



ARBORICULTURAL ASSESSMENT

Bognor Campus - Upper Bognor Road – Residential Development

- prepared on behalf of University of Chichester –

The Granary, White Chimney Row, Westbourne PO10 8RS

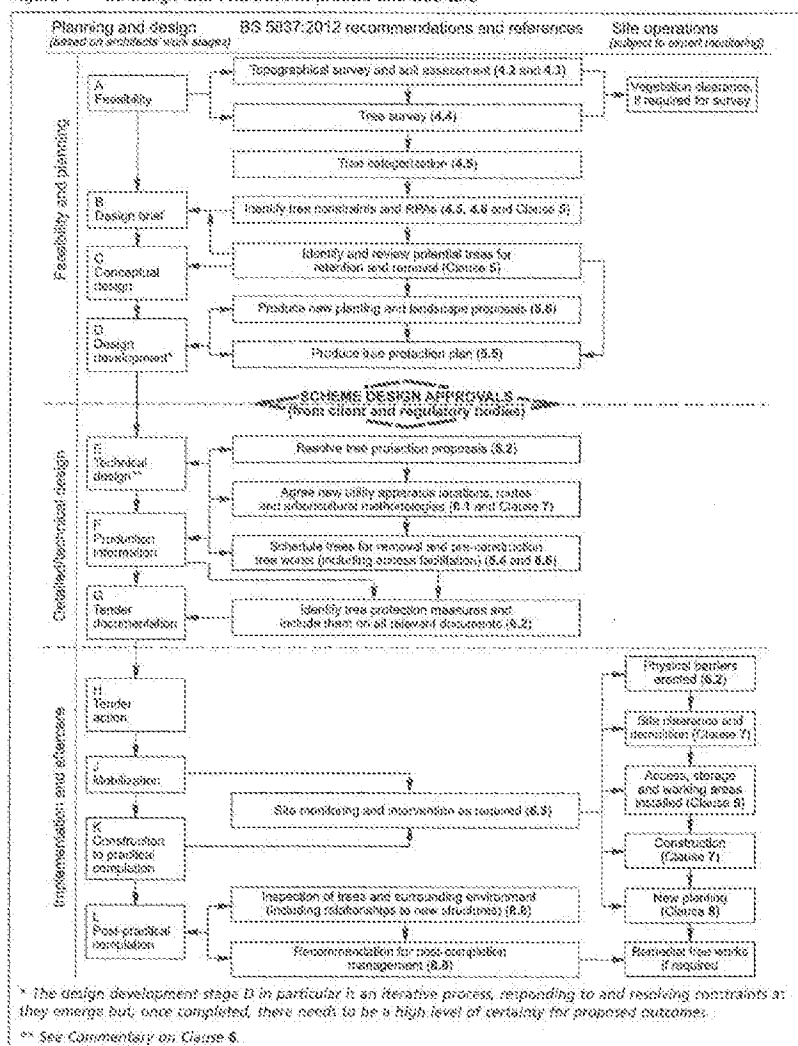




Tree Survey Schedule

+ T/S Notes & BS5837 Flow Diagram

Figure 1 The design and construction process and tree care



TREE SURVEY NOTES

These Tree Survey Notes have been prepared in accordance with the recommendations of **British Standard 5837:2012** and they define the criteria for pre –development tree surveys.

