



AllAboutTrees

Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

Arboricultural Impact Assessment

For Trees At

St. Cuthbert's Hospice,

Durham




For

St. Cuthbert's Hospice



Document Verification

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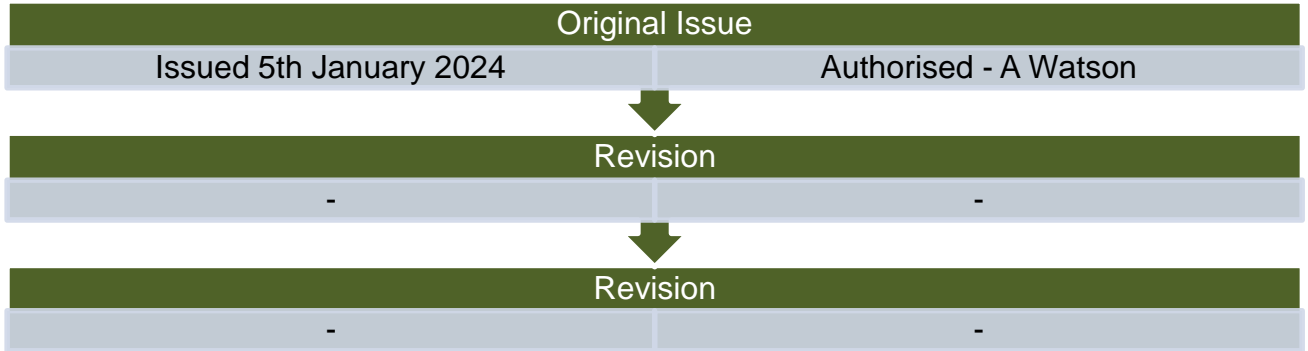


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1. Introduction

1.1 We are instructed by St. Cuthbert's Hospice to provide an Arboricultural Impact Assessment (AIA) for the significant trees located within a specified area at the St. Cuthbert's Hospice, Durham.

1.2 This report is produced to evaluate the proposed formation of additional parking bays adjacent to the Hospice building. The developments juxtaposition with the existing trees is considered.

1.3 We were provided with the following documents:

- Existing plan in jpeg format
- Proposed development plans in jpeg format

1.4 This assessment is concerned with recording the species, size and condition of the trees. Recommendations are made where appropriate to establish acceptable levels of safety for the site and also to establish a higher level of arboricultural management.

1.5 The trees are also evaluated for the purposes of British Standard 5837–2012 Trees in relation to design, demolition & construction, with regard to their quality and value. The type and size of the root protection area is calculated and the position of the protective barriers is determined. The remaining contribution or safe useful life expectancy is estimated as an indication of the trees period of retention.

1.6 All observations were from ground level without detailed investigation. No invasive examination or climbing inspections were carried out to confirm visual or audible signs of defect and no tissue or soil samples were taken for laboratory analysis.

1.7 Trees are living organisms whose health and condition may change rapidly and all observations, recommendations and conclusions are based on the status of the tree at the time of inspection. The recommendations contained within this report are valid for a period of one year only.

1.7.1 Both abiotic and biotic factors can alter the health/structural integrity of trees rapidly. No liability can be accepted for any physiological or structural deterioration of the tree occurring after the date of our inspection or that was not evident on the day of inspection. Where this report is relied upon at a later date the reader should be aware that the physiological and structural condition of the surveyed trees may have changed; Re-inspection may lead to significantly different observations, recommendations and conclusions.

1.7.2 Any significant alteration to the site which may affect the trees (demolition activity, construction activity, alterations to infrastructure, level

changes, hydrological changes, extreme climatic events, etc) will necessitate a re- assessment of the trees.

1.8 This report was prepared for use by our client in accordance with the terms of the contract and for planning purposes only. It is not a substitute for a tree condition, insurance, or mortgage service. Information provided by third parties used in the preparation of this report is assumed to be correct. The contents are copyright and may not be duplicated or used by third parties without the written consent of AllAboutTrees Ltd.

2. Protected Status Of Trees

2.1 Trees may be legally protected, this may either be in the form of a Tree Preservation Order (TPO) or that the trees are located within a Conservation area.

2.2 Potentially large penalties may be enforced for illegally carrying out works on protected trees. It is recommended that checks are made before any works are undertaken and no work should commence until permission has been granted. Please note that there are a number of exemptions from the requirement to obtain a felling licence including land on which full planning permission has been granted by the local authority, however this exemption does not cover land where only outline planning permission has been granted, or on land which has been allocated for residential development within local authority urban and local development plans.

