



Greenacre School, Barnsley

Tree Survey Report

Report for Barnsley Partnership for Learning
(Laing O'Rourke)

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SUMMARY

Greengage Arboriculture & Ecology was commissioned to carry out a tree survey at Greenacre School, Barnsley. The site is proposed for improvement, with construction of a new school building and associated facilities as part of the Building Schools for the Future programme. The site was visited during May 2009 and the trees assessed in accordance with BSS5837:2005 '*Trees in relation to construction – Recommendations*'.

The school contains a large number of trees. Many of these are located in groups and belts close to the boundaries, which have been densely planted with mixed native broadleaves, such as aspen, silver birch, wild cherry, alder and grey willow. The trees in these groups are predominantly young and middle-age. There are also a number of small and medium-growing ornamental species growing in mown grassland adjacent to the school and along the southern boundary. These include early-mature and middle-age silver birch, pear and *Sorbus* species.

No trees on site are protected by Tree Preservation Orders (TPOs). However, there are two mature horse chestnut trees on adjacent land protected by TPOs and these overhang the south-western boundary. These are the only trees of high quality and value (A category) identified during the survey. Both are large mature trees in good condition that are likely to make a substantial contribution to public amenity for a period of at least forty years.

Forty six individually surveyed trees have been assigned to the moderate quality and value category (B category). These include a significant number of the ornamental trees growing close to the buildings, plus several early mature Norway maple and sycamore trees and middle-age aspen growing in tree belts on the southern and western boundaries. Eight groups of trees have been assigned to the moderate quality and value category. All are substantial belts or groups of trees which contribute to the screening of the site and wooded character of the area. All of these trees are likely to make a significant contribution over a period of at least twenty years.

Thirty nine individually surveyed trees have been assigned to the low quality and value category (C category). These include younger and smaller trees and shrubs that are easily replaced, those with moderate structural defects and wounding and trees of poor form. All the groups of mixed ornamental shrubs on site and two conifer hedges have been assigned to this category. Six trees are in a poor condition and require felling because of their condition, irrespective of any development proposal (R category).

Trees on the site represent a constraint that should be taken into account when designing future development. It is recommended that significant consideration is given to the retention of all the high and moderate quality and value trees. Where retained, these should be provided with sufficient space to protect their root protection areas and provide sufficient space for future development without causing a nuisance. Where possible, low quality and value trees should be retained, but their presence should not represent a significant constraint on the design.

1. INTRODUCTION

1.1 Scope and brief

This arboricultural report was commissioned by Laing O'Rourke on behalf of Barnsley Partnership for Learning. Laing O'Rourke have been appointed by Barnsley Metropolitan Borough Council (Barnsley MBC) to design and construct new school buildings and facilities under Phase 2 of the Barnsley Building Schools for the Future (BSF) programme.

The report was prepared by Guy Morrison, Principal Arboriculturist and Partner of Greengage Arboriculture & Ecology. He is a Chartered Forester and Registered Consultant with the Institute of Chartered Foresters. He is also a Professional Member of the Arboricultural Association and holds the Royal Forestry Society Professional Diploma in Arboriculture.

The scope of the report was to prepare a tree survey report for the site in accordance with BSS5837:2005 '*Trees in relation to construction - Recommendations*' (BSi, 2005). This would determine the size, condition and value of trees and provide recommendations for remedial work and root protective distances to ensure the future health and stability of retained trees.

Tree survey reports have been commissioned for the three sites that form Phase 2 of the Barnsley BSF programme. These are Springwell School, Greenacre School and land to the west of Engine Lane, near Shafton. The former two sites are existing schools proposed for improvement, while the latter site is farmland proposed for development as a new school. This report relates to the Greenacre School site.

1.2 Proposed development

A Landscape Masterplan (SK07 Rev. B) for the site's redevelopment has been developed. This shows the construction of a new school building in the southern half of the site centre, which will adjoin the existing western building which is to be retained. To the north of the new building will be play areas, a multi-use games area (MUGA) and ball-court, plus a new access road and parking. It is also proposed to construct new parking at the southern end of the existing playing fields, although a full-size football pitch will be maintained. The existing eastern building and associated facilities are proposed for demolition.

Construction is not proposed to the west of the existing western building, although it is proposed to create a habitat trail and make a number of landscape improvements here. New landscaping is also proposed elsewhere with additional structural planting on the southern boundary and alongside internal roads and car-parking areas.

The tree survey and assessment that forms this report was based on arboricultural characteristics alone, without reference to any specific development proposal.

2. SITE DESCRIPTION

2.1 Location and boundaries

Greenacre School is a local authority special educational needs school. The site is located at Keresforth Hill Road, Barnsley, S70 6RJ (site centre OS grid ref. SE331053). The red line boundary plan in Appendix E shows the extent of the site.

The site is approximately rectangular in shape and has an area of approximately 4.6ha. The existing school buildings and associated parking, access and tarmac playground all lie in the centre of the site. The north-eastern third of the site is a grass playing field and the south-western third of the site is young woodland, scrub and rough grassland. The site is accessed from the B6099 Keresforth Hill Road to the south.

The site is bounded to the south by Keresforth Hill Road and to the east by the A6133 Broadway. To the north, the site is bounded by The Kingstone School and a footpath runs parallel to the northern boundary between the two schools. To the west the site is bounded by properties on the cul-de-sac of Bramley Carr.

2.2 Topography

The site is located approximately 140-155m above sea level.

The site has a variable topography. The area surrounding the existing buildings and playing fields is essentially flat. South of the buildings the site slopes down to Keresforth Hill Road and to the west of the buildings the land slopes more steeply to the site's lowest point in the south-western corner. There is 0.5-1.0m high retaining wall at the western end of the boundary with Keresworth Hill Road.

2.3 Geology and soils

The ground investigations report (CC Geotechnical, 2006) states that the site is located on mudstone of the Upper Carboniferous Middle Coal Measures geology. The site has previously been leveled with cut and fill and the eastern half subject to shallow open-cast mining, so a significant proportion of the site is made-ground, with an overlying layer containing brick, ash, gravel and sand to 3.5m. Elsewhere soils directly overlie the natural geology.

The ground investigations study did not encounter groundwater.

The ground investigations report does not investigate soil biological properties and soil investigation was not carried out as part of the tree survey. However vegetation growth and composition indicates that soils are relatively fertile and apparently adequately-drained over most of the site. It is assumed that the soils present do not represent a significant constraint on the root development and healthy growth of the tree and shrub species present.

2.4 Vegetation

The school contains a large number of trees. These are predominantly small and medium-growing ornamental species growing singly or in small clusters in mown grassland, and mixed native broadleaves planted in groups and belts adjacent to the site's boundaries.

Ornamental species include silver birch, Swedish whitebeam, hybrid service tree, manna ash, pear, rowan and purple crab apple. These are predominantly middle-age and early-mature trees which have been planted adjacent to school buildings, access roads and car-parking areas, plus along the southern boundary.

Dense groups of mixed native broadleaves have been planted at the south-western and western end of the site. These are predominantly young and middle-age trees. The predominant species are aspen, silver birch, wild cherry and alder. Other species include field maple, osier, rowan and hawthorn and the groups contain scattered larger-growing species such as English oak, beech and ash. These groups also contain a small number of older early-mature Norway maple and sycamore trees that pre-date the planting. Adjacent to the planted areas is an open area of bramble scrub and rough grassland.

Along the eastern boundary and eastern half of the northern boundary are dense belts of planted young and middle-age trees. These are dominated by the scrub willows, grey willow and goat willow, particularly on the northern boundary. Among the willows are scattered silver birch, rowan, English oak and field maple trees. Within the belt on the eastern boundary is a dense group of middle-age smooth-leaved elm trees that have grown from sucker growth.

The surrounding area has a relatively high tree density. The residential area of Kingston to the east is mainly occupied by semi-detached and detached housing with a moderately high tree density. There are a large number of large mature trees in the park to the east and highway trees on the surrounding road. The site lies on the edge of Barnsley and the countryside to the south-west has a relatively high density of trees, with abundant small woodlands and hedgerow trees.

2.5 Site access and visibility

Despite the restricted access to the school grounds, there is a relatively high public visibility of many of the trees on the site. These are visible from surrounding public viewpoints, particularly Keresforth Hill Road and Broadway.

There is also public visibility of the site from the footpath running along the northern boundary, although views from here are obstructed by a dense hedgerow and the belt of planting along the boundary. There are additional views of trees on the site from houses on Keresforth Hill Road and Bramley Carr.

Given the relatively high public visibility of the site, many of the trees on the site have the potential for significant public amenity value.

3. STATUTORY TREE PROTECTION

The Local Planning Authority (LPA) has confirmed (e-mails dated 27/04/09 and 28/04/09) that there are no trees on the site protected by Tree Preservation Orders (TPOs), although several trees adjoining the site are protected. Barnsley MBC TPO 1/1976 protects two mature horse chestnut trees (no.s 39-40) which lie beyond the south-western boundary, but slightly overhang the site. There are a number of other trees protected by TPOs to the south-west of the site, but located at a distance where they would not be affected by works on the site. The LPA have confirmed that site is not located in a Conservation Area.