- Each tree/group/hedge/shelterbelt/woodland has been allocated a unique number (**No.**), where specifically requested and appropriate fees are agreed small durable numbered metal tags can be applied to each tree/group surveyed.
- The tree species (**Species**) is provided in both English and Latin name formats.
- Height assessments (**Ht**) are estimated in metres. This will be adequate for the majority of cases, but where accurate heights become a critical issue it may be necessary to return to site, as a separately commissioned exercise, to collect accurate measurements with the aid of optical instruments.
- Trunk/stem diameters (**Diam**) are measured in millimetres at 1.5m above ground level – where the tree is inaccessible the diameter is estimated as indicated by suffix #
- Radial crown spread assessments (**Brch Sprd**) are estimated in metres from the centre of the trunk/group to each of the four primary points of the compass (**N**-north; **E**-east; **S**-south and **W**-west) in order to achieve a representation of the crown shape which will be shown on the accompanying tree survey plan. These provide a general guide as to the main bulk outline of a tree/groups crown but are not tape measured dimensions. These would only be undertaken as part of a separately commissioned exercise, where precise dimensions are critical to the project at hand.
- Both the canopy ground clearance (**GC**) and the height & compass direction of the lowest major branch (**LMB**) are estimated and shown in metres
- An assessment of a tree/groups 'life stage' (**LS**) is made in terms of its site specific maturity as part of the surrounding landscape, taking into account its overall shape and form in that setting, and is recorded thus :-
Y - Young tree/group; **SM** - Semi-Mature tree/group; **EM** - Early-Mature tree/group; **M** – Mature tree/group; **OM** - Over – mature tree/group
- Data on the structural condition (**Condition Comments**) of the tree/group is provided to give its visual appearance and any significant health and safety issues.
- Details of any recommended tree works required at the time of survey is given under the heading – **Preliminary Management Recommendations**.
- An estimate of a tree/groups remaining contribution in years (**RC**) is made and is recorded thus :-
0-5; 5-10; 10-20; 20-30; 30-40 or >40 years.

- The category grading (**Cat**) for each tree/group is assessed according to the criteria provided within **BS5837:2012**. The assessment is made of the tree/group in its current condition and within the environment encountered bearing in mind its suitability for retention as part of any future proposed development; although the exact layout detail of any specific scheme will not be known at the time of surveying. The trees have been classified into one of four categories and colour coded as BS5837 recommends :-
 (dark red); (light green); (mid-blue) and (grey). Please note that suffixed numerical sub-categories are also applied for guidance only and do not carry any cumulative or increased value for the tree/group. This colour coding scheme will be applied to all drawings provided.

Table 1 – Cascade chart for tree quality assessment

Category and definition	Criteria			Colour on plan
Trees unsuitable for retention				
Category  Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (i.e. where, for whatever reason the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.			Dark Red
Trees to be considered for retention				
	Criteria – Subcategories			
	1	2	3	
Category  Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual, or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and /or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light Green
Category  Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in the category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid Blue
Category  Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value, and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey



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TREE SURVEY SCHEDULE

Client : University of Chichester

Site Location : Upper Bognor Road – Residential Development

Surveyor : Bernie Harverson

Date Surveyed : 6th November 2019

Tree No.	Species	Ht m	Diam mm	Brch Sprd m	GC m	LS	Comments	Preliminary Management Recommendations	Rem Con Yrs	Cat
1	Sweet Chestnut <i>Castanea sativa</i>	15	650	N 2 E 10 S 5 W3	4	M	Unable to access-ivy smothering base, trunk and through crown and dominating-previously topped out-dead top-interfering with light throws from lighting column	Fell for safety reasons in view of close proximity to the road	<10	U
2	Sycamore <i>Acer pseudoplatanus</i>	20	650	N 6 E 11 S 4 W4	4	M	Ivy smothering base-dead ivy on trunk-suppressed –major deadwood and stubs	No work required at time of survey	>40	B1
3	Holly <i>Ilex aquifolium</i>	10	400	N 5 E 7 S 4 W0	1.5	M	Ivy smothering base and trunk-bifurcated at 2m above ground level-suckers –leans heavily east-suppressed	No work required at time of survey	30-40	C1
4	Grey Poplar <i>Populus cinerea</i>	20	670 500	N 8 E 10 S 8 W8	2	M	Roots exposed and mower damaged-bifurcated 1m above ground level-strong open fork-major deadwood and stubs-significant cankering undermines the safety of the southern trunk that grows out towards the house	Consider adapting mowing practices and relay turf-remove southern trunk for safety reasons and make final cut 0.5 m above main fork at ground level-remove deadwood and stubs	20-30	C1
5	Grey Poplar <i>Populus cinerea</i>	20	580	N 5 E 7 S 3 W3	3	EM	Hollow soundings obtained at ground level-contorted trunk-significant cavities in old pruning wounds-suppressed by Tree 4 -poor quality tree	Fell for safety reasons	<10	U
6	Common Beech <i>Fagus sylvatica</i>	12	480	N 3 E 6 S 6 W4	1.5	EM	Canker on trunk-suppressed-low crown density-low vigour and vitality-dieback-major deadwood and stubs-significant cankering of branches-poor quality tree	Remove deadwood and stubs and monitor annually as it has a short safe life span	<10	U
7	Sweet Chestnut <i>Castanea sativa</i>	7	400 350 250 x2 100	N 6 E 7 S 7 W6	1	SM	Multi stemmed at 0.5m above ground level-small diameter deadwood-deadwood and stubs-low branching habit-stunted form to tree	Remove deadwood and stubs and crown lift to 2m to clear for grass mowing	20-30	B1
8	Crab Apple <i>Malus spp.</i>	6	310 280	N 3 E 6 S 5 W4	1.5	M	Cavities in old pruning wounds-crown weighted south-cable through east side of crown-hollow sounding obtained from below the cavity in the east side	Remove deadwood-reduce and reshape by 1m to control decay in the trunk	10-20	C1

