Bolton Hall

Bolton upon Dearne

– BS 5837 Tree Survey



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1. Introduction

1.1.1 Ecus Limited were commissioned by Bolton Hall Senior Living Ltd. to undertake a tree survey of the Bolton Hall site off Carr Head Lane in Bolton upon Dearne. The site location is shown on Figure 1 below.

1.1.2 The survey and report sets out the findings of the survey and recommendations have been made for preliminary tree work that may be required.

Figure 1 – Location Plan



2. Methodology

2.1 Tree Survey

2.1.1 Ecus carried out the tree survey in October 2014 when the trees were partially in leaf. The tree survey was a ground based visual inspection carried out by an arboriculturist. The trees were not tagged as part of the survey.

2.1.2 The inspection of the trees, the site and the immediate surrounding area was carried out by Verena Meyer, CMLI TechArborA.

2.1.2 The following characteristics were recorded:

- Species
- Stem diameter at 1.5m above ground level (mm).
- Estimated height (m)
- Approximate crown diameter (m) as North, South, East and West measurements.
- An estimate of the number of years that the tree is likely to remain suitable for retention.

  <10 = less than 10 years

  10+ = 10-20 years

  20+ = 20-40 years

  40+ = more than 40 years

- Age class

  YNG = Young and recently established trees

  SM = Semi-mature trees age less than 1/3 life expectancy

  EM = Middle age trees 1/3 – 2/3 life expectancy

  M = Mature trees over 2/3 life expectancy

  OM = Over mature – declining or moribund trees of low vigour

- Condition category in accordance with *BS5837: Trees in relation to the design, demolition and construction recommendations (2012)*. The categories listed are defined as per BS5837:2012 and briefly are:

  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

  A = Those of high quality and value - best trees with a long expected safe life

  B = Those of moderate quality and value

  C = Those of low quality and value and trees less than 15cm diameter

- Value subcategories in accordance with *BS 5837:2012.* The subcategories listed are defined as per BS5837:2012 and briefly are:

  1 = Mainly arboricultural values

  2 = Mainly landscape values

  3 = Mainly cultural values, including conservation

- General notes about physiological and structural condition and any management recommendations.

2.1.3 A topographic survey of the site was not provided and an OS map tile was used as the basis for producing the tree survey plan. The base map does not show any tree locations within or 12m outside the development site and therefore all tree locations shown on the Tree Survey Plan in Appendix 3 were estimated.

2.1.4 A topographic survey should be carried out to verify these tree positions to ensure tree removal, tree retention and tree protection in relation to any proposed development can be planned and managed appropriately.

2.1.5 The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders and Conservation Area status by consulting with Barnsley Metropolitan Borough Council officers.

2.2 Root Protection Area (RPA)

2.2.1 Below ground constraints to development are represented by the root plate around a tree which needs protecting in order for the tree to be incorporated into a proposed scheme, without adverse harm to the tree or structural integrity of any proposed foundation structures. This area is illustrated by the Root Protection Area (RPA) and is calculated according to the formulae set out in BS5837:2012 clause 4.6.1.

2.2.2 Any deviation in the RPA from the original circular plot should take account of physical site conditions that influence the disposition of tree roots, e.g. streams, building foundations and retaining walls.

3. Survey Results

3.1 General Site Description

3.1.1 The site is part of the premises of Bolton Hall and comprises the building in the south and areas of grassland to the east of the building and on either side of the access drive in the north. The trees surveyed during the site visit are scattered across the areas of grassland, with two large beech trees located in private garden just outside the site boundary.

3.1.2 A public footpath crosses the site, connecting Carr Head Lane in the north and a public open space to the south of the site. All trees can be seen from public viewpoints.

3.2 Results of Tree Survey

3.2.1 Table 1 describes the results of the tree survey and includes preliminary management recommendations. The table should be read in conjunction with Figure 2 Tree Survey and Tree Constraints Plan. This drawing illustrates the location of the trees surveyed, the extent of their canopies as well as the root protection areas (RPA) of each tree and tree group.

3.2.2 During the survey, 36 individual trees have been recorded. A full survey to BS 5837 (2012) was carried out for those trees, including the recording of the stem diameter to determine the Root Protection Area (RPA) of the trees.

3.2.3 The species recorded on site are predominantly native and naturalised and include ash *(Fraxinus excelsior)*, sessile oak *(Quercus petraea)*, whitebeam *(Sorbus aria)*, yew *(Taxus baccata)*, wild cherry *(Prunus avium)* and beech *(Fagus sylvatica cv.)*, with a small number of ornamental cherry species *(Prunus sp.)* scattered along the west of the drive.

3.2.4 The quality of trees varies considerably across the site. Large high quality trees (category A) in good condition include the large beech trees located outside the site boundary (T13 and T36) and a number of mature sessile oak (T17, T19 and T20). T4 and T5 are of a similar age and overall landscape value, however, have been downgraded because of impaired condition, including stem cavities, which may reduce their safe and useful life expectancy. Of category B are also a number of early mature ash and yew scattered over the site (T11, T14, T22 and T23) which are in good to fair condition and contribute to the green character of the site.

