outside of the RPAs of retained trees.
- 6.6.5 Based on a review of the site layout, it looks that this is possible. If it becomes apparent that services are required inside the RPAs of retained trees, a more thorough study of the arboricultural impacts will be necessary. If this is the case, alternate alternatives should be considered, including trenchless installation methods (e.g., directional drilling, hand excavation, or Airspade excavation) that allow tree roots to be preserved.

Hard and Soft Landscaping

- 6.6.6 There are no anticipated impacts arising from the implementation of any proposed hard and soft landscaping works.

6.7 Above Ground Constraints and Considerations

Tree Crowns

- 6.7.1 The above ground constraints predominantly refer to the impact of the canopy of any retained tree on the Site either by size and form, shadowing, and nuisance factors. The above ground constraints imposed by tree/s, woodland/s and hedge crowns should be considered in relation to the following:
 - The crown's extent and its relationship to any structures. The primary consideration should be whether there will be enough space to prevent branches from damaging structures, post-construction.
 - The proportion of open space beneath the crown and if this will obstruct construction access or on-site activities and is it adequate for the passage of both vehicles and pedestrians.
 - Seasonal nuisance (e.g., leaf fall blocking gutters, fruit fall creating slippery patches and honey dew dripping on vehicles and surfaces).
- 6.7.2 Pruning urban trees to regulate their spatial requirements is a routine practice and might be used to address the issues raised above.

Proposed Tree Works and Pruning

- 6.7.3 Tree Pruning is generally confined to facilitation pruning during the construction phases however, the Proposed Development provides an ideal opportunity to carry out routine, proactive tree management. A specification of tree works is provided in Table 6.

Table 6 Tree Works Specification

Tree Reference No.	Description of Tree Works	Reason	BS5837:2012 Category
T3 – Common ash	Crown lift to 4m on southern extent of crown.	Remove branches overhanging existing roof of dwelling and causing injurious contact.	Category C
These works are not exclusively required for the Proposed Development.			

- 6.7.4 All tree works undertaken must comply with *British Standard 3998:2010 – Tree Work Recommendations* and should therefore be carried out by skilled tree surgery contractors, ideally Arboricultural Association Approved Contractors.
- 6.7.5 All vegetation and, particularly, woody vegetation proposed for clearance, must be removed outside of the bird-breeding season (March - September inclusive). Birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. If this is not practicable, a qualified Ecologist should inspect the vegetation to be removed or pruned for the presence of nesting birds.

7. Arboricultural Method Statement (AMS) 'Heads of Terms'

- 7.1.1 A draft, 'heads of terms' and concise summary of the principles of tree protection for the Proposed Development is included in the following paragraphs. The AMS 'Heads of Terms' provides enough information on tree-related protection methods for a Local Planning Authority to approve the feasibility of a scheme, in accordance with BS5837:2012 Table B.1.
- 7.1.2 A detailed AMS may also be required and should be provided as a 'reserved matter' or pre-commencement planning condition.

7.2 AMS 'Heads of Terms'

- Appointment of ACoW – schedule of monitoring and supervision.
- Confirm the use of proposed piled foundations with a ring beam within the RPA of T7.
- Pre-commencement Site meeting.
- Tree works, as proposed.
- Erection of tree protection barriers and temporary ground protection as may be required. To be signed off by ACoW.
- Main construction phase including any necessary excavations during installation of foundations with RPA of T7.
- Removal of tree protection barriers.

7.3 Arboricultural Clerk of Works (ACoW)

- 7.3.1 It is recommended that the client appoints a suitably qualified arboriculturist to act as an ACoW. The ACoW will be engaged to monitor and oversee the implementation of the works required.
- 7.3.2 The role of the ACoW is a relatively formal one. Normally their involvement should be limited to several site visits where decisions can be made relatively quickly. In the case of this Proposed Development, the following occasions are where the ACoW will be required:
- Initial meeting (usually the pre-commencement meeting, to ensure all required tree protection is in place, and to discuss any required amendments with the Local Planning Authority Tree Officer.
 - Supervision of works within the Root Protection Area (RPA) of trees to be retained during the construction element of the Proposed Development.
 - Completion meeting – to inspect trees to assess for any required works and to confirm that the development has been sufficiently completed, and the tree protection measures can be removed.
- 7.3.3 The ACoW will also be the first contact for arboricultural advice for any issues that arise that are not detailed in this report, such as extra tree works, work required within the RPA of the trees on-site, any damage that has occurred to any of the retained/unmanaged trees, or any breach of the tree protection measures on-site.

7.3.4 During the various stages of the development a record of the completion of the various tree protection works will be kept by the ACoW. This will provide the Council with sufficient evidence that all practicable steps have been taken to prevent damage to the trees, thereby ensuring compliance to the Planning Conditions.

7.4 General Protection Measures for Retained Trees

7.4.1 During construction, retained trees within influencing distance of the proposed works must be adequately protected. Most of the time, this protection will include the installation of mandatory tree protection barriers at the extent of the calculated RPAs to create construction exclusion zones (CEZ).

7.4.2 The tree-protection measures should adhere to the recommendations in BS5837:2012. The purpose of these measures should be understood and well-considered from the start, as they protect trees to be retained within and adjacent to the Site while allowing adequate access for the implementation of the Proposed Development.

7.4.3 Oil, bitumen, cement, or any other potentially hazardous material to trees should not be stacked or discharged within 10 metres of a tree stem. Concrete should not be mixed within 10 metres of a tree.

7.4.4 No fires will be lit where flames are expected to extend to within 5m of tree foliage, branches, or trunk, taking wind direction and fire size into account. Any part of a retained tree should not have notice boards, telephone cables, or other services attached to it.

7.5 Project Specific Tree Protection Fencing (TPF)

7.5.1 The TPF should be robust enough to restrict being breached from the type of construction activity taking place on Site and suitable for the degree and proximity of works to retained trees. Fencing to be installed must be periodically inspected to ensure that they remain fit for purpose and, where required, maintained, or improved throughout the duration of demolition and construction activities on Site.

7.5.2 Considering the minimal new incursions of potentially impactful works within proximity to retained trees, along with assumed minimal requirement for heavy plant or machinery, it is recommended that Tree Protection Fencing is of a low intensity specification. A non-default tree protection specification should be considered comprising of an orange mesh fencing and wooden stakes, combined with visible, all-weather signs attached to the protective fencing with the following "Construction Exclusion Zone - No Access" The specification is recommended as a practical solution to meet the tree protection requirements.

7.5.3 These tree protective measures will ensure suitable protection of trees and associated soils. Given the size of the development there is sufficient space for materials and machinery to be stored within the Site, on areas of existing hardstanding and therefore there it anticipated there will be no requirement to move the non-default fencing during the development.

7.5.4 Barriers will be erected prior to the start of any demolition and/or construction work unless they already exist. When barriers are installed, the area is designated as a CEZ. Protective barriers will not be removed or altered unless the appointed ACoW has been consulted and the acting local authority has agreed.

