



**Arboricultural Method Statement & Tree Protection Plan – In  
Accordance with BS 5837:2012**

Proj. No <b>8515</b>	<b>Lower Barn Farm, Lower Street, Balyham, Ipswich, Suffolk, IP6 8JP</b>		
Client:		SBS Simmons Building Services Ltd	
Date of Report:	22/02/2021	Revision:	A

***Arboricultural Method Statement &  
Tree Protection Plan  
In Accordance with  
BS 5837:2012***

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# 1.0 Introduction

## 1.1 Terms of Reference

- 1.1.1 Hayden's Arboricultural Consultants Limited has been commissioned by SBS Simmons Building Services Ltd to prepare a bespoke Arboricultural Method Statement for the proposed development at Lower Barn Farm, Lower Street, Ballyham, Ipswich, Suffolk, IP6 8JP.
- 1.1.2 This report provides supplementary information to that submitted in the Tree Survey, Arboricultural Impact Assessment, and Preliminary Method Statement & Tree Protection Plan dated 12/03/2019, ref: 7308.
- 1.1.3 In accordance with the requirements of Babergh Mid Suffolk District Council, information is required regarding the following:
  - (i) Fencing
  - (ii) Construction Methods
  - (iii) Services
  - (iv) Phasing and Monitoring Schedule

# 2.0 Specific Details

## 2.1 Fencing

- 2.1.1 Prior to the commencement of demolition and immediately after the completion of the necessary tree surgery and felling work, protective fencing will be erected on site. This must be fit for purpose (including any ground protection if necessary) in full accordance with the requirements of BS 5837:2012 and positioned as shown on drawing no. 8515-D-A-AMS (Appendix F).
- 2.1.2 Details of fencing are supplied in attached Appendix F.3 to F.5.
- 2.1.3 During the construction process, the fencing may require re-alignment. This is discussed in item 2.4 below (Phasing and Monitoring Schedule). Original positioning and all subsequent re-alignments must be agreed on site by the Monitoring Arboricultural Consultant (item 2.4.2).

## 2.2 Construction Methods

- 2.2.1 Construction of foundations or structural supports for Plot 9 encroach within the calculated RPA of one tree to be retained – T004. Given the minor extent of the intrusion at this location and the likely limiting effect of the previous structure on the same footprint, no significant root disturbance is thought likely. However, to ensure any roots which have permeated to the footprint of the new structure are not damaged, it is advised that precautionary excavation and root pruning is undertaken as part of the access facilitation pruning (AFP) works. This operation will obviate the need for arboriculturally imperative specialised foundation construction methods in this situation.



2.2.2 The alignment of all other structures does not encroach within the Root Protection Areas of any trees that are to be retained, and as assessed in accordance with BS5837:2012, no specialist foundation designs, or construction techniques will be required to prevent damage to tree roots. Specialist foundations may still be required for other reasons, including mitigating the influencing distance of tree roots, and as such expert advice should always be sought from a structural engineer.

2.2.3 Installation of new hard surfaces does not encroach within the RPA of any retained trees. Therefore, and from a purely arboricultural perspective, it will not be necessary for these items to be of specialist design.

## **2.3 Services**

2.3.1 Details on proposed services were made available and have been overlaid onto drawing no 8515-D-A-AMS.

2.3.2 Only one section of new underground service passes through the RPA of a retained tree, namely a section of rainwater drainage pipe within the RPA of T004. In this circumstance, the length infringing the RPA will be opened using an Air Spade following the methodology known as 'broken trenches' from NJUG 4 paragraph 4 to ensure the maximum protection of the trees' roots.

2.3.3 The trenches may also be excavated using an air spade, or trenchless technology can be employed if this methodology is considered appropriate by the relevant service company (thus allowing services to pass below and through the roots without the need for traditional excavation). If it is necessary to cut any small roots as part of any of these processes, they should be severed in such a way as to ensure that the final wound is as small as possible and free from ragged, torn ends.

2.3.4 All routes for overhead services will aim to avoid the trees. Where this is not possible, any tree work will be agreed prior to commencement with the Local Planning Authority.

2.3.5 All service providers (Statutory Authorities) will be consulted prior to commencement of works with the aim of minimising the number of service runs on the site.

2.3.6 All service runs/trenches where they encroach within the RPA of retained trees will be agreed with the Local Planning Authority prior to commencement of works.

## **2.4 Phasing and Monitoring Schedule**

2.4.1 The proposal involves the integration of several complex aspects that affect tree protection (e.g. – but not exclusively – access and movement of materials). For this reason, the project must be carefully phased to ensure the highest level of protection for trees at all times. Accordingly, Hayden's Arboricultural Consultants have produced a method statement flowchart/checklist phasing recommendation to cover the major operations on site as they affect retained trees. This is included on drawing no. 8515-D-A-AMS.



- 2.4.2 In accordance with item 6.3 of BS 5837:2012, the site and associated development must be monitored regularly by a competent Arboriculturalist to ensure that the arboricultural aspects of the planning permission are complied with. As such, the method statement flowchart/checklist included on drawing no. 8515-D-A-AMS should be used as an auditable monitoring schedule to assess the progress of key site events/activities.
- 2.4.3 In addition to the method statement flowchart/checklist, it is beneficial to identify the key arboricultural responsibilities associated with the progression of the development. Accordingly, a draft “Statement of Supervision (Arboriculture)” has been included at Appendix E. The purpose of this document is to identify a definite decision making and data recording structure in the monitoring process, together with providing a list of specific inspection trigger points. Prior to works commencing on site, this document should be re-issued with contact names and document reference numbers included.



## 3.0 Appendices

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Appendix	<b>B</b>	Schedule of Trees
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Appendix	<b>E</b>	Statement of Supervision (Arboriculture)
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	1.	BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care
	2.	European Protected Species and Woodland Operations Checklist (v.4)
	3.	BS 5837:2012 Figure 2 - Default specification for protective barrier
	4.	BS 5837:2012 Figure 3 - Examples of above-ground stabilising systems
	5	Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area
	6.	Air Spade/Air Excavation Specification
Appendix	<b>G</b>	Drawing No 8515-D-A-AMS



## Appendix A - Species List

### Species List:

Ash	<i>Fraxinus excelsior</i>
Cherry	<i>Prunus sp</i>
Corkscrew Willow	<i>Salix babylonica var. pekinensis 'Tortuosa'</i>
English Elm	<i>Ulmus minor var. vulgaris</i>
European Lime	<i>Tilia x europaea</i>
False Acacia	<i>Robinia pseudoacacia</i>
Fastigate Lawson Cypress	<i>Chamaecyparis lawsoniana 'Fastigiata'</i>
Field Maple	<i>Acer campestre</i>
Hawthorn	<i>Crataegus monogyna</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Paper-bark Birch	<i>Betula papyrifera</i>



## **Appendix B**

### Schedule of Trees



## SCHEDULE OF TREES (AIA) Lower Barn Farm, Lower Street, Ballyham, Ipswich, Suffolk

Lower Barn Farm, Lower Street, Ballyham, Ipswich, Suffolk

Surveyed By: Alex Garnham

Date:

