AllAboutTrees

Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

Arboricultural Impact Assessment

For Trees At St James' Church

Castle Eden

For

Beaumont Brown Architects

Institute of Chartered Foresters Registered Consultant

Arboricultural Association Fellow Member

Consulting Arborist Society.com Professional Member

Certified Arborist ISA

Constructionline Part of Capita plc

Document Verification

Document Title	• Arboricultural Impact Assessment Of Trees At St James' Church. Castle Eden • For Beaumont Brown Architects
Prepared By	• Rodger Lowe, MICFor, HND Arb
Authorised By	• Andrew Watson FLS MICFor CBiol MRSB FArborA CEnv LCGI

Original AIA	
Issued 21st June 2017	Authorised - A Watson

Revision	
-	-

Revision	
-	-

Table of Contents

Appendices

1. Introduction

1.1 We are instructed by Beaumont Brown Architects to provide an Arboricultural Impact Assessment (AIA) for the significant trees located at St James' Church, Castle Eden

1.2 This report is produced to evaluate the proposed construction of additional car parking. The developments juxtaposition with the existing trees is considered.

1.3 We were provided with the following documents:

- Existing plan in digital AutoCAD format
- Proposed development plans in digital AutoCAD 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.

1.7 Trees are living organisms whose health and condition may change rapidly and all observations are based on the status of the tree at the time of inspection.

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 4th April 2017 that there are restrictions on works to trees in the site. The site is within a Conservation area. The site is also within the Easington District 1 Tree Preservation Order 1947. Formal planning consent will be required for any works to trees covered by a TPO and 6 weeks' notice will be required to Durham County Council for all other works to trees which are outside the TPO area.

3. Site Visit & Description

Site location – N 54° 44' 21.09 W 01° 20' 11.90
O/S Grid reference- NZ426382 GB Grid

Figure 1 - The study area is indicated by the red boundary line as shown on the above image.

3.1 A site visit was undertaken on 4th April 2017 by Rodger Lowe. The weather was fine with no visibility constraints.

3.2 The study area consists of churchyard around a church which stands in an elevated position. Recent tree works have removed several large

diameter Horse chestnuts. One large specimen remains and this dominates the churchyard.

4. Appraisal

4.1 The trees have been surveyed on site and plotted on the site plan. Their positions are considered accurate given the provision of a detailed topographical survey.

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 and to establish a higher level of arboricultural management for the site.

- Group 2 will need to be removed to facilitate the construction of the new parking bays.

- Trees 1, 2, 5, 12 and 13 should be removed due to structural defects and a limited safe useful life expectancy.

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	Remove Due To Structural Defects, Limited Safe Useful Life Expectancy, Site Management	Trees Identified For Removal, Both To Facilitate The Development And Due To Impaired Condition
A – High	-	-	-
B – Moderate	-	-	-
C – Low	Group 2	Group 1,1,2,12,	-
U – Unsuitable For Retention	-	5,13	-

Figure 2 - Tree removals

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.

Figure 3- Ground level changes

4.6.4 The above photograph shows a *Sorbus* tree, approximately one week after the ground level was reduced on one side by around 150mm. Notice the yellowed foliage in contrast with the lush green canopies behind. This tree is unlikely to survive and will require removal.

4.6.5 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 2010

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 indicate the presence of bats in the surveyed trees though a number of the mature trees within the site display characteristics found favourable to bats and as such caution must be exercised.

4.7.5 When carrying out tree works it is essential that the contractor or other competent person carriers 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 and Natural England Batline contacted (0845 1300 228). A further inspection may well be required by a licensed bat handler or roost visitor.

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 a vertical and horizontal framework of scaffold tubing which is adequately braced to resist impacts. The vertical scaffold tubes need to be placed at a distance not exceeding 3m apart and driven securely into the ground for a minimum depth of 0.6m. Care should be taken when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid any structural roots. The weldmesh or Heras panels need to be a minimum 2.0m tall and are securely attached to the scaffold framework with wire or scaffold clamps. The wire or scaffold clamps should be secured on the inside of the barrier to avoid easy

dismantling. Panels on rubber or concrete feet are not resistant to impact and should not be used.