TPOs place various restrictions on the felling, pruning or damaging of trees, subject to various exemptions (DETR, 2000; DCLG, 2008). Permission is required from the LPA to fell or prune trees covered by the TPO, or to carry out any other operations that may damage the trees. There are a number of exemptions, such as the felling of dead, dying and dangerous trees, but it is recommended that the LPA is consulted on all planned works to agree on whether a formal application for permission is required.

Tree felling on non-residential land is also controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than 2m² of timber (or 5m² if timber is not sold) per three month period, subject to various exemptions (FC, 2005).

There is an exemption from the above statutory controls on tree felling and pruning for works strictly necessary to implement development that has received full planning permission. It is recommended that no tree felling is carried out until full planning permission has been gained and that trees to be felled are clearly shown on a plan (see section 6.4) that is submitted and approved by the LPA.

4. METHODOLOGY

4.1 Survey methodology

The site was visited over two days during May 2009 to carry out a survey and assessment in accordance with BS5837:2005.

A topographical survey was supplied (Malcolm Hughes Land Surveyors - drawing number: 9985/1&2) identifying the position of the trees and this formed the basis of the Tree Constraints Plan (Appendix F).

The following information was collected for each tree: species, age class (see Table 1), height, stem diameter at 1.5m above ground level, crown spread in the four cardinal directions and crown clearance height above the ground (excluding basal sprouts and epicormic branches).

Table 1. Age class categories

Age class	Proportion of life expectancy
Young (Y)	< 1/3
Middle-age (MA)	1/3 - 1/2
Early-mature (EM)	1/2 - 2/3
Mature (Mat)	> 2/3
Over-mature (OM)	> 2/3 (and crown retracting as a result of age)

Where multi-stemmed trees and shrubs were identified, the stem diameter was measured close to ground level, immediately above the root buttress flare. Where clusters of stems joining below ground level prevented the measure of a single basal stem diameter, the single stem equivalent diameter was calculated, based on the total basal area:

$$d_{BA} = \sqrt{\sum d^2}$$

d_{BA} is the single stem equivalent diameter (at 1.5m)
d is the measured diameter of each stem (at 1.5m)

An assessment was made of the trees' physiological and structural condition, noting any disorders or biomechanical features that present an obvious hazard to present or future users of the site or affect the trees' life expectancy.

Preliminary management works are proposed in order to either remove/reduce hazards or promote good future growth of the tree. These recommendations do not take account of any development proposals at this stage.

The trees' overall quality and value for retention was assessed in accordance with BS5837:2005 Table 1 (Appendix C). This was dependent on the trees' physiological and structural condition, safe useful life expectancy and arboricultural, landscape, cultural and ecological value. Arboricultural and

landscape value takes account of the trees' amenity value, which was determined by tree size, prominence, visibility, appropriateness, attractiveness and screening value.

The root protection area (RPA) radius and area for each tree was calculated in accordance with BS5837:2005. The RPA is an area of ground that provides sufficient soil rooting volume to ensure the survival of the tree. Where there are no likely impediments to rooting, a circular RPA is shown on the Tree Constraints Plan. Where restrictions on rooting are likely, a non-circular shape with an identical area has been plotted. RPA has not been plotted extending beneath buildings or beyond tall retaining walls. Where hard surfaces are present and the trees are open-grown, the RPA has been partially off-set (by up to 20%) away from this to reflect the fact that some rooting beneath the surface is likely, but the tree is likely to have responded to the poor quality of the soil environment beneath the hard surface by increased rooting into adjacent soft-surfaced areas.

4.2 Survey limitations

Trees were assessed visually from ground level. No climbed inspection or detailed investigation of decay was made. These are identified within the schedule where further action is necessary to fully assess the tree.

Tree condition can change significantly over a relatively short period of time, and therefore the results and recommendations of this survey can only be held to be valid for a period of 12 months following the survey date. The trees should be re-inspected at this time by a competent person.

5. SURVEY RESULTS

The full survey results are shown in the survey schedule in Appendix A.

The survey assessed 105 individual trees and shrubs, 15 groups of trees (6,740m² total on-site area) and three hedges (175m length).

The composition and distribution of species, age classes, size (height and stem diameter) and quality and value categories for individually surveyed trees and shrubs are summarised in Figures 1-5 below.

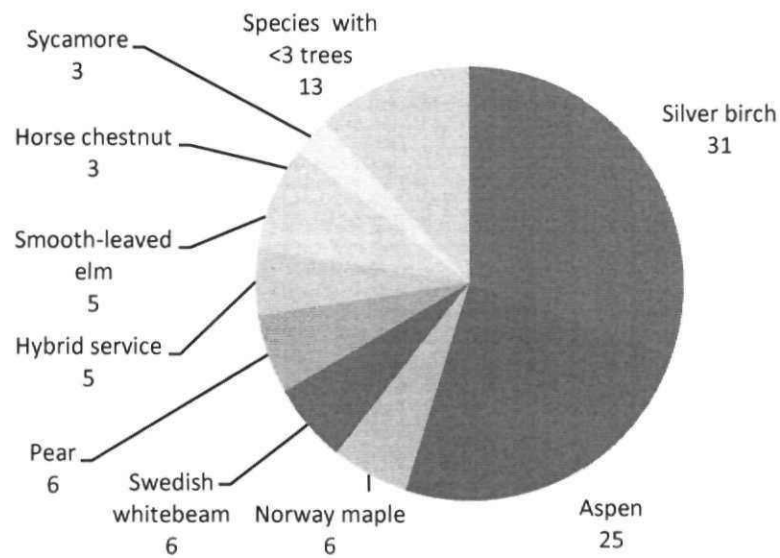


Fig. 1. Species distribution of individually surveyed trees and shrubs

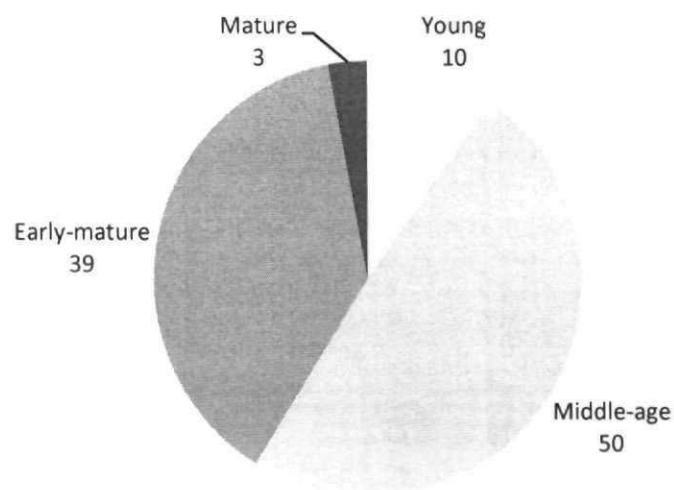


Fig. 2. Age-class of distribution of individually surveyed trees and shrubs

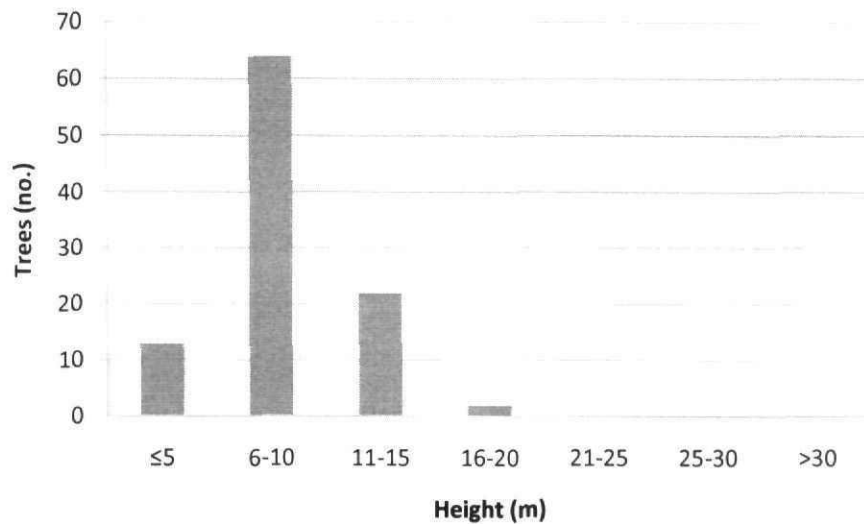


Fig. 3. Height distribution of individually surveyed trees and shrubs

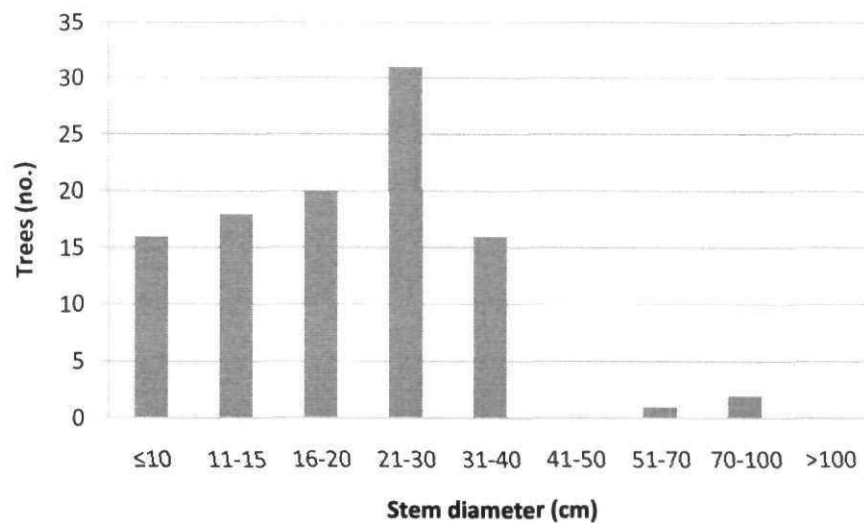


Fig. 4. Stem diameter distribution of individually surveyed trees and shrubs (includes basal diameter and single stem equivalent diameter (d_{BA}) for multi-stemmed trees and shrubs)

