B. J. UNWIN FORESTRY CONSULTANCY

Jim Unwin **BScFor MICFor FArborA**
Chartered Forester
Arboricultural Association Registered Consultant
Fellow of the Arboricultural Association
Chartered Environmentalist

Institute of Chartered Foresters
Registered Consultant

MEMBER ISA

Arboricultural Association REGISTERED CONSULTANT

Parsonage Farm
Longdon
Tewkesbury
Glos. GL20 6BD
UK
Telephone & Fax 01684 833538
Mobile 07860 376527
E mail Jim@bjunwin.co.uk

P/2014/01663

Received 23/12/14

Client: **East Staffordshire Borough Council**
c/o
***Adrian Cook - Director,* Heartwood Tree Surgeons Ltd -**
Registration No: 6215448 Registered England & Wales
Registered Office: 3 Hodgetts Lane Burton Green Kenilworth
Warwickshire CV8 1PH **Mob: 07977 106671 - Fax: 024 7646 6543**
Aboricultural Association Approved Contractor: http://www.trees.org.uk/find-a-professional/Directory-of-Tree-Surgeons
www.heartwoodtrees.co.uk

HEARTWOOD TREE SURGEONS LTD

Site: Land at end of **Pennycroft Lane**, Uttoxeter, ST14 7BW.

Subject: **BS5837 Tree Survey for proposed re-development.**
Including:-
- Tree Constraints on any development.

(- Arboricultural Implications of proposed Residential development,
- Tree Protection Method Statement to be included in a stage 2 report.)

Surveyor: Jim Unwin Date: October 2012

Notes:

Limitation of Report:-The statements made in this Report do not take account of the effects of extremes of climate, vandalism or accident, whether physical, chemical or fire. BJUFC cannot therefore accept any liability in connection with these factors, nor where prescribed work is not carried out in a correct and professional manner in accordance with current good practice. The authority of this Report ceases at any stated time limit within it, or if none stated after two years from the date of the survey or when any site conditions change, or pruning or other works unspecified in the Report are carried out to, or affecting, the Subject Tree(s), whichever is the sooner.

Pennycroft Lane - Contents

1. Instruction.

1.1 East Sfaffs Borough Council require an updated tree survey, impact assessment and tree protection method statement for the residnetial proposed development.

1.2 Therefore Heartwood Tree Surgeons has asked B.J.Unwin Forestry Consultancy to provide this, subject to quote. Methodology of the report below follows ***BS5837:2012 Trees in Relation to Design, Demolition & Construction*****.**
Figure 1: flowchart, overleaf, indicates the process.

2. Objectives of Tree Survey

2.1 Objectives of Tree Survey:-

- To provide an accurate measured survey of significant trees to *BS5837.*
- In addition, the site's trees have been considered in their landscape setting, and photos taken to show internal and external parts of the site from various viewpoints.
- The report aims to inform decision-making of Architects and Planners to:-
  -incorporate worthy trees within any development plans and associated landscape schemes,
  -protect them during development and
  -assist with planning of ongoing tree maintenance.
  Please note, BS5837 is an iterative process: which cannot all be included in one report. We divide it into:-

