



Tree Survey & Arboricultural Impact Assessment Land at Carr House Drive, Durham

Site Address

Land at Carr House Drive, Newton Hall, Durham, DH1 5RP (Grid reference NZ 27975 45041).

Date

Site Visit – 15th September & 4th October 2023

Tree Survey & Arboricultural Impact Assessment (V2) – 11th October 2023

Introduction

Outline planning permission (ref: 4/03/00647/OUT) was granted on 03 Sep 2003, and subsequently on 20 May 2008 (ref: 4/08/00295/FPA) for the construction of one dwelling on land adjacent to Coxyde, Newton Hall, Durham. Full planning permission is now sought for the proposals. Pre-application consultation dating back to June 2022, has been undertaken with the Local Planning Authority (LPA), Durham County Council (DCC) (ref: PRE28/22/01453) in relation to the current proposals. No objections have been raised.

Tree Surveys and Arboricultural Impact Assessments (AIA) formed part of the previous applications. Since the trees on site have not been reinspected since 2008, an updated Tree Survey and Arboricultural Impact Assessment (AIA) are required to:

- 1) Assess the current health and condition of the trees;
- 2) Assess the implications of the proposed development upon the trees;
- 3) Provide recommendations to minimise the impact of the proposals upon the trees where possible.

Methodology

The site was visited on the 15th September 2023 and subsequently on 04th October 2023. During the site visit the trees were assessed as part of a Tree Survey, visually, from ground level in accordance with BS5837:2012, Trees in Relation to Design, Demolition and Construction. Details of the Tree Survey at set out within the Tree Schedule at Appendix 1.

Site constraints when undertaking the Tree Survey, included:

The site is very overgrown, making access / visibility of some of the trees difficult;

Many of the trees are covered in ivy and / or epicormic growth; restricting inspection.

Some trees are growing outside, but adjacent to the site boundaries (north, east and west). Access to the trees outside the east and western boundaries was not obtained due to landowner issues; therefore information on these trees (where necessary for the assessment) has been obtained from within the site only. In some instances tree stem diameters have been estimated from within the site or the previous Tree Survey data is used.

At the time of the inspection (s), weather conditions were wet. Light visibility was reasonable. As trees are living organisms, their condition is subject to change; therefore the details contained within this report are valid for a 12-month period.

The site is not within a Conservation Area, however a Woodland Tree Preservation Order (TPO) covers the site. Therefore any works to the trees must firstly be agreed with DCC, either as part of the planning application, or an application for tree works

A Topographical Survey with the trees plotted was provided by the Architect. Tree Survey information, is overlaid onto this drawing, to provide a Tree Location and Tree Constraints Plan ref: TLP_TCP02 dated 11.10.2023. The proposed layout is also shown on this drawing to assess the arboricultural impacts of the scheme.

Other information in this assessment includes:

Tree Schedule (with tree detail) - Appendix 1

TPO Details - Appendix 2

Photographs – Appendix 3

Terminology – Appendix 4

Tree Protection – Appendix 5

Site Survey

The site is located within a residential area at Newton Hall, Durham. It consist of an 'L' shaped parcel of land between two detached, residential properties Coxyde and No. 1 Newton Hall Cottage.



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The site consists of unmanaged grass, with scattered scrub and tree saplings, many with a stem diameter of less than 7cm, and therefore not qualifying as a 'tree'. There are a small number of high quality, dominant trees growing across the site, along with less dominant low value trees.

The site has a shared access from a track at the north western corner leading from Carr House Drive, that also provides access to Coxyde.

Tree Survey

There are five large, dominant, mature trees growing within the site, that appear to be of high amenity and conservation value. There are also a number of semi-mature and younger trees, this includes a group of trees growing north of a small retaining wall adjacent to the northern boundary, that have lacked past management and maintenance, are heavily suppressed by ivy and overall are of poor quality and value.