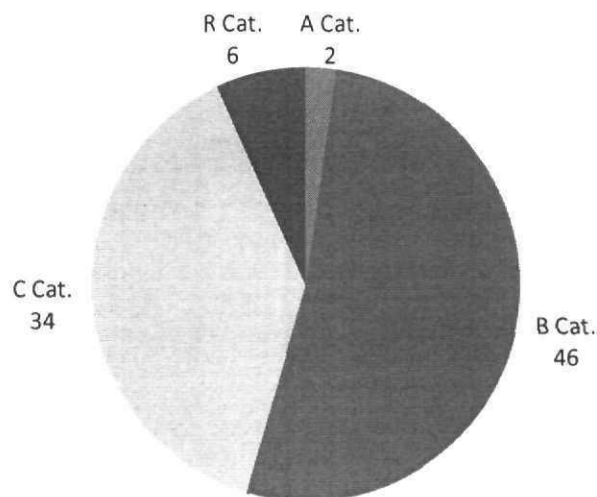


Fig. 5. Quality and value category representation of individually surveyed trees and shrubs

Two trees of high quality and value (A category) have been identified during the survey. These are the two horse chestnut trees (no.s 39 and 40) located beyond the south-western boundary. Both are large mature trees in good condition that are likely to make a substantial contribution to public amenity for a period of at least forty years. Both trees are protected by TPOs.

Forty six individually surveyed trees have been assigned to the moderate quality and value category (B category). These include some of the middle-age and early mature silver birch, pear and assorted *Sorbus* species located adjacent to the existing school and adjacent to the southern boundary. Trees in this category also include several early-mature Norway maple and sycamore trees growing in the tree belts on the south and south-western boundaries, as well as some of the large aspen and silver birch trees within these groups that were surveyed individually. All of these trees are likely to make a significant contribution over a period of at least twenty years.

Thirty nine individually surveyed trees have been assigned to the low quality and value category (C category). These include younger and smaller trees that are easily replaced, those with significant structural defects and wounding (which nevertheless have a safe useful life expectancy of more than ten years) and trees of poor form, such as multi-stemmed trees or those with strongly leaning stems and very irregular crowns.

Six trees are in a poor condition and require felling because of their condition, irrespective of any development proposal (R category). Trees in this category included trees with significant stem wounds, coppice regrowth from previously felled trees and trees of very low vigour in terminal decline

Of the 15 groups of trees surveyed, eight have been assigned to the moderate quality and value category (B category). These are all groups and belts of young and middle-age mixed broad-leaved trees that have an important role in screening the site. They also contribute to the wooded character of the area and their amenity value is expected to increase as they mature. All other groups of trees and shrubs have been identified as the low quality and value category (C category). The majority of groups in this category were beds of low and medium-growing mixed ornamental shrubs. These are easily replaced and do not make a significant contribution to their amenity of the surrounding area.

Of the three surveyed hedges, two were Leyland cypress hedges that have been identified as being of low quality and value (C category). The other hedge (no. H81) is the mature hedgerow located beyond the northern boundary. This has a role in screening the site and has been assigned to the moderate quality and value category (B category).

6. RECOMMENDATIONS

6.1 Preliminary work recommendations

The survey schedule (Appendix A) contains preliminary work recommendations. These recommendations do not take account of development proposals and it is likely additional felling and pruning would be necessary to accommodate any development proposals (see section 6.4).

No urgent works are proposed and all the preliminary work recommendations could be postponed for up to 12 months until a development proposal is finalised and receives planning permission.

All works carried out should comply with BS3998:1989 '*British Standard Recommendations for Tree Work*' (BSi, 1989), or its replacement standard.

Appropriate permission should be sought were works are planned to trees protected by TPO (see section 3.0 and Appendix A).

6.2 Tree quality and value retention

Trees on the site represent a constraint that should be taken into account when designing future development. Of these, the greatest constraint is represented by the two trees of high quality and value (A category) and the 46 trees of moderate quality and value (B category) and it is recommended that significant consideration is given to retaining these within the development. All retained trees should be retained with sufficient space to avoid construction damage and allow their future development.

Where possible, trees of low quality and value (C category) should be retained, but their presence should not represent a significant constraint on the design. It should be noted that although the individual loss of low value trees will not have an impact, the cumulative loss of a large number of low value trees could produce a local landscape and ecological impact due to a loss of overall tree cover. Under these circumstances, consideration should be given to providing space for mitigation planting as part of the landscaping of the development scheme.

The six trees of poor quality and value (R category) which require removal irrespective of the development proposal should obviously not represent a constraint.

6.3 Sustainable tree retention

In order to allow for the long-term sustainable retention of trees, two requirements need to be met. The first is that there is no adverse physical impact on the trees. This can be met by ensuring that no adverse construction takes place within the RPA given in the survey schedule (Appendix A) and shown on the Tree Constraints Plan (Appendix F). Where construction or demolition works are required to take place in the RPA, special care and design will be required to reduce the impact on the trees and it is recommended that additional advice is sought from an arboriculturist.

In addition to reducing the physical impact on the tree, it is also important to allow the space for trees to grow and develop without causing significant nuisances such as severe loss of light to adjacent properties that will lead to pressure for their future felling or severe pruning. The Tree Constraints Plan (Appendix F) shows the existing provisional shade profiles (marked as a segment from north-west to east, with radius equivalent to current tree height, in accordance with BS5837:2005). Very few of the trees on the site are mature trees that have grown to their maximum height and account should be taken of potential future growth. Provisional maximum heights are given in Appendix B and it is recommended that this information is taken account of during the design process.

It is understood that it is intended to commission an arboricultural implications assessment. This report should identify the direct and indirect impacts of the development proposal on the trees. In addition to the proposed layout, the assessment of impact should also consider changes to levels and proposed service routing. It should also provide outline recommendations for mitigation works where required and identify where revisions to the layout and standard construction methodologies could reduce arboricultural impact.

6.4 Construction phase tree protection and works

It is recommended that all retained trees on or immediately adjacent to the site should be protected by protective fencing during the site demolition and construction phases. This construction exclusion zone should protect the RPA and

Table A1. Tree Survey Schedule

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
H1	Leyland cypress	MA	< 12 @base	1	35	0	1	G	G	Trimmed hedge	Trim annually	20-40	C ₂₃	CS	CS
2	Silver birch	EM	29 @base	2	7	2	N 3.5 E 4 S 2.5 W 3	F	G	None	No action	20-40	C ₁₃	2.90	26
3	Silver birch	EM	23	1	9	2	N 3.5 E 4.5 S 2.5 W 3	P	F	Low crown vigour and minor deadwood in crown.	Consider felling tree in decline.	20-40	C ₁₃	2.76	24
4	Silver birch	EM	32 @base	1	9	2	N 3.5 E 3.5 S 2.5 W 3.5	F	G	Bowed stem and minor deadwood in crown.	No action	20-40	C ₁₃	3.84	46
5	Silver birch	EM	32	1	10	2	N 4 E 4.5 S 4 W 4.5	G	G	None	No action	20-40	B ₁	3.84	46
6	Hybrid service tree	EM	34	1	9	3	N 4 E 4 S 3 W 4	G	G	Located in playground adjacent to school.	No action	20-40	B ₁	4.08	52
7	Swedish whitebeam	EM	31	1	6	1	N 3.5 E 4 S 3.5 W 3	G	G	None	No action	20-40	B ₁	3.72	43
G8	Cherry laurel 'Otto Luyken'	M	NA	MS	3	0	<1	G	G	None	No action	20-40	C ₂₃	CS	CS

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
9	Sycamore	Y	15	1	7	1	N 2 E 2 S 2 W 2	G	G	Naturally regenerated tree of poor form growing at base of wall.	Fell tree	<10	R	1.80	10
10	Silver birch	EM	22	1	7	1	N 3 E 3 S 2 W 2	F	F	Bark wound on lower stem with exposed wood. Crown vigour slightly reduced.	No action	10-20	C ₁₃	2.64	22
11	Pear	EM	27	1	8	2	N 3 E 3 S 2 W 2.5	G	G	None	No action	20-40	B ₁	3.24	33
12	Silver birch	MA	17	1	10	2	N 2.5 E 3 S 1 W 2	G	G	None	No action	20-40	C ₁₃	2.04	13
13	Silver birch	EM	28	1	12	1	N 4 E 4 S 3 W 3	G	F	Mower damage to surface roots.	No action	20-40	B ₁	3.36	35
14	Silver birch	EM	20	1	11	2	N 2.5 E 2.5 S 2 W 2	G	F	Mower damage to surface roots.	No action	20-40	B ₁	2.40	18
15	Silver birch	MA	17	1	7	2	N 3 E 3 S 2.5 W 1.5	P	F	Low crown vigour and minor deadwood in crown.	Consider felling tree in decline.	10-20	C ₁₃	2.04	13

