TASE Barnsley – BS5837:2012 Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement

Bowmer and Kirkland

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Contents

Executive Summary

On behalf of Bowmer and Kirkland (the Client), Ecus Limited (Ecus) has carried out a tree survey to BS 5837:2012 *Trees in relation to design, demolition and construction - Recommendations* in December 2021 at TASE Barnsley, Keresforth Close, Barnsley, S70 6RS. The survey has formed the basis of an assessment of the impact development proposals may have on existing trees and any methodologies to be adopted to protect any retained trees.

The survey records all trees within the site and all those which may be affected by any development proposals within the site boundary, recording a number of parameters including species, crown spread and Root Protection Area (RPA).

The RPA of any given tree is the area of ground around that tree which should not be disturbed by excavation, compaction, changes in level or other construction/demolition operations. The extent of the RPA is calculated in accordance with BS 5837:2012, and is an important part of the methodologies described in this report.

The survey recorded 18 tree groups and 95 individual trees. The trees were generally of low to moderate quality and in a good overall condition.

The Client proposes the construction of a sports centre with associated access, landscaping and facilities. This will require the removal of 1 tree group, 41 individual trees and a section of 1 further tree group, but may also have an impact on the above and below ground parts of retained trees unless adequate protection of these trees is provided.

This report details the arboricultural impact and offers a range of protection measures that should be put in place prior to works starting on site as well as construction methodologies which should be adopted. These measures as described in detail in Chapter 5 will prevent accidental damage and other adverse effects on the health of retained trees:

- Protective fencing;
- Construction within RPA
- Soft landscaping and planting within RPA; and
- Arboricultural Clerk of Works.

This report also makes further recommendations for any measures to mitigate or compensate the loss of trees within the site and the likely impact on the site and the local landscape. These include:

- Replacement tree planting to compensate for the loss of trees.
- The preparation of a Landscape Management Plan to ensure the continued monitoring of retained trees and the establishment of newly planted trees and shrubs.

For ready reference, Figure 1.1 (Chapter 1) is a simplified version of the 'Design and Construction Process and Tree Care' table outlined in BS 5837:2012. The table clearly identifies processes and obligations expected at the various stages of the construction project. BS 5837:2012 is considered an iterative process, and as such the project arboriculturist's advice should be ongoing.

List of Figures and Tables

1. Introduction

1.1 Context of this document in the Planning System

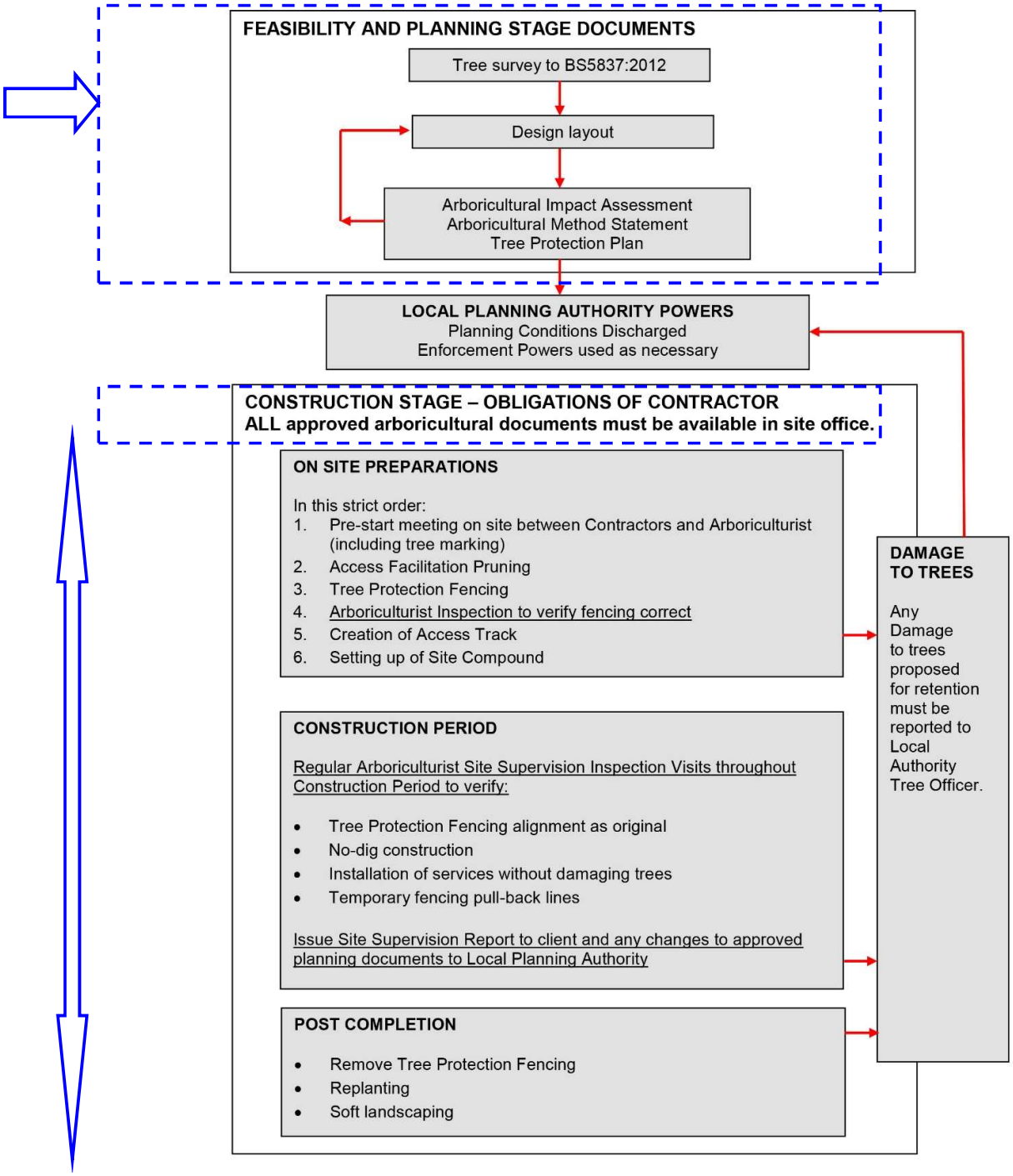


Figure 1.1 - The Design and Construction Process and Tree Care

1.1 This document has been prepared at the feasibility and planning stage of a project.

1.2 If it becomes an approved planning Arboricultural Method Statement (AMS) of tree protection measures and/or a Tree Protection Plan (TPP), a copy should be to hand in the site office at all times during the construction stage.

1.2 Location

1.2.1 Ecus Limited (Ecus) was commissioned by Bowmer and Kirkland to undertake a tree survey of the site at TASE Barnsley, Keresforth Close, Barnsley, S70 6RS, centred at UK Ordnance Survey Grid Reference SE 334055. The site location is shown on Figure 1.2.

Figure 1.2 – Location Plan
© OpenStreetMap contributors

1.2.2 The survey was carried out in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction - Recommendations*. This report sets out the findings of the survey and recommendations have been made for preliminary tree work that may be required.

1.3 Tree Designations

The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders (TPO) and Conservation Area status by checking the map information available on the Barnsley Metropolitan Borough Council website: www.barnsley.gov.uk/services/parks-and-open-spaces/tree-preservation-orders/.

1.3.1 None of the trees surveyed are protected by a TPO and the site is not within a Conservation Area.

Ancient Woodland/Veteran Trees

1.3.2 The site does not contain any recorded veteran trees as shown on the Ancient Tree Inventory maintained by the Woodland Trust (ati.woodlandtrust.org.uk).

2. Tree Survey Methodology

2.1 Site survey

2.1.1 Ecus carried out the tree survey in December 2021 when the deciduous trees were not in leaf. The tree survey was a ground based visual inspection carried out by a suitably qualified arboriculturist. The trees were not tagged as part of the survey.

2.1.2 The inspection of the trees within the site and the immediate surrounding area was carried out by Dave Farmer FdSc MArborA.

2.1.3 The weather during the survey was cold and clear with moderate winds. Weather conditions on the day of the survey allowed for a thorough inspection of all trees included in this survey.

2.1.2 The following characteristics were recorded:

- Species
- Stem diameter at 1.5 m above ground level (mm).
- Estimated height (m)
- Approximate crown spread (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; or
    - 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; and
    - OM = Over mature – declining or moribund trees of low vigour.
- Condition category in accordance with BS 5837:2012 *Trees In Relation To Design, Demolition and Construction - Recommendations*. The categories listed are defined as per BS 5837:2012 and briefly are:
    - 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;
    - Category A = Those of high quality and value, with a long safe life expectancy;
    - Category B = Those of moderate quality and value; and
    - Category 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 BS 5837:2012 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.

2.1.4 The survey recorded all trees on site with a stem diameter of 75 mm or more at 1.5 m height and includes all trees outside the site boundary which may be affected by any future development of the site, either by their crown overhanging the site or their Root Protection Area (RPA) potentially

extending into the site.