7.6 Piling rigs and Cranes

- 7.6.1 Work must be carefully planned so that there is sufficient room to avoid hitting the canopies of retained trees during transportation or operation. Loads that are wide or tall should not encounter retained trees. Arboricultural supervision may be required however, it is the responsibility of the contractor to assess and plan the work. Any access facilitation pruning required is detailed in the tree surgery schedule.

7.7 Site Compounds, Portakabins, Containers, and other Temporary Structures

- 7.7.1 Site compounds, Portakabins, Containers, and other temporary structures may be used in root protection areas in some cases if prior consent is obtained from the acting local planning authority. Prior to installation, the method for installing the buildings and an assessment of whether temporary ground protection is required must be agreed upon and specified with the ACoW.

7.8 Ongoing Arboricultural Monitoring of Retained Trees

- 7.8.1 Any trees that are to be retained and have the potential to be impacted by development demolition or construction should be routinely monitored both during and after construction.
- 7.8.2 The goal of arboricultural monitoring is to ensure that all tree protection measures are fit for purpose, that they are implemented in accordance with any approved details, and that any previously unforeseen arboricultural issues are quickly identified and appropriately addressed. This is particularly relevant where there is public access, as recommended in section 8.8.3 of BS5837:2012 - Post Development Management of Existing Trees, to satisfy the landowner's duty of care.

8. Conclusions and Recommendations

- 8.1.1 The tree survey identified 15no. arboricultural features composed of 11no. individual trees, 2no. groups of trees and 2no. hedges.
- 8.1.2 This report accompanies a full, detailed planning application to LPA, East Herts District Council, for a ground floor extension on the southeast elevation of the property, proposed raised patio, first floor extension defined as 'Bedroom 3', and 2no. car parking spaces/turning area off the existing driveway at the front of the property.
- 8.1.3 Except for 2no. trees (category C) which will be removed to facilitate 2no. new parking spaces/turning circle, all individual trees assessed will be retained and incorporated into the Proposed Development, including the only individual category A (High Quality) tree, namely T10. All groups of trees will be retained.
- 8.1.4 A section of 1no. low quality (category C) hedge will be removed to facilitate a 2no. new parking spaces/turning circle.
- 8.1.5 Subject to the implementation of the advice contained within this AIA, the Proposed Development can be implemented with minimal arboricultural impact. The loss of 2no. individual trees of low quality and partial removal of 1no. low quality hedge could be readily mitigated through the provision of new tree and hedgerow planting within the Site.
- 8.1.6 All the retained trees can be adequately protected during construction activities to sustain their health and longevity. Tree Protection Fencing should be robust enough to restrict being breached from the type of construction activity taking place on Site and suitable for the degree and proximity of works to retained trees.
- 8.1.7 An Arboricultural Method Statement (AMS) and finalised Tree Protection Plan will need to be produced. This detail can be agreed and submitted at a later stage as part of a pre-commencement planning condition (by agreement with the applicant).



TREE SURVEY METHODOLOGY

APPENDIX 1



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BS5837:2012 Methodology and Arboricultural Data Collection

The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

Stage 1: Tree Constraints & Feasibility Study - for most planning applications where there are trees on or adjacent to a site, an initial assessment of the tree population and tree constraints will be required. This should be instructed as early as possible in the planning process and includes:

- Tree Survey Schedule: Presents data collected during the tree survey which is made to identify & categorise all trees that may be impacted by a proposal.
- Tree Constraints Plan: Tree locations, retention categories and consideration of associated above and below ground constraints.
- Tree Constraints and Opportunities Assessment: A preliminary report written to inform the design and layout of future development of the site.

Stage 2: Arboricultural Impact Assessment & Outline Mitigation Measures. This will be normally be required following a Stage 1 survey and report. Components will vary depending on design complexity, but may include:

- Arboricultural Impact Assessment (AIA): An assessment of the anticipated impact of the proposed development on the tree population (existing & proposed).
- Draft Tree Protection Plan (where appropriate): Indicative plan of tree protection measures.
- 'Heads of Terms' Arboricultural Method Statement: Outlines principles of the methodology required to mitigate impact on existing trees.

BS5837:2012 outlines guidance on how to assess an arboricultural feature's quality and advises on assessing both direct and indirect impacts. Neither a methodology for defining impacts nor specific criteria for determining an arboricultural feature's perceived sensitivity are provided.

Stage 3: Detailed Tree Protection & Discharge of Conditions. This is sometimes required following a Stage 2 report if the tree protection requirements are complex; or if there is a planning condition or reserved matters requirement to do so. The stage three report may include the following components:

- Detailed Tree Protection Plan (TPP).
- Arboricultural Method Statement (AMS): detailed methodology to include arboricultural supervision and site monitoring schedule (if required).

Stage 4: Arboricultural Supervision & Post-Construction. This may include:

- Written report as evidence of arboricultural supervision, site monitoring, reinstatement, and planting and aftercare (as required).

RIBA Design Guidance

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

The process is broken down to coordinate broadly with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage 1: Tree Survey	2: Concept	4: Feasibility
Stage 2: Arboricultural Impact Assessment	3: Developed Design	5: Proposals
Sage 3: Arboricultural Method Statement and Tree Protection Plan	4: Technical Design	6: Technical Design
Arboricultural Supervision & Post-Construction.	5: Construction	7: Demolition and construction

The trees on the Site were originally surveyed without reference to site layout as detailed in paragraph 4.4.1.1 of BS5837:2012. However, for the purposes of the Arboricultural Impact Assessment the Proposed Development for the Site has been considered.

Small trees with a stem diameter less the 75mm were generally not surveyed as they would either be easily replaced or relocated.

Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.

Within the tree survey schedule, each surveyed Tree (T), Group (G), Hedge (H), Woodland (W) on or adjacent to the site is given a reference number. Metal tags have not been used for this survey as identification on-site does not require this. The tree numbers associated with each tree are cross referenced within the schedule and plans at Appendix 2 and 3 respectively.

Full details of the dimensions and measurements recorded including detailed definitions, can be found at Appendix 2.

Tree condition, health and structural integrity were inspected in accordance with the Visual Tree Assessment (VTA) method (*Mattheck 2007*), which provides a systematic framework for formal tree inspection, as summarised:

1. VTA Stage 1 - Inspection of the tree for visual evidence of internal defects.
2. VTA Stage 2 – Confirmation of defects and measuring their extent.
3. VTA Stage 3 – Assessment of defects and estimation of residual strength.

Ancient Woodland, Ancient, Veteran and Notable trees

For this BS5837:2012 survey, the methodology set out by the Recognition of Ancient, Veteran & Notable Trees – RAVEN (Julian Forbes-Laird, 2018) has been adopted to survey and assess potential Ancient, Veteran or Notable trees.

The Forestry Commission (FC) and Natural England (NE) have published guidance and recommendations to safeguard Ancient Woodland, Ancient, and Veteran trees against development. In summary this guidance advises on the use of semi-natural buffer zones as a means of protection with minimum distances identified as:

- Fifteen metres between any development and ancient woodland.
- Fifteen times the diameter of its stem or 5m from the edge of its canopy, if that's greater, around any ancient or veteran tree.