2.3 AllAboutTrees has been able to ascertain with Durham County Council (the Local Planning Authority) on Thursday 4th January that an Area Tree Preservation Order (Order number PN1-342, titled 'St Cuthbert's Hospice') protects some of the trees within the study area. An Area Order protects all trees that were present at the time of creation – in this example 11th December 1986. Any trees planted or self-sown after this date would not be legally protected. It is an offence to carry out any tree work to protected individuals unless permission is granted by the Local Planning Authority.

3. Site Visit & Description

Site location – N 54° 45' 50.20 W 01° 35' 48.09
O/S Grid reference- NZ 260 410 GB Grid



Figure 1 - The location of the proposed parking bays are indicated by the red line in the above image.

3.1 A site visit was undertaken on Tuesday 19th December 2023 by Tim Archment. The weather was fine with no visibility constraints.

3.2 The study area is a small parcel of land located within the grounds of St. Cuthbert's Hospice, Durham. The plot is located adjacent to the front elevation of the building on the entrance road.

3.3 The plot is given to soft landscaping. It is primarily grassed with trees and shrubs planted across the plot. One of the surveyed trees is a dead stem without canopy, retained in this form as deadwood habitat. A bench has been placed within this area beneath the canopies of the holly trees.

3.4 A footpath marks part of the northern edge of the landscaped area, providing a pedestrian link from the main carpark to the building.

3.5 The study area is relatively flat with no apparent drainage issues at the time of the survey.

4. Appraisal

4.1 The trees have been surveyed on site and plotted on the site plan. Their positions have been determined using a laser distometer and triangulation calculations.

4.2 All significant trees have been inspected and some of the smaller specimens have been included for accuracy. Individual recommendations are included within Appendix 1 of this report.

4.3 Root Protection Areas (RPAs)

4.3.1 The British Standard Root Protection Areas (RPAs) are indicated by the red circles surrounding the trunk position of the trees on the associated plans. These indicative circles do not take into consideration site specific conditions such as the presence of buildings, roads, footpaths, topography, underground utility services etc. and are representative of typical root morphology where said structures are not encountered.

4.4 Tree Removals

4.4.1 It will be necessary to remove some of the existing trees to facilitate the proposed development:

- Trees 1-6, 9
- Groups 1 & 2

will need to be removed to facilitate the formation of the new parking bays.

- The new parking bays are in direct conflict with the case of trees 1-6 and groups 1-2 necessitating their removal.
- In the case of tree 9 the conflict is indirect though considered severe enough to warrant removal of the tree. Disabled access is a requirement of the project, necessitating level ground. The use of above ground systems will not work with the existing levels. Consequently excavation is required. To do so would compromise around 25% of tree 9's RPA which far exceeds acceptable tolerances. The line of excavation start approximately 3.0m from the tree stem where potential exists for striking roots which contribute to structural stability. Lime is known to have relatively soft wood with limited ability to compartmentalise decay; this work is likely to invite future issues. The tree is a mature individual and unlikely to tolerate this level of disturbance. Consequently its removal is recommended.

4.4.2 A breakdown of recommended removals, alongside their BS5837 category rating is provided in the table below. For further information regarding the BS5837 quality categorisation system please refer to Appendix 2 (II).

| Tree Category Rating | Remove To Facilitate The Development |
|------------------------------|--------------------------------------|
| A – High | - |
| B – Moderate | Trees 2, 3 & 9 |
| C – Low | Trees 1, 4 & 6 Groups 1 & 2 |
| U – Unsuitable For Retention | Tree 5 |

4.4.3 There is likely to be a requirement for new planting to mitigate for the above removals. Careful consideration should be given to all new planting positions to ensure the trees can grow fully into maturity without requiring major or regular pruning works. New specimens should not be positioned in close proximity to buildings, windows or utility services.

4.5 Retained Trees

4.5.1 Protective barriers as per section 5.1 of this report should be erected around all retained trees in the position indicated by the blue line on the Tree Protection Plan prior to any works on site. Signs should also be attached stating that the area is a protected zone and should not be entered.

4.6 Ground Level

4.6.1 There should be no alteration of the ground level within the RPA of any retained tree. This includes the lowering of the ground level via the excavation of existing material or the raising of the ground level via the importation of additional material.

4.6.2 Lowering of the ground level results in the inevitable severance of roots. As the majority of feeding roots are located towards the surface of the soil, lowering the ground level by even a few centimetres can have a drastic effect on the trees physiological health, greatly limiting the trees ability to uptake nutrients. A more significant reduction in ground level is likely to sever larger supporting roots resulting in immediate loss of structural integrity, predisposing the tree to failure.

4.6.3 Raising the ground level encourages anaerobic conditions, resulting in reduced gaseous exchange, a necessary part of the respiration process. Water penetration to the underlying root system is also limited. The roots are slowly suffocated leading to decline. Symptoms are likely to include wilting foliage, poor shoot elongation, late bud break, early leaf abscission, crown thinness, followed by dieback and eventually death.