9	Golden Rain Tree <i>Laburnum anagyroides</i>	4	350 230 140	N 2 E 3 S 5 W5	2	M	Multi stemmed at ground level-suppressed by Tree 10-crown weighted west-low branching habit-poor quality tree-cavities and hollowing and significant decay in southern trunk	Fell for safety reasons	<10	U
10	Norway Maple <i>Acer platanoides</i>	9	300 x3 200 x2 170	N 6 E 5 S 6 W5	1	EM	Multi stemmed at ground level-suckers-epicormics-low branching habit-dominant tree at this location	Remove suckers and epicormics	>40	B1
11	Sweet Chestnut <i>Castanea sativa</i>	4.5	230 170	N 4 E 4 S 4 W4	1.5	SM	Low branching habit-interferes with building roof	Crown lift to clear from building line	>40	B1
12	Sycamore <i>Acer pseudoplatanus</i>	8	250	N 4 E 4 S 4 W4	1.5	Y	Roots exposed and mower damaged-cable through crown	Clear route of cable	>40	B1
13	Ornamental Elder <i>Sambucus spp.</i>	4	300	N 3 E 4 S 0 W1.5	1.5	EM	Unable to access-ivy smothering base, trunk and through crown and dominating tree-suppressed and dominated by Tree 14-low crown density-low vigour and vitality-poor quality tree in a state of decline	Advise fell and grub out-poor and short life expectancy	<10	U
14	Sycamore <i>Acer pseudoplatanus</i>	10	180 x2 150 x7	N 5 E 5 S 5 W5	1	SM	Ivy smothering base and trunk-multi stemmed at ground level-suckers- epicormics-cables through lower crown-poor quality tree	Remove ivy and suckers clear route of cables-crown lift to 3m over access roads	20-30	C1
15	English Yew <i>Taxus baccata</i>	4	170	N 2 E 2 S 2 W2	0	Y	Ivy smothering base and trunk-ivy and brambles through trunk-suckers-dieback-dead top-cables through crown-overall a poor quality tree	Remove ivy-remove dieback and brambles-clear route of cables	10-20	C1
16	Sycamore <i>Acer pseudoplatanus</i>	8	200 x2 #	N 2.5 E 2.5 S 2.5 W2.5	4	Y	Unable to access due to dense vegetation and brambles-ivy smothering trunk and dominating-minimal live crown remains-short life expectancy-poor quality tree	Advise fell and grub out as tree has no long term value	<10	U
17	Wych Elm <i>Ulmus glabra</i>	8	150 #	N 2 E 2 S 2 W2	1	Y	Poor quality tree	Fell- will eventually succumb to Dutch Elm Disease	<10	U



Root Protection Area Schedule

+ BS5837 RPA Calculation Methodology

4.6 Root Protection Area (RPA)

4.6.1 For single stem trees, the RPA should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter measured at a height of 1.5m from ground level.

