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Ref: 23<sup>rd</sup> March 2021 - BJU/mmi

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Dear Ceri,

**Arbour Tree Farm, Warwick Road, Chadwicks End, B93 0BE. - BS5837 Tree Constraints, Tree Impacts and Tree Protection Method Statement for re-development.**

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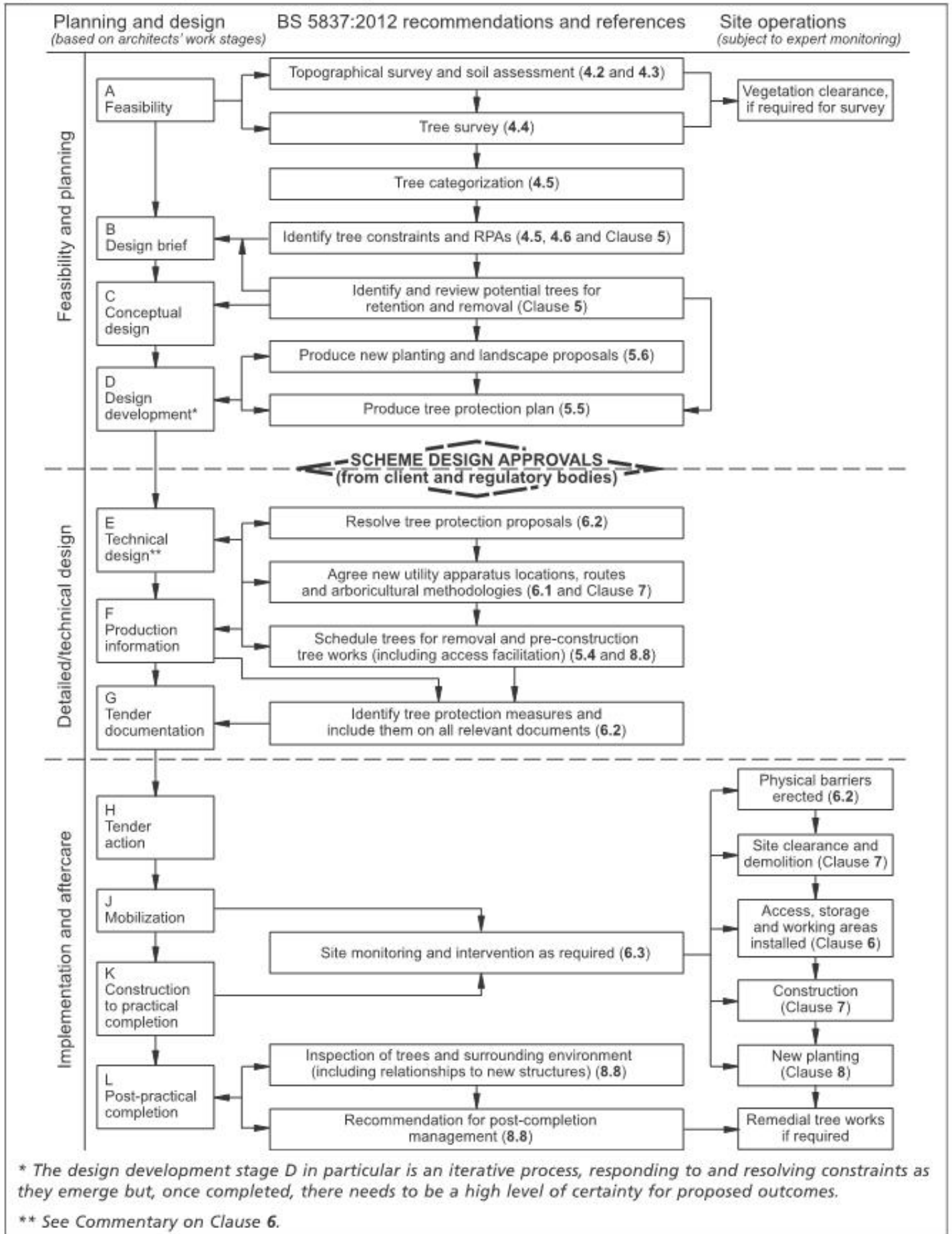
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**Tree and Woodland Consultancy**  
**Woodland Valuation and Timber Sales**  
**Landscape Management**

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Figure 1 The design and construction process and tree care



## **1. Instruction.**

- 1.1 Ceri King, assisted by Tyler Parkes, intends to re-develop part of Arbour Tree Farm. Therefore, Alan Tyler has asked B J Unwin Forestry Consultancy to advise on trees for planning application purposes, subject to quote.
- 1.2 The local authority (Solihull Metropolitan Borough Council) require a tree impact assessment and tree protection method statement for any proposal. The local authority may require mitigation by new planting for any trees lost as part of any development.
- 1.3 We have used a **topo building & visibility splays surveys by Landsett Services of 2018 & 2019** for constraints plans. We have added trees within the site. **Tyler Parkes 18081(10)M-401B Proposed Block Plan of 22/03/21**, extract in section 5, shows the proposal, and guides our tree impact and tree protection sections 5 & 6 of this report.
- 1.4 Therefore methodology of the report below follows *BS5837:2012 Trees in Relation to Design, Demolition & Construction*.
- 1.5 BS5837 flowchart previous page. Appendices follow signature page.

## **2. Inspection.**

- 2.1 Jim Unwin visited the property on 3<sup>rd</sup> March 2021, met house occupier and Stable Cottage occupier, and made an un-accompanied inspection.
- 2.2 The survey was from ground level, involving visual observation (Visual Tree Assessment: Mattheck and Breloer, 1994 and Lonsdale, 1999). We measured dbh, (estimated for off-site and inaccessible trees) and measured or estimated crown spread and height. We added most trees, located by laser measure from known points.
- 2.3 The survey and report for this project are by Jim Unwin, who has > 40 years' experience working with trees (professional-CV attached).

## **3. The Site.**

- 3.1 The site inspected is the farmhouse and most of its garden, and outbuildings to its south. In total about 100m by 80m in size. The garden is mostly lawned, with a kitchen garden and small orchard to the north east.
- 3.2 Local terrain is Flat with a very slight fall to the south from about 117m aod to 114m aod. Surrounding ground is reasonably flat, and the site is not exposed to winds.
- 3.3 Geology from BGS website:  
**Superficial deposits:** Glaciofluvial Deposits, Mid Pleistocene - Sand and gravel. Sedimentary superficial deposit formed between 860 and 116 thousand years ago during the Quaternary period.  
**Bedrock geology:** Sidmouth Mudstone Formation - Mudstone. Sedimentary bedrock formed between 250 and 228.4 million years ago during the Triassic period. Therefore, natural subsoils and upper geology will have no volume-change potential. Deeper mudstone has volume-change potential.
- 3.4 The site sits in a rural location with a small copse to the north, farm/equestrian buildings to the south, and agricultural / horse paddock land all around.

## **4. The Trees.**

- 4.1 Trees on site:-
  - The site contains only two large trees, good beech T21 in the back garden, and mature ash T18 on the front lawn, by a small pond.

- Other garden trees are mostly in a strip along the southern wall, including ornamental plums, Lawson cypress, other small trees and shrubs.
- South east of the garden is a stunted Norway maple T4 in a raised planter, and a good beech T1.
- East of T4 is some younger ornamental planting T2, T3 & T4-T11, including and some leaning wild cherries.
- The roadside hedge is an original hawthorn field hedge, with a laurel and holly hedge planted close to its eastern side, so the two merge.

#### 4.2 Off-site trees:-

- A small mixed copse stands north of the garden.
- The roadside south of the farm buildings has some young to half-grown mixed planted trees including limes, and self-sown hedgerow ash. .

#### 4.3 Amenity: This could describe an attractive tree, a screening function, habitat potential, or historic/veteran tree.

- Trees within the site are largely hidden from external views, except ash T18.
- Although in the rear garden, beech T21 is a large and well-shaped tree.
- We have not checked for presence of TPOs.

#### 4.4 Photos below:



#### 4.4.1 View north along the A4141 Warwick Road, with planted roadside trees on the right and self-sown ash etc on the left.



**4.4.2 View east to maple T4, beech T1 and cherry T3 on right. Garden trees on left behind wall include T22 and Lawson cypresses T23 & T24.**



**4.4.3 View north to small cypress T14 left in front of mixed roadside hedge H15. Central is ash T18, small lime T17 and Leylandii hedge H16.**



**4.4.4 View south east across kitchen garden to small fruit trees G20 on left. Beech T21 in distance.**



**4.4.5 View south west to good beech T21. T22-T25 beyond beech. Mixed group G26 including a cedar out of picture left.**

## **4.5 Detailed Tree Descriptions**

4.5.1 Trees **on, or potentially influencing** the site, are individually described in the table below, and shown on the plans in Appendices.