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
16	Silver birch	MA	10 @base	1	2	1	N 0.5 E 0.5 S 0.5 W 0.5	F	P	Coppice regrowth from 0.5m stump of previously felled tree.	Cut stump to base and treat to prevent regrowth.	<10	R	1.20	5
G17	Ornamental shrubs	EM	NA	MS	0.5 - 2.5	0	<2.5	G	G	Mixed small and medium-growing ornamental shrubs, including: <i>Lonicera pileata</i> , <i>Viburnum tinus</i> , <i>Aucuba japonica</i> cv., <i>Ulex europaeus</i> , <i>Cotoneaster horizontalis</i> , <i>Potentilla fruticosa</i> , <i>Salix</i> , <i>Euonymus</i> , <i>Escallonia</i> and <i>Cytisus</i> .	No action	20-40	C ₂₃	CS	CS
G18	Ornamental shrubs	EM	NA	MS	0.5 - 2	0	1.5	G	G	Mixed small and medium-growing ornamental shrubs, including: <i>Lonicera pileata</i> , <i>Viburnum tinus</i> , <i>Aucuba japonica</i> cv., <i>Prunus laurocerasus</i> 'Otto Luyken', <i>Cotoneaster horizontalis</i> , <i>Potentilla fruticosa</i> , <i>Euonymus</i> , <i>Escallonia</i> and <i>Cytisus</i> .	No action	20-40	C ₂₃	CS	CS

Age class: Y - young MA - middle-age EM - early mature Mat - mature OM - over-mature **Branch spread:** N - north E - east S - south W - west **Condition:** G - good F - fair P - poor VP - very poor

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								Physiological	Structural						
G19	Mixed broadleaves	MA	<10	1/M	1 - 6	0	<3	G	G	Dense broadleaved planting including wild cherry, field maple, silver birch, beech, English oak, grey alder, guelder rose, white dogwood and sea buckthorn. Plot will benefit from thinning by 33% within 5 years to improve form and growth of trees.	Consider thinning plot by 33%. Select oak and beech for retention and promotion. Prune trees and shrubs to 0.5m beyond kerb-line.	>40	B ₂	CS	CS
20	Norway maple	EM	38	1	9	1	N 4.5 E 7 S 7 W 4	G	G	Located close to retaining wall and overhanging road.	No action	>40	B ₁	4.56	65
21	Norway maple	MA	30	1	9	2	N 4 E 4.5 S 5 W 2.5	G	G	Located close to retaining wall and overhanging road.	No action	>40	B ₁	3.60	41
22	Norway maple	MA	24	1	8	1	N 4 E 5 S 2.5 W 3	G	F	Weak fork at base with included bark. Strong stem lean E.	Remove secondary stem at base.	>40	C ₁₃	2.88	26
G23	Ornamental shrubs	MA	NA	MS	1-25	0	1	G	G	Mixed small and medium-growing ornamental shrubs, including: <i>Lonicera pileata</i> , <i>Viburnum tinus</i> , <i>Aucuba japonica</i> cv., <i>Cornus alba</i> , <i>Potentilla fruticosa</i> , <i>Escallonia</i> and <i>Cytisus</i> .	No action	10-20	C ₂₃	CS	CS

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature Branch spread: N – north E – east S – south W – west Condition: G – good F – fair P – poor VP – very poor

ensure that trees to be retained and their essential rooting zone is not damaged during the works. All potentially damaging operations should be excluded from within the construction exclusion zone, including: excavation, changes to levels, temporary access, vehicle parking or movements, fires and the storage, disposal or mixing of materials and chemicals.

It is understood that it is intended to commission an arboricultural method statement. The method statement should detail procedures and methods to be adopted to protect trees and their rooting environment during the construction and demolition works. The method statement should be produced once the detailed design of the proposed development is finalised.

The method statement should be accompanied by a tree protection plan. The plan should show the location and detailing of the protective fencing and other tree protection measures, such as ground protection, both in relation to the existing and proposed layout. It should also show trees to be retained and removed.

The method statement should be accompanied by a schedule and specification for facilitation works to trees that are necessary in order to accommodate the proposed development, as well as remedial works necessary to improve tree condition and reduce risk to an acceptable level within the context of the proposed site layout and use.

6.5 Protected species

Trees on the site may be used for nesting by birds during the spring and summer. Nesting birds and their nests are legally protected and wherever possible the felling or pruning trees should be avoided between 1 March to 30 August to avoid an impact on nesting birds. Where it was necessary to carry out the work during this period then advice should be sought from an ecologist.

Trees may be used by bats for roosting, and both bats and their roosts are legally protected. Bat roosts within trees are usually associated with features such as cavities, cracks, loose bark and dense ivy. It is strongly recommended that advice is sought from an ecologist if it is intended to fell or carry out works to trees containing any of these features.

It is understood that an ecological survey will be commissioned at Stage 2 of the project. It is recommended that this determines the presence or absence of bats and any other protected species associated with the trees on the site. Observations and recommendations from the ecological survey should be incorporated into the arboricultural implications assessment (see section 6.3) and method statement (see section 6.4).

7. REFERENCES

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APPENDIX A – TREE SURVEY SCHEDULE

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
31	Silver birch	Y	10	1	5.5	0.3	N 2 E 2 S 2 W 2	G	G	None	Prune tree 0.5m beyond kerb-line	>40	C ₂₃	1.20	5
32	Silver birch	Y	11 @base	2	5.5	0	N 1.5 E 2 S 1.5 W 0.5	G	G	None	No action	>40	C ₂₃	1.32	5
33	Silver birch	Y	8	1	5.5	0.5	N 1.5 E 2 S 2 W 1.5	G	G	None	No action	>40	C ₂₃	0.96	3
G34	Silver birch & white dogwood	Y/MA	<7	MS/1	1.5-5	0	<1.5	G	G	None	No action	>40	C ₂₃	CS	CS
35	Norway maple	EM	34	1	11	1.8	N 4 E 4.5 S 5.5 W 4	G	G	None	No action	>40	B ₁	4.08	52
36	Norway maple	EM	33	1	10	1.5	N 5.5 E 4 S 4.5 W 2.5	G	G	None	No action	>40	B ₁	3.96	49

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
G37	Mixed broadleaves	MA	<15	1/MS	<10	0.5	<2.5	G	G	Dense broadleaved planting dominated by aspen, alder, silver birch and osier. Wild cherry, rowan, field maple, beech and English oak also present. Plot will benefit from thinning by 33% within 5 years to improve form and growth of trees.	Consider thinning plot by 33%. Select oak and beech for retention and promotion.	>40	B ₂	CS	CS
G38	Ash & sycamore	EM	<40	1/MS	12-15	2.5	<6	F	F	Row of trees growing immediately beside low retaining wall and over-hanging road.	Remove poor multi-stemmed ash with canker and multi-stemmed sycamore adjacent to utilities cabinet. Remove 3 additional stems to thin densely-growing group.	20-40	B ₂	CS	CS
39	Horse chestnut	M	80	1	18	2	N 6 E 10 S 8 W 8	F	G	Tree growing on adjacent land, but over-hanging site. Minor bleeding canker at stem base. Protected by TPO (Barnsley MBC TPO 1/1976 T1).	No action	20-40	A ₁	9.60	290

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
40	Horse chestnut	M	80	1	18	2.5	N 8 E 8 S 4 W 10	F	G	Tree growing on adjacent land, but over-hanging site. Minor bleeding canker at stem base. Protected by TPO (Barnsley MBC TPO 1/1976 T2).	No action	20-40	A ₁	9.60	290
41	Silver birch	EM	28 @base	1	11	1.8	N 0.5 E 3 S 3 W 0.5	G	F	None	No action	20-40	C ₂₃	3.36	35
42	Osier	EM	25 @base	MS	6	0.5	N 0.5 E 4.5 S 2.5 W 0	G	F	None	No action	20-40	C ₂₃	3.00	28
43	Aspen	M	26 @base	3	10	1.5	N 1.5 E 2 S 1.5 W 1.5	G	G	None	No action	20-40	C ₂₃	3.12	31
44	Osier	EM	25 @base	MS	6	0.5	N 0.5 E 4.5 S 0.5 W 0.5	G	F	None	No action	20-40	C ₂₃	3.00	28
45	Aspen	EM	20	1	12.5	2.5	N 2.5 E 4 S 2 W 0.5	G	G	None	No action	20-40	B ₂	2.40	18