3.2.5 Five trees were assessed as being 'unsuitable for retention' (category U), which includes three mature oaks which are of such condition that they may fail and cause damage or injury to people in particular along the public footpath, the building and neighbouring properties. T3 has repeatedly suffered from severe stem damage by arson which caused a large cavity at the base of the tree. T16 and T18 have cavities at the base of their stems which lead to relatively large areas of internal decay, with T18 leaning severely over towards the adjacent private garden in the east. These trees should be removed as soon as possible. T35 is a dead tree the split stem of which is compromising the health and structural condition of adjacent ash T29. Both trees should be removed.

3.2.6 All other trees are relatively young, in fair condition and of low landscape value (category C).

3.2.7 A number of trees on site were previously tagged.

3.3 Tree Designations

3.3.1 The Tree Officer at Barnsley Metropolitan Borough Council confirmed that trees to the east of the access drive and the building are covered by Area TPO reference 1/1978 (A1).

3.3.2 An Area TPO applies to all the trees that were in existence at the time the TPO was made, i.e. in 1978, and which are therefore 36+ years old. It was confirmed by the Tree Officer that the tags recorded on the trees in the east of the site relate to the TPO and that they identify which trees are protected (tags 2553 to 2544). A number of trees along the west boundary were also tagged (tags 0183 to 0188), however, this is unrelated to the TPO.

3.3.3 Tree T36 located outside the west boundary is protected under Group TPO reference 5/1984 (G2).

3.3.4 Trees protected by the Area TPO 1/1978 and Group TPO 5/1984 are identified on the Tree Survey Plan in Appendix 3.

3.3.5 Group TPO reference 1/1978 (G1) covers trees to the west of the building which have not been included in this survey.

Trees covered by Tree Preservation Order (TPO)

3.3.6 The Tree Preservation Order prohibits the topping, lopping, damaging, wilful destruction and uprooting of the tress covered by the TPO without prior consent of the Local Authority. This includes any work proposed in close proximity that may have an impact on both above and/or below parts of these trees.

3.3.7 Consent needs to be sought from the local planning authority if tree removal work or tree management work affect protected trees within the site or those which overhang the site boundary. Tree works must not be carried out without permission.

3.3.8 Work will also be permitted if it is included in an Arboricultural Impact Assessment, Arboricultural Method Statement and/or Tree Protection Plan approved by the Local Planning Authority where development proposals for a site have been granted Planning Permission.

4. Arboricultural Impact Assessment and Method Statement

4.1 Arboricultural Impact Assessment

4.1.1 An Arboricultural Impact Assessment of the proposed site plan has been undertaken to assess the likely impact of the development on existing trees and tree groups. This assessment is based on the development plan provided by the Architect (ref: OS Mastermap_150915 and OS Mastermap_140915_Footpath diversion plan received September 2014) and estimated tree positions (see 2.1.3 and 2.1.4)

4.1.2 The client proposes the erection of five 'mobility studios' to the west of the access drive and the installation of five car parking spaces on the opposite side of the drive. A secure garden is proposed to the east of the existing building, with screen planting to protect guests from views into the site. The proposals require the realignment of the existing public footpath and the installation of a new boundary fence.

4.1.3 The development plan indicates that, based on estimated tree positions, 16 trees within the red line site boundary will need to be removed to accommodate the new development, five of which are unsuitable for retention and require removal irrespective of any development proposals.

4.1.4 The loss in particular of the mature category U trees will have a relatively high impact on the landscape and views of the site. Three of the trees proposed for removal are covered by Area TPO ref. 1/1978 (A1) and the felling must not be carried out without approval from the Local Authority.

4.1.5 The construction work may have an impact on both above and below parts of existing trees proposed for retention, including soil compaction in Root Protection Areas, branch and stem damage by construction plant and direct root damage by excavations. The bungalow construction will lead to the loss of approximately 5% of the RPA of T36.

4.2 Recommendations

4.2.1 A full topographic survey should be carried out to verify tree positions on site.

4.2.2 As the development proposals assume the removal of 16 trees growing within the site, no protection measures will be required for those trees.

4.2.3 It is recommended that replacement tree planting is carried out along the new footpath and to the north east and east of the existing main building. The trees should be planted at minimum Heavy Standard size. Proposed tree species should be long-lived and suitable for the limited space available.

4.2.4 Hard surfacing within the RPA of retained trees should be installed avoiding any excavations to minimise the damage to existing roots.

4.2.5 All works proposed to the east of the main building, incl. fence and footpath installation should be carried out avoiding the use of heavy machinery, which should be excluded from this area due to the density of protected trees.

4.2.6 Trees to be retained should be protected by fencing in accordance with BS 5837:2012. Where construction and access is justified within the RPA, temporary ground protection should be installed to minimise soil disturbance and compaction.

4.2.7 Where conflicts may arise between the development and tree canopies, access facilitation may be carried out in accordance with the methodology described in 4.3.

