ARBORICULTURAL REPORT
to BS 5837:2005
at
Elsecar Station Site
Elsecar
Barnsley
South Yorkshire

Client:
Arup and Partners

Client Address:
Rose Wharf
78 East Street
Leeds
LS9 8EE

Client Telephone:
0113 242 8498

JCA Ref:
9575/AW

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1. Introduction

1.1 Purpose of the Report

1.1.1 A report is required at **Elsecar Station Site, Elsecar,** to provide detailed, independent, arboricultural advice on the trees present, in the context of potential development.

1.2 Terms of Reference

1.2.1 I am instructed by Mark Summers of Arup and Partners to visit the site and prepare my findings in a report.

1.2.2 For this purpose I have been supplied with a topographical survey.

1.3 Scope of the Report

1.3.1 This report is compiled in accordance with *BS 5837:2005 Trees in relation to construction.*

1.3.2 Preliminary recommendations are given with a view to the long-term management of a sustainable tree cover.

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

1.3.4 Where applicable trees outside the site boundary, but close enough to be affected by the proposed development, are included.

1.3.5 The specific design of any proposed development is not generally taken into account at this stage.

1.4 Survey details

1.4.1 The survey took place during the month of May 2010.

1.4.2 The survey was conducted by Adam Winson BSc (Hons) E Con, ND (Arboriculture).

1.4.3 Inspection was made at ground level. Further investigation, such as climbed inspections or decay detection surveys, may be recommended where appropriate.

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

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2. Site Description

2.1 Land Use

2.1.1 The site is a former park area with bowling green and tennis court area that has been unused and unmanaged for a number of years and now has no formal use.

2.2 Topography

2.2.1 The site slopes gently from the north down towards the southern boundary.

2.3 Treescape

2.3.1 Surrounding the site to the north and east is a residential area containing occasional garden and street trees whilst to the south, beyond the railway line the land is more rural with a good distribution of trees and to the west beyond the adjacent houses is a larger area of open parkland with a reasonable distribution of boundary trees.

2.3.2 The trees on this site have a moderate to significant impact on the local treescape.

2.4 Visual Amenity Value

2.4.1 The trees on site collectively provide a reasonable visual amenity to the surrounding area. Occasional specimens have a high amenity value.

2.5 Age Class Mix

2.5.1 The trees surveyed ranged in age from young to mature. However, the trees were predominantly semi-mature and mature.

2.6 Species Diversity

2.6.1 Species surveyed include Horse Chestnut, Lime, Sycamore, Ash, Whitebeam, Rowan, Beech, London Plane, Norway Maple, Hawthorn and Goat Willow. The predominant species were Sycamore and Hawthorn, with other species being occasional specimens.

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3. Status of the Trees

3.1 A check was made on 14th May 2010 with: ***Barnsley Metropolitan District Council.***

We are informed that there is no Tree Preservation Order in force and that the site is not within a Conservation Area.

3.2 Due to the large potential penalties for illegally carrying out work to protected trees, JCA recommend that a further check is carried out prior to any works being undertaken. We are able to arrange this and to organise and supervise professional contractors.

4. Tree Descriptions and Recommendations

4.1 Full details of all individual trees surveyed are recorded in the tables at **Appendix 1**. A full explanation of the tables can be found at **Appendix 2**. Please refer also to the Tree Constraints Plan at **Appendix 6** for tree locations.

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5. Discussion

5.1 Tree Condition & Recommended Works

5.1.1 The tree survey revealed a total of 54 items of vegetation (39 individual trees, 15 groups of trees). Of these, 11 trees were identified as retention category 'B' and 43 trees/groups were identified as retention category 'C'. No retention category 'A' or 'R' trees were identified on this occasion. Please refer to **Appendix 2** for retention category and definition criteria.

5.1.2 The tree cover on site can be broadly grouped into higher value trees to the north-west, within the former formal park area and lower value naturally regenerated trees and scrub to the south and south east.

5.1.3 Tree pruning works are recommended for reasons of public safety, as detailed at **Appendix 1**. The recommended work should be carried out as a matter of **low priority.**

5.1.4 Where decayed wounds or cavities have been noted, as detailed at **Appendix 1**, further detailed investigations should be undertaken. A decay detection analysis is therefore recommended (ideally using a Picus) to determine the extent of the decay and to establish the extent of the tree works required.