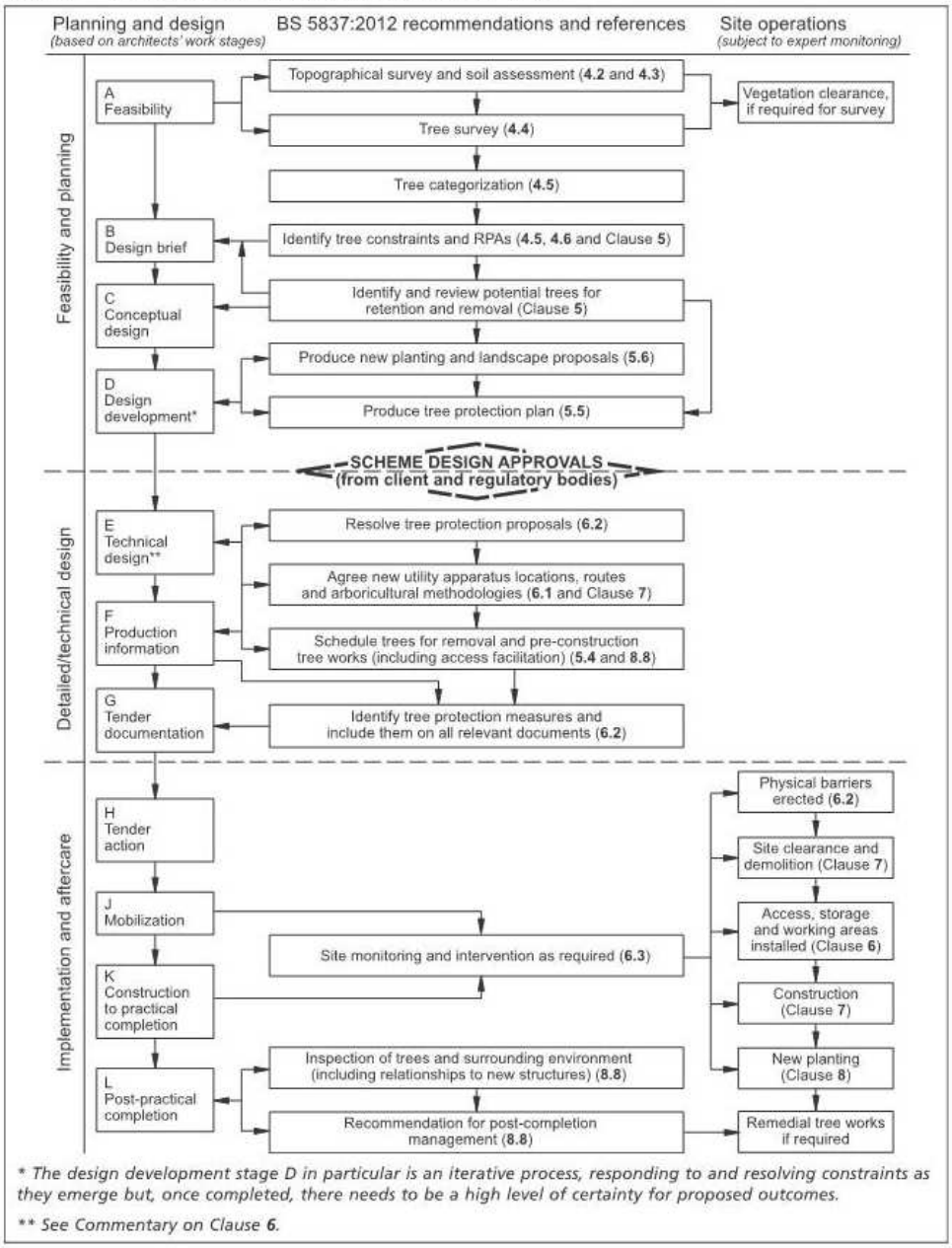
Sections 1-4 = our Stage 1:- Tree survey and preliminary constraints plan: TSCP.
Sections 5 onwards = our Stage 2, which has several sequential phases, not all included in this report:-

- Design review to test proposed layout.
- Arboricultural Implications Assessment (AIS).
- Arboricultural Method Statement (AMS)
- & Tree Protection Plan (TPP).
- Discharging planning conditions.
- Implementation and supervision of tree work and protective measures.

So BS5837 requires an iterative progression interlocking with other specialists in the developer's team: plus interaction with the lpa staff (tree officer, engineer, planner etc).
There is no draft development layout known to this surveyor at constraints report stage.

2.2 A **Topographic Survey** by Greenhatch Group **17438-OGL dated 28/08/12** is the basis for our constraints plans. We have added and removed trees to reflect current site conditions. **Development plan??** shows the development, (reproduced in the appendices **to be included in a stage 2 report.**).

Figure 1 **The design and construction process and tree care**



3. Survey

3.1 The survey was conducted from ground level, involving visual observation (Visual Tree Assessment (VTA): Mattheck and Breloer, 1994 and Lonsdale, 1999); and measurements of crown spread in four directions, height and dbh with tapes and hypsometer. Bases of suspect trees were sounded with a hammer and probed for defects with a chisel and a 1m x 4mm steel rod.

3.2 The survey was carried out on 23rd October, unaccompanied, and led by Jim Unwin (Professional CV in appendices).

4. Results of Survey

4.1 Physical

4.1.1 The site is about 120m north west to south east by 135m south west to north east, with a total area of about 1.47Ha.

Terrain is slightly elevated above adjacent ground level to the north. East and south, and is undulating and man-made. This is the result of its old canal wharf and railway historic land uses. The most notable feature is the deep man-made and open drain channel running across the site.

The underlying geology is Mid-Pleistocene sand & gravel deposits, according to BGS website, but the playing fields to the south were waterlogged, suggesting impeded drainage. The whole site appears heavily man-modified.

The site comprises a local authority recycling site, a large yard area, mostly open, with Hawksworth Graphic Signs and Dovebank Motors occupying buildings, and abandoned ground to the east.

4.1.3 Maintenance

The amenity tip is well maintained. The rest of the site is a bit neglected.

4.2 Landscape Setting of the Site

4.2.1 Photos

Please refer to photos in Appendix III.

4.2.2 Land uses beyond the site:-

To the north is a sports field.

To the east is abandoned land.

To the south down a short bank is Thomas Alleynes' School playing fields: saturated at the time of my visit.

To the west is the compound of "Gun-point Re-pointing". To the south west are very new houses.

4.2.3 Prominence of the site in the local landscape:-

The site's edges are seen from public footpaths and playing fields around edges. It is not prominent.

4.3 Trees, hedges and large shrubs on or near site.

4.3.1 Trees on site

- An L-shaped avenue of half-grown (mostly) sycamores (T22-T39) edging, then running north from, the open drain will need some thinning out to favour better trees (eg remove alternate trees).
- A belt of good but youngish limes and field maples (T9-T17) on the eastern edge of the recycling site has good potential.
- Northern boundary hedges H5 & H6 are particularly good.
- Everything else is self sown.
- Two patches of Japanese knotweed require vigorous and regular herbicide treatment to control.