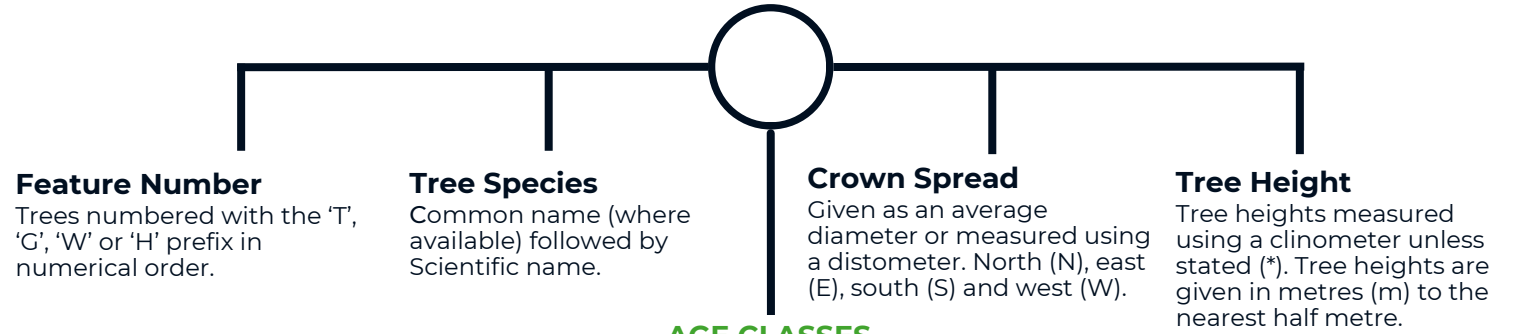


BS5837 TREE SURVEY SCHEDULE

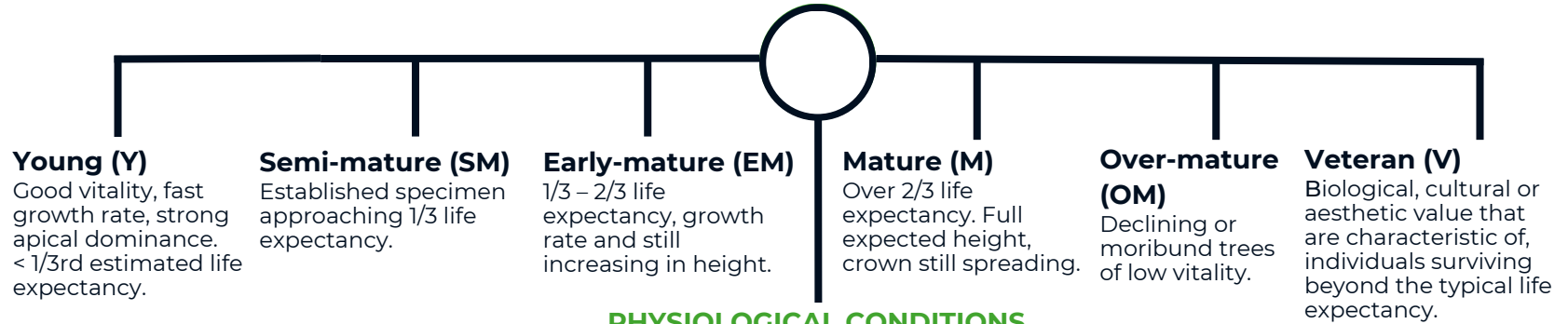
■ **APPENDIX 2**

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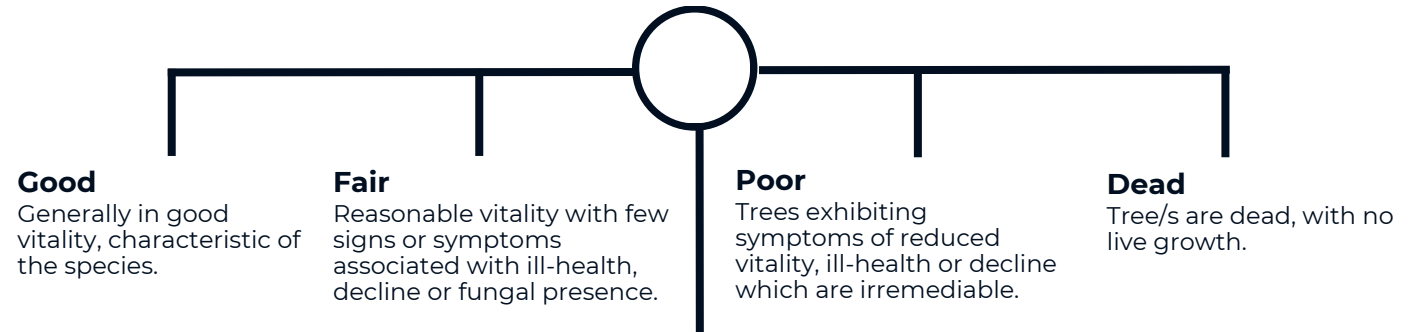
MEASUREMENTS AND IDENTIFICATION



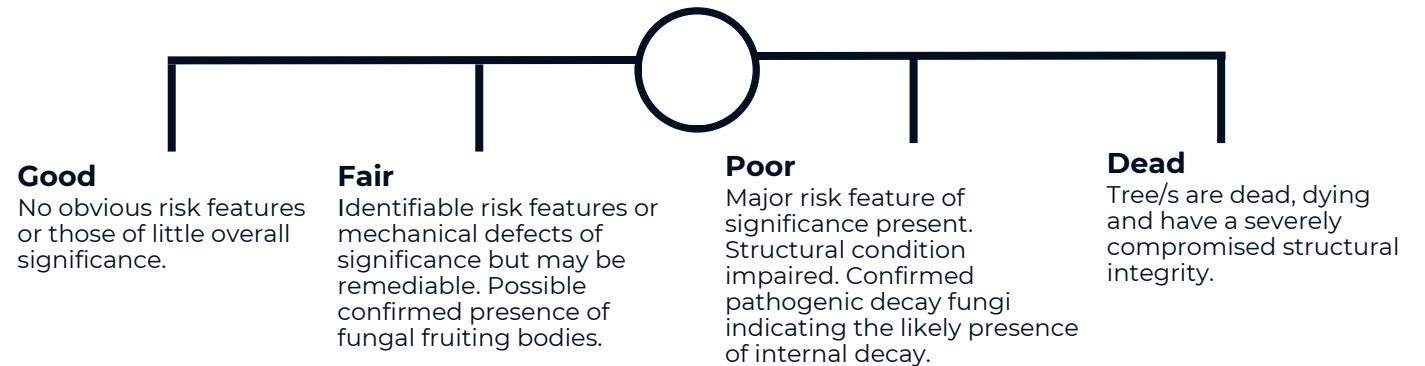
AGE CLASSES



PHYSIOLOGICAL CONDITIONS



STRUCTURAL CONDITIONS



Root Protection Area (RPA)

The below ground constraints are generally summarised as the root protection areas (RPA). The RPA is an area equivalent to a circle with a radius 12 times the diameter of the trees measured at 1.5 metres for single stemmed trees. For trees with more than one stem, one of two calculation methods should be used. In all cases, the stem diameter(s) should be measured in accordance with Annex C, and the RPA should be guided from Annex D of BS5837:2012. Both RPA radius in metres from the main stem and total area for the RPA as square metres are provided.

