ARBORICULTURAL SAFETY SURVEY
at:
St' Pauls Church
Armitage Bridge
Huddersfield
West Yorkshire
HD4 7PN

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St' Pauls Church

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JCA Limited
Arboricultural & Ecological Consultants

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1. Introduction

1.1 Purpose of the Report

1.1.1 This report details the findings of an expert arboricultural safety survey and risk assessment of the trees at:

St' Pauls Church, Armitage Bridge, Huddersfield, West Yorkshire, HD4 7PN.

1.1.2 This report details the relevant arboricultural information which is required to inform the owners of the condition of their trees and provides specific management actions that, once undertaken, demonstrate that a duty of care has been taken with regards to tree management.

1.2 Terms of Reference

1.2.1 We are instructed by **David Hirst** of **St' Pauls Church**, to visit the site and prepare our findings in a report.

1.2.2 For this purpose a plan of the site has been drawn.

1.3 Scope of the Report

1.3.1 This report, and any recommendations made are compiled in accordance with current industry standards and best arboricultural practice.

1.3.2 The trees have been inspected in order to assess and, if necessary, reduce their potential risk of harm.

1.3.3 All trees within the site boundary with a stem diameter above 75mm are included.

1.4 Survey Details

1.4.1 The survey was originally conducted during the month of April 2018 by Andrew Bussey, however, the site was again surveyed once the trees were in full leaf in May 2018 Additionally, at this time, a decay detection test was undertaken on **T23**, as recommended within the original report.

1.4.2 Inspection was made visually from ground level, in order to assess the trees condition and potential to cause harm. Where necessary, management recommendations have been made. This may include tree removal, pruning, future monitoring or the need for a further detailed inspection, such as climbed inspections or decay detection surveys.

1.4.3 Measurements were obtained using clinometers, specialist tapes or electronic distometers. Where this was not possible measurements were estimated.

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2. Explanation of Tree Descriptions

2.1 Measurements

2.1.1 *HEIGHT* of the tree is measured from the stem base to the top of the canopy.

2.1.2 *CROWN HEIGHT* is an indication of the height at which the main crown begins above ground level.

2.1.3 *STEM DIAMETER* is measured at 1.5 metres above (higher) ground level. Where the tree is multi-stemmed at this point; the diameter is measured close to ground level, just above the root buttress.

2.1.4 *CROWN SPREAD* is a measurement of the overall width of the crown, at its widest point.

2.2 Evaluations

2.2.1 *AGE CLASS* of the tree is described as young, semi-mature, early-mature, mature, or over-mature.

2.2.2 *PHYSIOLOGICAL CONDITION* is classed as good, fair, poor, or dead. This is an indication of the health of the tree and takes into account vigour, presence of disease and dieback.

2.2.3 *STRUCTURAL CONDITION* is classed as good, fair or poor. This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.

2.2.4 *LIFE EXPECTANCY* is classed as; less than 10 years (<10), 10-20 years, 20-40 years, or more than 40 years (40+). This is an indication of the number of years before removal of the tree is likely to be required.

2.2.5 *TARGET VALUE* is classed as high, moderate or low. This is an indication of the likelihood of persons or objects, the latter having variable significance, being within falling distance of a tree or its branches.

2.2.6 *PRIORITY.* A priority rating is given concerning the time periods in which the recommended works should be undertaken. LOW priority works should be undertaken within 12 months of the survey, MOD (moderate) priority works should be undertaken within 6 months and HIGH priority works should be completed as soon as practically possible. If no works are recommended, N/A (not applicable) will be used.

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2.2.7 *RE-INSPECTION TIMING* is classed as; 6 months (0.5), 1 year (1), 2 years (2), or within 5 years (5). This is an indication of the timescale in which a tree should be re-inspected; a specific time of year for the inspection may also be detailed in the recommendations.

2.3 Safety Categories

2.3.1 *SAFETY CATEGORY* values for the trees are as follows:

2.3.2 ***A (marked in green on the plan) = posing no immediate risk: no action required.***
These trees are considered to be in an acceptable condition at present and require no action at this time. However, these trees may require future management in order to ensure that they remain safe.

2.3.3 ***B (marked in light blue on the plan) = posing a potential risk: action required.***
These trees pose a potential risk and therefore require active management. This may include remedial pruning (crown cleaning) or target management.

Such trees may also require a further, more detailed, investigation (such as a climbing inspection or a decay detection analysis) or may require future monitoring (re-surveying and re-assessing) at a timescale specified within this report.