**Age class** is described as:-

- Sap: Very young tree, or sapling, one-five years old.  
Y: Young tree less than fifteen years old and <1/3 fully grown.  
Sm: Semi-mature tree having attained 1/3 to 2/3 full stature and 1/3 to 1/2 estimated lifespan.  
Em: Early mature: tree at 2/3 to virtually full size, and halfway through its safe life.  
M: Mature: fully-grown tree with useful life expectancy.  
Lm: Late-mature: fully grown, of declining vigour, but still healthy.  
Om: Overmature tree: fully grown and starting to decline in health (but may still have years of safe life).  
Vet: Veteran: usually very old; of significant historic, habitat or cultural value.

**Health & Structural condition**:- Self-explanatory:- **Good, Fair, Poor or Dead.**

### **Remaining Safe Useful Life**

Prediction of safe life in its location, estimated as:-  
<5 years, <10 years, 10-20 years, 20-40 years, >40 years.

**Retention categories**, based on BS 5837 Section 4.5, are:-

Retain:

- A =** High quality or value >40yrs safe life: Light Green\*  
**B =** Moderate quality or value >20yrs safe life: Mid Blue\*  
**C =** Low quality or value >10yrs safe life  
or young trees <150mm stem diameter. Grey\*

Remove:

- U =** <10yrs safe life or should be removed for  
sound arboricultural reasons: Dark Red\*  
(\*Colour marking on relevant Tree plan)

### **Sub-category for retention**:-

- 1 = Arboricultural Value  
2 = Landscape Value  
3 = Cultural and/or Habitat Conservation Value

### **BS 5837:2012 Root Protection Area:**

The estimated volume of soil 1m deep required to sustain the tree, usually expressed as a disc 1m deep, centred on the tree's trunk.

**THE RPA CAN BE A VARIED SHAPE ENCLOSING THE CORRECT ROOTABLE AREA:  
but SHOWN AS A CIRCLE FOR CONVENIENCE.**

**Calculated as:-**

**Single-stem** tree, radial distance = 12 x stem diameter at 1.5m ht.

**Multi-stem** trees 1-5 stems = Square root of (sum of individual stem diameters squared).  
> 5 stems = Square root of (average dbh squared x number of stems).

4.5.2 **Arbour Tree Farm - BS5837 Inspection - BJUFC – 3<sup>rd</sup> March 2021**

No. T=tree S=shrub H=hedge G=group	Species	Dbh (stem diam @ 1.5m ht) mm.	Total height. Ht to base of crown. Est Ht in 10 yrs. m.			Crown radii m.				Age class	Health	Structural Condition	SULE	Comment  (All are in average to good health and condition, unless stated otherwise.)	Retention category A (best) to C. U = (remove) Sub-category 1, 2 or 3	BS 5837 Root Protection Area Radius. m.	Recommended WORK excluding development.  (No entry means no work anticipated within five years.)
			N	E	S	W	N	E	S								
T1	Beech	370	16	4	18	4	4	4	4	Sm	F	F	>40		A2	4.4	
T2	Wild cherry	460	15	2.5	17	6	4	3	3	M	F	F	>20		B2	5.5	
T3	Whitebeam	190	8	2.5	8	3	0	0	3	Em	F	P	10- 20	Lopsided.	C2	2.3	
T4	Norway maple	450	8	2.5	9	4	4	4	4.5	Sm	P/ F	F	10- 20	In small raised island.	C2	5.4	
T5	Pear	150	7	1	8	2.5	2.5	2.5	2.5	Y	F	P/ F	>20	Basal suckers taking over.	C2	1.8	Prune off basal suckers.



T6	Rowan	180	5	1.5	6	2	2	2	2	2	Y	F	F	>20		C2	2.2	
T7	Crab apple	200 basal	6	1.5	7	2.5	2.5	2.5	2.5	2.5	Y	F	F	>20	Small ornamental.	C2	2.0	
T8	Crab apple	220	4	1	5	1.5	1.5	2	1.5	1.5	Y	F	F	>20	Small ornamental.	C2	2.6	
T9	Pear	110	5	1	6	1.5	1.5	1.5	1.5	1.5	Y	F	F	>20	Small ornamental.	C1	1.3	
T10	Pear	140	7	2	9	1.5	1	2.5	1	1	Y	F	F	>20	Small ornamental.	C1	1.7	
T11	Whitebeam	100, 150, 180	7	2	9	2.2	2.2	2.2	2.2	2.2	Y	F	F	>20	Small ornamental.	C2	3.1	
T12	Wild cherry	120, 150, 150, 200	10	2.5	12	0.5	4	5	3	3	Sm	F	P	>20	Lean south.	C1	3.8	
T13	Whitebeam	180	7	2	7.5	0.5	0.5	2	2	2	Sm	F	P/F	>10	Suppressed.	C1	2.2	

T14	Variegated Lawson cypress	5 stems avg. 100	5.5	0	5.5	2.5	2.5	2.5	2.5	Em	F	F	>40		C1	2.7	
H15	Mixed	150	1-2.5 See	0	5.5	2.5	2.5	2.5	2.5	Em	F	F	>20	Original hawthorn hedge with laurel and holly hedge planted on garden side.	C2	1.8	Trim annually to 'A'-shaped profile.
H16	Leyland cypress	150	6	0	6	1.25	1.25	1.25	1.25	Sm	F	F	10-20	Slightly overgrown hedge.	C2	1.8	Prune: Top and trim. Then trim annually.
T17	Lime	300	9	2	12	2.5	2.5	2.5	2.5	Y	F	F	>40		B1	3.6	
T18	Ash	600, 650	16	4	16	5	6	7	7	M	P	F	10	Some Ash Dieback Disease.	C2	10.6	Monitor. If > 50% dieback, fell.
T19	Hawthorn	90	4	1	4	1	1	1	1	Sm	P	P	10	Tiny. Dieback. Grass suppression.	C2	1.1	Needs 2m diameter mulch bed around it.
G20	Fruit trees	150	2-4	1	2-4	1.5-3	1.5-3	1.5-3	1.5-3	Sm	F	F	10->20	Mixed fruit orchard. Apples etc.	C2	1.8	Prune annually for fruit.
T21	Beech	1000	22	3	23	8	8	8	8	Em / M	F	F	>40	Good and large.	A1/A2	12.0	

T22	Purple plum	700 basal	9	2.5	9	4	4.5	4.5	4.5	Lm	F	F	10-20	Big.	C2	7.0	
T23, T24	Lawson cypress	250	12	1	12	1.5	1.5	1.5	1.5 ext.	Em	F	F	>20	Topped long ago.	C2	3.0	
T25	Plum	400 basal	9	2	9	4.5	4.5	4.5	4.5	Em / M	F	F	>20		C1	4.0	
G26	Mixed	20-35	5-9	2	5-10	2.5 ext	2.5 ext	2.5 ext	2.5 ext	Em	F	F	>20	Mixed planted ornamental garden trees, including a cedar; none large.	C2	3.5	
None.	Roadside trees									Y-Em	F	F	20-40	Roadside trees to the south, see plans for identification.	C & B	n/a	