4.6.4 Any level changes, installation of retaining structures etc, should take place outside of the RPA of retained trees.

4.7 Wildlife Habitats

4.7.1 As part of the survey the significant trees were inspected from ground level for signs of wildlife habitation, in particular birds and bats.

Bats

4.7.2 All UK bats and their roosts are protected by law. The legislation protecting bats are:

- The Wildlife & Countryside Act 1981 (WCA)
- Conservation of Habitats and Species Regulations 2017

For all countries of the UK, the legal protection for bats and their roosts may be summarised as follows:

You will be committing a criminal offence if you:

1. Deliberately* capture, injure or kill a bat
2. Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
4. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
5. Intentionally or recklessly obstruct access to a bat roost

**In a court, 'deliberately' will probably be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action will most likely have.)*

4.7.3 Penalties on conviction - the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

4.7.4 No visual signs were found to confirm the presence of bats in the surveyed trees.

4.7.5 When carrying out tree works it is essential that the contractor or other competent person carries out a specific 'bats in trees risk assessment' which can be obtained from the 'Arboricultural Association' or the 'Bat Conservation Trust' (BCT). If evidence of bats is found work must stop immediately we should be contacted so that our licenced Ecologist can advise further.

Birds

4.7.6 In the UK, all wild birds, their nests and their eggs are protected by law.

In England, Scotland and Wales the legislation that protects wild birds is:

- The Wildlife and Countryside Act 1981
- The Countryside (or CRoW) Act 2000

4.7.7 No nesting birds were present at the time of inspection though given the scope of the site, and the extent of vegetation, potential exists for birds to nest and as such caution must be exercised.

4.7.8 As with bats the contractor has an obligation to carry out visual checks prior to works. Where possible tree works should be carried out in the period from August to the end of February in order to avoid the bird nesting season.

5. Tree Protection Measures

5.1 Root Protection Area & Barrier Specification

5.1.1 Trees on development sites are prone to damage during the course of demolition and construction works. Retained trees need to be protected in line with British Standard 5837–2012 Trees in relation to design, demolition & construction.

5.1.2 This usually involves identifying a construction exclusion zone around the tree which should remain undisturbed with appropriate protective barriers preventing access to this Root Protection Area for the duration of the project.

5.1.3 The minimum root protection areas (measured in a radius from the centre of the tree to the protective barrier) are outlined for each individual tree and the barrier layout is indicated on the plan.

5.1.4 The exact root spread of an individual tree is difficult to quantify, but in general, the bulk of a trees roots are situated in the upper 600mm of the soil with the finer absorbing roots prevalent in the upper 250mm.

5.1.5 Dependant on soil conditions and the species of the tree, the root plate may extend radially for distances in excess of the height of the tree.

5.1.6 In the case of development sites, the root protection area is designed to prevent any significant long-term damage to the tree by protecting the root plate and to some extent the lower branches of the tree.

5.1.7 The barriers should be erected prior to work commencing on site and should remain until construction activities have been completed. The root protection area should be considered essential and should not be removed or altered without prior recommendation by an Arboriculturalist and approval of the local planning authority.

5.1.8 The barrier should consist of proprietary 2m tall welded mesh panels mounted on rubber or concrete feet. The panels must be joined together with a minimum of two anti-tamper couplings situated at least 1m vertically apart and installed uniformly throughout the barrier so that they can only be removed from inside the barrier. The panels must be supported by stabilising struts mounted on a block tray.

5.1.9 No fixing shall be made to any tree and all possible care must be taken to prevent damage to tree roots when locating the posts.

5.1.10 All types of barriers must be firmly attached to prevent movement by site personnel or vehicles and all-weather signs with the wording "Construction exclusion zone- keep out" should be attached.

