

USW Caerleon

Environmental Statement

Chapter G: Arboriculture

29 November 2019

Steve Ambler and Sons Tree Specialists Ltd
‘Sunnydale Bungalow’. 28a Intermediate Rd.
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G1.0

Introduction

- G1.1 This Chapter of the Environmental Statement ('ES') has been prepared by Steve Ambler and Sons Tree Specialists Ltd on behalf of Redrow Homes Ltd ('the applicant'). It considers the effect of the proposed development on trees, hedges and woodland both within and surrounding the site.
- G1.2 The baseline situation is considered before the likely environmental effects from the development proposals based on the Proposed Site Plan (Drawing No 18137(05)1101H) both during the construction and operational phases of the development. Mitigation measures to reduce any negative environmental effects are identified, if appropriate, before the residual environmental effects are assessed.
- G1.3 Detailed conflicts arising between trees and the design layout / levels plan / service plans / landscape plans / contractor compounds and temporary access routes should be recorded and identified within an Arboricultural Implications Assessment and Tree Protection Plan (draft) and resolved within the Arboricultural Method Statement and Tree Protection Plan with site specific mitigation measures offered where deemed necessary.

About the Author

- G1.4 This ES (Arboriculture) has been undertaken by Vaughan Lewis, Arboricultural and Woodland Consultant at Steve Ambler Associates. It follows the preparation of a Tree Survey and Tree Constraints Plan (February-April 2019) in accordance with BS5837 Trees in Relation to Design, Demolition and Construction – Recommendations (2012).
- G1.5 Vaughan has worked within the arboricultural and forestry sectors for over 25 years, most recently as the Principal Arboricultural and Woodlands Officer for a local authority. Vaughan holds the following relevant qualifications: -
- Professional Technician in Arboriculture (Arboricultural Association)
 - Landscape Science, Higher National Diploma -Distinction. (Pencoed College - University of Glamorgan)
 - Woodland Management, National Diploma - Distinction (Hereford College of Agriculture)
 - Rural Studies, Btec First Diploma – Distinction (Pencoed College)
 - Lantra Award, “Bats and Arboriculture – A Guide for Practitioners” developed by The Bat Conservation Trust.
 - Professional Tree Condition Certificate (Lantra Awards).
- G1.6 This assessment is overseen by Steve Ambler who is a professional arboriculturalist with over 40 years' experience in the arboricultural industry. His Consultancy Practice was established during 1999 and expanded to become Steve Ambler and Sons Tree Specialists in 2006, with the launch of a specialist tree management unit. He holds the following relevant arboricultural qualifications: -
- Certificate in Arboriculture (Royal Forestry Society)
 - Professional Technician in Arboriculture (Arboricultural Association)
 - Professional Diploma in Arboriculture (Royal Forestry Society)
 - Fellow Member of the Arboricultural Association.
 - Lantra Award, “Bats and Arboriculture – A Guide for Practitioners” developed by The Bat Conservation Trust.
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G2.0 **Policy Context**

The Town and Country Planning Act 1990.

- G2.1 Section 197 of the Act places an express duty on the local planning authority, when granting planning permission, to ensure, whenever appropriate, that adequate conditions are imposed to secure the preservation or planting of trees, and that any necessary tree preservation orders are made under section 198 of the Act. When granting outline planning permission, the authority may consider it appropriate to impose a condition requiring the submission of particular details relating to trees to be retained on the site, such as their location in relation to the proposed development and their general state of health and stability. When granting detailed planning permission, conditions may be used to secure the protection of trees to be retained, for example by requiring the erection of fencing around trees during development or restricting works which are likely to adversely affect them. The long-term protection of trees, however, should be secured by Tree Preservation Orders (TPO) rather than by condition; such orders may also be expedient for the temporary protection of existing trees until details of the reserved matters are submitted and it becomes clear whether there is a need to retain the trees.
- G2.2 Several individual trees and groups (or parts thereof) on site are subject to the protection under a Tree Preservation Order - TPO 5 of 2016 was made on the 18th January 2017 and was confirmed with no objections 27th February 2017 - *TPO 5/2016 protects 37 individual trees , a group of 23 trees and a woodland.*
- G2.3 The Tree Preservation Order provides legal protection for certain trees and groups on site and these are held in high regard by the Local Planning Authority, primarily in terms of their amenity value and in some instances their rarity as a species found in Newport. E.g. 2 No Foxglove Tree (*Paulownia tomentosa*) a Fern-leaved beech (*Fagus sylvatica* “*Aspleniifolia*”) and a Common walnut (*Juglans regia*).

Planning Policy Wales 10 (December 2018)

- G2.4 PPW includes the following key paragraphs in relation to trees: -
- G2.5 4.1.1.9. Well-integrated green infrastructure, such as SUDS, street trees and verges, not only create a pleasant environment but can also achieve a range of other benefits, including pollutant filtering, urban cooling, water management and habitat creation. Such features should be included as part of a well-designed street layout.
- G2.6 6.2.1. Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways and mountain ranges. At a local scale, it might comprise parks, fields, public rights of way, allotments, cemeteries and gardens. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks.
- G2.7 6.4.24 Trees, woodlands, copses and hedgerows are of great importance for biodiversity. They are important connecting habitats for resilient ecological networks and make a valuable wider contribution to landscape character, sense of place, air quality, recreation and local climate moderation. They also play a vital role in tackling climate change by locking up carbon, and can provide shade and shelter, a sustainable energy source and building materials. The particular role, siting and design requirements of urban trees in providing health and well-being benefits to communities, now and in the future should be promoted as part of plan making and decision taking.
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- G2.8 6.4.25 Planning authorities should protect trees, hedgerows, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial and identified green infrastructure function. Planning authorities should consider the importance of native woodland and valued trees, and should have regard, where appropriate, to local authority tree strategies or SPG. Permanent removal of woodland should only be permitted where it would achieve significant and clearly defined public benefits. Where woodland or trees are removed as part of a proposed scheme, developers will be expected to provide compensatory planting.
- G2.9 6.4.26 Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory.
- G2.10 6.4.27 The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs). They should also be incorporated into Green Infrastructure Assessments and plans.
- G2.11 6.7.3 Certain sounds, such as those created by trees, birds or water features, can contribute to a sense of tranquillity whilst others can be reassuring as a consequence of their association with the normality of everyday activities.....

Technical Advice Note 12 Design (2016)

- G2.12 2.5 This advice note states the response to context should not be confined to architectural finishes. It is important to help integrate old and new development and reinforce hierarchy between spaces through the consideration of retaining existing landmarks, mature trees and hedgerows within housing areas as well as introducing new planting appropriate to the area. The guidance notes that opportunity should be taken when improving the public realm to protect and enhance biodiversity and assist pollution abatement through careful design, implementation and maintenance of planting. Planting, particularly large tree species can also be used to improve microclimate and reduce dust and the perception of noise through, shade, shelter and screening.

The Local Development Plan (LDP)

- G2.13 Policies relating to trees, woodlands and hedgerows are set out below: -
Policy GP5: General Development Principle, Natural Environment,
- G2.14 Criterion vii): [Development will be permitted where] the proposal includes appropriate tree planting or retention where appropriate and does not result in the unacceptable loss of or harm to trees, woodland or hedgerows that have wildlife or amenity value.
- G2.15 2.7 This policy recognises that trees can have a major influence on the planning and use of the site. However, through the use of Arboricultural surveys the Council may use these as a tool to assess the potential effects of development and propose suitable mitigation where appropriate. Effective measures should be taken by developers to protect existing trees, woodlands and hedgerows. It is shown that if such matters are integrated sensitively and with due care it will

enhance the quality of the development and amenity from the outset, safeguard biodiversity and natural resources and minimise loss of trees and woodlands.

Newport City Council Supplementary Planning Guidance - Trees, Woodland, Hedgerows and Development Sites. January 2017.

- G2.16 This Supplementary Planning Guidance (SPG) set out the Council's requirement for Trees, Woodland and Hedgerows affecting new development sites.
- G2.17 This guidance is designed to help create high quality and sustainable urban and rural landscapes where trees, woodlands and hedges are a key element. Trees, woodlands and hedgerows are important features of an overall design of a development site. They are important to people's quality of life as well as having wider ecological benefits. National planning policy is clear that design is the relationship between all elements of the natural and built environment; therefore the positive use of trees, woodlands and hedges within a development site can help create truly sustainable development.
- G2.18 This SPG will be a material consideration in the determination of all planning applications which can impact on or propose the inclusion of tree, woodlands or hedgerows.

G3.0

Assessment Methodology and Significance Criteria

Assessment Methodology

G3.1

The trees, hedges and woodland on the site were assessed using criteria recommended within *BS5837 Trees in relation to design, demolition and construction – Recommendations (2012)* with regard their retention value given the proposed development of the site – Report ‘Caerleon Former University Campus BS5837.Tree Survey and Tree Constraints Plan February-April 2019. S.Ambler’ (Refer to Appendix G1).

G3.2

The trees are categorised as stated within the British Standard in a way that should help assist those within local government to help form a balanced judgement. The primary purpose of this report is to provide an assessment of the trees and to determine their suitability for retention in the proposed development.

G3.3

Retention Category (letters A,B,C and U) with definition criteria (including subcategories (numbers 1,2, 3 or multiples thereof), where appropriate).

Category U

- Trees unsuitable for retention. 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.
- 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).
- Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline.
- Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality.
- Trees to be considered for retention.

Category A

- Trees of high quality with an estimated remaining life expectancy of at least 40 years
- 1 Mainly arboricultural qualities- 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)
- 2 Mainly landscape qualities- Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
- 3 Mainly cultural values, including conservation- Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).

Category B

- Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- 1 Mainly arboricultural qualities- 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), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation
- 2 Mainly landscape qualities- 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
- 3 Mainly cultural values, including conservation- Trees with material conservation or other cultural value.

Category C

- Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.
- 1 Mainly arboricultural qualities- Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories
- 2 Mainly landscape qualities- 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.
- 3 Mainly cultural values, including conservation- Trees with no material conservation or other cultural value.

Evaluation of Trees

G3.4 It is noted that the BS Standard states that:

“Particular care is needed when evaluating young trees, especially where they occur as individual specimens. Where these are less than 150 mm stem diameter at 1.5 m above adjacent ground level, it might be acceptable and relatively straightforward to mitigate their loss, if necessary, with similar new tree planting. Alternatively, it might be practicable to relocate such trees within the site (e.g. using a tree spade). Whilst the presence of young trees of good form and vitality is generally desirable (i.e. those trees which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site’s potential.

G3.5 Detailed tree condition investigations using decay detection equipment and climbing inspections were undertaken on certain trees that were initially highlighted as having suspected condition issues. Based on the findings of these investigations their Tree Retention category ratings were reviewed and in certain cases downgraded.

Significance Criteria

G3.6 The ES classifies the impact of the development (both positive and negative impact) using the following measures:

- i **Substantial beneficial.** E.g. the improvement, betterment, or protection of trees or woodland features that have, or have the potential to have, regional or national value. For example, the protection of ancient trees, or the creation of large tracts of native woodland.
- ii **Moderate beneficial.** E.g. the enhancement of valuable trees or woodlands, including the integration of existing trees around new features that has long-term sustainability and significant value in the immediate locality and landscape.
- iii **Minor beneficial.** E.g. the planting of trees in areas of low visibility or of smaller scale that may not have a significant impact in the locality but that increases canopy cover generally.
- iv **Neutral/negligible.** E.g. not impacting on present tree or woodland cover.
- v **Minor adverse.** E.g. The loss of or damage to low or moderate quality trees or small-scale woodland features, where the impact is considered highly localised or short-term – for example the removal of trees with low visual importance within the landscape or with short future life expectancy.
- vi **Moderate adverse.** E.g. the loss or irreversible damage to trees or woodland features that has an impact primarily in the immediate locality – for example the loss of quality trees and woodlands that will have a visually detrimental effect on a local landscape, streetscape, or other vista.
- vii **Substantial adverse.** E.g. the loss or irreversible damage of significant trees or woodland features that has an impact greater than that experienced in the immediate locality – for example the loss of important historic, rare, or ecologically important trees, and of regional or national importance.

Consultation

- G3.7 Consultation and a site meetings have occurred with Shona Carle (Tree Officer TPO's and Private land (Newport City Council) before and after the production of the BS5837 Tree Survey and Tree Constraints Plan (Refer to Appendix G1). During these meetings the officer advised that all tree survey and development reports must be in accordance with BS5837 2012.

Assumptions and Limitations

- G3.8 The provision and acceptance of this Arboricultural ES is subject to the general terms and conditions of Steve Ambler and Sons Tree Specialists Ltd.
- G3.9 Unless otherwise stated, this Arboricultural ES remains valid for 12 months. Trees require frequent inspections and the next one is recommended within 12 months of the date of this Report.

G4.0

Baseline Conditions

Existing Conditions

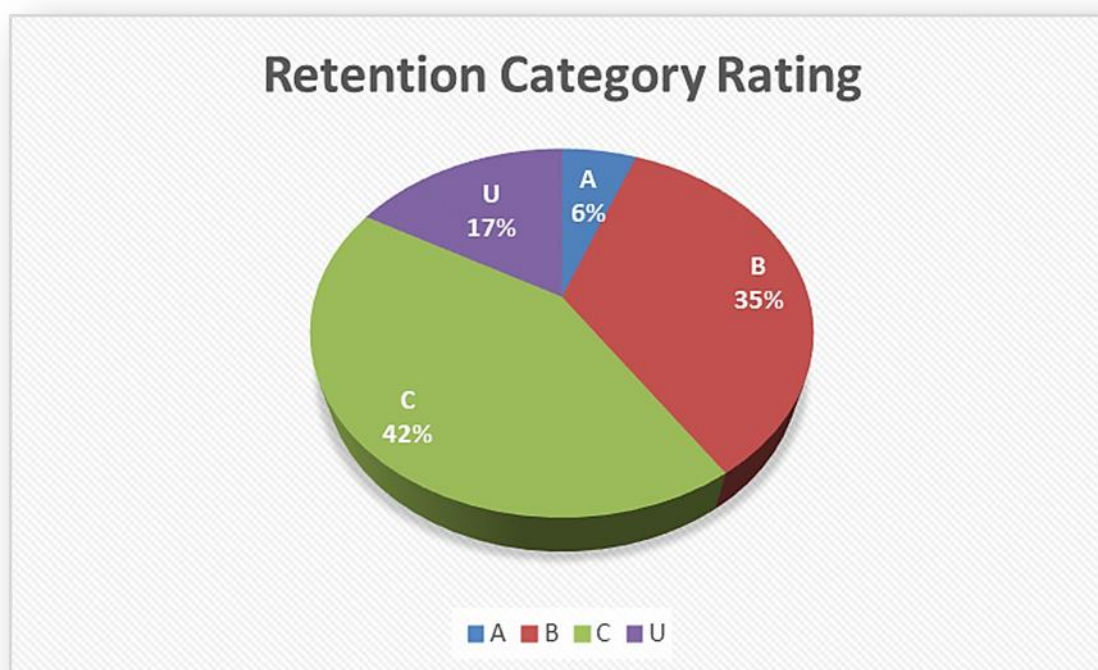
G4.1

The site and immediately adjoining land was surveyed in accordance with Phase 1 of BS5837 in February 2019 with subsequent detailed tree condition investigations occurring in April 2019. Findings of both surveys were amalgamated in the Report - 'Caerleon Former University Campus BS5837. Tree Survey and Tree Constraints Plan February - April 2019. Ambler SJ' (Refer to Appendices to Appendix G1).

G4.2

The site comprises of a hugely diverse age range and species mix of trees, groups, woodland/parkland, an orchard and hedges (both formal and informal) in the following retention categories:

Figure G4.2 Proportion of Existing Trees on site according to Retention Category



G4.3

Due to their prominent locations, generally good health and on occasion unusual species, category A trees/groups are recorded on the site identified as numbers G23, T24, T53, T60, T76, T89 and T92 (Refer to Tree Constraints Plan in Appendix G1). The structural condition of several trees and groups was undertaken and summarised below.

G4.4

A detailed tree conditions inspection was undertaken in April 2019 on the orchard (G7), T90 and T100 - Foxglove tree (*Paulownia tomentosa*), T92 Common walnut (*Juglans regia*) and T6 – Sessile oak (*Quercus petraea*). Decay detection equipment (IML Resistograph 500) was used, as was a climbing inspection for the walnut. As such the Retention Category ratings on the Foxglove Trees have been downgraded to T90 = B1,2 and T100 = U category. The others remain unchanged with a few category U trees now occurring in G5 and G7 (orchard).

G4.5

The majority of category B trees are larger, more prominent specimens in good condition, or groups which have the potential to provide screening of views into or out of the site (or between

parts of it). Unfortunately, a number of what would have been B category mature limes on the Lodge Road entrance (Trees 2, 3 and 4) have succumbed to the fungal decay pathogen *Kretzschmaria deusta* (*Ustulina deusta*) and are not deemed suitable (safe) for retention in a high target occupancy setting or indeed their current setting. The remaining limes in this location should be monitored for signs of this pathogen, including the adjoining street tree in NCC ownership.

- G4.6 There are a number of sections where conifers have been planted in rows (two or more) and these need to be carefully considered with regards to the issues relating to light levels and main dwelling rooms within the proposed development. This matter is regulated under the Anti-Social Behaviour Act 2003, Part 8 - High Hedges.
- G4.7 The remaining trees are not considered to be of any particular arboricultural or visual merit; are below the threshold of 75-mm stem diameter when measured at 1.5 metres above ground level or are in poor condition and have been allocated a retention category of C or U. Due to a history of planting operations on this site there are a number of young trees that fall outside of the criteria set within BS5837, but which could offer long term tree cover if they did not pose significant constraints to the site layout. These younger trees, along with areas of ornamental shrub planting are labelled on the Tree Constraints Plan.
- G4.8 The tree stock on site has clearly been well-managed as part of the University's ground maintenance commitment, with some forethought for future generations through a tree planting programme. Many trees were seemingly planted along with the mid 1990's student residential developments as landscape enhancements.
- G4.9 There are some tree condition issues as recorded in the Tree Survey (Refer to Appendix G1) and this perhaps was somewhat overlooked in the latter years of the ground's management.

Future Baseline

- G4.10 If development were not to occur then target occupancy remains lower due to the current level of usage and therefore tree condition hazards become less of a risk.
- G4.11 Without development the tree stocks remain fully intact, however the management of the tree stocks would likely decline and any structural or health issues go unnoticed and unmanaged, which may shorten the trees life expectancy and provide a risk to those using the site albeit at a lower usage level. Such hazards would also pose a risk to those living in properties adjoining the site or the surrounding highways. E.g. the proposed crown reduction on T100 - Foxglove tree (*Paulownia tomentosa*) should aim to prolong its useful safe life expectancy presently compromised by its declining structural integrity with remedial works reducing loading.
- G4.12 The maintenance of hedgerows would cease and their condition decline. This would have a negative impact on their amenity landscape value although the habitat value of the hedges dominated by native species may improve.
- G4.13 With development comes the opportunity to invest in further tree planting and management of the woodland feature (G23) and this offers an opportunity for habitat and amenity gains, as discussed further in Section G6.O.