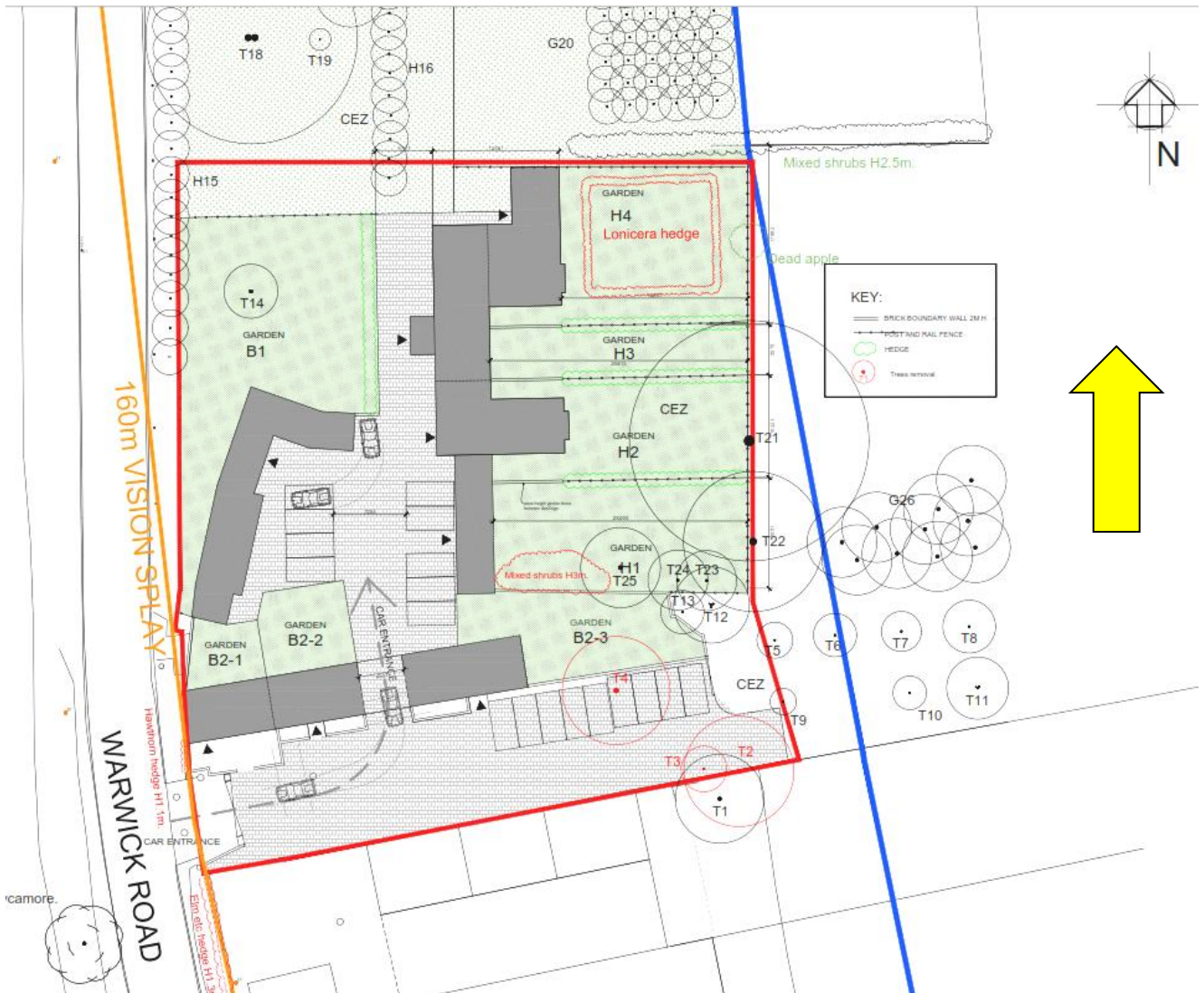
End of table.

## 5. Proposed Development & Tree Impacts.

### 5.1 The proposal.

5.1.1 The plan, Tyler Parkes 18081(10)M-401B Proposed Block Plan of 22/03/21, extract below, shows the proposal.

5.1.2 The existing entrance accesses a divided house, and renovated outbuildings, in all, eight units.



### 5.2 Tree Constraints and Impacts (considered below).

5.2.1 There are six potential arboricultural constraints to the development of the site:

- **physical contact of above-ground parts of the tree,**
- **below-ground parts,**
- **shading,**
- **over-bearing, and falling material,**
- **subsidence/heave, and root growth,**
- **impact on amenity value.**

5.2.2 Trees are listed in table, and coloured on the Tree Plans, to indicate their retention categories A,B,C,U: with the colours explained in the keys of the table & plan (A = best to U = remove). This allows the site designer to plan around important trees, and ignore lesser trees.

### **5.3 Physical contact of above-ground parts of trees.**

#### **5.3.1 General:-**

Tree Plans in Appendices shows tree locations and crown spreads. Crown dimensions: spread in four directions, base of crown and tree height, are given in Table 4.5.2.

#### **5.3.2 Specific above-ground impacts:-**

- Norway maple T4 is replaced by new parking: being in a raised bed, it will not tolerate disturbance.
- Cherry T2 and small whitebeam T3 are replaced by turning head.
- Shrubs west of T25 will need removing or cutting back hard to facilitate the new garden for plot of house 1.
- Roadside hedge West of Stable cottage is removed to allow visibility splay.

### **5.4 Below-ground root spread.**

#### **5.4.1 General:-**

BS5837 defines a tree's Root Protection Area as a circular area of 12 x stem diameter: required to maintain long-term health of a full-canopied tree. We show it as an idealised circle. We think of this as a disc of untouched ground 1m deep. Rooting areas are never symmetrical, but ideally there should be no ground disturbance within the RPA zone. At the discretion of an arboriculturalist, where rooting is restricted on one side, the RPA can be offset to provide the same protection area. This is shown on the RPA plan.

Typically the structural rootplate of a tree to resist windthrow is much smaller than the RPA. Therefore tree stability should not be affected by some disturbance within the RPA.

#### **5.4.2 Specific Rootzone Impacts:-**

- None.
- Hard surfacing west of T13 is replaced by lawn, with positive results.

### **5.5 Light Interception & Shading.**

#### **5.5.1 General:-**

The sun rises to 60° at mid-day in mid-Summer when trees are in leaf (ratio of 16m vertical height to 10m horizontal distance).

The sun only rises to 12° in mid-Winter. However, in winter deciduous trees are leafless, so shading is reduced.

Theoretical shadows of arcs equal to estimated tree height in ten-years' time is recommended in BS5837. *This is the shadow pattern for a period from May to September inclusive, from 10.00hrs to 18.00hrs daily.*

#### **5.5.2 Specific Shading Impacts:-**

- No issues.

## **5.6 Over-bearing and Falling material.**

### **5.6.1 General:-**

All trees drop flower parts, leaves, twigs and fruits throughout the year. These can create a mulch layer on roads. Bird droppings and honeydew can spoil car paintwork. Big trees make adjacent dwellers nervous.

### **5.6.2 Specific Impacts:-**

- Beech T21 will be quite dominant in house 2's garden, but only half its crown is over the garden.
- Lonicera hedge behind new house 4 should be removed to allow new-garden creation.

## **5.7 Subsidence/heave & root growth.**

5.7.1 To be assessed by an engineer referring to NHBC 4.2 of 2019.

Subsoil and drift geology suggest non-shrinkable geology.

5.7.2 Therefore, trees should pose no problems to existing foundations.

## **5.8 Amenity impact.**

5.8.1 Amenity can be *visual landscape, habitat or heritage/historic.*

- One small/medium-sized maple, set 45m from the road, a leaning cherry and small whitebeam even further from the road, are lost.
- Amenity impact is therefore minimal.

## **6. Arboricultural Method Statement in sequential order for proposed development at Arbour Tree Farm site.**

### **6.1 Supervision**

6.1.1 We would recommend the following arboricultural supervision:-

- a **pre-start site meeting** between architect, building / groundwork contractor, Council Tree/Landscape Officer, and retained arboriculturalist to agree feasibility of tree retention, tree protection and working methods.
- **Inspection of protection fencing.**

6.1.2 All inspections to be followed within three working days with emailed supervision log with action points and photos, copied to client and tree/landscape officer.

### **6.2 Tree Management**

6.2.1 Tree Work prior to ground work:-

Table overleaf.....

6.2.2 Treework informatives, included for general information:-

#### 6.2.2.1 Disturbance to wildlife.

It is essential to check for nesting birds, bat roosts, badgers and hibernating animals such as hedgehogs under trees, before pruning or removing trees, as negligent disturbance is an offence under the EC Habitats Directive 92/43/EEC, Countryside and Rights of Way Act 2000, Protection of Badgers Act 1992. The Conservation (Natural Habitats, & C) (Amendment) Regulations 2007 make **any** damage or destruction of a breeding site or resting place of a European Protected species (mainly bats in a tree context) an offence.

In general, autumn tree work: **September, October and November** is least disruptive to bats and birds. Work on very ivy-clad trees may need a formal pre-start bat assessment by a trained bat worker.

#### 6.2.2.2 Permission

Trees may be protected by a TPO, or could lie within a Conservation Area.

Trees may be owned by third-parties.

Trees may be protected by planning conditions.

Therefore, a contractor must satisfy himself that all necessary permissions from the local planning authority or tree owners are in place before touching trees.

A Felling Licence may be needed to clear non-domestic areas.

#### 6.2.2.3 Quality of Tree Work

All off-ground tree work should be done by insured tree surgeon with certificates in aerial chainsaw use (new designations:- NPTC 020-04, 0020-05, 0020-07, 0021-01, 0021-07; LANTRA 600/5703/8, 600/5717/8, 600/5715/5, 600/5704/X, 600/5714/2), and working to BS3998:2010, and "*Treework at Height*": the Arboricultural Association's ICoP.

(Stumps can be left to shoot again, ground out, or grubbed out, or poisoned, depending on location.)