2.1.5 A full topographic survey of the site was provided; this was used as the basis for producing the tree survey plan. The topographic survey did not pick up some tree locations within or outside the development site and therefore some tree locations were estimated. These trees are marked with a cross on Figures 3.1 and 5.1.

2.1.6 Estimated tree locations are plotted with the internal GPS of a handheld data collection device, and an accuracy of +/- 2 m should be assumed.

2.1.7 At the time of carrying out a site survey it is not always possible to know which trees will be in conflict with development proposals. Therefore, when proposals are confirmed, it may be that arrangements are made to check measurements on site, especially where development is proposed very close to existing trees.

2.1.8 Trees are living organisms that change over time. The condition of all trees described by this survey must be checked by a suitably qualified arboriculturist before works commence, especially if there have been any storm events or 12 months or more have passed since the survey was carried out.

2.2 Calculation of Root Protection Area (RPA)

2.2.1 Below ground constraints to development are the significant roots around a tree which need protecting in order for the tree to be incorporated into a proposed scheme, without adverse harm to the tree or the structural integrity of any proposed foundation structures being compromised. This area is illustrated by the RPA and is calculated according to the formulae set out in BS 5837:2012 clause 4.6.1.

2.2.2 Any deviation in the shape of the RPA from the calculated circular shape should be based on physical site conditions that influence the disposition of tree roots, e.g. water courses, building foundations and retaining walls.

3. Tree Survey Results

3.1 General Site Description

3.1.1 The site is a now a closed NHS centre, approximately 1.4km to the south west of Barnsley town centre. There are residential properties to the east, south and west, and the grounds of a large sports club to the north.

3.1.2 The trees surveyed during the site visit are primarily located in dense groups close to the site boundaries. The trees in the central areas of the site are generally smaller individuals that are less established.

3.1.3 Much of the north eastern half of the site is taken up by the buildings and driveways of the NHS centre, while the south western half is a large and relatively flat open field.

3.1.4 The trees that surround the open field area are particularly prominent, being highly visible from the main road that passes the western and southern boundaries of the site and the residential properties beyond. The trees in the north eastern half are less prominent due to the site topography, but provide some comprehensive screening between the site and the surrounding areas.

3.2 Results of Tree Survey

3.2.1 The Tree Survey Schedule in Table 3.1 (Appendix 1) describes the results of the tree survey and includes preliminary management recommendations. The table should be read in conjunction with Figure 3.1 Tree Survey and Tree Constraints Plan (Appendix 4). This drawing illustrates the location of the trees surveyed, the extent of their canopies as well as the RPA of each tree and tree group.

3.2.2 18 tree groups and 95 individual trees have been recorded during the survey. A full survey to BS 5837:2012 was carried out for those trees, including the recording of the stem diameter to determine the RPA of the trees.

3.2.3 The vast majority of the trees included within the survey were of low individual value, retention category ‘C’. While none of these trees should pose any significant constraint to the future development of the site, they collectively formed a significant landscape feature and comprehensively screened much of the site from the surrounding properties. The large scale clearance of trees across the site should be avoided and lower value trees should be retained where they do not conflict with the design proposals.

3.2.4 The majority of the higher value trees were located close to the boundaries of the large field area in the south western half of the site. These included the birch, Norway maple, Swedish whitebeam and sycamore trees and groups G86, T87, T89 to T95, T99, T100, T102 to T105, T107, T108 and G109. These trees formed a particularly prominent landscape feature that was visible from within the majority of the site and for some distance beyond to the south and west.

3.2.5 Within the north eastern half of the site, beyond the boundary trees and groups of varying quality, that gained the majority of their value collectively, there were only the occasional trees of moderate individual value. These had generally been planted in locations where their root growth and access to light had not been restricted by the surrounding structures, allowing them to become better established, with less significant defects than the lower value trees that surrounded them. Of particular note are the Swedish whitebeams T20, T21, T48, T49, T58, T66, T69, T76 and T77; ash T45 and T46; and beech T50 and T75.

3.2.6 The willow T59 and sycamore T97 were both in a particularly poor condition with the potential to

cause some level of damage or harm in the current context of the site. A large pine tree had also failed within the group G42 and was resting in the canopy of surrounding trees. It is advised that T59, T97 and the failed tree within G42 are removed to ground level regardless of any development of the site.

Table 3.2: Summary of Tree Survey Findings

Category A	Category B	Category C	Category U
None	**Trees:**	**Trees:**	**Trees:**
	2 ash	1 alder	1 goat willow
	2 beech	1 apple	1 sycamore
	1 black pine	1 ash	
	5 cherry	18 cherry	
	1 hornbeam	1 crack willow	
	4 Norway maple	2 goat willow	
	2 silver birch	1 hornbeam	
	21 Swedish whitebeam	1 pedunculate oak	
	8 sycamore	7 rowan	
		1 silver birch	
		10 Swedish whitebeam	
		3 sycamore	
	Groups:	**Groups:**	
	1 black pine group	1 black pine group	
	1 Norway maple group	1 crack willow group	
	2 mixed species groups	1 sycamore group	
		11 mixed species groups	
Total 0 Trees 0 Groups	**Total** 46 Trees 4 Groups	**Total** 47 Trees 14 Groups	**Total** 2 Trees 0 Groups

4. Arboricultural Impact Assessment (AIA)

4.1 Introduction

4.1.1 A BS 5837:2012 Arboricultural Impact Assessment (AIA) has been carried out for trees present across the site. This methodology evaluates the direct and indirect effects of the proposed development and where necessary recommends mitigation. The British standard states:

> "*The assessment takes account of the effects of any tree loss required to implement the design, and any potentially damaging activities proposed in the vicinity of retained trees. Such activities might include the removal of existing structures and hard surfacing, the installation of new hard surfacing, the installation of services, and the location and dimensions of all proposed excavations or changes in ground level, including any that might arise from the implementation of the recommended mitigation measures. In addition to the impact of the permanent works, account has been taken of the buildability of the scheme in terms of access, adequate working space and provision for the storage of materials, including topsoil*."

4.1.2 To ensure clarity and consistency Ecus has adopted a similar approach to evaluating impacts on the tree as would be used in undertaking an Environmental Impact Assessment (EIA). The methodology used assesses the sensitivity of the receptor and the magnitude of change to give a significance of any affect. The detailed methodology is outlined in Appendix 3.

4.2 Development Proposals

4.2.1 An AIA of the proposed site plan has been undertaken to assess the likely impact of the development on the existing trees. This assessment is based on the development plan provided by the Client (ref: Ares Landscape Architects FS0954-ALA-XX-ZZ-DR-L-0001/2 dated September 2021).

4.2.2 The client proposes the construction of a sports centre with associated access, landscaping and facilities.

4.3 Arboricultural Impact Assessment

Direct Impact from Development

4.3.1 The development proposals indicate that 41 trees, 1 tree group and the southern section of 1 further group within the red line site boundary will need to be removed to accommodate the new development, including new structures and hard surfacing.

4.3.1 A total of 13 category 'B' trees (T9, T14, T17, T20, T21, T29 to T31, T66, T69 and T75 to T77), 28 category 'C' trees (T3 to T6, T16, T22 to T28, T32, T52, T53, T62 to T65, T67, T68, T70 to T74, T111 and T112) and 1 category 'C' group (G82) will have to be removed to facilitate the development, along with several trees within the category 'C' group G12.

4.3.2 The sensitivity of this loss will be medium (as detailed at Appendix 3) due to the category of the trees to be removed and their local value. The magnitude of this loss in the context of the wider site will be medium as the trees to be removed are a small proportion of the total number of trees across the site, and their loss will mostly be shielded from the wider view by the dense surrounding tree cover. The overall effect of the proposed tree removals will therefore be moderate.

4.3.3 While there will be some loss of amenity value from the proposed removals it will not significantly detract from the landscape value of the wider site. This loss can largely be mitigated through the planting of suitable species, particularly in the open area to the east of the site and along the north western boundary adjacent to Keresforth Close.

4.4 Recommendations

4.4.1 Chapter 5 Arboricultural Method Statement describes measures to protect the retained trees during the development, and operations within the RPA of retained trees including:

- Protective fencing;
- Arboricultural Clerk of Works;
- Removal of protective fencing; and
- Soft landscaping.

4.4.2 It is recommended that replacement tree planting is carried out throughout the site but particularly in the open area close to the eastern boundary and along the north western boundary adjacent to Keresforth Close. The trees should be planted at minimum 12-14 cm standard size.

4.4.3 The planting of diverse species that are in keeping with the surrounding landscape character and tolerant of climate change will provide mitigation for the required tree removals and can increase the amenity value of the site in the longer term.