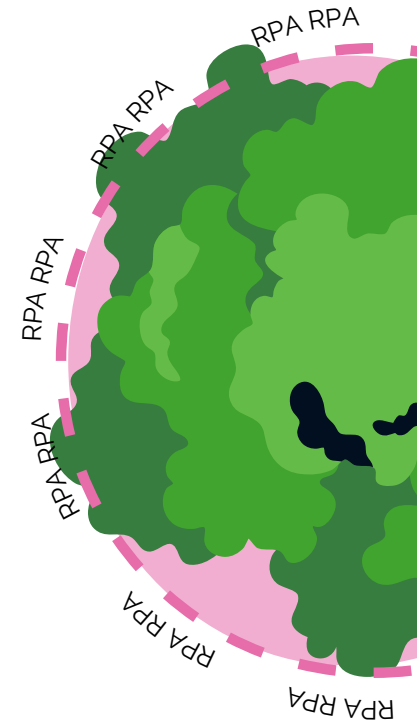
An average stem diameter is provided for tree groups, wooded areas and hedges. Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter or 5m beyond the crown whichever is greater.

General Notes

Each individual tree has been given an identification number. Metal tags have not been used for this survey as identification on-site does not require this. The tree numbers associated with each tree are cross referenced within the schedule and Tree Constraints Plan/s. Small trees with a stem diameter less than 75mm were not surveyed as they would either be easily replaced or relocated.

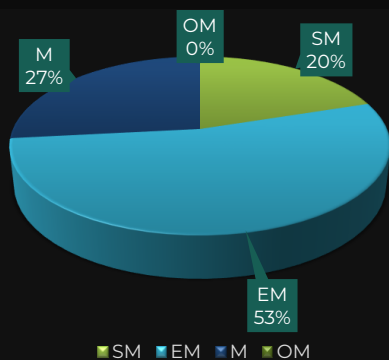
Abbreviations

- est - Estimated stem diameter
- avg - Average stem diameter for multiple stems
- upto - Maximum stem diameter of a group



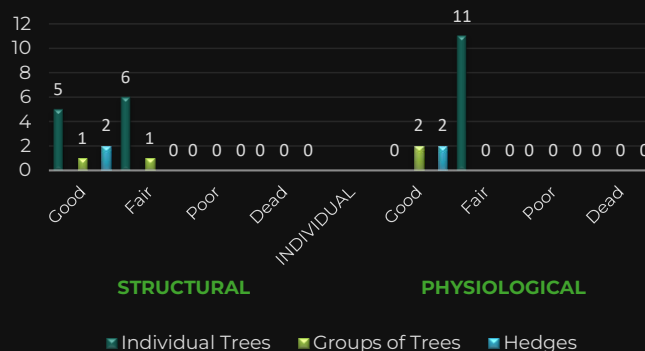
Age Distribution of the Tree Population.

The distribution of the tree populations age is useful for understanding expected longevity which can help inform the BS5837 useful life expectancy, and help homeowners or property managers to make informed decisions on mitigation, tree management and replacement.



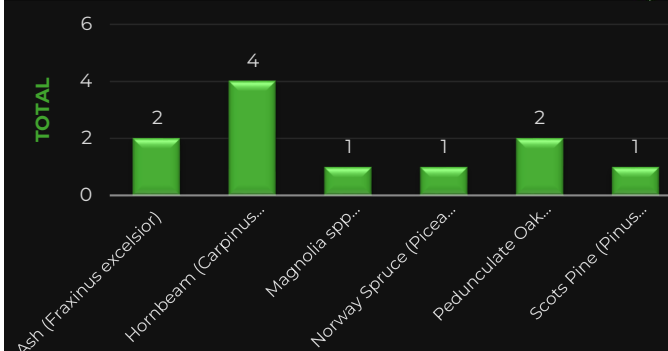
Distribution of Physiological and Structural Conditions across the Tree Population.

Physiological condition provides an indication of the vitality of the tree. Structural condition is related to the presence of defects that can lead to failures.



Species Composition of the Individual Tree Population.

The proportions of any given family, genus, species, and cultivar which make up the total individually recorded tree population across the Site.



Ancient Woodland and Ancient, Veteran and Notable Trees

Ancient Tree - A tree that has passed beyond maturity and is old, or aged, in comparison with trees of the same species. Characterised by biological, cultural, or aesthetic features of interest.

Ancient Woodland - Any wooded area that has been continuously wooded since 1600 AD

Veteran Tree - Exhibiting features of biological, cultural, or aesthetic value characteristic of species surviving beyond the typical age range.

Notable Tree - mature trees which may stand out in the local environment because they are large in comparison with other trees around them.

Forestry Commission and Natural England Guidance for the protection of ancient woodland, ancient trees and veteran trees from development and the use of semi-natural buffer zones:

- Fifteen metres between any development and ancient woodland.

- Fifteen times the diameter of its stem or 5m from the edge of its canopy, if that's greater, around any ancient or veteran tree.

ANCIENT WOODLAND

ANCIENT TREES

VETERAN TREES

NOTABLE TREES

0

0

0

1

BS5837:2012 TREE SURVEY SCHEDULE

CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY U
Trees with an estimated remaining contribution of at least 40 years. 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.	Trees with an estimated remaining life expectancy of at least 20 years. Trees that might be included in category A, but are downgraded because of impaired condition or trees lacking the special quality necessary to merit the category A designation.	Trees with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees 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.
Sub-categories	Mainly arboricultural value 1	Mainly landscape value 2	Mainly cultural or conservation value 3
Summary of Individual trees, Groups, Woodlands and Hedges			
T10	T1, T2, T7, T11	T3, T4, T5, T6, T8, T9, G1, G2, H1, H2	
1	4	10	0
Estimated Remaining Contribution (ERC)			
> 40 years	> 20 years	< 20 years	< 10 years
Breakdown of Arboricultural Features for each BS5837:2012 Category			
Trees 1	Trees 4	Trees 6	Trees 0
Groups 0	Groups 0	Groups 2	Groups 0
Woodlands 0	Woodlands 0	Woodlands 0	Woodlands 0
Hedgerows 0	Hedgerows 0	Hedgerows 2	Hedgerows 0
Percentage of tree population 6.7%	Percentage of tree population 26.7%	Percentage of tree population 66.7%	Percentage of tree population 0.0%
In assigning the BS5837:2012 Category, particular consideration has been given to the presence of any structural defects for each feature, the size and form of each feature, its suitability within the context of a proposed development, and the location of each feature relative to existing site features e.g. its screening value or landscape amenity value.			