4.3 Arboricultural Method Statement (AMS)

4.3.1 The Arboricultural Method Statement should be read in conjunction with Figure 3 Tree Protection Plan.

Protective Barrier

4.3.2 The development design prepared for the site indicates that a number of trees within the site are being retained and that they need to be protected by fencing during the development works to BS 5837 (2012) to create a sacrosanct Construction Exclusion Zone (CEZ).

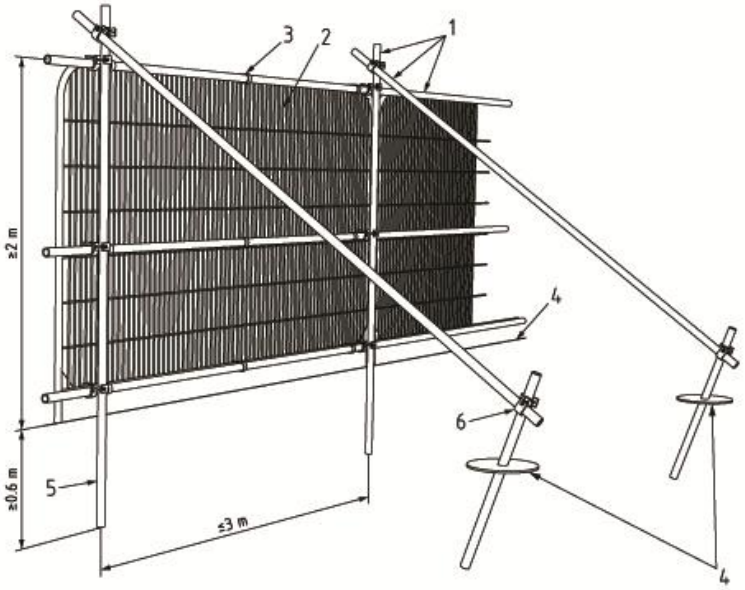
4.3.3 The protective barrier should be installed in accordance with the default specification for protective barrier as shown in Figure 4 below. Protective fencing should be erected before any work commences on site. Protective fencing should be removed only on completion of all construction work.

4.3.4 The alignment of the protective barrier should aim to maximise the RPA within unmade ground to be protected from compaction during construction operations. The detailed alignment is shown in Figure 3 Tree Protection Plan. Where soft landscape areas are proposed within unmade ground, this should also be included in the CEZ where practical.

4.3.5 Trees for removal do not need protection. The individual trees to be removed should be identified and marked by an arboricultural consultant. Approval from the Local Authority is required before any trees are removed which are protected by a TPO.

4.3.6 Assuming the footpath and fence installation east of the building can be carried out without the use of heavy machinery, no protective barrier will be required to the east of the main building. Prior to any use of heavy loads in this area, the Figure 3 will need to be amended to show a protective barrier to protect both RPA and canopies of the trees.

Figure 4: Default Specification for Protective Barrier to BS 5837 (2012)



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Temporary Ground Protection and soil improvement (T36)

4.3.7 Where unmade ground within the RPA of trees but outside the protective barrier is exposed to construction damage and/or soil compaction, temporary ground protection should be installed immediately following the erection of tree protection fencing and prior to starting work on site.

4.3.8 The ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

4.3.9 The location and extent of the ground protection is shown in Figure 3 Tree Protection Plan. The design should be based on BS 5837 (2012) clause 6.2.3.3. and should be appropriate for the construction traffic expected to use the site.

4.3.10 Following completion of construction works, the ground protection should be removed and the ground reinstated without soil disturbance. Should a hard landscape margin such as a gravel strip be proposed around the new building, this should be installed using a no-dig approach and permeable material.

4.3.11 In order to improve the rooting area of T36 following the loss of 5% of its RPA during construction, it is recommended to improve ground conditions of any unsurfaced ground within the remainder of the tree's RPA within the site to encourage root growth. Initially, soil investigations should determine any requirement for aeration, irrigation and addition of nutrients, including the addition of mycorrhizae to improve soil ecology.

No dig construction

4.3.12 Hard landscaping proposed within the Root Protection Areas (RPA) needs to be constructed avoiding excavations.

4.3.13 New hard surfacing should only be installed on completion of surrounding construction work.

4.3.14 A geotextile will be laid out on top of the existing ground, before a three-dimensional Cellular Confinement System (CCS) will be installed, acting as the sub-base. Infill materials should include no-fines aggregate (granular) sub-base layer which when compacted is free draining and allow gaseous exchange. Clean angular stone 4-20mm or 20-40mm in diameter, or angular gravel over 4mm are able to create a positive interlock with the CCS.

4.3.15 The wearing course should be a permeable surface allowing gaseous exchange and the infiltration of water into the root zone.

4.3.16 Kerbs and edgings that require excavations should not be used. Where kerbing is required for light structures, above-ground peg and board edging might be acceptable.

Installation of power supply and services

4.3.17 Underground power supply and services routed through the RPA should be installed in accordance with BS 5837:2012 clause 7.7.2. and NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

Fence construction within RPAs

4.3.18 Where fence posts need to be installed within RPAs, excavations should be minimal and carried out using hand held tools. Fence posts should be erected at least 1m from trees, using metal post support spikes within the RPA.