4.4.4 Tree planting and establishment should be carried out in accordance with BS 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations.*

4.4.5 It is recommended that tree planting follows the 5 – 10 – 20 – 30 formula (i.e.no more than 5% of any one cultivar, no more than 10% of any one species, no more than 20% of any one genus, and no more than 30% of any one family.) This gives any new tree population maximum resilience against pests and diseases.

5. Arboricultural Method Statement (AMS)

5.1 Important Founding Principle of BS 5837:2012

5.1.1 The most important and effective process, in terms of preventing damage to trees on a construction site, is the timely erection of tree protection fencing. **This must be erected as the first operation on site**, for example, before access track construction, before Contractors site cabins, and before trenching for service runs.

5.1.2 The founding principle of BS 5837:2012 *Trees in relation to design, demolition and construction - Recommendations* is that the protective fencing is erected before any other operation. However, it is noted that the fencing provides an unnecessary and potentially dangerous restriction to essential tree works and therefore tree works can be carried out before fencing is erected.

5.2 General

5.2.1 The Arboricultural Method Statement (AMS) should be read in conjunction with Figure 5.1 Tree Protection Plan in Appendix 4. The AMS paragraphs below are written in the chronological sequence they are to be carried out:

5.3 Pre-Commencement

5.3.1 It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery on site. The meeting will firstly highlight the potential for damage occurring to tree crowns, but thereafter ensure that extra care is applied when manoeuvring any machinery within close proximity of retained trees to prevent any contact with the tree and consequent damage to crown, stem or roots.

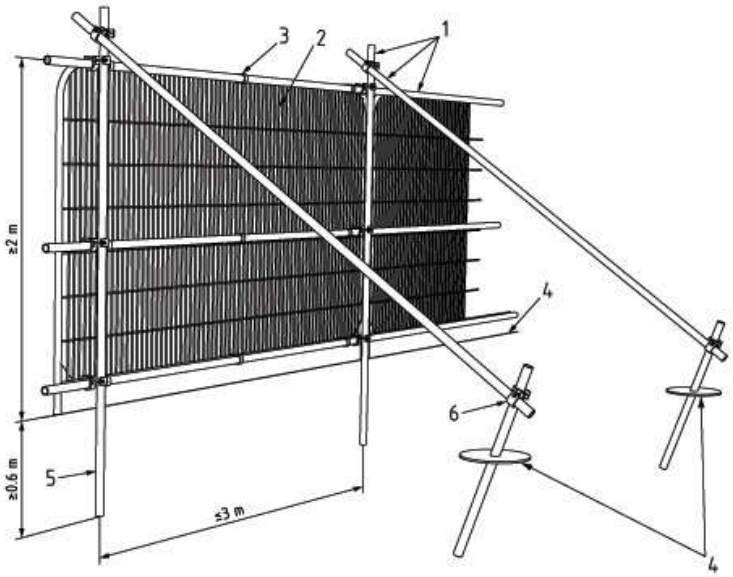
5.3.2 For clarity, prior to any construction or development work proceeding, the alignment of the protective fencing and the RPAs of any individual trees to be retained which are not able to be protected by fencing should be marked out using the distances provided in the table within the tree survey report. Marking out should be completed or approved by a person with arboricultural 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. This may be done prior to, or during, the Pre-Commencement Site Meeting.

5.4 Protective Barrier/Tree Protection Fencing

5.4.1 The development design prepared for the site indicates that a large number of trees are being retained. These trees need to be protected from all demolition and construction operations by a protective barrier (fencing to BS 5837:2012 which creates a sacrosanct Construction Exclusion Zone (CEZ).

5.4.2 The alignment of the protective barrier is generally based on the calculated extent of the RPA in accordance with BS 5837:2012. The detailed alignment is shown in Figure 5.1 Tree Protection Plan in Appendix 4.

5.4.3 In principle, protective fencing should be erected before any construction operations start on site and before the storage of plant, machinery and materials, and should be removed only on completion of all works on site.



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

Figure 5.2: Default Specification for Protective Barrier to BS 5837:2012

5.4.4 The default specification for the protective barrier is shown in Figure 5.2 above. It may be appropriate on some sites to use temporary site offices as components of the protection barriers, on the understanding that they will remain in situ for the duration of the demolition and construction works, and their removal will be planned to ensure the Contractor's co-ordinated withdrawal from site away from the trees rather than towards them.

5.4.5 BS 5837:2012 clause 6.2.2.3 specifies an alternative protective barrier where site circumstances and associated risk of damage incursion into the RPA do not necessitate the default level of protection. This can include 2m tall welded mesh panels (e.g. Heras fencing) on rubber or concrete feet to protect from cars, vans, pedestrians and manually operated plant. The alternative specification for the protective barrier should only be used if and where agreed with the Local Planning Authority.

5.4.6 All weather notices should be placed on fencing to indicate that operations are not permitted within the fenced area, for example "CONSTRUCTION EXCLUSION ZONE – NO ACCESS" or similar.

5.4.7 Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor.

5.4.8 The presence of long grass and other vegetation in the 'Construction Exclusion Zone' is a welcome indicator that the protected area has been left undisturbed. However, on occasion, and certainly towards the end of the project, it is acceptable to cut the vegetation by hand held strimmer or scythe taking care not to work within 300mm of the tree trunk (to avoid damaging the bark). Vegetation within 300mm of the trunk can be cut with non-mechanised shears.

5.5 Installation of power supply and services

5.5.1 There are currently no proposals to route services or utilities through the RPA of any retained trees. If this changes at a later stage of the project, proposals should be submitted to the local planning authority Tree Officer for approval.

5.5.2 As guidance only, any 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.

5.6 Removal of Protective Fencing

5.6.1 Tree protective fencing can only be removed once construction is complete, and all plant, machinery and materials have been removed from the site.

5.7 Soft landscaping

5.7.1 Where soft landscaping is proposed within the RPA of retained trees, excavations should be kept to the minimum required to provide adequate conditions for the establishment of new shrubs and trees. Excavations should be carried out carefully and by hand, avoiding the severance of any roots larger than 25mm diameter.

Fencing within RPAs

5.7.2 Where fence posts need to be installed within RPAs, excavations should be minimal and carried out using hand held tools only. Fence posts should be erected at least 1m from trees, and using metal post support spikes or if using concrete mix, post holes should be lined with an impermeable membrane to prevent contact between tree roots and potentially damaging chemicals in the concrete.

5.7.3 The proposed fence alignment should allow for a minimum distance of 500mm between any tree stem and the fence, providing sufficient room for the future increase of the stem diameter and minimising the risk of potential conflicts between the fence structure and the tree stems.

Soil Improvements and Mulching

5.7.4 To compensate for potential root damage and stress caused by construction activities, it would be beneficial for the retained trees to be mulched. The materials that may be used for mulching include coarsely divided plant matter, such as wood chip, pulverized bark, or leaf mould, any of which may be combined with well-rotted animal manure. The mulched area should extend over as much of the root system as can be allowed by other site usage requirements. The depth of an organic mulch should not be so much as to inhibit aeration of the root system or to cause overheating of non-composted material (normally no more than 80 mm to 100 mm). The mulch should be periodically replenished as it decomposes, so that it does not become depleted.

6. Arboricultural Site Supervision

6.1.1 The project arboriculturist will make prior arrangements with the main contractor to visit the construction site at the following stages:

- After erection of protective barrier (before demolition/construction operations on site);
- During the installation of any service runs in proximity to trees; and
- If any issues arise that have the potential to impact the retained trees on site.

6.1.2 The project arboriculturist will bring any indication of non-compliance to the attention of the main contractor, any relevant sub-contractors and the client, with the intention that non-compliant matters will be rectified within 7 days, upon which the project arboriculturist will make a re-inspection.

6.1.3 Records of arboricultural site inspections will be kept in the site diary and at the project arboriculturist's office. The local authority can request a copy of the arboricultural site inspection records at any time during the construction period.

6.1.4 The project arboriculturist will request the ceasing of work which actively damages the trees or compacts the soil of the RPAs until such time as the non-compliant actions are rectified. The project arboriculturist will contact the Local Authority to help with this if necessary.

7. Tree Management

7.1.1 The following section provides guidance as to how retained trees will best be protected during construction. More detailed guidelines for tree protection during construction are given in BS 5837:2012 *Trees in relation to design, demolition and construction - Recommendations*.

7.1.2 Any tree roots severed during site clearance works will be wrapped or covered with hessian sheets (wet in summer, dry in winter) as an immediate protection measure against desiccation and rapid temperature changes. This will be removed prior to backfilling which should be carried out as soon as possible. In addition the advice of an arboriculturist, or the Tree Officer of the local planning authority, will be sought as soon as possible on the potential effect of the root damage on the tree's stability, vitality and legal implications.