INDIVIDUAL TREES															ESTIMATED REMAINING CONTRIBUTION (erc)	BS5837 CATEGORY	RPA (m ²)	RPA RADIUS (m)
TREE NO.	TAG NO.	SPECIES (COMMON & SCIENTIFIC NAME)	HEIGHT (m)	NO. OF STEMS	STEM DIA (mm)	CROWN SPREAD (m)				CROWN CLEAR (m)	AGE CLASS	PHYS COND	STRUC COND	ASSESSMENT OBSERVATIONS AND PRELIMINARY RECOMMENDATIONS				
T1	0	Norway Spruce (Picea abies)	15	1	550	5	4	5	4	3.5	M	Good	Fair	Previously reduced, topped at 15m. Driveway at base, to the west. Light ivy cover on main stem. Small diameter broken, hanging branch over driveway, north side at circa. 7m - remove. Dense undergrowth at base. No obvious major defects.	20+	B1	137	6.6
T2	0	Hornbeam (Carpinus betulus)	10	1	360	4.5	4	5.5	6	3	EM	Fair	Fair	Asymmetrical crown, biased to the west. Suppressed crown form. Hard standing at base, within 1m, bin store and well-trodden gravel path. Small cavity at base, between two buttress flares, west side. Heartwood decay noted but not significant at the time of assessment.	20+	B1	59	4.3
T3	0	Ash (Fraxinus excelsior)	17	1	440	6.5	4	7	7	4	EM	Fair	Fair	Asymmetric crown form, biased west. Upper crown thinning, several large diameter (>35mm) branches south and west in middle third of crown. Several failed and suspended dead branches hung up in nearby vegetation - remove. Crown hangs over property and touches roof.	10+	C1	88	5.3
T4	0	Hornbeam (Carpinus betulus)	4.5	3	200	1	1	1	1	0	EM	Good	Fair	Multi stemmed hornbeam, on the edge of driveway. Routinely topped.	10+	C1	21	2.6
T5	0	Ash (Fraxinus excelsior)	6	1	160	1.5	1	1	1.5	3	SM	Fair	Fair	Outgrown hedgerow tree. Previously topped.	10+	C1	12	1.9
T6	0	Hornbeam (Carpinus betulus)	6	1	200	0.5	1	2	1.5	3	SM	Fair	Fair	Outgrown hedgerow tree. Previously topped.	10+	C1	18	2.4
T7	0	Pedunculate Oak (Quercus robur)	20	1	795	6	7	6	5.5	7	M	Good	Fair	Crown previously reduced, establishing epicomic growth emerging from pruning points. Pruning wounds on main stem and in lower crown. Small diameter (<35mm) deadwood throughout middle third of crown. Small depression at base, east side between two buttress. Existing incursion into RPA to the west, with the property and courtyard positioned within 4m.	20+	B1	286	9.5
T8	0	Scots Pine (Pinus sylvestris)	11	1	250	2.5	2	1	1	7	EM	Fair	Fair	Boundary tree not featured on the Topo.	10+	C1	28	3.0
T9	0	Pedunculate Oak (Quercus robur)	13.5	1	640	7	4.5	2.5	6	4	EM	Fair	Fair	Previously reduced, several large diameter (>35mm) dead branches. Pruning wounds. Die back in upper crown. Woodpecker hole at 5 and 7m, south and west. Sap run/exudate west from woodpecker hole/Branch socket cavity. Possible hollowing. Tree exhibiting features associated with mortality spiral, reduced vitality. Cause unknown.	10+	C1	185	7.7

INDIVIDUAL TREES																		
TREE NO.	TAG NO.	SPECIES (COMMON & SCIENTIFIC NAME)	HEIGHT (m)	NO. OF STEMS	STEM DIA (mm)	CROWN SPREAD (m)				CROWN CLEAR (m)	AGE CLASS	PHYS COND	STRUC COND	ASSESSMENT OBSERVATIONS AND PRELIMINARY RECOMMENDATIONS	ESTIMATED REMAINING CONTRIBUTION (erc)	BS5837 CATEGORY	RPA (m ²)	RPA RADIUS (m)
T10	0	Hornbeam (Carpinus betulus)	24	1	950	11	10	12	11	2.5	M	Good	Fair	Small diameter (<35mm) deadwood throughout the crown. Several branch stubs from previous branch failures. Large tree for species, considered notable.	40+	A1	408	11.4
T11	0	Magnolia spp (Magnolia spp)	9	3	300	5	5.5	6	4.5	2.5	M	Good	Fair	Characteristic for the species. Multi stemmed from base. Situated within an old courtyard garden.	20+	B1	128	6.4

GROUPS OF TREES																		
TREE NO.	TAG NO.	SPECIES (COMMON & SCIENTIFIC NAME)	HEIGHT (m)	NO. OF STEMS	STEM DIA (mm)	CROWN SPREAD (m)				CROWN CLEAR (m)	AGE CLASS	PHYS COND	STRUC COND	ASSESSMENT OBSERVATIONS AND PRELIMINARY RECOMMENDATIONS	ESTIMATED REMAINING CONTRIBUTION (erc)	BSS837 CATEGORY	RPA (m ²)	RPA RADIUS (m)
G1	0	Holly (Ilex aquifolium), Hornbeam (Carpinus betulus), Laurel	6	1	140	1	1.5	1	1.5	0	EM	Fair	Good	Dense group, mixed species. Hornbeams on eastern boundary previously reduced in height (topped) at 4m.	10+	C2	8.9	1.7
G2	0	Holly (Ilex aquifolium), Hornbeam (Carpinus betulus), Pedunculate Oak (Quercus robur)	5.5	1	110	2	1	2	2	0	SM	Good	Good	Rhododendron. Unmanaged hedge.	10+	C2	4.5	1.2

GROUPS OF TREES																		
TREE NO.	TAG NO.	SPECIES (COMMON & SCIENTIFIC NAME)	HEIGHT (m)	NO. OF STEMS	STEM DIA (mm)	CROWN SPREAD (m)				CROWN CLEAR (m)	AGE CLASS	PHYS COND	STRUC COND	ASSESSMENT OBSERVATIONS AND PRELIMINARY RECOMMENDATIONS	ESTIMATED REMAINING CONTRIBUTION (erc)	BS5837 CATEGORY	RPA (m ²)	RPA RADIUS (m)
						N	E	S	W									
H1	0	Holly (Ilex aquifolium)	3	1	100	0.5	0.5	0.5	0.5	0	EM	Good	Good	0		4.5	1.2	
H2	0	Holly (Ilex aquifolium), Hornbeam (Carpinus betulus), Privet, Rhododendron.	3	1	100	1	0.5	1	0.5	0	EM	Good	Good	0	10+	4.5	1.2	