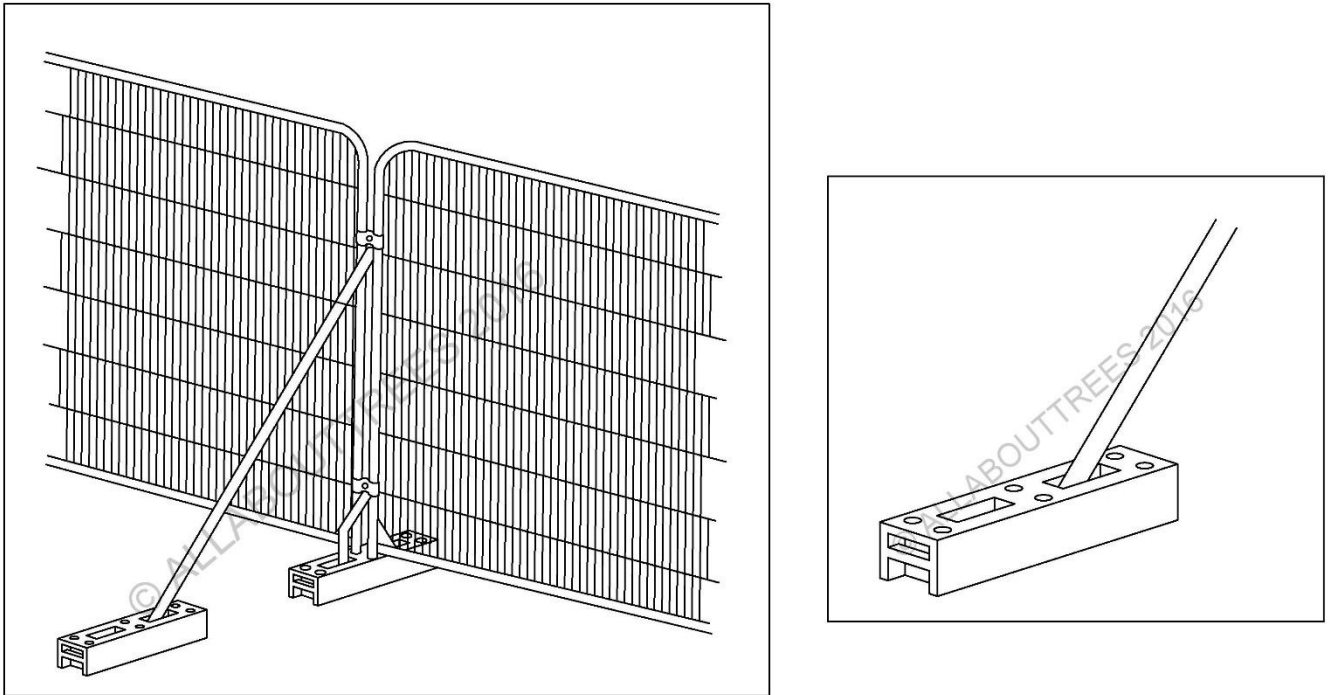


Figure 2 - Stabiliser strut mounted on block tray.



Figure 3 – An example of a barrier erected on a site

5.2 Service Runs

5.2.1 It is assumed that the existing service runs will be exploited where possible, but if new works are required it is important that they comply with the National Joint Utilities Group (NJUG) 'Guidelines for the planning, installation, and maintenance of utility services in proximity to trees' and BS 5837:2012. The excavation of open trenches by machine will be unacceptable within the protective zone of any of the retained trees.

5.2.2 Acceptable techniques (fuller details in the appendices) for the laying of services in order of preference are:

- **Trenchless-** by using thrust boring or similar techniques
- **Broken Trench-** to be dug by hand
- **Continuous trench-** to be dug by hand

5.2.3 Wherever possible, services should be routed outside of any retained trees RPA. When this is not possible apparatus should be routed together in a common duct and any inspection chambers sited outside the RPA.

5.2.4 When underground apparatus is to pass within the RPA of a retained tree, trenchless insertion methods should be used (see table below) with entry and retrieval pits sited outside the RPA.

5.2.5 Shallow services runs may be dug with hand tools if appropriate and preferably by compressed air soil displacement. Roots, whilst exposed, should immediately be wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.

| Trenchless Solutions For Installation Of Underground Services | | | | | |
|---|--------------------|-----------------------------------|---------------------------------|--|--|
| Method | Accuracy (MM) | Bore ^(A) diameter (MM) | Maximum subterranean length (M) | Applications | Not suitable for |
| Micro tunnelling | <20 | 100 to 300 | 40 | Gravity-fall pipes, deep apparatus, watercourse/ roadway under crossings | Low-cost projects due to relative expense |
| Surface-launched directional drilling | ≈100 | 25 to 1200 | 150 | Pressure pipes, cables including fibre optic | Gravity fall pipes, e.g. drains and sewers ^(B) |
| Pipe ramming | ≈150 | 150 to 2000 | 70 | Any large-bore pipes and ducts | Rocky and other heavily obstructed soils |
| Impact moling ^(C) | ≈50 ^(D) | 30 to 180 ^(E) | 40 | Gas, water and cable connections, e.g. from street to property | Any application that requires accuracy over distances in excess of 5m. |

- (A) Dependent upon strata encountered
- (B) Pit-launched directional drilling can be used for gravity fall pipes up to 20m in subterranean length
- (C) Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.
- (D) Substantial inverse relationship between accuracy and distance
- (E) Figures given relate to single pass: up to 300mm bore achievable with multiple passes

6. Conclusion

6.1 As with any construction exercise near trees, there are potential areas of conflict where damage could be caused to retained trees.

6.2 By using the protective elements dictated by British Standard 5837, no significant damage should take place during the construction phase and the tree cover should flourish in the longer term. It is anticipated that all of the retained trees can be incorporated into the site design.