G5.0

Potential Effects

During Construction

G5.1

Prior to any construction activities trees must be considered as a constraint but also as an asset to the site within the design layout. The site hosts several notable specimen trees due to their size and/or rarity of species and also those with potential. Conflicts, consideration and protection should be considered within the following:

G5.2

In view of the recommendations for the design and construction process, in considering tree care further assessments are required throughout the planning and design phases and recommended as follows:

- 1 Tree Removal and Retention Plan (draft) – Refer to Appendix G2)
- 2 Arboricultural Implications Assessment (AIA)
- 3 Tree Protection Plan (TPP) – (Item 1 will be updated within this document as further details become available such as a Levels Plan)
- 4 Arboricultural Method Statement (AMS)

G5.3

Any construction works have the ability to negatively impact on tree health and stability, as their underground parts are frequently ignored, damaged or severed and above ground parts are injured or broken through impact. They will require protection from such injury throughout the development phase from the onset.

G5.4

The following table indicates the main potential conflicts between this proposed development and trees. It also defines the anticipated degree to which the subject trees and groups may be adversely impacted, using the significance criteria detailed within section G3.15. This is based on the Proposed Site Plan (Drawing No 18137(05)1101H).

Table G5.4 Potential Arboricultural Construction Effects

Potential Conflict	Affected tree, group, hedge or woodland	Potential Significance
Loss of trees several of which may be subject to Tree Preservation Order's such as G18. The loss of some interesting species in terms of their amenity or rarity value.	Mostly young or semi mature planted specimens, with mature or rarer specimens tending to be retained in defined open spaces often to the periphery.	Minor Impact - - Minor adverse
Loss of U category trees – those with significant underlying condition issues. Increased potential target occupancy come with the proposed development.	26 trees are rated as U category. Arguably many would be lost due to current target occupancy, but this is increased due to the potential increased target occupancy as a result of the proposed development.	Minor impact - Minor adverse
Ground level changes (levels plan not currently available but will be made available for the AIA and TPP.	Most likely area affected will be the trees north-east of the driveway off College Crescent, which has the greatest incline and required level changes but is only a relatively small section of the site affecting a	Minor impact - Minor adverse

Potential Conflict	Affected tree, group, hedge or woodland	Potential Significance
	relatively low number of young / early mature trees.	
Damage to trees both aerial and underground parts, caused by demolition and construction activities.	All retained trees especially those retained within the more intensive areas of new house building.	Significant Impact – Moderate adverse.

During Operation

Table G5.4 Potential Arboriculture Operational Impacts

Potential Conflict	Affected tree, group, hedge or woodland	Potential Significance
Change in wind dynamics and wind loading on retained trees. Often occurs on development sites where structures are placed in closer proximity to trees than previously encountered or where the wind becomes funnelled between rows of trees/woodland edges and new buildings. In certain locations the removal of existing three storey student halls residents may increase loading as these buildings are demolished, albeit only having had influence upon these trees for a relatively short period of time.	Southern section of G23. Trees 85-90 and 92 – 101 (excluding T100)	Minor Impact - Minor adverse
Increased pressure placed upon retained trees in a residential setting through the perceived threat from trees; overhanging / encroaching branches and roots; available sunlight; but also, other factors such as natural debris and satellite reception. In many locations the trees have a buffer zone often formed by internal access roads. Much of the southern and northern tree cover is located on lower ground from the proposed development and in the case of the orchard to the south (G5, G7), these are relatively small – medium sized species.	Those trees in close proximity to housing and gardens. Probably most applicable to the evergreen conifers found to the north of the College Crescent entrance and either wholly or partially a component within Groups 10, 13, 14 and 15 to the east (potentially affecting morning light levels and main dwelling rooms). Also applicable to Trees 85-90 and 92 – 101 (excluding T100) on a proposed open space to the south-west and in close proximity to housing The High Hedges Regulations under the Anti-Social Behaviour Act (2005) may become applicable subject to the assessment criteria.	Minor Impact - Minor adverse

G6.0

Mitigation and Monitoring

During Construction

- G6.1 As certain trees on site pose a constraint to the proposed development (primarily young and early mature specimens), there is scope on this site to undertake mitigation planting particularly along the somewhat open north-east boundary abutting the Public Right of Way and within the woodland / parkland grouping of G23, thereby improving habitat connectivity. Planting could be in the form of mixed native woodland, specimen tree planting to enhance the tree collection and the creation of native hedgerows.
- G6.2 Appoint a Qualified Arborist / Woodland Specialist should be appointed to produce a report for Group 23. This would benefit from a wider management plan to consider tree planting (G6.1), tree condition, access facilities, interpretation and long-term woodland management. Access facilities should guide users to the trees of interest and away from any sensitive habitat areas (to be defined within woodland report and plan).
- G6.3 The use of a tree spade to re-locate some trees that pose significant constraints and are deemed to be of high value was considered and discussed during meetings with Shona Carle (Tree Officer TPO and Private Land) and EDP's Landscape Architect. After careful consideration in terms of practicality (access, service runs, existing built structures), survival rates and a cost comparison with planting large size stock replacements it was agreed that; the Japanese maple (*Acer palmatum*) collection to the south-west of the main building could be retained subject to further detailing, based on the Levels Plan (to be produced) and which will be assessed under the Arboricultural Implications Assessment. If this is not achievable these can be moved by hand outside of the growing season along with the 4 x *Magnolia grandiflora* grown as standards within G30 b and the single Persian Ironwood (*Parrotia persica*) to the north-eastern end of G30 a. EDP will produce a landscape plan to include mitigation planting for the better quality early mature trees lost within G30b (Dawn redwood and Sweet gum) and T39 (Tulip tree).
- G6.4 Recommendations within the Tree Survey (S.Ambler Feb-April 2019) should be implemented in order to offset known risks posed by tree hazards either whole tree or part thereof.
- G6.5 Pro-active precautionary pruning may reduce issues of wind damage through the changing wind dynamics associated with the proposed development. This would be restricted to a few locations where it is in close proximity to trees in the form of end weight reduction pruning on limbs and primary branches to the housing side prior to high target occupancy dwellings being constructed. This would need to be identified and defined in the Arboricultural Implications Assessment and Arboricultural Method Statement.
- G6.6 To prevent damage in general terms to the retained trees, including their roots there must be none of the following:
- a Alteration of ground levels, including soil stripping.
 - b Installation of drainage or services using conventional open trenching methods which would not be in accordance with BS:5837 (any works should be in accordance with the National Joint Utilities NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees Volume 4).
 - c Excavation of any kind.
 - d Storage of any materials or equipment, even on a temporary basis.

- e Storage of oil, bitumen, cement or other harmful materials, mixed or discharged within 12-m of the trunk of any retained tree and making further allowances for any slope of the ground so prevent running contamination. Phytotoxic materials would include any mineral oil, fuels, cement mortar washings concrete washings, mortar.
- f Fires must not be lit beneath or within 12-m of any tree canopies.
- g Site operations such as deliveries, site machines, crane jibs etc should be organised to avoid damaging the trunk or crown of trees. Where this conflict is unavoidable then facilitation pruning should be carried out in advance, rather than after damage has occurred. This may also be required to allow demolition operations.
- h Mechanical cultivation of the soil as part of landscaping operations.

G6.7 Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without encountering the Root Protection Area, trunks stems or branches of any retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any movement of plant or machinery in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times. Access facilitation pruning should be undertaken where necessary to maintain this clearance if in accordance with good arboricultural practice.

G6.8 Irrespective of the design layout and prior to construction activities, consider the removal of G10 located to the south of Felthorpe Lodge, as it comprises of vigorous evergreen conifers near housing, in order to remove / reduce issues with light and main dwelling rooms, as legislated under the High Hedges regulations (presently this is shown as being retained on the Tree Removal and Retention Plan (Refer to Appendix G2). G14 and G15 are also shown to be retained, however there is a significant buffer with the housing and potential level change with dwellings located at a higher elevation. A detailed condition survey is recommended for these retained stands of trees as they adjoin a highway and open space within the design layout which provides a target.

G6.9 Appoint a Qualified Arborist in order to produce the required reports in accordance with BS5837 Trees in relation to design, demolition and construction – Recommendations (2012) – Refer to section G5.2. Ensure the Arborist has access to all of the required plans prior to undertaking the Arboricultural Implications Assessment and Arboricultural Method Statement. To include but not exclusively:

- 1 Design layout for Arboricultural Implications Assessment and an approved layout for the Arboricultural Method Statement
- 2 Levels plan with clear plus and minus readings to indicate any ground level changes.
- 3 Service plans – drainage, water, foul, electricity, gas, BT etc.
- 4 Contractor facilities – compounds, site offices, temporary access.
- 5 Landscape plans

G6.10 Appoint a Qualified Arborist to undertake supervision via an Arboricultural Watching Brief. This should occur through the demolition and construction phases to supervise the construction in relation to trees and ensuring protection measures and 'tree friendly' construction methodology is implemented in accordance with the approved Arboricultural Method Statement and Tree Protection Plan.

During Operation

- G6.11 The design layout shows buffers between the houses, gardens and retained trees. This will reduce the pressures that would otherwise be placed upon these trees by residents.
- G6.12 Appoint a Qualified Arborist / Woodland Specialist to produce a Risk Zone plan and undertake cyclical tree condition surveys. Such a survey should occur pre and post construction phases and into perpetuity in order to reduce the actual risk that trees pose, but also alleviate the perceived risks that residents may incorrectly associate with trees.
- G6.13 Monitoring and maintenance of newly planted and transplanted trees should occur for 5 years to ensure establishment. Any tree losses or those with significant health, developing structural issues or vandalised will be replaced like for like. Maintenance will include suitable watering subject to requirements and conditions, ensuring supports and ties are fit for purpose and a weed free rooting area.

Table G6.1 Residual Arboricultural Effects During Construction

Potential Conflict	Affected tree, group, hedge or woodland	Potential Significance
Loss of trees several of which may be subject to Tree Preservation Order's such as G18. The loss of some interesting species in terms of their amenity or rarity value.	Mostly young or semi mature planted specimens, with mature or rarer specimens tending to be retained in defined open spaces often to the periphery.	Significant benefit Moderate beneficial
Loss of U category trees – those with significant underlying condition issues. Increased potential target occupancy.	This relates to 26 trees. Arguably many would be lost due to current target occupancy, but this is increased due to the potential increased target occupancy as a result of a residential development.	Not Significant Minor adverse
Ground level changes – levels plan not currently available	Most likely area affected will be the trees north-east of the driveway off College Crescent which has the greatest potential level changes	Not Significant Minor adverse
Damage to trees both aerial and underground parts, caused by demolition and construction activities.	All retained trees especially those retained within the more intensive areas of new house building.	Neutral/negligible

During Operation

Table G6.2 Residual Arboricultural Effects During Operation

Potential Conflict	Affected tree, group, hedge or woodland	Potential Significance
Change in wind dynamics and wind loading on retained trees.	Southern section of G23.	Not Significant.

Often occurs on development sites where structures are placed in closer proximity to trees than previously encountered or where the wind becomes funnelled between rows of trees/woodland edges and new buildings. In certain locations the removal of existing three storey residential halls may increase loading as these buildings are demolished, albeit only having influence upon these trees for a relatively short period of time.	Trees 85-90 and 92 – 101 (excluding T100)	Minor adverse
Increased pressure placed upon retained trees in a residential setting through the perceived threat of risk from trees, overhanging / encroaching branches and roots, available sunlight but also other factors such as natural debris and satellite reception. In many locations the trees have a buffer zone often formed by internal access roads. Much of the southern and northern tree cover is located on lower ground and in the case of the orchard to the south (G5, G7), these are relatively small – medium sized species.	Those in close proximity to housing and gardens. Probably most applicable to the evergreen conifers found to the north of the College Crescent entrance and either wholly or partially a component within Groups 10, 13, 14 and 15 to the east (morning light levels). Also applicable to Trees 85-90 and 92 – 101 (excluding T100) on a proposed open space to the south-west and in close proximity to housing The High Hedges Regulations under the Anti-Social Behaviour Act (2005) may become applicable subject to the assessment criteria.	Not Significant. Minor adverse

G7.0 Summary and Conclusions

- G7.1 The proposed development permits the retention of all the most significant and valuable trees, hedges, orchard, woodland and parkland. There is also no obvious adverse impact upon trees adjacent to the site. Retained trees, hedges, orchards and woodland can be protected in accordance with the recommendations outlined within BS5837 Trees in relation to Design, Demolition and Construction – Recommendations (2012).
- G7.2 Long-term woodland management plans, orchard restoration and a well-thought out complimentary landscaping and tree planting scheme will not only compensate for any short-term losses but will enhance tree stocks and habitat value long-term.
- G7.3 It is our view that the scheme will ensure a sustainable integration of the trees, hedges, orchard and woodland within the proposed scheme, as trees have been considered from the on-set of the design process and if adequately protected throughout the demolition and construction phases and managed into perpetuity, there will be no long-term adverse impact.

G8.o

Abbreviations and Definitions

- 1 BS – British Standard
- 2 RPA – Root Protection Area
- 3 TPO – Tree Preservation Order

G9.0

References

- 1 BS5837 Trees in relation to design, demolition and construction – Recommendations (2012)
- 2 The Town and Country Planning Act 1990.
- 3 Planning Policy Wales 10 (2018)
- 4 Technical Advice Note 12 Design (2016)
- 5 Newport City Council's Local Development Plan (LDP) 2011-2026
- 6 Newport City Council Supplementary Planning Guidance - Trees, Woodland, Hedgerows and Development Sites. January 2017.
- 7 Anti-Social Behaviour Act. Part 8 High Hedges (2005)



Tree Survey, Categorisation & Constraints Report
in accordance with
BS 5837:2012 (Survey Phase 4.2, 4.4 & 4.6)

At
Former University Campus – Caerleon

On the instructions of
Redrow Homes Ltd

Dated
February & April 2019



Inspected by Mr.V.Lewis. Tech.Arbor.A.
Approved by Mr. S J Ambler. Cert.Arb.(RFS), Tech.Arbor.A., Dip.Arb. (RFS), F.ARBOR.A.
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1. INTRODUCTION

I am instructed by Mr. Dafydd Andrews (Land Manager) Redrow Homes Limited, to undertake an arboricultural survey at Former University Campus – Caerleon to assist in the submission of a planning application to the Local Planning Authority.

The survey will be in accordance with the standards set out in BS 5837:2012¹ (items 4.2, 4.4, & 4.6) to gather information to assist the Local Planning Authority in their decision-making process in respect of existing and proposed trees, in the context of design, demolition and construction.

I have been provided with a full technical pack which included but not exclusively, the following information -

- Tree Preservation Order Schedule and Plan
- Topographical Survey (Drawing No- 4252-30MAR15-01-07)

I understand there is a proposal to redevelop the site, however, the trees have been assessed objectively and without reference to any site layout proposals.

It should be noted that a few trees recorded in the Findings Table were not included in the original topographical survey and their positions as indicated on the Tree Constraints Plan are plotted approximately only.

Trees are a material consideration in the UK planning system and the survey and report were prepared in consideration of Planning Policy Wales 10 with regard to the general provision, in relation to the value accorded to trees and their protection (contained within paragraphs 6.4.24 – 6.4.27).

- Local authorities have a duty to ensure that adequate provision is made for the planting or preservation of trees by imposing conditions when granting planning permission and/or by making Tree Preservation Orders (TPOs).
- Local authorities have a general power to make TPOs if it appears it is expedient to do so in the interests of amenity. They can make a provisional TPO which takes effect immediately, and it can remain effective for six months or until the TPO is confirmed."

The weather conditions were favourable for a survey of this nature although fog was present on one of the survey days. Surveying was conducted from ground level on the 23rd, 24th & 26th February 2019 with tree condition inspections undertaken on the 10th & 11th April. The surveys were undertaken by Company Director Vaughan Lewis (Arboricultural and Woodland Consultant) who has worked within the arboricultural and forestry sectors for 21 years. Vaughan holds the following arboricultural qualifications:

- a) Professional Technician in Arboriculture (Arboricultural Association)
- b) Landscape Science, Higher National Diploma -Distinction. (Pencoed College (University of Glamorgan)

¹ British Standards Institute Publication 'Trees in Relation to Design, Demolition and Construction - Recommendations' 2012



- c) Woodland Management, National Diploma - Distinction (Hereford College of Agriculture)
- d) Rural Studies, Btec First Diploma – Distinction (Pencoed College)
- e) Lantra Award, “Bats and Arboriculture – A Guide for Practitioners” developed by The Bat Conservation Trust.
- f) Professional Tree Condition Certificate (Lantra Awards)

This survey report is overseen and assessed by Steve Ambler who is a professional arboriculturalist with over 38 years’ experience in the arboricultural industry. His Consultancy Practice was established during 1999 and expanded in 2006 with the launch of a specialist tree management unit to become - Steve Ambler & Sons Tree Specialists. Steve holds the following relevant arboricultural qualifications: -

- a) Certificate in Arboriculture (Royal Forestry Society)
- b) Professional Technician in Arboriculture (Arboricultural Association)
- c) Professional Diploma in Arboriculture (Royal Forestry Society)
- d) Fellow Member of the Arboricultural Association.

The provision and acceptance of this report are subject to the general terms and conditions of Steve Ambler & Sons Tree Specialists Ltd

Unless otherwise stated, this report remains valid for 12 months. Trees require frequent inspections and the next one is recommended within 12 months of the date of this Report.

2. SITE DESCRIPTION AND OBSERVATIONS

The site is located centrally in the South Wales historic town of Caerleon, which sits above the Afon Llwyd to the east and Afon Wsyg to the south. Ponthir Road and Lodge Road form the immediate south and east boundaries, with housing adjoining elsewhere. A Public Right of Way intersects the site and adjoining housing to the north – north-east.

Post Code: NP18 3NU

OS National Grid Reference: ST335911

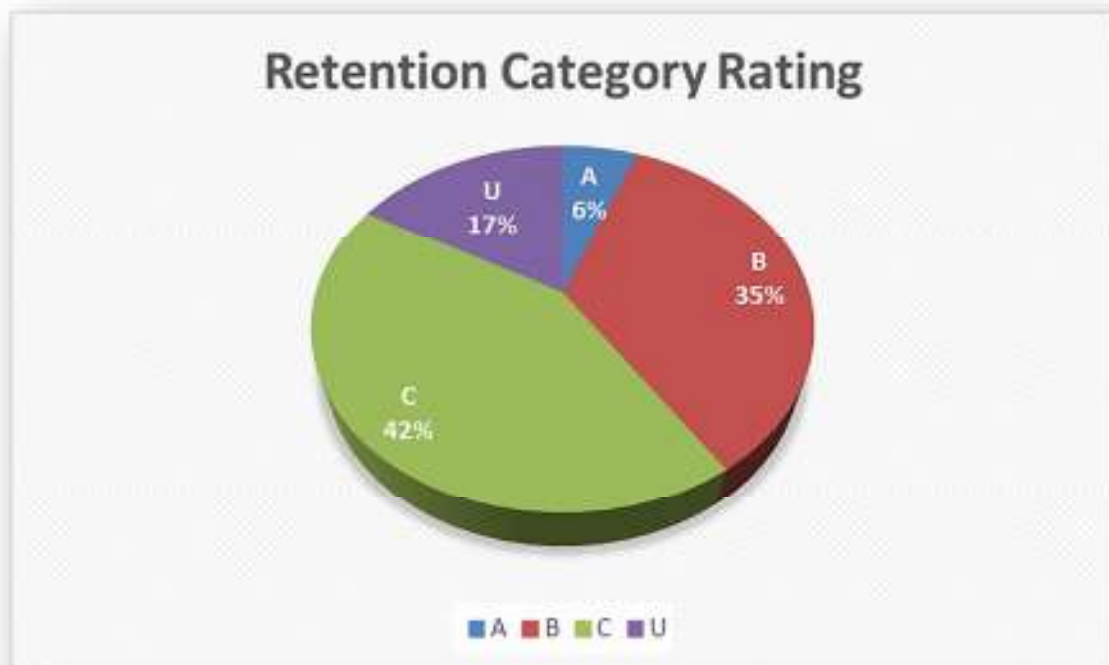
The site lies at an altitude of approximately 20-40-m above sea level and primarily slopes eastwards. Whilst soil tests have not been undertaken, the area is thought to have free draining and slightly acid loamy soil over primarily sandstone.