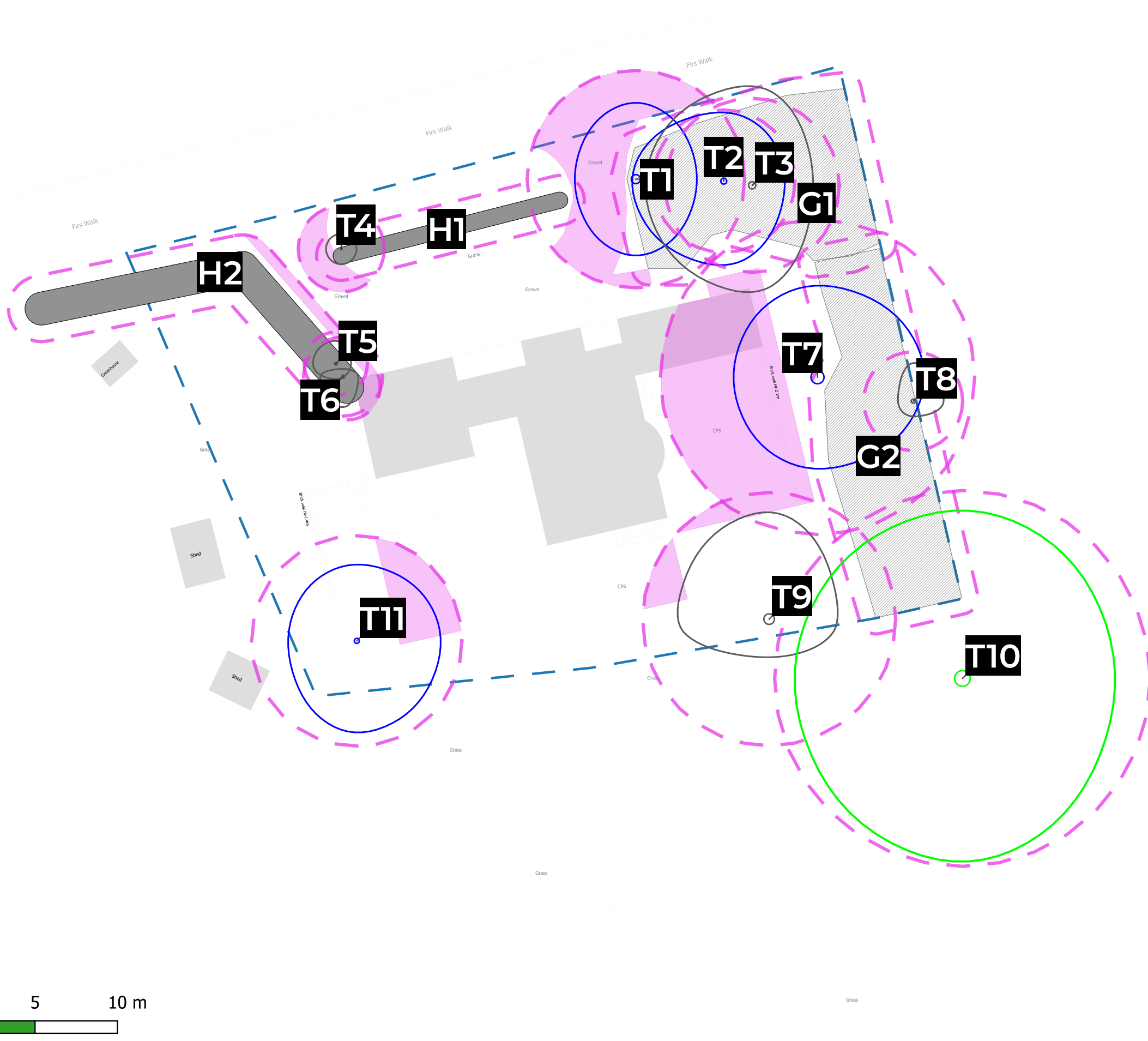


ARBORICULTURAL PLANS

APPENDIX 3



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KEY

Individual Trees (Crown and RPA)

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)

Groups of Trees (Crown and RPA)

- Category C (Low Quality)

Hedges (Crown and RPA)

- Category C (Low Quality)

Existing Site Features

- Existing Root Protection Area (RPA) Incursion

Boundary and Mapping

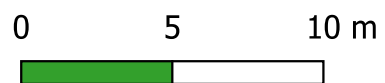
- Arboricultural Survey Boundary
- Application Boundary