2.3.4 ***R (marked in red on the plan) = trees to be removed.***
These trees require removal usually because they are dead, dying or dangerous and are therefore potentially hazardous. Such trees shall usually require removal as a matter of high priority.

Trees may also require removal in order to prevent damage occurring to existing structures or buildings (where trees are growing within close proximity or are in actual contact) or in order to benefit adjacent trees (where trees are growing in direct competition, the poorer of the two trees may be removed). Such work is usually of a lower priority.

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3. Status of the Trees

3.1 An online check was made on 26th April 2018 on the **Kirklees Metropolitan Borough Council** website service.

3.2 We are informed that there are Tree Preservation Orders (TPO's) in force on this site.

3.3 For trees protected by a TPO, before any work is organised, an application form must be submitted to the Local Authority, outlining all the proposed works along with suitable justification. A waiting period of eight weeks is then required, after which time the council will either give consent to the works, refuse the works or grant a conditional consent.

3.4 ***No work must be done to any trees until permission has been granted.***

3.5 We are also informed that the site is within a Conservation Area.

3.6 For all trees within a conservation area, before any work is organised, the Local Authority must be informed of the proposed tree works (a "notice of intent") and may wish to afford the trees with further protective status. If, after the required timescale has lapsed and/or the authority does not wish to allocate a Tree Preservation Order (TPO), the works may commence as planned.

3.7 ***No work must be done to any trees until the above process has been completed and the trees have not been allocated with a TPO.***

4. Tree Descriptions and Recommendations

4.1 Full details of all individual trees surveyed are recorded in the tables at **Appendix 1**. Please refer also to the site plan at **Appendix 5** for tree locations and **Section 2** for a full explanation of the tables.

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5. Discussion

5.1 In total **42** items of vegetation were surveyed (**39** individual trees and **3** groups of trees). The surveyed vegetation was generally found to be in a good condition.

5.2 Following is an overview of our observations and recommendations; please refer to **Appendix 1** for specific details on the condition of individual trees:

5.3 **T13** requires crown cleaning to remove deadwood within its crown as a matter of a **low priority**.

5.4 **T21** was noted to have complete crown die-back above its mid-crown and as such, requires removal as a matter of **moderate priority**.

5.5 A Sonic Tomograph Decay Detection Test was undertaken at the base of **T23** where a sizeable decay cavity (likely caused by Honey Fungus) was noted. This test revealed the base of the tree has 22% decay and that the remainder of the wood is structurally sound.

As such, **T23** is considered to be in an acceptable condition at present, however, as a precautionary measure it is recommended that he tree is crown reduced by an overall 3m and crown thinned by 10% in order to reduce its crown weight and the sail effect of the canopy during strong wind conditions as a matter of a **moderate priority**.

Please see **Appendix 6** for a brief description of the decay detection test and the resulting image and showing the structural integrity of the tree and a brief explanation of the results.

5.6 **T24** was noted have a lean towards the church building. This tree has been pruned in the past in order to reduce its crown weight and the sail effect of it canopy during strong wind conditions, however, its crown is now quite dense ands as such; it is recommended that it is again crown thinned by 10% as a precautionary measure as a matter of a **moderate priority**.

5.7 One tree within **G27**, as indicated on the plan at **Appendix 5** was noted to have a significant lean and a poor form. The removal of this tree has been recommended as a matter of a **low priority**.

5.8 **T32** has multiple torn out branch wounds and poor unions and as such; is considered to have a limited long term future and requires removal as a matter of **low priority**.

5.9 **T15, T17, T19, T24, T25, T34** and **T39** were noted to have structural defects, as detailed at **Appendix 1**. Although these trees were considered to be in an acceptable condition at the time of the inspection, the defects observed may lead to their early demise or render them unsafe in the future. As such, it is recommended that these trees be monitored (re-inspected) on a biennial basis to assess if their condition is still acceptable.

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5.10 If the above recommendations are undertaken, the trees surveyed can be considered to be in adequate condition in terms of public health and safety. We recommend that the trees are re-surveyed as per the recommended schedule, in order to ensure the long term health and safety of the trees.