A **Tree Preservation Order** provides legal protection for certain trees and groups on site and these are held in high regard by the Local Planning Authority, primarily in terms of their amenity value and in some instances their rarity as a species found in Newport. E.g. 2 No Foxglove Tree (*Paulownia tomentosa*) a Fern-leaved beech (*Fagus sylvatica* “*Asplenifolia*”) and a Common walnut (*Juglans regia*).

TPO 5 of 2016 was made on the 18th January 2017 and was confirmed with no objections 27th February 2017
- TPO 5/2016 protects 37 individual trees, a group of 23 trees and a woodland.

NOTE - Where trees have been recorded individually within the Tree Survey there is on occasion some uncertainty as to whether or not they may be included within a protected (TPO) group or woodland. The client is advised to consult with the Local Planning Authority for confirmation when considering trees protected under the Tree Preservation Order. Any felling or remedial works on trees subject to a Tree Preservation Order must have written approval from the Local Planning Authority either through the TPO Works Application process or Full Planning Permission that accepts the recommendations of this report. The exception are those trees considered to be in a dangerous condition that are deemed exempt under the 'dead, dying or dangerous' clause, whereupon 5 days written notice should be given prior to works commencing.

The site comprises of a hugely diverse age range and species mix of trees, groups, woodland/parkland, an orchard and hedges (both formal and informal) in the following retention categories:-



Due to their prominent locations, generally good health and on occasion unusual species, category A trees/groups are recorded on the site identified as numbers G23, T24, T53, T60, T76, T89, T90, T92 and T100. The structural condition of several A rated trees most notably the two Foxglove trees, requires detailed investigations and so their retention category is PRELIMINARY ONLY and subject to findings of these investigations.

The majority of category B trees are larger, more prominent specimens in good condition, or groups which have the potential to provide screening of views into or out of the site (or between parts of it). Unfortunately, a number of what would have been B category mature limes on the Lodge Road entrance have succumbed to the fungal decay pathogen *Kretzschmaria deusta* (*Ustulina deusta*) and are not deemed suitable (safe) for



retention in a high target occupancy setting or indeed their current setting (Trees 2, 3 & 4). The remaining limes in this location should be monitored for signs of this pathogen, including the adjoining street tree in NCC ownership.

There are a number of sections where conifers have been planted in rows (two or more) and these need to be carefully considered with regards to the issues relating to light levels and main dwelling rooms within the proposed housing areas. This matter is regulated under the Anti-Social Behaviour Act 2003, Part 8 - High Hedges.

The remaining trees are not considered to be of any particular arboricultural or visual merit; are below the threshold of 75-mm diameter when measured at 1.5 metres above ground level or are in poor condition and have been allocated a retention category of C or U. Due to a history of planting operations on this site there are a number of young trees that fall outside of the criteria set within BS5837, but which could offer long term tree cover if they did not pose significant constraints to the site layout. These younger trees, along with areas of ornamental shrub planting are labelled on the Tree Constraints Plan but are not included within the Findings Table.

As certain trees on site are likely to pose a significant constraint to development there is scope on this site to undertake mitigation planting particularly along the somewhat open north-east boundary abutting the PRow and within the woodland / parkland grouping of G23, thereby improving habitat connectivity. Planting could be in the form of mixed native woodland, specimen tree planting and the creation of native hedgerows. Group 23 would also benefit from a wider management plan to consider tree condition, access facilities, interpretation and woodland management.

There may be scope to consider the use of a tree spade to re-locate some trees that pose significant constraints and are deemed to be of high value, but this needs careful consideration in terms of practicality (access, service runs), existing built structures), survival rates and a cost comparison with planting large size stock replacements, as an alternative. This would include but not exclusively the evergreen Magnolia's grown as standards within G30 b, the relatively young collection of Japanese maple varieties (*Acer palmatum* var) to the south-west of the main house and the Tulip tree (T39).

This updated version of the Tree Survey now includes the additional surveyed areas along the Public Right of Way bordering the site to the north and north-west. Trees on adjoining land to this path has also been included where trees occur within influencing distance.

A detailed tree conditions inspection has also been undertaken in April on the orchard (G7), T90 & T100 - Foxglove tree (*Paulownia tomentosa*), T92 Common walnut (*Juglans regia*) and T6 – Sessile oak (*Quercus petraea*). Decay detection equipment (Resistograph 500 unit²) was used as was a climbing inspection for the walnut.

² Resistograph 500 Drill: this instrument is based on measuring the drilling resistance along a small needle path when inserted into the tree with a constant drive. The drilling resistance at the needle tip is transferred by use of different gearboxes to a pointer that is visible at the top of the instrument. The pointer scratches the drilling profile on a waterproof wax paper printout using a 1:1 scale, recording the resistance offered to the torque of the drill bit and thus assess to some extent the quality of the wood. As the drilling resistance of the tree is a function of the mechanical wood quality, defect zones and



According to Mattheck³, a reasonably balanced tree with a full crown and with a central decay cavity with no external cavities as is effectively the case hear with the two Foxglove trees requires a minimum residual stem cylinder with a sound wall thickness of 0.30-0.35 of its radius (t/R ratio). The minimum sound wall thickness is calculated for each tree being tested using the Resistograph 500 unit within the Findings Table.

A number of stumps were noted, and these are indicated on the attached Tree Constraints Plan.

NOTE- Category C trees are of little merit and need not necessarily be a significant constraint on the site' s potential as their loss may be mitigated through planting.

3. SPECIES RECORDED

Apple (<i>Malus</i> sp)	Himalayan birch (<i>Betula utilis</i>)
Ash (<i>Fraxinus excelsior</i>)	Himalayan honeysuckle (<i>Leycesteria formosa</i>)
Beech (<i>Fagus sylvatica</i>)	Holly (inc. variegated varieties) - (<i>Ilex aquifolium</i> var)
Black mulberry (<i>Morus nigra</i>)	Hornbeam (<i>Carpinus betulus</i>)
Black pine (<i>Pinus nigra</i>)	Horse chestnut (<i>Aesculus hippocastanum</i>)
Box (<i>Buxus sempervirens</i>)	Horse chestnut 'Flore Pleno' (<i>Aesculus hippocastanum 'Flore Pleno'</i>)
Chanticleer pear (<i>Pyrus calleryana 'Chanticleer'</i>)	Hybrid black poplar (<i>Populus x Canadensis</i> var)
Cherry (<i>Prunus</i> sp)	Irish yew (<i>Taxus baccata 'Fastigiata'</i>)
Cherry 'Kanzan' (<i>Prunus 'Kanzan'</i>)	Rhododendron sp
Cherry laurel (<i>Prunus laurocerasus</i>)	Italian cypress var. (<i>Cupressus sempervirens</i> var)
Common lime (<i>Tilia x europaea</i>)	Japanese cornelian cherry 'Kintoki' (<i>Cornus officinalis 'Kintoki'</i>)
Common walnut (<i>Juglans regia</i>)	Japanese maple (<i>Acer palmatum</i>)
Copper beech (<i>Fagus sylvatica 'Purpurea'</i>)	Japanese spotted laurel (<i>Aucuba japonica</i>)
Cotoneaster sp	Pittosporum (<i>Pittosporum 'Garnetii'</i>)
Deodar cedar (<i>Cedrus deodara</i>)	Judas tree (<i>Cercis siliquastrum</i>)
Douglas fir (<i>Pseudotsuga menziesii</i>)	Lawson cypress (<i>Chamaecyparis lawsoniana</i>)
Downy birch (<i>Betula pubescens</i>)	Leyland cypress (× <i>Cuprocyparis leylandii</i>)
Escallonia rubra 'Macrantha'	Mexican orange blossom (<i>Choisya ternata</i>)
European larch (<i>Larix europaea</i>)	Myrobalan plum (<i>Prunus cerasifera</i>)
False acacia (<i>Robinia pseudoacacia</i>)	Noble fir (<i>Abies nobilis</i>)
Fern-leaved beech (<i>Fagus sylvatica 'Aspleniifolia'</i>)	Norway maple (<i>Acer platanoides</i>)
Firethorn (<i>Pyracantha coccinea</i>)	Norway spruce (<i>Picea abies</i>)
Foxglove tree (<i>Paulownia tomentosa</i>)	Oval leaved privet (<i>Ligustrum ovalifolium</i>)
Goat willow (<i>Salix caprea</i>)	Pear (<i>Pyrus communis</i>)
Golden weeping willow (<i>Salix x sepulcralis 'Chrysocoma'</i>)	Pedunculate oak (<i>Quercus robur</i>)
Hawthorn (<i>Crataegus monogyna</i>)	Plum (<i>Prunus domestica</i>)
Hazel (<i>Corylus avellane</i>)	

discontinuities like open cracks, areas of severe decay, hollows and in evergreens and ring-porous broadleaves even tree ring structures can be detected up to a maximum depth of 500 millimetres". Claus Mattheck, K. Bethge and W. Albrecht. How to Read the Results of Resistograph.

³ Mattheck.C.& Breloer H. The Body Language of Trees. Department of the Environment.



Red oak (<i>Quercus rubra</i>)	Sweet chestnut (<i>Castanea sativa</i>) ,
Rowan (<i>Sorbus aucuparia</i>)	Sycamore (<i>Acer pseudoplatanus</i>)
Sessile oak (<i>Quercus petraea</i>)	Tulip tree (<i>Liriodendron tulipifera</i>)
Silver birch (<i>Betula pendula</i>)	Wellingtonia (<i>Sequoiadendron giganteum</i>) Coastal
Silver birch 'Obelisk' (<i>Betula pendula</i> 'Obelisk')	redwood (<i>Sequoia sempervirens</i>)
Silver maple (<i>Acer saccharinum</i>)	Western catalpa (<i>Catalpa speciosa</i>)
Small-leaved lime (<i>Tilia cordata</i>)	White willow (<i>Salix alba</i>)
Smoke tree (<i>Cotinus coggygria</i>)	Willow-leaved pear (<i>Pyrus salicifolia</i>)
Southern evergreen magnolia (<i>Magnolia grandiflora</i> var)	Wilson' s honeysuckle (<i>Lonicera nitida</i>)
Stone pine (<i>Pinus pinea</i>)	Yew (<i>Taxus baccata</i>)
Swamp cypress (<i>Taxodium distichum</i>)	Young' s weeping birch (<i>Betula pendula</i> 'Youngii')
Sweet bay (<i>Laurus nobilis</i>)	

4. TREE SURVEY & TREE SURVEY PLAN

This tree survey will include each tree within the site boundary with a stem diameter of above 75-mm or in the case of woodland trees or large groups those measuring above 150-mm when measured at a height of 1.5-m above ground level. Trees over this size growing on land adjacent to the site, which are within a distance equal to 12 times their stem diameter from the boundary, are also included.

Each tree or group of trees is identified on the attached plan. Large trees are sometimes identified on site using a numbered tag attached to the trunk of each tree at 1.5-2.0 metres above ground level. A tabular format later in the report (8. Schedule of Findings) records baseline details of each tree or group against the appointed tree number or numbered tag.

The report assigns the trees to one of four categories U, A, B, C (see Appendix A - Table One) depending on their overall health, size, condition, amenity, cultural and conservation value, their suitability in view of the increased usage that will arise following development. For trees in categories A to C, it should qualify under one or more of the three subcategories (1, 2, 3). Subcategories 1, 2, and 3 are intended to reflect arboricultural and landscape qualities, and cultural values, respectively. This system will also identify any unsuitable trees and suggest removal where necessary.

Where trees are found to require immediate attention, they will be identified in red bold text in the schedule of findings

Particular care is needed when considering the quality and value of C grade and young trees, especially where they occur as individual specimens and should not dominate site layout considerations.

The reference numbers of the surveyed trees are included in the survey schedule and shown on the Tree Constraints Plan (TCP) which should be read in accordance with this report.

Trunk diameters are measured at 1.5 metres above ground level and rounded to the nearest 25 millimetres.



Trunk diameters, accessible crown spreads, tree heights and height of the lower crowns above ground level were all estimated.

The proposed development site boundary is identified by plan and is hereafter referred to as 'the site' .

In all cases where a tree's position may be critical (e.g. in accurately determining clearances between a tree and a proposed structure) all dimensions should be checked on site.

5. TREE CONSTRAINTS PLAN

A Tree Constraints Plan accompanies this report and identifies a 'Root Protection Area' (RPA) for each tree or group of trees surveyed. The RPA is in effect a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain tree viability, and in which the protection of the roots and soil structure is treated as a priority. Where a tree is to be retained, its RPA should be respected from the initial design period and throughout the demolition works until completion of the build. The necessary RPA distances are found in Table D1 of the British Standards¹

The RPA is marked on the Tree Constraints Plan as a solid line and reflects a radial distance when measured from the centre of the tree's trunk shown as a circle, centred upon the trunk of the tree, to enclose an area equal to the required RPA. This measurement is replicated within the end column of the Findings and again in tabular format and appears in the Tree Constraints Plan.

In practice, the distribution of roots may frequently prove to be uneven due to the presence of a variety of constraining influences. These may be physical barriers such as existing foundations etc., or the existence of localised soil conditions inhospitable to root growth, such as water logging or soil compaction. Conversely, soil conditions may be particularly conducive to root development in one quarter and this might lead to an asymmetric distribution of roots around the tree. However, in most cases the nominal circular areas as indicated will provide a reasonable guide as to where special protection is needed.

Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area will be produced on the TCP to represent this. Modifications to the shape of the RPA will reflect a soundly based arboricultural assessment of likely root distribution.

Proposed new planting may be marked on the plan as a constraint and soil should be protected from compaction where this is to occur.

Trees will be coloured according to their category and the following will apply. **See Appendix 1 ...Tree Quality Assessment**

- U - Dark red
- A - Light green
- B - Mid blue
- C - Grey



6. RECOMMENDATIONS

Your attention is drawn to the condition of tree numbers 2, 3, 4, Tag 5053, 12, 14, 19, 26, 43, 52, 56, 58, 78a, 78b, 80, 83, 84, 91, 93, 96, 97, 98, 105, 113 & 115. These trees are considered to be either in a dangerous condition or causing damage to existing structures and it is recommended that they are felled immediately.

Efforts should be made to retain category A and B trees

C category trees may be retained if desired although not need necessarily be a significant constraint on the site's potential.

Category U trees should be removed as part of any site development and evaluated through a site risk assessment in the sites existing current situation.

Design and layout should take account of existing trees of importance and consider their requirements to maintain existing landscape value where possible. The site layout should ensure construction activity is outside the RPA of any retained trees. Recommended minimum RPA radii are shown in the final column of the survey schedule and diagrammatically as circles on the TCP.

In view of the recommendations for the design and construction process, in considering tree care (Figure 1, Appendix A), further assessments are required throughout the planning and design phase and recommended as follows...

- (1) **Arboricultural Implications Assessment (AIA)**
- (2) **Tree Protection Plan (TPP)**,
- (3) **Arboricultural Method Statement (AMS)** which should be undertaken by an 'Arboriculturalist' .

Tree clearance works or works other than those to deal with serious defects posing considerable risk shall not commence until such time written approval or full planning approval is received from the Local Planning Authority. Any authorised tree works should be completed prior to the onset of any demolition or construction works, taking account of all legal constraints.

Trees require regular inspections, once the development is complete all the retained trees should be re-examined by an arboricultural specialist.

Where the installation of paths or lightweight structures such as walls are unavoidable near to trees, the design and construction specification needs to take account of future growth. Refer to Table A of the Standard.

Shading of buildings by trees can be a problem, particularly where there are rooms which require natural light. Buildings will need to be positioned further away than just the outer edge of tree canopies in order to reduce the likelihood of pressure from future occupiers for tree removal or trimming. This applies particularly where windows of habitable rooms will face onto tree canopies. Future dimensions of immature trees and shadow



patterns should also be taken into account. A minimum of 2-m should be allowed between buildings and the outer edge of fully-grown canopies to allow for building maintenance and the erection of scaffolding etc.

Proposed buildings should be designed to take account of existing trees that are to be retained, their ultimate size and density of foliage, and the effect that these will have on the availability of light. Where sufficient distances (including allowances for future growth) cannot be achieved, the removal of C category trees should be considered. Larger trees are unlikely to increase greatly in height or spread. Older trees are particularly sensitive to root disturbance and are best retained within open space where they can be managed for optimum health, amenity value, and safety, rather than within private spaces.

All trees being retained must be protected by barriers and/or ground protection before

- Site activity except for tree clearance
- Materials or machinery are brought onto site
- Demolition
- Stripping of soil

Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Where construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection should be installed (see 6.2.2 and Figure 2 of the standard) working under the guidance of an approved AMS and the supervision of the Project Arborist.

The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2 in the Appendices. The vertical tubes should be spaced at a maximum interval of 3 metres and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

In order to prevent damage to the trees, including their roots, within the fenced area (RPA) there should be no...

- Alteration of ground levels, including soil stripping and digging.
- Installation of drainage or services using conventional open trenching methods which would not be in accordance with BS: 5837. (Any works should be in accordance with the National Joint Utilities NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees Volume 4)
- Excavation (there are exceptions when covered by an approved⁴ Arboricultural Method Statement)
- Storage of any materials or equipment, even on a temporary basis.

⁴ Approved by the Local Planning Authority



- Storage of oil, bitumen, cement or other harmful materials, mixed or discharged within 12-m of the trunk of any retained tree and making further allowances for any slope of the ground to prevent running contamination. Phytotoxic materials would include any mineral oil, fuels, cement mortar washings concrete washings, mortar.
- Fires must not be lit beneath or within 12-m of any tree canopies.
- Site operations such as deliveries, site machines, crane jibs etc should be organised to avoid damaging the trunk or crown of trees. Where this conflict is unavoidable then facilitation pruning should be carried out in advance, rather than after damage has occurred. This may also be required to allow demolition operations.
- Mechanical cultivation of the soil as part of landscaping operations.

Tree felling and surgery may be required to allow access for construction or future site traffic, or in the interests of the future health and safety. Detailed recommendations for such works can be provided once a final site layout is agreed and it is determined which trees (if any) are to be retained. All surgery should comply with the British Standards 3998:2010 Tree Work Recommendations or more recently accepted arboricultural good practice. The legal position regarding site designations should be considered.