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
46	Aspen	MA	11	1	10	4	N 1 E 2.5 S 1.5 W 0.5	G	G	None	No action	>40	C ₂₃	1.32	5
47	Aspen	MA	13	1	10	4	N 2.5 E 2.5 S 0.5 W 0.5	G	G	None	No action	>40	C ₂₃	1.56	8
48	Aspen	MA	13	1	10	2.5	N 1 E 2.5 S 0.5 W 0.5	G	G	None	No action	>40	C ₂₃	1.56	8
49	Aspen	MA	16	1	10.5	2.5	N 3.5 E 3.5 S 2.5 W 1	G	G	None	No action	>40	B ₂	1.92	12
50	Aspen	MA	17	1	10.5	2	N 2 E 1.5 S 2.5 W 2.5	G	G	None	No action	>40	B ₂	2.04	13
51	Aspen	MA	19	1	10.5	3.5	N 3 E 2.5 S 0.5 W 2.5	G	G	None	No action	>40	B ₂	2.28	16
52	Aspen	MA	19	1	11.5	1.5	N 1.5 E 4.5 S 3.5 W 1	G	G	None	No action	>40	B ₂	2.28	16

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
53	Aspen	MA	16	1	11	1.5	N 3.5 E 4.5 S 1 W 0.5	G	G	None	No action	>40	B ₂	1.92	12
54	Aspen	MA	9	1	9	2	N 0.5 E 2.5 S 1 W 0.5	G	G	None	No action	>40	C ₂₃	1.08	4
55	Aspen	MA	16	1	9	2.5	N 2 E 2 S 3.5 W 0.5	G	G	None	No action	>40	B ₂	1.92	12
56	Aspen	MA	16	1	10	2.5	N 1 E 2 S 3 W 2	G	G	None	No action	>40	B ₂	1.92	12
57	Aspen	MA	12	1	9	5	N 1 E 2.5 S 1 W 0.5	G	G	None	No action	>40	C ₂₃	1.44	7
58	Aspen	MA	13	1	9	2.5	N 1.5 E 1.5 S 1.5 W 2	G	G	None	No action	>40	C ₂₃	1.56	8
59	Aspen	MA	15	1	10	5	N 3.5 E 1 S 1 W 1.5	G	G	None	No action	>40	B ₂	1.80	10

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
60	Aspen	MA	16	1	10	1.5	N 4 E 2.5 S 1 W 0.5	G	G	None	No action	>40	B ₂	1.92	12
61	Silver birch	MA	10	1	10	1.5	N 1.5 E 1.5 S 1.5 W 1.5	G	G	None	No action	>40	C ₂₃	1.20	5
62	Silver birch	MA	12	1	11	1.8	N 2 E 2 S 1.5 W 1.5	G	G	None	No action	>40	C ₂₃	1.44	7
63	Silver birch	MA	11	1	11	1.8	N 2 E 2 S 1 W 1	G	G	None	No action	>40	C ₂₃	1.32	5
64	Silver birch	MA	10	1	10	2	N 1.5 E 1.5 S 1.5 W 1.5	G	G	None	No action	>40	C ₂₃	1.20	5
65	Silver birch	MA	11	1	11	1	N 1.5 E 1.5 S 2 W 1.5	G	G	None	No action	>40	C ₂₃	1.32	5
66	Norway maple	EM	33	1	11	2.5	N 5 E 5.5 S 4 W 3.5	G	G	Tree located close to boundary and overhanging adjacent cul-de-sac.	No action	>40	B ₁	3.96	49

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
67	Sycamore	EM	29	1	11	1	N 3 E 5 S 4 W 4	G	G	Tree located close to boundary and overhanging adjacent property.	No action	>40	B ₁	3.48	38
68	Aspen	MA	22	1	11	2	N 1.5 E 1.5 S 4 W 2	G	G	None	No action	>40	B ₂	2.64	22
69	Aspen	MA	19	1	0	1	N 1.5 E 3.5 S 4 W 2	G	G	None	No action	>40	B ₂	2.28	16
70	Aspen	MA	23 @base	2	9	4	N 2.5 E 2.5 S 1.5 W 1	G	F	Twin-stemmed at 0.5m with weak fork with included bark.	No action	20-40	C ₂₃	2.76	24
G71	Mixed broadleaves	MA	<15	1/ms	<11	>0	<2.5	G	G	Dense broadleaved planting dominated by aspen, alder, field maple, osier and ash. Plot will benefit from thinning by 33% within 5 years to improve form and growth of trees.	Consider thinning plot by 33%. Select ash for retention and promotion.	>40	B ₂	CS	CS
72	Aspen	MA	20 @base	2	10	1	N 1.5 E 1.5 S 1.5 W 1.5	G	F	Twin-stemmed at base with weak fork with included bark.	No action	20-40	C ₂₃	2.40	18

Age class: Y - young MA - middle-age EM - early mature Mat - mature OM - over-mature **Branch spread:** N - north E - east S - south W - west **Condition:** G - good F - fair P - poor VP - very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
73	Aspen	MA	17	1	10	2	N 1.5 E 1.5 S 1.5 W 2	G	G	None	No action	>40	B ₂	2.04	13
74	Wild cherry	MA	10	1	7	2.5	N 1.2 E 2 S 0.5 W 0.5	G	G	None	No action	>40	C ₂₃	1.20	5
75	Sycamore	MA	25	1	10	2	N 4 E 4 S 4 W 2.5	G	G	Tree located close to boundary and over-hanging adjacent property. Previously crown-lifted over garden.	No action	>40	B ₁	3.00	28
76	Aspen	MA	15	1	11	3	N 2.5 E 4 S 2.5 W 0.5	G	G	None	No action	>40	B ₂	1.80	10
77	Aspen	MA	16	1	11	2	N 2 E 1.5 S 2 W 2.5	G	G	None	No action	>40	B ₂	1.92	12
78	Aspen	MA	13	1	10	1.5	N 2 E 2.5 S 2 W 1	G	G	None	No action	>40	C ₂₃	1.56	8

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
G79	Mixed broadleaves	MA	<15	1/MS	<12	>0	<3	G	G	Dense broadleaved planting dominated by aspen and silver birch. Wild cherry, rowan, field maple, English oak, hazel, alder and ash also present. Plot will benefit from thinning by 33% within 5 years to improve form and growth of trees.	Consider thinning plot by 33%. Select oak and ash for retention and promotion.	>40	B ₂	CS	CS
80	Japanese cherry	Y	6 @base	1	2.5	1.2	N 0.5 E 0.5 S 0.5 W 0.5	F	F	Damage bark at stem base.	No action	20-40	C ₁₃	0.72	2
H81	Hawthorn, elder and sycamore	M	25	MS	6	0.5	3.5	G	G	Mature hedgerow beyond site boundary. Contains several early mature sycamore (stem diameter <40cm and height <14m).	No action	>40	B ₂	3.00	28
82	Swedish whitebeam	EM	31	1	8.5	1.8	N 3 E 4 S 4 W 4	G	G	None	No action	20-40	B ₁	3.72	43
83	Swedish whitebeam	EM	28	1	6	1.8	N 3 E 3.5 S 3.5 W 3.5	G	G	Large bark wound at S stem base. Associated early decay.	No action	10-20	C ₁₃	3.36	35
84	Stump	NA	10 @base				NA			None	No action		R		

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
85	Stump	NA	11 @base				NA			None	No action		R		
86	Leyland cypress	MA	26	1	9	1.5	N 1.5 E 1.5 S 1.5 W 0.5	G	G	Tree growing in small bed of highly compacted bare soil in playground.	No action	20-40	C ₁₃	3.12	31
87	Leyland cypress	MA	18	1	7.5	1.5	N 1.5 E 0.5 S 1.5 W 1.5	G	G	Tree growing in small bed of highly compacted bare soil in playground.	No action	20-40	C ₁₃	2.16	15
G88	Shrub (unknown)	MA	NA	MS	1.5	0	N 1 E 1 S 1 W 1	G	G	None	No action	10-20	C ₂₃	CS	CS
89	Stump	NA	10 @base				NA			None	No action		R		
90	Small-leaved lime	MA	24	1	8	1.5	N 1.5 E 4 S 4.5 W 3	F	F	Weak forks in crown with included bark. Tree may be at risk of failure as it grows.	Monitor weak fork development as tree matures.	10-20	C ₁₃	2.88	26
91	Rowan	EM	16	1	5	1.8	N 3 E 3.5 S 3 W 2.5	F	F	Significant stem wounds from base to 1m E and W. Low crown vigour Tree in decline.	Fell tree	<10	R	1.92	12
92	Common lime	MA	39	1	10	1	N 5 E 5 S 5 W 4	G	G	None	No action	>40	B ₁	4.68	69