7.1.3 All tree works will 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.

7.1.4 The best practice principles have been broadly summarised below:

- 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;
- Wide or tall loads etc. will not come into contact with retained trees. Banks-person will 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 will not be stacked or discharged within 10 m of a tree bole. No concrete mixing will be done within 10 m 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 5 m 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; and
- In the event of having caused any branch or limb damage to retained trees, the advice of an arboriculturist will be sought on what tree surgery can be carried out, in accordance with BS 3998:2010, to correct the damage, and the best timescale for that tree surgery which will be determined by season, species, gravity of damage and legal status of the tree (Tree Preservation Order/ Conservation Area/nesting birds/roosting bats).

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

7.1.6 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.

8. References

Books and Papers

BS 3998:2010 *Tree work – Recommendations*. ISBN 978 0 580 53777 6

BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*. ISBN 978 0 580 69917 7

BS 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations.*

Volume 4 National Joint Utilities Group (NJUG) *Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity To Trees*, Volume 4: Issue 2: 16/11/2007, www.njug.org.uk

Appendix 1: Tables

Table 3.1 – BS 5837:2012 Tree Survey Schedule

Key:	Measurements	Age – Class	Overall Condition	BS 5837 2012 : 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 **Est Yrs –** estimate of years remaining (40+ years; 20+ years; 10+ years, <10 years)	ADB – Ash Die Back DED – Dutch Elm Disease	**Sub-categories:** **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 @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m²)
T001	Ash (*Fraxinus excelsior*)	8	250, 260	3	3	3	3	2	Semi Mature	20+ Years	Good	Twin stemmed at base with included bark union		C1	4.332	58
G002	Hazel >10 (*Corylus avellana*) Elder >10 (*Sambucus nigra*) Cherry >10 (*Prunus sp. 'Cherry'*) Crack Willow x4 (*Salix fragilis*)	10	150 avg	See Plan				1	Semi Mature	40+ Years	Fair	Dense linear group of young to semi mature cherry trees surrounded by various other species & undergrowth, occasional snapped branch & failed stem throughout, trees generally taller at eastern end, collectively of reasonable value if maintained		C2	0	1714

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T003	Cherry (*Prunus sp. 'Cherry'*)	7	280	3.5	2	3	3.5	2	Early Mature	40+ Years	Fair	Many old pruning wounds, several included bark unions at 2m	***Removal required to facilitate development***	C2	3.36	36
T004	Cherry (*Prunus sp. 'Cherry'*)	7	410	3	4.5	4	3	2	Early Mature	40+ Years	Fair	Many old pruning wounds, several included bark unions at 2m	***Removal required to facilitate development***	C2	4.92	75
T005	Cherry (*Prunus sp. 'Cherry'*)	7	320	5	5	2	4	2	Early Mature	40+ Years	Fair	Many old pruning wounds, several included bark unions at 2m	***Removal required to facilitate development***	C2	3.84	45
T006	Swedish Whitebeam (*Sorbus intermedia*)	5	230	2.5	2.5	2.5	2.5	2	Semi Mature	40+ Years	Good	Several old pruning wounds	***Removal required to facilitate development***	C2	2.76	25
T007	Swedish Whitebeam (*Sorbus intermedia*)	10	420	3	3	3	3	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs		B2	5.04	79
T008	Swedish Whitebeam (*Sorbus intermedia*)	9	370	2.5	2	2.5	3	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs		B2	4.44	61
T009	Swedish Whitebeam (*Sorbus intermedia*)	7.5	380	3	3	3.5	3.5	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs	***Removal required to facilitate development***	B2	4.56	66

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T009	Swedish Whitebeam (*Sorbus intermedia*)	7.5	370	3	3	3.5	3.5	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs		B2	4.44	61
T010	Swedish Whitebeam (*Sorbus intermedia*)	8.5	420	3.5	3.5	3.5	3.5	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs		B2	5.04	79
T011	Swedish Whitebeam (*Sorbus intermedia*)	7.5	390	3.5	3	3.5	2.5	2	Early Mature	40+ Years	Good	Surrounded by dense elder shrubs		B2	4.68	69
G012	Elder >10 (*Sambucus nigra*) Field Maple x2 (*Acer campestre*) Cherry >10 (*Prunus sp. 'Cherry'*)	12	100 avg	See Plan				1	Young	40+ Years	Fair	Dense group of predominantly young cherry trees surrounded by smaller elders & undergrowth, occasional semi to early mature tree generally in centre of group, trees are generally taller close to northern boundary	***Removal of southern section required to facilitate development***	C2	0	905

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
G013	Elder >10 (*Sambucus nigra*) Hazel >10 (*Corylus avellana*) Hawthorn >10 (*Crataegus monogyna*) Crack Willow >10 (*Salix fragilis*)	17	340 avg	See Plan				2	Early Mature	10+ Years	Poor	Linear group of tall willows surrounded by smaller trees & undergrowth, many large branches have recently snapped out some hanging over the public footpath, a full health & safety assessment of these trees is advised		C1,2	0	664
T014	Cherry (*Prunus sp. 'Cherry'*)	13	460	5	6.5	4.5	2.5	2	Early Mature	40+ Years	Good	Wide spreading form, larger & in a better overall condition than surrounding trees	***Removal required to facilitate development***	B1,2	5.52	95
G015	Hawthorn >10 (*Crataegus monogyna*) Hazel >10 (*Corylus avellana*) Cherry >10 (*Prunus sp. 'Cherry'*) Elder >10 (*Sambucus nigra*)	8	100 avg	See Plan				1	Young	20+ Years	Fair	Young to semi mature trees surrounded by dense undergrowth, several snapped stems & failed limbs		C2	0	561
T016	Goat Willow (*Salix caprea*)	6	140 x8	1.5	5	5.5	1	0.5	Semi Mature	10+ Years	Poor	Multi-stemmed at base with several included bark unions, suppressed form, various snapped branches & signs of decay	***Removal required to facilitate development***	C2	4.752	72

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T017	Black Pine (*Pinus nigra*)	16	720	4.5	5.5	7.5	5.5	3.5	Mature	40+ Years	Good	Several moderate sized dead branches in lower crown	***Removal required to facilitate development***	B1	8.64	232
G018	Black Pine >10 (*Pinus nigra*)	14	240 avg	See Plan				2.5	Semi Mature	40+ Years	Fair	Dense group of trees between larger pines, small crowns, high proportion of minor deadwood throughout, understory of elder shrubs		C1,2	0	64
G019	Black Pine x8 (*Pinus nigra*)	18	550 avg	See Plan				2	Early Mature	40+ Years	Good	Roughly linear group of similar trees forming a single canopy, occasional snapped branch & moderate deadwood generally to the north of the stems		B1,2	0	254
T020	Swedish Whitebeam (*Sorbus intermedia*)	7	400	3	3	3	3	2	Early Mature	40+ Years	Good		***Removal required to facilitate development***	B1	4.8	72
T021	Swedish Whitebeam (*Sorbus intermedia*)	7	370	3	3	3	3	2	Early Mature	40+ Years	Good		***Removal required to facilitate development***	B1	4.44	61
T022	Cherry (*Prunus sp. 'Cherry'*)	10	210	2	2	2	2	3	Semi Mature	20+ Years	Fair	Several included bark unions at 2m, moderate deadwood	***Removal required to facilitate development***	C2	2.52	20

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T023	Cherry (*Prunus sp. 'Cherry'*)	7	270	2.5	2.5	2.5	2.5	2	Semi Mature	20+ Years	Fair	Many old pruning wounds some with minor decay, moderate deadwood	***Removal required to facilitate development***	C2	3.24	32
T024	Cherry (*Prunus sp. 'Cherry'*)	7	240	3	3	3	3	2	Semi Mature	40+ Years	Fair	Bark damage on stem, old pruning wounds, moderate deadwood	***Removal required to facilitate development***	C2	2.88	26
T025	Cherry (*Prunus sp. 'Cherry'*)	7	260	3	3	3	3	2	Semi Mature	40+ Years	Fair	Bark damage on stem, old pruning wounds, moderate deadwood	***Removal required to facilitate development***	C2	3.12	30
T026	Swedish Whitebeam (*Sorbus intermedia*)	7	220	2.5	2.5	2.5	2.5	2	Semi Mature	40+ Years	Good	Bark damage on lower branches	***Removal required to facilitate development***	C2	2.64	21
T027	Swedish Whitebeam (*Sorbus intermedia*)	7	310	3	3	3	3	2	Semi Mature	40+ Years	Good	Bark damage on lower branches	***Removal required to facilitate development***	C2	3.72	43
T028	Swedish Whitebeam (*Sorbus intermedia*)	7	350	3	3	3	3	2	Semi Mature	40+ Years	Good	Several old pruning wounds, occluding well	***Removal required to facilitate development***	C1,2	4.2	55
T029	Swedish Whitebeam (*Sorbus intermedia*)	8.5	450	3.5	3.5	3.5	3.5	2	Semi Mature	40+ Years	Good	Small area of superficial bark damage on stem, several old pruning wounds, generally occluding well	***Removal required to facilitate development***	B1,2	5.4	92
T030	Cherry (*Prunus sp. 'Cherry'*)	9.5	430	4.5	4.5	4.5	4.5	2	Semi Mature	40+ Years	Good	Several old pruning wounds, some resulting in stubs	***Removal required to facilitate development***	B1,2	5.16	85