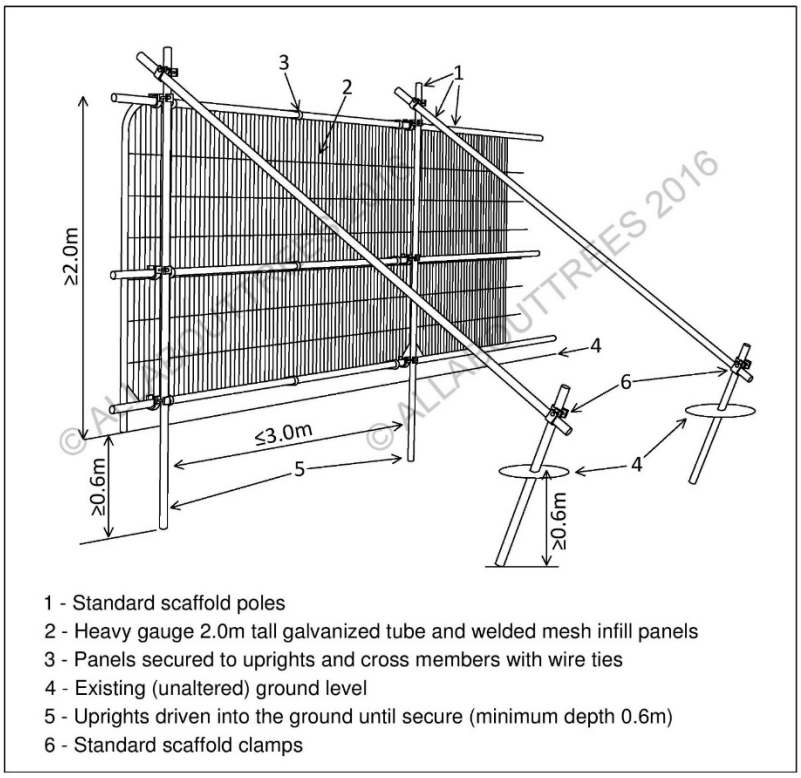


Figure 4 - Protective barrier specification

Figure 5 - Example of a barrier erected on a site

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.

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.

Figure 6 - Services

(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.

6.3 It is anticipated that all of the retained trees can be incorporated into the site design; however, it is vital that the ultimate size and spread of the trees should be considered when retaining trees near to the building and that shading and light penetration should also be considered when positioning the windows in the building.

6.4 All tree works must conform rigorously to BS 3998 (2010) 'Tree Work - Recommendations'

For and on behalf of
AllAboutTrees Ltd

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

Appendix 1 (With Photographs)

Tree No.	Species Common Name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
1	Ilex aquifolium (Holly)	13	2	0	2	1	410	2	2	3(W)	Mature	Poor	Fair	4.92	10+	C-Low	One stem snapped out at 5m and flushed. Stem divides at ground level. Included bark present in fork. Dieback in crown.	Remove tree	Low	13	12	C
2	Ilex aquifolium (Holly)	13	2	0	2	2	310	1	2	3(W)	Mature	Poor	Fair	3.72	10+	C-Low	Dieback in crown.	Remove tree	Low	13	12	C
3	Aesculus hippocastanum (Horse Chestnut)	23	9	9	6	9	1400	1	2.5	3(W)	Mature	Good	Good	15	20+	B-Moderate	Characterful old tree. Rare to see such an old chestnut in such good condition. Pruned well Stumps of felled chestnuts adjacent. Stem divides above 1.5m.	No works required 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.	Low	20	20	-
4	Quercus robur (Common Oak)	3	1	1	1	1	50	1	1.5	1.5(W)	Young	Fair	Fair	0.6	40+	C-Low	Leaning East.	Needs higher stake	Low	25	20	C
5	Quercus robur (Common Oak)	3	1	1	1	1	50	1	1.5	1.5(W)	Young	Dead	Dead	0.6	0	U-Unsuitable for retention	Newly planted	Replace with new tree	Low	25	20	C
6	Quercus ilex (Holm Oak)	13	4.5	4.5	4.5	4.5	880	1	1	3(N)	Middle aged	Fair	Fair	10.56	20+	B-Moderate	Decay wound in stem probably initiated by historic tear out wound Significant tree well sheltered. Ivy on tree. Decay present on stem. Cavity on stem. Broken branches in crown.	Carry out further aerial inspection. Carry out further decay detection	Low	20	16	B