Age class: Y - young MA - middle-age EM - early mature Mat - mature OM - over-mature **Branch spread:** N - north E - east S - south W - west **Condition:** G - good F - fair P - poor VP - very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
93	Purple crab apple	MA	10	1	3.5	1.8	N 2 E 2 S 2.5 W 1	VP	P	Very low crown vigour, with significant crown dieback. Tree in decline.	Fell tree	<10	R	1.20	5
94	Purple crab apple	MA	13	1	3.5	1.8	N 2 E 2 S 2 W 2	P	F	Relatively low crown vigour.	No action	10-20	C ₁₃	1.56	8
95	Swedish whitebeam	MA	31 @base	MS	3.5	0.5	N 2.5 E 2.5 S 2.5 W 2.5	G	F	None	No action	20-40	C ₁₃	3.72	43
96	Hybrid service tree	EM	27	1	8.5	1	N 3 E 3.5 S 3.5 W 2	G	G	Basal sprouts from rootstock (Swedish whitebeam).	Remove basal sprouts.	20-40	B ₁	3.24	33
G97	Mixed broadleaves	MA	<20 @base	MS	5-8	0	<4.5	G	G	Dense belt of planting dominated by goat willow and grey willow. Occasional rowan, English oak, ash, alder and hawthorn. Plot would benefit from thinning.	Consider thinning plot by 20%. Select and promote non-willows for retention to diversify plot.	20-40	B ₂	CS	CS
G98	Mixed broadleaves	MA	<20 @base	MS	5-6	0	<4	G	G	Dense belt of planting dominated by grey willow. Occasional rowan, English oak, wild cherry, aspen and hawthorn. Plot would benefit from thinning.	Consider thinning plot by 20%. Select and promote non-willows for retention to diversify plot.	20-40	B ₂	CS	CS

Age class: Y - young MA - middle-age EM - early mature Mat - mature OM - over-mature **Branch spread:** N - north E - east S - south W - west **Condition:** G - good F - fair P - poor VP - very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
G99	Mixed broadleaves	Y	<15 @base	MS	4-6	0	<2	G	G	Dense belt of planting dominated by grey willow. Also rowan, English oak, field maple, wild cherry, aspen and hawthorn. Plot would benefit from thinning.	Consider thinning plot by 20%. Select and promote non-willows for retention to diversify plot.	20-40	B ₂	CS	CS
100	Silver birch	EM	22	1	7	1.5	N 2.5 E 2.5 S 2.5 W 2	G	G	None	No action	20-40	B ₂	2.64	22
101	Smooth-leaved elm	MA	17+15 +15+1 0+10	6	10	2.5	N 4 E 4 S 1.5 W 3	G	F	No symptoms of Dutch elm disease. Likely to die before maturity.	No action	10-20	C ₂₃	3.68	42
102	Smooth-leaved elm	MA	15+15	2	9	2.5	N 1 E 3 S 1.5 W 3	G	F	No symptoms of Dutch elm disease. Likely to die before maturity.	No action	10-20	C ₂₃	2.55	20
103	Smooth-leaved elm	MA	13+12	2	9	2.5	N 1 E 3 S 3 W 3	G	F	No symptoms of Dutch elm disease. Likely to die before maturity.	No action	10-20	C ₂₃	2.12	14
104	Smooth-leaved elm	MA	15	1	9	1.5	N 2 E 1 S 2 W 3	G	F	No symptoms of Dutch elm disease. Likely to die before maturity.	No action	10-20	C ₂₃	1.80	10
105	Silver birch	EM	20	1	8	3	N 2 E 4.5 S 3 W 3	G	F	None	No action	20-40	B ₂	2.40	18

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature Branch spread: N – north E – east S – south W – west Condition: G – good F – fair P – poor VP – very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
106	Smooth-leaved elm	MA	19	1	9	3.5	N 0.5 E 2.5 S 3 W 3	G	F	No symptoms of Dutch elm disease. Likely to die before maturity.	No action	10-20	C ₂₃	2.28	16
107	Pear	EM	26	1	8	1.8	N 3 E 3.5 S 3 W 3	G	G	Dense multi-stemmed form due to vigorous growth of rootstock.	Cut rootstock shoots at base.	20-40	B ₁	3.12	31
108	Pear	EM	35 @base	MS	7.5	0	N 3.5 E 4 S 4 W 4	G	G	Dense multi-stemmed form due to vigorous growth of rootstock.	Cut rootstock shoots at base.	20-40	B ₁	4.20	55
109	Pear	EM	28 @base	1	8	0	N 4 E 4 S 4 W 4	G	G	Dense multi-stemmed form due to vigorous growth of rootstock.	Cut rootstock shoots at base.	20-40	B ₁	3.36	35
110	Swedish whitebeam	EM	33	1	6.5	1.5	N 3.5 E 3.5 S 3 W 3.5	G	G	Overhangs highway.	No action	20-40	B ₁	3.96	49
111	Hybrid service tree	EM	27	1	8	1.8	N 3 E 3.5 S 2.5 W 3	G	G	Overhangs highway.	No action	20-40	B ₁	3.24	33
112	Swedish whitebeam	EM	34	1	6.5	1.6	N 3.5 E 4 S 3 W 3	G	G	Overhangs highway.	No action	20-40	B ₁	4.08	52

Age class: Y - young MA - middle-age EM - early mature Mat - mature OM - over-mature **Branch spread:** N - north E - east S - south W - west **Condition:** G - good F - fair P - poor VP - very poor

No.	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
113	Silver birch	EM	26	1	11.5	0.3	N 3.5 E 3.5 S 3 W 2.5	G	G	None	No action	20-40	B ₁	3.12	31
114	Silver birch	EM	26	1	11.5	1.6	N 3.5 E 3.5 S 3.5 W 1.5	G	G	None	No action	20-40	B ₁	3.12	31
115	Silver birch	MA	11	1	11.5	3.5	N 0.5 E 1.5 S 2 W 0.5	P	F	Significant bark wounds at stem base. Crown vigour low. Tree in decline.	Fell tree	<10	R	1.32	5
116	Silver birch	EM	26	1	7	1.2	N 1.5 E 3 S 3.5 W 1.5	G	G	None	No action	20-40	B ₁	3.12	31
117	Hybrid service tree	EM	33	1	11	2.5	N 3.5 E 3.5 S 3.5 W 2.5	G	F	Damage to surface roots.	No action	20-40	B ₁	3.96	49
118	Silver birch	EM	19+11	2	9.5	0.5	N 2.5 E 3 S 3 W 2	F	F	Tree of poor form. Crown vigour relatively low.	Crown lift 2.4m above foot-path.	10-20	C ₁₃	2.63	22
119	Hybrid service tree	EM	31	1	8	1.5	N 3 E 3.5 S 3 W 2.5	G	G	None	No action	20-40	B ₁	3.72	43

Age class: Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

ID	Species	Age class	Stem diameter (cm)	Stem no.	Height (m)	Crown clearance height (m)	Branch spread (m)	Condition		Comments	Preliminary management recommendations	Remaining contribution (yrs)	Category grade	RPA radius (m)	RPA area (m ²)
								Physiological	Structural						
120	Pear	EM	30	1	9.5	1	N 2.5 E 2.5 S 2.5 W 2.5	G	F	Wound from previous branch loss on stem.	Cut rootstock shoots at base.	20-40	B ₁	3.60	41
121	Pear	EM	53 @base	MS	9	1.8	N y E 3.5 S 2 W 2.5	G	G	Wound from previous branch loss on stem.		20-40	B ₁	6.36	127
122	Horse chestnut	MA	15	1	9	1.6	N 1.5 E 2.5 S 2 W 1.5	P	P	Severe bleeding canker infection. Large dead bark patches on stem. Tree in decline.	Fell tree. Use hand-saw and sterilise after use to prevent cross-infection.	<10	C ₁₃	1.80	10
123	Manna ash	MA	24	1	7.5	1	N 2.5 E 4 S 4 W 3	F	G	Damage to surface roots. Crown vigour slightly low.	No action	20-40	C ₁₃	2.88	26

 **class:** Y – young MA – middle-age EM – early mature Mat – mature OM – over-mature **Branch spread:** N – north E – east S – south W – west **Condition:** G – good F – fair P – poor VP – very poor

APPENDIX B – SPECIES LIST AND POTENTIAL TREE HEIGHT

Table B1. Potential ultimate height for tree and large shrub species and cultivars on the survey site

Species	Common name	Potential mature tree height (m)		
		Estimated for site*	UK (NHBC, 2006)**	UK (More & White, 2003)***
<i>Acer campestre</i>	Field maple	12		14
<i>Acer platanoides</i>	Norway maple	22	18	25
<i>Acer pseudoplatanus</i>	Sycamore	28	22	35
<i>Aesculus hippocastanum</i>	Horse chestnut	28	20	36
<i>Alnus glutinosa</i>	Alder	20	18	25
<i>Alnus incana</i>	Grey alder	18		22
<i>Betula pendula</i>	Silver birch	18	14	25
<i>Chamaecyparis lawsoniana</i>	Lawson cypress	25	18	40
<i>Cornus alba</i>	White dogwood	4		
<i>Corylus avellana</i>	Hazel	12	8	15
<i>Crataegus monogyna</i>	Hawthorn	12	10	15
<i>X Cupressocyparis leylandii</i>	Leyland cypress	25	20	40
<i>Fagus sylvatica</i>	Beech	28	20	35
<i>Fraxinus excelsior</i>	Ash	25	23	30
<i>Fraxinus ornus</i>	Manna ash	12		16
<i>Malus x purpurea</i>	Purple crab-apple	7		7
<i>Populus tremula</i>	Aspen	18		25
<i>Prunus avium</i>	Wild cherry	18	17	25
<i>Prunus laurocerasus</i>	Cherry laurel	6	8	6
<i>Prunus serrulata</i>	Japanese cherry	9	9	<12
<i>Pyrus communis</i>	Pear	12	12	≤15
<i>Quercus petraea</i>	Sessile oak	28		30
<i>Quercus robur</i>	English oak	25	20	25
<i>Rosa canina</i>	Dog rose	6		
<i>Salix caprea</i>	Goat willow	10		10
<i>Salix cinerea</i>	Grey willow	7		7
<i>Salix viminalis</i>	Osier	7		
<i>Sambucus nigra</i>	Elder	6	10	
<i>Sorbus aucuparia</i>	Rowan	12	11	15
<i>Sorbus intermedia</i>	Swedish whitebeam	12		15
<i>Sorbus x thuringiaca</i> 'Fastigiata'	Hybrid service tree	10		10
<i>Tilia cordata</i>	Small-leaved lime	22	22	25
<i>Tilia x europaea</i>	Common lime	28	22	40
<i>Ulmus minor</i>	Smooth-leaved elm	15		30
<i>Viburnum opulus</i>	Guelder rose	4		

* - Maximum height of trees and shrubs growing under similar conditions in the local area. Estimate takes account of site exposure and ground conditions.