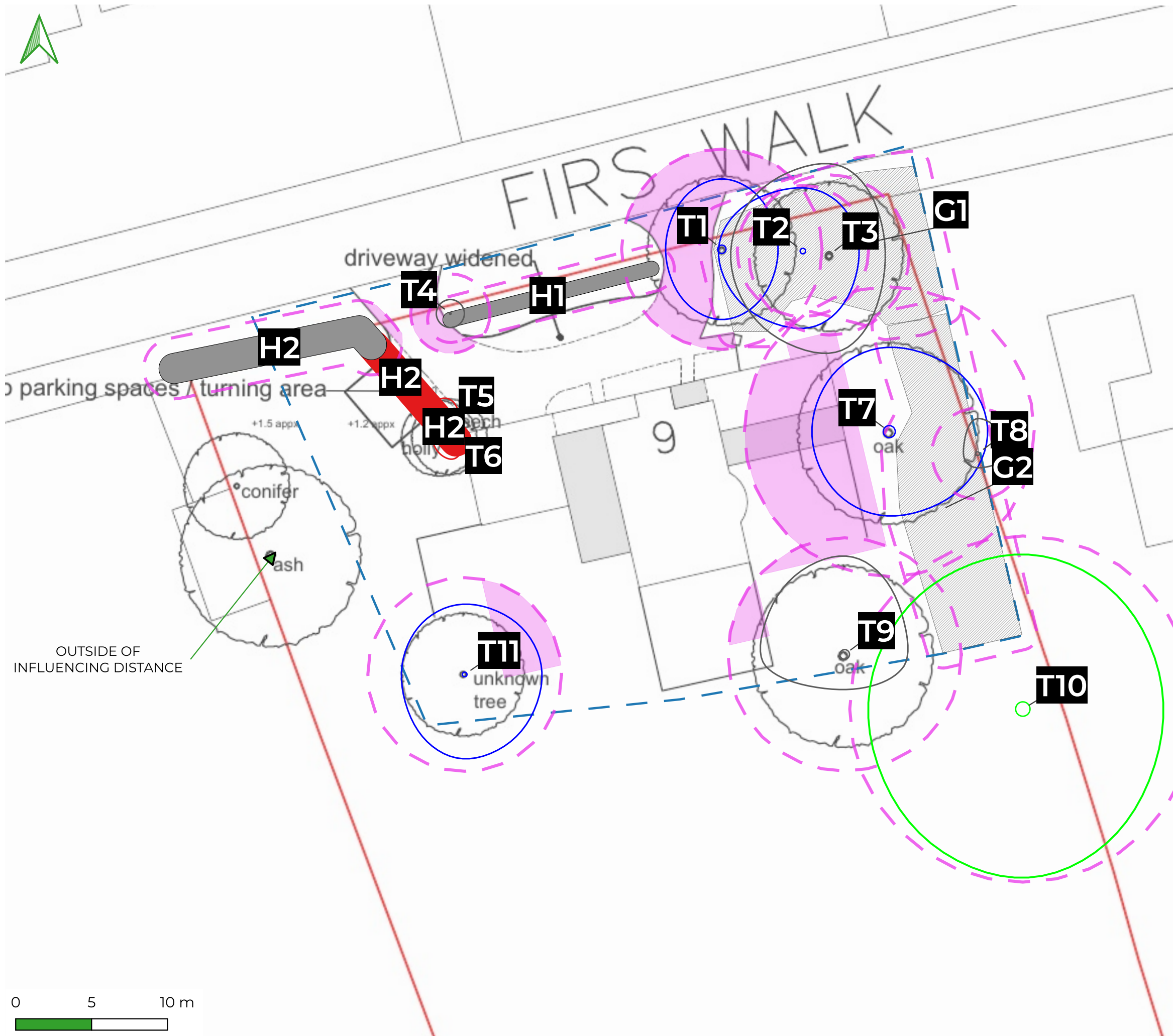


ARB Innovators Ltd
3.15 Hollinwood Business Centre, Albert Street, Oldham, England, OL8 3QL

T: 07837 794373
E: support@arbinnovators.co.uk
W: www.arbinnovators.co.uk

CLIENT:	Louise Willcox	
PROJECT:	Firs Walk 6, Tewin Wood	
TITLE:	Tree Constraints Plan	
SCALE @ A3:	DRAWN:	APPROVED:
1:250	CTT	CTT
PROJECT No:	DATE:	
1007	05/02/2024	
DRAWING No:	REV:	
240216 1007 TCP V1	1	





KEY

Individual Trees (Crown and RPA)

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)

Groups of Trees (Crown and RPA)

- Category C (Low Quality)

Hedges (Crown and RPA)

- Removed (RPA shown removed)
- Category C (Low Quality)

Existing Site Features

- Existing Root Protection Area (RPA) Incursion

Boundary and Mapping

- Arboricultural Survey Boundary
- Application Boundary

20694-P001 OPTION 1-P001-C



ARB Innovators Ltd
3.15 Hollinwood Business Centre, Albert Street, Oldham, England, OL8 3QL

T: 07837 794373
E: support@arbinnovators.co.uk
W: www.arbinnovators.co.uk

CLIENT:	Louise Willcox		
PROJECT:	Firs Walk 6, Tewin Wood		
TITLE:	Tree Retention and Removals Plan		
SCALE @ A3:	DRAWN:	APPROVED:	
1:250	CTT	CTT	
PROJECT No:	DATE:		
1007	19/02/2024		
DRAWING No:	REV:		
240219 1007 TRRP V1	1		



CAVEATS, LIMITATIONS AND REFERENCES

APPENDIX 4



#WEAREINNOVATORS

Caveats and Limitations

The contents of this report are valid for a period of one year (**18 months**) from the date cited.

An assessment of statutory and non-statutory constraints has been carried out using publicly accessible third-party information and aerial imagery. While this is deemed to be broadly accurate, in some instances no specific date is given for the information and images used and ARB Innovators cannot and will not accept liability for any deficiencies in third-party information.

This is a report which should be used to accompany a planning application and provides no detail specifically in relation to the condition or quantification of risk posed by trees. This report in no way constitutes a tree risk-benefit survey nor should it be used exclusively to assign remedial management to trees. Where concerns for tree condition and risk exist, the necessary and appropriate tree inspections should be carried out using an appropriate methodology.

Trees are growing dynamic structures. Whilst reasonable effort has been made to identify tree-risk features (defects) within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. No tree is ever safe due to the unpredictable laws and forces of nature. As a result of this, natural failure of intact trees will occur; extreme climatic conditions can cause damage to even apparently healthy trees.

This inspection was undertaken from ground level and in accordance with stage one VTA, involving the use of non-invasive methods to identify tree health issues and structural defects by visual observation. Should a more detailed inspection be required then this will be highlighted in the recommendations. This may involve the use of decay detection tools or aerial inspection (stage two VTA) and interpretation of findings to form a prognosis (stage three VTA).

The survey has only been undertaken from land within the Client's ownership, from public land or from areas where formal access has been arranged. Where trees have been captured beyond the Site boundary, all dimensions of trees and their associated parts are based on estimation unless otherwise stated.

This is an arboricultural report and as such no reliance should be given to comments relating to buildings, engineering, or soil. Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (NHBC. 'Chapter 4.2- Building Near Trees'. NHBC Standards 2016. 2016).

Further, this report does not rely on ecological or archaeological data. If either is commented upon within the report further professional advice should be sought.

Technical References

This Arboricultural Assessment was prepared in accordance with or following the guidance contained within the following technical references:

- Town and Country Planning Act 1980
- National Planning Policy Framework, published by the MHCLG
- British Standards Institute. BS 5837 (2012) *Trees in relation to design, demolition and construction - Recommendations*, London: BSI.
- British Standards Institute. BS 3998:2010 *Tree Works - Recommendations*, London: BSI.
- British Standards Institute. BS 8545 (2014) *Trees: from nursery to independence in the landscape - Recommendations*, BSI
- Royal Institute of British Architects, RIBA Plan of Work 2020 Overview, RIBA (2020).
- Fay, N., Dowson, D., Helliwell, R. (2005) *Tree Surveys: A Guide to Good Practice*, The Arboricultural Association
- Lonsdale D. (1999). *Principles of Tree Hazard Assessment and Management*, Research for Amenity Trees No. 7, Stationary Office London
- Mattheck, C. (2007) *Updated Field Guide for Visual Tree Assessment*
- Mattheck, C & Breloer, H (2006) *The Body Language of Trees: A Handbook for Failure Analysis*. Research for Amenity Trees No. 4. DETR
- Weber, K., Mattheck, C. (2003) *Manual of Wood Decays in Trees*, The Arboricultural Association
- R.G. Strouts & T. G. Winter, *Diagnosis of Ill- Health in Trees* (7th Impression, TSO - 2013)
- Duncan Slater. (2018) *Natural bracing in trees: management recommendations*. *Arboricultural Journal* 40:2, pages 106-133.
- National Joint Utilities Group (2007) *Volume 4, Issue 2: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees*



LEGISLATION AND POLICIES

APPENDIX 5



#WEAREINNOVATORS

Legislation

Legislation	Definition
Town and Country Planning Act 1990	<p>Section 197 places a duty on the local planning authority to ensure that, where appropriate, planning conditions are imposed which require the preservation or planting of trees.</p> <p>Section 198 provides local planning authorities with the powers to impose Tree Preservation Orders where it is expedient in the interests of amenity.</p> <p>The role of a TPO is to protect specific trees, groups of trees and woodlands for the purpose of amenity. In the Secretary of State's view <i>'Orders should be used to protect trees and woodlands if their removal would have a significant negative impact on the local environment and its enjoyment by the public'</i>.</p>
Town and Country Planning (Tree Preservation) (England) Regulations 2012	<p>These Regulations govern the administration of Tree Preservation Orders. They make it a statutory offence to undertake specified activities without the formal consent of the local planning authority.</p> <p>Prohibited activities include:</p> <ul style="list-style-type: none"> • Cutting down; • Topping; • Lopping; • Uprooting; • Wilfully damaging; and, • Wilfully destroying. <p>Exemptions for the need to obtain formal consent include, but are not limited to:</p> <ul style="list-style-type: none"> • Dead trees. • The removal of dead branches. • Works necessary to remove a risk of serious harm. • Works necessary to implement a planning permission (excluding outline planning permission) or where permission is granted under the Town and Country Planning (General permitted Development Order 1995) (as amended).