Full visual inspection of the trees was limited due to ivy and or epicormic growth. Once this is removed / severed it would be useful that trees are re-inspected for signs of decline that may not have been visible during the inspection (especially for tree T1845, which may have a cavity that is currently not due visible to ivy / epicormics, but recorded in the previous Tree Survey undertaken by others).

Arboricultural Impact Assessment (AIA)

The site is heavily constrained due to the presence of trees, tree root protection areas (RPA)'s and canopies. Development of the site cannot take place without encroachment into tree RPA's, therefore works will need to comply with a detailed Arboricultural Method Statement (AMS). Details are set out below in relation to the potential impacts and how they might be mitigated by specialist working Methods:

1. Proposed access off the highway (Carr House Drive) to the site entrance

The proposed access encroaches into the RPA of T919 (less than 20%). Track mats or something similar will need to be used to protect roots during construction. For the permanent access into the site, where the access is within the trees RPA, it will need to be constructed from non-dig methods and permeable materials.

2. Access driveway into the site and parking area

The existing access at the north eastern side of the drive is to be upgraded as part of the scheme. Additionally, the proposed access encroaches into the RPA of T11 (untagged) and T1845. The proposed driveway is sited as far away from these trees as possible, however encroachment into the trees RPA remains.

The proposed driveway (and / parking area) also impacts the following tree RPA's:

Tree No.	Tree Root Protection Area (m ²)	Amount of Encroachment (m ² / %)
T11 (not tagged)	452m ²	32m ² / 8% (approximate) Not including existing driveway
T1845	252m ²	35m ² / 14% (approximate) Not including existing driveway
T1846	91m ²	15m ² / 16% (approximate)
T1847	75m ²	13.5m ² / 13% (approximate)
T1848a	36m ²	Poor quality trees, not calculated / excavations too close to tree stem to retain.
b	43m ²	
T1849	18m ²	
T1850	260m ²	76m ² / 30% (approximate)
T1851	289m ²	90m ² / 31% (approximate)
A	326m ²	102m ² / 30% (approximate)
B	66m ²	2.1m ² / 4% (approximate)
C	72m ²	8m ² / 11% (approximate)

In most cases, encroachment is minimal (under 20%), however for trees T1850, T1851 and tree 'A' it is slightly higher, up to 30%.

Trees T11, T1850 and T1851, should be retained and protected as part of the proposals (the future of T1845 is to be confirmed due to the possible presence of a cavity in the trees stem). The driveway will need to be constructed

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from non-dig methods and using permeable materials and / or in accordance with The Association's Guidance Note 12: The Use of Cellular Confinement Systems near Trees.

The driveway is sited closer to the poorer quality trees T1848a to c and T1849, so that it is further away from the mature trees T1850 and T1851. Trees T1848a to c and T1849 will therefore need to be removed. However as these trees are suppressed and of poor quality, their removal is insignificant to the site and wider area. This part of the site is also screened by other trees outside the northern boundary.

Construction of the driveway adjacent to T1846 and T1847 will involve digging out some of the raised bed south of the trees. As these trees are suppressed and are of limited quality and value, it is advised that consideration also be given to their removal with the view to undertaking replacement planting with better quality, ornamental specimens more suitable to a residential scheme.

3. Proposed dwelling

Trees T1852 (Apple), and T1853 (Spruce) will need to be removed for the construction of the proposed dwelling. Both trees are low quality (Grey - C category trees). They are visually localised to the site and their removal will have no significant impact upon the site or wider area.

The dwelling is within the RPA's of several trees growing outside the eastern boundary whose roots are expected to encroach into the site. Some of the Lime trees within this group have been pollarded, and the trees are of limited quality and value. Where the dwelling is within the RPA's of these trees, pile and ground beam foundations that require reduced localised excavations to minimise root disturbance, removing the need for large plant, opposed to traditional foundations will need to be used.