5.1.5 Where a full detailed inspection of trees was inhibited by restricted access or by the presence of epicormic shoots, as detailed at **Appendix 1**, it is advised that these trees be re-inspected for any possible defects when the epicormic shoots has been removed or when access has been made available.

5.1.6 Those trees which overhang the public footpaths or public highways, detailed at **Appendix 1**, shall require future maintenance in order to maintain clearance heights for vehicular or pedestrian traffic. These heights should be 5.6m above a road and 2.5m above a footpath.

5.2 Potential Arboricultural Implications & Design Advice

5.2.1 The following comments can be made about the site in terms of its tree cover in relation to a potential development.

5.2.2 There are a number of high amenity trees within this site. They will enhance any proposed development and care should be taken at the design stage to ensure that these trees are retained.

5.2.3 The majority of higher value category 'B' trees recommended for retention are situated close to the site boundary. This offers a potential window for development within the centre of the site.

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5.2.4 There is little room for development within this site without the removal of some trees. However many of the trees are of poor quality (retention category 'C') and could be replaced as part of a post development landscaping scheme.

5.2.5 During development the part of the tree most commonly under threat, and most commonly ignored, is the rooting system. When trees are damaged, particularly the roots, their long-term health and stability can be affected. Most development activity can have an impact on the future condition and safety of a tree, and therefore careful planning and management of tree protection should ensure a continued sustainable tree cover with minimal stress to existing trees.

5.2.6 In order to ensure that the retained trees on site are properly protected a Construction Exclusion Zone (CEZ) must be created, based on the rooting area of the tree. For the purpose of development the rooting area is known as the Root Protection Area or RPA. The RPA of each tree or group is marked on the Tree Constraints Plan at **Appendix 6** and represents the rooting zone that should not be disturbed. The RPA of each tree should be considered during the layout phase of development.

5.2.7 Damage caused by any construction activity such as demolition, soil stripping, and provision of services needs to be considered at the design stage. Care should be taken to avoid damage to tree roots when existing structures such as tarmac surfaces are removed within a RPA.

5.2.8 The laying of access roads, driveways, parking areas or any other hard surfaces planned in proximity to retained trees needs to be considered. There are many solutions available to construct hard surfaces over RPAs without causing damage to trees.

5.2.9 Boundary walls or other light structures can be constructed without damage to roots through the use of piled foundations rather than the more traditional strip foundations.

5.2.10 The location of drainage and utilities within the RPA can be achieved if need be, using special techniques and supervision.

5.2.11 The position of the site compound is a major consideration. It is recommended that this, which typically includes the site office, facilities, toilets, storage of materials and parking, is located away from trees and outside the RPA.

5.2.12 Consideration must be given to movement of both vehicle and pedestrian traffic. If possible traffic should be diverted away from the RPAs. If this is not possible a range of temporary surfaces are available to distribute the weight of traffic and allow the roots to receive moisture and air.

5.2.13 Generally, the alteration of ground levels within the RPA is not acceptable, however, should ground levels need to be lowered in areas adjacent to trees or within the minimum distance recommended, appropriate measures should be taken to minimise the detrimental effects on the trees and their root systems. With regards to raising levels, it is necessary to maintain adequate supplies of moisture and oxygen through the

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soil to the tree roots. Therefore, no material should be placed within the RPA without arboricultural advice.

5.2.14 The shade that will be cast by the retained trees must also be considered. Where buildings are to be positioned within the shade cast area of trees, these should be designed in order to maximise light levels. If required, JCA can provide a shade cast prediction plan.

5.2.15 Many development sites contain areas of nature conservation interest. Trees and hedgerows, in particular, provide an important habitat for birds, bats, invertebrates and fungi and appropriate attention needs to be paid to preserving habitats throughout the development process. JCA can provide ecological and bat surveys where required.

5.2.16 Where a landscape planting scheme is proposed, consideration must be made at the planning stage as to where this is to be implemented on site. Such locations should be protected in order to prevent soil compaction and/or contamination and should therefore form part of the Construction Exclusion Zone. JCA can provide Tree Planting Schemes where required.

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6. Conclusions

6.1 The trees surveyed were generally found to be in good condition.

6.1.1 The tree cover on site can be broadly grouped into higher value trees to the north-west, within the former formal park area and lower value naturally regenerated trees and scrub to the south and south east.