Excavation for new tree and shrub planting

4.3.19 Excavations for tree and shrub planting should be carried out by hand and without severing any roots larger than 25mm diameter.

Access facilitation pruning

4.3.20 The following trees require pruning to facilitate the development:

Tree No.	Proposed tree works	Reason
T4, T13, T17, T19, T20	Raise canopy over proposed footpath to 2.5m	To create clear height over proposed footpath
T36	Raise canopy to 1m above proposed ridge level	To prevent conflicts between branches and roof structure

4.3.21 Due to these trees being protected by a Tree Preservation Order, permission has to be sought from the Local Planning Authority before any pruning and management work can be carried out on protected trees.

4.3.22 Tree management work can be carried out if:

- Written consent to the work was given by the Local Planning Authority.
- The tree management proposals are listed by the Local Planning Authority as an approved document on granting Planning Permission.

5. Tree Management

5.1.1 The following section provides some general guidance as to how retained trees could best be protected during construction. More detailed guidelines for tree protection during construction are given in BS5837: Trees in relation to the design, demolition and construction recommendations (2012).

5.1.2 Any development proposals should seek to safeguard category A and B trees and trees growing offsite as well as their root protection areas (RPA). In addition refer to specific management recommendations in Appendix 1 for any other trees to be retained.

5.1.3 Any trees being retained during a proposed development will need to be adequately protected during any approved development works. As a general rule at this site, measures to protect trees should follow the best practice principles set out in BS5837: Trees in Relation to design, demolition and construction – recommendations (2012).

5.1.4 Any tree roots severed during site clearance works should be wrapped or covered with hessian sheets as an immediate protection measure against rapid temperature changes. This should be removed prior to backfilling which should be carried out as soon as possible.

5.1.5 Table 1 lists any preliminary management recommendations for each tree which include monitoring or maintenance works necessary to maintain the tree's health and structural integrity and ensure the safety of people using the site and the public, irrespective of any development proposals.

5.1.6 Prior to any construction or development work proceeding, the RPA's of individual trees to be retained should be marked out using the distances provided in the table within Appendix 1. Marking out should be completed by a person with arboricultural or horticultural expertise as individual trees will have root zones that may be affected by local conditions and allowances will need to be made to accommodate this. The best practice principles have been broadly summarised below:

- All trees retained adjacent to the site should be protected by barriers or ground protection around the calculated Root Protection Area (RPA) and as indicated on any Tree Protection Plan (TPP) that may be produced in association with the assessment.

- Any fencing required should be erected prior to commencement of construction and before demolition including erection of any temporary structures. Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor.

- Arrangements should be made for an arboriculturist to supervise works and tree protection where trees are particularly vulnerable or sited close to access points.

- Pre-development works may be undertaken prior to the installation of fencing with the agreement of the local planning authority.

- All tree works should follow best practice procedures as set out in BS 3998 (2010). All trees should be maintained in good condition on site and be inspected annually (where overall condition requires) or every 2 years and after any major storm events, with safety a priority.

- Fencing should be clearly visible and suitable for the location, type and

proximity of construction activity.

- It may be appropriate on some sites to use temporary site offices as components of the protection barriers.

- Where it has been agreed and shown on a Tree Protection Plan, construction access may take place within the RPA if suitable ground protection measures are in place (e.g. existing surfaced car park areas). In other areas this may comprise single scaffold boards over a compressible layer laid onto geo-textile materials for pedestrian movements. Vehicular movements over the RPA will require the calculation of expected loading and may require the use of proprietary protection systems.

- Once areas around trees have been protected by fencing, any works on the remaining site area may be commenced providing activities do not impinge on protected areas. Notices should be placed on fencing to indicate that operations are not permitted within the fenced area.

- Wide or tall loads etc. should not come into contact with retained trees. Banksman should supervise transit of vehicles, jibs, booms etc. where this is in close proximity to retained trees.

- Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree bole. No concrete mixing should be done within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.

- No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.

- Notice boards, telephone cables or other services should not be attached to any part of a retained tree.

- Where it is deemed necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment, as part of construction works, and such equipment would have potential to cause injurious contact with crown material i.e. low branches and limbs, of retained trees within the RPA fencing, it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obvious problem branches. This is classed as ‘Facilitation Pruning’ within BS 5837 (2012). Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturist.

- It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery, as described above. To firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.

- In the event of having caused any such branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with BS 3998 (2010) Recommendations for Tree Work, to correct the damage, upon completion of development.

- All of the above precautionary measures should be applied to minimise the effect of any damage to long-term tree health and safety.

It is recommended that any trees that require removal or significant canopy works, should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

6. Appendix 1 – Tables and Figures

Table 1 - Tree Survey Schedule

Appendix 1: BS5837 Tree Schedule

Key:	Measurements	Age – Class	Overall Condition	BS 5837 2005 : Cascade Chart for Quality Assessment/Retention Category	Symbols:
	MS – Multi-stemmed	YNG – Young Mature	G – Good	A – High	< = less than
	Ht - Height in metres	SM – Semi-mature	F – Fair	B – Moderate	~ = approximately
	Stem – Stem Diameter at 1.5m in mm	EM – Early mature	P – Poor	C – Low	> = greater than
	Crown – Crown spread in metres	M – Mature	D - Dead	U – Unsuitable for retention	
	TD - Trunk division (height in metres)	OM – Over mature		**Sub-categories:**	
		Est Yrs – estimate of years remaining (40+ years; 20+ years; 10+ years, <10 years)		**1** = mainly arboricultural values **2** = mainly landscape values **3** = mainly cultural values.	