Many of the trees growing outside / adjacent to the eastern boundary have been pollarded. Therefore canopy overhang over the dwelling should be limited and only minor tip pruning works to trim back overhanging branches required.

4. Hard and soft Landscaping

Details of hard and soft landscaping is currently unknown, however these works will be within tree RPA's and must therefore be undertaken using non-dig methods and using permeable materials.

5. Utilities

The details of underground services have not been provided. Any future installation must comply with National Joint Utilities Group (NJUG) guidelines when working in proximity of trees.

The details of the above working should be set out within an AMS once confirmed.

Conclusion

The site is constrained by existing trees within and surrounding the site, some of which are mature and have large overlapping RPA's. The proposals have been sited to retain as many trees as possible. Five trees (and a small Group of low quality Conifers) will need to be removed for the development (three of which, + the Conifer group are poor quality), however it is requested that an additional two trees be considered for removal with the view to undertaking replacement planting with better quality trees, more suitable for the proposed development (a residential scheme).

Much of the proposals involve works within tree RPA's. The only way this can be achieved is by sensitive working methods that will minimise root damage during construction. Some tree canopy pruning will be required to facilitate the work and manage future tree growth. These details (working methods and tree pruning works) should be set out in an AMS.

Recommendations

1. Tree works

Recommendations for tree works are set out within the Tree Schedule at Appendix 1. Tree works must be undertaken by a qualified Arborist and in accordance with BS3998. Tree works must be undertaken outside the nesting bird season (March to September inclusive), otherwise pre-works nesting bird checks must be undertaken.

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Where tree inspections have been restricted due to Ivy and epicormic growth on trees, the trees should be reinspected when this is removed.

2. Tree Protection

Once the layout of the scheme is finalised and agreed with the LPA, a Tree Protection Plan must be prepared to protect retained trees during the development. Tree protection will comply with Appendix 5 of this report to avoid risk of damage to trees during the work.

3. Arboricultural Method Statement

Once the scheme has been finished and details agreed, It is advised that a AMS be prepared that will set out specific working methods on site, adjacent to the trees

Prepared by: [Redacted]	Della Adams MRTPI, HND (Arb), TechArb We Care Tree Care Arboricultural Services [Redacted]	Date: V1: 11.10.2023
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Appendix 1 - Tree Schedule

Tree Tag No. / Group No.	Species	Age	Height (m)	DBH (cm)	Crown Spread south, east & west (m)	Height above ground level of		BS5837: 2012 Colour Retention Category	Structural Condition	Physiological Condition	Life Expectancy (yrs.)	Tree Detail	Recommendations	Root Protection Area (m) (radius from the centre of the tree)
						a) 1st branch & direction of growth	b) Canopy (m)							
919	Lime	Mature	20	48	4453	2m north	4	Blue (B1)	Fair	Fair	20-40	Multi-stemmed tree / group 4 stems + additional smaller stem to the south. Tree is outside of site but adjacent to the access. Growing on slight raised bed / mound. Included bark at base between unions. Competing canopy.	No action - outside site and client ownership. Works adjacent to the tree - Details to be agreed as part of a AMS.	5.8
11	Lime	Mature	20	Circa. 100	5344	3m south	5	Blue (B1)	Fair	Fair	20-40	Growing on raised mound at the entrance of the site (circa. 30 cm higher than the ground level). Heavy limb previously removed to the north west. Canopy and foliage appears to be full and healthy, however tree is covered epicormic growth therefore inspection limited / restricted (stem and tree base not visible). Previous report noted that the tree may have been topped out, however top of tree not visible at the time of the current inspection.	Remove epicormic growth (and re-inspect). Future tree works – crown clean and reduce canopy by 30%. Works adjacent to the tree - details to be	12