4.3.2 Trees nearby

- The south-east boundary is a planted hornbeam hedge which has largely been let go, and has developed into a mix of trees and spindly hedge. It contains an older sycamore and ash.

- Running north east off the site is the remains of an old hawthorn hedge, G84; now a row of trees.

4.3.3 Amenity Value

- The open channel corridor edged by planted and self-sown trees and scrub is an attractive landscape and habitat feature.
- The southern boundary hornbeam etc 'hedge' is a strong boundary feature defining and screening the site.
- The Pennycroft Lane hedges also screen and define the site edges: important landscape features.

4.4 Detailed Tree Descriptions

4.1.1 Trees **on, or potentially influencing** the site, are individually described in the table below, and shown on the plans in Appendix II.

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 many years of safe life).
Vet: Veteran: usually very old; of significant historic, habitat or cultural value.

Condition / Health:- **Self-explanatory:-** G**ood,** F**air,** P**oor or** D**ead.**

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 4.3, 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 (and because it is hard to predict rooting location!).
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).*

4.4.2 Pennycroft Lane, Uttoxeter BS5837 pre-development survey – October 2012

No	Species	Dbh (stem diameter @ 1.5m ht) Rounded down to nearest 10mm.	Total height m. Ht to base of crown. m. Est Ht in 10 yrs.	Crown radii m. North East South West	Age class	Cond-ition	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. M	WORK excluding Development
G1	Wych elms x 5	20	6	3m external	Sm	D	0	Group of small elms, dead and ivy covered.	U		Cut down to waist height in hedge.
T2 T3 T4	Kashmir birch x 2 Wych elm x 1	12	5 1.5 7	2m all round	Y	f	10->40	T3 elm many die, but birches are good.	B2	1.5	
H5	Hawthorn	10	1.7 0 1.7	0.7m each side	Em	f	>40	Planted and well trimmed.	C2	1.2	Trim to 'A' shape annually.
H6	Hawthorn	15	2.5 0 2.5	0.8m each side	Em	f	>40	Planted and well trimmed. Ivy.	C2 C3 Habitat	1.8	Trim to 'A' shape annually.
G7	Hawthorn	20	5-7 0 5-7	1.5m external	M	f	20-40	Short section of old hedge at end of railway bridge.	C2	2.4	

G8	Japanese knotweed							13m x 2m.	U		Cut and treat regrowth with herbicide three times per summer, annually until dead. Do not remove any material off site.
T9	Field maple	28	10 2 12	3 2 3 3	Sm	F	20-40		B2	3.4	Tidy up ugly low pruning stubs.
T10	Lime	21	8 2 10	3 2 2 3	sm	F	>40		B2	2.5	Tidy up ugly low pruning stubs.
T11	Field maple	25	8 2 10	2 2.5 2.5 2.5	Sm	F	20-40		B2	3.0	Tidy up ugly low pruning stubs.
T12	Lime	20	9 2 11	3 3 3 2.5	Sm	F	>40		B2	2.4	Tidy up ugly low pruning stubs.
T13	Lime	22	8.5 2 10.5	3 3 2.5 2.5	sm	F	>40		B2	2.7	Tidy up ugly low pruning stubs.
T14	Field maple	21	8 2 10	3 3 2 3	Sm	F	20-40		B2	2.5	Tidy up ugly low pruning stubs.
T15	lime	26	8 2 10	3 4 3 2	Sm	F	>40		B2	3.2	Tidy up ugly low pruning stubs.
T16	Field maple	22	8 2.5 10	2 3 3 2.5	Sm	F	20-40		B2	2.7	Tidy up ugly low pruning stubs.

T17	Lime	27	9.5 2 11	2.5 3.5 4 3	Sm	F	>40		B2	3.3	Tidy up ugly low pruning stubs.
T18	Sycamore	8 stems avg 13cm	12 1 14	5 5 5 4.5	Sm	F	20-40	Self-sown, multi-stem on bank.	C1	4.5	Thin out to leave three best stems.
G19	Blackthorn	10	3 0 4	14 x 10 in size.	Sm	F	10-20	Scrub clump.	C2 C3 habitat	1.2	
G20	Japanese knotweed							Patch 12 x 4m.	U		Cut and treat regrowth with herbicide three times per summer, annually until dead. Do not remove any material off site.
G21	Silver birch & goat willows	10-15	8-10 1 9-12	2m external	Y / Sm	P-F	<5->20	Off-site. Planted silver birch and self-sown willow, at 1-2m centres.	C2	1.5	Cut down and poison stumps of all willows.
T22	Norway maple	29	11 2 12	4 3 2 4	Sm	f	10-20	On end of row. Lopsided and split bottom limb.	C1	3.5	Remove split bottom limb.
T23-31	Sycamore		10 2 12	4w 3e	Sm	F	10->40	Avenue at 4m centres.	B2 As avenue		Consider thinning out poor trees or remove alternate to retain formal feature.
T23	sycamore	33								4.0	
T24	Sycamore	33								4.0	
T25	Sycamore	31								3.7	
T26	Sycamore	19								2.3	
T27	Sycamore	20								2.4	