7. SCHEDULE OF FINDINGS

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
1	NA	Common lime	19	500	3	3	2	4	6	4	M	Street tree of reasonable form, adjoining the site.	None	40+	B 2	113	6.00
G1	NA	Cherry laurel, Japanese spotted laurel, Pittosporum.	5	150	3	3	3	3	0	0	M	Dense group on entrance opposite security gate.	None	20-40	C 2	10	1.80
2	5042	Common lime	20	725	5	4	6	4	4	2	M	Protected by Tree Preservation Order. Tree of reasonable form but with crown dieback by some 10%. <i>Kretschmaria deusta</i> present. <i>K. deusta</i> leads to brittle fractures of the base and roots. Refer to Photograph 1, in Appendices	Fell to ground level, with replacement planting. Species and location to be agreed with Local Planning Authority	<10	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
3	5043	Common lime	21	575	4	4	5	2	3	2	M	Protected by Tree Preservation Order. Tree of reasonable form, with a bifurcated stem at 6-m AGL. Fork union occluded by ivy. Early crown dieback by some 5%. <i>Kretzschmaria deusta</i> present. <i>K. deusta</i> is a soft rot decay fungi that leads to brittle fractures of the base and roots.	Fell to ground level, with replacement planting. Species and location to be agreed with Local Planning Authority	<10	U	0	0.00
4	5044	Common lime	19	525	5	2	5	5	4	3	M	Protected by Tree Preservation Order. Tree of reasonable form but with crown dieback by some 5%. <i>Kretzschmaria deusta</i> present. <i>K. deusta</i> is a soft rot decay fungi that leads to brittle fractures of the base and roots. Refer to Photograph 2, in Appendices	Fell to ground level, with replacement planting. Species and location to be agreed with Local Planning Authority	<10	U	0	0.00
5	5045	Common lime	19	550	5	6	5	5	2	3	M	Protected by Tree Preservation Order. Tree of good form near frontage.	Remove basal epicormics and inspect base and lower stem.	10-20	B 1	137	6.60



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
													Arrange for a qualified arborist to re-inspect paying particular attention for signs of <i>K. deusta</i>				
6	463	Pedunculate oak	16	850	7	8	9	9	5	1	M	Protected by Tree Preservation Order. Tree of reasonable form and somewhat squat in appearance. Refer to findings of detailed condition inspection below. Refer to Resistograph results & in Appendices	Implement recommendations below.	40+	B 2,3	327	10.20

Detailed Condition Inspection.

Remarks.

Stem diameter taken @ 1-m AGL above the basal swelling = 870-mm.

Minimum Required Sound Wall Thickness.. Safety factor @ 0.35= 152-mm.

Broadened base at 360 degrees of the stem circumference up to 1-m AGL may indicate internal basal decay, but this could not be ascertained using a sounding hammer. Decay was however noted on the underside of an enlarged south & east buttress.



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M')
The crown is formed of lateral scaffold limbs that are often 'dog legged' with acute change of angles. Resistograph Results Summary (Refer to test readings in Appendices) North = Pass South buttress = decay at 14-cm East buttress= decay at 12-cm West = Decay in sapwood between 5-6-cm Recommendations There is decay present within the south and east buttresses with notable reaction wood with the broadening of the stem base and affected buttresses. The type of decay in the two buttresses and sapwood to the west may be indicative of Honey fungus (<i>Armillaria mellea</i>) but this is not confirmed. The structural faults are within acceptable levels and as such remedial works are not required. However, the condition of this tree near a well-used road merits a regular condition inspection. 1. Access facilitation pruning may be required. 2. Place into a cyclical tree inspection regime every 18 months. The next inspection should be undertaken whilst in full leaf to assess for any crown symptoms.																	
7	462	Common lime	12	175	2	2	2	2	2	1	Y/EM	Tree of reasonable form with potential to develop into a key tree.	Tip back lower branches to create 2.5-m ground clearance	40+	B 2	14	2.10
8	464	Akin to Japanese cornelian cherry 'Kintoki'	10	200	4	5	5	5	1	2	EM/ M	Small tree/shrub of unremarkable form. Fractured crossing central stem.	Remove crossing and fractured stem and limb. Sever 1m ivy band.	20-40	C 1	18	2.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G2	NA	Holly	7	125	3	3	3	3	0	0	EM	Unremarkable group located under canopy of oak.	None	40+	C 2,3	7	1.50
G3	NA	Oval-leaved privet, hornbeam	2	75	1	1	1	1	0	0	EM	Formal roadside hedge to frontage.	Maintain shape through box pruning.	20-40	B 2	3	0.90
G4	5046 - 5051	Ornamental flowering cherry	9	175	2	2	2	2	2	2	Y/EM	Trees of fair to reasonable form, in a row, slightly offset from hedge G3. Bacterial canker of cherry present but not extensive. Occasional compression forks developing.	Monitor health and structure every 3 years.	20-40	C 2	14	2.10
G5	NA	Irish yew, rhododendron, sweet bay, holly, variegated holly, apple, plum	10	175	4	4	4	4	0	0	EM	Jointly with Group 6, 7 - 23 No trees protected under Tree Preservation Order. Dense unkempt group and possibly part of the remnant orchard (Group 7), offering screening to adjoining garden. Fruit trees tagged 5052- 5055.	Individual dominant shrubs and small trees could be selected for retention in order to improve the amenity value of the group. If retained undertake renovation pruning on fruit trees. Implement recommendations below.	10-20	C 2	14	2.10



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M')
Tree Condition Inspection.																	
Tree No	Tree Tag	Species	Remarks									Recommendations					
128	371	Elder	Multi-stemmed specimen with crown dieback by 30%.									Coppice to 30cm from ground level and finish with a clean cut at 20 degrees.					
129	5055	Apple	Root-plate failure with tree resting on boundary fence and overhanging Isca Court. Refer to Photograph 21d, in Appendices									Dismantle and make safe lying flat on the woodland floor.					
130	5053	Apple	Ganoderma applanatum fungal bracket noted which causes a white rot with associated basal decay and a fractured and failed main stem.									Fell to ground level.					
9	466	Silver birch	18	350	6	6	0	7	4	3	M	Twin-stemmed tree of fair form, subordinate to tree 10.	None	20-40	B 2,3	55	4.20
10	467	Silver birch	18	650	8	7	8	7	2	2	M	Dominant tree of the two (9) and of good form.	None	20-40	B 2,3	191	7.80
11	5056	Cotoneaster sp	7	175	3	6	5	5	0	2	EM/M	Insignificant small tree/shrub	None	10-20	C 2	14	2.10
12	5057	Goat willow	11	125	6	6	7	6	0	1	M	Protected by Tree Preservation Order. Mature stool with early mature growth. Multi-stemmed specimen from base.	Fell to ground level	10-20	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Inherently weak structurally and not deemed suitable for retention near high target occupancy housing.					
13	5058	Holly	6	175	3	3	3	3	0	0	Y/EM	Protected by Tree Preservation Order. Insignificant small tree/shrub	None	40+	C 2,3	14	2.10
G6	NA	Leyland cypress, Mexican orange blossom, apple, smoke bush	10	125	2	2	2	2	2	2	Y/EM	Jointly with Group 5, 7 - 23 No trees protected under Tree Preservation Order. Sporadic trees located in adjoining gardens.	None	20-40	C 2	7	1.50
14	5059	Judas tree	5	100	1	3	4	5	2	1	EM	Protected by Tree Preservation Order. Tree of poor form with a 30% dieback	Fell to ground level	<10	U	5	1.20
15	NA	Leyland cypress	15	400	4	4	4	4	4	3	Y/EM	Protected by Tree Preservation Order. Located in adjoining garden on boundary and offers some screening	None	20-40	B 2	72	4.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G7	NA	Orchard consisting of mixed fruit trees	10	300	5	5	5	5	2	2	M	Jointly with Group 5, Tree's 6 – 23 are protected under Tree Preservation Order. Orchard comprising of well-spaced trees, some with a multitude of condition issues ranging from fractured limbs/primary branches, crossing branches, congested crowns & decay cavities. Refer to Photograph 3, in Appendices	Sever ivy and other climbers. Undertake renovation pruning on all fruit trees Implement recommendations below.	10-20	B 2,3	41	3.60

Tree Condition Inspection.

<u>Tree No</u>	<u>Tree Tag</u>	<u>Species</u>	<u>Remarks</u>	<u>Recommendation</u>
124	367	Apple	Basal wound to north at 100 degrees of stem circumference. Congested crown with multiple crossing branches. Fractured and partially attached wind damaged branches at 6-m AGL to the south, that have been pruned and shortened to the boundary. Refer to Photograph 21a, in Appendices	Target prune crossing, damaged branches
125	368	Plum	Tree forks at 1.5-m AGL to become bifurcated. Three pruning stubs occur in this union effectively acting as wedges when they were live. Reaction wood to this previous force has widened the stem at the union. An elongated narrow decay cavity to the north between 1.8-m - 3-m AGL. Fractured and partially attached limb at 3-m AGL. Refer to photograph 21b, in Appendices	Remove fractured limb. Monitor linear cavity on east stem every 18 months.



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M')	
126	369	Apple	Elongated narrow decay cavity between 0.3-m – 1.1-m AGL to a depth of 50-mm. Congested crown with multiple crossing branches. Refer to photograph 21c, in Appendices										Target prune crossing branches. Monitor cavity every 18 months					
127	370	Apple	Small tree with crown dieback by 60%. Small but deep decay cavity at 300-mm AGL to south.										Fell to ground level.					
16	5060	Ornamental flowering cherry	6	300	3	5	4	5	2	2	EM/M	Protected by Tree Preservation Order. Tree of below average form	Consider removal	<10	C 2	41	3.60	
17	1381	Noble fir	11	350	3	3	3	3	4	5	EM	Protected by Tree Preservation Order. Tree of below average form becoming bifurcated with a tensile union. Offers some limited screening for adjoining house	Remove lower dead branches and sever ivy	40+	C 2	55	4.20	
G8	NA	Hazel, holly, myrobalan plum, Japanese spotted laurel	10	125	4	4	4	4	0	1	EM	Unkempt group, offering some screening to the sub-station	Remove suckers if retained	20-40	C 2,3	7	1.50	
Stump	NA	Goat willow	/	/	/	/	/	/	/	/	M	Recently felled tree with no re-growth form stump as yet.	Treat with glyphosate-based herbicide in accordance with manufacturers instruction, in order to cease regrowth	10-20	U	0	0.00	



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G9	NA	Cherry laurel	6	100	3	3	3	3	0	0	EM/M	Isolated unremarkable group with two individual small shrubs just to the north-east	None	10-20	C 2	5	1.20
18	468	Horse chestnut	10	550	5	5	5	6	4	2	EM	Tree of reasonable form	May require access facilitation pruning	40+	B 2	137	6.60
19	1382	Holly	/	/	/	/	/	/	/	/	EM/M	Sparse foliage with crown dieback and young basal growth in response	Fell to ground level	<10	U	0	0.00
20	1383	Downy birch	16	225	4	2	3	3	5	4	EM	Remaining stem of two formed from ground level, of reasonable form	None	20-40	C 2,3	23	2.70
21	1385	Beech	13	150	2	2	2	4	5	4	Y/EM	Tree of reasonable form.	Consider removal of tree 20 to provide space for this tree' s crown to develop	40+	B 1,3	10	1.80
G10	NA	Lawson cypress	16	300	5	5	5	5	0	0	EM/M	Multi-stemmed specimen with butt sweep.	Consider removal in light of issues in relation to High Hedges Act	10-20	C 2	41	3.60
22	1386	Holly	12	275	4	5	4	6	4	2	EM/M	Tree of reasonable form, with a bifurcated stem at 1-m AGL.	None	40+	B 2,3	34	3.30



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G11	NA	Goat willow, cherry laurel, Himalayan honeysuckle, hazel	12	150	3	3	3	3	0	0	Y/EM	Unremarkable group, located near lodge entrance	Consider removal	10-20	C 2	10	1.80
G12	NA	Yew	2	75	1	1	1	1	0	0	Y	Young hedge along roadside boundary. Has potential, but could also be easily replaced through mitigation planting	Prune leaders to promote dense lower growth. Remove adjoining shrubs to improve light levels.	40+	C 2,3	3	0.90
23	1387	Pear	7	250	4	6	5	3	3	3	EM/M	Tree of poor form. Scaffold limbs are 'dog legged' with acute changes of angle	If retained, undertake renovation pruning and remove deadwood	10-20	C 2,3	28	3.00
24	471	Pedunculate oak	15	475	8	9	8	6	3	1	Y/EM	Protected by Tree Preservation Order. Long lived species of good form near frontage. Refer to Photograph 4, in Appendices	Remove deadwood	40+	A 2,3	102	5.70



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
25	472	Lawson cypress	17	500	6	6	6	6	1	0	M	Tree of good form, near frontage with small conifers and shrubs adjoining	Consider removal in favour of oak tree T24, to allow its crown to develop unhindered	20-40	B 1,2	113	6.00
G13	NA	Ash, Lawson cypress with juvenile foliage, variegated holly, Wilson's honeysuckle, hazel, holly	11	150	4	4	4	4	2	2	Y/EM	Unremarkable group located near frontage to road and lodge. Ash Tag (1388) multi-stemmed with one stem having been felled and the other leaning out towards the road due to phototropic tendencies	Ash (Tag 1388) - fell to ground level and treat stump with herbicide in accordance with manufacturers instruction, to cease regrowth.	20-40	C 2,3	10	1.80
26	1389	Pear										Extensive basal decay with cavity. <i>Kretzschmaria deusta</i> present which is a soft rot decay fungi that leads to a sudden brittle fractures of the base and roots.	Fell to ground level	/	U	0	0.00
27	1390	Holly	10	175	4	3	3	4	2	2	EM	Triple stemmed specimen of average form	None	20-40	C 2,3	14	2.10



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G14	NA	Lawson cypress	14	300	5	6	2	4	0	0	EM/M	Row of conifers close to south boundary. Consider issues in relation to High Hedges Regulations. Condition issues include incipient stem failure, decaying pruning wounds & compression forks. These trees have been poorly reduced 'topped' , at some stage in the past.	Consider removal and replacement with better performing trees more suitable to a development.	20-40	C 2	41	3.60
28	1392	Red oak	16	225	1	6	7	5	5	5	EM/M	Twin stemmed specimen leaning with an asymmetric crown, predisposed to the south and road.	Reduce crown by 3-m distally	40+	C 2	23	2.70
29	1391	Red oak	16	275	5	7	9	7	4	2	EM/M	Twin stemmed specimen of reasonable form.	None	40+	B 2	34	3.30
G15	475	Lawson cypress	18	525	9	4	6	7	2	1	M	Multi-stemmed specimens of average form located on low mound. Consider issues in relation to High Hedges Regulations. Several compression forks present.	Monitor structural issues annually, if retained	20-40	B 2	125	6.30
30	473	Pedunculate oak	20	475	7	10	6	0	6	4	M	Protected by Tree Preservation Order.	Reduce crown by 2-m distally	40+	B 2,3	102	5.70



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
												Twin stemmed specimen subordinate to tree 31. Tree of fair form with a dominant east stem					
31	474	Common lime	20	550	6	8	7	5	2	5	M	Protected by Tree Preservation Order. A single dominant stem remains with 3 x stems to the north, having been poorly removed to accommodate the nearby student block. Decay developing in the three large diameter pruning wounds. Refer to Photograph 5, in Appendices	Monitor structural issues annually, if retained	40+	B 2	137	6.60
32	476	Lawson cypress	18	600	7	7	8	6	3	1	M	Tree of fair form soon forking to become multi-stemmed. The main fork has enveloped the metal railing stanchion, whilst the forks at 2-m AGL are formed under compression.	If retained, install a two-way cable bracing systems	20-40	B 2	163	7.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
33	1393	Sessile oak	19	475	7	8	6	7	5	5	EM/M	Protected by Tree Preservation Order. Tree of reasonable form by metal gates on tarmac ramp. Small grouping of early mature holly & hazel under the canopy	Remove deadwood	40+	B 2,3	102	5.70
G16	NA	Irish yew	7	75	1	1	1	1	0	0	Y/EM	Closely spaced group in small beds, with limited rooting potential	None	40+	C 2	3	0.90
34	1394	Norway maple	8	200	4	4	4	4	3	3	Y/EM	Tree of good form in quadrant	None	40+	B 2	18	2.40
35	1395	Norway maple	8	200	4	4	4	4	3	3	Y/EM	Tree of good form in quadrant	None	40+	B 2	18	2.40
36	1396	White willow	10	325	6	6	8	5	3	0	EM	Unremarkable tree which is inherently structurally weak.	Consider removal in high target occupancy housing areas.	20-40	C 3	48	3.90
37	1397	Holly	8	125	3	3	3	3	2	2	EM	Unremarkable multi-stemmed specimen with 2 x central stems, reduced at 2-m AGL.	None	40+	C 2,3	7	1.50
38	1398	Common walnut	14	200	2	3	4	4	3	2	EM	Twin-stemmed tree of reasonable form, with a dominant east stem.	Monitor health annually	40+	B 1,2	18	2.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Google images in leaf suggests a somewhat thinning upper crown.					
G17	NA	Lime sp	10	250	4	3	4	4	2	2	Y/EM	Row of well-spaced and well-formed trees planted on top of bank within Cherry laurel shrub bed. Most easterly tree has a developing compression fork.	Monitor compression fork on tree, to east end of row	40+	B 2	28	3.00
39	1399	Tulip tree	14	275	4	4	4	4	3	2	EM	Protected by Tree Preservation Order. Tree of good form in planting grill in paved seating area, adjoining the car park. Refer to Photograph 6, in Appendices	Investigate rooting pit and improve rooting space if required and retained. Otherwise consider transplanting with tree spade following careful removal of surrounding,, hardstanding.	40+	B 1,2	34	3.30
G18	1400, 2281, 2282, 2283	Himalayan birch	10	200	4	5	4	5	2	1	Y/EM	Protected by Tree Preservation Order. Group of 4 trees in the corner of a quadrant Trees of reasonable form. Several crossing branches and developing compression forks.	May require access facilitation pruning	20-40	B 2	18	2.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G19	NA	Norway maple	5	100	2	2	2	2	3	3	Y	Planted in narrow raised strips demarketing parking bays. Located in grills and stone setts. Can easily be replaced through mitigation planting.	Investigate rooting pit and improve rooting space if required and retained.	40+	C 2	5	1.20
40	2284	Ornamental flowering cherry	5	125	3	3	3	3	2	2	Y/EM	Unremarkable tree	None	20-40	C 2	7	1.50
41	2288	Himalayan birch	13	175	4	4	1	5	2	1	Y/EM	Tree of fair form, but subordinate to T42.	May require access facilitation pruning	40+	B 2	14	2.10
42	2287	Himalayan birch	14	250	5	5	3	5	2	1	Y/EM	Tree of good form and the dominate one in a pair with T41	May require access facilitation pruning	40+	B 2	28	3.00
43	2289	Sessile oak	17	400	8	6	3	8	3	2	EM	Protected by Tree Preservation Order. Extensive crown dieback with notable young growth within the internal crown. Refer to Photograph 7, in Appendices	Fell to ground level	<10	U	72	4.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
44	2290	Sessile oak	18	500	7	10	7	6	4	3	EM	Protected by Tree Preservation Order. Tree of good form.	Remove deadwood over target	40+	B 2,3	113	6.00
45	2291	Sessile oak	18	600	10	10	10	9	2	2	M	Protected by Tree Preservation Order. Twin stemmed specimen from ground level, of reasonable form.	May require access facilitation pruning. Remove deadwood over target.	40+	B 2,3	163	7.20
46	2292	Goat willow	10	250	5	6	4	5	2	2	EM	Protected by Tree Preservation Order. Inherently weak structurally and not suitable for retention near high target occupancy housing.	If retained, coppice.	20-40	C 3	28	3.00
47	2293	Sessile oak	18	550	9	7	6	8	4	4	EM	Protected by Tree Preservation Order. Tree of good form	Remove deadwood over target	40+	B 2,3	137	6.60