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Tree Tag No. / Group No.	Species	Age	Height (m)	DBH (cm)	Crown Spread south, east & west (m)	Height above ground level of		BS5837: 2012 Colour Retention Category	Structural Condition	Physiological Condition	Life Expectancy (yrs.)	Tree Detail	Recommendations	Root Protection Area (m) (radius from the centre of the tree)
						a) 1st branch & direction of growth	b) Canopy (m)							
													agreed as part of a AMS.	
1845	Sycamore	Mature	20	88	3774	4 south	4	Red	Poor	Poor	<10	Mature tree stem, covered in Ivy, dense vegetation at base and leaf litter, restricting inspection. Growing on slightly raised mound. Large spreading canopy. Tree grown competition with adjacent Lime. Deadwood in the western side of the tree's canopy. Stump to south. Large cavity on the eastern side of trunk (noted in previous inspections).	Decay detection work will need to be undertaken / tree or remove to ground level – TBC once cavity is made visible (currently restricted by Ivy).	10.6
1846	Sycamore	Semi-mature	14	Appro x. 45	2.5 5 22	3 south	2-4	Grey (C1)	Poor	Poor	10	Tree growing adjacent to the boundary fence (on other side of a raised bed retaining wall). Tree covered in dense Ivy, heavily suppressing tree and restricting inspection. Overall tree appears to be in decline (mostly likely due to Ivy) .	Sever Ivy, crown clean and formative prune. For the development – consider removal and replant.	5.4
1847	Ash	Semi-mature	14	41	1.5 111	-	6	Grey (C1)	Poor	Poor	<10	Tree growing adjacent to the boundary fence (on other side of a raised bed retaining wall). Tree covered in dense Ivy, heavily suppressing tree and restricting inspection. Tall spindly specimen with a limited branching system.	Sever Ivy, crown clean and formative prune. For the development –	4.9



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Tree Tag No. / Group No.	Species	Age	Height (m)	DBH (cm)	Crown Spread south, east & west (m)	Height above ground level of		BS5837: 2012 Colour Retention Category	Structural Condition	Physiological Condition	Life Expectancy (yrs.)	Tree Detail	Recommendations	Root Protection Area (m) (radius from the centre of the tree)
						a) 1st branch & direction of growth	b) Canopy (m)							
													consider removal and replant.	
1848a	Cherry	Young	8	28 31	4000	-	2-4	Red	Poor	Poor	<10	Tree growing adjacent to the boundary fence (on other side of a bed retaining wall). Heavily suppressed by Ivy. Overall low quality tree. Cankers around base.	Sever Ivy and monitor. For the development – remove.	3.4
1848b	Cherry	Semi-mature	10	31	4040	3m north east	4	Red	Poor	Poor	<10	Tree growing adjacent to wall (higher ground than site). Heavily suppressed by Ivy, in competition with adjacent trees. Canopy all north. Poor form.	Remove.	3.7
1848c	Conifer (group)	Young	4	Circa. 20	1111	-	-	Red	Poor	Poor	<10	Low quality Conifers growing on raised bed. In competition.	Suppressed and poor quality remove.	2.4
1849	Sycamore	Semi-mature	6	Appro x. 15 / 20	00 0.5 0	-	1-2	Red	Poor	Poor	<10	Small tree growing adjacent to boundary fence. Tree is leaning east. Top tree not visible due to Ivy. Poor form.	Sever Ivy. Crown clean / formative prune. For the development – remove.	2.4
1850	Lime	Mature	20 +	76	7786	2m north	3	Blue (B1)	Fair	Fair	20+	Dominant tree. Growing close proximity and in competition with adjacent Lime. Ivy and epicormics on stem and into canopy restricting inspection (stem not visible). Dense canopy – appears to be healthy. Buttresses formed at base.	Sever Ivy, remove epicormic growth and reduce canopy by 30%.	9.1