Managed By: Alex Garnham

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
G001	Fastigate Lawson Cypress	190	4.8		Low	N1.5, E1.5, S1.5, W1.5	Three ornamental Fastigate Cypress genus, each a differing species.	C1	No work required.	4	Fell to allow development	0
		2.28	0.2		SM	High						
		16.3			10+ years	Grass						
G002	English Elm	130	5.5		Low	N1.5, E1.5, S1.5, W1.5	Three young Elm located off-site but immediately adjacent to the boundary fence. One Elm has two branches which extend over the fence into site by approx. 3 metres.	C1	No work required.	4		
		1.56	0		Y	High						
		7.6			10+ years	Grass						
G003	Cherry Spp	170	4.5		Low	N4, E2.5, S2.5, W2.5	Two Cherry specimens located between two rows of post and wire fence. As such, ownership is unclear. One is upright and twin stemmed with a weak included bark union, the other has hockey stick form at the base and leans east into the field. Both trees are of poor overall condition but fair physiological condition. Limited landscape or long term value.	C1	No work required.	4		
		2.04	0		SM	Moderate						
		13.1			10+ years	Grass						
G004	Lime Species	820	20		High	N7.5, E7.5, S7.5, W7.5	Linear row of six early mature Lime trees. As is common with maturing Lime, the apex of the stems are cracked and dying, resulting in storm damaged torn stubs, deadwood and fresh regrowth. Some woodpecker holes visible at the apex and on branches at height. Generally good physiological condition. Given that the current land use is an animal pasture, there is not a pressing need for management. If the land use changes, it may be necessary to introduce a management scheme to remove deadwood and weak branches at height or to pollard. No indicators of fungi around the base, though clusters of Adventitious Growth prevents complete assessment.	A2	No work required.	4		
		9.84	0.5		EM	High						
		304.2			40+ years	Grass						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
H001	Field Maple, English Elm	120	6		Moderate	N2, E2, S2, W2	Hedgerow demarcating boundary between field and highway. Hedgerow is comprised primarily of a dense mass of bramble. There are occasional young Elm along the length of the feature, some of which are symptomatic of Dutch Elm Disease. As such, it is not likely that this hedge will be an enduring feature other than its composition of a mass of bramble and an individual Field Maple (surveyed separately). If the hedge is desired for retention, it is recommended that the bramble and Elm are grubbed out and the entire feature replaced with a native hedgerow species mix. This can then be managed as a traditional hedgerow.	U	Continue annual maintenance of bramble. Consider removing and replacing with native hedgerow mix.	3	Fell to allow development	0
		1.44	0		SM	High						
		6.5			<10 years	Dense undergrowth						
H002	English Elm, Hawthorn	160	5.5		Moderate	N2, E2, S2, W2	Hedgerow of Elm and Hawthorn around a portion of the boundaries onto the highway and adjacent site. Doesn't appear to be routinely managed. Some Elm symptomatic of Dutch Elm Disease.	C2	Continue annual maintenance.	3	Fell section as shown on drawing 8515-D-A-AMS.	0
		1.92	0		SM	High						
		11.6			10+ years	Grass						
T001	Corkscrew Willow	200	4		Low	N1.5, E2.1, S0.5, W1	No major defects. Has been subject to some hard pruning of the southern stems resulting in asymmetric form. Limited landscape or long term value.	C1	No work required.	4	Fell to allow development	0
		2.4	1.5		SM	High						
		18.1			10+ years	Grass						
T002	Paper-bark Birch	230	5		Moderate	N3.5, E3.2, S3.2, W3.1	Three stems from 0.75 metres, fairly typical of the species. Good overall condition. An unremarkable specimen of limited merit.	C1	No work required.	4	Fell to allow development	0
		2.76	0.5		SM	Low						
		23.9			10+ years	Grass						
T003	Field Maple	320	7		Moderate	N3, E4.2, S4.2, W4.2	Twin stemmed Field Maple located in hedgerow adjacent to the highway on the northern aspect. Tree generally in good condition, though is larger and older than the surrounding hedgerow, so has taken form as an individual specimen.	C1	No work required.	4		
		3.84	0		SM	Moderate						
		46.3			10+ years	Dense undergrowth						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T004	Ash	680	10		Moderate	N4.5, E4.5, S6, W6	Off-site Ash, visible through holes in a wooden fence. The stem bifurcates at 0.75 metres with a poor looking union. There is a cup forming on the upper surface of the southern stem, from the union. The northern stem is upright and further divides into three, with branches and foliage overhanging a garage structure and a paved area of farm. The southern stem emanates out of the low union at approximately 35 degrees and has been previously severed with surgery. New regrowth has formed two vertical stems. Overall the tree appears to be of poor structural form but good physiological condition. There is a blackened wound on the underside of a branch overhanging the boundary fence.	C1	No work required.	4		
		8.16	2.2	2.2	EM	Moderate						
		209.2		E	10+ years	Grass						
T005	Ash	330	10		Moderate	N1.5, E3.5, S4.5, W3.5	Off-site Ash tree which is twin stemmed from ground level. Crown does not overhang boundary. Poor structural form owing to the union at the base but good physiological condition.	C1	No work required.	4		
		3.96	2.5		SM	Moderate						
		49.3			10+ years	Grass						
T006	Horse Chestnut	250	7.5		Moderate	N3, E2.5, S3, W3	Off-site Horse Chestnut of good structural form and good physiological condition. Good future growth potential and may in future years become a specimen tree.	B1	No work required.	4		
		3	1.8		SM	Moderate						
		28.3			40+ years	Grass						
T007	Horse Chestnut	570	16		High	N4.5, E4, S6.5, W5.5		Off-site early mature Horse Chestnut. A free-standing tree house is located adjacent to the tree, with exterior decking at height surrounding the stem. Stem bends to the south, though compensatory branch growth to the north is helping balance. Limited access prevents full assessment however the specimen appears to be in good physiological condition.	B1	No work required.	4	
		6.84	4.5		EM	Moderate						
		147			20+ years	Grass						
T008	False Acacia	480	16		High	N5.5, E5.5, S5.5, W5.5	Off-site specimen of False Acacia of upright form and evenly distributed crown. Limited access prevents full assessment, however the tree appears to be of excellent form and condition. A tree of high quality.	A1	No work required.	4		
		5.76	5		EM	High						
		104.2			40+ years	Grass						

## **Appendix C**

### Schedule of Works to Allow Development

SCHEDULE OF WORKS (AIA)

Lower Barn Farm, Lower Street, Balyham, Ipswich, Suffolk

Surveyed By: Alex Garnham  
Surveyed:  
Managed By: Alex Garnham

Tree No.	Species	Work required	Priority
G001	Fastigate Lawson Cypress	Fell to allow development	0
H001	Field Maple, English Elm	Fell to allow development	0
H002	English Elm, Hawthorn	Fell section as shown on drawing 8515-D-A-AMS.	0
T001	Corkscrew Willow	Fell to allow development	0
T002	Paper-bark Birch	Fell to allow development	0

## **Appendix D**

### Explanatory Notes

# Explanatory Notes



## Categories

Below is an explanation of the categories used in the attached Tree Survey.