Tree No.	Species Common Name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
7	Nothofagus obliqua (Roble Beech)	27	4	7.5	5	5	710	1	1.5	2.5(S)	Mature	Good	Fair	8.52	40+	A-Good	Surface rooting. Broken branches in crown. Exceptional specimen of County significance	No works required 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.	Low	30	16	-
8	Cupressus macrocarpa (Monterey Cypress)	20.5	5	7	7.5	4.5	820	1	1.5	3.5(S)	Middle aged	Good	Fair	9.84	40+	A-Good	Leaning East. Multiple stems above 1.5m.	No works required 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.	Low	30	16	-
9	Chamaecyparis lawsoniana (Lawson Cypress)	15	2.5	3	3.5	3	782	3	1.8	0.5(S)	Middle aged	Fair	Fair	9.38	40+	B-Moderate	Leaning East. Multiple stems below 1.5m.	No works required 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.	Low	25	12	-
10	Chamaecyparis lawsoniana (Lawson Cypress)	15	2	2	2	2	690	1	2.5	3(N)	Middle aged	Fair	Fair	8.28	20+	B-Moderate	Stem divides above 1.5m. Included bark present in fork.	No works required 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.	Low	25	12	-
11	Taxus baccata Fastigiata (Yew)	10	3.5	4	3.5	3.5	350	1	3	1(N)	Middle aged	Fair	Fair	4.2	20+	B-Moderate	Multiple stems at ground level. Broken branches in crown.	No works required This tree is retainable and will be adequately protected	Low	12	10	-

Tree No.	Species Common Name *Latin Name*	Height (M)	Crown Spread (M) N	 S	 E	 W	Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	 Spread	Priority
																		by the position of the protective barrier as indicated by the blue line on the TPP.				
12	Ilex aquifolium (Holly)	5	1	1.5	1	1	220	1	1	1.5(S)	Young	Poor	Poor	2.64	<10	C-Low	Decay present on stem. Dieback in crown.	Remove tree	Low	12	12	C
13	Ilex aquifolium (Holly)	5.5	1	1	1	1.5	270	1	1	1.5(S)	Middle aged	Poor	Poor	3.24	<10	U-Unsuitable for retention	Decay present on stem. Dieback in crown.	Remove tree	Low	12	12	B
Hedges																						
Hedge 1	Crataegus monogyna (Hawthorn)	1.5	0.5	0.5	0.5	0.5	50	-	0	0(N)	Middle aged	Fair	Fair	0.6	20+	B-Moderate	Trimmed	No works required	Low	10	8	--
Groups																						
Group 1	Ilex aquifolium (Holly), Sambucus nigra (Elder)	10	4	4	4	4	220	-	0	0(N)	Mature	Fair	Fair	2.64	20+	B-Moderate	Mother stems died and thrown up suckers	Remove group	Low	10	12	C
Group 2	Ilex aquifolium (Holly), Sambucus nigra (Elder)	10	3	3	3	3	220	-	0	0(N)	Mature	Fair	Fair	2.64	20+	B-Moderate	4 clumps. Several dead stems. Multiple stems at ground level. Dieback in crown.	Remove group to facilitate the development	Low	10	12	A

Photograph 1 - Group 1 and 2 (location of additional parking in foreground)

Photograph 2 - T3 with group 1 to the right

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 immanent 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**	
Category High = A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially, if rare or unusual, or those that are essential components of groups, or 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
Category Moderate = B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (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
Category Low = C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years; or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees 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
	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			
Category = U Trees unsuitable for retention 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	• 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 bentinite) 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.