6.2 Some works were recommended for reasons of public safety and to ensure the long term health of the trees. These are summarised in **Section 5** and detailed at **Appendix 1**.

6.3 All development work carried out in close proximity to trees should be done so in a manner sympathetic to their needs. Otherwise the condition of the trees may deteriorate in the months and years following the development, leading to a loss of amenity and potentially hazardous trees.

6.4 Care should be taken at the design stage to ensure that the retained trees are protected. The protection of retained trees can be achieved by the creation of a Construction Exclusion Zone based on the Root Protection Area of a tree. The Root Protection Area of each tree or group is marked on the Tree Constraints Plan at **Appendix 6**.

6.5 The proposed development should be accompanied by an Arboricultural Method Statement (AMS) detailing the specific protection measures necessary for each tree. This should specify fencing standard and positions (the creation of the Construction Exclusion Zone), acceptable construction techniques and necessary tree works.

6.6 Upon instruction JCA Ltd are able to provide a comprehensive Arboricultural Method Statement in order to ensure the continued health of trees throughout the proposed development. We are also able to provide trees planting schemes and organise tree works.

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Appendices

Appendix 1: Tree Descriptions and Recommendations

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Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
T 1	Mature Horse Chestnut *Aesculus hippocastanum*	17	1	91 at 1m	8 8 9.5 9.5	Multi-stemmed at 2m. Dense crown overhangs the footpath. Characteristic cracking of bark. Slight lean.	Thin 10%, lift 2m and clear overhanging branches over footpath.	FAIR	FAIR	HIGH	40+	B
T 2	Mature Lime *Tilia sp.*	14	1	50	6 5 5 6	Crown overhangs the footpath. Multi-stemmed at 2m with a dense crown. No major visible defects.	Thin 10%, lift 2m and clear overhanging branches over footpath.	GOOD	GOOD	HIGH	40+	B
G 3	Early-mature Ash and Apple *Fraxinus excelsior and Malus sp*	8	1	25	2.5 2.5 2.5 2.5	Several stems growing as one crown.	No action required.	GOOD	FAIR	LOW	20-40	C
G 4	Young Sycamore *Acer pseudoplatanus*	Ave 6	1	Ave 10	See plan	Natural regeneration, growing against wall. Multi-stemmed. Limited long term value.	No action required.	GOOD	FAIR	LOW	10-20	C
T 5	Early-mature Lime *Tilia sp.*	13	1	44	4.5 5 5 5	Single stemmed and vertical. No major visible defects.	No action required.	GOOD	GOOD	MOD	40+	B
G 6	Young Hawthorn and Ash *Crataegus monogyna and Fraxinus excelsior*	Ave 6	1	10	See plan	Natural regeneration. Limited long term value. No major visible defects.	No action required.	GOOD	FAIR	LOW	40+	C
T 7	Mature Thorn *Crataegus sp.*	9	1	Est 50	2.5 3 4.5 4	Twin-stemmed at base. Rubbing limbs at 3m, dense shoots prevented detailed inspection of base. Limited long term value.	No action required.	GOOD	POOR	MOD	10-20	C
T 8	Mature Sycamore *Acer pseudoplatanus*	14	4	52 at 1m	6 4 6 4	Crown overhangs the footpath. Single stemmed and vertical with a well-developed crown. No major visible defects. Variegated leaf form.	No action required.	GOOD	GOOD	HIGH	20-40	B
T 9	Mature Horse Chestnut *Aesculus hippocastanum*	20	3	84	7 6 6 6	Twin-stemmed at 3m with a well developed crown. Early signs of Bleeding Canker of Horse Chestnut.	Monitor 1 year.	POOR	FAIR	HIGH	10-20	C
T 10	Early-mature Whitebeam *Sorbus aria*	8	4	36	4 2 4 1	Crown overhangs the footpath. Single stemmed with an unbalanced crown due to T9. No major visible defects.	No action required.	GOOD	FAIR	MOD	10-20	C

Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
T 11	Mature Lime *Tilia sp.*	20	5	57	6 5 4.5 6	Crown overhangs the footpath and road. Twin-stemmed at 4m. Tight union and partially included bark. Minor deadwood. Pruning wound at 2m with some decay.	Deadwood. Crown reduce 20%. Monitor, (idealy use Picus decay detection)	GOOD	FAIR	MOD	20-40	B
T 12	Mature Purple Beech *Fagus sylvatica 'purpureae'*	18	4	55	6 4 3 8	Twin-stemmed at 2.5m. Partially included bark. Poor union.	Reduce lowest southern limb 30%. Monitor.	GOOD	FAIR	HIGH	40+	B
T 13	Early-mature Sycamore *Acer pseudoplatanus*	16	5	61	7 7 4 6	Crown overhangs the boundary. Buds on stem, may be late to leaf, or under stress. Single stemmed and vertical.	Monitor in 3 months.	FAIR	FAIR	MOD	10-20	C
T 14	Early-mature Purple Beech *Fagus sylvatica 'purpureae'*	9	4	29	3 4 4 4	Single stemmed and vertical. Pruning wounds on stem. No major visible defects.	No action required.	GOOD	GOOD	MOD	20-40	C
T 15	Early-mature Lime *Tilia sp.*	19	5	53	5 4 5 3	Single stemmed and vertical. Dense epicormic growth prevented detailed inspection yet no major visible defects.	No action required.	GOOD	GOOD	MOD	40+	B
T 16	Mature London Plane *Platanus x hispanica*	21	5	90	8 8 10 10	Crown overhangs the boundary. Multi-stemmed at 4m with a well developed crown. No major visible defects.	No action required.	GOOD	GOOD	HIGH	40+	B
T 17	Early-mature Sycamore *Acer pseudoplatanus*	10	5	50	5 5 5 5	Twin-stemmed at 2m. Tight union and partially included bark. Stem damage at 0.5m.	No action required.	GOOD	POOR	LOW	10-20	C
T 18	Semi-mature Sycamore *Acer pseudoplatanus*	10	3	45	4 4 5 5	Multi-stemmed at 2m. Tight union and partially included bark.	No action required.	GOOD	FAIR	LOW	20-40	C
T 19	Semi-mature Hawthorn *Crataegus monogyna*	5	2	15	2 2 2 2	Single stemmed and vertical. No major visible defects.	No action required.	GOOD	GOOD	LOW	40+	C
T 20	Mature Sycamore *Acer pseudoplatanus*	13	4	58	6 6 6 6	Multi-stemmed at 3m. Well developed crown. No major visible defects.	No action required.	GOOD	GOOD	MOD	40+	B

Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
T 21	Semi-mature Sycamore *Acer pseudoplatanus*	7	2	20	1 2 2 3	Multi-stemmed at ground level. No major visible defects.	No action required.	GOOD	FAIR	LOW	40+	C
T 22	Mature Sycamore *Acer pseudoplatanus*	19	3	70 est	7 7 7 2	Multi-stemmed at 4m. Access prevented detailed inspection of base. Foliage shows signs of stress.	Monitor in 3 months.	FAIR	FAIR	MOD	20-40	C
T 23	Mature Sycamore *Acer pseudoplatanus*	18	4	65	2 6 7 7	Twin-stemmed at ground level. One co dominant and one main stem. Co-dominant stem has been ring barked to 0.5m. Access prevented detailed inspection of base.	Remove co-domiant stem at base.	GOOD	FAIR	MOD	20-40	B
T 24	Mature Sycamore *Acer pseudoplatanus*	19	4	60	7 6 7 6	Multi-stemmed at 2.5m with a well developed crown. Pruning wound at stem union - likely point of decay. No major visible defects.	No action required.	GOOD	GOOD	MOD	40+	B
T 25	Early-mature Purple Plum *Prunus cerasifera*	7	2	45	4 4 3 5	Twin-stemmed at 0.5m. Rubbing stems. No major visible defects.	No action required.	GOOD	FAIR	MOD	20-40	C
T 26	Early-mature Leylandii *X Cupressocyparis leylandii*	13	4	40	2 2 2 2	Single stemmed and vertical. Lower branches lopped. Limited long term value.	No action required. Consider removal.	GOOD	POOR	LOW	10-20	C
G 27	Early-mature Goat Willow *Salix caprea*	8	2	25	See plan	Natural regeneration. No long term value.	No action required.	GOOD	FAIR	LOW	10-20	C
T 28	Semi-mature Sycamore *Acer pseudoplatanus*	6	2	20	2 2 2 2	Natural regeneration. No major visible defects.	No action required.	GOOD	GOOD	LOW	20-40	C
T 29	Mature Sycamore *Acer pseudoplatanus*	8	2	40	3.5 3.5 3.5 3.5	Multi-stemmed at ground level. Approx 10 stems. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C
G 30	Young-Semi-mature Sycamore *Acer pseudoplatanus*	6	2	Ave 20	See plan	Line of natural regeneration. Multi-stemmed. Growing against brick wall. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C

Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
G 31	Young-Semi-mature Elder, Sycamore, Hawthorn *Sambucus nigra, Acer sp, Crataegus sp*	To 5	1	Ave 10	See plan	Dense scrub area. Limited individual value.	No action required.	GOOD	GOOD	LOW	20-40	C
G 32	Young-Semi-mature Elder, Hawthorn *Sambucus nigra, Crataegus monogyna*	To 6	1	Ave 12	See plan	Scrub area. Limited individual value.	No action required.	GOOD	GOOD	LOW	20-40	C
G 33	Semi-mature Sycamore *Acer pseudoplatanus*	To 8	1	Ave 20	See plan	Natural regeneration. Multi-stemmed at ground level. Alongside fencing some overhanging boundary. Some on adjacent land. Limited long term value.	No action required.	FAIR	FAIR	LOW	20-40	C
G 34	Semi-mature Hawthorn *Crataegus monogyna*	Ave 3	0	15	See plan	Natural regeneration scrub. Multi-stemmed Hawthorn, occasional young Sycamore. Limited individual value. Some value for screening alongside adjacent gardens.	No action required.	GOOD	GOOD	LOW	20-40	C
T 35	Semi-mature Norway Maple *Acer platanoides*	8	3	20	2 3 1 3	Crown overhangs the boundary. Single stemmed and vertical with a well-developed crown. Good potential.	No action required.	GOOD	GOOD	LOW	40+	C
T 36	Semi-mature Norway Maple *Acer platanoides*	9	2	25	3 3 3 3	Crown overhangs the boundary. Twin-stemmed at 2m and vertical. No major visible defects.	No action required.	GOOD	GOOD	LOW	40+	C
T 37	Early-mature Norway Maple *Acer platanoides*	9	3	28	3 1 1 3	Crown overhangs the boundary. Twin-stemmed at 1m and vertical. Tight union. No major visible defects.	No action required.	GOOD	FAIR	LOW	20-40	C
T 38	Semi-mature Norway Maple *Acer platanoides*	8	3	20	3 1 3 3	Crown overhangs the boundary. Single stemmed and vertical with a well-developed crown.	No action required.	GOOD	GOOD	LOW	40+	C
T 39	Early-mature Sycamore *Acer pseudoplatanus*	10	3	37	4 4 4 4	Crown overhangs the boundary. Multi-stemmed at 2m. Pruning wounds.	No action required.	GOOD	FAIR	LOW	20-40	C
G 40	Semi-mature Goat Willow *Salix caprea*	7	1	20	See plan	Natural regeneration. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C

Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
G 41	Semi-mature Sycamore *Acer pseudoplatanus*	5	2	Ave 20	See plan	Natural regeneration along wall. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C
T 42	Semi-mature Sycamore *Acer pseudoplatanus*	8	3	Twin-stemmed 35	4 3 3 2	Crown overhangs the boundary. Twin-stemmed at ground level. Tight union and partially included bark. Limited long term value.	No action required.	GOOD	POOR	LOW	20-40	C
G 43	Young -Semi-mature Sycamore *Acer pseudoplatanus*	5	2	10	See plan	Natural regeneration. Multi-stemmed. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C
G 44	Semi-mature Rowan *Sorbus aucuparia*	4	1	12	See plan	Planted trees. Single stemmed and vertical yet all with dense sucker growth.	Lift 1m. Thin 15%.	GOOD	GOOD	LOW	20-40	C
T 45	Early-mature Sycamore *Acer pseudoplatanus*	9	2	Est 25 x 3	6 5 5 5	Situated on adjacent land. 3 stems forming one crown.	No action required.	GOOD	FAIR	LOW	20-40	C
T 46	Semi-mature Goat Willow *Salix caprea*	3	2	10	1.5 1.5 1.5 1.5	Pruning wounds. Limited long term value.	No action required.	GOOD	FAIR	LOW	10-20	C
G 47	Early-mature Rowan *Sorbus aucuparia*	4	1	Ave 12	See plan	3 Planted trees. Overgrown form. No major visible defects.	Thin 15%. Lift 1.5m.	GOOD	FAIR	LOW	20-40	C
T 48	Young Sycamore *Acer pseudoplatanus*	5	2	10 x 3	2 2 2 2	3 stems at ground level. Sparse crown. Limited long term value.	No action required.	FAIR	FAIR	LOW	20-40	C
T 49	Semi-mature Whitebeam *Sorbus aria*	6	1	20	2.5 2.5 2.5 2.5	Planted tree. Multi-stemmed at 2m. Well developed crown. Good potential. No major visible defects.	No action required.	GOOD	GOOD	MOD	40+	C
T 50	Semi-mature Whitebeam *Sorbus aria*	7	1	18	3 2 2 3	Planted tree. Multi-stemmed at 2m. Well developed crown. Good potential. No major visible defects.	No action required.	GOOD	GOOD	MOD	40+	C