**No** Identifies the tree on the drawing.

**Species** Common names are given to aid understanding for the wider audience.

**BS 5837 Main Category** Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

**Category A** - Those of high quality with an estimated remaining life expectancy of at least 40 years;

**Category B** - Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

**Category C** - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

**Category U** - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

**BS 5837 Sub Category** Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

**Sub Category 1** - Mainly arboricultural qualities;

**Sub Category 2** - Mainly landscape qualities;

**Sub Category 3** - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

**DBH (mm)** Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

**Age** Recorded as one of seven categories:

**Y** Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

**S/M** Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

**E/M** Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

**M** Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

**O/M** Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.



## D Dead.

<b>Height</b>	Recorded in metres, measured from the base of the tree.						
<b>Crown Base</b>	Recorded in metres, the distance from ground and aspect of the lowest branch material.						
<b>Lowest Branch</b>	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.						
<b>Life Expectancy</b>	<p>Relates to the prospective life expectancy of the tree and is given as 4 categories:</p> <p>1 = 40 years+;</p> <p>2 = 20 years+;</p> <p>3 = 10 years+;</p> <p>4 = less than 10 years.</p>						
<b>Crown Spread</b>	Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.						
<b>Minimum Distance</b>	This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).						
<b>RPA</b>	This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as “a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority”. The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority’s tree officer.						
<b>Water Demand</b>	This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 “Building Near Trees”.						
<b>Visual Amenity</b>	<p>Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows:</p> <table><tr><td>Low</td><td>An inconsequential landscape feature.</td></tr><tr><td>Moderate</td><td>Of some note within the immediate vicinity, but not significant in the wider context.</td></tr><tr><td>High</td><td>Item of high visual importance.</td></tr></table>	Low	An inconsequential landscape feature.	Moderate	Of some note within the immediate vicinity, but not significant in the wider context.	High	Item of high visual importance.
Low	An inconsequential landscape feature.						
Moderate	Of some note within the immediate vicinity, but not significant in the wider context.						
High	Item of high visual importance.						
<b>Problems/ Comments</b>	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.						
<b>Work Required (TS)</b>	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the “Problems/comments” category.						





<b>Work Required (AIA)</b>	Identifies the tree work specifically necessary to allow a proposed development to proceed.
<b>Priority</b>	<p>This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey.</p> <p><b>1</b> Urgent – works required immediately;</p> <p><b>2</b> Works required within 6 months;</p> <p><b>3</b> Works required within 1 year;</p> <p><b>4</b> Re-inspect in 12 months,</p> <p><b>0</b> Remedial works as part of implementation of planning consent.</p>



<b>Access Facilitation Pruning</b>	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
<b>Arboricultural Method Statement</b>	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
<b>Arboriculturist</b>	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
<b>Competent Person</b>	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. <i>NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.</i>
<b>Construction</b>	Site-based operations with the potential to affect existing trees.
<b>Construction Exclusion Zone</b>	Area based on the root protection area from which access is prohibited for the duration of a project.
<b>Root Protection Area (RPA)</b>	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
<b>Service</b>	Any above or below ground structure or apparatus required for utility provision. <b>NOTE</b> - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
<b>Stem</b>	Principal above ground structural component(s) of a tree that supports its branches.
<b>Structure</b>	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
<b>Tree Protection Plan</b>	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.
<b>Veteran Tree</b>	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. <b>NOTE</b> - these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.



## **Appendix E**

### Statement of Supervision

**Statement of Supervision (Arboriculture)**

**Introduction**

In accordance with Planning Permission DC/19/02401 and DC/20/00458, SBS Simmons Building Services Ltd are undertaking the development of the above site.

The purpose of this document is to ensure that all works that have an impact on retained trees are undertaken in accordance with the approved Method Statement and Tree Protection Plan. As such, the purpose of the Statement is to identify the following arboricultural issues:

- Approved documents;
- Key staff and contacts;
- Critical phases of pre-commencement, induction and construction.

**Approved Documents**

The following documents must be available to all those with responsibility for arboricultural matters during construction:

- BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- Notice of Planning Decision DC/19/02401 and DC/20/00458.
- Preliminary Arboricultural Method Statement & Tree Protection Plan for this project – produced by Hayden's Arboricultural Consultants dated 12/03/2019.
- REV A Arboricultural Method Statement & Tree Protection Plan for this project – produced by Hayden's Arboricultural Consultants dated 18/02/2021.

**Key Staff**

The following have or are to be appointed responsible for arboricultural matters at the site:

- Developer: SBS Simmons Building Services Ltd (or their representative).
- Arboricultural Consultant: Hayden's Arboricultural Consultants Ltd. Contact Mr David Carmichael (Practice Manager) – 01284 765391, [info@treesurveys.co.uk](mailto:info@treesurveys.co.uk), (or his representative).
- Site Manager/Agent – TBC, (or their representative).

**Critical phases of pre-commencement, induction, construction & completion**

REF	ACTIVITY	ONE OFF /REPEAT	ATTENDEES	ACTION
1	Inspection of completed tree surgery & erection of fencing	One off	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
2	Inspection of specific tasks during construction (eg excavation in RPA, root pruning, realignment of fencing, service installation)	One off (for each identified item)	Arboricultural Consultant, Site Manager/Agent, Contractors (as required)	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
3	Additional inspections (if necessary) to ensure periods not greater than three months elapse between any of above listed monitoring events	Dependent on progress of the project	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer

**Variations and Incidents**

Any proposed variations to the proposed working method (relating to arboricultural matters) will be referred by the on-Site Manager/Agent to the Developer who will seek advice from the Arboricultural Consultant. The Arboricultural Consultant shall advise on minor amendments (e.g. realignment of fencing etc) and will subsequently report these to the Arboricultural Officer by e mail or minutes. Issues directly relating to tree surgery or tree retention will be forwarded by the Arboricultural Consultant (with recommendations) to the Arboricultural Officer for approval. Except in an emergency situation **and** when the Arboricultural Officer is unavailable, no such actions will occur without the written approval of the Arboricultural Officer.



**Alex Garnham**

Arboricultural Consultant  
Hayden's Arboricultural Consultants Ltd

Thursday 18<sup>th</sup> February 2021.

## **Reasons for a Qualified Monitoring Arboriculturalist**

It is essential that the works are monitored by a qualified and experienced Arboriculturalist for the following reasons.

1. An Arboriculturalist has the skill and expertise to identify if the approved tree surgery specification has been complied with and the knowledge to provide appropriate remedial advice.
2. It is necessary for informed decisions to be made regarding the impact of tree surgery, particularly root pruning. The location of roots is assessed via a calculation, but in reality, roots may grow in a more unpredictable fashion dependent on topographic and historic features. Under CDM it is essential that expert individual knowledge is available and can advise on the inevitable unforeseen circumstances that arise.
3. An Arboriculturalist provides the point of liaison and information exchange with the Local Planning Authority's Tree Officer who is also normally a qualified Arboriculturalist. This allows fellow professionals to discuss the technical matters that inevitably arise and agree appropriate and balanced solutions. Having an Arboriculturalist engaged on the supervision of a project provides comfort to the Local Planning Authority that tree protection measures are complied with and hence it is much more likely that there will be less direct scrutiny from the Local Planning Authority (regarding tree matters) during the build of the project than would otherwise be the case.
4. Arboricultural input is essential to confirm that tree protection measures are adequate and fit for purpose. This can often save the client time (and therefore money) by identifying working methods and systems that are site efficient.
5. As living entities sensitive to their environment, the condition of trees changes, and over the course of a project it may be necessary to advise on additional tree surgery or felling as a result of, for example disease or storm damage.
6. An Arboriculturalist will provide detailed briefing notes and "toolbox talks" to site staff to ensure their compliance with conditions and prevent arboricultural breaches of conditions arising which can have severe consequences for project progression.
7. Close liaison between the Site Manager and the Arboriculturalist will ensure that the retained trees are protected but as minimal an inconvenience to construction as possible. This leads to the final outcome which is the completion of the project with retained healthy trees complementing the buildings in the manner that the designers and planners envisaged.