6.2.3 Treework for Arbour Tree Farm development:-

No	Species	RPA radius m.	Work for landscape / tree health.	<u>ADDITIONAL WORK FOR DEVELOPMENT</u>	
				<u>Specification.</u>	<u>Reason for additional work for development.</u>
T1	Beech	4.4			
T2	Wild cherry	5.5		<u>Remove.</u>	<u>Turning head.</u>
T3	Whitebeam	2.3		<u>Remove.</u>	<u>Turning head.</u>
T4	Norway maple	5.4		<u>Remove.</u>	<u>Parking.</u>
T5	Pear	1.8	Prune off basal suckers.		
T6	Rowan	2.2			
T7	Crab apple	2.0			
T8	Crab apple	2.6			
T9	Pear	1.3			
T10	Pear	1.7			
T11	Whitebeam	3.1			
T12	Wild cherry	3.8			
T13	Whitebeam	2.2			
T14	Variegated Lawson cypress	2.7			
H15	Mixed	1.8	Trim annually to 'A'-shaped profile.		
H16	Leyland cypress	1.8	Prune: Top and trim. Then trim annually.		



<b>T17</b>	<b>Lime</b>	<b>3.6</b>			
<b>T18</b>	<b>Ash</b>	<b>10.6</b>	<b>Monitor. If &gt; 50% dieback, fell.</b>		
<b>T19</b>	<b>Hawthorn</b>	<b>1.1</b>	<b>Needs 2m diameter mulch bed around it.</b>		
<b>G20</b>	<b>Fruit trees</b>	<b>1.8</b>	<b>Prune annually for fruit.</b>		
<b>T21</b>	<b>Beech</b>	<b>12.0</b>			
<b>T22</b>	<b>Purple plum</b>	<b>7.0</b>			
<b>T23, T24</b>	<b>Lawson cypress</b>	<b>3.0</b>			
<b>T25</b>	<b>Plum</b>	<b>4.0</b>			
<b>G26</b>	<b>Mixed</b>	<b>3.5</b>			
<b>None.</b>	<b>Roadside trees</b>	<b>n/a</b>			

End of table.

(Treework following development see 6.10 below.)

## **6.3 Tree Protection**

### **6.3.1 Requirement**

The most important tree-protection measure is effective protective fencing, erected as close as possible to the Root Protection Area (RPA) boundary before any other work starts on site including demolition in the vicinity of trees. It must be maintained until all work is completed, except final soft landscaping. Here tree protection is proposed for retained trees, and for areas of possible new planting where this is feasible: called **landscape protection zones**.

### **6.3.2 Vertical Tree Protection**

- 6.3.2.1 Tree Protection fencing **locations** are shown on Tree Protection Plan in Appendices.
- 6.3.2.2 Two specifications for suitable protective fencing are given in Appendix II. **Lightweight fencing will suffice here.**
- 6.3.2.3 Within the fenced off **CEZ** Construction Exclusion Zone: there must be:-
- no construction access,
  - no storage of materials, including soil,
  - no ground disturbance.
- 6.3.2.4 Fencing to remain until all demolition, construction and hard landscaping work is completed, and removed only for final soft landscaping.

### **6.3.3 Temporary Ground Protection (TGP) within RPAs:-**

- 6.3.3.1 IF work is required to be closer than the all-round protection zone, then the fenced off zone can be made smaller on that side, or entered temporarily, subject to permission from retained arboriculturalist.  
Within such zones, temporary horizontal ground protection plus temporary fencing would be essential.  
**TGP is not needed on current proposal.**
- 6.3.3.2 Obvious options for temporary ground protection would be:-
- **Butted scaffold boards or 22mm plyboard laid on bearers on 150mm depth woodchip or bark mulch (pedestrian access only).**
  - **After all construction, leave mulch on the ground to cover rootzones.**
  - **Temporary ground protection plates such as aluminium "Eve Trakway" or plastic interlocking-plate ground protection, both on 150mm depth of woodchip or bark, shown in Appendix III.**
  - A layer of woven geo-textile under minimum 250mm depth of graded aggregate which is lifted after work.

## **6.4 Construction Access.**

### **6.4.1 General points:-**

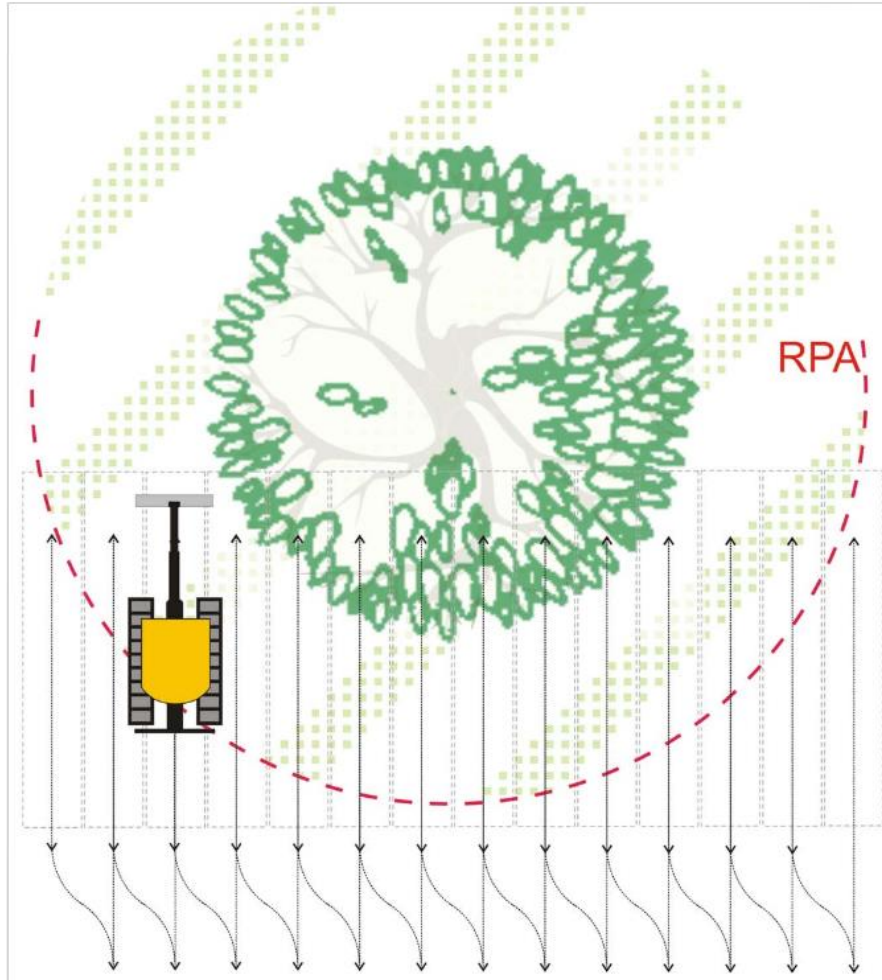
- Access is adequate, using existing concrete access past T4's island (to be removed).
- All retained trees and hedges need protection from construction access and storage.
- No pedestrian, vehicle, plant or machinery to enter RPAs without temporary ground protection as detailed in para 6.3.3 above.

6.4.2 Site huts could be placed within RPA of trees and hedges; provided they stand elevated on stilt feet, no excavation is required for temporary services, and pedestrian and vehicle access is ground protected as detailed in 6.3.3 above.

## **6.5 Demolition / Excavation within RPAs:-**

6.5.1 General specification FOR EXCAVATION, useful for levelling within the site:-

- Parallel tracking with slewing outside the RPA. Sketch plan below:-.
- 1.5-tonne rubber-tracked mini-digger with toothless grading bucket.
- Scrape off only turf or top layer to maximum 100mm depth.
- Slew outside RPA.
- Heap spoil outside RPA, for dumper to collect and run outside RPA.



## **6.6 Foundations within RPAs:-**

6.6.1 None proposed.

## **6.7 Drainage.**

6.7.1 Storm-water drainage: Any soak-away system must be designed to avoid significant increase, and no decrease, of ground water in trees' rooting zones. Store for greywater recycling, or into soakaway avoiding RPAs.

6.7.2 Foul Drainage: **Keep out of RPAs. Link to existing.**

6.7.3 Sustainable Urban Drainage System: Any SUDS scheme, to reduce the load on local mains drainage, must not significantly add to, or reduce, the soil water in trees' root zones. Store for re-use or dissipate as above for stormwater.

## **6.8 Service Trenches within RPAs.**

6.8.1 Service trenches (electric lights, utilities, telecoms, drains etc) must be **designed** to run as far from trees as possible.

6.8.2 Trenches **within RPAs must be avoided.**

6.8.3 Otherwise use this onerous, work method:-

- Hand digging\* or trench-less systems must be used.  
\*Use an air-spade to reveal roots (Appendix V).
- Retain roots >15mm diameter within service trenches. Thread service pipe underneath.
- No roots >25mm diameter must be exposed or severed without express written permission of local authority tree officer or retained arboriculturalist.
- Any excavation within the RPA of a tree must be covered immediately after digging with damp hessian, topped by tarpaulin & plyboard, to prevent root desiccation.
- Hole must be backfilled within five days of opening.
- Wrap exposed roots >20mm with hessian, and surround by 50mm depth sand, as part of backfill medium.
- Tamp backfill material by hand thumper or whacker plate only.