Tree Ref	Age Species *Latin Name*	Height (m)	Crown Height (m)	Diameter (cm)	Crown Spread N W E S	Observations	Recommendations	Physiological Condition	Structutral Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
T 51	Semi-mature Whitebeam *Sorbus aria*	7	2	18	3 2 3 3	Planted tree. Multi-stemmed at 2m with a well developed crown. Good potential.	No action required.	GOOD	GOOD	LOW	40+	C
T 52	Semi-mature Rowan *Sorbus aucuparia*	5	1	15	2 2 2 2	Overgrown form. No major visible defects.	No action required.	GOOD	FAIR	LOW	20-40	C
G 53	Early-mature Goat Willow and Sycamore *Salix caprea and Acer pseudoplatanus*	6	2	Est 35	See plan	Situated on adjacent land. Crown overhangs the boundary. Access prevented detailed inspection. Limited long term value.	No action required.	GOOD	FAIR	LOW	20-40	C
G 54	Young-Semi-mature Sycamore & Hawthorn *Acer pseudoplatanus & Crataegus monogyna*	5	2	Ave 12	See plan	Natural regeneration along wall. Mostly Sycamore. Occasional Ash, Birch and Hawthorn. Limited long term value.	No action required.	GOOD	FAIR	LOW	10-20	C

Appendix 2: Explanation of Tree Descriptions

A2.1 Measurements

A2.1.1 *HEIGHT* of the tree is measured from the stem base in metres. Where the ground has a significant slope the higher ground is selected.

A2.1.2 *CROWN HEIGHT* is an indication of the average height at which the crown begins.

A2.1.3 *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.

A2.1.4 *CROWN SPREAD* is measured from the centre of the stem base to the tips of the branches in all four cardinal points.

A2.2 Evaluations

A2.2.1 *AGE CLASS* of the tree is described as young, semi-mature, early-mature, mature, or over-mature.

A2.2.2 *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.

A2.2.3 *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.

A2.2.4 *LIFE EXPECTANCY* is classed as; less than 10 years, 10-20 years, 20-40 years, or more than 40 years. This is an indication of the number of years before removal of the tree is likely to be required.

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A2.3 Retention Categories

A2.3.1 ***A (marked green on the plan) = retention most desirable.***

These trees are of high quality and value with a good life expectancy. They may be further sub-divided as follows:

A1) Particularly good examples; perhaps rare or unusual species, or forming an essential part of arboricultural features e.g. avenues.

A2) Groups of trees having a significant landscape impact or with excellent screening properties, or those softening the effect of existing structures.

A3) Those having significant conservation or historical value e.g. veteran trees.

A2.3.2 ***B (marked in blue on the plan) = retention desirable.***

These trees are of moderate quality and value with a significant life expectancy. They may be further sub-divided as follows:

B1) Trees that might be included in the high category but because of their numbers or slightly impaired condition, are downgraded in favour of the better individuals.

B2) Groups of trees forming distinct landscape features, thereby attracting a higher collective rating than they might as individuals.

B3) Trees with clearly identifiable conservation or other cultural benefits.

A2.3.3 ***C (marked in grey on the plan) = trees which could be retained.***

These trees are of low quality and value, and are in adequate condition to remain until new planting could be established. They may be further sub-divided as follows:

C1) Trees not qualifying in higher categories.

C2) Groups of trees which do not form a distinct landscape feature.

C3) Trees with very limited conservation or other cultural benefits.