**David M Carmichael**  
Practice Manager



## **Tree Protection Briefing Note**

### ***Introduction:***

The trees that are to remain as part of the development are important and must not be harmed. They have been carefully selected as part of an extensive appraisal, design and planning process and therefore are legally protected by a combination of Tree Preservation Orders and Planning Conditions. This means that any damage caused to retained trees is a serious offence, as is the undertaking of any work to trees that has not been authorised in writing by the Local Planning Authority. Contravention of this legislation is liable to lead to heavy personal or corporate fines together with the imposition of stop notices, expensive mitigation measures and replacement planting instructions. Given this, it is vital that all development staff are familiar with the approved Tree Protection Plan (TPP).

### ***Typical Forms of Construction Damage to Trees:***

1. **Physical Injury to Trunk and Crown.** Construction equipment can injure the above-ground portion of a tree by breaking branches, tearing the bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal.
2. **Root Cutting\*.** Excavation, grading and trenching associated with construction and underground service installation can be very damaging to tree roots which are vital for both anchoring the tree in the ground and gathering moisture and nutrients. Unacceptable levels of damage to the roots will lead to a tree losing vitality, dropping branches, dying or becoming unsafe – either immediately or in the future.
3. **Soil Compaction.** An ideal soil for root growth and development contains about 50% pore space for water and air movement. Tracking by construction equipment and the storage of materials can compact soil and dramatically reduce pore space. Compaction inhibits root growth, limits water penetration, and decreases oxygen needed for root survival. If the compaction is too severe, in addition to preventing effective root growth, it will cause physical injury to both anchor and feed roots.
4. **Smothering Roots by Adding Soil\*.** The majority of fine moisture and nutrient absorbing roots are within the top 30 cm of soil. Even a few centimetres of soil piled over the root system to change the grade can smother fine roots and eventually lead to the death of larger roots.
5. **Rooting Zone Contamination\*.** Many materials used on development sites (e.g. salt, lime, concrete, cement, oil) are toxic to trees. If such contaminants are spilled or allowed to leach into the RPA, they can quickly kill the roots, thus causing the same effects as root cutting, soil compaction and smothering.



\* As the location of tree roots cannot be seen, each retained tree close to a developable portion of the site has a designated Root Protection Area (RPA) as shown on the approved TPP. No excavation, grading, trenching, storage of materials nor any other activity may take place within the designated RPA unless it is in accordance with the approved Tree Protection Plan and completed under the supervision of Hayden's Arboricultural Consultants.

### ***Preventing Damage to Trees During Construction:***

The approved TPP provides specific instruction on the tree protection measures required across whole site in order to prevent damage. The primary methods of protection are as follows: -

1. **Installation of Protective Fencing.** The alignment and specification of this is shown to scale on the approved TPP. It must be erected prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. No activities may take place within the fenced area, and no materials may be stored within the fenced area. The fencing may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.
2. **Ground Protection.** Where fencing is impractical the TPP provides instruction on other forms of effective ground protection. An example of this would be the provision of a temporary load bearing surface to prevent soil compaction and contamination. This must be of bespoke design for each situation so as to ensure it is fit for purpose. As with the fencing, this must be installed prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. The temporary ground protection may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.
3. **Monitoring Visits from Hayden's Arboricultural Consultants.** Under the terms of the planning permission the development must be monitored by an Arboriculturalist on a suitably frequent basis. The purpose of this is twofold: -
  - a. To ensure that the above tree protection measures are complied with and report findings to the developers AND the Local Planning Authority.
  - b. To be available to provide help and advice regarding the inevitable requests for changes and supervision when working around retained tree.
4. **Operational Planning.** Whilst it is understood that trees are far from the only issue to be managed on site, they do represent a significant and potentially costly constraint if the protection measures required in the TPP are not strictly adhered to and as a result construction damage to trees occurs. Therefore, if problems in terms of work space conflicting with tree protection measures are identified, early liaison with Hayden's Arboricultural Consultants is essential so as to agree supervised works, alternate working methods or if necessary seek additional approval from the Local Planning Authority. Failure to identify these matters at an early stage may lead to significant delays as it can be a lengthy procedure in gaining a response from the Local Planning Authority.





**Conclusion:**

- Tree Protection Measures are there to protect the environment. They are also there to protect you. If they are complied with, trees will not be harmed. Therefore, DO NOT amend the protection unless you have written consent from Hayden's Arboricultural Consultants or the Local Planning Authority.
- If you are unsure on any tree related matter, seek advice before you act. Hayden's Arboricultural Consultants will discuss your concerns and help find practical and timely solutions (where possible).
- Hayden's Arboricultural Consultants, in conjunction with the Local Planning Authority, may change the frequency of Arboricultural Monitoring Inspections if it is deemed necessary to ensure the approved standards of tree protection are adhered to.
- Hayden's Arboricultural Consultants can be contacted in the first instance at the Head Office on 01284 765391.