Legislation

Legislation	Definition
Forestry Act 1967	<p>Tree felling is also restricted under the Forestry Act 1967.</p> <p>If you own your home, you don't need permission to fell a tree that's solely within your garden unless it's:</p> <ul style="list-style-type: none"> • Subject to a Tree Preservation Order • In a Conservation Area. <p>Where a tree must be felled outside of a private garden, you may need a felling licence.</p>
The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Species and Habitat Regulations 2017 (as amended)	<p>Provides statutory protection of birds, bats and other species that can inhabit trees. The Natural Environment and Rural Communities Act 2006 (Section 41 England and Section 42 Wales) also places a duty on Local Planning Authorities to consider biodiversity when carrying out their duties.</p> <p>The Conservation of Habitats and Species Regulations 2017 specifically provides safeguards for European Protected Sites and Species (as listed in the Habitats Directive). This has recently been amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019 which continue the same provision for European protected species, licensing requirements, and protected areas now that the UK has left the European Union.</p> <p>Great care is required to avoid an offence under the above legislation, and consideration should be given to the potential presence of protected species within a tree subject to future works. Where the presence of protected species is suspected, the project ecologist or Natural England should be contacted for advice before works proceed.</p>

National Planning Policy

Planning Policy	Definition
National Planning Policy Framework (2023)	<p>Key relevant principles from the National Planning Policy Framework (2023) include the following:</p> <p>Paragraph 131: <i>Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places.</i></p> <p>Paragraph 174: <i>Planning policies and decisions should contribute to and enhance the natural and local environment by: - Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of ... trees and woodland;</i></p> <p>Paragraph 179: <i>To protect and enhance biodiversity and geodiversity, plans should: - Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.</i></p> <p>Paragraph 180: <i>When determining planning applications, local planning authorities should apply the following principles: - Development resulting in the loss or deterioration or irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists;</i></p>



GLOSSARY OF TERMS

APPENDIX 6



#WEAREINNOVATORS

Common Terms used in this Report

Term	Acronym	Definition
Ancient Tree	-	A tree that has passed beyond maturity and is old, or “aged”, in comparison with trees of the same species.
Ancient Woodland	AW	Characterised by biological, cultural, or aesthetic features of interest. Any wooded area that has been continuously wooded since 1600 AD.
Arboricultural Method Statement	AMS	Methodology for the implementation of any aspect of development that is within the root protection area or has potential to result in loss of or damage to a tree to be retained.
Arboriculturist	-	A person who has, through relevant education, training, and experience, gained professional expertise in the field and study of trees.
Construction	-	The action of building something, typically a large structure.
Construction Exclusion Zone	CEZ	The area based on the root protection area from which access is prohibited for the duration of demolition and construction.
Crown	-	The foliage bearing section of the tree formed by its branches and not including any clear stem/trunk.
Crown reduction	-	Operation that results in an overall reduction in the height and/or spread of a tree’s crown by means of a general shortening of the smaller diameter twigs and/or branches comprising the outer peripheral crown structure, while retaining the main framework of heavier stems and branches.

Common Terms used in this Report

Term	Acronym	Definition
Crown lift or Crown raise	-	Selective removal of lower branches from a tree crown to provide clearance.
Dead wood	-	Non-living branches or stems due to natural ageing or external influences. Durability and retention or deadwood will vary by tree species.
Fungi	-	Organisms of several evolutionary origins, most of which are multicellular and grow within dead organic matter or living organisms (Wood decay fungi are specialised forms which have co-evolved with woody plants.)
Included Bark	-	Bark of adjacent parts of a tree (usually in forks, acutely angled branches, or basal flutes) which is in face-to-face contact, so that there is a weakness due to the lack of a woody union.
Occlusion	-	The process whereby a wound is progressively closed by the formation of new wood and bark around it.
Root Protection Area	RPA	A general term for the wood, cambium and bark that form around a wound on a woody plant. In British Standards (BS5837:2012) area of perceived rooting, calculated from a measurement of the tree' stem. Tree root zone to be protected from construction damage.

Common Terms used in this Report

Term	Acronym	Definition
Services	-	Any above or below ground structure or apparatus required for utility provision.
Stem	-	In a tree, the principal portion of the woody structure (i.e., the trunk), or one of several such portions with similar size and status.
Subsidence	-	In relation to soil or structures resting in or on soil: a sinking due to shrinkage when clay soils dry out, sometimes due to extraction of moisture by tree roots. Also termed as 'indirect damage'.
		In relation to branches of trees: a term that can be used to describe a progressive downward bending due to increasing weight.
Tree	-	A woody plant which typically has a single stem and, in maturity, attains a height of at least four metres and a stem diameter at breast height of at least 75mm.
Tree Preservation Order	TPO	A TPO is a written order from a local planning authority to protect specific trees or whole woodland areas. The aim is to protect trees that have amenity value for the public.
Veteran Tree	-	Trees exhibiting features of biological, cultural, or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.
Vigour	-	In tree assessment, an overall measure of the rate of shoot production, shoot extension, or diameter of growth.

Common Terms used in this Report

Term	Acronym	Definition
Visual Tree Assessment	VTA	In addition to the literal meaning, a system developed by Mattheck and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.
Vitality	-	In tree assessment, an overall appraisal of physiological and biomechanical processes, in which high vitality equates with healthy function.



TREE PROTECTION FENCING SIGNAGE

APPENDIX 7

#WEAREINNOVATORS



GENERAL NOTICE

The following must be observed:

- This fencing must not be moved or removed.
- The area inside the fencing is regarded a Construction Exclusion Zone (CEZ).
- No plant, machinery, materials or spoil are to pass through or be stored in this area.
- Any incursion into the CEZ must be prior agreed with the acting local authority (LPA).

CONTACT DETAILS

ARB Innovators Ltd
Arboricultural (Tree)
Consultants



KEEP OUT



TREE PROTECTION AREA

TOWN & COUNTRY PLANNING ACT (1990)

THIS FENCING MUST REMAIN IN PLACE AND BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS FOR THIS DEVELOPMENT.

TREES ENCLOSED ARE PROTECTED BY PLANNING CONDITIONS AND/OR TREE PRESERVATION ORDERS (TPO). CONTRAVENTION OF A TPO MAY LEAD TO CRIMINAL PROSECUTION.