5.11 We would be happy to assist should you have any queries regarding the points raised above.

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Appendices

Tree Ref.	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread (m)	Observations	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Target Value	Recommendations	Priority	Safety Category	Re-Inspection Timing (yrs)
G 1	Semi-mature Sycamore & Elm sp. *Acer pseudoplatanus & Ulmus sp.*	To 10	1	To 20	See plan	Limited inspection due to location off-site and the presence of dense Ivy. A group of 4 self-seeded, multi-stemmed trees overhanging the river.	GOOD	FAIR	40+	LOW	No action required.	N/A	A	2
T 2	Mature Small leaved-Lime *Tilia cordata*	23	8	78	14	Single-stemmed and vertical with a balanced crown. Occasional pruning wounds due to crown lifting. Exposed roots to base of tree. Epicormic growth at base prevented a detailed inspection.	GOOD	FAIR	40+	HIGH	No action required.	N/A	A	2
T 3	Mature Small-leaved Lime *Tilia cordata*	23	9	76	14	Single stemmed and vertical with a slight lean towards the river. Occasional pruning wounds. Epicormic growth at base prevented a detailed inspection.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 4	Early-mature Sycamore *Acer pseudoplatanus*	12	3	Est to 30	8	Limited inspection due to difficult access and the presence of Ivy. Situated within G1. A slightly suppressed specimen. Single stemmed with a slight lean towards the river.	FAIR	FAIR	20-40	LOW	No action required.	N/A	A	2
T 5	Mature Small-leaved Lime *Tilia cordata*	24	10	75	14	Single stemmed and vertical with a slight lean to the south. Occasional pruning wounds due to crown lifting. Epicormic growth at base prevented a detailed inspection.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 6	Mature Small-leaved Lime *Tilia cordata*	25	7	81	16	Single-stemmed and vertical with a balanced crown. Some minor signs of dieback within the crown. Epicormic growth at base prevented a detailed inspection.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 7	Mature Small-leaved Lime *Tilia cordata*	24	10	65	14	Single stemmed and vertical with a slight lean toward river. Occasional pruning wounds due to crown lifting. Epicormic growth at base prevented a detailed inspection.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 8	Mature Small-leaved Lime *Tilia cordata*	24	10	72	16	Single-stemmed and vertical with a balanced crown. Occasional pruning wounds. Epicormic growth at base prevented a detailed inspection.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 9	Mature Small-leaved Lime *Tilia cordata*	24	6	75	16	Twin stemmed with a tight union at 5m. Vertical stem with a slightly imbalanced crown. Occasional pruning wounds. Epicormic growth at base prevented a detailed inspection.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 10	Mature Small-leaved Lime *Tilia cordata*	24	6	77	16	Single-stemmed and vertical with a balanced crown. Occasional pruning wounds. Epicormic growth at base prevented a detailed inspection.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2

Tree Ref.	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread (m)	Observations	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Target Value	Recommendations	Priority	Safety Category	Re-Inspection Timing (yrs)
T 11	Mature Small-leaved Lime *Tilia cordata*	23	7	74	16	Twin-stemmed at 10m with a balanced crown. Occasional pruning wounds due to crown lifting. Some minor deadwood. Acceptable condition at present. Epicormic growth at base prevented a detailed inspection.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 12	Mature Small-leaved Lime *Tilia cordata*	22	7	72	16	Twin stemmed at 7m and vertical with a balanced crown. Previous evidence of crown thinning. Epicormic growth at base prevented a detailed inspection.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 13	Mature Small-leaved Lime *Tilia cordata*	25	7	92	17	Twin stemmed at 7m and vertical with a balanced crown. No evidence of previous pruning. Epicormic shoots and some minor deadwood noted. Acceptable condition at present.	GOOD	GOOD	40+	MOD	Crown clean to remove the deadwood.	LOW	B	2
T 14	Early-mature Small leaved-Lime *Tilia cordata*	18	5	58	10	Single-stemmed and vertical with a balanced crown. Occasional pruning wounds due to crown lifting. Epicormic shoots noted. No major visible defects.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 15	Mature Sycamore *Acer pseudoplatanus*	18	4	67	13	Single-stemmed and vertical with a balanced crown. Small cavity present at base.	GOOD	FAIR	20-40	MOD	Monitor biennially.	LOW	B	2
T 16	Semi-mature Sycamore *Acer pseudoplatanus*	14	2.5	30	16	Single-stemmed and vertical with a balanced crown. No evidence of previous pruning. No major visible defects.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 17	Early-mature Beech *Fagus sylvatica*	22	2	88	17	Single-stemmed slight lean to the south and a slightly one sided crown. Occasional pruning wounds due to crown lifting.	GOOD	GOOD	40+	MOD	Monitor biennially.	LOW	B	2
T 18	Semi-mature Common Lime *Tilia x europeae*	22	1	49	14	Twin stemmed at 4m. Vertical with a slighty one sided crown overhanging the river. Crossing branches and minor deadwood present within crown.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	1
T 19	Mature Beech *Fagus sylvatica*	To 23	3	77	16	Twin stemmed at 6m with a slightly one-sided crown. Occasional pruning wounds due to crown lifting. Minor deadwood and crossing branches within the crown. Vertical wound on the lower stem due to past fire damage.	GOOD	GOOD	40+	MOD	Monitor biennially.	LOW	B	2
T 20	Early-mature Beech *Fagus sylvatica*	18	4	59	14	Single stemmed with a slight lean to the southwest and a balanced crown overhanging the river. No evidence of previous pruning.	GOOD	FAIR	40+	LOW	No action required.	N/A	A	2