RPA = Root protection area (equivalent to a circle with a radius 12 x the stem diameter of single stem trees or 12 x the notional stem diameter of multi stemmed trees as per BS 5837:2012 clause 4.6). This will be capped to 707m² for trees with a stem diameter larger than 1.25m.

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m²)
T1	Sorbus aria	8	300	3.5-4-2.5-3	1.8	M	10+	Fair	Crossing branches, sign screw to stem, forks with included bark, previously pruned	-	C1	3.60	40.72
T2	Sorbus aria	7	230	3-3-3-3	2	M	10+	Fair	Fork at 0.5m, crossing branches and stems, previously pruned	-	C1	2.76	23.93
T3	Quercus petraea	20	690	8-7-8-6	1.8	M	<10	Good	Severe arson damage of stme including hollowing, some deadwood in canopy including large deadwood to north, screws in stem at 2m	Fell and remove stump as medium priority, deadwood removal as high priority	U	8.28	215.38

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T4	Quercus petraea	20	780	7-7-9-5	1.8	M	20+	Good	Tree tag 2553, stem opening at base leading to internal cavity	Further assessment of extent of internal deay, monitor annually to detect development of deadwood and other signs of decline	B2	9.36	275.23
T5	Quercus petraea	18	570	6.5-8-9.5-4.5	3	M	20+	Fair	Tree tag 2552, large deadwood at 4m east and south, slight lean to east, stem damage at base to west indication possible fracture point	Remove large deadwood and monitor damage at base to detect any link between lean and stem damage	B2	6.84	146.98
T6	Acer pseudoplatanus	10	180	3-3-3-2	2	EM	20+	Fair	Some ivy on stem	-	C2	2.16	14.66
T7	Acer pseudoplatanus	10	200	3-2-2.5-2	1	EM	20+	Fair	Ivy covered stem	-	C2	2.40	18.10
T8	Fraxinus excelsior	10	260	6-5-2.5-4.5	1.5	EM	20+	Fair	Some ivy on stem, fork at 1.2m	-	C2	3.12	30.58
T9	Sorbus aria	6	130	3-3-1-2.5	1.8	EM	10+	Fair	-	-	C2	1.56	7.65
T10	Sorbus aria	8	140	2.5-2.5-2-2.5	1	EM	20+	Fair	Twin stemmed	-	C2	1.68	8.87
T11	Fraxinus excelsior	12	260	4-5-5.5-5.5	1.4	M	40+	Good	-	-	B2	3.12	30.58
T12	Sorbus aria	4	120	1.5-1.5-1.5-1.5	2	SM	20+	Fair	-	-	C1	1.44	6.51
T13	Fagus sylvatica 'Atropurpurea'	20	900	9.5-9-9-10	2	M	40+	Good	Located off site	-	A2	10.80	366.44

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T14	Taxus baccata	11	440	3.5-3.5-4-4	1.2	M	40+	Good	Tag 2550, two screws in stem, fork at 1.4m with second stem removed and dry cavity forming at fork	-	B2	5.28	87.58
T15	Sorbus aria	8	220	2.5-2.5-2.5-2.5	2	M	10+	Fair	Twin stemmed, stems twisted around each other	-	C1	2.64	21.90
T16	Quercus petraea	22	720	8-8-5.5-8	2.5	M	<10	Fair	Tag 2549, large cavity at base with extensive internal decay	Fell and remove stump	U	8.64	234.52
T17	Quercus petraea	22	420	7.5-6.5-3.5-7.5	1.5	M	40+	Good	Tag 2548	-	A2	5.04	79.80
T18	Quercus petraea	22	690	7.5-10-9.5-6	2.5	M	<10	Fair	Tag 2547, severe lean to east, large cavity at base to east leading to extensive internal decay	Fell and remove stump	U	8.28	215.38
T19	Quercus petraea	22	410	4-3.5-8-6	1	M	40+	Good	Likely to have been tagged 2546	-	A2	4.92	76.05
T20	Quercus petraea	22	570	7.5-5-4-5	1.6	M	40+	Good	Tag 2545, Some deadwood	-	A2	6.84	146.98
T21	Fraxinus excelsior	10	190	4-4-3-2.5	1	SM	20+	Fair	Twin stemmed	-	C1	2.28	16.33
T22	Fraxinus excelsior	14	260	2-3.5-4.5-6	1.7	M	40+	Good	Tag 2544	-	B2	3.12	30.58
T23	Fraxinus excelsior	14	280	4-4.5-2-5	1.5	M	40+	Good	Possibly protected under tag 2544	-	B2	3.36	35.47
T24	Prunus avium	12	300	5.5-5.5-4.5-5	2	M	10+	Fair	Infection with bacterial canker	-	C2	3.60	40.72