AllAboutTrees

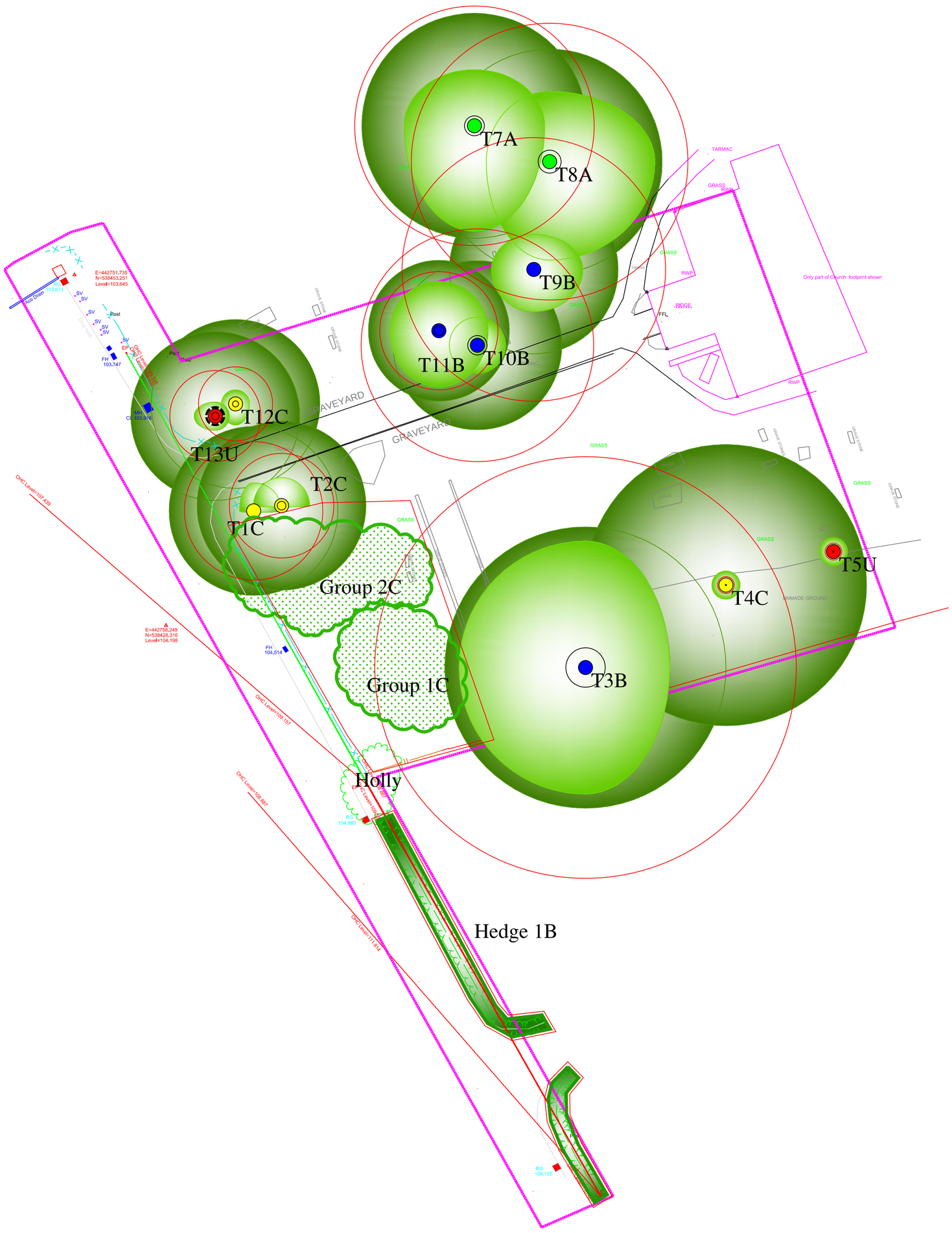
Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