T28	Sycamore	16								2.0	
T29	Sycamore	20								2.4	
T30	Sycamore	22								2.7	
T31	Sycamore	30								3.6	
T32-39	Sycamore		11 2 13	5 2 4 4 External	Sm	F	10->40	East-west avenue at 3-5m centres.	B2 Except T34 & T35 U		Consider thinning out poor trees or remove alternate to retain formal feature.
T32	Sycamore	22								2.7	
T33	Sycamore	29								3.5	
T34	Sycamore	26									Fell T34 & T35 to release ash.
T35	Sycamore	20									Fell T34 & T35 to release ash.
T36	Sycamore	31								3.7	
T37	Sycamore	28								3.4	
T38	Sycamore	20								2.4	
T39	Sycamore	34								4.1	
T40	Ash	37	14 3 16	6 5 6 4	Em	F	>40	Good. Self-sown on bank.	B1	4.5	
T41-44	Hawthorn	Multi-stem 25	7 1 8	2.5m external	M	f	20-40	Self-sown on bank.	C2	3.0	
T45	ash	16	10 6 11	0.5 0.5 2 2	Sm	P	10	Self-sown on bank. Spindly.	C1	2.0	

T46	Silver birch	21, 26	13 4 14	1 4 4 2	Em	P	<5	Self-sown on top of culvert.	U		Cut and poison stump.
T47	Hawthorn	9, 9	6 0 7	1.3m all round	Em	P	<5	Self-sown on top of culvert.	U		Fell and poison stump.
T48 T49 T50	Sycamore	10-20	10 3 12	2 1 2 3 External	Sm	P	<5	Self-sown on top of culvert.	U		Fell and poison stump.
T51	Sycamore	24 @ 0.6m	10 2 12	1.5 1.5 5 1.5	Sm	P	10-20	Self-sown close to culvert.	U		Cut and poison stump.
T52	Silver birch	13, 19, 22	13 3 15	1 1.5 4 3	Em	F	10-20	Three stem, self-sown.	C1	3.7	
G53	Sycamore & hawthorn	20	9 0 10	1 2.5 4 1	Sm	F	10->20	Self-sown.	C2	2.4	
T54	Silver birch	25, 26, 26	13 2 15	4 4 5 4.5	M	F	10-20	Three stems.	B2	5.3	
G55	Silver birch x many	5	8 0 10	1m external	Sap	P-F	10->40	Self-sown at 0.5m centres.	C2	1.0	
T56	Sycamore	13	8 2 10	1.5m all round	Y	F	>40	Self-sown but quite good.	C1	1.6	
T57	Silver birch	35	14 3 15	3m external	M	F	10-20	Off-site in corner of yard.	B2	4.2	

T58	Sycamore	30	12 2 14	3m all round	Sm	F	20-40	Off-site in corner of yard.	B2	3.6	
T59	Leyland	25	10 1 14	2.5m all round	Sm	F	20-40	Off-site in corner of yard.	B2	3.0	
T60	Silver birch	30	10 3 12	2m all round	Em	F	10-20	Off-site in corner of yard.	C1	3.6	
G61	Mixed	5	2-4 0 3-6	1.5m external	Sap-Y	P	10->20	Self-sown silver birch, goat willow, buddleia. Scrub.	C2	1.0	
G62	Silver birch x 3	5-15	7 1 9	1.5m external	Y	F	10	Self-sown by sheds.	C2	1.5	
T63	Sycamore	15	8 0 10	3 2 1 2	Y-Sm	P	<10	Self-sown on boundary wall/fence.	U		Fell and poison stump.
T64	Sycamore	22	12 4 14	0.5 3 5 2	Sm	F	20-40		C1	2.7	
T65	Sycamore	11	11 8 11	0.5m all round	Y	P	<5		U		Coppice.
T66	Sycamore	13	13 6 15	2m all round	Sm	F	10-20		C1	1.6	
T67	Hawthorn	6 stems x 12	8 1 8	3m all round	M	F	10-20		C1	3.5	

T68	Hawthorn	15	6 2 6	1.1m all round	Em	P/F	10-20		C1	1.8	
T69	Sycamore	22, 26	13 3 16	4 2 5 4	Sm	F	10-20	Narrow included forks at 0.5m and 1.6m height.	C1	4.1	
T70	Goat willow	8 stems x 16cm	9 0 10	6 6 6 5	Lm	P	10-20	Multi-stem, sprawling.	C2	5.4	
T71	Crack willow	8 stems x 20cm	11 1 12	5 6 5 6	M	F	10-20	Multi-stem from ground. Bushy.	B2	6.9	
T72	Hawthorn	10, 11, 12	6 1 7	2.5m al round	M	F	20-40		C2	2.3	
T73	Sycamore	32 @ 0.5m height	12 1 14	3.5m all round	Sm	F	>40	Self-sown.	B2	3.9	
T74-80	Ash	10	6 0 9	1m all round	Sap/ Y	F	>40	Some of many self-sown trees.	C2	1.2	
T81	Hawthorn	12cm x 3 stems	7 1 8	2m all round	M	F	20-40		C2	2.5	
T82	Wych elm	20	8 1 9	3m all round	Sm	F	<10	Self-sown. Bushy. May die of Dutch elm disease.	C1	2.4	
T83	Goat willow	25 @ 0.5m	8 1 11	3m all round	Sm	F	10-20	Self-sown. Multi-stem.	C1	3.0	