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
48	2294	Sessile oak	19	600	12	8	9	4	4	3	EM/M	Protected by Tree Preservation Order. Tree of good form. Lateral limbs on site side likely to be subject to increased torsional loading that closer development will cause.	Remove deadwood and reduce lateral limb formed at 4-m AGL to the site side by 3-m distally.	40+	B 2,3	163	7.20
49	2295	Sessile oak	16	600	15	4	9	6	4	1	EM/M	Protected by Tree Preservation Order. Forms a pair with T50. Tree soon becomes lateral at 2.5-m AGL predisposed towards the site. Notable fibre buckling under compression on stems and limbs	End weight reduction pruning to reduce loading, by 5-m distally	40+	B 2,3	163	7.20
50	2296	Sessile oak	16	525	5	10	10	8	6	6	EM/M	Protected by Tree Preservation Order. Forms a pair with T49. Tree soon becomes lateral at 6-7-m above ground level, predisposed towards the road.	End weight reduction loading by 3-m distally	40+	B 2,3	125	6.30



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
51	2297	Ash	18	350	7	6	7	3	6	2	EM	Protected by Tree Preservation Order. Tree of good form located on edge of low stone retaining wall, with some signs of soil disturbance.	Monitor effect on wall every 2 years	20-40	B 2,3	55	4.20
G20	NA	Ash	15	125	6	6	5	4	3	2	Y/EM	Small group on edge of low stone retaining wall. Offers some screening but individually unremarkable.	Thin to favour better formed specimens and remove those with symptoms of Ash dieback disease (<i>Hymenoscyphus fraxineus</i>)	40+	C 2,3	7	1.50
G21	NA	Cherry laurel	6	125	3	3	3	3	0	0	EM/ M	Dense group on top of bank that offers some screening. Isolated stems of Japanese knotweed (<i>Fallopia japonica</i>) noted to west end of group.	Treat Japanese knotweed with glyphosate-based herbicide in accordance with industry best practice and Manufacturers' instructions.	20-40	C 2	7	1.50
52	2298	Cherry 'Kanzan'	6	/	/	/	/	/	/	/	EM	Elongated compression fork from union at 1.2-m AGL to ground level. Refer to Photograph 8, in Appendices	Fell to ground level	<10	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G22	NA	Ornamental flowering cherry x 4	10	150	4	4	6	6	2	2	EM	Unremarkable row of trees on bank to front of student accommodation block	None	10-20	C 2	10	1.80
G23	NA	Ash, oak, sycamore, holly, hawthorn, goat willow, Norway spruce, hazel, lime, mulberry, European larch, Lawson cypress, black pine, Douglas fir, beech, cedar, wellingtonia, birch, coastal redwood, weeping willow	20	1000	6	6	6	6	2	2	M	Protected by Tree Preservation Order. Mixed broadleaved woodland and parkland further north. Comprising of predominantly native and naturalised species with the occasional planted exotics and some fine specimens. Issues include but not exclusively - windblown trees, small and medium diameter deadwood, phytophthora, fractured & failed stems / limbs and primary branches. Woodland canopy cover thins further northwards and conversely bramble increases, as light levels improve. Individual trees and sub-groups in this wider group have been recorded where they occur within influencing distance of the PRow (trees 121-123, G39 & G40) Refer to Photograph 9, 10 in Appendices	Woodland management plan required. Identify and plot / tag specimen trees. Undertake detailed tree condition inspection. Potential planting but not at the cost of overplanting around the specimen parkland trees.	40+	A 1,2,3	452	12.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G24	NA	Chanticleer pear	11	225	3	3	3	3	2	2	EM	Planted in paved area within tree grills.	Investigate rooting pit and improve rooting space if required and retained	20-40	B 2	23	2.70
G25	NA	Hornbeam, ornamental flowering cherry, pear	4	150	1	1	1	1	1	1	Y	Young trees within tree pits/trenches within paviour car park.	Investigate rooting pit and improve rooting space if required and retained	20-40	C 2	10	1.80
53	2299	Deodar cedar	19	700	11	12	11	10	1	1	M	Protected under Tree Preservation Order. Specimen tree of good form. Several large flush pruning wounds. Large sweeping stems and lateral limbs gives it a similar form to Cedar of Lebanon. Refer to Photograph 11, in Appendices	Consider impact of changing wind dynamics and use of cable / propping bracing system once a layout is known.	40+	A 1,2	222	8.40
H1	NA	Yew with a section of Escallonia rubra 'Macrantha'	2	100	1	1	1	1	0	0	EM	Sections of mostly yew hedges with one section of Escallonia. Formal box cut hedge to front of main historical buildings	Maintain box cutting	40+	B 1	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
54	2300	Himalayan birch	10	150	4	5	3	4	1	2	Y/EM	Multi-stemmed specimen of average form with multiple stems of Sawara cypress (<i>Chamaecyparis pisifera</i>)	None	40+	B 2	10	1.80
H2	NA	Box	1	75	1	1	1	1	0	0	EM	Formal border hedge at entrance to main historic house.	Continue formal pruning	40+	B 1	3	0.90
55a, 55b	NA	Box	2	100	1	1	1	1	1	1	EM	Formally pruned to an umbrella shape. Located in raised planters on entrance to main historic house.	Continue formal pruning	40+	B 1	5	1.20
56	1641	Variegated holly	7	/	/	/	/	/	/	/	EM/M	Located in grounds of old stone house. Extensive crown dieback by some 80%	Fell to ground level	<10	U	0	0.00
57	1642	Variegated holly	7	/	/	/	/	/	/	/	EM/M	Located in grounds of old stone house. Extensive crown dieback by some 80%	Fell to ground level	<10	U	0	0.00
58	1643	Variegated holly	9	350	4	3	4	3	5	4	EM/M	Located in grounds of old stone house. Early crown dieback of lower branches. Discoloured and potentially dysfunctional areas of bark / cambium.	Monitor crown health annually	10-20	B 2	55	4.20
59		Lawson cypress var. (with juvenile foliage)	5	100	2	2	2	2	0	1	Y/EM	Unremarkable conifer in grounds of old stone house	None	20-40	C 2	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
60	429	Common lime	20	800	10	10	10	10	5	2	M	Protected under Tree Preservation Order Specimen tree of good form in grounds of historic house. Refer to Photograph 12, in Appendices	May require access facilitation pruning	40+	A 2	290	9.60
61	430	Silver birch	14	325	5	4	5	5	2	2	EM/M	Tree of fair form located between buildings	May require access facilitation pruning	20-40	C 2,3	48	3.90
62	1644	Silver birch	15	425	5	3	5	5	4	3	EM/M	Tree of good form located between buildings	None	20-40	B 2,3	82	5.10
63	432	Silver birch	12	225	3	3	2	4	4	4	EM	Tree of below average form located between buildings	None	20-40	C 2,3	23	2.70
64	434	Young' s weeping birch	6	275	2	2	2	2	3	1	EM	Tree of average form located between buildings	None	20-40	C 2	34	3.30
65	1645	Young' s weeping birch	4	250	4	3	4	4	2	1	EM	Tree of average form located between buildings	None	20-40	C 2	28	3.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
66	428	Lawson cypress var	10	400	4	5	3	4	1	0	EM	Thinning crown with possible root damage and broadening base and buttress roots to south and east.	Consider removal if its near housing	<10	C 2	72	4.80
67	1646	Weeping birch	3	325	4	4	3	5	2	1	EM	Suppressed under crown of T66 and the stem soon becomes lateral to east at 3-m AGL.	Consider removal	10-20	C 2	48	3.90
68	426	Western catalpa	11	325	4	4	5	5	2	2	EM	Tree of good form in grounds surrounding the historic building	None	40+	B 1,2	48	3.90
69	1647	Pedunculate oak	10	250	4	5	5	5	2	2	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	28	3.00
70	1648	Pedunculate oak	10	175	4	4	4	4	2	2	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	14	2.10
71	1649	Pedunculate oak	8	150	2	2	2	2	2	1	Y	Tree of good form but young for species and could be replaced with mitigation planting	None	40+	B 2,3	10	1.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
72	425	Silver birch akin to var. 'Obelisk'	18	325	2	4	4	3	3	5	EM/M	Tree of reasonable form	None	20-40	B 2,3	48	3.90
73	1650	Silver maple	16	525	6	7	7	7	4	2	M	Tree of average form, forking at 2-m AGL with west stem soon forking again. Small basal decay cavity to west.	Monitor decay and crown structure every 3 years	20-40	B 2	125	6.30
74	422	Akin to Stone pine	8	350	4	5	4	4	2	3	Y/EM	Tree of average form with limited rooting potential in hard landscaping	None	20-40	C 2	55	4.20
75	421	Akin to Stone pine	7	350	4	4	4	4	2	3	Y/EM	Tree of average form with limited rooting potential in hard landscaping	None	20-40	C 2	55	4.20
76	1651	Small-leaved lime	20	700	6	7	8	6	4	2	M	Protected under Tree Preservation Order Tree of good form.	May require access facilitation pruning	40+	A 2	222	8.40
G26	NA	Italian cypress var.	6	100	1	1	1	1	1	1	Y	Located in shrub beds within courtyard	None	40+	C 2	5	1.20
G27	NA	Ornamental flowering cherry, Himalayan birch, hornbeam	4	75	1	1	1	1	2	2	Y	Located in paved areas within car park. Several have had their leader snapped and/or pruned	None	20-40	C 2	3	0.90



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
77a, 77b	NA	Weeping cherry	4	125	2	2	2	2	3	1	Y	Trees of average form	Investigate rooting pit and improve rooting space if required	20-40	C 2	7	1.50
G28	NA	Hornbeam	5	150	2	2	2	2	1	2	Y	Located in paved areas within car park.	Investigate rooting pit and improve rooting space if required	20-40	C 2	10	1.80
78a	451	Hybrid black poplar	/	/	/	/	/	/	/	/	/	Cankered with crown dieback by 15%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
78b	450	Hybrid black poplar	/	/	/	/	/	/	/	/	/	Cankered with crown dieback by 10%. Inherent structural weakness and not deemed suitable for retention near housing	Fell to ground level and replace with better performing species	10-20	U	0	0.00
79	449	Small-leaved lime	10	325	4	4	5	4	3	2	EM/M	Tree of reasonable form with some lower stem epicormic growth	Remove lower stem epicormics	40+	B 2	48	3.90
80	448	Horse chestnut 'Flore Pleno'	/	/	/	/	/	/	/	/	EM	Bleeding canker of Horse chestnut (<i>Pseudomonas syringae</i> pv <i>aesculi</i>) causing coalescing cankers. Memorial tree	Fell and consider replacement and retention of memorial plaque.	<10	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
G29	NA	Chanticleer pear	8	225	2	2	2	2	2	2	Y/EM	Three trees planted in a row in narrow grass verge	None	20-40	C 2	23	2.70
81	1652	Himalayan birch	8	150	3	3	3	2	3	1	Y	Tree of good form with tight compressive forks at 2-m above ground level	Monitor fork structure every 3 years	40+	C 2	10	1.80
G30 a, b	NA	Myrobalan plum, Himalayan birch, scarlet oak, Southern evergreen magnolia	8	150	3	3	3	3	2	2	Y	Generally, an insignificant group of fair-average form. Planted within shrub beds and amenity grass areas in close proximity to buildings. The magnolia are an unusual species and variety. Refer to Photograph 13, in Appendices	The magnolia x 4 could be transplanted.	20-40	C 2	10	1.80
H3	NA	Cherry laurel, dwarf conifer, yucca, firethorn, variegated holly	3	100	2	2	2	2	0	0	EM	Initially dominated by Cherry laurel to the west providing a dense hedge offering screening but becoming less dense and mixed to the south of tree 104.	Maintain shape through pruning. Plant into gaps using native shrub species.	20-40	C 2	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
82	418	Horse chestnut		475	6	6	6	6	2	1	EM	Tree of average form with Bleeding canker of Horse chestnut (<i>Pseudomonas syringae pv aesculi</i>) and tarry black lesions	Monitor health annually	40+	B 2	102	5.70
G31	417, 1653, 1654, 1657	Horse chestnut, Norway maple, false acacia, cherry-crab	10	150	4	4	4	4	2	2	Y	Even aged group, planted in a row surrounding the grass verge of car park bays	None	40+	C 2	10	1.80
83	416	False acacia									Y	Extensive dysfunctional bark and cambium with low vitality. Tree of poor form. Refer to Photograph 14, in Appendices	Fell to ground level	<10	U	0	0.00
84	415	Poplar sp									M	Twin stemmed, having been poorly reduced 'topped' at 8-m AGL. Inherently structurally weak and not deemed suitable for retention near housing. Refer to Photograph 14, in Appendices	Fell to ground level	10-20	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G32	NA	Hornbeam, cherry	5	125	2	2	2	2	2	2	Y	Located in paved areas within car park.	Investigate rooting pit and improve rooting space if required and retained	20-40	C 1	7	1.50
85	411	Apple	10	350	6	5	5	5	2	2	M	Tree of below average form with poorly pruned limb leaving a decaying peg.	If retained undertake renovation pruning	10-20	C 2,3	55	4.20
86	414	Apple	6	200	3	3	5	2	3	4	EM	Tree of poor form with decaying pruning wound at 2-m AGL	Consider removal	10-20	C 2,3	18	2.40
87	412	Apple	10	250	3	5	5	4	2	2	EM/M	Tree of average form.	If retained undertake renovation pruning	10-20	C 1,3	28	3.00
88	413	Apple	10	325	4	5	3	6	2	0	EM/M	Tree of below average form with fractured and partially failed limb at 2-m above ground level	Renovation pruning and target prune fractured limb	10-20	C 2,3	48	3.90



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
89	1658	Fern-leaved beech	18	575	9	7	9	7	1	0	M	Protected under a Tree Preservation Order. Specimen tree of an unusual variety. Forks at 1-m AGL to become bifurcated. Multiple low limbs form a deep down-swept crown giving the tree a compact appearance	None	40+	A 1,2	150	6.90
90	409	Foxglove tree	16	1025	8	9	9	10	3	1	M	Protected under a Tree Preservation Order. This is a large specimen tree and an unusual species within the UK. Its retention category has been downgraded due to condition issues and reduced amenity value with the required remedial works. Refer to findings of detailed condition inspection below. Refer to Resistograph results & Photographs 19 a – f, in Appendices	Severe ivy and remove. Ecologist to inspect for bats prior to works commencing. Implement recommended works below.	20-40	B 1, 2	475	12.30



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W	1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
Detailed Condition Inspection. Remarks Basal stem diameter = 1080-mm. Minimum Required Sound Wall Thickness (Safety Factor) Mattheck) @ 0.35 = 189-mm. Small cavity at base to the north. A metal probe 450-mm in length extended to its full length into the cavity, detecting a hollow and then extensively decayed wood. Using a sounding hammer basal decay is detected >180 degrees of stem circumference up to 1.2-m AGL. Broad and fractured north-west buttress to side of cavity, with suspected fracture running up to 1.8-m AGL with columns of reaction wood to either side. Broad buttress and structural roots have developed to the east side of the cavity. However, initial inspections using a probe would suggest one of the structural roots may have been severed at 1.2-m proximal to the stem, hence the decay in this structural root, noted using a sounding hammer. A probe extends 870-mm into a hollow at 500-mm proximal to the stem where the exposed structural root forks. Decay is noted in both root buttresses on the underside in this section extending into the stem. The exposed section of the adjoining structural root does not seem to have been severed, certainly as far as 2.5-m proximal to the stem. Fibre buckling is noted at the base of the columns of reaction wood to east and west and possible helical fractures suggests weed creep due to crown torsional loading being transferred into the stem. Lateral limbs form at 3-m AGL, the south-western one is displaying signs of subsidence with a gap noted in the crown and a reaction wood column forming on the compression side. The upper side is occluded by ivy and hidden from view. The formation of a rib on the north side of the union with the south-west lateral limb formed at 3-m AGL suggests torsional loading from the prevailing wind making it prone to 'cupboard door' type failure. To the north side of the rib there is a large pruning stub. Several wind fractured limbs and primary branches were noted. Early signs of crown dieback with young shoots within the internal crown suggesting an early survival strategy for crown retrenchment and/or in reaction to condition issues.														



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W	1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
The surrounding three storey buildings constructed in the 1990's, to the north, east, and south provides a micro climate and some protection from all but the prevailing wind direction (south-west). This building is proposed for demolition and exposure to the elements and particular the wind will suddenly increase. Resistograph Results Summary (Refer to test results in Appendices) North = Pass North buttress = decay occurs at 30-cm East Buttress = sound to 31-cm South = Pass West = Pass Recommendations. This tree has an eccentric cavity to the east but with adequate sound wall thickness in the three other cardinal points. The buttresses are sound to at least 30-cm depth although it appears one of the main eastern structural roots may been severed at 1.2 metres from the main stem, perhaps dating back to the construction of the surrounding student accommodation. This species has a relatively soft non-durable wood akin to poplar species, as can be seen from the low amplitude readings of sound wood in the test results. The wind loading and hollowing is having an effect as notable columns of reaction wood are forming as a result of stress and suspected fracture lines in a buttress and the stem itself. Given that this tree will be exposed following the demolition of adjoining buildings, its stem decay and lateral limbs, and its position to the eastern end of the group, if the tree is to be retained with a limited safe useful life expectancy, significant reduction work through crown modification and a close condition monitoring regime must be implemented. Close monitoring must involve an increased inspection regime annually with anticipated further diagnostic investigation required. Cyclic surgery interventions will also be necessary to control crown size, depending on stem residual wall strength and thickness. - Reduce the crown by 3-m distally and remove all deadwood - Reduce the south western lateral limb by 4-5-m distally - Permanently fence out the tree from the proposed open space with high ornamental railings to deter access. Fencing to be set back at 10-m radially from the stem. - Place on an annual condition inspection regime paying particular attention to crown physiology. - Monitor crown size versus the structural integrity of stem and buttress roots.														



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
91	405	Black mulberry	11	550	4	5	4	5	2	1	M	The tree has a failing compression fork at 1.5-m AGL with a 1-m long split in the union. A ratchet strap has been used to brace the failure and is under tremendous tension. Refer to Photograph 15, in Appendices	Not deemed suitable for retention in a high target occupancy setting. Fell to ground level	<10	U	137	6.60
92	404	Common walnut	16	625	8	8	7	8	2	2	M	Protected under a Tree Preservation Order. Specimen tree of good form. Refer to Photograph 16, in Appendices	Branches may need to be temporarily tied up or back for access of machinery.	40+	A 1,2	177	7.50

Detailed Condition Inspection.

Remarks.

Large diameter lateral limb to the south at 2-m distally.

Small cavity with notable reaction wood immediately around the opening at 2-m proximal to the parent stem on the west side. A climbing inspection finds the cavity to be structurally insignificant, being no wider than the narrow opening and only 100-mm deep. Use of a sounding hammer finds the decay to be localised.

Insignificant small decay cavity on south-east lateral limb at 2.5-m AGL, 4-m proximal to parent on the south side.

Small diameter deadwood throughout, regarded at a normal level in association with cladoptosis.