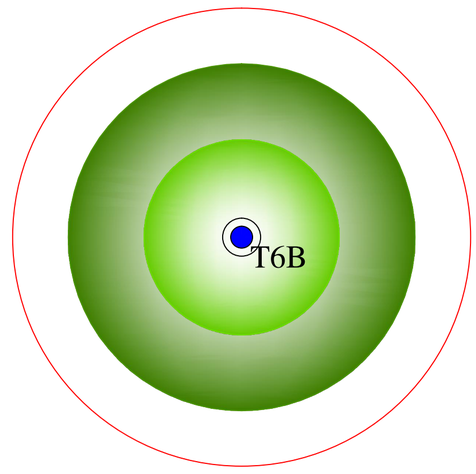
The Old School
Quarry Lane
Butterknowle
Co Durham
DL13 5LN

Telephone 0191 3739494 / 01388 529200

Email – info@allabouttrees.co.uk
www.allabouttrees.co.uk

Registered in England & Wales No. 5301671
Registered Office: The Old School, Quarry Lane, Butterknowle, Co Durham, DL13 5LN





Key:

- Tree Number
- Tree Crown True Shape (Shaded Light Green)
- Predicted Future Growth Of Canopy (Shaded Dark Green & Surrounding Current Crown Shape)
- Trees To Be Removed Broken Black Ring Surrounding Centre
- Tree Quality Assessment Centre Colours As Below
- Green Centre = High Quality (Denoted By Letter A)
- Blue Centre = Moderate Quality (Denoted By Letter B)
- Yellow Centre = Low Quality (Denoted By Letter C)
- Red Centre = Unsuitable To Retain (Denoted By Letter U)
- BS Root Protection Area As Shown By The Red Circle Around The Tree
- Tree / Woodland Groups
- Hedgerows

Institute of Chartered Foresters
Registered Consultant

Arboricultural Impact Assessment

Existing Trees Shown On Existing Layout

St. James' Church, Castle Eden

For

Beaumont Brown Architects

AllAboutTrees Ltd
Arboricultural & Ecological Consulting
Chartered Arboriculturalists & Environmentalists
The Old School, Quarry Lane,
Butterknowle, Co. Durham, DL13 5LN
Tel 0191 3739494 01388 529200
email info@allabouttrees.co.uk www.allabouttrees.co.uk

Drawn at Durham Office By RL	Checked by AW
Scale A1 @ 1.200	Date 04.04.17

-Registered Chartered
-Arboricultural Consultants
-Planning & Development
-Urban Forestry
-Ecological Consultants

Drawing Ref.	Revision
AIA EXI	-

T7A
T8A
T9B
T11B
T10B
T6B
T12C
T13U
T2C
T1C
Group 2C
T4C
T5U
T3B
Group 1C
Holly
Hedge 1B

Key:

- Tree Number
- Tree Crown True Shape (Shaded Light Green)
- Predicted Future Growth Of Canopy (Shaded Dark Green & Surrounding Current Crown Shape)
- Trees To Be Removed Broken Black Ring Surrounding Centre
- Tree Quality Assessment Centre Colours As Below
- Green Centre = High Quality (Denoted By Letter A)
- Blue Centre = Moderate Quality (Denoted By Letter B)
- Yellow Centre = Low Quality (Denoted By Letter C)
- Red Centre = Unsuitable To Retain (Denoted By Letter U)
- BS Root Protection Area As Shown By The Red Circle Around The Tree
- Tree / Woodland Groups
- Position Of Protective Barrier (Continuous Blue Line)

Institute of Chartered Foresters
Registered Consultant

Arboricultural Impact Assessment
Tree Protection Plan (TPP)

Retained Trees Shown On Proposed Layout With Protective Measures Indicated

St. James' Church Castle Eden

For

Beaumont Brown Architects

AllAboutTrees Ltd
Arboricultural & Ecological Consulting
Chartered Arboriculturalists & Environmentalists
The Old School, Quarry Lane,
Butterknowle, Co. Durham, DL13 5LN
Tel 0191 3739494 01388 529200
email info@allabouttrees.co.uk www.allabouttrees.co.uk

Drawn at Durham Office By RL Checked by AW

Scale 1:200 at A1 | Date 21.06.17

-Registered Chartered
-Arboricultural Consultants
-Planning & Development
-Urban Forestry
-Ecological Consultants

Drawing Ref.	Revision
AIA TPP	-