Tree Ref.	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread (m)	Observations	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Target Value	Recommendations	Priority	Safety Category	Re-Inspection Timing (yrs)
T 21	Early-mature Sycamore *Acer pseudoplatanus*	20	7	56	16	Single-stemmed and vertical with a balanced crown. Multiple pruning wounds due to crown lifting (healing well). Missing bark patches within the mid-crown with complete die-back of the canopy above this point.	POOR	POOR	<10	LOW	Remove.	MOD	R	N/A
T 22	Mature Sycamore *Acer pseudoplatanus*	22	10	82	18	Single-stemmed and vertical with a balanced crown. Minor deadwood within crown.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	2
T 23	Mature Beech *Fagus sylvatica*	28	7	105	20	Single-stemmed and vertical with a slightly unbalanced crown. Occasional branch cavities noted in upper crown due to crown lifting (occluding well). Large cavity at base has progressive internal decay, however, a resistograph test undertaken in July 2012 revealed that the core of the tree was structurally sound. However, as Honey Fungus *(Armillaria)* rhizomorphs were observed at base and the extent of the decay appears to have progressed. A Sonic Decay Detection Test (Picus Sonic Tomograph) undertaken in order to assess the structural integrity of the base carried out in May 2018 revealed that the tree is in an acceptable condition at present.	GOOD	FAIR	10-20	MOD	Crown reduce by an overall 3m and crown thin by 10% in order to reduce the sail effect of the canopy during strong winds. Monitor biennially.	MOD	B	2
T 24	Mature Beech *Fagus sylvatica*	27	4	111	19	Twin-stemmed at 8m with a balanced crown. Stem leans towards the east. Large pruning wounds noted at 4m to the east are occluding well. Wound on stem at 1.5m. Acceptable condition at present. It is noted that this tree has been crown reduced and thinned in the recent past.	GOOD	FAIR	40+	MOD	Crown thin by 10% in order to reduce the sail effect of the canopy during strong winds. Monitor biennially	LOW	B	2
T 25	Mature Sycamore *Acer pseudoplatanus*	20	4	65	16	Twin-stemmed at 8m with a balanced crown. Large decay cavity present at 4m.	GOOD	FAIR	10-20	LOW	Monitor biennially.	LOW	B	2
G 26	Early-mature to mature Common Ash and Sycamore *Fraxinus excelsior and Acer pseudoplatanus*	To 20	0+	To 60	See plan	Limited inspection due to location and dense shrubs at base. Boundary trees of vertical and balanced form.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	2
G 27	Early-mature to mature Mixed *Details in observations*	To 20	0+	To 60	See plan	Limited inspection due to location and dense shrubs at base. Boundary Common Ash, Sycamore, Wild Cherry and English Oak of vertical and balanced form. One tree, shown in red on the plan at **Appendix 5**, was noted to have a significant lean and a very poor form.	GOOD	GOOD	40+	LOW	Remove the tree shown in red on the plan at **Appendix 5**.	LOW	B	2