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
93	479	Magnolia	/	/	/	/	/	/	/	/	EM	Tree of poor form being multi-stemmed from base. Dead north-west stem. The remaining stems are mostly lateral with compressive fork unions.	Fell to ground level	<10	U	0	0.00
G33	NA	Beech, Himalayan birch, sweet chestnut, Swamp cypress, fastigate ornamental cherry	14	250	3	3	3	3	2	2	Y/EM	Mixed group of trees, generally of good form. If retained they could be left as a group, but also individual specimens could be selected at this young age. If lost, mitigation planting with large stock is also an option due to their young age. Refer to Photograph 17, in Appendices	None	40+	B 2	28	3.00
94	4541	Lawson cypress	18	625	3	4	4	4	3	2	M	Tree of good form. Broadening of base noted to west and south	Sever 1m ivy band.	40+	B 2	177	7.50
95	436	Silver birch	17	350	3	4	3	3	4	3	EM/ M	Tree of good form, with several bark wounds and a thinning upper crown with small diameter deadwood	Consider removal	<10	C 2,3	55	4.20

Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
96	4542	Silver birch	14	350	4	4	2	4	4	4	EM/M	Crown dieback by some 20%	Fell to ground level	<10	U	55	4.20
97	438	Apple									EM	Tree of poor form poorly pruned with coalescing decay cavities and wounds on the lower stem.	Fell to ground level	<10	U	0	0.00
98	439	Apple									EM/M	Tree of poor form poorly pruned with coalescing decay cavities and wounds on the lower stem.	Fell to ground level	<10	U	0	0.00
99	4543	Himalayan birch	11	150	2	2	2	2	2	1	Y	Tree of good form on edge of bank	None	40+	C 2	10	1.80
100	4544	Foxglove tree	16	850	7	6	7	8	5	3	M	Protected under a Tree Preservation Order. Specimen tree and infrequent within the UK. The retention category has been downgraded due to significant structural issues and deemed unsafe to retain. Refer to findings of detailed condition inspection below.	Ecologist to inspect for bats prior to works commencing. Implement recommendations, below.	20-40	U	327	10.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Refer to Resistograph results & Photographs 18 a - e, in Appendices					

Detailed Condition Inspection.

Remarks.

Basal stem diameter = 940-mm.

Minimum Sound Wall Thickness @ Safety Factor of 0.35 = 165-mm.

Using a sounding hammer basal stem decay is detected up to 1.8-m AGL to north and east, equating to approximately >180 degrees of stem circumference.

There is no discernible buttress development to the north and east and what there is present, is decayed. There are suspected fractures to the east from base up to 1.5-m AGL, to the north side of a decaying buttress and to its south side up to 0.5-m AGL.

Significant reactionary buttress development occurs to the south on the tension side to the prevailing winds.

Ivy clad stem extending into lower crown.

Multiple pruning wounds, a few with small decay cavities of unknown depth.

Fractured and failed west limb at 8-m proximal to parent stem.

Medium diameter deadwood throughout crown in excess of normal levels associated with cladoptosis.

The surrounding tall buildings are within influencing distance (shelterbelt) and this is proposed for demolition, to the north, east, and which provides shelter in reducing wind speeds. Therefore, once demolished, this tree will be exposed to a sudden and dramatic increased wind-loading from varying directions which it has not been exposed to for some 25 years.

Resistograph Results Summary (Refer to test results in Appendices)

North = Fail

South = Fail

East = Fail



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
West = Fail East buttress = decay occurs at 200-mm South-east buttress = decay occurs at 200-mm Recommendations. The stem does not have the required minimum sound wall thickness within the stem cylinder, and it fails by a reasonable margin in all directions. In addition, the two and only significant buttresses and structural roots have decay at 200-mm depth. Given the increased exposure that this tree will be subjected to when the three storey buildings are demolished and its location within a small open space within a proposed housing development, it is not deemed practical or safe to retain. A replacement tree will need to be planted, to be advised by the Local Planning Authority.																	
101	4545	Copper beech	18	600	6	7	7	7	2	1	EM/ M	Protected by Tree Preservation Order. Tree of below average form forking at 1.4-m AGL to form, four stems. The fork unions are slightly compressive. Refer to Photograph 18a, in Appendices	If target occupancy increases, install 4-way cable brace to stabilise the members which should be fitted in full accordance with the recommendations of the British Standard Recommendations for Tree Work 3998: 2010 and reduce crown by 3-m.	40+	B 2	163	7.20
102	403	Cherry 'Kanzan'	5	350	7	5	3	5	3	1	EM/ M	Tree of poor form. Typically, congested crown with crossing branches. Refer to Photograph 18a, in Appendices	Consider removal otherwise Remove deadwood, crossing branches and thin crown by 15%.	10-20	C 1	55	4.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
													May require access facilitation pruning.				
103	402	Willow-leaved pear	6	275	5	0	4	2	3	0	EM	Tree of poor form, subordinate to T101. Ivy clad. Refer to Photograph 18a, in Appendices	Consider removal but if retained, remove ivy and undertake detailed condition inspection	10-20	C 2	34	3.30
104	407	Common lime	18	475	4	4	5	4	1	1	EM/ M	Tree of good form on roadside boundary in close proximity to gas sub station	May require access facilitation pruning	40+	B 2	102	5.70
105	406	Horse chestnut									EM/ M	Basal decay with a large coalescing decay cavity on the stem. Decay wound up to 5-m AGL from base.	Fell to ground level	<10	U	0	0.00
H4	NA	Cherry laurel, oval-leaved privet.	3	75	1	1	1	1	0	0	Y/EM	Formal hedge around former nursery, near entrance.	Offers some screening	20-40	C 2	3	0.90
106	NA	Apple	5	100	2	2	2	2	1	1	Y	Insignificant tree in garden of former nursery	None	40+	C 2,3	5	1.20



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
107	NA	Lawson cypress	10	200	2	2	2	2	0	0	EM	Tree of reasonable form slightly subordinate to T108, in garden of former nursery	None	40+	C 2	18	2.40
108	4546	Norway maple	15	300	3	5	4	4	2	2	EM	Tree of good form in garden of former nursery	None	40+	B 2	41	3.60
109	NA	Rowan	6	125	1	2	1	2	1	2	Y	Tree of reasonable form in garden of former nursery	None	40+	C 2,3	7	1.50
110	447	Lawson cypress	9	200	2	2	2	2	0	0	EM	Tree of average form on boundary with road, in garden of former nursery. Twin-stemmed forking from base under slight compression.	Consider removal	20-40	C 2	18	2.40
111	NA	Lawson cypress	8	200	2	1	2	2	3	2	Y/EM	Tree of average form on boundary with road, in former garden of nursery. Subordinate to T112.	None	40+	C 2	18	2.40
112	4548	Ash	16	400	8	5	7	8	6	4	EM/M	Tree of below average form on boundary with road, in garden of former nursery. Forks under tension at 1.2-m AGL and several times again to form an open broad crown.	Consider removal	20-40	C 2,3	72	4.80



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
												Likely to outgrow its position and damage the boundary wall in time as secondary stem thickening occurs and cell turgor pressure of its roots disturb the wall.					
113	4547	Sycamore									EM	Twin-stemmed specimen from base, forking under compression, at 4-m AGL.	Fell to ground level	40+	U	0	0.00
114	4549	Sycamore	15	325	2	6	4	6	4	5	EM	Tree of below average form on boundary with road, in garden of former nursery. Forks under compression at 3-m AGL. Crossing stems at 5-m AGL.	Consider removal	40+	C 2	48	3.90
115	4550	Leyland cypress	17	450	2	4	4	5	6	6	M	Formally twin-stemmed with the south stem having been removed. Significant butt sweep, leaning slightly eastwards with mounding of soil to the west and a notable gap formed between its roots and the wall. Refer to Photograph 20, in Appendices	Fell to ground level	10-20	U	0	0.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
Trees Adjoining the Public Right of Way to North & North-West of Site (includes trees on adjoining public and private land)																	
G34 a	NA	Hazel, hawthorn	10	150	3	5	4	4	0	2	EM/ M	Primarily located in garden behind timber board fence.	None	20-40	C 2,3	10	1.80
G34 b, c	NA	Holly, hawthorn	11	275	4	4	4	4	2	2	EM/ M	Small group bordering end of garden offering some screening value.	None	20-40	C 2,3	34	3.30
H5	NA	Lawson cypress	3	200	3	3	2	2	0	0	Y/EM	Small section of hedge, bordering end of garden offering screening. Unkempt on the side of the Public Right of Way but has been reduced in height.	None	40+	C 2	18	2.40
116	NA	Sessile oak	16	600	8	8	11	10	4	4	M	Dominant tree located in garden beyond conifer hedge (H5).	None	40+	A 2,3	163	7.20
G35 a, b, c	NA	Ash, hawthorn, field maple, elder, hazel	10	250	4	3	5	4	3	2	EM/ M	Remnant unkempt native banked hedge. Occasionally sporadic.	Subject to ownership, fell dead hawthorn to south of G35a.	40+	B 2,3	28	3.00



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												In the case of G35c an open narrow woodland abuts with a public open space further afield. Larger individual trees have been recorded if their RPA exceeds that of the remnant hedge. Open deep banked stream to west of hedge, which is culverted to the southern end. Larger trees on far side of stream are not considered as their roots and crowns do not pose a constraint.	Tip back overhanging branches to give 2.4-m clearance along path. Note - Potential mitigation opportunity to plant up gaps with native hedge species.				
117	NA	Sessile oak	16	750	5	6	7	7	3	3	M	Tree of good form in remnant banked hedge.	Remove deadwood	40+	B 2,3	254	9.00
118	NA	Ash	11	150	2	3	4	2	3	3	Y	Twin stemmed tree of poor form	None	40+	C 2,3	10	1.80
119	NA	Sessile oak	19	950	8	12	12	12	4	9	M	Dominant tree located in scrub wood beyond G35c. Small basal decay cavity to west. Small and medium diameter deadwood.	Subject to ownership, remove deadwood over target only	40+	A 2,3	408	11.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
G36	NA	Ash, field maple	13	300	3	5	5	4	2	1	EM	Four trees of fair form in close proximity to boundary fence.	None	40+	C 2,3	41	3.60
H6	NA	Leyland cypress with mixed broadleaves & a cherry laurel	11	200	3	3	3	3	2	2	Y	Located in garden of adjoining properties and overhanging the Public Right of Way. Unclear if they are rooting under the Public Right of Way.	Subject to ownership, Crown lift overhang to 2.4m clearance.	40+	C 2	18	2.40
G37 a, b	NA	Hawthorn, Lawson cypress, holly var, Norway spruce, rowan, cherry, Mexican orange blossom, flowering current, firethorn, & other ornamental shrubs	10	150	2	2	2	2	2	2	Y/EM	Located in gardens of adjoining properties and just overhang the Public Right of Way in certain places. Occasionally sporadic. Unlikely to be rooting under the Public Right of Way.	None	40+	C 2	10	1.80
120	NA	Pedunculate oak	12	450	6	6	7	4	2	4	EM	Tree of fair form in garden of adjoining property, with its crown overhanging the Public Right of Way. Unclear if its rooting under the tarmac path.	Subject to ownership, remove overhanging deadwood to path	40+	B 2,3	92	5.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M2)	Root Protection Radius (M)
												Slightly thinning crown with deadwood over path.					
G38	NA	Hawthorn, holly, ash, horse chestnut	10	200	3	3	3	3	2	2	Y/EM	Unremarkable group of trees on small section of land adjoining the Public Right of Way, off Ponthir road. Crowns just overhang the path in a few locations, and they are unlikely to be rooting under the Public Right of Way.	None	40+	C 2,3	18	2.40
121	NA	Sycamore	10	175	2	4	4	4	2	2	Y/EM	Multi-stemmed specimen in G23, derived from a stool abutting boundary fence and Public Right of Way. Already in contact with fence and some signs of rooting under the Public Right of Way.	Consider felling and treat stump with herbicide to cease regrowth in accordance with manufacturer's instructions.	40+	C 2	14	2.10
122	NA	Pedunculate oak	14	450	6	7	6	5	3	3	EM/M	Tree of good form in G23, within influencing distance of Public Right of Way, with an overhanging crown but is unlikely to be rooting under the tarmac path.	None	40+	B 2,3	92	5.40



Tree Number	Tree Tag	Species	Height (M)	Effectual Diameter (mm)	Branch Spread N S E W				1st Significant Branch	Canopy Clearance	Life stage	General Observations	Preliminary Management Recommendations	Remaining Contribution (years)	Retention Category	Root Protection Area (M ²)	Root Protection Radius (M)
G39	NA	Ash, hawthorn	10	150	3	4	2	2	2	3	Y/EM	Two ash in group adjoin the boundary fence in G23, whereas the more mature hawthorn is set back. The ash will be rooting under the Public Right of Way but it's unlikely the hawthorn will be.	Consider felling the two ash trees and treat stump with herbicide to cease regrowth in accordance with manufacturer's instructions.	10-20	C 2,3	10	1.80
123	NA	Sycamore	16	500	5	6	5	5	4	1	EM/M	Tree of reasonable form on boundary fence within G23. Becomes bifurcated at 2.5-m AGL with the fork union formed under slight compression. The crown overhangs Public Right of Way and roots seemingly occur underneath the tarmac surface.	Remove ivy on main fork and inspect.	40+	B 2	113	6.00
G40	NA	Sycamore with ash	20	450	6	7	5	5	3	1	EM/M	Linear group of trees in G23 within 2-3-m of the boundary fence. Crowns overhang the Public Right of Way and there are signs of rooting under the tarmac path.	Remove ivy on main forks and inspect.	20-40	B 2,3	92	5.40



8. LEGAL CONSTRAINTS

With regards trees, the legal constraints on any site should be considered early on in the planning process and well before any work commences on site. Such constraints may cause time delays and should be given full consideration from the outset. The legal constraints here are general constraints that relate to arboriculture only and do not cover any other legal matters that may be relevant on this site.

Tree Preservation Orders and Conservation Area Status in Wales

In Wales, the law on TPOs is in Part V111 of the Town and Country Planning Act 1990 Town and Country Planning (Trees) Regulations 1999. When any tree/s are protected by a TPO or are situated within a Conservation Area, it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from the Local Planning Authority (LPA), there are exceptions. An LPA may grant permission, if considered reasonable following the submission of an application for consent to undertake the works, or where in accordance with an Approved Planning Application or under the exemptions within the Town and Country Planning Act 1990 of dead, dying, or dangerous. It is advisable to consult the LPA and an Arborist prior to conducting any tree works under these exemptions.

Felling Licence

A Felling Licence is required in certain felling operations which are administered by the Forestry Commission where more than five cubic metres of wood are felled in one calendar quarter and when selling more than two cubic metres. There are exceptions, and these are in the Forestry Act 1967 and Regulations made under this Act. Contravention of the felling licence controls can incur substantial penalties. Tree felling forming part of a Local Authority Planning Approval is exempt.

The Wildlife and Countryside Act 1981 protects nesting birds and to disturb nesting birds can be a criminal offence. Therefore, caution must be aired if tree works are programmed during the nesting season, between March and August. Should nesting birds be present then all but essential works will be postponed. If in undertaking essential works a nest or nests are found to be present, then further advice will be sought from the Countryside Council for Wales.

Bats...Summary of Current Relevant Legislation

There are some 17 species of bat which are known to breed in the British Isles, all are insectivorous and depend to some extent on habitat in which trees are a significant element. Bats are a protected species and are in decline both globally and nationally. Therefore, they are to be fully considered before any tree work commences and particularly if the trees are mature. If a bat roost is known to be in any tree that is to be removed or worked on, a license must be obtained from the Welsh Government beforehand.

The European Habitats Directive (passed in 1992) provides the principal legal protection for bats in the UK and this is currently enacted into British legislation through the Conservation of Habitats and Species Regulations 2010 in England and Wales; the Conservation (Natural Habitats &c) Amendment (No. 2) (Scotland) Regulations 2009 in Scotland; and the Conservation (Natural Habitats &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland. These regulations relate to all animals which are identified as European Protected Species (EPS) which includes all bat species.

The different countries of the UK have domestic legislation which also provides protection (by varying degrees) to bats; however, this has largely been superseded by the Regulations specified above.

Under the Regulations it is illegal to:

- kill, injure or capture a bat
- disturb bats
- damage or destroy a bat's breeding site or resting place (roost)
- possess a bat (live or dead) or offer one for sale or exchange.

This is a simplified summary of the legal position relating to bats and is intended for guidance purposes only. If further assistance is required, the primary legislation should be referred to or legal advice sought.

The legislation makes it an offence to intentionally or recklessly damage, destroy or obstruct access to a site used by bats whether bats are present at the time or not. This can include work on trees whether it is surgery, felling, the covering, or filling of cavities or the installation of rod braces and flexible cable braces, where a bat roost is present.

Where there is a risk bat roosts may be present, it is incumbent upon the owner or manager to commission a specialist bat survey to identify bat roosts before instructing tree surgery to commence. Failure to do so and in the event of disturbing a roost site or injuring any bats is an offence. Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/ 1991 (i.e. £5000 in April 2001) per roost or bat disturbed or killed, or to both.



Statute and Common Law.

A landowner or land manager should be aware that both statute and common law dictates that regular inspections of trees on land in their control are necessary where such trees could cause injury or damage in the event they should fall or shed any parts. The part of the statute law that relates to this responsibility is governed by the Occupiers' Liability Act (1957 & 1984) in the case of England and Wales and most prosecutions are brought under this heading. In addition, a landowner has a "Duty of Care" see court case reference...British Road Services v Slater & Another [1964] Vol. 1, Weekly Law report 493-497

A person suitably qualified in arboriculture should undertake such routine inspections and any remedial tree works recommended should be carried out within the time constraints specified, to prevent injury or damage occurring. A landowner should retain records of all inspections and any remedial tree works that have resulted from such inspections. Arboricultural Association, the Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire, GL10 3DL. Telephone 01242 522152 are able to provide advice on suitably qualified persons or indeed suitable qualifications a person should hold to undertake qualified inspections.

9. LIMITATIONS OF THIS REPORT

It must be stressed that this report is a pre-development survey and not a risk assessment or a detailed report on the health and condition of the trees. Whilst any obvious problems noted during this ground level inspection may be noted, general comments are made based on a somewhat cursory, visual inspection. In addition, future management may receive a mention or be briefly discussed but such comments are general comments only, for basic information, which should not be taken to form immediate or long-term management plans nor do they replace the need for having professional management plans for groups, areas or woodlands.

Trees are living dynamic organisms which can be affected by external environmental conditions and very occasionally internal biological symptoms that are not visible, causing failure without warning. It is therefore not possible to state with any certainty that any tree is completely safe. There are occasions when even healthy and completely defect-free trees break or become windblown. This represents a "normal failure rate" which is the price of the lightweight, energy-saving structure that favours the species to compete with others in a cost-effective way.

Every attempt has been made to provide a realistic and accurate assessment of trees and their condition at the time of this inspection. No responsibility can be accepted for damage or injury as a result of the failure of any tree or its parts due to faults not apparent upon a visual inspection carried out at this season, or for faults developing subsequent to the survey. Similarly, no liability can be accepted for the condition of the trees that are obscured in part or by whole (e.g. due to dense ivy or other foliage), nor for any that proved inaccessible to the inspector. Certain features which might provide evidence of ongoing decay or decline (Such as seasonal fruiting bodies, damage to foliage, insect emergence holes etc.) may not be in evidence. Only those features present at the time of inspection could be assessed.

This report is based on the tree's circumstances and condition at the time of the survey. It must be recognised that the circumstances may be altered radically over the course of any development process and that such changes cannot be accurately predicted. The report also does not provide any specific long-term management recommendations.

The effect this new development may have on localised wind turbulence has not been assessed during this inspection. As trees grow, they respond and mechanically adapt to their surroundings and exposure limits. With the erection of dwellings in close proximity to existing trees, new turbulence is created. The author accepts no liabilities to any failure subsequent upon such new imposed, artificial conditions.

Unless stated in writing, the inspection shall not include any underground parts of the tree. It does not consider **indirect** damage resulting from the extraction of moisture from shrinkable clay soils by tree roots causing **subsidence** or by **heave** occurring through soil rewetting following removal of trees on this site. Such problems are almost entirely restricted to areas of shrinkable clay soils and as I have **not** considered a soil analysis as part of my present brief, this aspect is **not** addressed at this time.

Unless otherwise stated in writing and in the absence of altered circumstances, a report on the health and safety of a tree or trees cannot be relied on after a period of 12 months. Following such a period, a further inspection is required.