G84	Hawthorn x many	30 est.	7 0 8	3m external	M	F	10->20	Old hedge, now line of trees.	C2 C3 Habitat	3.6	
T85	Goat willow	5 stems x 20cm	6 1 7	5 5 5 4	Lm	P	<5	Multi-stem. Collapsed on fence.	C2	5.4	Coppice.
T86	Hawthorn	20	6 1 7	2.5m all round	M	F	20-40		C1	2.4	
T87	Grey willow	8 stems x 10cm	8 0 8	3 4 4 3	Em	P	<5	Multi-stem. Dieback.	C2	3.4	
T88	Silver birch	38	14 2 15	3 4 4 1.5 External	Em	P-F	10-20	Group of three birches.	B2	4.6	
T89	Silver birch	19	11 2 12	3 4 4 1.5 External	Em	P-F	10-20	Group of three birches.	B2	2.3	
T90	Silver birch	12	6 3 6	3 4 4 1.5 External	Em	P-F	10-20	Group of three birches.	B2	1.5	
T91	Hawthorn	20	5 0 6	2m all round	Em-m	P-F	<10->20	Self-sown scrubby tree.	C1	2.4	
T92	Willow	20	5 0 6	2m all round	Em-m	P-F	<10->20	Self-sown scrubby tree.	C1	2.4	

T93	Elder	20	5 0 6	2m all round	Em-m	P-F	<10->20	Self-sown scrubby tree.	C1	2.4	
T94	Willow	20	5 0 6	2m all round	Em-m	P-F	<10->20	Self-sown scrubby tree.	C1	2.4	
T95 T96	Sycamore & ash	15	8 1 10	2m external	Y / Sm	P/F	10->20	Sycamore and ash.	C2	1.8	Coppice the sycamore.
T97	Sycamore	17	9 1 11	2 1.5 0.5 1	Y / Sm	P/F	>20		C1	2.1	
T98	Sycamore	40	14 2 16	5 4 5 4	Em	F	>40	Off-site.	B1	4.8	Clean off basal shoots.
T99	Ash	25, 50	12 2 13	6 6 5 5	M	F	20-40	Off-site. Tight to wall.	B1	6.8	
T100	Hornbeam	25	8 2 10	3m all round	Sm	F	>40	Grown up out of hornbeam hedge.	B2	3.0	
T101	Sycamore	65 Est	16 3 17	6m all round	Em	F	20-40	Forks into three at head height.	B1	7.8	Cut off basal suckers.
T102	Sycamore	15,20	9 2 11	4N 4S	Sm	P/f	<10	Self-sown in hornbeam hedge.	U		Cut to ground.
T103	Swedish whitebeam	36	9 2.5 10	4m all round	M	F	10-20	Planted in hedge.	B2	4.4	

H104	Hornbeam hedge	10	2-8 0 2-10	1-2m external	Em	P-F	20-40	Neglected hornbeam hedge.	C2	1.2	
T105 - T117	Hornbeams	Details below.	10 1-3 12	4N 4S	Sm	P-F	20-40	Overgrown hedge. Some grown up into crown-lifted trees.	Details below.		
T105	Hornbeam	12						In hedge.	C	1.5	
T106	Hornbeam	12						In hedge.	C	1.5	
T107	Hornbeam	13						In hedge.	C	1.6	
T108	Hornbeam	14						In hedge.	C	1.7	
T109	Hornbeam	20						In hedge.	C	2.4	
T110	Hornbeam	20						In hedge.	C	2.4	
T111	Hornbeam	28						In hedge.	B	3.4	
T112	Hornbeam	28						In hedge.	B	3.4	
T113	Hornbeam	34						In hedge.	B	4.1	
T114	Hornbeam	39						In hedge.	B	4.7	
T115	Hornbeam	30						In hedge.	B	3.6	
T116	Hornbeam	29						In hedge.	B	3.5	
T117	Hornbeam	28						In hedge.	B	3.4	

End of table.

To be included in a stage 2 report:-.

5.0 Arboricultural Constraints, Impacts of proposed re-development on trees, and vice versa.

5.1 Proposed development.
5.2 Tree Constraints and Impacts.
5.3 Physical contact of above-ground parts of trees.
5.4 Below-ground root spread.
5.5 Shading.
5.6 Dominance/Falling material.
5.7 Subsidence/Heave/Root growth.