6.3 All tree works must conform rigorously to BS 3998 (2010) 'Tree Work - Recommendations'. The contractors undertaking tree work must comply with the legal obligations to wildlife as outlined in both the AIA and AMS.

For and on behalf of
AllAboutTrees Ltd

Andrew Watson FLS MICFor CBiol MRSB FArborA CEnv LCGI
-Chartered Arboriculturalist & Registered Consultant

Appendix 1

| Tree No. | Species Common Name <i>Latin Name</i> | Height (M) | Crown Spread (M) | | | | Trunk Diameter (MM) | No. Of Stems | Height Of Lower Canopy (M) | First Significant Branch Position (M) | Age | Physiological Condition | Structural Condition | Root Protection Area Radii (M) | Estimated Remaining Contribution (Years) | Tree Quality Assessment | Comments | Maintenance | Bat Roost Potential | Ultimate Size For Species (M) | | Priority |
|----------|--|------------|------------------|-----|-----|-----|---------------------|--------------|----------------------------|---------------------------------------|-------------|-------------------------|----------------------|--------------------------------|--|-------------------------|---|--|---------------------|-------------------------------|--------|----------|
| | | | N | S | E | W | | | | | | | | | | | | | | Height | Spread | |
| 1 | Yew <i>Taxus baccata</i> | 13 | 1.7 | 5.8 | 2.8 | 6.1 | 310, 450 | 2 | 1.7 | 2.2 W | Mature | Poor | Poor | 6.6 | 10+ | C - Low | <p>Tagged 0141.</p> <p>2x codominant stems from approximately 50cm. Both stems further subdivide between 1.7-1.9m. All unions are incredibly tight with included bark – structurally poor.</p> <p>Low bud/leaf density with dieback of branch tips – impaired physiological condition.</p> <p>Slightly asymmetric canopy, distorted due to pressure from adjacent lime tree.</p> <p>Deadwood in canopy.</p> | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 15 | 12 | A |
| 2 | Holly <i>Ilex aquifolium</i> | 6.5 | 2.1 | 2.1 | 1.5 | 1.7 | 180 | 1 | 1.7 | 2.1 SE | Middle aged | Fair | Fair | 2.2 | 20+ | B - Moderate | <p>Distorted by and growing beneath the canopy of adjacent yew tree.</p> <p>Tagged 0146.</p> | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 12 | 10 | A |
| 3 | Holly <i>Ilex aquifolium</i> | 7.0 | 1.2 | 3.5 | 0.9 | 2.8 | 180, 40, 30, 30 | 4 | 0.8 | 0 N | Middle aged | Fair | Fair | 2.3 | 20+ | B - Moderate | <p>Distorted by and growing beneath the canopy of adjacent yew tree.</p> <p>Leans to the south.</p> <p>3x small diameter subdominant stems.</p> | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 12 | 10 | A |
| 4 | Rhododendron <i>Rhododendron ponticum</i> | 1.9 | 1.3 | 0.4 | 0.7 | 0.6 | 120 | MS | 0 | 0.5 N | Middle aged | Fair | Fair | 1.4 | 20+ | C - Low | <p>Multi-stemmed shrub.</p> <p>10x small diameter stems.</p> <p>No major visible defects.</p> | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 6 | 6 | A |