** - Average height attained by healthy trees growing in favourable ground and environmental conditions.

** - Height generally attained by healthy open-grown trees growing in their appropriate conditions and climatic range.

APPENDIX C – TREE QUALITY AND VALUE CATEGORIES

Table C1. Tree quality and value assessment categories
(from BS5837:2005, Table 1 – 'Cascade chart for tree quality assessment')

TREES FOR REMOVAL				
Category and definition	Criteria			Plan colour
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.	- Trees that have a serious, irreversible, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category tree (ie: 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 (eg: Dutch elm disease) or very low quality trees suppressing adjacent trees of better quality - NB: Habitat reinstatement may be appropriate (eg: R category tree used as a bat roost: installation of bat box in nearby tree).			Dark red
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria - Subcategories			Plan colour
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (eg: the dominant and/or principal trees within an avenue).	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (eg: avenues or other arboricultural features assessed as groups).	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (eg: veteran trees or wood-pasture).	Light green
Category B Those of moderate quality and value: in such a condition as to make a significant contribution (a minimum of 20 years is suggested).	Trees that might be included in the high category, but are downgraded because of impaired condition (eg: presence of remedial defects including unsympathetic past management and minor storm damage).	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (eg: trees of moderate quality within an avenue that include better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality.	Trees with clearly identifiable conservation or other cultural benefits.	Mid blue
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm.	Trees not qualifying in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit.	Trees with very limited conservation or other cultural benefits.	Grey
	NB: Whilst C Category trees will usually not be retained where they impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.			

APPENDIX D – SITE PHOTOGRAPHS



Photo.1 – Hybrid service tree 6, viewed from the north.



Photo.2 – Swedish whitebeam tree 7, viewed from the south.



Photo.3 – Pear tree 11 and silver birch trees 12-15, viewed from the north.

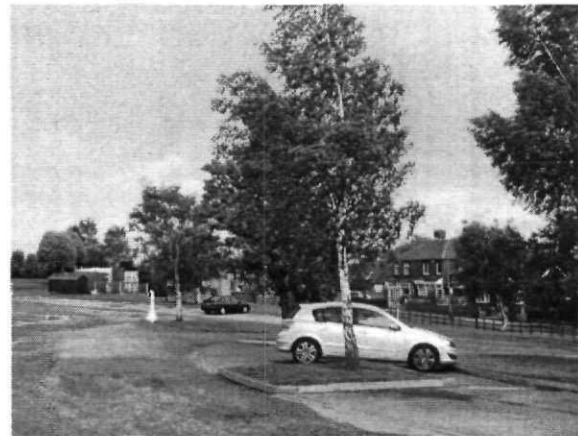


Photo.4 – Silver birch tree 12, viewed from the west.



Photo.5 – Group of mixed broadleaves G19, viewed from the north-west.



Photo.6 – Group of mixed broadleaves G37, viewed from the north-east.



Photo.7 – Group of mixed broadleaves G79, viewed from the north-east.



Photo.8 – Off-site hawthorn hedgerow and sycamore trees H81, viewed from the south-west.



Photo.9 – Swedish whitebeam tree 112 and hybrid service tree 111, viewed from the west.



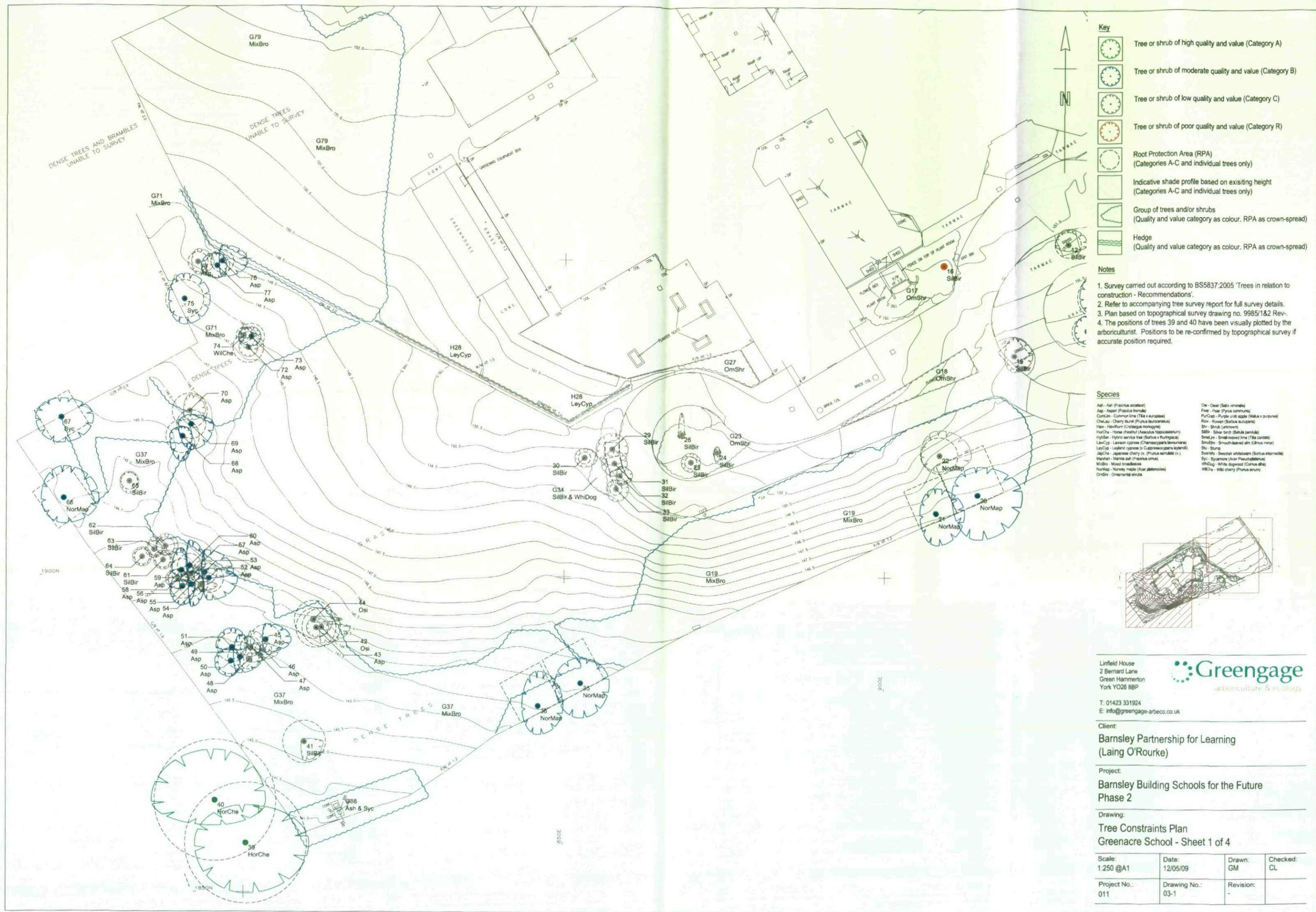
Photo.10 – Silver birch trees 113-116 and hybrid service tree 117, viewed from the east.

APPENDIX E – SITE BOUNDARY PLAN

(Barnsley MBC drawing)

APPENDIX F – TREE CONSTRAINTS PLAN

(Greengage drawing no.s 011/03/01-4)



- Key**
- Tree or shrub of high quality and value (Category A)
 - Tree or shrub of moderate quality and value (Category B)
 - Tree or shrub of low quality and value (Category C)
 - Tree or shrub of poor quality and value (Category R)
 - Root Protection Area (RPA) (Categories A-C and individual trees only)
 - Indicative shade profile based on existing height (Categories A-C and individual trees only)
 - Group of trees and/or shrubs (Quality and value category as colour, RPA as crown-spread)
 - Hedge (Quality and value category as colour, RPA as crown-spread)

- Notes**
- Survey carried out according to BS5837:2005 'Trees in relation to construction - Recommendations'.
 - Refer to accompanying tree survey report for full survey details.
 - Plan based on topographical survey drawing no. 9985/1&2 Rev-.
 - The positions of trees 39 and 40 have been visually plotted by the arboriculturist. Positions to be re-confirmed by topographical survey if accurate position required.