6. Arboricultural Method Statement for proposed development.

6.1 Tree Management
6.1.1 Tree Work prior to ground work:-
6.1.2 Treework conditions
6.1.3 Treework after construction.
6.2 Supervision.
6.3 Tree Protection.
6.3.1 Requirement
6.3.2 Vertical Tree Protection
6.3.3 Horizontal Ground Protection
6.4 Construction Access
6.5 Demolition.
6.6 Foundations within RPAs.
6.7 Drainage.
6.7.1 Storm-water drainage.
6.7.2 Sustainable Urban Drainage System.
6.8 Service Trenches.
6.9 Minimal-dig construction for new access drive / parking.
6.10 Tree Work following construction and any hard landscaping of the site:-
6.11 New Landscaping.

Appendices:

IV Development plan.
V **Tree Retention & Protection Plan** for proposed re-development to residential use.

If you or local authority have any further queries please do not hesitate to contact us.

Yours sincerely,

Jim Unwin

B. J. Unwin Forestry Consultancy

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Appendix I

Site location

Appendix I contd.

Aerial photo taken late morning spring or early autumn.

Appendix II

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.**

- **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.

Separate plans insert here in paper copy only.
Electronic version has separate plans:-

Appendix III

Photos x 12

Photo 1: **View east to good hedges H5 & H6. Field maples and limes T9 etc beyond.**

Photo 2: **View west across old railway bridge to Jap knotweed. Far left is sycamore & ash clump by open channel. Hedges H5-G7 on right.**

Photo 3: **View south to belt with field maple T9 foreground. Sycamore T18 on left.**

Photo 4: **View south to off-site birch etc on right, and sycamore, maple & ash belt T22-T40 centre.**

Photo 5: **View south west into open channel. Trees by concrete structures need removing to prevent further root damage.**

Photo 6: **View west to off-site birch T54 on right, and off-site group T57 etc on left.**

Photo 7: **View north east to trees along channel. Birch T52 centre.**

Photo 8: **View south west into corner with G62 centre. Note old shed, older houses off-site to left, and new houses off-site beyond.**

Photo 9: **View south west to T95 then belt on southern boundary.**

Photo 10: **View north from wet playing fields to silver birches T88 etc and willows just in or out of the site.**

Photo 11: **View west along southern boundary. Hornbeams far left are we off-site. Note recent planting on bank.**

Photo 12: **Not bad for a hedge! View north west to western end of overgrown hornbeam hedge, grown into trees. T28-T34 centre, including one whitebeam**

To be included in a stage 2 report:-.

Appendix IV

Proposed Site Layout ???? Tree retention is indicative.

Appendix V

Tree Retention & Protection Plan

Separate plan insert here in paper copy only.
Electronic version has separate plans:-

Appendix VI

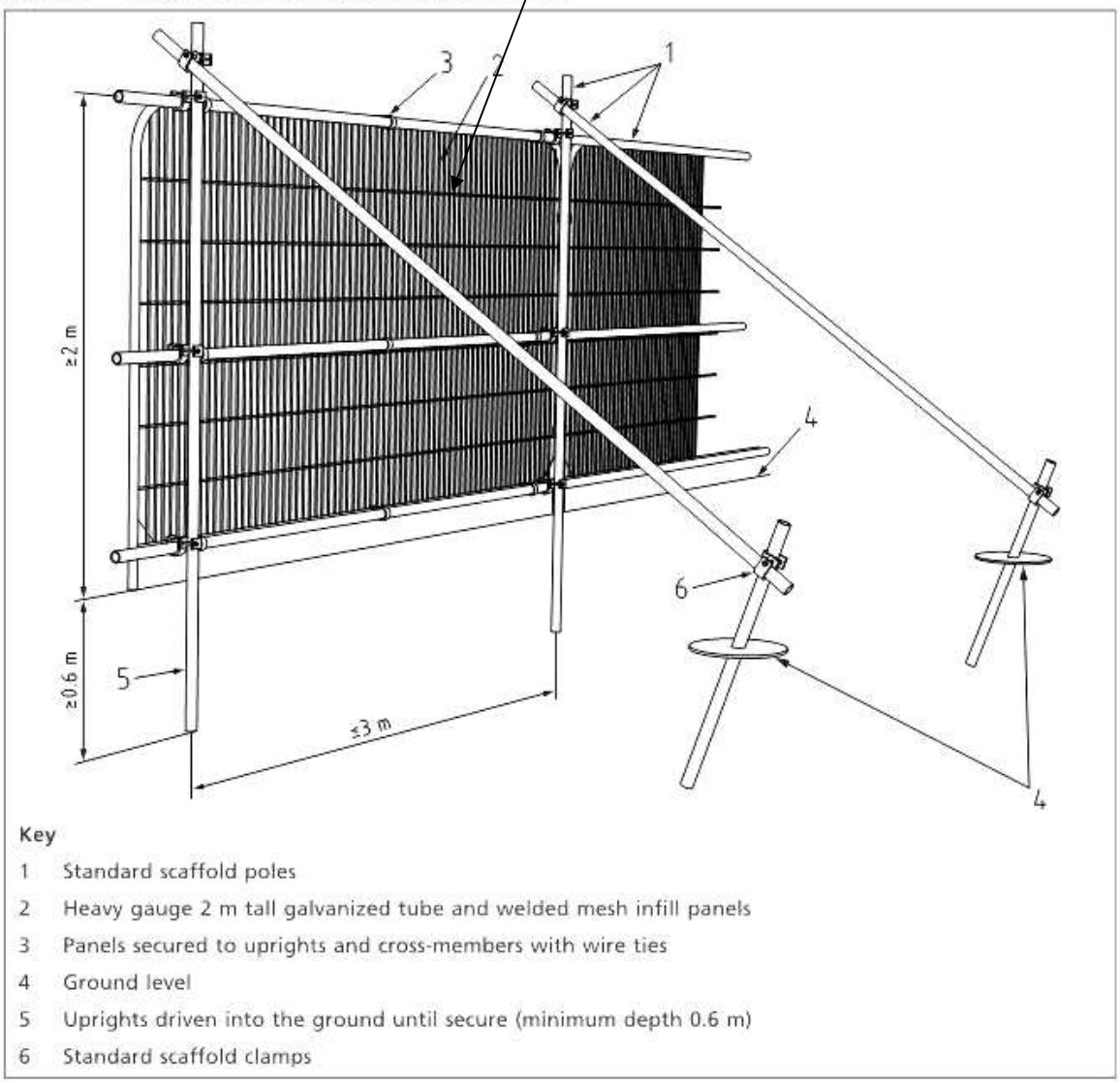
Vertical Tree Protection Fencing, from BS5837.