Tree Ref.	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread (m)	Observations	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Target Value	Recommendations	Priority	Safety Category	Re-Inspection Timing (yrs)
T 28	Early-mature Western Red Cedar *Thuja plicata*	9	2	51	7	A good specimen; typical form for species. Twin stemmed at ground level with a balanced crown. Occasional pruning wounds due to crown lifting. Good vigour.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 29	Early-mature Lawson Cypress *Chamaecyparis lawsoniana*	20	3	70	7	Typical form for species. Good vigour. Occasional pruning wounds due to crown lifting.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	2
T 30	Early-mature Lawson Cypress *Chamaecyparis lawsoniana*	18	2	50	7	Tree with good form and vigour. Single stemmed and vertical with a balanced crown. No major visible defects.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	2
T 31	Early-mature Japanese Maple *Acer palmatum*	12	2.5	27	6	Twin-stemmed at 1m with a balanced crown. Occasional pruning wounds. No major visible defects.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	5
T 32	Early-mature Hinoki Cypress *Chamaecyparis obtusa*	16	2	63	8	Single-stemmed and vertical with a balanced crown. A lost branch on the ground has snapped out from the high crown. A split out branch is hanging within the mid-crown. The remainder of the tree is considered to be structurally unsound due to multiple poor unions. It should be noted that we are informed that this tree has lost multiple branches in recent years.	GOOD	FAIR	20-40	LOW	Remove.	LOW	R	N/A
T 33	Early-mature Lawson Cypress *Chamaecyparis lawsoniana*	16	2	55	6	Typical form for species. Single-stemmed and vertical with a balanced crown. Good vigour. No major visible defects.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	5
T 34	Early-mature Hinoki Cypress *Chamaecyparis obtusa*	18	2	41	5	Twin-stemmed at 3.5m with a balanced crown. Included bark present at the stem junction.	GOOD	FAIR	10-20	LOW	Monitor biennially.	LOW	B	2
T 35	Semi-mature Box *Buxus sempervirens*	2	0	Est to 15	3	Well maintained specimen. Good vigour and no major visible defects.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	5
T 36	Early-mature Yew *Taxus baccata*	12	5	To 36	7	Co-dominant stems from ground level with a balanced crown. Occasional pruning wounds due to crown lifting. Small decay stub present at 0.5m.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 37	Early-mature Yew *Taxus baccata*	12	3.5	70	8	Three stemmed from ground level. Vertical stems with a balanced crown. Occasional pruning wounds due to crown lifting. No major visible defects.	GOOD	GOOD	40+	MOD	No action at present.	N/A	A	2

Tree Ref.	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread (m)	Observations	Physiological Condition	Structural Condition	Life Expectancy (yrs)	Target Value	Recommendations	Priority	Safety Category	Re-Inspection Timing (yrs)
T 38	Early-mature Hinoki cypress *Chamaecyparis obtusa*	17	3	57	9	Twin-stemmed at 2.5m with a balanced crown. Occasional pruning wounds. No major visible defects.	GOOD	FAIR	40+	MOD	No action required.	N/A	A	2
T 39	Early-mature Hinoki cypress *Chamaecyparis obtusa*	17	4	59	9	Multi-stemmed at 5m with a balanced crown and a slight lean to the east. A slight earth bulge was noted on the ground at the opposing side of the tree to the lean.	GOOD	GOOD	40+	MOD	Monitor biennially.	LOW	B	2
T 40	Mature Holly *Ilex aquifolium*	13	2.5	49	9	Twin stemmed at 2.5m. Vertical stems with a balanced crown. Occasional pruning wounds due to crown lifting. No major visible defects.	GOOD	GOOD	40+	MOD	No action required.	N/A	A	2
T 41	Semi-mature Spotted Laurel *Aucuba japonica*	3	0	<10	5	A well established shrub with good vigour. No major visible defects. Acceptable condition at present.	GOOD	GOOD	20-40	LOW	No action required.	N/A	A	2
T 42	Early-mature Sawara Cypress *Chamaecyparis pisifera*	17	3	58	8	Single-stemmed and vertical with a balanced crown. Occasional pruning wounds due to crown lifting. Some minor damage to stem. Acceptable condition at present.	GOOD	GOOD	40+	LOW	No action required.	N/A	A	2

Appendix 2: Explanation of Terms & Recommended Clearances

Canker Disease damaged area of a tree, usually caused by fungus or bacteria.

Co-dominant Stem A stem which has grown in direct competition to the main stem and which has formed a substantial size influencing the appearance of the tree.

Crown lift The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance underneath for vehicles etc.

Crown reduce The reduction of a tree's height or spread while preserving its natural shape.

Crown thin The removal of some of the density of a tree's crown**,** usually 5-25% allowing more light through its canopy and reducing wind resistance.

Deadwood The removal of all dead, dying and diseased branches from a tree.