Soil testing to ascertain the plasticity index or shrinkable characteristics of the soil on the development site to provide information in relation to the likelihood of building damage caused by tree related subsidence or heave where trees are within influencing distance has not been carried out. The author cannot be held liable for building damage as a result. A soil analysis can be provided if requested.

Further and more general report limitations are set out in the authors Terms and Conditions and copies are available upon request



10. TERMS AND DEFINITIONS

Number (No.) a tree number is allocated to each tree or group and provides reference to an individual. It will occur either by way of a T-number T1, T2 etc. or a series of numbers e.g. 00123 that relates to an identification tag attached to the stem of each tree. Such numbers will occur on the Tree Constraints Plan.

Species The species is the given name of the tree which is usually provided in both the common and scientific names.

Diameter (DBH) The trunk diameter for each tree is measured in millimetres at a height of approximately 1.5 metres above ground level, unless otherwise stated. All measurements are approximate.

Crown Spread The crown spread is measured as the radius from the centre of the trunk in meters and in most cases is approximate covering the four points of the compass.

Height The height of the tree is measured in metres and is usually approximate. If the abbreviation 'Clinom' appears after the given measurement, it indicates the tree has been measured with an optical measuring instrument, a Clinometer, and is accurate to within 5 metres.

Life Stage The age of the tree is given based on its life expectancy. For example, an oak tree at an age of 100-years is perceived as early mature when a hawthorn at 100 years would be considered old. Age classes are given as follows: -

Y.	Young trees (recently planted or saplings under 15 years old)
SM.	Semi mature (around 1/3 their life expectancy, still growing vigorously but not as fast as a younger tree)
EM	Early Mature (between 1/3 – 2/3 life expectancy still growing reasonably vigorously)
M.	Mature trees (above 2/3 life expectancy. Growth rates beginning to slow down at this stage)
OM.	Over Mature trees (growth rates slow and possibly beginning to display signs of decline)
V.	Veteran (decline is well set-in, but the tree may be of specific ecological value. The tree is likely to contain sufficient deadwood and decay that is a special habitat for many rare invertebrates that are considered to be at risk from extinction)

Recommendations The recommendations give the appropriate action required for the trees or groups of trees to fulfil the brief, which possibly include reducing the most blatant foreseeable risk or improve the physiology of the tree.

Target Rating

Target rating is used to consider how likely a mobile or stationary target will be present at any one moment in time, within proximity to the tree under investigation. It is often approximated after a short period on site and often with little knowledge of the site. Unless otherwise stated, no information on visitor or vehicle numbers have been provided by the client and this assessment is based on a small 'snap-shot in time', the client should consider this assessment and where it is not considered accurate, should make the Author aware immediately and certainly within 7 days of issue of the Report.

Low Target Occupancy (occasional use)

Infrequently used footpaths, isolated car parks, desire lines (permissive and non-permissive paths) through woodlands, open spaces without particular features or attractions, (such as picnic benches), and difficult to access areas due to undergrowth, perhaps the occasional jogger, dog walker or cyclist could be expected during day light and reasonable weather conditions.

Medium Target Occupancy (Intermittent use)

Target not present for any length of time i.e. low use car parks, footpaths in countryside, parkland open during normal working hours and access roadways. No stationary targets and could normally be expected during day light and reasonable weather conditions.

High Target Occupancy (Frequent use)

Target not present for 24 hours but a frequently used site such as - day use car parks, B-Class and minor roads, footpaths in towns and cities, offices operating normal working hours, excluding weekends, access roadways to a facility. Target maybe stationary for short periods of time.

Very High Target Occupancy (Constant use)

Where persons are present at all times such as a hospital building and car park, A-class roads, railways, dual carriageways, motorways and residential properties where vehicles or persons are expected during any time day or night.

Priority Coding is provided to relay the urgency in which any recommended work is required based on the hazard presented by the tree and the considered target occupancy. Whilst it highlights the most urgent works to help offset risk, it may also be helpful for budgeting purposes.

Priority 1	Top priority; to be undertaken as soon as it is practicable for reasons of offsetting foreseeable risk, injury or damage and where the likelihood of it occurring is considered high. Action should be taken diligently
Priority 2	Medium priority; attention strongly advised at your earliest convenience to deal with a problem that whilst is not as serious as priority one, carries significant concern and liability. In any event, works should be completed within 6 months.



Priority 3	Low Priority; the work is advised but of a lower priority than above which should be carried out before a period of 12 months' lapses.
Priority 4	Minor Problems representing no immediate hazard at the time of inspection although potential for harm or hazard to develop as the tree grows or faults developing that may become significant at a later date if left to develop. Works without any immediate urgency, possibly to rectify a minor fault or to abate a nuisance present or developing.

Root Protection Area this is a protection area established for around the base of each tree to prevent physical, chemical or compaction damage occurring. This is usually achieved through the erection of fencing or other barriers.

Construction Exclusion Zone this is an area established where construction is not permitted and usually correlates to the Root Protection Area.

Special Precaution Area this is an area, usually within the root protection area, where construction or other activity may be permitted but only under the direction of an 'Arboricultural Method Statement' and the supervision of an Arborist.

- *All measurements given are approximate.*
- *AGL: an abbreviation for above ground level.*

11. GLOSSARY OF TERMS

Adaptive Growth; in tree biomechanics, the process whereby wood formation is influenced both in quality and in quantity by the action of gravitational force and mechanical stresses on the cambial zone (THIS HELPS TO MAINTAIN A UNIFORM DISTRIBUTION OF MECHANICAL STRESS)

Adventitious; Latent or dormant bud on stem or root often invisible until stimulated into growth which occurs from an unusual place i.e. not a twig, leaf or bud.

Anchorage; in trees, the holding of the root system within the soil, involving the flow of forces from the stem through the branches of the root system to the cohesive root/soil interface.

Architecture; in a tree, a term describing the pattern of branching of the crown or root system.

Assessment; in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

Assym; This abbreviation means...asymmetric...and refers to the tree having an asymmetric or unbalanced crown. This is usually preceded by a measurement in metres which provides the extent of crown asymmetry and is measured from the centre of the trunk. It may also have a correlation to the lever arm

Arboriculturalist; person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the management of trees generally and in relation to construction.

Architecture; in a tree, a term describing the pattern of branching of the crown or root system.

Arboricultural Implication Assessment (AIA) study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impact on existing trees that may arise as a result of the implementation of the site layout.

Arboricultural Method Statement; methodology for the implementation of any aspects of development that has the potential to result in loss of or damage to a tree.

Assessment; in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

Bole (trunk); the main stem of a tree below its first major branch

Branch; a limb extending from the main stem or parent branch of a tree

Canopy; the topmost layer of twigs and foliage in a woodland, tree or group of trees

Construction Exclusion Zone; area based on the RPA (meters as a radial measurement and sometimes a m²), identified by an Arboriculturalist, to be protected during development, including demolition and construction work, by use of barriers and/or ground protection fit for the purpose to ensure the successful long-term retention of a tree.

Crown; in arboriculture the main foliage-bearing portion of a tree containing the leaves and branches

Defect; in relation to tree hazards, any feature of a tree that detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

Dysfunction; in woody tissues, the loss of physiological function, especially water conduction.

Failure; in connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil. (IN TOTAL FAILURE, THE AFFECTED PART SNAPS OR TEARS AWAY COMPLETELY. IN PARTIAL FAILURE, THERE IS A CRACK OR DEFORMATION WHICH RESULTS IN AN ALTERED DISTRIBUTION OF MECHANICAL STRESS)

Group; the term 'group' is intended to identify trees that form cohesive arboricultural features either **aerodynamically** (e.g. trees that provide companion shelter), **visually** (e.g. avenues or screens) or **culturally** including for biodiversity (e.g. parkland or wood pasture).

Heave; in relation to a shrinkable clay soil, expansion due to re-wetting, sometimes after the felling or root severance of a tree which was previously extracting moisture from the deeper layers; also, in relation to root growth, the lifting of pavements and other structures by radial expansion; also, in relation to tree stability, the lifting of one side of a wind-rocked root plate.

Leader; in a tree, a topmost shoot that has apical dominance.

Preventive action; in a tree hazard management, action that helps to prevent injury to persons or damage to property.

Pruning; the removal or cutting back of twigs, branches or roots; in some contexts, applying only to twigs or small branches only, but more often used to describe all kinds of work involving cutting.

Retained Tree; a tree that has been considered suitable by an Arborist for retention and which during the design stage is selected for retention and incorporated within the development.



Risk: the likelihood of the potential harm from a particular hazard becoming actual harm.

Root Protection Area (RPA): layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m²

Soil heave: *see* heave

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.

Subsidence: in relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

Targets: in a tree hazard assessment (and with somewhat incorrect terminology), persons or property or other things of value, which might be harmed by mechanical failure of the tree or by objects falling from it.

Tree: a woody plant, which typically has a single main stem and, in maturity, attains a height of at least four metres and a stem diameter at breast height of at least 75-mm.

Tree Constraint Plan (TCP): plan prepared by an Arboriculturalist for the purpose of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade dominance, etc.

Tree Preservation Order: in Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.

Tree Protection Plan: scale drawing prepared by an arboriculturalist showing the final layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

Trunk: the single main stem of a tree.

Vigour: in tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth (*cf.* vitality)

Visual Tree Assessment (VTA): in addition to the literal meaning, a system expounded by Mattheck & Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.

Wind exposure: the degree to which a tree or other object is exposed to wind, with regard both to duration and velocity.

Wind pressure: the force exerted by wind on a tree or other object.

Wind snap: the breaking of a tree stem by wind.

Windthrow: the blowing over of a tree at its roots.

12. REFERENCES

- **British Standard 5837: 2012 Trees in Relation to Design, Demolition and Construction - Recommendations** Arboricultural Association, Guidance Note 10, Protected Species and Arboriculture
- **British Standard Recommendations for Tree Work BS 3998; 2010**
- **Lonsdale D.** Principles of Tree Hazard Assessment and Management.
- **Mattheck C. & Breloer H.** The Body Language of Trees Department of the Environment.
- **Brown G.E. Kirkham. T.** The Pruning of Trees, Shrubs & Conifers. Timber Press 2nd Edition.

13. APPENDICES

APPENDIX A - TABLE 1 TREE QUALITY ASSESSMENT

APPENDIX B - DEFAULT SPECIFICATION FOR PROTECTIVE BARRIER

APPENDIX C - TABLE B1- TREES AND THE PLANNING SYSTEM

APPENDIX D – PHOTOGRAPHS

APPENDIX E – RESISTPGRAPH TEST RESULTS

APPENDIX F – TREE CONSTRAINTS PLAN



APPENDIX A - TABLE 1 TREE QUALITY ASSESSMENT

The trees are categorised as stated within the British Standard in a way that should help assist those within local government to help form a balanced judgement. The primary purpose of this report is to provide an assessment of the trees and to determine their suitability for retention in any proposed development.

The Tree Categories used in evaluating the trees on this site are reproduced below. This categorisation is also included in the tree data schedules and by colour code on the attached plan.

Category and definition Criteria (including subcategories where appropriate)

Category U

Trees unsuitable for retention (see Note)

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

- ✓ 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)
- ✓ Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline
- ✓ Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality

NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7. See Table 2

Trees to be considered for retention

Category A

Trees of high quality with an estimated remaining life expectancy of at least 40 years

- ✓ 1 Mainly arboricultural qualities- 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)
- ✓ 2 Mainly landscape qualities- Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
- ✓ 3 Mainly cultural values, including conservation- Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture) See Table 2

Category B

Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

- ✓ 1 Mainly arboricultural qualities- 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), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation
- ✓ 2 Mainly landscape qualities- 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
- ✓ 3 Mainly cultural values, including conservation- Trees with material conservation or other cultural value See Table 2



Category C

Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.

- ✓ 1 Mainly arboricultural qualities- Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories
- ✓ 2 Mainly landscape qualities- 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.
- ✓ 3 Mainly cultural values, including conservation- Trees with no material conservation or other cultural value. See Table 2.

***NOTE:** the BS Standard states...Particular care is needed when evaluating young trees, especially where they occur as individual specimens. Where these are less than 150 mm stem diameter at 1.5 m above adjacent ground level, it might be acceptable and relatively straightforward to mitigate their loss, if necessary, with similar new tree planting. Alternatively, it might be practicable to relocate such trees within the site (e.g. using a tree spade). Whilst the presence of young trees of good form and vitality is generally desirable (i.e. those trees which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site's potential.*

Where remaining contributory years' score is provided within the 'Findings' , and where further investigative works are required, these scores are preliminary only and based on an incomplete inspection.

BRITISH STANDARD BS 5837:2012

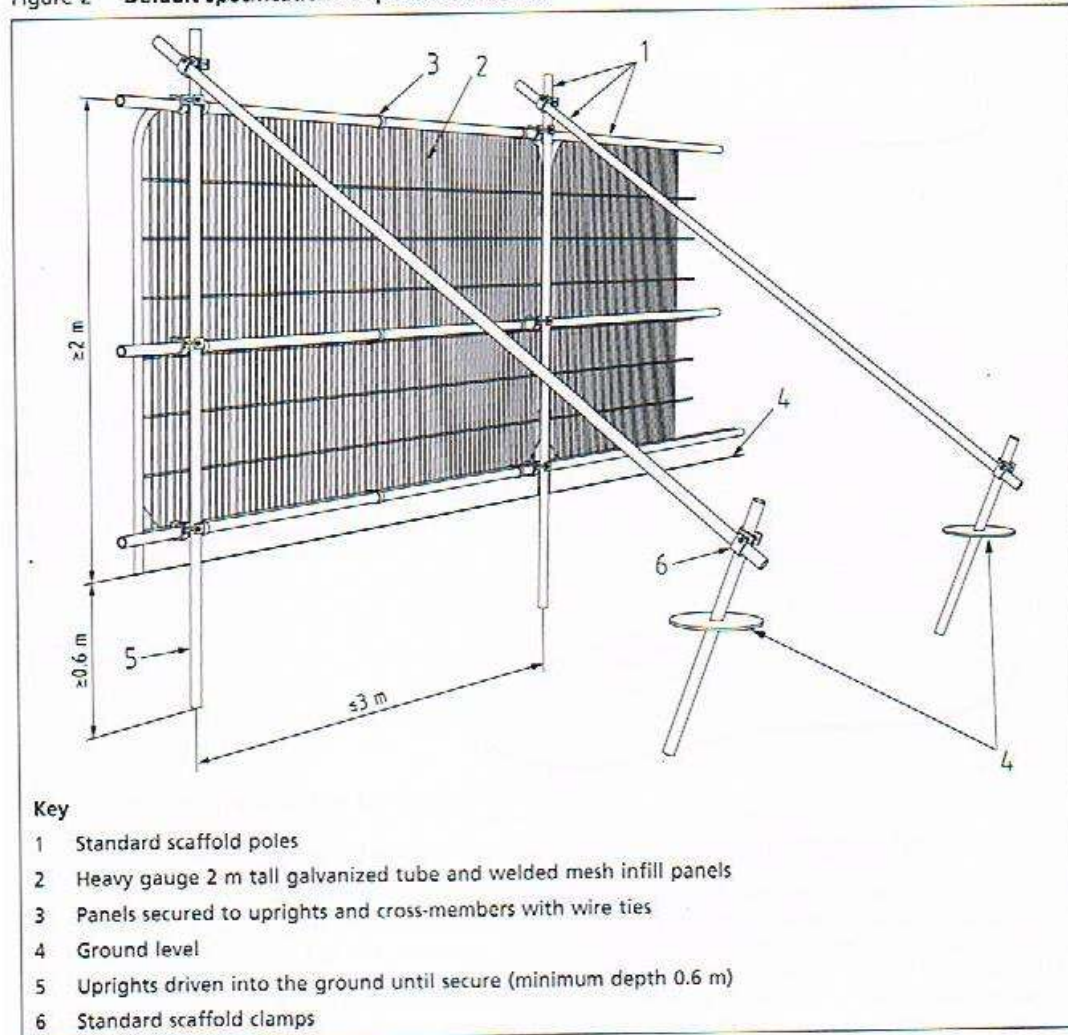
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APPENDIX B - DEFAULT SPECIFICATION FOR PROTECTIVE BARRIER

Figure 2 Default specification for protective barrier





APPENDIX C - TABLE B1- TREES AND THE PLANNING SYSTEM

BS 5837:2012

BRITISH STANDARD

Annex B (informative)

Trees and the planning system

Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.

The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term “minimum detail” is intended to reflect information that local authorities are expected to seek, whilst the term “additional information” identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.

Table B.1 Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
	Arboricultural impact assessment	
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	

**APPENDIX D - PHOTOGRAPHS**

Photograph 1. Lime with *Kretzschmaria deusta* decay fungi with associated crown symptoms.



Photograph 2. Lime with *Kretzschmaria deusta* decay fungal fruiting bodies at base.





Photograph 3. Group 7: Orchard along south-east boundary.



Photograph 4. Tree 24: Oak of good form with potential long life.





Photograph 5. Tree 31: Poorly removed stems x 3, resulting in large developing decay wounds (one is indicated with the red arrow below).





Photograph 6. Tree 39. Well formed Star Magnolia in paved seating area.





Photograph 7. Tree 43: Oak with crown dieback.



Photograph 8. Tree 52: Cherry with failing compression fork.



Photograph 9 & 10. G23. Top - Specimen Wellingtonia. Bottom – northern end of woodland, as the canopy starts to thin.



Photograph 11. Tree 53: Specimen cedar.



Photograph 12. Tree 60: Specimen lime tree in grounds of historic building.





Photograph 13. Group 30 a, b: Young trees of limited significance.



Photograph 14. Tree 83 (False acacia– right) & 84 (poplar – left)





Photograph 15. Tree 91: Mulberry with failing compression fork temporarily braced with a ratchet strap.



Photograph 16. Tree 91: Specimen Walnut of good form





Photograph 17. Group 33. Well-formed young group of mixed species trees.



Photograph 18a. Tree 100 – 103: Background - Trees surrounded by tall buildings. The group includes the U category Foxglove tree (right) and the B category Copper beech (left).

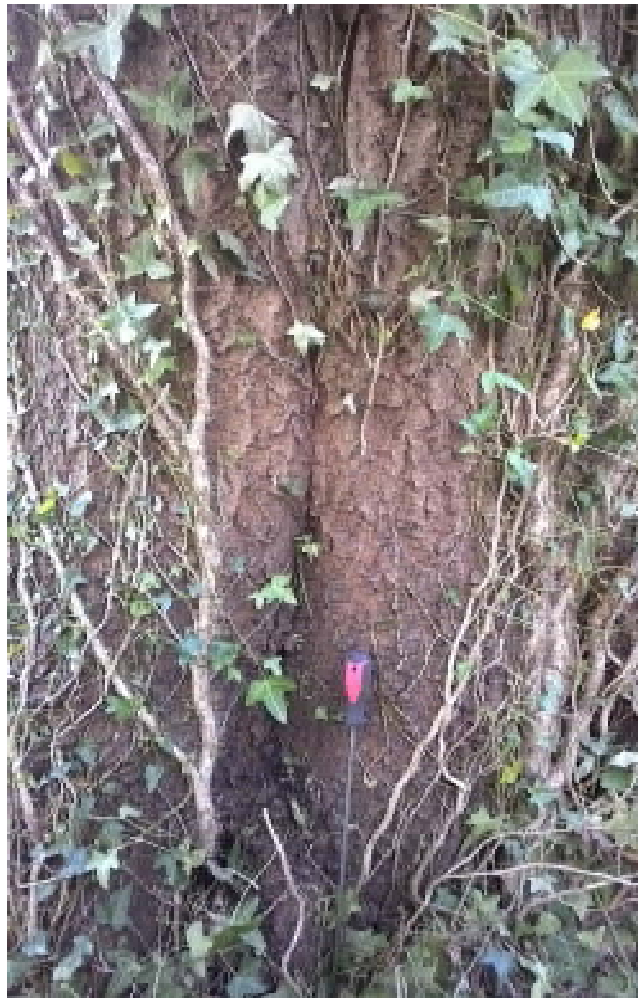




Photograph 18b. Tree 100 – decaying north side of Foxglove tree with stem swelling in response to significant decay.