For trees with more than one stem, one of two calculation methods should be used as illustrated and explained below.

a) For trees with 2 to 5 stems, the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots \text{ up to } + (\text{stem diameter } 5)^2}$$

In words - measure the diameter of each of the stems – square each one and add it to the next - finally assess the square root of the combined total to derive one measurement which you look up in Table D.1 to find the radial RPA and area measurement equivalent to the area of a circle with that radius - in case you have to apply a polygon protection zone [see at 4.6.2 below].

The calculated RPA for each tree is to be capped at 707 m²

b) For trees with more than five stems the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{the total number of stems}}$$

In words – measure all of the stem diameters – add them all together and divide by the total number of stems (= mean stem diameter) – then square this figure – then multiply that figure by the total number of stems and then finally assess the square root of that figure to derive one measurement which you look up in Table D.1 to find the radial RPA and area measurement equivalent to the area of a circle with that radius - in case you have to apply a polygon protection zone [see at 4.6.2 below].

4.6.2 The RPA for each tree should initially be plotted as a circle centred on the accurate position of the trunk of the tree. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area to the circle should be plotted instead of the circle. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

4.6.3 Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

- the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and underground apparatus);
- topography and drainage;
- the soil type and structure;
- the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

Root Protection Area – Table D1

The RPA's given in Table D.1 should be used for single stem trees and the equivalent resultant combined stem diameter for multi-stemmed trees

Stem Diam. mm	Circle Rad. m	Area m ²	Stem Diam. mm	Circle Rad. m	Area m ²	Stem Diam. mm	Circle Rad. m	Area m ²	Stem Diam. mm	Circle Rad. m	Area m ²	Stem Diam. mm	Circle Rad. m	Area m ²
75	0.9	3	310	3.7	43	545	6.5	134	780	9.4	275	1015	12.2	466
80	1.0	3	315	3.8	45	550	6.6	137	785	9.4	279	1020	12.2	471
85	1.0	3	320	3.8	46	555	6.7	139	790	9.5	282	1025	12.3	475
90	1.1	4	325	3.9	48	560	6.7	142	795	9.5	286	1030	12.4	480
95	1.1	4	330	4.0	49	565	6.8	144	800	9.6	290	1035	12.4	485
100	1.2	5	335	4.0	51	570	6.8	147	805	9.7	293	1040	12.5	490
105	1.3	5	340	4.1	52	575	6.9	150	810	9.7	297	1045	12.5	494
110	1.3	5	345	4.1	54	580	7.0	152	815	9.8	301	1050	12.6	499
115	1.4	6	350	4.2	55	585	7.0	155	820	9.8	304	1055	12.7	504
120	1.4	7	355	4.3	57	590	7.1	157	825	9.9	308	1060	12.7	508
125	1.5	7	360	4.3	59	595	7.1	160	830	10.0	312	1065	12.8	513
130	1.6	8	365	4.4	60	600	7.2	163	835	10.0	315	1070	12.8	518
135	1.6	8	370	4.4	62	605	7.3	166	840	10.1	319	1075	12.9	523
140	1.7	9	375	4.5	64	610	7.3	168	845	10.1	323	1080	13.0	528
145	1.7	10	380	4.6	65	615	7.4	171	850	10.2	327	1085	13.0	533
150	1.8	10	385	4.6	67	620	7.4	174	855	10.3	331	1090	13.1	538
155	1.9	11	390	4.7	69	625	7.5	177	860	10.3	335	1095	13.1	542
160	1.9	12	395	4.7	71	630	7.6	180	865	10.4	339	1100	13.2	547
165	2.0	12	400	4.8	72	635	7.6	182	870	10.4	342	1105	13.3	552
170	2.0	13	405	4.9	74	640	7.7	185	875	10.5	346	1110	13.3	557
175	2.1	14	410	4.9	76	645	7.7	188	880	10.6	350	1115	13.4	562
180	2.2	15	415	5.0	78	650	7.8	191	885	10.6	354	1120	13.4	568
185	2.2	16	420	5.0	80	655	7.9	194	890	10.7	358	1125	13.5	573
190	2.3	16	425	5.1	82	660	7.9	197	895	10.7	362	1130	13.6	578
195	2.3	17	430	5.2	84	665	8.0	200	900	10.8	366	1135	13.6	583
200	2.4	18	435	5.2	86	670	8.0	203	905	10.9	371	1140	13.7	588
205	2.5	19	440	5.3	88	675	8.1	206	910	10.9	375	1145	13.7	593
210	2.5	20	445	5.3	90	680	8.2	209	915	11.0	379	1150	13.8	598
215	2.6	21	450	5.4	92	685	8.2	212	920	11.0	383	1155	13.9	604
220	2.6	22	455	5.5	94	690	8.3	215	925	11.1	387	1160	13.9	609
225	2.7	23	460	5.5	96	695	8.3	219	930	11.2	391	1165	14.0	614
230	2.8	24	465	5.6	98	700	8.4	222	935	11.2	396	1170	14.0	619
235	2.8	25	470	5.6	100	705	8.5	225	940	11.3	400	1175	14.1	625
240	2.9	26	475	5.7	102	710	8.5	228	945	11.3	404	1180	14.2	630
245	2.9	27	480	5.8	104	715	8.6	231	950	11.4	408	1185	14.2	635
250	3.0	28	485	5.8	106	720	8.6	235	955	11.5	413	1190	14.3	641
255	3.1	29	490	5.9	109	725	8.7	238	960	11.5	417	1195	14.3	646
260	3.1	31	495	5.9	111	730	8.8	241	965	11.6	421	1200	14.4	652
265	3.2	32	500	6.0	113	735	8.8	244	970	11.6	426	1205	14.5	657
270	3.2	33	505	6.1	115	740	8.9	248	975	11.7	430	1210	14.5	662
275	3.3	34	510	6.1	118	745	9.0	251	980	11.8	435	1215	14.6	668
280	3.4	35	515	6.2	120	750	9.0	255	985	11.8	439	1220	14.6	673
285	3.4	37	520	6.2	122	755	9.1	258	990	11.9	443	1225	14.7	679
290	3.5	38	525	6.3	125	760	9.1	261	995	11.9	448	1230	14.8	685
295	3.5	39	530	6.4	127	765	9.2	265	1000	12.0	452	1235	14.8	690
300	3.6	41	535	6.4	130	770	9.2	268	1005	12.1	457	1240	14.9	696
305	3.7	42	540	6.5	132	775	9.3	272	1010	12.1	462	1245	14.9	701
												1250	15.0	707