Dieback Where branches are beginning to show signs of death usually at the tips in the crown.

Epicormic shoots Small branches that grow in uncharacteristic clusters around the base or the stem of a tree, usually as a result of bad pruning or some other stress factor.

Included bark Where the bark on two adjoining branches or stems is growing tight together, forming a joint with limited physical strength.

Pollarding A method of tree management in which the main trunk of the tree is cut at about 4m, and the resulting branches are then cropped on a regular basis.

Remedial pruning The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's crown. Sometimes referred to as crown cleaning.

Recommended Clearances

JCA recommend the following distances are maintained:

Height for pedestrian access:	No less than 2.5m
Height for vehicular access:	No less then 4m for a minor road
	No less than 6m for major roads or where buses will pass.
Distance from overhead cables:	No less than 2m
Distance from building or other structure:	No less than 2m
Distance from lamppost or sign	Sufficient to not impede visibility for 2 years.

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Appendix 3: Author Qualifications

Principal Consultant and Managing Director

Jonathan Cocking *F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MSB. MICFor.* Jonathan is a Registered Consultant and Fellow of the Arboricultural Association and sits on its Professional Committee. He has 31 years experience in the Arboricultural profession and served for eight years as Senior Arboriculturist with a large local authority before establishing JCA in 1997. Jonathan has since developed JCA's portfolio of services and its extensive client base. He is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Director

Toby Thwaites *BSc (Hons), HND (Arboriculture).* Toby joined JCA in 1998 after graduating in Ecology at the University of Huddersfield and has since graduated in Arboriculture at the University of Central Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby is now Technical Director and oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff: Arboriculture

Toby Parsons *Cert. Arb. (RFS), Tech. Cert. (Arbor.A).* Toby joined JCA after spending 6 years working as a senior climber for various Arboricultural contractors in the East Midlands and the South-West. He has gained the Level 2 Certificate in Arboriculture (RFS) and an Arboricultural Technicians Certificate. Toby is LANTRA certified in Professional Tree Inspection.

Scott Reid *ND* *(Arboriculture and Forestry).* Scott joined JCA after working with other consultancy companies in the south of England. He specialises in trees in relation to development and holds a National Diploma, various NPTC qualifications and is currently studying for his Level 4 Diploma in Arboriculture.

Andrew Bussey. Andrew joined JCA having spent 12 years working as a tree surgeon for various private companies and a Local Authority. He has various NPTC qualifications, is QTRA qualified and is currently studying for his Arboricultural Technicians Certificate.

Phil Humeniuk *FdSc (Arboriculture).* Phil joined JCA having spent 3 years working for various tree surgery companies and as a Tree Officer for a Local Authority. He also has several years experience working as a consultant both for JCA and for another consultancy. Phil obtained his foundation degree in Arboriculture at the University of Central Lancashire and has various NPTC's and is LANTRA certified in Professional Tree Inspection.

Emily Wilde *FdSc (Arboriculture).* Emily joined JCA having previously worked for various private tree surgery and consultancy companies over the past 8 years. She initially obtained a ND in Forestry & Arboriculture, followed by a FdSc in Arboriculture at Askham Bryan College, York. Emily has various NPTC certificates and is QTRA qualified.

Mick Eltringham *ND (Forestry).* Mick joined JCA after spending 12 years working in the industry for various private companies in the north and south of England. He has also spent the last five years working as a consultant for two canopy research projects in the Amazon Rainforest, working with Oxford University and the University of Arizona. He has various NPTC Qualifications.

Charles Cocking *(FdSc Arboriculture).* Charles joined JCA in January 2014 as an Apprentice having previously worked for the company on a part time basis during 2013. Charles obtained his Foundation Degree in Arboriculture at Askham Bryan College, York, and is now part of our qualified Arboricultural consultancy team.

Consulting Staff: Ecology

David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation.* David joined JCA as an addition to the expanding ecology department. An advocate of evidence based conservation, he studied Zoology (Ind) at University and moved onto an MSc in Biodiversity and Conservation where he gained the myriad of skills needed as an ecologist. With over 7 years of experience, David specialises in bat and amphibian ecology.

Jenny Butler Bsc (Hons) Environmental Science. Jenny joined JCA's ecology department in 2017, bringing with her a bachelor degree in Environmental Science from Bangor University. Jenny has previously worked as an Environmental Consultant for an Agri-Environment company and as a freelance ecological consultant. Jenny specialises in great crested newt and bat ecology.