Photograph 18c. Tree 100 – potential fracture above decayed buttress.





Photograph 18d. Tree 100 – Significant buttress development to the south with decay.



Photograph 18e. Tree 100 – Location of tree with protection afforded by three storey high buildings.





Photograph 19a. Tree 90 – Foxglove tree with small but deep cavity >450-mm leading to hollowing of stem and extensively decayed wood. Photograph shows inspector inserting a 450-mm probe to its full depth.



Photograph 19b. Tree 90 – Notable stem swelling due to decay and potential fracture through buttress up to 1.8-m above ground level..





Photograph 19c. Tree 90 – Curving parallel suspected fractures from base and fibre buckling on lower sections.



Photograph 19d. Tree 90 – broad buttresses to south





Photograph 19e. Tree 90 – Exposed structural roots with the right one seemingly having been severed as the inserted probe indicates. A hollowing and decay occurs under the fork between these structural roots.



Photograph 19f. Tree 90 – Lateral limb with signs of subsidence (note the gap between it and the crown section above).





Photograph 20. Tree 115. Tree with butt sweep and root-plate disturbance and a gap forming with the boundary wall.



Photograph 21a. Group 7. Tree 124 – Apple with congested crown with multiple crossing branches. Fractured and partially attached wind damaged branches at 6-m AGL to the south.





Photograph 21b. Group 7. Tree 125 -Plum forks with an elongated narrow decay cavity to the north between 1.8-m - 3-m AGL. Fractured and partially attached limb at 3-m AGL.

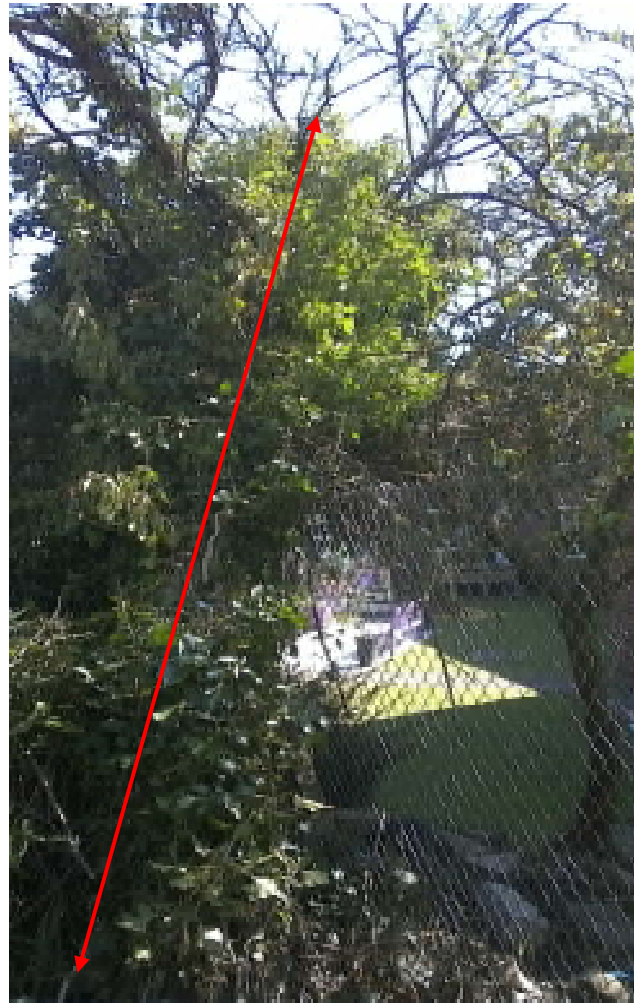


Photograph 21c. Group 7. 126 – Apple with elongated narrow decay cavity between 0.3-m – 1.1-m AGL to a depth of 50-mm. Congested crown with multiple crossing branches.



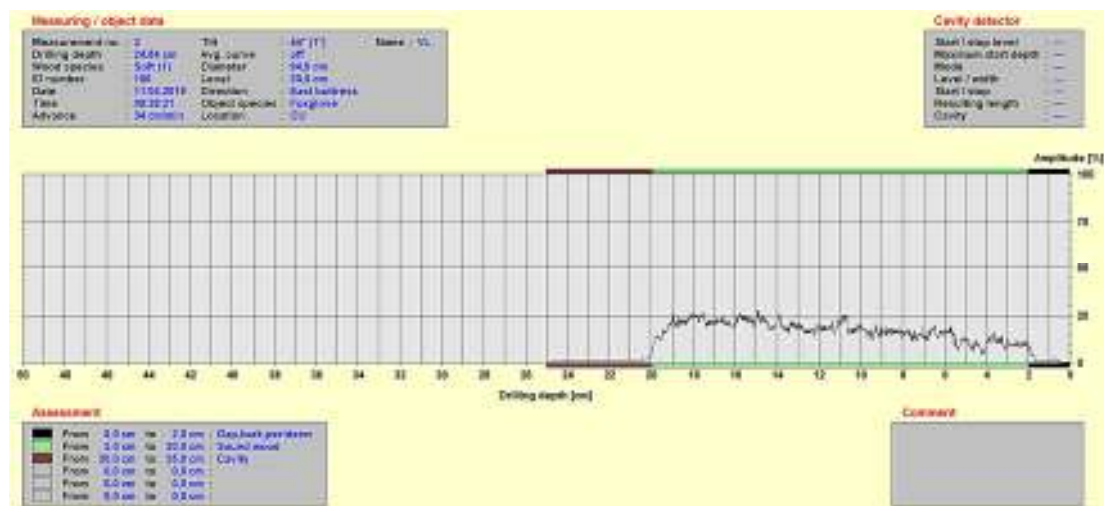
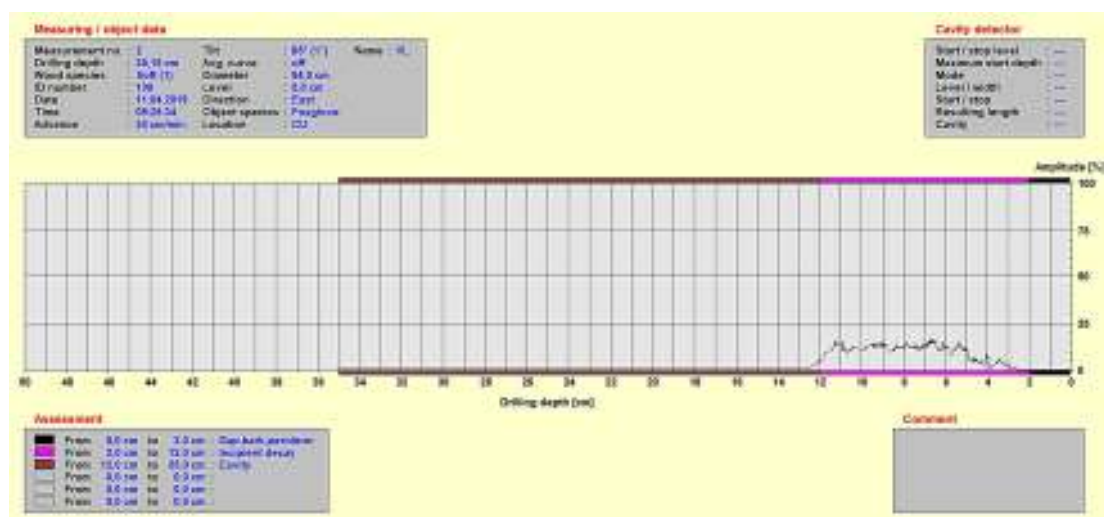
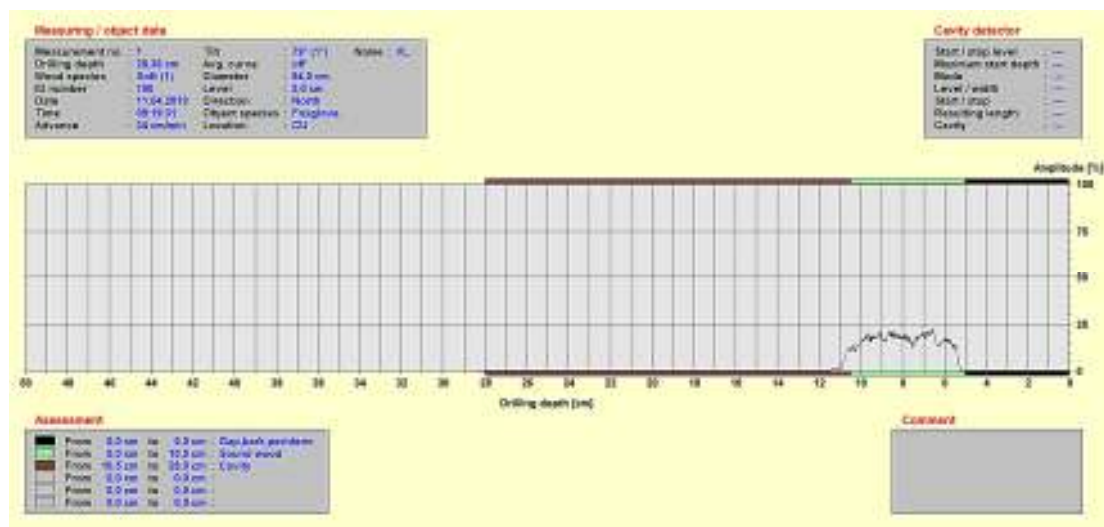


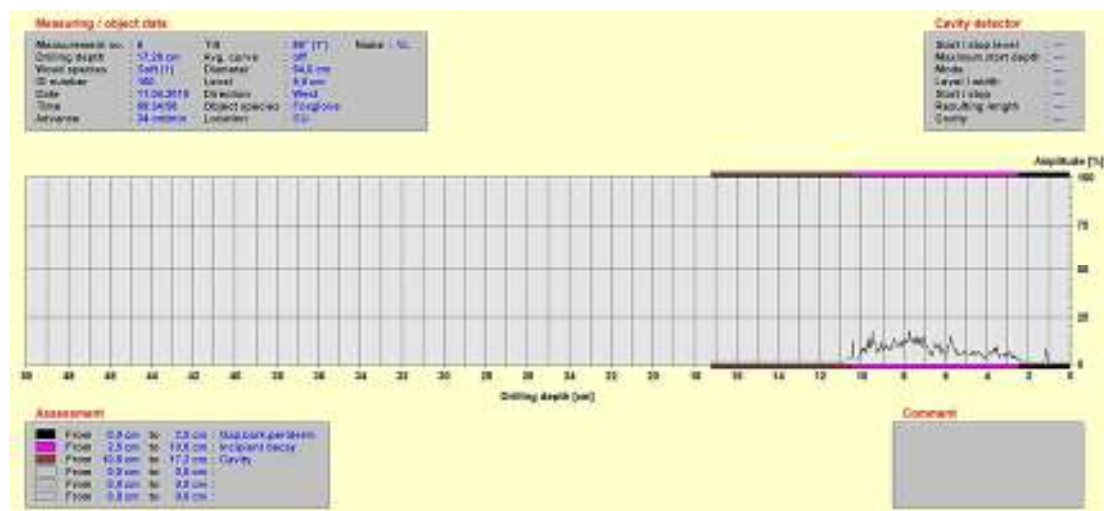
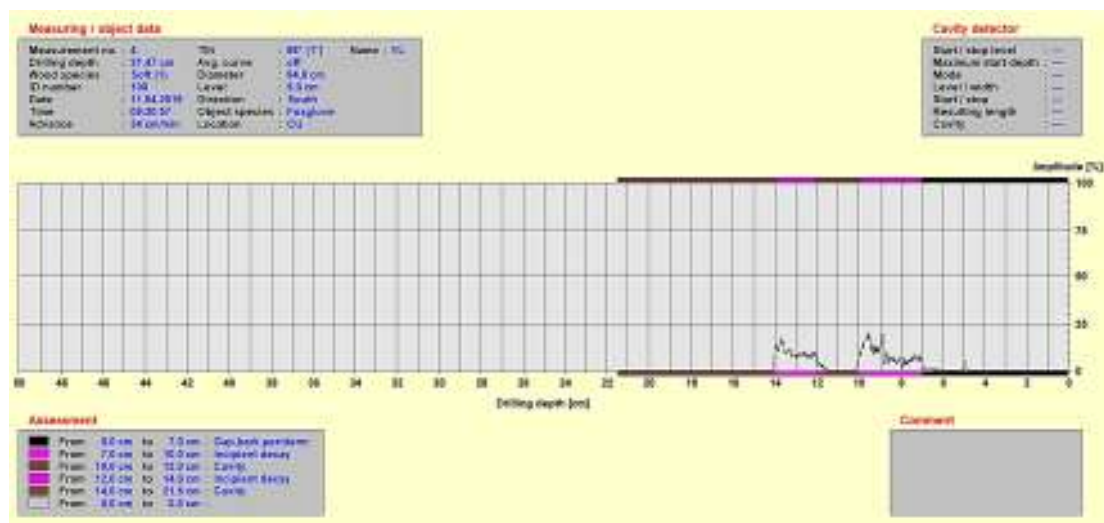
Photograph 21d. Group 5. Tree 129 – Apple with root-plate failure with tree resting on boundary fence and overhanging Isca Court.

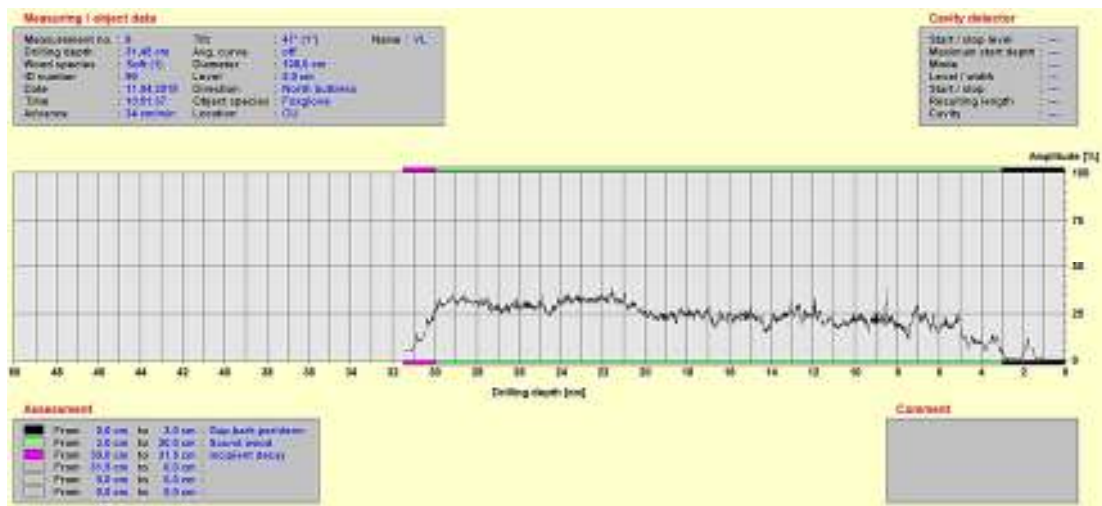


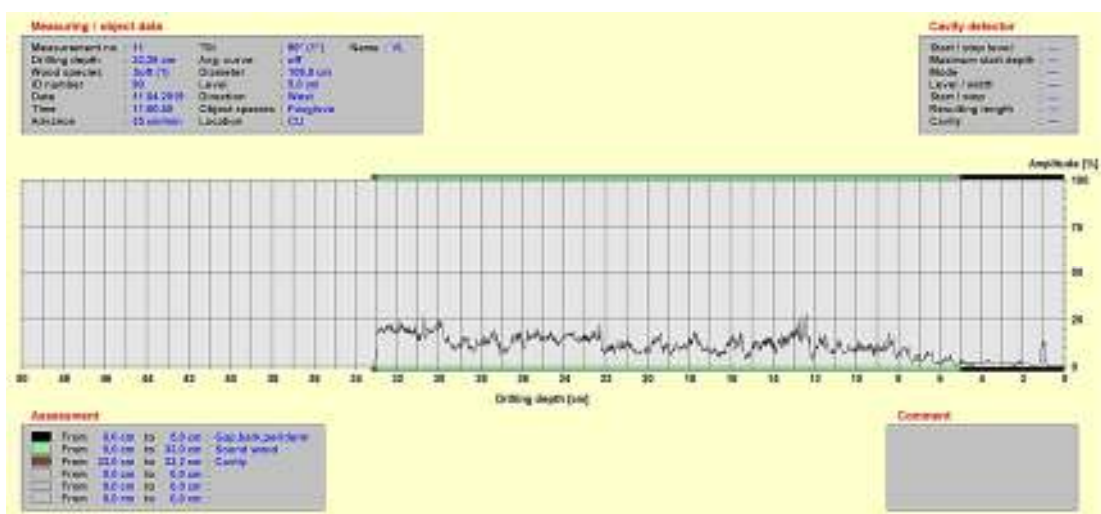
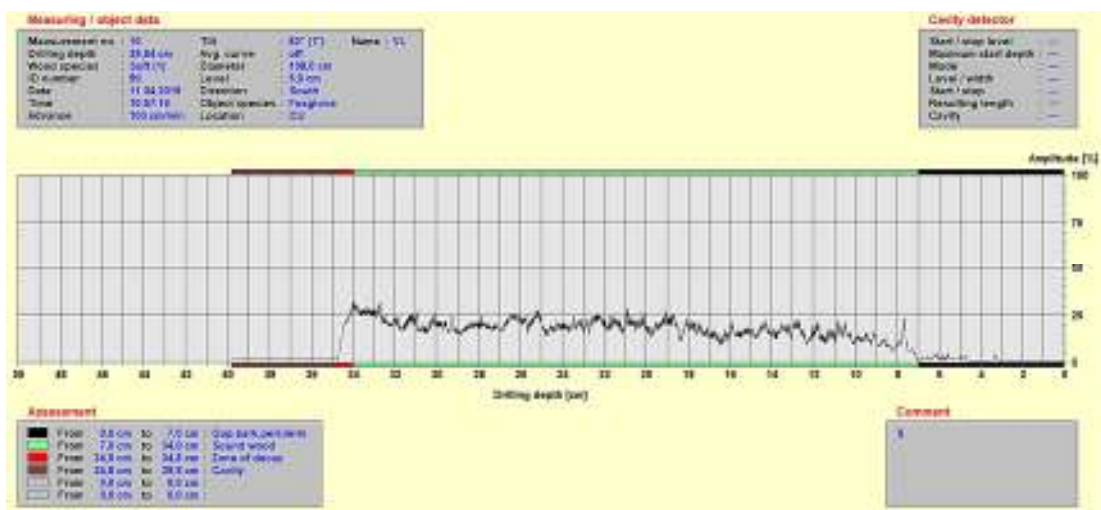
RESISTOGRAPH READINGS

Tree 100. Foxglove tree (*Paulownia tomentosa*)





Tree 90. Foxglove tree (*Paulownia tomentosa*)



Tree 6. Pedunculate oak (*Quercus robur*).





[illegible]