## **6.9 Minimal-dig construction for new access drives, parking & paths**

6.9.1 If roads, footpaths, cycle-ways, yards or parking are required near trees, they can be constructed in two ways:-

Conventional construction:- If outside a tree's RPA.

Minimal-dig construction:- If within a tree's RPA.

6.9.2 Appendix IV gives materials for minimal-dig, porous, build-up, but not needed with current proposal.

## **6.10 Tree work following construction.**

6.10.1 Trees should be re-inspected. This inspection would reveal the need for remedial tree work for the following reasons:-

- to rectify damage occurring during construction (regrettable but possible),
- to allow additional clearance.

-or complete tree removal if trees were considered too close for safe retention.

6.10.2 All additional work subject to further local authority agreement if trees are protected by TPO or planning conditions, or stand within a Conservation Area.

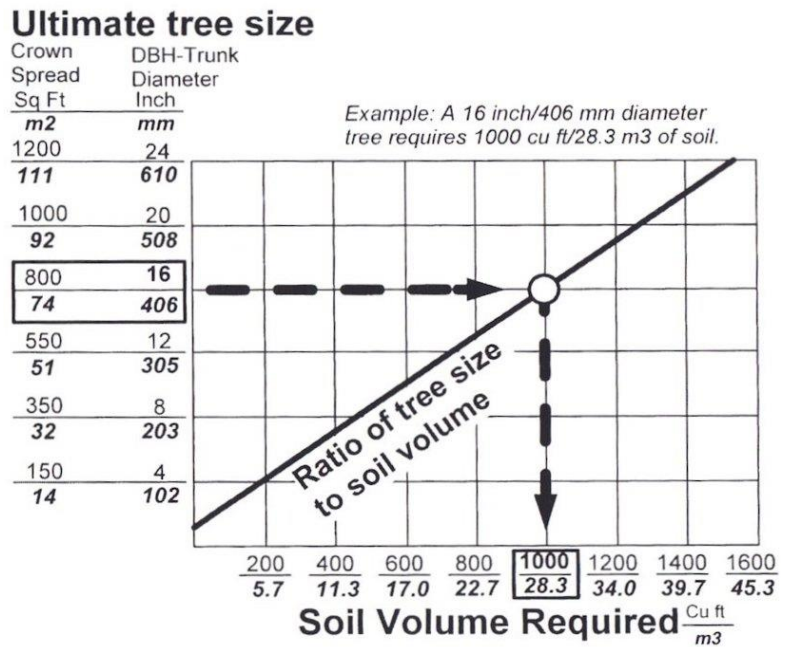
## **6.11 New Planting.**

6.11.1 There is space for new planting on this site. New hedging, shrubs and small trees will help create new (smaller-scale) garden landscapes. Hedging is indicated on architect's plans.

6.11.2 Any planting and maintenance to comply with: **BS 8545 "Trees: from nursery to independence in the landscape – Recommendations". BSI 2014**

Table 2.4.1. Tree size to soil volume relationships (Urban 1992).

6.11.3 Any planting must be provided with adequate long-term soil-moisture availability: graph below from James Urban shows rootable area related to tree size (Up by Roots, ISA, 2008), to remind designers:



## 7.0 Conclusions

- 7.1 Proposed renovation of outbuildings and sub-division of the farmhouse requires removal of only three trees.
- 7.2 Retained trees can be protected by measures detailed in section 6 of this report.
- 7.3 Landscaping and new planting is desirable for this development, to create individual gardens.

Please contact us for further information.

Yours sincerely,

*Jim Unwin*

For B J Unwin Forestry Consultancy.

### References:

- "The Body Language of Trees". Claus Mattheck and Helge Breloer. HMSO 1994.
- "Principles of Tree Hazard Assessment and Management". David Lonsdale. HMSO 1999.
- BS 3998: 2010 "British Standard Recommendations for Treework".
- BS 5837: 2012 "Trees in Relation to Design, Demolition & Construction".
- BS 8545 "Trees: from nursery to independence in the landscape – Recommendations". BSI 2014.
- NJUG Volume 4 2007 "Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees". NJUG, 30 Millbank, London, SW1P 4RD.
- "Trees and Development". Nelda Matheny and James R Clark. ISA. 1998.
- BS 8206:1992 "Lighting for buildings".
- BRE guide 209 (2002) "Site Layout planning for daylight and sunlight".
- NHBC Chapter 4.2, "Building Near Trees". National House Building Council, 2019.
- "Tree Roots in the Built Environment". J Roberts, N Jackson & M Smith. R.A.T.8, TSO (The Stationary Office), London, 2006.
- "Treework at Height" Industry Code of Practice. Arboricultural Association. 2014.

**Appendix I**

Location





Google Earth aerial.  
Taken April 2020.



Appendix II

**Vertical Tree Protection Fencing, from BS5837.**

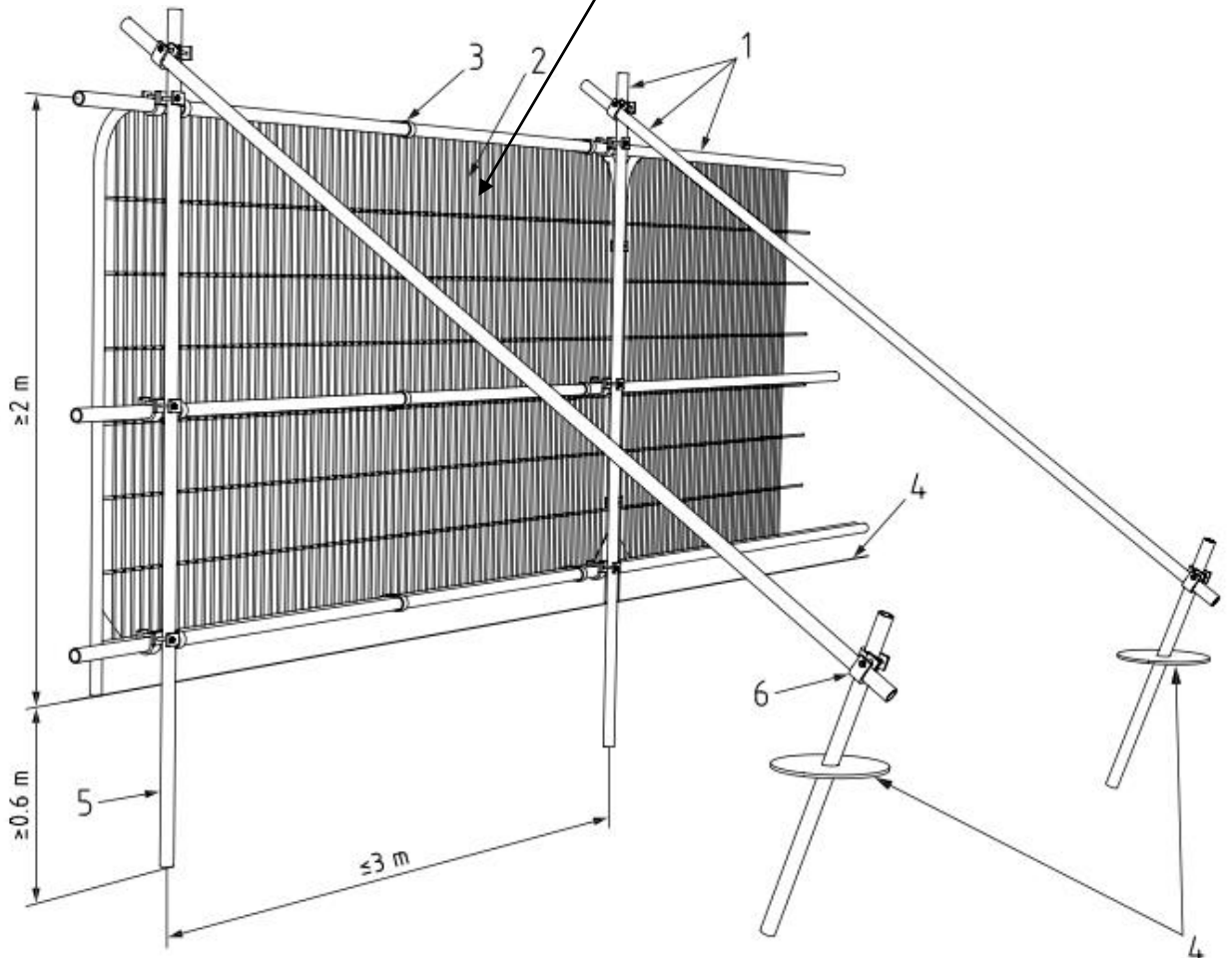
**Vertical protective fence: location on plan:**



**Default in situ > 3 months:-  
Heras panels on driven poles, + braces on driven poles.**

Apply signs at MAX 10m spacing:

**TREE PROTECTION -  
Construction Exclusion  
Zone.  
NO ACCESS**



**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

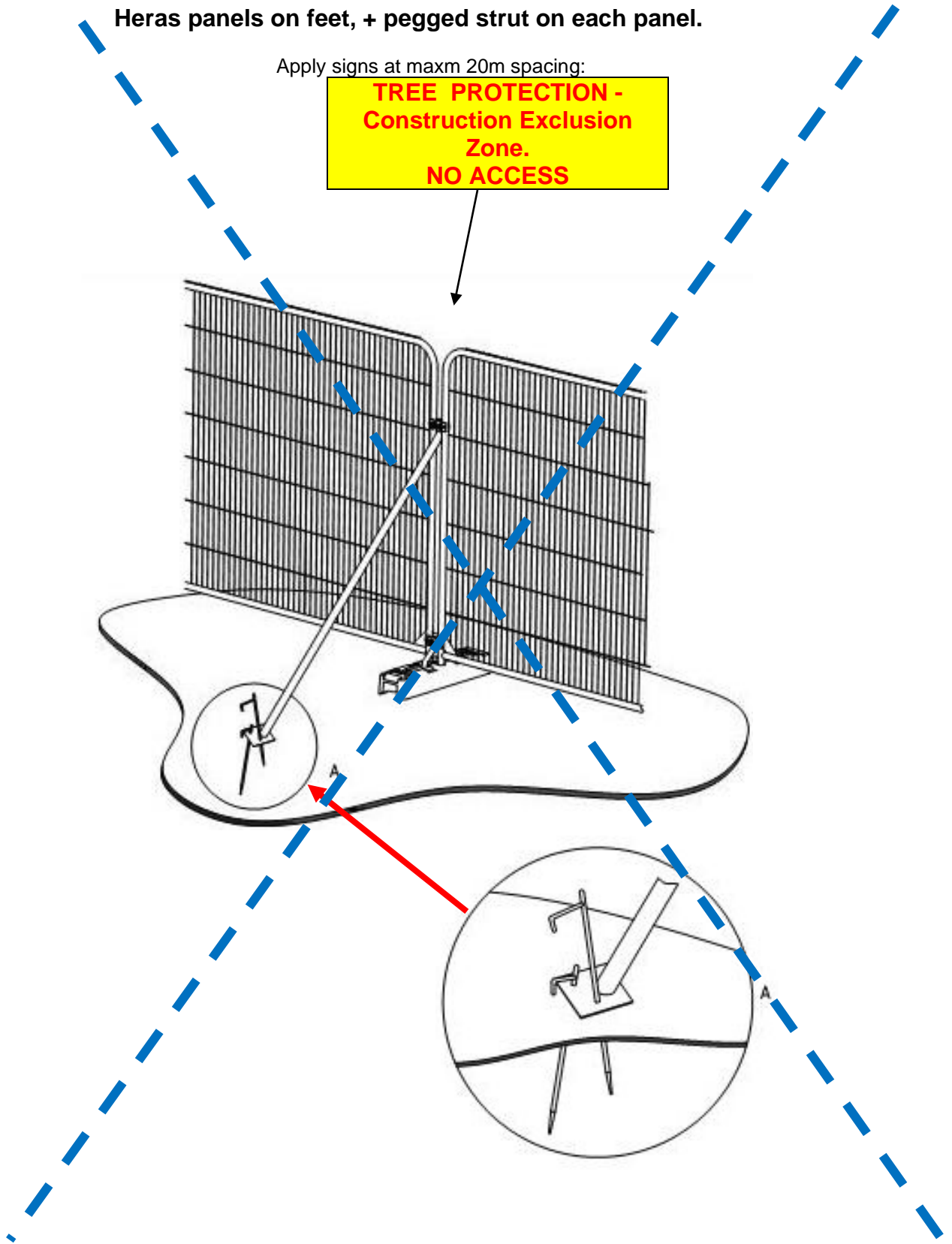


**Lightweight: in situ for < 3 months-**

**Heras panels on feet, + pegged strut on each panel.**

Apply signs at maxm 20m spacing:

**TREE PROTECTION -  
Construction Exclusion  
Zone.  
NO ACCESS**



**Individual tree guard: in situ for < 3 months-**

**Double layer heavy geotextile, around trunk and covering all root buttresses.  
Held by double height of 1.2m chestnut paling.**



## Appendix III

# Horizontal Ground Protection x 2 examples

Example of aluminium temporary ground protection.

## EVE TRAKWAY



### Roadways - Medium Duty Trakpanel

The Medium Duty Trakpanel, or 'Box' panel, is ideal for where both pedestrian and vehicle access is required. This versatile panel can be laid with either a smooth or corrugated surface uppermost. The smoother surface finish provides excellent support underfoot, whilst the construction of the panel maintains a high load bearing capacity. Due to the way these panels fit together, a smooth joint is created therefore reducing trip hazards.

The Benefits:-

Pedestrian friendly upper surface

Suitable for heavy vehicles Ideal for where both pedestrians and vehicles require safe passage.

#### Technical Specifications

Dimensions	2.5 x 3m (when installed 2.44m x 3m due to overlap)
Weight	274.7 kg
Carrying Capacity	A more pedestrian friendly roadway, this system is capable of taking any road going loads.

The following Roadways are available.

Please select an item to view more information:

**Other Roadways products:-**

Heavy Duty Trakpanel-

LD20-

Roadway Ramps-

Multi-Directional Trakpanel

## Example of plastic temporary ground protection.

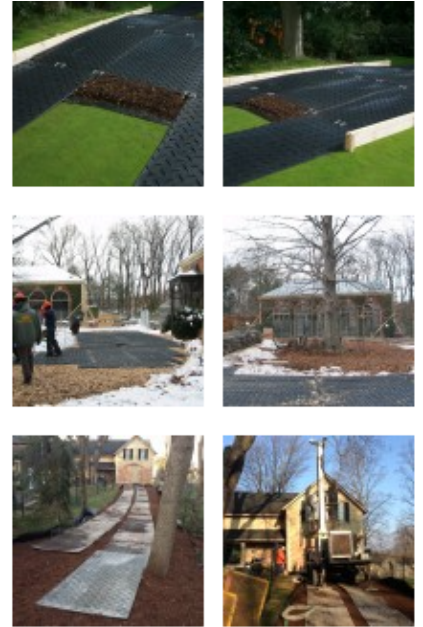
### Ground-Guards Tree Root Protection

#### Tree root protection for construction projects

Planning Departments may often need to stipulate that site access roads will not involve any excavation because of the proximity of tree roots on the site. Furthermore, that they will also provide additional ground cushioning when passing over the immediate areas where there are tree roots beneath. This is very important to prevent compaction of the ground, and long-term damage to the soil structure, the tree roots, and ultimately, to the health of the trees themselves.

An effective means of protecting tree roots is to use a double layer of Ground-Guards. Panels with 150mm of wood chips sandwiched in-between which creates a suitably cushioned roadway for this purpose.

The Ground-Guards system is so durable and versatile that whatever your need, the team will be delighted to work with you to provide an effective solution. Please just call our team on 0113 267 6000 for friendly advice on any difficult site conditions that you need assistance with.



## Appendix IV

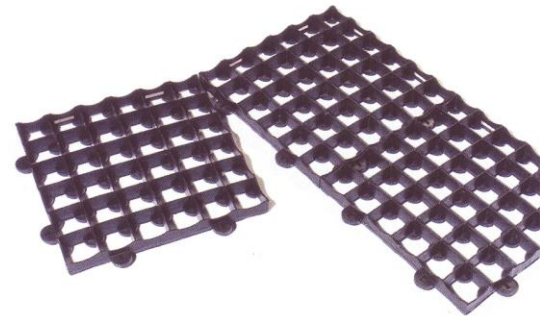
### Trays for strengthening gravelled or grassed areas. (50mm or 80mm trays for strengthening gravelled or grassed areas.

# DuoBlock

Grass Protection System



Using grass or gravel infill, DuoBlock 750 and 500 give architects, consulting engineers, landscape contractors and developers the ultimate in load-bearing performance combined with aesthetic appearance.



Porous paving systems have been available since the early 1990's and provide a durable yet aesthetically pleasing alternative to traditional surfacing solutions. Increased awareness of the need to manage storm water runoff in new developments and the advent of Sustainable Urban Drainage Systems (SUDS) has led to an increase in popularity.