Vertical protective fence: location on plan:

Apply signs at 20m spacing:

TREE PROTECTION - Construction Exclusion Zone. NO ACCESS

Figure 2 **Default specification for protective barrier**



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

Appendix VII

Horizontal Ground Protection

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.

Appendix VIII

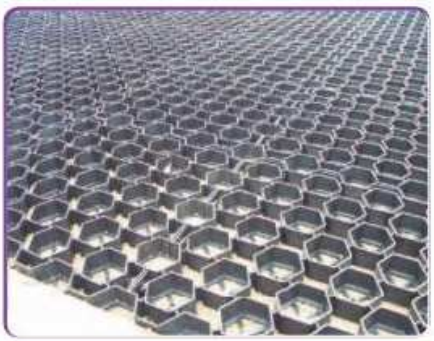
Shallow trays for strengthening gravelled or grassed areas.

GRB Plus

GRB Plus is a new and revolutionary development in ground stabilisation and reinforcement.

Introduction:

Manufactured in the UK from 100% recycled material directed from landfill, GRB Plus is the environmental and sustainable solution to prevent ground erosion. The honeycomb design provides an interlocking system that can be laid at ground level, filled with stone, gravel or soil and then seeded.
GRB Plus creates maintenance-free areas without detracting from the scenary, qualities that make it perfect for green car parks and construction projects.



Specification:

Grid Area	500 x 500 x 40mm
Wall Thickness	4mm
Wall Depth	40mm
Weight/m^2	4.56kg/m^2
Number of tiles per m^2	4
Load Capacity	Up to 250 tonnes/m^2
Material	100% Recycled UV Stable Polyolefin

Application:

- Construction sites
- Green parking areas
- Access roads & Private lanes
- Pathways & drives
- Golf courses
- Landscaping projects
- Equestrian & livestock facilities
- Green roof & roof top gardens
- Towpaths
- River & road embankment
- Embankment stabilisation
- Emergency access routes
- Helicopter landing pads
- Cycle routes
- Private Airfields

Green-tech Ltd.
Sweethills Park. Nun Monkton. York. YO26 8ET
Tel: 01423 332 100. Fax: 01423 332 101. Email: sales@green-tech.co.uk. Web: www.green-tech.co.uk

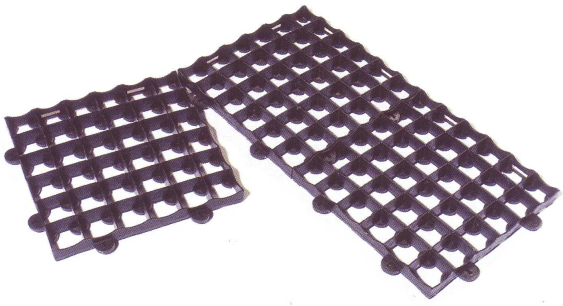
Slightly deeper (50mm or 80m trays for strengthening gravelled or grassed areas.

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

Deeper Cellweb 3-D grid for strengthening tracks.

Access road for the National Lake District Parks Authority.

Site before construction pictured above.

CellWeb during installation.

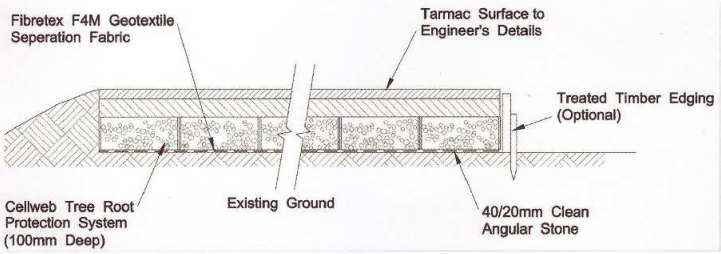
Final surfacing.