Amanda Beck *Cert He in Field Ecology***.** Amanda joined JCA's ecology department in 2018, previously working as a freelance Ecological Consultant in North Wales and Liverpool and as a trainee Ecologist in South Wales. Amanda has extensive practical experience in surveying for botanical, amphibians, terrestrial and marine mammals along with invertebrate research work. She has practical experience in habitat management and creation and is a CIEEM student member.

Administrative Staff

Sue Guest Administrative Team Leader.
Catherine Cocking Accounts Manager.
Lisa Hampson Marketing Manager.
Simeon Haigh *BSc (Hons).* IT Director.
Lorraine Spink Administrative Assistant.

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Appendix 4: General Guidelines

A4.1 All work must be to BS 3998: 2010 - '*Recommendations for tree work'*.

A4.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors, and should be covered by adequate public liability insurance.

A4.3 This report is based upon a visual inspection. The consultant shall not be responsible for events which happen after this time due to factors which were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

A4.4 Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.

A4.5 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this report are carried out under his supervision and within his timescale.

A4.6 It is advisable to have trees inspected by an arboricultural consultant regularly. In this instance it is recommended that these inspections are made as per the recommended re-inspection timings at **Appendix 1**.

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Appendix 5: Site Plan

ADDRESS: St' Pauls Church, Armitage Bridge, Huddersfield, WestYorkshire, HD4 7PN.
JCA REF: 14096-A/AJB.

NOT TO SCALE	PAPER SIZE A4

SURVEYED BY: AJB	DRAWN BY: AJB	APPROVED BY: ME

SAFETY CATEGORIES

Detailed definitions of the safety categories can be found in Section 2.3 of the arboricultural report.

	SAFETY CATEGORY A: NO WORKS REQUIRED
	SAFETY CATEGORY B: WORKS OR MONITORING REQUIRED
	SAFETY CATEGORY R: TREE TO BE REMOVED
	STEM OF TREE
	STEM OF TREE TO BE REMOVED

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Appendix 6: Sonic Tomograph Test Results

The Picus Sonic Tomograph is a specialised electronic instrument which is used to assess the internal structure of a tree branch or stem. The condition of the tree is assessed by measuring the speed that sound travels through the wood in a number of different directions from a number of set positions.

The Picus Sonic Tomograph works on the basis that sound travels faster through solid wood (healthy wood) than softer/denatured wood (decayed wood) or air/voids (cavities). Therefore, by measuring the speed it takes for sound to travel from one point to another through the tree, across a known distance, an idea of the structural condition of the wood can be obtained.

Small nails are inserted into the tree at specific points around the circumference of the branch or stem at a height where an assessment of the internal structure is required. Specialist sensors, which are used to record the time taken for the sound to travel through the wood, are attached to each of the nails. Sound is generated by tapping each nail in turn with an electronic hammer. Each sensor records the time taken for the sound to travel through the wood, the results of which are relayed directly to a computer.

The results are displayed as a computer generated image which shows the cross section of the branch or stem tested. The image is colour coded, with each colour determined by the speed that sound travelled through the wood and therefore an indication of the wood density. The slower speeds (indicating denatured/compromised wood, decayed areas or cavities) are highlighted on the image providing information about the internal structure of the tree and based upon this, management recommendations can be made.

We are advised that the following pictorial representation should be interpreted as follows:

- Dark/Light Brown = solid wood/slightly less solid wood (healthy).
- Green = intermediate wood (the beginning of decay).
- Pink = soft/denatured wood (decayed).
- Blue = very soft/extremely denatured wood (advanced decay).
- White = no wood (a hollow/cavity).

Please note that the red line indicated on the tomograph images indicates the t/R ratio (t = thickness, R = Radius). This refers to the ratio between the radius of the trunk and an area of decay within the trunk.