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T031	Cherry (*Prunus sp. 'Cherry'*)	8	410	4	4	4	4	2	Semi Mature	40+ Years	Good	Several old pruning wounds, some resulting in stubs	***Removal required to facilitate development***	B1,2	4.92	75
T032	Cherry (*Prunus sp. 'Cherry'*)	9	410	4.5	4.5	4.5	4.5	1.5	Semi Mature	20+ Years	Fair	Exposed & constricting roots at base, Several included bark unions, several old pruning wounds, some resulting in stubs, moderate deadwood	***Removal required to facilitate development***	C2	4.92	75
T033	Swedish Whitebeam (*Sorbus intermedia*)	9	440	4	4	4	4	2	Early Mature	40+ Years	Good			B1,2	5.28	88
T034	Swedish Whitebeam (*Sorbus intermedia*)	9	430	4	4	4	4	2	Early Mature	40+ Years	Good			B1,2	5.16	85
T035	Swedish Whitebeam (*Sorbus intermedia*)	9	440	3.5	3.5	3.5	3.5	2	Early Mature	40+ Years	Good	Minor bark wounds on southern limbs		B1,2	5.28	88
T036	Cherry (*Prunus sp. 'Cherry'*)	8	180	3.5	3.5	2	0.5	2.5	Semi Mature	20+ Years	Fair	Suppressed form, moderate deadwood		C2	2.16	15
T037	Cherry (*Prunus sp. 'Cherry'*)	8	170	1.5	3	2	2.5	2.5	Semi Mature	20+ Years	Fair	Suppressed form, moderate deadwood		C2	2.04	13
T038	Hornbeam (*Carpinus betulus*)	12	330	2	3.5	3.5	3.5	1.5	Semi Mature	40+ Years	Good	Slight stem lean		B1,2	3.96	50

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m²)
T039	Cherry (*Prunus sp. 'Cherry'*)	13	480	3	6.5	6	5.5	1.5	Early Mature	40+ Years	Fair	Exposed roots at base, large area of bark damage & potential for decay at base of eastern stem		B1,2	5.76	106
G040	Hazel >10 (*Corylus avellana*) Elder >10 (*Sambucus nigra*) Hawthorn >10 (*Crataegus monogyna*) Cherry >10 (*Prunus sp. 'Cherry'*) Rowan >10 (*Sorbus aucuparia*)	10	150 avg	See Plan				1	Semi Mature	40+ Years	Fair	Young to semi mature group with understory of dense saplings & undergrowth, occasional snapped branch & failed stem		C2	0	1152
G041	Cherry x4 (*Prunus sp. 'Cherry'*) Rowan x2 (*Sorbus aucuparia*) Elder x2 (*Sambucus nigra*)	10	270 avg	See Plan				1.5	Semi Mature	20+ Years	Poor	Larger cherry trees with smaller elder, rowan & undergrowth, several areas of significant bark damage & potential decay on upper branches, likely to need some form of management if close to future development		C2	0	242

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m²)
G042	Cherry >10 (*Prunus sp. 'Cherry'*) Black Pine x4 (*Pinus nigra*)	15	500 avg	See Plan				1	Early Mature	40+ Years	Fair	Large early mature pines surrounded by smaller semi mature cherries & undergrowth, large pine at centre of group has failed at base & is resting in neighbouring tree group to the east, occasional moderate deadwood & snapped branch	Remove fallen tree regardless of future development	B1,2	0	305
G043	Hawthorn x5 (*Crataegus monogyna*) Swedish Whitebeam x2 (*Sorbus intermedia*) Cherry >10 (*Prunus sp. 'Cherry'*) Elder >10 (*Sambucus nigra*)	8	200 avg	See Plan				0.5	Semi Mature	40+ Years	Fair	Dense group close to boundary fence, occasional snapped branch, moderate deadwood, fire damage to trees at southern extent		C2	0	665
T044	Cherry (*Prunus sp. 'Cherry'*)	10	430	5	5	5	5	2	Early Mature	40+ Years	Good	Several included bark unions at 2m		B1	5.16	85
T045	Ash (*Fraxinus excelsior*)	14	450	5	5	2	5	2.5	Early Mature	20+ Years	Fair	Several large dead branches in centre of crown		B1	5.4	92

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T046	Ash (*Fraxinus excelsior*)	14	450	4	2.5	5	5.5	2	Early Mature	20+ Years	Fair	Occasional large dead branch in centre of crown		B1	5.4	92
T047	Cherry (*Prunus sp. 'Cherry'*)	10	260	2	2	3.5	1.5	2	Semi Mature	40+ Years	Fair	Several included bark unions, surrounded by smaller cherries & undergrowth		C1,2	3.12	30
T048	Swedish Whitebeam (*Sorbus intermedia*)	8.5	400	4	4	4	4	2	Early Mature	40+ Years	Fair	Covered in dense ivy, growing against boundary fence		B1	4.8	72
T049	Swedish Whitebeam (*Sorbus intermedia*)	8.5	480	5	5	5	5	2	Early Mature	40+ Years	Good	Surrounded by dense saplings & undergrowth		B1	5.76	106
T050	Beech (*Fagus sylvatica*)	10	450	5	5	5	5	1.5	Semi Mature	40+ Years	Good	Ivy on stem & lower crown, surrounded by dense saplings & undergrowth		B1	5.4	92
T051	Rowan (*Sorbus aucuparia*)	5.5	160	1.5	1.5	1.5	1.5	2	Semi Mature	40+ Years	Fair	Long thin bark wound on stem		C1	1.92	11
T052	Rowan (*Sorbus aucuparia*)	5.5	100, 100, 110	2	2	2	2	2	Semi Mature	40+ Years	Fair	Multi-stemmed at base	***Removal required to facilitate development***	C1	2.148	14
T053	Rowan (*Sorbus aucuparia*)	5	50, 50, 70, 70, 80, 90	2	2	2	2	2	Semi Mature	40+ Years	Fair	Multi-stemmed at base	***Removal required to facilitate development***	C1	2.052	14
T054	Cherry (*Prunus sp. 'Cherry'*)	6	130	1	1	1	1	1	Semi Mature	40+ Years	Fair	Mower damage at base, epicormic growth		C2	1.56	8

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T055	Rowan (*Sorbus aucuparia*)	5.5	80 x10	2	2	2	2	1.5	Semi Mature	40+ Years	Fair	Surrounded by dense brambles		C2	3.036	28
T056	Alder (*Alnus glutinosa*)	6	140, 110	2.5	2.5	2.5	2.5	2	Semi Mature	40+ Years	Fair	Surrounded by dense brambles		C2	2.136	14
T057	Swedish Whitebeam (*Sorbus intermedia*)	7.5	420	3	3	3	3	1.5	Early Mature	40+ Years	Fair	Dense ivy on stem & growing into crown, surrounded by dense undergrowth		C1	5.04	79
T058	Swedish Whitebeam (*Sorbus intermedia*)	7.5	400	3.5	3.5	3.5	3.5	1.5	Early Mature	40+ Years	Good			B1	4.8	72
T059	Goat Willow (*Salix caprea*)	5	120, 50, 50	4	1.5	2.5	3	0	Semi Mature	<10 years	Poor	Growing in neighbouring land against boundary fence, most stems have snapped & are resting on the fence	Remove to ground level regardless of future development	U	0	0
T060	Cherry (*Prunus sp. 'Cherry'*)	5	75	1	1	1	1	1.5	Young	40+ Years	Good	Growing within boundary shrubs		C2	0.9	3
T061	Sycamore (*Acer pseudoplatanus*)	5	60, 40	1	1	1	1	1.5	Young	40+ Years	Good	Growing within boundary shrubs		C2	0.864	3
T062	Swedish Whitebeam (*Sorbus intermedia*)	6	320	3	3	3	3	1.5	Semi Mature	40+ Years	Good	Exposed roots at base, southern branches growing into security light & sign	***Removal required to facilitate development***	C1	3.84	45