A2.3.4 ***R (marked in red on the plan) = trees for removal.***

These trees are in such a condition that any existing value would be lost within 10 years. This may be due to any of the following:

1) Failure is likely due to serious, irredeemable, structural defects.
2) Removal of other category R trees will render them exposed and unstable.
3) They are in serious, overall decline or are dead.
4) They are of low quality and suppressing adjacent trees of better quality.
5) Diseases are present which may affect the health of adjacent trees.

These trees should be removed or treated in such a way as to make them safe where they have high ecological value, such as in a woodland setting.

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Appendix 3: General Guidelines

A3.1 All work must be to BS 3998:1989 - '*Recommendations for tree work'*.

A3.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors. They should be covered by adequate public liability insurance.

A3.3 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.

A3.4 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.

A3.5 No liability can be accepted by JCA Ltd in respect of the trees unless the recommendations of this report are carried out under the supervision of JCA and within JCA's timescale.

A3.6 It is advisable to have trees inspected by an arboricultural consultant regularly. In this instance it is recommended that these inspections are made every year.

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Appendix 4: Glossary of Terms & Abbreviations

Arboriculture	The cultivation of trees in order to produce individual specimens of the greatest ornament, for shelter or any primary purpose other than the production of timber.
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	Either dead branches, or a procedure involving the removal of dead, dying and diseased branches.
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.
Formative pruning	The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation is aimed at reducing the potential for future weaknesses or problems within the tree's crown.
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.
RPA	Root Protection Area – The theoretical rooting area of a tree as defined in BS5837: 2005 *Trees in relation to construction.*
Topping	Topping is a form of pruning that removes terminal growth leaving a 'stub' cut end. Topping causes serious health problems to a tree.

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Appendix 5: The Author's Qualifications

Principal Consultant and Managing Director

Jonathan Cocking *F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MIBiol. 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. He has since developed JCA's portfolio of services and its extensive client base. Jonathan is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Coordinator

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 Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby was promoted to Technical Coordinator and now oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff

Andrew Bagshaw *FD (Arboriculture).* Andrew joined JCA in 2005 having gained several years experience in tree surgery and landscaping. He is trained in aerial rescue and is JCA's principal first aid person. Andrew is a JCA team leader, is QTRA qualified and manages an office of Consulting Arboriculturists. He is currently working towards a degree in Arboriculture at the University of Lancashire.

Adam Winson *BSc (Hons), ND (Arboriculture).* Adam is a Professional Associate of the Institute of Chartered Foresters and an Associate Member of the Institute of Ecology and Environmental Management. Prior to joining JCA Adam worked as a tree surgeon. During his BSc in Environmental Conservation he gained the CPRE award for best dissertation and he is currently working towards an MSc in Arboriculture and Urban Forestry.

Robert Godwin *BA (Hons) (Landscape Planning), MArborA.* Robert is a Professional Member of the Arboricultural Association and a Professional Associate of the Institute of Chartered Foresters. He has a degree in Landscape Planning & Management and has several years experience as a Consulting Arboriculturist. Robert is currently working towards an MSc in Arboriculture and Urban Forestry.

Victoria Black *FD (Arboriculture).* Victoria has been with JCA since 2002 building her knowledge of the Arboricultural business. She has recently obtained her foundation degree in Arboriculture at the University of Lancashire.

Andrew Bussey Andrew joined JCA having spent 12 years doing tree surgery 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.

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), an Arboricultural Technicians Certificate and is QTRA qualified.

David Venables *BSc (Forestry).* David joined JCA in 2009 having achieved his degree at University of Wales, Bangor. David's work experience prior to joining JCA was as a Management Support Officer for the Forestry Commission at Delamere Nursery, Cheshire, where his responsibilities included carrying out health and safety inspections to ensure all sites and staff met relevant standards, assisting with the supervision of the workforce and the initiation of a GIS system for the nursery.

Raphael Skerratt *BSc (Forestry) FArborA.* Rafael covers the London area for JCA. He ran his own Arboricultural businesses since 1972 and is experienced in tree surveys for development, safety and subsidence purposes, and is an Expert Witness.

Administrative Staff

Andrew C Parker *GM, BA (Hons), PGCE.* Project Manager.
Sue Guest Administrative Team Leader.
Sally Whitwam Administrative Assistant.
Simeon Haigh *BSc (Hons).* IT Officer.
Catherine Cocking Accounts Manager.
Yasmin Hussain Administrative Assistant.
Elizabeth Bone Trainee Administrative Assistant
Alec Fielden *Cert. Arb. (RFS).* CAD Technician.