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T25	Fraxinus excelsior	12	320	5-6.5-5-5	1.7	M	20+	Fair	Signs of previous tagging, large number of pruning cuts	-	C2	3.84	46.32
T26	Prunus avium	8	210	3.5-4-3.5-3.5	2.5	M	10+	Fair	-	-	C1	2.52	19.95
T27	Fraxinus excelsior	9	200	5-5-1.5-1.5	1.8	EM	10+	Fair	Suppressed by T36, signs of previous tagging	-	C2	2.40	18.10
T28	Prunus sp.	6	150	3-5-4-1	2	M	10+	Fair	Tag 0188	-	C1	1.80	10.18
T29	Fraxinus excelsior	6	140	1.5-3-3-3	2	SM	<10	Fair	Tag 0186, split stem of T35 leaning into canopy	Fell and remove stump	U	1.68	8.87
T30	Fraxinus excelsior	12	220	3-3.5-3.5-3.5	2	EM	20+	Fair	Tag 0185, deadwood throughout canopy	-	C2	2.64	21.90
T31	Prunus sp.	6	310	3-3-3.5-2	1.8	EM	10+	Fair	Bacterial canker infection	-	C2	3.72	43.47
T32	Fraxinus excelsior	8	190	3-3-2.5-3	2.5	EM	10+	Fair	Tag 0183, some deadwood	-	C2	2.28	16.33
T33	Prunus sp.	4	160	2.5-2.5-2-2	1.5	EM	10+	Fair	Nest at 3m	-	C2	1.92	11.58
T34	Sorbus aria	7	210	2-2-2.5-1.5	1.5	EM	10+	Fair	-	-	C1	2.52	19.95
T35	*dead tree*	14	360	0-10-10-5	1.8	OM	<10	Poor	Fork at 1.5m with one stem splitting off main stem and leaning into canopy of T29	Fell and remove stump	U	4.32	58.63
T36	Fagus sylvatica	20	500	8-8-8-8	3.5	M	40+	Good	Located outside site boundary	-	A2	6.00	113.10

7. Appendix 2 - Site Photographs



Arson damage on T3 cavity



Stem damage of T5 to be monitored



Wooded south east corner of the site



Cavity at base of T16



TPO trees along the east of the site



Dead tree T35 leaning to the south



Leaning oak T16



Off site beech T13 (category A)