DuoBlock is a permanent grass protection / gravel retention porous paving system. It is extremely versatile and may be used in a wide range of applications including:

#### Applications:

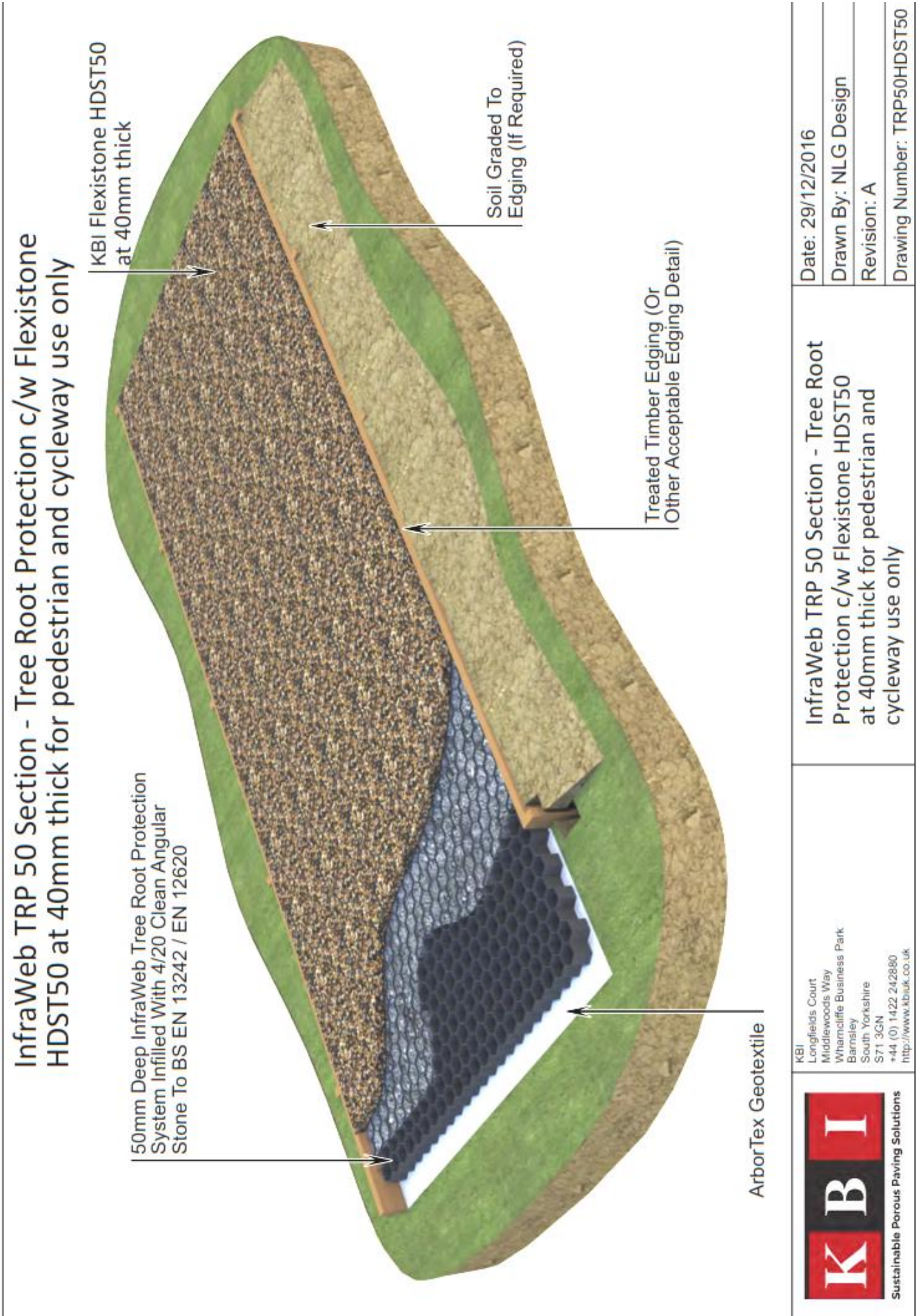
- Overspill car parking
- Emergency access and service roads
- Caravan hardstanding
- Verge hardening
- Service Roads
- Pedestrian walkways and towpaths
- Bridle ways
- Helipads
- Golf course pathways / Tee reinforcement

DuoBlock systems are uniquely designed to ensure the ultimate in load bearing performance and aesthetic appearance and have numerous benefits over traditional and first generation plastic systems such as:

#### Benefits:

- 90% surface area available for infill
- Reduces surface water runoff
- Increases water Filtration
- Interconnecting cell walls
- High Load Performance
- Unique surface design for greater aesthetic appeal
- Positive interlock System

**NEXT DAY  
DELIVERY**  
from stock



<p>Date: 29/12/2016</p>	<p>InfraWeb TRP 50 Section - Tree Root Protection c/w Flexistone HDST50 at 40mm thick for pedestrian and cycleway use only</p>	<p>KBI Longfields Court Middlewoods Way Wharmcliffe Business Park Barnsley South Yorkshire S71 3GN +44 (0) 1422 242880 <a href="http://www.kbiuk.co.uk">http://www.kbiuk.co.uk</a></p>
<p>Drawn By: NLG Design</p>		<p><b>KBI</b> Sustainable Porous Paving Solutions</p>
<p>Revision: A</p>		
<p>Drawing Number: TRP50HDST50</p>		

## Deeper Cellweb 3-D grid for strengthening tracks.

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a ‘no dig’ solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.



### Cellweb® TRP Key Functions

Cellweb® is a ‘no dig’ solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

### The Cellweb® TRP system comprises the following three components

**Treetex™ Geotextile.** Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

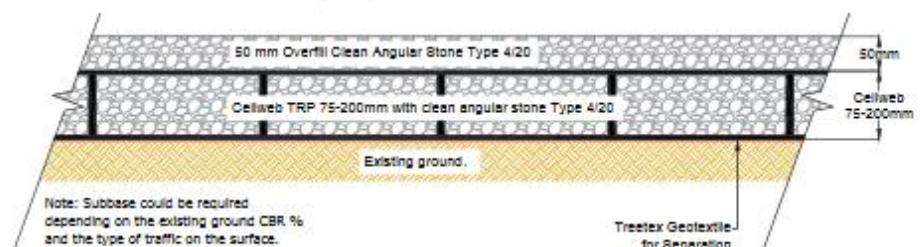
**Cellweb® 3D Cellular Confinement.** The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

**4-20mm Clean Angular Stone.** The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

### Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website [www.geosyn.co.uk](http://www.geosyn.co.uk).

### Indicative Cellweb with overfill



Web: [www.geosyn.co.uk](http://www.geosyn.co.uk) | Tel: 01455 617139  
Fax: 01455 617140 | Email: [Sales@geosyn.co.uk](mailto:Sales@geosyn.co.uk)



**Geosynthetics**  
Engineered Solutions

## Appendix V

# Example of Air-spade.

### HANDLE VIBRATION TEST

Product type – MBW Soil Pick SP125

Manufacturer of testing apparatus – Castle

Accelerometer was affixed to the rear of the handle on the Soil Pick and all three axes were tested.

Accelerometer position:

X axis = 0.0M/S<sup>2</sup>

Y axis = 0.0M/S<sup>2</sup>

Z axis = 0.0M/S<sup>2</sup>

Hand/arm vibration = 0.0M/S<sup>2</sup>

### TREE CARE

MBW's Soil Pick provides a multi-functional air tool for a variety of applications in the tree care industry including:

#### Radial Trenching

Radial trenching is a process which involves aerating the soils around a tree root in a pattern resembling a wagon wheel. The Soil Pick provides a safe and damage free means of utilizing a high air pressure to loosen tightly compacted soils.

#### Aeration & Excavation

#### Root Locating for Utility Line Installation or Pruning

#### Investigating Root Structure and Damage

#### Transplanting or Bare Rooting

#### Reducing Soil Compaction



- Non-Conducting Barrel**  
Independently certified safe for 100,000 Volts/12" Barrel
- Large Deflector**  
protects operator from scatter of dirt and debris
- Non-Sparking Nozzle**  
allows safe use around leaking gas lines
- Polymer Trigger**  
reduces operator fatigue
- Unlike the Competition,**  
the Soil Pick maintains a cool temperature
- Pressure Gauges**  
ensure maximum performance

**MBW UK Ltd.**  
Units 2 & 3 Cochrane Street • Bolton BL3 6BN • England UK  
Ph: 44 (0) 1204 387784 • Fax: 44 (0) 1204 387797  
E-mail: mbwuk@btinternet.com • Website: www.mbw.com

 1-800-878-5287



## Appendix VI

### - B J UNWIN FORESTRY CONSULTANCY Ltd. -

Head office: **Parsonage Farm, Longdon, Tewkesbury, Gloucestershire. GL20 6BD.**

Tel / Fax: 01684 833538. Home Tel: 01684 833795. Mob: 07860376527. E-mail: [Jim@bjunwin.co.uk](mailto:Jim@bjunwin.co.uk)

Satellite Offices: - Haley Ridge, Highcliffe, **Nr. Wadebridge, Cornwall, PL27 6TN.**

-105 Charfield Court, 2 Shirland Road, **London, W9 2JR.**

Associate office: - 1 Market Place Mews, **Henley-on-Thames, Oxfordshire, RG9 2AH.**

Principal: **Jim Unwin BScFor, MICFor, FArborA, RArborA, CEnv.**

**Chartered Forester - ICF Registered Consultant - Fellow of the Arboricultural Association -**

**Arboricultural Association Registered Consultant - Chartered Environmentalist.**

<b>From:</b>	<b>Jim Unwin</b>	<b>To:</b>	<b>Prospective Client</b>
<b>Date:</b>	<b>Nov 2020</b>	<b>No. of pages:</b>	<b>2</b>
<b>Subject:</b>	<b>Professional CV</b>		

Below are set out **B J Unwin Forestry Consultancy's** competences and experience.