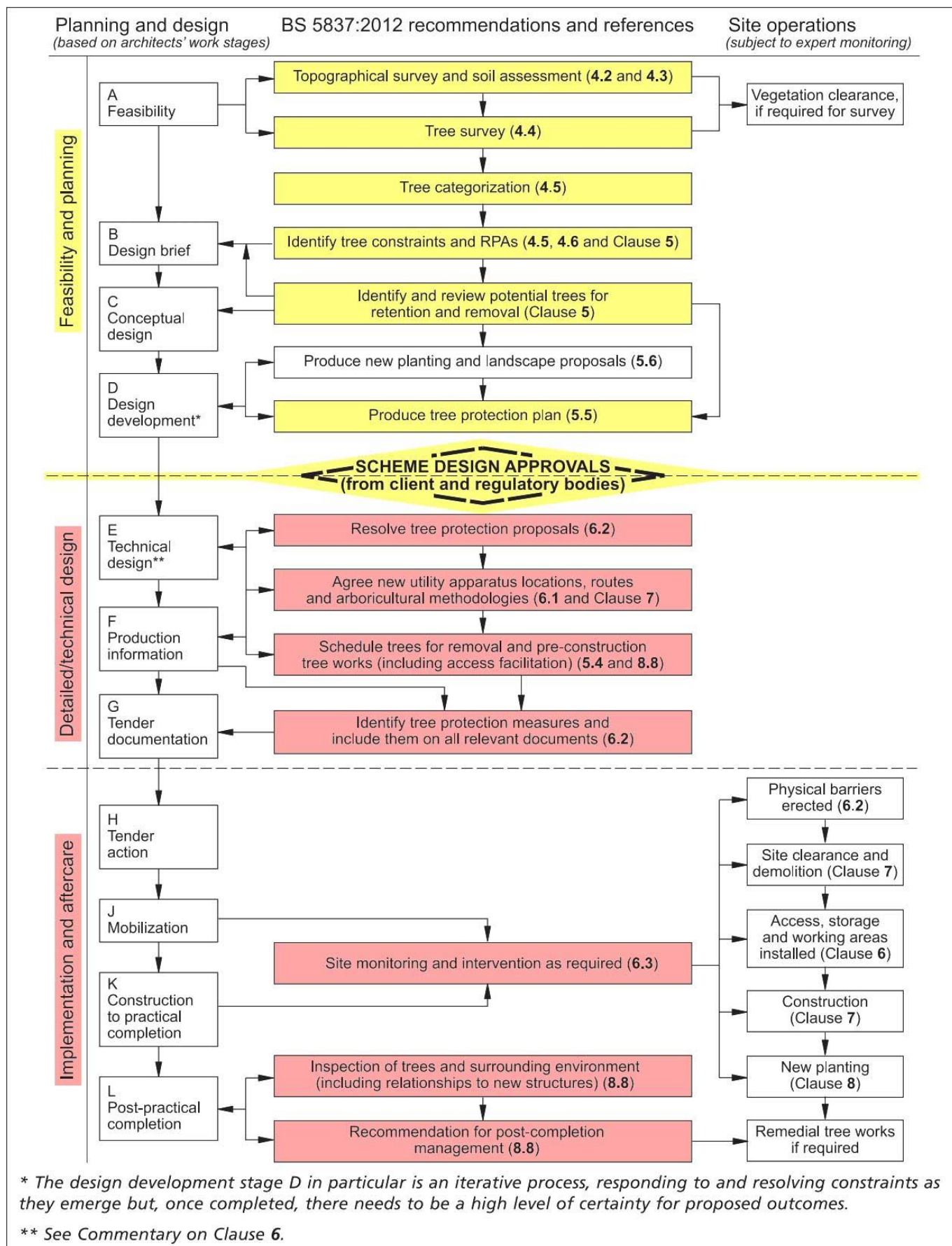
**David M Carmichael**  
Practice Manager



## **Appendix F**

### Advisory Information & Sample Specifications

# 1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care



## European Protected Species and woodland operations. (V4)

Complete all sections of the Checklist



### Checklist

<b>1</b>	<p>Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply. See distribution maps in the Good Practice Guidance for each species -</p> <p> <input type="checkbox"/> Dormice  <input type="checkbox"/> Otters  <input type="checkbox"/> Great crested newts  <input type="checkbox"/> Sand lizards  <input type="checkbox"/> Smooth snakes         </p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>
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<b>2</b>	<p>Does your wood contain any of the following habitats? Tick any that apply.</p> <p> <input type="checkbox"/> Old trees with holes and crevices which might be used bats  <input type="checkbox"/> Species rich scrub/coppice, early growth stage plantations and forest interfaces  <input type="checkbox"/> Rivers on which otters might be found  <input type="checkbox"/> Ponds which might be occupied by great crested newts  <input type="checkbox"/> Open areas on heathy soils         </p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>
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<b>3</b>	<p>Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply. Indicate which sources of information you have checked:</p> <p> <input type="checkbox"/> National Biodiversity Network (<a href="http://www.nbn.org.uk">www.nbn.org.uk</a>)  <input type="checkbox"/> Local Biological Records Centre  <input type="checkbox"/> Local Wildlife Trust  <input type="checkbox"/> Other  <i>Specify Other:</i> </p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>
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<b>4</b>	<p>Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.</p> <p> <input type="checkbox"/> Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts)  <input type="checkbox"/> Sightings (or echo-location)  <input type="checkbox"/> Potential breeding or roosting sites (e.g. veteran trees, old trees with crevices, riverside hollow trees, ponds, timber stacks, large fallen deadwood)  <input type="checkbox"/> Confirmed breeding or roosting sites (i.e. evidence of sites actually being used)  <i>Details:</i> </p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>
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### CHECK POINT

If you have answered NO to ALL of the above then only bats need to be considered in your operations.

If you have answered YES to any of the above then the species concerned must be considered as well as bats.

### Details

Name of Wood:
Grid Reference:
Area: (ha)
Date of Assessment:
Name of Assessor:

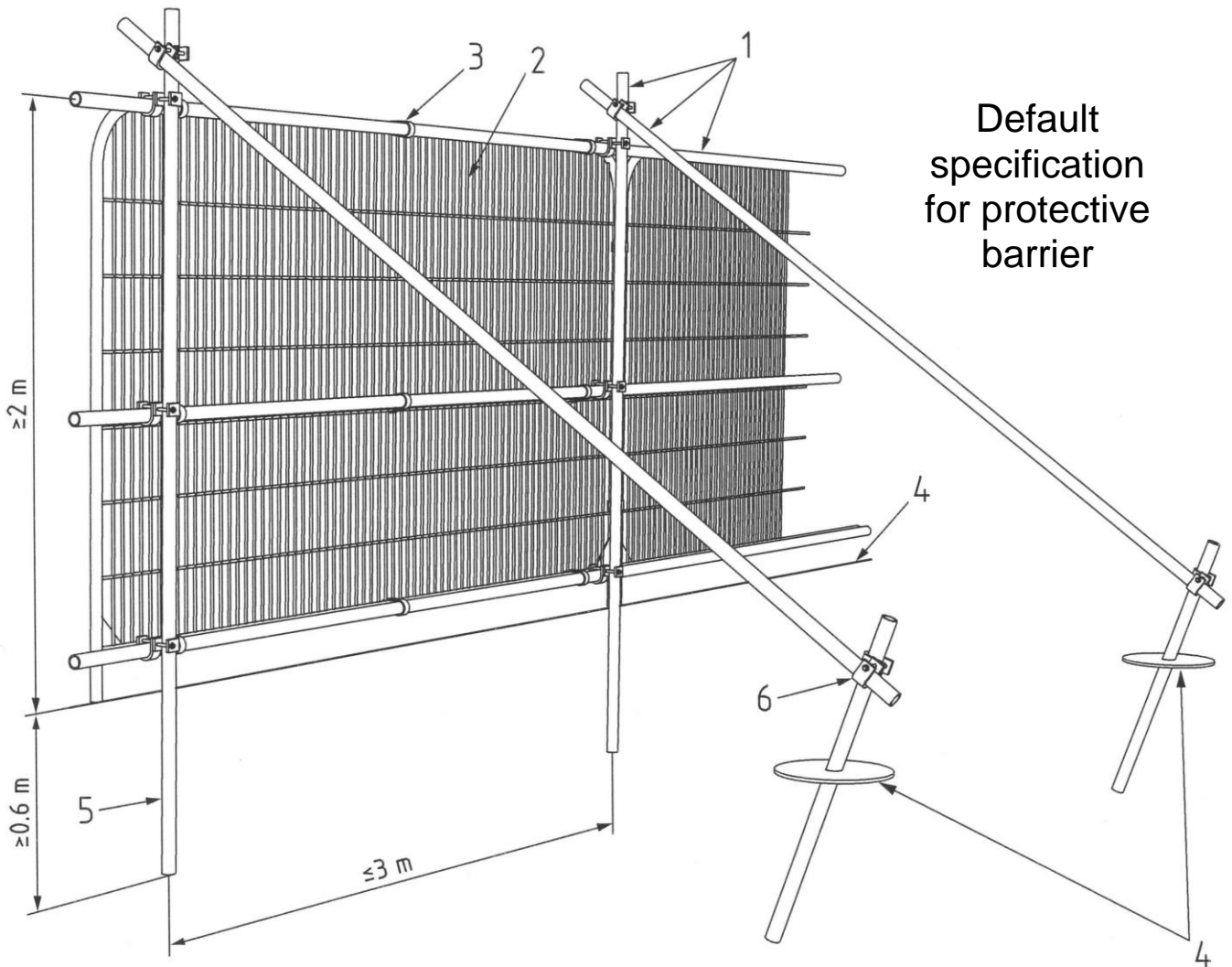
### Notes

<b>5</b>	<p>Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so? <i>Details: Use reverse of form to expand as required:</i></p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>	<p>A licence is not required but continue to sections 6 and 7 below</p> <p>You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)</p>
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<b>6</b>	<p><u>Whether or not a licence is required...</u> Has the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.</p> <p> <input type="checkbox"/> Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan)  <input type="checkbox"/> Shown to operators and/or their supervisor  <input type="checkbox"/> Marked with paint or hazard tape  <input type="checkbox"/> Shown on the site plan  <i>Other means:</i> </p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>	<p>You may commit an offence if you do not tell your operators about the protected species in your wood.</p>
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<b>7</b>	<p>Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations? <i>Details:</i></p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">YES</div> <div style="border: 1px solid black; padding: 2px;">NO</div>	<p>You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.</p>
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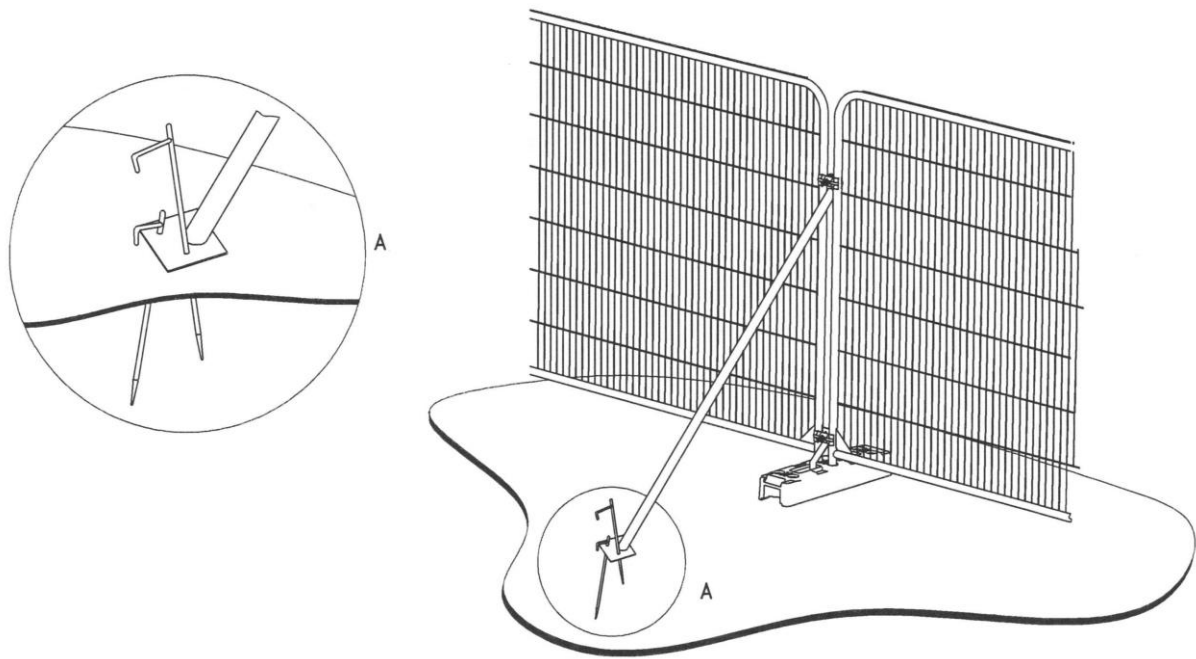
3. BS 5837:2012 Figure 2: Default specification for protective barrier



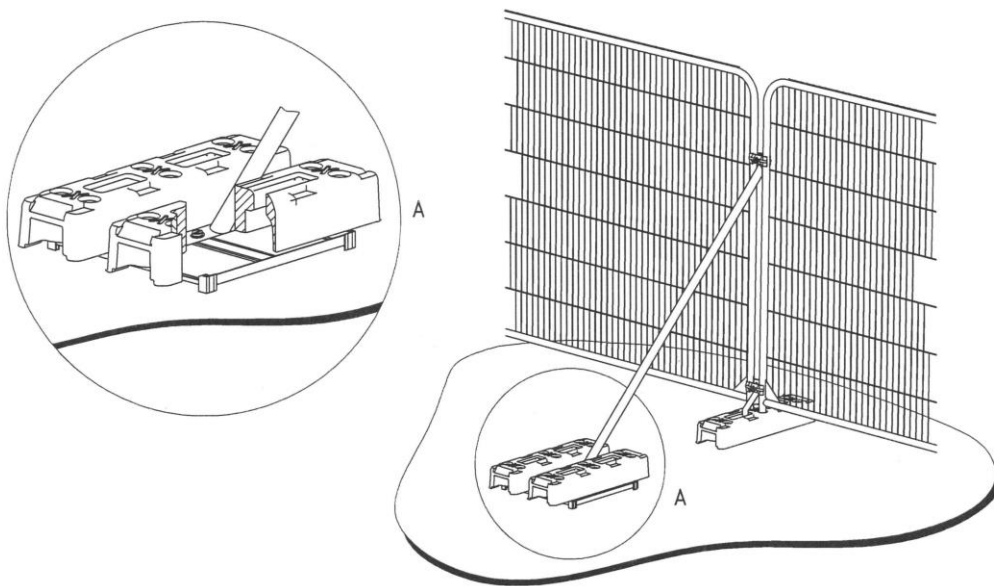
Key

- 1 Standard scaffold pole
- 2 Heavy gauge 2m tall galvanised 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 0.6m)
- 6 Standard scaffold clamps