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T063	Swedish Whitebeam (*Sorbus intermedia*)	6	280	2.5	4.5	3.5	2	1.5	Semi Mature	40+ Years	Good	Exposed roots at base	***Removal required to facilitate development***	C1	3.36	36
T064	Rowan (*Sorbus aucuparia*)	6	80 x12	2	2	2	2	1.5	Semi Mature	40+ Years	Fair	Exposed roots at base	***Removal required to facilitate development***	C1	3.324	34
T065	Cherry (*Prunus sp. 'Cherry'*)	5	90	1	1	1	1	1.5	Young	40+ Years	Good		***Removal required to facilitate development***	C1	1.08	4
T066	Swedish Whitebeam (*Sorbus intermedia*)	7.5	400	3.5	3.5	3.5	3.5	1.5	Early Mature	40+ Years	Good	Exposed roots at base	***Removal required to facilitate development***	B1	4.8	72
T067	Rowan (*Sorbus aucuparia*)	5.5	190	2	2	2	2	1.5	Semi Mature	40+ Years	Good		***Removal required to facilitate development***	C1	2.28	17
T068	Swedish Whitebeam (*Sorbus intermedia*)	7	270	3	3.5	2.5	1	1.5	Semi Mature	40+ Years	Fair	Slightly suppressed form	***Removal required to facilitate development***	C1	3.24	32
T069	Swedish Whitebeam (*Sorbus intermedia*)	7	410	4.5	4.5	4.5	4.5	1.5	Semi Mature	40+ Years	Good		***Removal required to facilitate development***	B1	4.92	75
T070	Cherry (*Prunus sp. 'Cherry'*)	5.5	280	2.5	2.5	2.5	2.5	2	Semi Mature	10+ Years	Fair	Large bark wound on main stem with signs of historical decay	***Removal required to facilitate development***	C2	3.36	36

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T071	Swedish Whitebeam (*Sorbus intermedia*)	5.5	190	2.5	2.5	2.5	2.5	1.5	Semi Mature	40+ Years	Good		***Removal required to facilitate development***	C1	2.28	17
T072	Swedish Whitebeam (*Sorbus intermedia*)	7	360	3	3	3	3	1.5	Semi Mature	40+ Years	Good		***Removal required to facilitate development***	C1	4.32	58
T073	Hornbeam (*Carpinus betulus*)	8	280	2	2	2	2	3	Semi Mature	40+ Years	Good	Fastigiate form, included bark union at 2m	***Removal required to facilitate development***	C1	3.36	36
T074	Cherry (*Prunus sp. 'Cherry'*)	7.5	320	2.5	2.5	2.5	2.5	2	Semi Mature	10+ Years	Poor	Dense ivy on stem & lower crown, dense epicormic growth throughout crown, high proportion of minor deadwood	***Removal required to facilitate development***	C2	3.84	45
T075	Beech (*Fagus sylvatica*)	12	380	4	4	4	4	1	Semi Mature	40+ Years	Fair	Several included bark unions at 1m to 2m, epicormic growth at base	***Removal required to facilitate development***	B1	4.56	66
T076	Swedish Whitebeam (*Sorbus intermedia*)	8	370	3	3	3	3	2	Early Mature	40+ Years	Good		***Removal required to facilitate development***	B1	4.44	61
T077	Swedish Whitebeam (*Sorbus intermedia*)	8	360	3.5	3.5	3.5	2	2	Early Mature	40+ Years	Good		***Removal required to facilitate development***	B1	4.32	58

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
G078	Elder x2 (*Sambucus nigra*) Hawthorn x4 (*Crataegus monogyna*)	8	120 avg	See Plan	0.5	Semi Mature	10+ Years	Fair	Dense ivy covering all stems & growing into canopy, surrounded by dense brambles, limited long term value		C2	0	144
T079	Cherry (*Prunus sp. 'Cherry'*)	8.5	110, 80, 70, 60	3 3 3 3	2.5	Young	20+ Years	Fair	Multi-stemmed at base with included bark unions, stem damage, sparse crown		C1,2	1.968	13
G080	Elder >10 (*Sambucus nigra*) Hawthorn >10 (*Crataegus monogyna*) Cherry >10 (*Prunus sp. 'Cherry'*)	9	140 avg	See Plan	0.5	Semi Mature	20+ Years	Poor	Dense linear group surrounded by dense saplings & undergrowth, stems & crowns covered in dense ivy, several snapped branches & dead stems		C2	0	440
T081	Cherry (*Prunus sp. 'Cherry'*)	7	290	4 4 4 4	1.5	Semi Mature	40+ Years	Good	Several old pruning wounds and small stubs		C1	3.48	38
G082	Elder >10 (*Sambucus nigra*) Hazel >10 (*Corylus avellana*)	5	90 avg	See Plan	0	Semi Mature	20+ Years	Fair	Dense group of young to semi mature hazel growing between fence lines, several elder & various smaller shrubs	***Removal required to facilitate development***	C2	0	352
G083	Crack Willow >10 (*Salix fragilis*)	7	110 avg	See Plan	0.5	Semi Mature	20+ Years	Fair	Dense group of young to semi mature trees growing between fence lines, several snapped branches, understory of dense shrubs		C2	0	182

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T084	Crack Willow (*Salix fragilis*)	14	160 x7	4.5	4.5	4.5	4.5	1	Semi Mature	20+ Years	Fair	Dense ivy covering the majority of stems, surrounded by dense brambles		C1	5.076	82
T085	Sycamore (*Acer pseudoplatanus*)	12	210	1.5	2.5	2.5	1	3	Semi Mature	20+ Years	Fair	Dense ivy on stem, slightly suppressed form		C1	2.52	20
G086	Sycamore x2 (*Acer pseudoplatanus*) Silver Birch x3 (*Betula pendula*)	15	360 avg	See Plan				1.5	Semi Mature	40+ Years	Good	Group of 5 trees growing in inaccessible area between fence lines, ivy on lower stems, some moderate deadwood, surrounded by dense undergrowth & brambles		B1,2	0	293
T087	Sycamore (*Acer pseudoplatanus*)	16	530	5	5.5	4	4.5	1.5	Early Mature	40+ Years	Fair	Large & dense epicormic growth at base, moderate deadwood		B1	6.36	129
T088	Sycamore (*Acer pseudoplatanus*)	16	680	4	6.5	5.5	5	2.5	Early Mature	10+ Years	Fair	Large cavity on western side of stem near base with moderate decay, ivy on stem, moderate deadwood & several stubs in the crown		C1	8.16	211
T089	Silver Birch (*Betula pendula*)	17	350	3.5	3.5	3.5	3.5	1.5	Early Mature	40+ Years	Good	Ivy on lower stem, moderate deadwood		B1	4.2	55
T090	Sycamore (*Acer pseudoplatanus*)	16	550	5	5	5	2.5	2	Mature	40+ Years	Good	Bark damage, epicormic growth, ivy on stem		B1,2	6.6	137

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T091	Sycamore (*Acer pseudoplatanus*)	16	590	5	2.5	5	2.5	2	Mature	40+ Years	Good	Bark damage, epicormic growth, ivy on stem		B1,2	7.08	158
T092	Sycamore (*Acer pseudoplatanus*)	16	680	5	3	5	3	2	Mature	40+ Years	Good	Bark damage, epicormic growth, ivy on stem		B1,2	8.16	211
T093	Sycamore (*Acer pseudoplatanus*)	16	410	4.5	2.5	4.5	2.5	2	Early Mature	40+ Years	Good	Bark damage, epicormic growth, ivy on stem		B1,2	4.92	75
T094	Sycamore (*Acer pseudoplatanus*)	16	530	4.5	2.5	4.5	2.5	2	Mature	40+ Years	Good	Bark damage, epicormic growth, ivy on stem		B1,2	6.36	129
T095	Sycamore (*Acer pseudoplatanus*)	16	530	5	2.5	5	5.5	2	Mature	20+ Years	Good	Bark wound with historical decay, epicormic growth, ivy on stem		B1,2	6.36	129
T096	Apple (*Malus sp.*)	3	150	4	2	1	1.5	1	Semi Mature	10+ Years	Poor	Large wound at base, sparse & suppressed crown, moderate deadwood		C2	1.8	10
T097	Sycamore (*Acer pseudoplatanus*)	16	420	4.5	4.5	2.5	1.5	2	Early Mature	10+ Years	Poor	High proportion of large deadwood particularly in southern half of crown, very limited long term value	Remove to ground level regardless of future development	U	0	0
T098	Rowan (*Sorbus aucuparia*)	10	230	3	1.5	2.5	2.5	1.5	Semi Mature	20+ Years	Fair	Southern branch has partially snapped & is resting on ground, moderate deadwood		C1	2.76	25