| Tree No. | Species Common Name Latin Name | Height (M) | Crown Spread (M) | | | | Trunk Diameter (MM) | No. Of Stems | Height Of Lower Canopy (M) | First Significant Branch Position (M) | Age | Physiological Condition | Structural Condition | Root Protection Area Radii (M) | Estimated Remaining Contribution (Years) | Tree Quality Assessment | Comments | Maintenance | Bat Roost Potential | Ultimate Size For Species (M) | | Priority |
|----------|--|------------|------------------|-----|-----|-----|---------------------|--------------|----------------------------|---------------------------------------|-------------|-------------------------|----------------------|--------------------------------|--|--|--|---|---------------------|-------------------------------|--------|----------|
| | | | N | S | E | W | | | | | | | | | | | | | | Height | Spread | |
| | | | | | | | | | | | | | | | | Stem diameter estimated as a single value. | | | | | | |
| 5 | Scots pine <i>Pinus sylvestris</i> | 4.1 | - | - | - | - | 790 | 1 | - | - | Mature | Dead | Dead | 9.5 | <10 | U – Unsuitable For Retention | Tagged 0145 & 0185. Dead stem leaning to the south. Canopy removed. Honey fungus rhizomorphs on stem. | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 20 | 15 | A |
| 6 | Holly <i>Ilex aquifolium</i> | 2.7 | 0.9 | 1.1 | 0.8 | 1.0 | 40, 50, 70, 80, 90 | 5 | 0.75 | 0.8 NE | Mature | Fair | Poor | 1.8 | 10+ | C - Low | Multi-stemmed regenerative growth growing from decaying stool. Maintained as topiary. Slightly oversailing the adjacent road. | This tree is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 12 | 10 | |
| 7 | Holly <i>Ilex aquifolium</i> | 1.5 | 0.5 | 0.7 | 0.7 | 0.6 | 250 | MS | 0.1 | 0.1 N | Mature | Fair | Fair | 3.0 | 20+ | C - Low | Multi-stemmed regenerative growth growing from coppiced stool. Maintained as topiary. Stem diameter estimated as a single value. | This tree is retainable and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. No tree works required at the present time. | None | 12 | 10 | - |
| 8 | Common Lime <i>Tilia x europaea</i> | 12.1 | 2.5 | 4.7 | 2.5 | 2.5 | 140, 150, 160, 180 | 4 | 2.75 | 2.75 W | Middle aged | Fair | Fair | 3.8 | 20+ | B - Moderate | Multiple stems from ground level. Asymmetric crown spread; canopy distorted due to group pressure. Tagged 0151. | This tree is retainable and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. No tree works required at the present time. | None | 22 | 20 | - |
| 9 | Common Lime <i>Tilia x europaea</i> | 20.0 | 4.6 | 5.4 | 4.1 | 5.6 | 820 | 1 | 3.2 | 3.2 NW | Mature | Fair | Fair | 9.8 | 20+ | B - Moderate | Abuts the path – surface lying roots disrupting the path surface. Tagged 0150 & 0151. | This tree is in conflict with the proposed design and will need to be removed to | Low | 22 | 20 | A |

| Tree No. | Species Common Name Latin Name | Height (M) | Crown Spread (M) | | | | Trunk Diameter (MM) | No. Of Stems | Height Of Lower Canopy (M) | First Significant Branch Position (M) | Age | Physiological Condition | Structural Condition | Root Protection Area Radii (M) | Estimated Remaining Contribution (Years) | Tree Quality Assessment | Comments | Maintenance | Bat Roost Potential | Ultimate Size For Species (M) | | Priority |
|---------------|---|------------|------------------|-----|-----|-----|---------------------|--------------|----------------------------|---------------------------------------|----------------------|-------------------------|----------------------|--------------------------------|--|--|---|-------------|---------------------|-------------------------------|--------|----------|
| | | | N | S | E | W | | | | | | | | | | | | | | Height | Spread | |
| | | | | | | | | | | | | | | | | Epicormic growth removed. Deadwood retained in the tree canopy. Ivy starting to climb the stem – up to 1.0m in height. | facilitate the development proposals. | | | | | |
| 10 | Portugal laurel <i>Prunus lusitanica</i> | 7.2 | 2.9 | 1.3 | 2.1 | 2.9 | 230 | 1 | 2.3 | 2.4 NW | Mature | Fair | Fair | 2.8 | 20+ | B - Moderate Tagged 0149. Asymmetric crown spread; canopy distorted due to adjacent lime (T9). Ivy starting to climb the stem – up to 65cm in height. | This tree is retainable and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. No tree works required at the present time. | None | 10 | 10 | - | |
| Groups | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Cherry laurel <i>Prunus laurocerasus</i> | 1.25 | - | - | - | - | 100 | MS | - | - | Young | Fair | Fair | 1.2 | 20+ | C - Low Multi-stemmed shrubs, maintained to current dimensions. No major visible defects. Stem diameter estimated as a single value. | This group is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 6 | 6 | A | |
| 2 | Dogwood <i>Cornus alba</i> | <1.5 | - | - | - | - | 150 | MS | - | - | Mature | Fair | Fair | 1.8 | 20+ | C - Low Multi-stemmed shrubs, maintained to current dimensions. No major visible defects. Stem diameter estimated as a single value. | This group is in conflict with the proposed design and will need to be removed to facilitate the development proposals. | None | 3 | 3 | A | |
| 3 | Ash, Hazel, Lawson cypress, Rhododendron, Beech, Dogwood, Spotted laurel, | <8.0 | - | - | - | - | <177 | - | - | - | Young to middle aged | Fair | Fair | <2.1 | 20+ | C - Low Mixed species in group outside of development area. Group adjacent to access road. Small trees and shrubs complementing larger trees. | This group is retainable and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. | None | 23 | 18 | C | |