4. BS 5837:2012 Figure 3: Examples of above-ground stabilizing systems



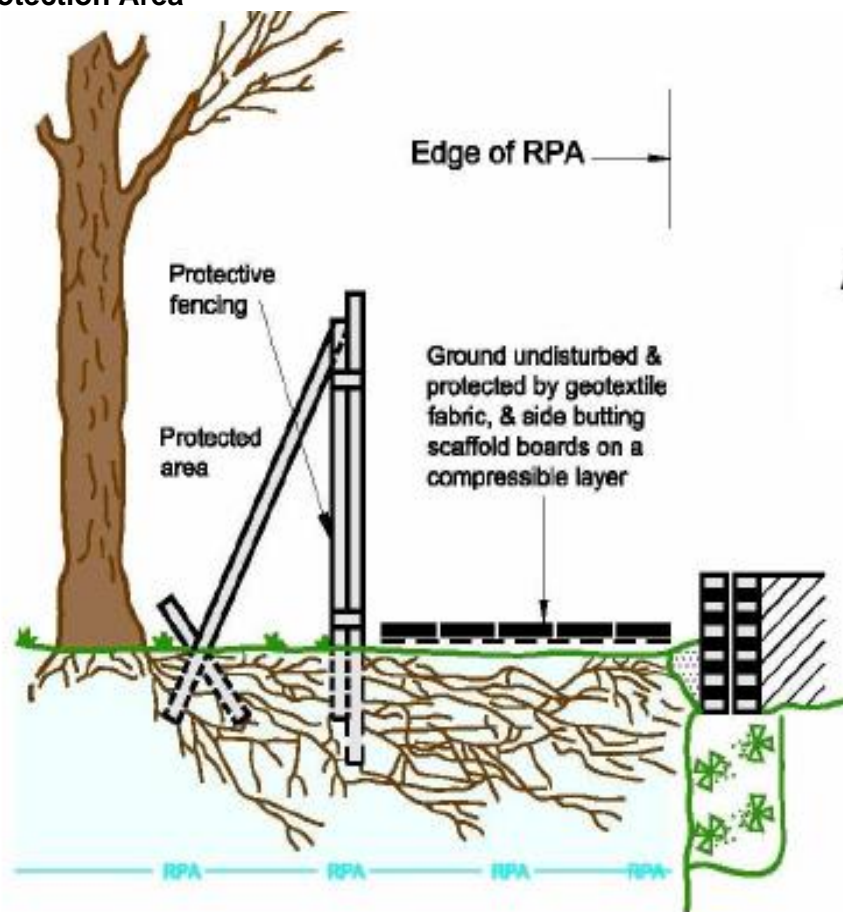
a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

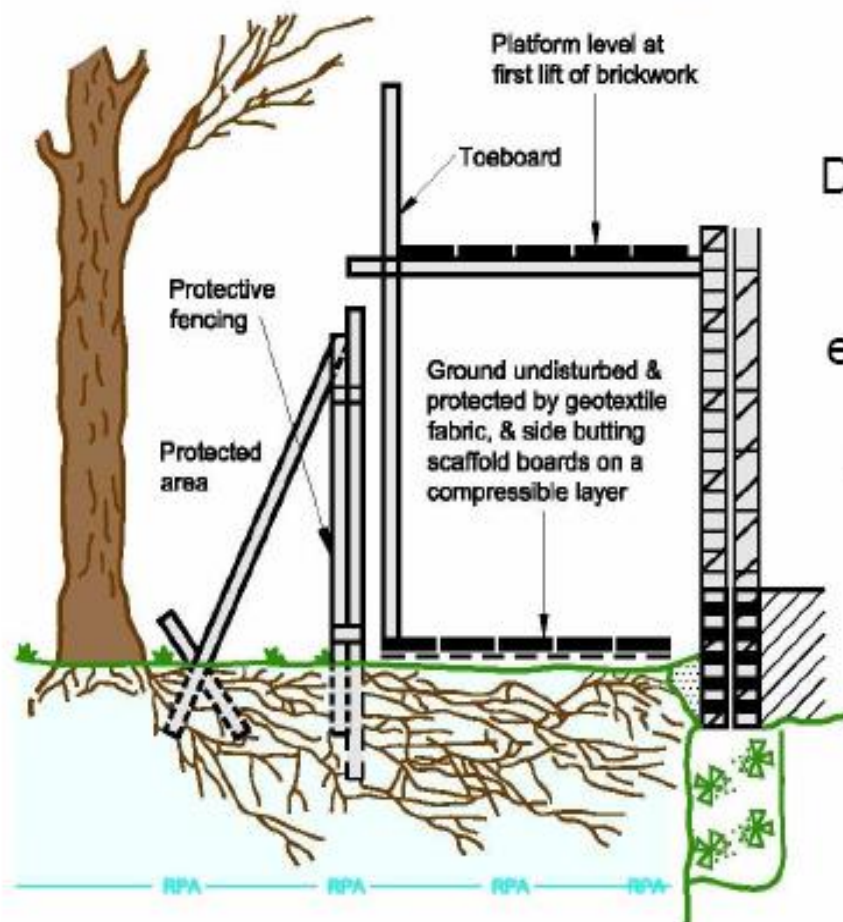


5. Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area



Appendix No 2.1

Figure 4 –



Detail of protective barrier where construction encroaches within BS 5837:2012 Root Protection Area (RPA)

## Industrial / Construction Applications

**AIR-SPADE®** is the ideal tool for contractors, utility companies and everyone practicing safe excavation. Common uses include:

Pot holing  
Utility line Locating  
Crack Cleaning  
Valve box cleaning  
Utility Installation  
Line spotting for backhoe  
Vacuum excavation  
Trench rescue  
Meter locating

## Full Range of Parts Available

AIR-SPADE® Series 2000 tool \*

2 ft. 3 ft, 4 ft or 5 ft. extensions

Custom length barrel  
Extra 15, 25, or 60 scfm nozzle  
Extra 105 or 150 scfm nozzle  
Extra 225 scfm nozzle  
45o Angled Adapter  
Arboricultural Applications Benefits  
AIR-SPADE® Handle

10 Ft. Lightweight Hose  
25 Ft. Lightweight Hose  
50 Ft. Lightweight Hose

Scratch Proof Face Shield

Spare Parts Kit  
Storage Case with lock  
\* includes handle, 150 cfm / 90 psi nozzle, and 4 foot barrel.

## Why does the AIR-SPADE® out perform other air tools?

In head to head tests, the AIR-SPADE® dislodged harder clay soil and dug faster than other air digging tools. Soil fractures from compressive stress, tons per square foot (tsf), exerted on its surface. As shown above for the same pressure and flow, compressed air exiting from a pipe nipple, orifice, or improperly designed nozzle expands outward rapidly to 3 to 4 times the area versus the jet from the patented supersonic nozzle in the AIR-SPADE®. The flow from these competitors can even go sub-sonic as indicated by the presence of a "Mach Disk," which can be seen in the flow if the

## 6. Air Spade/Air Excavation Specification

The largest specialist Arboricultural suppliers in the North of England.

UK Distributors to the Tree Care Industry of the **AIR-SPADE®**

**AIR EXCAVATION TOOL**

Industrial / Construction Applications



## Arboricultural Applications

## Benefits

**AIR-SPADE®** is used by arborists and landscape professionals worldwide for:

Root Collar Excavation

Plant Aeration

Vertical Mulching

Soil Compaction Relief

Disease diagnosis and treatment

Transplanting

Bare rooting

Damage analysis

Locating Roots in New Construction

Root Pruning and Structure Analysis

Running utilities through the root zone

Radial trenching

- Digs faster and harder soils than competitive or home made wands
- Less worker fatigue/injuries than a pick or shovel
- Faster and safer than hand digging
- Saves expensive hourly labour costs
- Non-damaging to all kinds of buried utilities or plant roots
- Digs without making mud and does not create "contaminated" spoil like water
- Excavated soil is ideal for recompaction
- Modular design with parts that screw together without tools
- Interchangeable nozzles sized to match air compressors from 15 to 250 scfm
- Interchangeable extensions to 8ft and reducers to 2 ft
- Ergonomic handle with thermal shield and pressure gauge
- Safety "dead Man" trigger with guard
- Electrically insulating barrel
- Hardened wear resistant stainless steel nozzle
- 45 deg adaptor