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T099	Sycamore (*Acer pseudoplatanus*)	16	620	5.5	4.5	5.5	4.5	2	Mature	40+ Years	Good	Bark damage, epicormic growth		B1,2	7.44	172
T100	Silver Birch (*Betula pendula*)	14	350	3.5	3.5	3.5	3.5	1.5	Early Mature	40+ Years	Good	Minor cavities on stem, occasional moderate deadwood		B1	4.2	55
T101	Silver Birch (*Betula pendula*)	14	240	2.5	2.5	2.5	2.5	2	Semi Mature	40+ Years	Fair	Minor cavities on stem, occasional moderate deadwood		C1	2.88	26
T102	Norway Maple (*Acer platanoides*)	14	500	4	4.5	4	3	2	Early Mature	40+ Years	Good	Multi-stemmed at 2.5m, occasional large old pruning wound, several included bark unions, moderate deadwood		B1,2	6	113
T103	Norway Maple (*Acer platanoides*)	14	620	5	4	5	3	2	Mature	40+ Years	Good	Multi-stemmed at 2.5m, occasional large old pruning wound, several included bark unions, moderate deadwood		B1,2	7.44	172
T104	Norway Maple (*Acer platanoides*)	14	490	4	4	4	3	2	Early Mature	40+ Years	Good	Multi-stemmed at 2.5m, occasional large old pruning wound, several included bark unions, moderate deadwood		B1,2	5.88	109
T105	Norway Maple (*Acer platanoides*)	14	480	4.5	4.5	4.5	4.5	2	Early Mature	40+ Years	Good	Multi-stemmed at 2.5m, occasional large old pruning wound, several included bark unions, moderate deadwood		B1,2	5.76	106

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations *incl. Arboricultural Method Statement*	BS 5837 Category	RPA Radius (m)	RPA (m^2)
G106	Sycamore x4 (*Acer pseudoplatanus*)	10	250 avg	See Plan				2	Semi Mature	40+ Years	Fair	Epicormic growth at base, minor stem cavities, moderate deadwood		C2	0	227
T107	Swedish Whitebeam (*Sorbus intermedia*)	9	420	3.5	3.5	3.5	3.5	1.5	Early Mature	40+ Years	Good	Several old pruning wounds & included bark unions		B1	5.04	79
T108	Swedish Whitebeam (*Sorbus intermedia*)	9	370	3	3	3	3	1.5	Early Mature	40+ Years	Good	Several old pruning wounds & included bark unions		B1	4.44	61
G109	Norway Maple x6 (*Acer platanoides*)	12	350 avg	See Plan				2	Early Mature	40+ Years	Good	Occasional included bark union		B2	0	318
G110	Sycamore x4 (*Acer pseudoplatanus*) Swedish Whitebeam x7 (*Sorbus intermedia*)	10	280 avg	See Plan				1.5	Semi Mature	40+ Years	Good	Occasional included bark union, moderate deadwood, good collective value		C2	0	601
T111	Pedunculate Oak (*Quercus robur*)	7	230	2.5	2.5	2.5	2.5	0.5	Semi Mature	40+ Years	Good		***Removal required to facilitate development***	C1	2.76	25
T112	Goat Willow (*Salix caprea*)	6	80 x6	2.5	2.5	2.5	2.5	1	Semi Mature	20+ Years	Fair	Multi-stemmed at base, growing within the site against boundary fence	***Removal required to facilitate development***	C2	2.352	18

Appendix 2 – Site Photographs

Plate 1: Mixed species group G2 from the south west

Plate 2: T3, T4 and T5 from the north west

Plate 3: T7 to T11 with boundary groups in the background from the south west

Plate 4: T16, T17, G18 and G19 from the south east

Plate 5: T33 to T39 with boundary groups in the back ground from the east

Plate 6: T68 and T69 from the west

Plate 7: T84 to T99 from the north west

Plate 8: T101 to T105 from the north

Appendix 3 – Arboricultural Impact Assessment Methodology

9. Arboricultural Impact Assessment

9.1 Introduction

9.1.1 A BS5837 arboricultural impact assessment has been carried out for trees present across the Site. This methodology evaluates the direct and indirect effects of the Proposed Development and where necessary recommends mitigation. The standard states:

> "*The assessment takes account of the effects of any tree loss required to implement the design, and any potentially damaging activities proposed in the vicinity of retained trees. Such activities might include the removal of existing structures and hard surfacing, the installation of new hard surfacing, the installation of services, and the location and dimensions of all proposed excavations or changes in ground level, including any that might arise from the implementation of the recommended mitigation measures. In addition to the impact of the permanent works, account has been taken of the buildability of the scheme in terms of access, adequate working space and provision for the storage of materials, including topsoil*."

9.1.2 There are no published criteria, guidance or methodologies for the assessment of effects of development on forestry, trees or woodland. The Forestry Commission published 'Environmental Impact Assessment for Forestry Projects' in February 2019 however this is concerned with forestry operations and is not relevant to trees on development sites. As a result, the assessment of effects is made based on professional judgement, with reference to:

- the sensitivity of the tree population present in the study area taking account of the degree and rate of change in the tree population, both in the recent past and that anticipated in the near future, and therefore the susceptibility/vulnerability of the tree population to change; the quality of the tree population (based on the categorisation method outline in BS5837:2012 broadly based on amenity value and useful life expectancy) and the extent to which it is rare or distinctive, the value attributed to the tree population through designations;
- magnitude of change and extent of tree removal, impact of proposed development on retained trees and impact of any required tree work;
- duration and reversibility - timescale of effect (days/weeks/months/years) until recovery. Permanent effects are described as such, and likelihood of recovery is detailed where appropriate; and
- adverse/beneficial - if the effect will be beneficial or detrimental to the feature.

9.1.3 The effect of tree removal is normally considered to be of an adverse nature; however indirect beneficial effects in some areas may arise where the introduction of a proposed development allows for the removal of ecologically habitat-poor or discretionary trees. This may be followed up by detailed landscape masterplans, ecological and woodland management plans or schemes of compensatory planting to replace lost trees with more beneficial individuals.

9.1.4 Baseline survey methodologies and data sources used to inform this assessment, including the BS5837:2012 tree surveys.

9.1.5 BS5837:2012 is the accepted standard for the management of trees on development sites. The standard offers advice on the assessment of impacts of a scheme on trees, based on a tree survey carried out to the same BS5837 specifications.

9.1.6 As well as an evaluation of the extent of the impact on existing trees, the arboricultural impact assessment has included:

a) the tree survey;

b) trees selected for retention, clearly identified (e.g. by number) and marked on a plan with a continuous outline;

c) trees to be removed, also clearly identified (e.g. by number) and marked on a plan with a dashed outline or similar;

d) trees to be pruned, including any access facilitation pruning, also clearly identified and labelled or listed as appropriate;

e) areas designated for structural landscaping that need to be protected from construction operations in order to prevent the soil structure being damaged;

f) evaluation of impact of proposed tree losses;

g) evaluation of tree constraints and draft tree protection plan;

h) issues to be addressed by an arboricultural method statement, where necessary in conjunction with input from other specialists.

9.2 Sensitivity of Receptors

9.2.1 Four categories of sensitivity are defined in Table 9.1:

Table 9.1: Definitions of Sensitivity Levels of Trees/Woodland/Forestry

Value	Definition
Very High	Receptor has little or no ability to absorb change without altering its present character, is of very high environmental value, or of international importance.
High	- Highly valued, subject of national designation e.g. Ancient Woodland Category, veteran and heritage trees - Particularly rare or distinctive in a national context; or - Considered susceptible to small changes.
Medium	- Valued more locally, subject to local designation; - Mainly B and C category trees - Rare or distinctive in a regional context; and/or - Are tolerant of moderate levels of change
Low	- Generally, more commonplace, not designated; - Mainly C category trees - Considered potentially tolerant of noticeable change; or - Undergoing substantial development such that their character is one of change.
Negligible	- Low quality, insignificant trees, mainly C and U category - Considered tolerant of noticeable change; or - Having undergone substantial development such that their character is one of change.

9.3 Magnitude of Change

9.3.1 The magnitude of change has been assessed with reference to the four categories defined in Table 9.2:

Table 9.2: Definitions of Magnitude of Change Levels

Magnitude	Definition
High	A noticeable change to the tree population over a wide area or an intensive change over a limited area.
Medium	Small changes to the tree population over a wide area or noticeable change over a limited area.
Low	Very small changes to the tree population over a wide area or small changes over a limited area.
Negligible	No discernible change to the tree population.

9.4 Significance of Effect

9.4.1 The significance of the effect is calculated by combining the sensitivity of the receptor (Table 9.1) with the magnitude of change (Table 9.2) in Table 9.3 below.

Table 9.3: Framework for Assessment of the Significance of Effect

Magnitude of Change	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Appendix 4 – Figures

GENERAL NOTES - TREE SURVEY

- Drawing for Planning purposes only.
- Refer to arboricultural report produced by ECUS Ltd titled TASE Barnsley – BS5837:2012 Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement.
- Based on topographic survey provided by Bowmer and Kirkland dated July 2020.
- Check all dimensions on site.
- Do not scale from this drawing.
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NB This drawing includes information provided by independent surveyors and / or consultants, to whom all queries shall be made. Ecus Ltd can accept no liability for its context or accuracy.