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Tree Tag No. / Group No.	Species	Age	Height (m)	DBH (cm)	Crown Spread south, east & west) (m)	Height above ground level of		BS5837: 2012 Colour Retention Category	Structural Condition	Physiological Condition	Life Expectancy (yrs.)	Tree Detail	Recommendations	Root Protection Area (m) (radius from the centre of the tree)
						a) 1st branch & direction of growth	b) Canopy (m)							
													Crown-clean. Works adjacent to the tree - details to be agreed as part of a AMS.	
1851	Lime	Mature	25	80	7655	No visible	2-3	Blue (B1)	Fair	Fair	20-40	Dominant tree. Growing close proximity and in competition with adjacent Lime. Ivy and epicormics on stem and into canopy restricting inspection (stem not visible past 4m). Dense canopy in contact with adjacent Lime.	Sever Ivy, remove epicormic growth and reduce canopy by 30%. Works adjacent to the tree - details to be agreed as part of a AMS.	9.6
1854	Sycamore	Semi-mature	25	84	6666	3m east	4	Blue (B1)	Fair	Fair	20-40	Covered in dense Ivy, on tree stem and trunk. Canopy not visible, however foliage appears to be healthy. Some deadwood. Leaf little decay vegetation at tree's base restricting inspection.	Sever Ivy, remove epicormic growth and reduce canopy by 30%.	10.1
1855	Norway Spruce	Semi-mature	17	50	3333	-	4	Grey (C3)	Fair	Fair	10-20	Tree suppressed, covered in Ivy restricting inspection.	Sever Ivy, remove epicormic growth and crown clean.	6.0



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Tree Tag No. / Group No.	Species	Age	Height (m)	DBH (cm)	Crown Spread south, east & west (m)	Height above ground level of		BS5837:2012 Colour Retention Category	Structural Condition	Physiological Condition	Life Expectancy (yrs.)	Tree Detail	Recommendations	Root Protection Area (m) (radius from the centre of the tree)
						a) 1st branch & direction of growth	b) Canopy (m)							
1853	Norway Spruce	Semi-mature	10	46	2333	3m east and west	2	Grey (C3)	Fair	Poor (Ivy)	10-20	Competing upper central leaders. Tree covered in Ivy, suppressing tree and restricting inspection.	Sever Ivy, remove epicormic growth and crown clean.	5.5
1852	Apple / Malus sp.	Semi-mature	4	29	3333	2m north	Less 2	Grey (C3)	Fair	Fair	10	Tree splits into codominant stem at approx. 0.75m. Canopy more north east.	No action. Tree will need to be removed for development proposal.	3.5
Group 1	Birch saplings	Young	2 to 4	Less than 10	Varies	<1	-	Grey (C1)	10	Fair	Fair	Saplings. Too overcrowded to grow to form good quality trees.	Will need to be removed for the development.	
A B C T1 T2 T3 T4 TY5 T6 T7 T8 T9 T10	A, B, T1 to T10 & Cherry, Sycamore & Lime C – Birch	Mostly Mature	10 to 15	Av. Circa. 60	Varies	-	2+	A – Red Others Grey & Blue (C & B)	10-20	Not visible		Not fully visible - growing outside / adjacent to site boundary (viewed from within site only). Some of the Lime trees have been pollarded. Visual inspection of the trees from within the site restricted due to dense epicormic growth on the tree stems, and into canopies.	Trees are outside of the site and client ownership. Minor tip pruning may be required to trim canopies back from the site boundary.	10.4 4.2 4.8 T1 to T10 - Av. Circa. 7.2