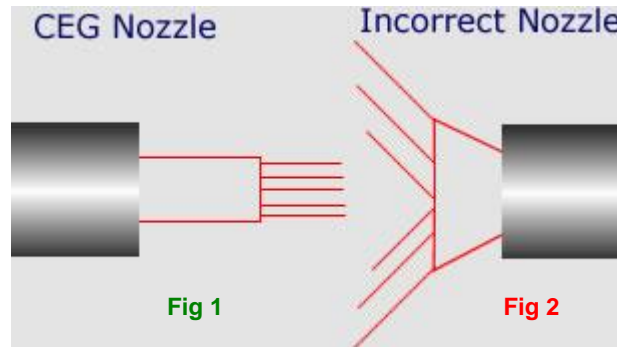


## Will higher pressure make the AIR-SPADE® work Better?

## How Does it Work?

Increasing the air pressure above 90 psi on a properly designed supersonic nozzle does not lead to a proportional gain in excavation capability. For example, doubling the nozzle pressure to 180 psi increases the air jet force by only 10% and the exit momentum flux (stress seen by the soil) by only 45%. Supplying higher pressure to a nozzle designed to work at 90 psi actually un-focuses the air jet degrading performance and consuming more air.

Patented CEG Supersonic nozzle turns 90 psig compressed air into laser-like Mach 2 jet. Jet penetrates and fractures friable materials like soil but harmlessly goes around buried pipes, cables, fibre optic lines and tree roots.



Jet from CEG nozzle focuses all of its energy and momentum onto concentrated spot on the soil. **Fig 1**

Air from pipe nipple, orifice, or improperly designed nozzle, expands greatly reducing its effectiveness. **Fig 2**

## In what types of soil will an AIR-SPADE® work?

Because of its unique, focused air-jet, the **AIR-SPADE®** works in most soils, even hard clays. Cohesive soils can be classified and described by unconfined compressive strength as shown below. Tests have shown the **AIR-SPADE®** to be effective in compacted soils with unconfined compressive strengths well above the values listed to the right for hard clay.

Watering the work area ahead of time can be helpful sometimes. Watering reduces airborne dust if the soil is extremely dry. It also reduces the soil's strength making the digging easier. Combined use of the **AIR-SPADE®** with a low pressure water jet is effective even with extreme cases of highly compacted or sun-baked soils.

The **AIR-SPADE®** in general will not cut through rock, since its unconfined compressive strength is much greater than for soil. In fact, soil results from the physical and chemical breakup of weathered rock. Shales, however, may be broken apart by the **AIR-SPADE®** if the jet is directed between the laminations of the rock. Similarly, the **AIR-SPADE®** will not dislodge hard frozen soil which may behave like pavement or concrete.

Type	Unconfined Compressive Strength tsf	Description Cohesive soils including:
A	$\geq 1.5$ stiff	Clay, silty clay, sandy clay, clay loam, caliche, hardpan, and sometimes silty clay loam and sandy clay loam.
B	$< 1.5$ and $> 0.5$ med	Granular cohesive soils like angular gravel, silt, silt loam, sandy loam, and sometimes silty clay loam and sandy clay loam.
C	$\leq 0.5$ soft /v.soft	Granular soils such as gravel, sand, loamy sand, submerged soil, or soil from which water is freely seeping.

## What size nozzle should I use?

Nozzles are available that use from 15 to 225 cfm of compressed air. The amount of soil that can be dislodged in a given amount of time is roughly proportional to the amount of air used. The 150 cfm nozzle is the most commonly used size for arboricultural and industrial applications. It has good productivity and is designed to run from the most common size of portable air compressor, a 175 to 185 cfm unit

Pressure Loss (psi) for 50 feet of common air hose						Excavation Rates (cu ft / min)			Recommended Compressor Size	
FLOW 9CFM						Nozzle Air Flow (CFM)	Soil Type A	Soil Type C	Nozzle (cfm)	Flow Rating (cfm) at 100 psi
Hose ID	25	60	105	150	225	15	0.5	0.2	15	15
						25	0.9	0.4	25	25 - 30
¾"	0.3	1.6	5.6	12.3	25.0	60	1.1	0.7	60	60 - 70
1"	0.1	0.4	1.3	2.8	5.5	105	1.5	0.9	105	125
1 1/4"	0.0	0.1	0.4	0.8	2.0	150	1.8	1.2	150	175 - 185
						225	2.3		225	250

## How should I dig with the AIR-SPADE® ?

The **AIR-SPADE®** will dislodge up to several inches deep in a medium to stiff soil. High-speed movies show that an air-jet penetrates and dislodges the soil in a fraction of a second. Unless the soil is highly compacted, dwelling on the same spot is unnecessary and tends to increase spray. The **AIR-SPADE®** can be moved over the soil surface at a rate of about 1 to 2 feet per second. When several inches of soil have been loosened, the soil should be removed to expose a fresh working face for the air jet. Vacuum suction, as provided by our AIR-VAC and SAFEX® units, is an excellent companion to the **AIR-SPADE®** since it is likewise non-damaging.

## What size of air hose do I need to use the AIR-SPADE® properly?

Compressed air flowing through a hose experiences a drop in pressure from friction and constrictions. Friction loss is proportional to the length of the hose. The amount of air, its pressure, the hose inner diameter and its smoothness also determine the loss. The table below shows the pressure loss for 50 feet of common air hose with couplings as a function of size and nozzle flow, cfm, for air at a pressure of 90 psi. Generally, a 1-inch air hose is recommended for use with the AIR-SPADE®.

## How much will it Cost?

### Arbor Kit complete includes:

AIR-SPADE® Series 2000 tool



45deg Angled Adapter  
10 Ft. Lightweight Hose  
Storage Case with lock  
Shipping/Carriage to Mainland UK  
Excluding vat  
£995.00 \*

Shipping/Carriage to Mainland UK  
Excluding vat  
£775.00

\*Prices are subject to exchange rate fluctuations

AIR-SPADE® Series 2000

## Who can supply me with it – and How long will it take to arrive?

You can be using this tool within 6 days of ordering it, it will be delivered to your door, carriage paid (Mainland UK).



The largest specialist Arboricultural  
suppliers in the North of England  
Import the

### AIR-SPADE®

Air Excavation Tool  
&  
Arbor Kit

CONTACT US NOW TO DISCUSS THIS INVALUABLE ADDITION TO YOUR WORKING TOOLS DO THE WORK FASTER - GET BETTER RESULTS !

TELEPHONE 0113 2296006:

EMAIL [info@treesunlimited.co.uk](mailto:info@treesunlimited.co.uk)

FAX 0113 2295171

## **Appendix G**

Haydens Drawing

Arboricultural Impact Assessments ●  
Arboricultural Method Statements ●  
Tree Constraints Plans ●  
Arboricultural Feasibility Studies ●  
Shade Analysis ●  
Picus Tomography ●  
Arboricultural Consultancy for Local Planning Authority ●  
Quantified Tree Risk Assessment ●  
Health & Safety Audits for Tree Stocks ●  
Tree Stock Survey and Management ●  
Mortgage and Insurance Reports ●  
Subsidence Reports ●  
Woodland Management Plans ●  
Project Management ●  
Ecological Surveys ●



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