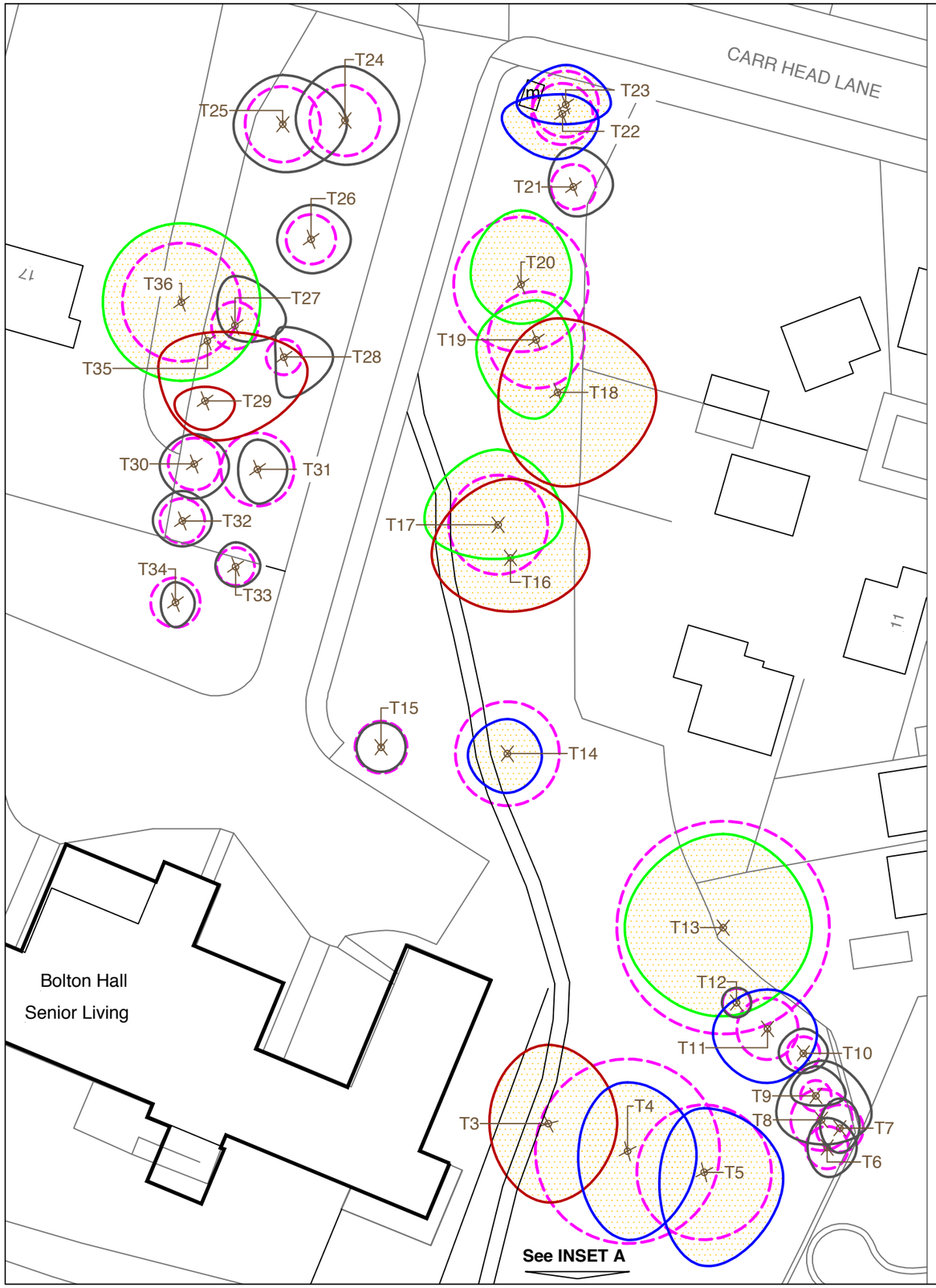


Early mature ash and cherries along west boundary

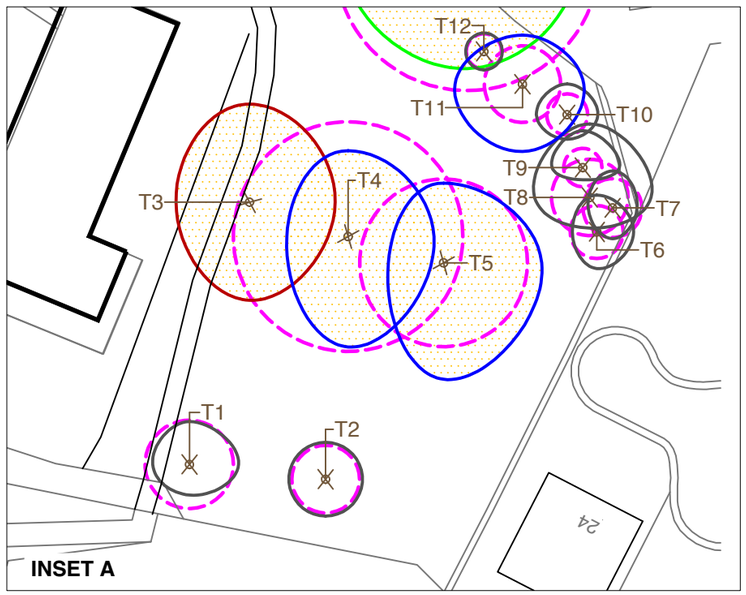


Early mature trees along west boundary

8. Appendix 3- Tree Survey and Tree Constraints Plan







KEY- Tree Survey and Tree Constraints Plan
(to be read in conjunction with Ecus Ltd. Tree Survey report ref. 5249)

Tree surveyed by Ecus - tree location approximated by Ecus

Tree categories (BS 5837:2012)