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Appendix 6: Tree Constraints Plan

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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

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Adam Winson BSc (Hons) E Con, ND (Arboriculture).

24th March 2010

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

Registered Office:

Unit 80
Bowers Mill
Branch Road
Barkisland
Halifax
HX4 OAD

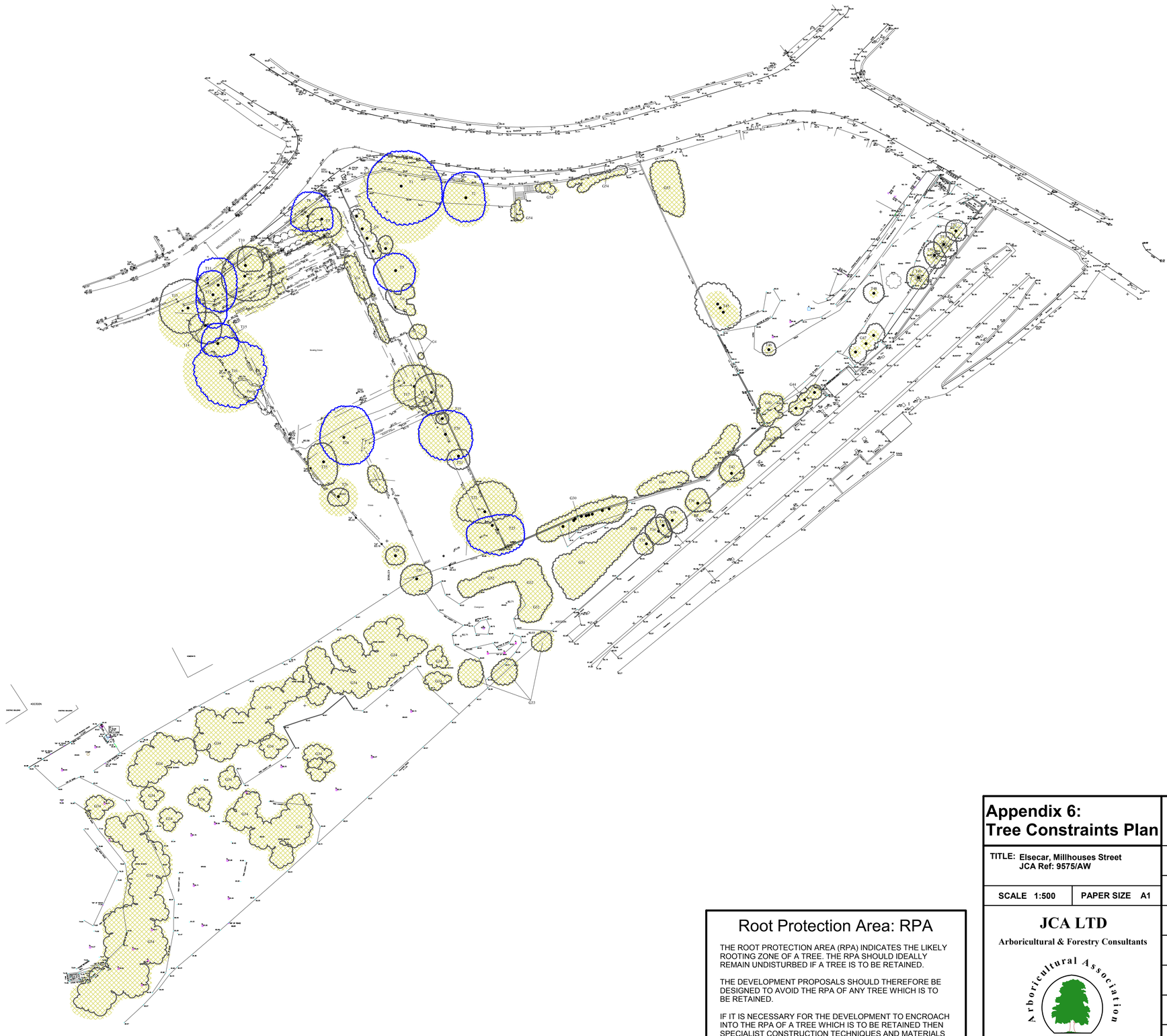
Tel. 01422 376335
Fax. 01422 376232
Email: jon@jcaac.com

www.jcaac.com

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