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Appendix 2 – TPO Details

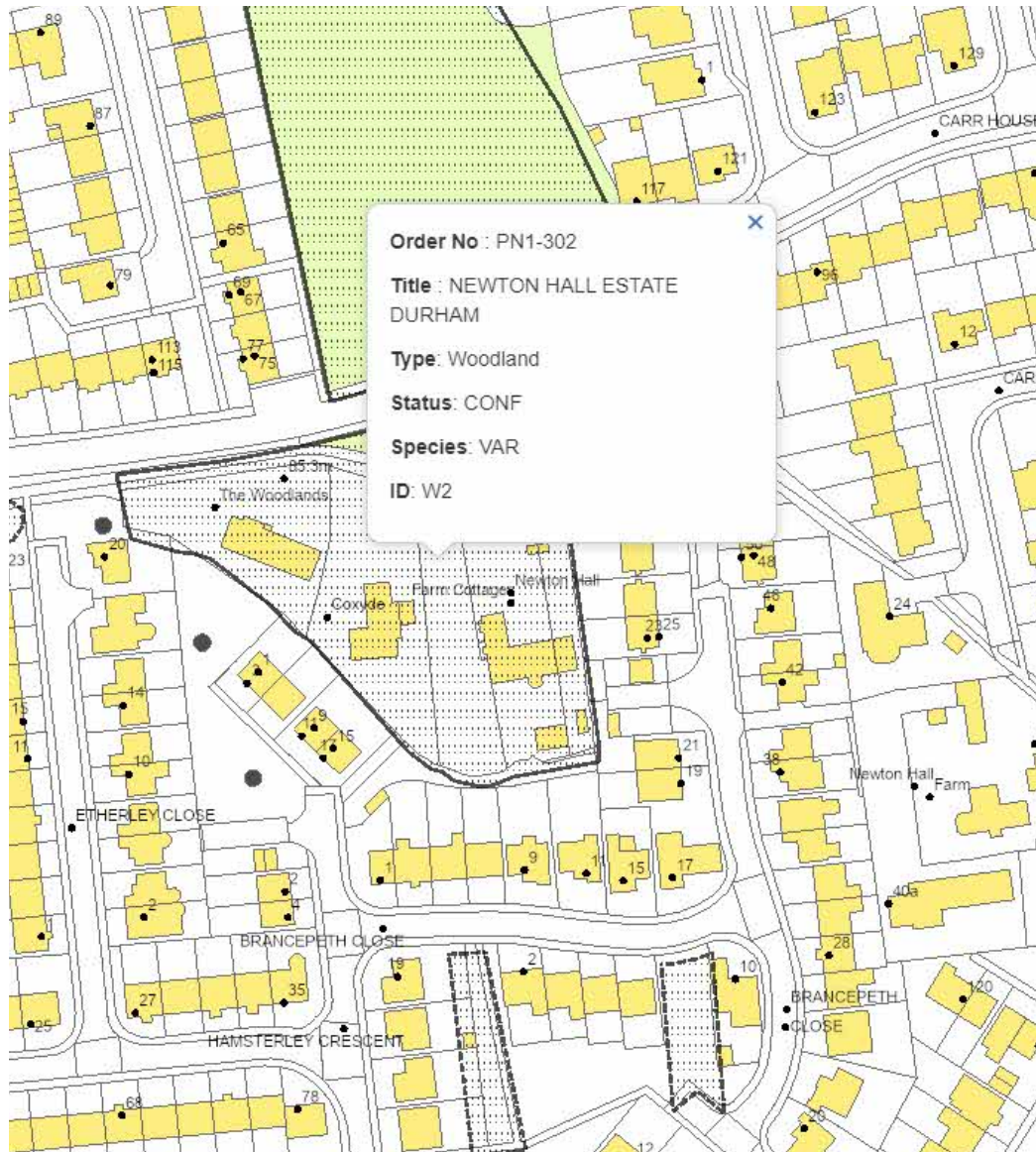


Figure 1 – Details of the TPO Woodland Order covering the site (Source Durham County Council TPO Maps)

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Appendix 3 – Photographs / Images



Photographs 1 – The overgrown / unmanaged condition, limiting visual inspection of the trees



Photographs 2 – The small low quality Birch trees growing across the site (to be removed a part of the development)



Photographs 3 – The small retaining wall at the front (north of the site) where trees are growing along the northern boundary. A section will need to be removed for the proposed access road.