#### **Insurance:-**

**£5m Public Liability & £2m Professional Indemnity (renewed June).**

#### **Personnel:-**

B J Unwin (born 1956) started his forestry career as a tree surgeon and landscape contractor in 1975. He studied forestry at Aberdeen University from 1977 to 1981, worked for Unilever as a Forestry Manager in the Solomon Islands from 1981 to 1983. Since then he has been based in Gloucestershire assisting clients to manage their woodland, trees and vegetation throughout Southern Britain, and occasionally in northern England, Scotland and Northern Ireland.

In the mid-1980s to mid-1990s for a period of about ten years he taught chainsaw, tree felling and tree surgery courses at Worcestershire Agricultural College on a part-time basis. He was assessed and passed as a LANTRA assessor in these skills, and held NPTC certificates of competence in chainsaw use on the ground and up trees.

He now works as a tree consultant / manager / contract manager to a range of clients listed below.

For tree decay testing we have a **PICUS II ULTRASOUND** tomograph with electronic callipers and **RESISTOGRAPH-R400** drill.

He works with two self-employed arboriculturalists of >20 years' combined experience:-

**Jasper Fulford-Dobson** Arboricultural Association Registered Consultant - Associate Member of the Institute of Chartered Foresters - Professional member of the International Society of Arboriculture - Technicians Certificate (ArborA) 2005, now regarded as NQF "level 4" - Professional Tree Inspection Certificate (LANTRA) 2013,

**Owen Hutchison** BSc(Hons) Agriculture & Estate Management, Level 4 Diploma Arboriculture, LANTRA Professional Tree Inspection & working with trees since 2007.

Plus a secretary/ plan technician; calling in extra help as required (eg ecologist or arboricultural assistant). On bigger projects he regularly works as a part of a multi-disciplinary team.

Current BJUFC qualifications are:-

BSc Forestry Hons 1<sup>st</sup> Class, Aberdeen 1981.

**Chartered Forester No. 0330064, 1986.**

**Fellow of the Arboricultural Association, 1995.**

Licensed Subsidence Risk Assessor, 1997-2001 (scheme closed in 2001).

Completed Training in September 2002 to Prepare Native Woodland Plans for CCW and FC in Wales.

**Arboricultural Association Registered Consultant No. 42, 2004.**

LANTRA certificate for Arboriculture and Bats, BJU in 2005.

Examined and approved to submit Welsh WGS as Management Planner and PAWS Assessor, 2006.

Joined Utilities Vendor DataBase, Supplier No: 88101 in Feb 2006 (left 2010).

Training and Certification in basic CAD operation 2006.

**Chartered Environmentalist April 2008.**

Woodfuel Production and Supply : LANTRA Certificate of Training Dec 2008.

Training in CAVAT amenity tree asset valuation October 2010.

**Company Safety Policy:-** We have been successfully assessed by Safety Management Advisory Services (SMAS) as meeting CDM Regs 2015 Core Criteria Stage 1, as a **Worksafe Consultant No. 75950.** expiry 09/2020.

CITB *Health, Safety & Environment Test for Managers & Professionals* passed 22/01/2015.

First-aid at work June 2013.

Current clients and typical work include:-

English Heritage	Tree safety inspection contract 2007-2013 for East Midlands, East Anglia, London and SE England. Tree safety inspection contract for West of England & Midlands 2013-2021.
Planning Inspectorate (PINS) & Dept for Communities and Local Government. 2000-2017.	<b>Arboricultural Inspecting Officer</b> in South-West England, South East England, West Midlands and East Midlands; advising the First Secretary of State on TPO appeals since 2000. Contract with DCLG expired April 2008 when transferred to PINS. Contract continued with PINS, as Non-Salaried <b>Arboricultural Inspector, determining TPO appeals and High Hedge appeals. All non-salaried inspectors released in 2017.</b>
Architects / Developers / Planning Appeals	Complete Tree Constraints, Impact Assessment & Tree Protection advice for planning, working with other professionals to input arboriculture into more complex development schemes. Recent assignments in Liverpool to Cornwall, Kent, Norfolk & London. All using BS5837:2012. FULL CAD CAPABILITY.
Amey Mouchel Ltd	Overseeing Amey Tree Officer on motorway and trunkroad tree inspections throughout Midlands and Marches to 2012. Amey Mouchel are agents for Highways Agency.
CRH Tarmac Ltd, + Midland Quarry Products + Quarryplan (in Northern Ireland).	Since 1990 working with Estates staff, quarry managers and Landscape / ecological consultancies organising and managing contracts for tree and woodland planting both pre- and post- quarrying. Also preparing landscape restoration schemes for straightforward sites plus landscape management on sites throughout southern England, East Anglia and south and south-west Wales. (Commendations for Land Restoration and Environmental improvements from Spelthorne Borough Council 2003.) Also in England & Northern Ireland ongoing tree consultancy for Quarryplan.
Land Agents	Assisting Bruton Knowles clients' with woodland management and other tree issues since 1984. We also assist clients of Fisher German and Savills on a regular basis.
Tarmac Central now CRH Tarmac Ltd.	1988-2018 woodland management of Hopwas Hays Wood, Tamworth.
Rural estates in Herefordshire, Worcestershire and Gloucestershire, plus private woodland owners in southern England and Wales.	Since 1983 woodland management, tree management, hedgerow management. Many are Ancient woodlands and SSSI's requiring detailed ecological management plans produced in consultation with ecologists. About forty Farm Woodland Premium Schemes and about twenty Native Woodland Plans prepared to date in England and Wales. On-going EWGS grant applications. Input into Tir Gofal (and its successor) and Stewardship schemes. Better Woods for Wales (BWW) applications.
British Waterways	Ten-year Tree and Vegetation Management Plans along canals and around reservoirs in London, Hertfordshire, Berkshire, Birmingham, Staffordshire, Worcestershire, Gloucestershire, Shropshire, Llangollen Canal, etc: plus help in dispute with riparian owners. This work ceased around 2011.
Stroud District Council	Management of 49Ha woodland since 1989 on FC schemes plus grassland on DEFRA Stewardship Schemes, including HLS. Retired Nov07.
One-off clients	Since 1983 assisting tree owners, developers, lawyers etc throughout southern or midland Britain, including Wales, on a wide range of tree-related issues including planning, planning appeals, subsidence, health & safety, disputes, vegetation control, expert witness, valuation of woodlands, standing and felled timber, Christmas trees etc, and tree and landscape planting schemes. Recently High Hedge issues and BS5837 are hot topics.
Malvern Hills District Council. South Oxfordshire District Council	BJU Stand-in part-time Consultant Tree Officer Summer 2003. JF-D stand in Consultant Tree Officer summer 2009 to spring 2010.
Golf course & leisure facilities	Assistance with development of Carden Park golf course in Cheshire. Management advice for trees on other golf courses: Eg Ross Golf Club, Swindon Golf Club .
Farm management	Management of own 95Ha farmland since 1985.

Please do not hesitate to ask for further information. B J Unwin END.

## Appendix VII

Constraints plans :-

- **Tree Plan**

**Retention categories, based on BS 5837 Table 1:-**

**A = High quality & Value (>40yrs life): Green.**

**B = Moderate quality & Value (>20yrs life): Blue.**

**\*\*C = Low quality & Value (>10yrs life): Grey.**

**U = Trees to be removed (<10yrs life): Red.**

**\*\*PLEASE NOTE. FOR CLARITY, C-CATEGORY TREES MAY NOT BE COLOURED.**

and

- **Root Protection Areas Plan**

**RPA = circles.**

**See Tree Table for dimensions.**

and

- **Theoretical Shading Plan**

= quadrant of tree height in ten years' time from north west (mid-morning) to due east (evening). This is a shadow pattern for 1 x tree height from 10.00-18.00hrs from May to September.

***Plans are not included in pdf format of report.***

***Insert plans here in paper copy of report:-***

## Appendix VIII

### Tree retention and Tree Protection Plan

*Plans are not included in pdf format of report.  
Insert plans here in paper copy of report:-*

END.