| Tree No. | Species | | Height (M) | Crown Spread (M) | | | | Trunk Diameter (MM) | No. Of Stems | Height Of Lower Canopy (M) | First Significant Branch Position (M) | Age | Physiological Condition | Structural Condition | Root Protection Area Radii (M) | Estimated Remaining Contribution (Years) | Tree Quality Assessment | Comments | Maintenance | Bat Roost Potential | Ultimate Size For Species (M) | | Priority |
|----------|--|------------|------------|------------------|---|---|---|---------------------|--------------|----------------------------|---------------------------------------|-----|-------------------------|----------------------|--------------------------------|--|-------------------------|--|--|---------------------|-------------------------------|--------|----------|
| | Common Name | Latin Name | | N | S | E | W | | | | | | | | | | | | | | Height | Spread | |
| | Box, Cotoneaster | | | | | | | | | | | | | | | | | Ash to 8.0m height. Lawson cypress to 3.0 and all others <2.0m. | Continue with existing management programme. | | | | |
| | Fraxinus excelsior, Corylus avellana, Chamaecyparis lawsoniana, Fagus sylvatica, Cornus alba, Aucuba japonica, Buxus sempervirens, Cotoneaster sp. | | | | | | | | | | | | | | | | | Ash has largest diameter in group (multi-stemmed, as a single value 177mm), all others <100. | Remove ash tree as part of site management due to presence of ash dieback. | | | | |
| | | | | | | | | | | | | | | | | | | Ash has ash dieback and is unlikely to survive the coming years. | | | | | |

Appendix 2(1)

Glossary of Terms

- 1 Reference number:** An individual identifying number
- 2 Species:** Species identification is based on visual field observations and lists the common name. In some cases, the botanical name will be used where there is no common alternative. On in-depth surveys the botanical name only may be used
- 3 Height:** Height is estimated to the nearest metre. On computerised surveys this may be within a range of heights. When measured height is required, a clinometer is used to measure to the nearest metre
- 4 Diameter:** Trunk diameter measured at 1.5 metres from ground level and recorded in millimetres. In some surveys this is indicated as a range
- 5 Spread:** Measurement of canopy from the trunk to the nearest metre in four directions, North, South, East, and West in metres
- 6 Lower crown Clearance:** Height in metres of crown clearance above adjacent ground level
- 7 Age:**
Either an estimate (or statement if accurately known) of the age of the tree, classified as:
 - Y** = Young tree, established tree usually up to one third of expected ultimate height & spread
 - MA** = middle aged, usually between one third and two thirds of ultimate height & spread
 - M** = Mature, more or less at full height but still increasing in girth & spread
 - OM** = Over mature, grown to full size and becoming senescent,
 - V** = Veteran tree, individuals surviving beyond the typical age range for the species
- 8 Physiological Condition:**
Good = Healthy tree with good vitality,
Fair = Moderate health and vitality normal or slightly less for species and age
Poor = Poor shape or form - signs of decline in crown, may have structural weakness.
Dead = dead or dying tree
- 9 Structural Condition:**
Good = No visible structural defects
Fair = Only minor structural defects
Poor = Defects which may need to be rectified or regularly monitored
Remove = Severe defects which may result in imminent failure or collapse
- 10 Management Recommendations:** General comments on the condition of the tree or group and any action required. potential for wildlife habitats
- 11 Estimated Remaining Contribution:** Safe Useful Life Expectancy (SULE): in some cases the age ranges are modified
Short: 0 – 10years Medium: 10– 20 Years
Intermediate: 20-40 Long: 40 + years
- 12 Tree Quality:** Assessment of tree quality see following cascade chart for details
- 13 Priority:**
A - Works to achieve an acceptable level of safety or required to facilitate the development
B - Works to achieve higher levels of arboricultural management.
C - To improve the aesthetic appearance.
- 14 Ultimate Size:** Based on site specific features and the individual specimen in its surroundings. Measured to nearest metre (m)
- 15 Root Protection Area:** The distance at which the protective barrier should be erected measured in a radii from the centre of the trunk in metres.
- 16 Pruning:** Pruning shall be defined as the removal of living or dead parts of a plant by the Contractor. Such parts may be soft growth, twigs, branches, limbs or sections of the tree trunk. The cut material may vary from small to large in size.

- 17 Crown Cleaning:** Cleaning out is defined as the removal of dead, dying or diseased branchwood, broken branches or stubs left from previous tree surgery operations (see also 16 Deadwooding) together with all unwanted objects, which may include ivy (if specified) and/or other climbing plants, nails, redundant cable bracing, rope swings, tree houses and windblown rubbish from the tree, and any such debris from any cavities within the tree.
- 18 Deadwood Removal:** Dead-wooding shall be defined as the removal of all dead and dying branches and limbs from the tree.
- 19 Crown Lifting:** Crown lifting shall be defined as the removal of all soft growth and branches or parts thereof which are below or which extend below the height specified in the tender documents. It is recognised that the resultant canopy base might not be one single level but might be stepped to allow for different clearances, for example where a tree overhangs both the footway and the road where different height clearances are required.
- 20 Crown Reduction:** Crown reduction shall be defined as the reduction of the complete outline dimension of the canopy, from the tips of limbs and branches to the main trunk, by pruning growth to an acceptable branch, twig or but to leave a flowing silhouette.