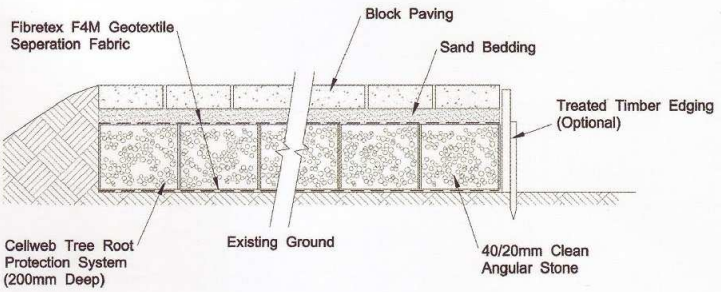
Final surfacing

The CellWeb Tree Root Protection is totally confined within the clean stone sub base, therefore you can choose whichever surface materials are most appropriate for your installation. Some materials are more suitable than others and serious consideration should be given to the porosity of the surface for continued healthy growth of the tree. An ideal surfacing are DuoBlocks: a grass reinforcement and gravel retention system. Geosynthetics can supply these systems for a visually attractive surface that also has the advantage of being fully porous.

Loose or bonded gravels can be used as an alternative hard landscaping and CellWeb can also be used with block paviors whose porous joints will permit moisture and air transfer to the roots. Where planning allows, porous asphalt is yet another possible surfacing treatment.

Call our sales office on 0870 850 1018 for more information.





butor of geosynthetic materials in the UK

Design service

Onsite support

See all products online at geosyn.co.uk

GEOSYNTHETICS

Appendix IX

Compressed-Air Soil Knife

HANDLE VIBRATION TEST

Product type – MBW Soil Pick SP12S

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/S2
Y axis = 0.0M/S2
Z axis = 0.0M/S2

Hand/arm vibration = 0.0M/S2

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

Appendix X

B J UNWIN FORESTRY CONSULTANCY,

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

Principal: **Jim Unwin BScFor, MICFor, FArborA, AARC, CEnv.**
Chartered Forester,
ICF Registered Consultant,
Fellow of the Arboricultural Association,
Arboricultural Association Registered Consultant
Chartered Environmentalist.

From:	**Jim Unwin**	*To:*	**Prospective Client**
Date:	**July 2012**	*No. of pages:*	**2**
Subject:	**Professional CV**		

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. He works as a tree consultant / manager / contract manager to a range of clients listed below.
He works with one employed Level-3 arboriculturalist of sixteen years' experience (**Jasper Fulford-Dobson** Professional Member of AA, NatDip Arb (BTEC), Tech Cert (Arbor.A), plus a secretary/technician; calling in extra help as required (eg ecologist or arboricultural assistant to TechCert standard). On bigger projects he regularly works as a part of a multi-disciplinary team.

Current BJUFC qualifications are:-
BSc Forestry Hons 1st Class, Aberdeen 1981.
Chartered Forester, 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, 2004.
LANTRA certificate for Arboriculture and Bats, BJU in 2005, JF-D in 2009.
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.
SPA Quarry Safety Passport, current: BJU & JF-D.

Company Safety Policy:- We have been successfully assessed by SMAS as meeting CDM Regs Core Criteria Stage 1, as a ***Worksafe Consultant No. 19905***. Dated 9/07/12.

Current clients and typical work include:-

Amey Mouchel Ltd	Overseeing Amey Tree Officer on motorway and trunkroad tree inspections throughout Midlands and Marches. Amey Mouchel are agents for Highways Agency.
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 Northern Ireland ongoing tree consultancy for Quarryplan.
English Heritage	Appointed Tree Inspector for all EH sites in SE England, London, Eastern England and East Anglia, for five years from April 2007.
Bruton Knowles	Assisting BK clients with woodland management and other tree issues since 1984.
Tarmac Central Ltd	Since 1988 woodland management of Hopwas Hays Wood, Tamworth.
Planning Inspectorate (**PINS**) & Dept for Communities and Local Government.	**Arboricultural Inspecting Officer** 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. Contract continues with PINS, as **Arboricultural Decision Officer**.
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. Now doing 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 is ongoing over the past fourteen years.
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.
Architects / Developers / Planning Appeals	Complete Arboricultural Impact Assessments on simple sites: and working with other professionals to input arboriculture into more complex development schemes. Recent assignments from Liverpool to Wiltshire, Kent and Norfolk, London. All using BS5837:2005. FULL CAD CAPABILITY.
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 of trees on other golf courses: Eg Ross Golf Club, Swindon Golf Club .
Farming	Management of non-cropped areas including woodland, hedgerows, Stewardship schemes (HIS, CSS, ELS, OELS) etc on owned 90Ha farm since 1988.

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