KEY

Trunk location from topographic survey

Trunk location approximated by ECUS

Shrubs and hedges

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

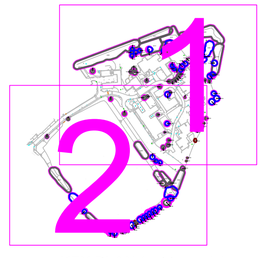

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Figure 3.1 (Sheet 1 or 2)
Tree Survey and Tree Constraints Plan

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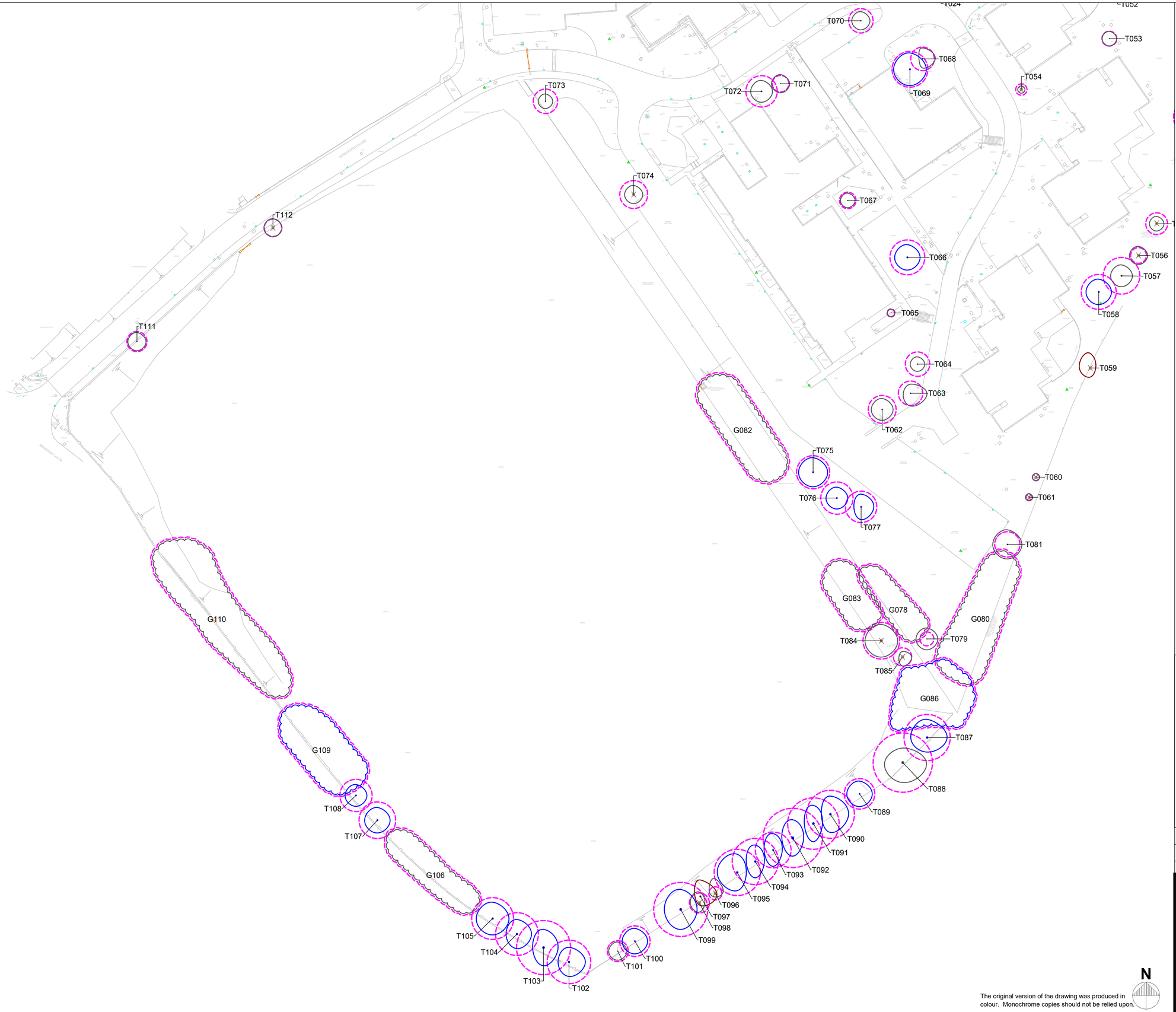

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KEY

Trunk location from topographic survey

Trunk location approximated by ECUS

Shrubs and hedges

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

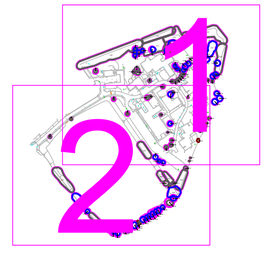

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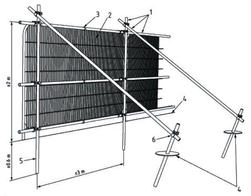
Figure 3.1 (Sheet 2 or 2)
Tree Survey and Tree Constraints Plan

By	Date	Scale @ A1	Drg. no.
DF	**Dec 2021**	**1:500**	**18221-ARB-02**

BS5837 (2012) Tree Protective Fencing Standard Detail.



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

NOTES

Protective Barrier/Fencing
This must be erected before commencement of any other demolition or construction operations on site including construction of site access track. In order to protect the root zone and the tree canopy, behind the fencing/barrier is a sacrosanct construction-free zone which should remain clear of materials, vehicles and all construction/demolition operations. Long grass behind the fencing is a good indication that this area has not been disturbed, it may be strimmed but by hand held tools only, and ensuring a trunk protector is used to prevent strimming damage to the trunk. Unless otherwise agreed with the Project Arboriculturalist and written on this drawing, there will be no spreading of soil or topsoil in this area.

Services
New service trenches must not be dug through RPA. Service runs should avoid RPA, or be installed following BS5837 guidance such as using directional drilling.

GENERAL NOTES - TREE PROTECTION PLAN

- Drawing for Planning purposes only unless we are commissioned for construction stage.
- Refer to arboricultural report produced by ECUS Ltd titled TASE Barnsely - BS5837:2012 Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement.
- Based on topographic survey provided by Bowmer and Kirkland dated July 2020.
- Building layout and masterplan provided by Ares Landscape Architects on drawing numberFS0954-ALA-XX-ZZ-DR-L-0002
- Refer to Engineer's details for level and drainage information.
- Check all dimensions on site.
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KEY

Trunk location from topographic survey
Trunk location approximated by ECUS
Shrubs and hedges

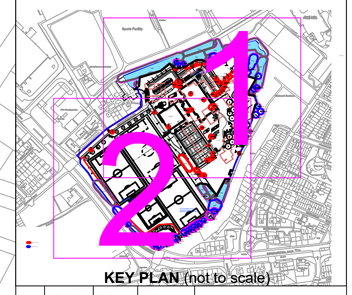
Tree categories (BS 5837:2012)

Category A Trees | Category B Trees | Category C Trees | Category U Trees | Existing tree to be removed

Root Protection Area (RPA) of category A, B and C trees
Protective Barrier* - BS5837 (2012), clause 6.2.2

***See note on drawing about Protective Fencing and No-dig construction.**

Construction Exclusion Zone



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Tree Protection Plan

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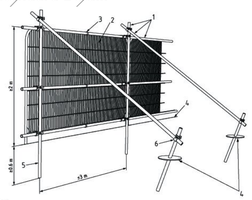
BS5837 (2012) Tree Protective Fencing Standard Detail.



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

NOTES

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This must be erected before commencement of any other demolition or construction operations on site including construction of site access track. In order to protect the root zone and the tree canopy, behind the fencing/barrier is a sacrosanct construction-free zone which should remain clear of materials, vehicles and all construction/demolition operations. Long grass behind the fencing is a good indication that this area has not been disturbed, it may be strimmed but by hand held tools only, and ensuring a trunk protector is used to prevent strimming damage to the trunk. Unless otherwise agreed with the Project Arboriculturalist and written on this drawing, there will be no spreading of soil or topsoil in this area.

Services

New service trenches must not be dug through RPA. Service runs should avoid RPA, or be installed following BS5837 guidance such as using directional drilling.

Tree protective fencing extends along site boundary where as no existing fencing in place

No tree protection measures required in field area as no proposed construction activities

No tree protection measures required in field area as no proposed construction activities

GENERAL NOTES - TREE PROTECTION PLAN

- Drawing for Planning purposes only unless we are commissioned for construction stage.
- Refer to arboricultural report produced by ECUS Ltd titled TASE Barnsely - BS5837:2012 Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement.
- Based on topographic survey provided by Bowmer and Kirkland dated July 2020.
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Protective Barrier* - BS5837 (2012), clause 6.2.2

***See note on drawing about Protective Fencing and No-dig construction.**

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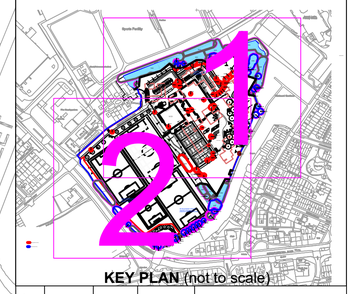

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Tree Protection Plan

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