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Photographs 4a & b – The existing access at the front of the site that leads on to Carr House Drive. Tree T11 and T1845 can be seen in the photograph.



Photographs 5 – Tree T1850 & T1841

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Photograph 6 – T1852



Photograph 6 – T1853

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Appendix 4 – Key to the ‘Tree Schedule’

- 1.0 Tree number: Where trees have been assessed individually, they were allocated individual ‘T’ or tree numbers. Where trees are in large groups and may be difficult to identify they have been ‘tagged’ with tree tags showing the allocated number. This is identified in the report.
- 1.1 Tree species: Tree species is identified and provided.
- 1.2 Age class: The estimated age of the tree, categorised as one of the following:
 - a) Young – Immature specimens, being in the early stages of life or development.
 - b) Semi-mature – half, or early stages of maturity.
 - c) Mature – Completely developed/ developed fully.
 - d) Over-mature –The latter stages of maturity, being past maturity and optimum life. The tree is therefore in latter stages of life
- 1.3 Tree Height: Estimated height of the tree given from base at ground level to top of canopy.
- 1.4 DBH: The trees ‘diameter at breast height’ and involves measuring the diameter of the trees trunk at a height of approximately 1.3 meters above soil level. This measurement is then used to calculate trees ‘Root Protection Areas’ (RPA), a definition of which may be found within the glossary.
- 1.5 Crown spread: The spread of the trees crown was estimated in meters “at four cardinal points to derive an accurate representational the crown”, e.g. from the centre of tree in north, south, east and western directions (BS 5837:2005).
- 1.6 Existing height above ground level of a) first significant branch and direction of growth, and b) canopy. This is used to inform on ground clearance, crown/stem ratio and shading.
- 1.7 Trees Condition – Structural / Physiological & further comments: General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations.
- 1.8 British Standard Colour Categorisation BS5837: 2012

Trees are allocated a ‘colour’ in accordance with the chart overleaf The colour categorises are a coding system which identifies the trees ‘retention value’ (see overleaf).



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Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan															
Trees unsuitable for retention (see Note)																	
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> • Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2															
	1 Mainly arboricultural qualities 2 Mainly landscape qualities 3 Mainly cultural values, including conservation																
Trees to be considered for retention																	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features															
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality															
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape															
	Table 2 Identification of tree categories <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 33%;">Category (from Table 1)</th> <th style="width: 33%;">Colour ^{A)}</th> <th style="width: 33%;">RGB code ^{A)}</th> </tr> </thead> <tbody> <tr> <td>U</td> <td>Dark red</td> <td>127-000-000</td> </tr> <tr> <td>A</td> <td>Light green</td> <td>000-255-000</td> </tr> <tr> <td>B</td> <td>Mid blue</td> <td>000-000-255</td> </tr> <tr> <td>C</td> <td>Grey</td> <td>091-091-091</td> </tr> </tbody> </table>		Category (from Table 1)	Colour ^{A)}	RGB code ^{A)}	U	Dark red	127-000-000	A	Light green	000-255-000	B	Mid blue	000-000-255	C	Grey	091-091-091
Category (from Table 1)	Colour ^{A)}	RGB code ^{A)}															
U	Dark red	127-000-000															
A	Light green	000-255-000															
B	Mid blue	000-000-255															
C	Grey	091-091-091															
	^{A)} Colours verified against http://safecolours.rigdenage.com/palettefiles.html#files [viewed 2012-03-26].																