Appendix 2(11) Cascade Chart For Assessing Tree Quality

| Category and definition Trees to be considered for retention | Criteria – Subcategories | | | Identification on plan |
|--|---|---|--|------------------------|
| | 1. Mainly arboricultural values | 2. Mainly landscape values | 3. Mainly cultural values, including conservation | |
| <p><u>Category High = A</u></p> <p>Trees of high quality with an estimated remaining life expectancy of at least 40 years</p> | Trees that are particularly good examples of their species, especially, if rare or unusual, or those that are essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue) | Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features | Trees, groups or woodlands of significant conservation historical, commemorative or other value (e.g. veteran trees or wood – pasture) | Green |
| <p><u>Category Moderate = B</u></p> <p>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</p> | Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects including unsympathetic past management and storm damage), 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 | Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality | Trees with material conservation or other cultural value | Blue |
| <p><u>Category Low = C</u></p> <p>Trees of low quality with an estimated remaining life expectancy of at least 10 years; or young trees with a stem diameter below 150mm</p> | Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories | Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value, and/ or trees offering low or only temporary/transient landscape benefits | Trees with no material conservation or other cultural benefits | Yellow |
| <p><u>Category = U Trees unsuitable for retention</u></p> <p>Those of such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years</p> | <p>NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation</p> <ul style="list-style-type: none"> 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 U category trees (i.e. 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 (e.g. Dutch elm disease) or very low quality trees suppressing adjacent trees of better quality Habitat reinstatement may be appropriate (e.g. U category trees used as a bat roost- installation of bat box in nearby tree) | | | Red |

Appendix 2(111)
Guidelines for the Planning, installation and
Maintenance of utility services in proximity to trees -
Based on information from National Joint Utilities
Group (NJUG)

Ideally all services should be placed outside of the trees root protection area, but in some situations this is not feasible due to the confines of the site. If services must be laid within the root protection area acceptable techniques are detailed below in order of preference.

- **Trenchless-** by use of thrust boring or similar techniques. The pit excavations for starting and receiving the machinery should be located outside of the root protection area.
To avoid root damage, the mole should run at a depth of at least 600mm.
Use of external lubricants on the mole other than water (e.g. oil or bentonite) should be avoided.
- **Broken trench-** by using hand dug trench sections together with trenchless techniques. It should be limited to practical access and installation around or below the roots. The trench must be dug by hand (see following comments re continuous trenching) and only be long enough to allow access for linking to the next section. The open sections should be kept as short as possible.
- **Continuous trench-** the trench is excavated by hand and retains as many roots as possible. The surface layer is removed carefully and hand digging of the trench takes place. No roots over 2.5cm diameter or clumps of smaller roots (including fibrous) should be severed. The bark surrounding the roots must be maintained. Cutting of roots over 2.5cm diameter should not be attempted without the advice of a qualified Arboriculturalist.
If roots have to be cut, a sharp tool (defined as spade, narrow spade, fork, breaker bar, secateurs, handsaw, post hole shoveller, hand trowel) should be used.

Backfilling

Reinstatement of street works must comply with the code of practice New Roads and Streetworks Act 1991 (Specification for the reinstatement of openings in highways), but where tree roots are involved backfilling should be carefully carried out to avoid direct damage to retained roots and excessive compaction of the soil around them.

The backfill should incorporate an inert granular material mixed with top soil or sharp sand (not builders sand) around the retained roots. This will allow a measure of compaction for resurfacing whilst creating an aerated zone around the roots.

Roots and in particular fine roots, are vulnerable to desiccation on exposure to air. The roots are at greatest risk when there are rapid fluctuations in the air temperature around them (especially winter diurnal temperatures). It is vitally important that the roots are covered with sacking whilst the trench is open. The sacking should be removed once the trench is backfilled.

Planning of services

When laying new or replacement services it is wise to plan ahead to prevent future direct damage to the services from root growth by placing the services within a duct.

If roots have grown into a drain or duct and proliferated to cause a blockage, removal of the root mass will only have a temporary affect and the root will regrow. The fault is in the pipe or duct, not the tree roots and the only answer is to repair or replace the damaged area. Particular problems occur with old salt glazed pipes where clay has been used to seal the joints and has subsequently dried out leaving a gap for the roots to infiltrate.

A popular myth has arisen that tree roots are attracted to water or nutrients within piped systems, this is not so. Roots are adventitious and grow in all directions proliferating in areas where moisture or nutrients are present. They tend to grow near to the pipe to make use of the condensation or moisture build up on the outside of the pipe but will enter the pipe through any crack or damaged joint. They are not capable of breaking into sound pipes.



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