- Species**
- Ash - Ash (*Fraxinus excelsior*)
 - Asp - Aspen (*Populus tremula*)
 - ComLin - Common lime (*Tilia x europaea*)
 - ChesLau - Cherry laurel (*Prunus laurocerasus*)
 - Haw - Hawthorn (*Crataegus monogyna*)
 - HuChe - Horse chestnut (*Aesculus hippocastanum*)
 - HybSer - Hybrid service tree (*Sorbus x hortensis*)
 - LauCyp - Larch cypress (*Chamaecyparis lawsoniana*)
 - LeyCyp - Leyland cypress (*xCupressocyparis leylandii*)
 - JapChe - Japanese cherry (*Prunus serrulata* cv.)
 - ManMap - Manna ash (*Fraxinus ornus*)
 - MixBir - Mixed broadleaves
 - NorMap - Norway maple (*Acer platanoides*)
 - OmShr - Ornamental shrubs
 - Or - Oak (*Quercus robur*)
 - Pur - Pear (*Pyrus communis*)
 - PuCrab - Purple crab apple (*Malus x purpurea*)
 - Ros - Rose (*Rosa rugosa*)
 - Sil - Silver birch (*Betula pendula*)
 - SilBir - Silver birch (*Betula pendula*)
 - SmLm - Small-leaved lime (*Tilia cordata*)
 - SmShr - Smooth-leaved ash (*Fraxinus saxonica*)
 - Stu - Stump
 - SweWh - Swedish whitebeam (*Sorbus intermedia*)
 - Syc - Sycamore (*Acer pseudoplatanus*)
 - WhiDog - White dogwood (*Cornus alba*)
 - WCh - Wild cherry (*Prunus avium*)

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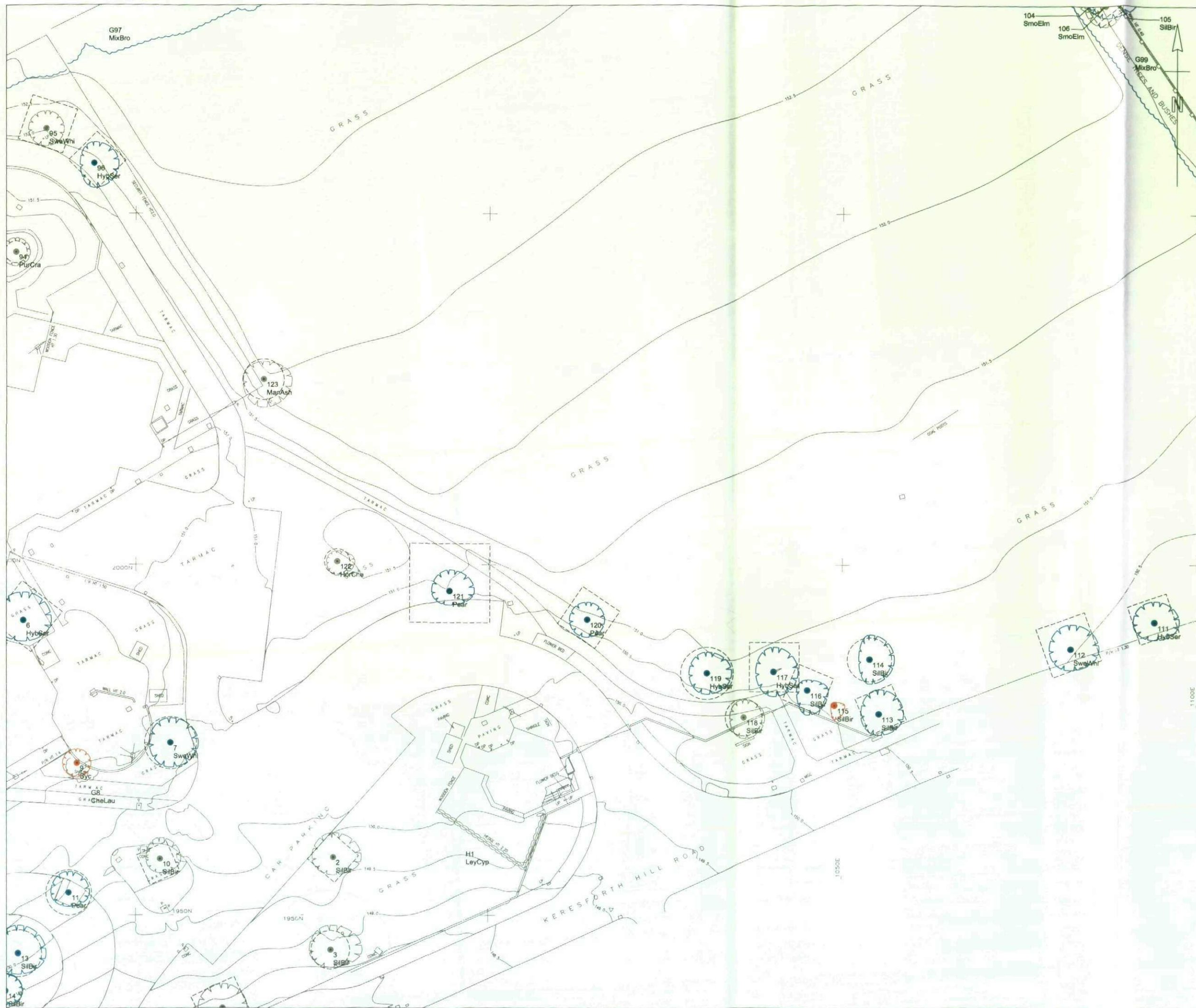
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Barnsley Partnership for Learning
(Laing O'Rourke)

Project:
Barnsley Building Schools for the Future
Phase 2

Drawing:
Tree Constraints Plan
Greenacre School - Sheet 1 of 4

Scale: 1:250 @A1	Date: 12/05/09	Drawn: GM	Checked: CL
Project No.: 011	Drawing No.: 03-1	Revision:	

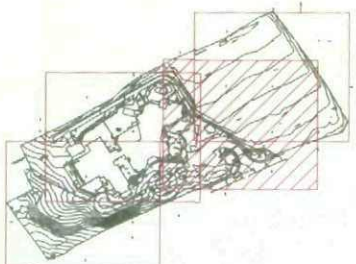


Key

- Tree or shrub of high quality and value (Category A)
- Tree or shrub of moderate quality and value (Category B)
- Tree or shrub of low quality and value (Category C)
- Tree or shrub of poor quality and value (Category R)
- Root Protection Area (RPA) (Categories A-C and individual trees only)
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- Hedge (Quality and value category as colour, RPA as crown-spread)

- Notes**
1. Survey carried out according to BS5837:2005 'Trees in relation to construction - Recommendations'.
 2. Refer to accompanying tree survey report for full survey details.
 3. Plan based on topographical survey drawing no. 9985/1&2 Rev-.
 4. The positions of trees 39 and 40 have been visually plotted by the arboriculturist. Positions to be re-confirmed by topographical survey if accurate position required.

- Species**
- | | |
|--|---|
| Ash - Ash (<i>Fraxinus excelsior</i>) | Oak - Oak (<i>Quercus robur</i>) |
| Ash - Ash (<i>Fraxinus excelsior</i>) | Pear - Pear (<i>Pyrus communis</i>) |
| Asp - Aspen (<i>Populus tremula</i>) | PurCra - Purple crab apple (<i>Malus x purpurea</i>) |
| ComLin - Common lime (<i>Tilia x europaea</i>) | Ros - Rose (<i>Rosa rugosa</i>) |
| Chela - Cherry laurel (<i>Prunus laurocerasus</i>) | SilB - Silver birch (<i>Betula pendula</i>) |
| Haw - Hawthorn (<i>Crataegus monogyna</i>) | SilBk - Silver birch (<i>Betula pendula</i>) |
| HybSer - Hybrid service tree (<i>Sorbus x thuringiaca</i>) | SmallLin - Small-leaved lime (<i>Tilia cordata</i>) |
| LeaCyp - Laminar cypress (<i>Chamaecyparis lawsoniana</i>) | SmallLin - Small-leaved lime (<i>Tilia cordata</i>) |
| LeyCyp - Leyland cypress (<i>Chamaecyparis leylandii</i>) | Stu - Stump |
| JapCh - Japanese cherry (<i>Prunus serrulata</i>) | SwiWhi - Swedish whitebeam (<i>Sorbus intermedia</i>) |
| ManAsh - Manx ash (<i>Fraxinus ornus</i>) | Syc - Sycamore (<i>Acer pseudoplatanus</i>) |
| MidBr - Mixed broadleaves | WhiDog - White dogwood (<i>Cornus alba</i>) |
| NorMap - Norway maple (<i>Acer platanoides</i>) | WCh - Wild cherry (<i>Prunus avium</i>) |
| OrnShr - Ornamental shrubs | |



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Drawing:
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