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- 1.9 Estimated remaining contribution in years in accordance with BS 5837: This is a professional judgement may on the expected remaining life / contribution of the tree. The following categories apply.
- a) Less than 10.
 - b) 10-20
 - c) 20-40
 - d) More than 40.
- 1.10 Recommendations: Advice is given on any recommended on tree works based on surveyor's experience and knowledge.
The following terms may be used:
- a) Crown clean – involves the removal of dead, dying, diseased damaged and crossing branches, usually undertaken for the health and longevity of the tree, but also as a means of reducing potential risk associated with branch failure.
 - (b) Crown raise/lift – the selective removal of the lower branches to raise the lower canopy of the tree. This may be undertaken to allow avoid obstruction to pedestrians/vehicles. Such works may be prescribed as a method of formative pruning to improve the shape of trees, particularly younger specimens.
 - (c) Crown Thin – the selective removal of branches within the crown reduce crown density, allowing the increased penetration of light and air to pass through the canopy. This is usually prescribed as a percentage thin.
 - (d) Removal – complete removal of the tree, usually to a height just above existing ground level unless indicated otherwise.



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Appendix 5 – Tree Protection

- 1.0 Trees to be retained need to be protected in accordance with BS5837: 2012. Measurements were obtained on site which enabled the tree's root protection areas (RPA) to be calculated, the details of which are shown on the attached TLP_TCP02, details include:
- 1.1 Barriers and ground protection (Extract Taken from BS 5837: 2012)
- 1.2 “All trees that are being retained on site should be protected by barriers and/or ground protection before any materials or machinery is brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Where, due to site constraints, construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection should be installed....”
- 1.3 Where required, pre-development tree work may be undertaken before the installation of tree protection measures, with the agreement of the project arboriculturist or local planning authority if appropriate. It should be confirmed by the project arboriculturist that the barriers and ground protection have been correctly set out on site, prior to the commencement of any other operations” (BS 5837: 2012).
- 1.4 Barriers

“Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Barriers should be maintained to ensure that they remain rigid and complete. The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.
- 1.5 Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority. For example, 2 m tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b)”. (BS 5837: 2012).



Tree Survey & Arboricultural Impact Assessment Land at Carr House Drive, Durham

Figure 2 Default specification for protective barrier

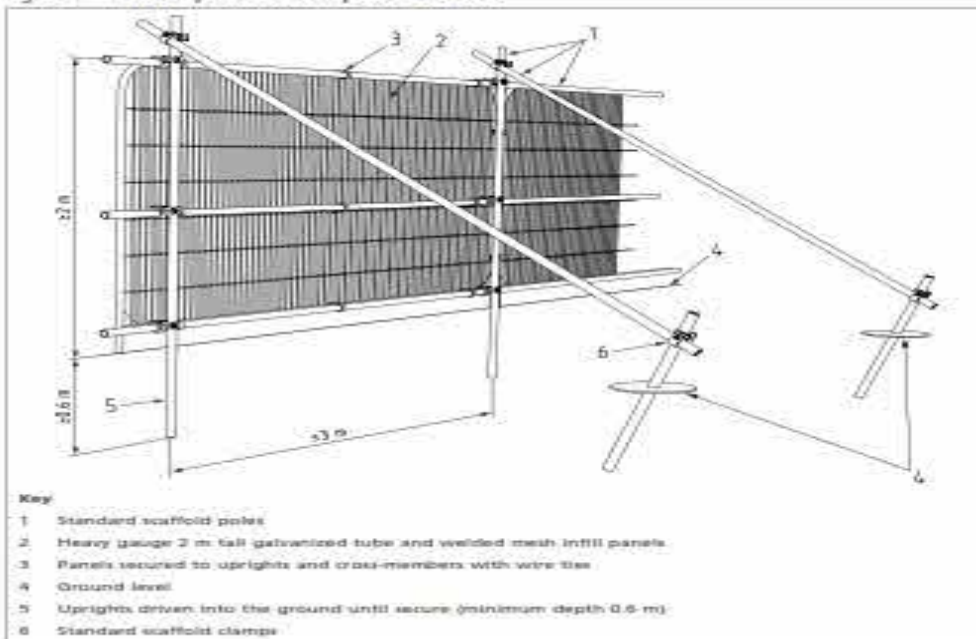


Figure 3 Examples of above-ground stabilizing systems