Past studies suggest that a tree trunk that is decayed or hollow, but which still has one third of its radius intact with solid/sound wood all around its circumference, only has a minor reduction of its safety factor (approximately 29%). In theory, if the decay is enclosed within this red line on the tomography we can assume that the tree has only a minor reduction in its safety factor

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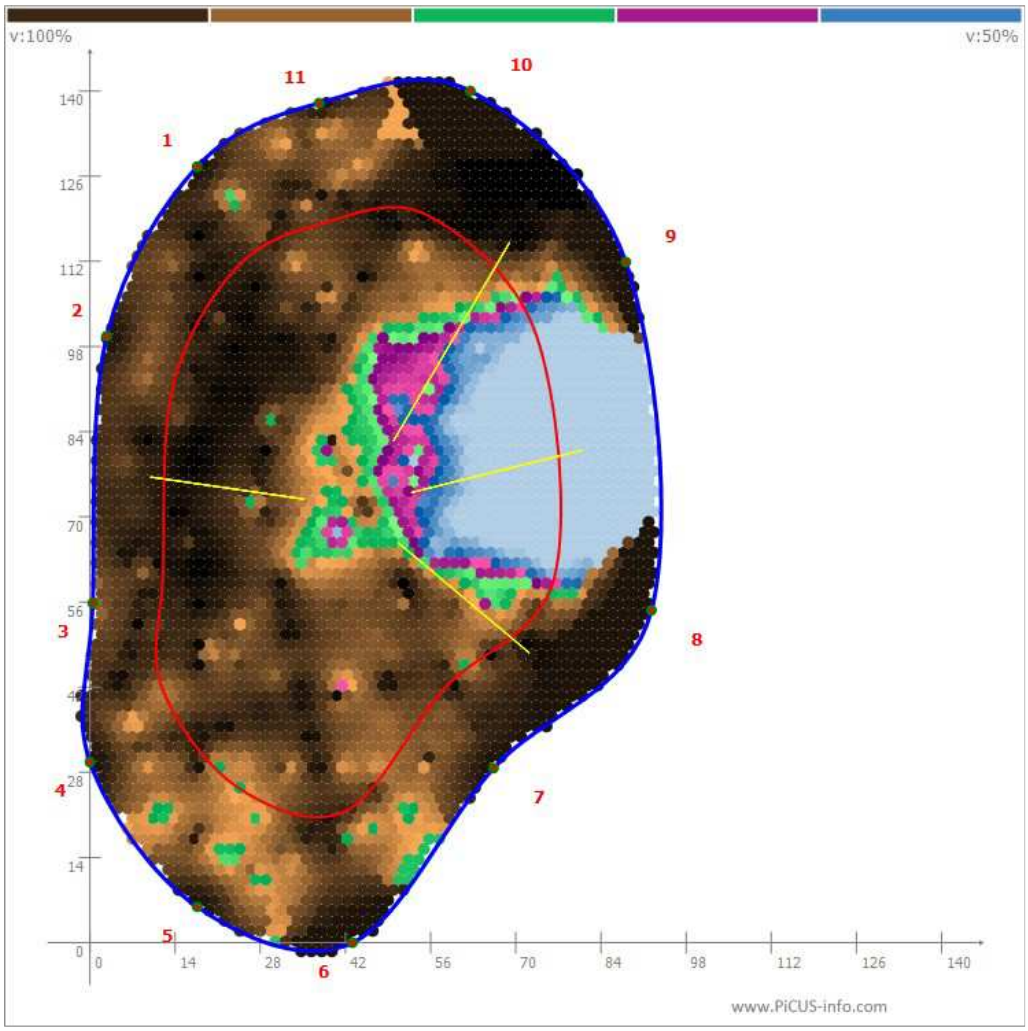
and if the decay has spread outside of the red line, then the tree is likely to have a more significant reduction in its safety factor and therefore more likely to fail. However, this can only be used as a rough guide and there are many other factors, such as the size of the tree, physiological condition, density of the crown with relation to prevailing winds etc. and targets to consider, should the tree fail.

Tree 23: Mature Beech

Defect: A large stem wound with visible decay from 0.3m to 1.5m.

Investigation Height and Location: The base of the main stem at 0.1m.

Sensor Locations: Sensor 1 (indicated at the top of the image in red lettering) was positioned directly into the stem wound on the northern side of the stem. A total of 11 sensors were used.



Analysis: The blue shaded area indicates that the stem of the tree in the vicinity of Sensors 8 and 9 is approximately 22% decayed. The pink and green areas indicate that there is a progression of this decay, however, at present, the tree is considered to be structurally sound.

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I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact the author.

Signed

.....

Andrew Bussey.

18th May 2018

For and on behalf of ***JCA Ltd***

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JCA Ltd. Arboricultural and Ecological Consultants
Professional Tree and Ecology Advice nationwide

ARBORICULTURAL SERVICES

Guidance for Architects and Developers

- British Standard 5837 Tree Surveys
- Arboricultural Implication Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected Species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)



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