Category A Trees

Category B Trees

Category C Trees

Category U Trees

Root Protection Area (RPA) of category A, B and C trees

Trees protected by Barnsley Council Tree Preservation Order

Rev	Date	Initials	Checked	Revision
A	21.10.14	VM	ECUS	PRELIMINARY

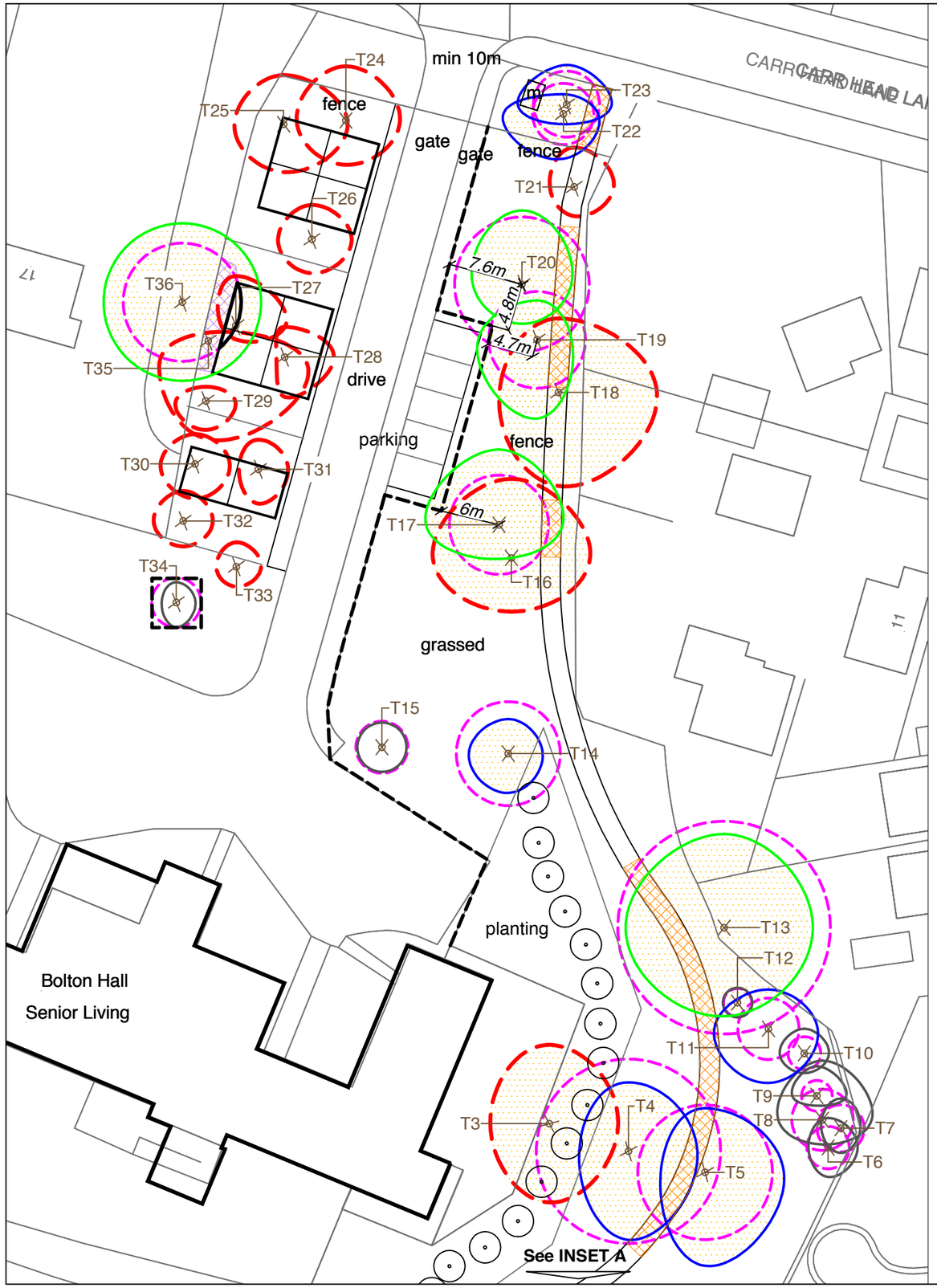
ecus ENVIRONMENTAL CONSULTANTS
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Job
BOLTON HALL SENIOR LIVING

Title
Figure 2
Tree Survey and Tree Constraints Plan

Drawn by	Date	Scale @ A3	Drg. no.
VM	Oct 2014	1:500	L5249/01

9. Appendix 4- Tree Protection Plan



KEY- Tree Protection Plan
(to be read in conjunction with Ecus Ltd. Tree Survey report ref. 5249)

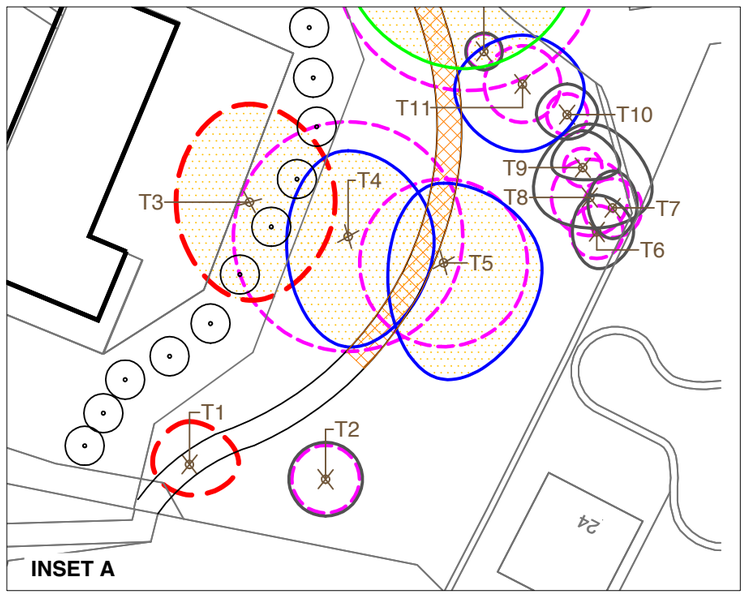
- Tree surveyed by Ecus - location of tree centre from topographic survey
- Tree surveyed by Ecus - tree location approximated by Ecus

Tree categories (BS 5837:2012)

- Category A Trees
- Category B Trees
- Category C Trees
- Category U Trees
- Existing tree to remove

- Root Protection Area (RPA) of trees to be retained
- Tree Protection Barrier As default specification in accordance with BS5837:2012
- Temporary ground protection
- No-dig paving construction
- Trees protected by Barnsley Council Tree Preservation Order

N



Rev	Date	Initials	Checked	Revision
A	22.10.14	VM	ECUS	PRELIMINARY

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Title
Figure 3
Tree Protection Plan

Drawn by	Date	Scale @ A3	Drg. no.
VM	Oct 2014	1:500	L5249/02