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ROOT PROTECTION AREA SCHEDULE

Client : **University of Chichester** Site Location : **Upper Bognor Road – Residential Development**

Tree No	Tree Species	Cat	Diam mm	BS5837:2012 Table 1 Radial Protection Zone m	BS5837:2012 Table D1 Polygon Area m ²	Is An Offset Required To Cater For Existing Rooting Pattern Restrictions
1	Sweet Chestnut <i>Castanea sativa</i>	U	650	7.8	191	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
2	Sycamore <i>Acer pseudoplatanus</i>	B1	650	7.8	191	NO – fairly free rooting to all directions
3	Holly <i>Ilex aquifolium</i>	C1	400	4.8	72	NO – free rooting to all directions
4	Grey Poplar <i>Populus cinerea</i>	C1	670 500	10.0	316	NO – free rooting to all directions
5	Grey Poplar <i>Populus cinerea</i>	U	580	7.0	152	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
6	Common Beech <i>Fagus sylvatica</i>	U	480	5.8	1041	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
7	Sweet Chestnut <i>Castanea sativa</i>	B1	400 350 250 x2 100	7.8	189	NO – free rooting to all directions
8	Crab Apple <i>Malus spp.</i>	C1	310 280	5.0	79	NO – fairly free rooting to all directions
9	Golden Rain Tree <i>Laburnum anagyroides</i>	U	350 230 140	5.3	88	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
10	Norway Maple <i>Acer platanoides</i>	B1	300 x3 200 x2 170	7.2	163	NO – fairly free rooting to all directions
11	Sweet Chestnut <i>Castanea sativa</i>	B1	230 170	3.4	37	NO – fairly free rooting to all directions
12	Sycamore <i>Acer pseudoplatanus</i>	B1	250	3.0	28	NO – fairly free rooting to all directions

13	Ornamental Elder <i>Sambucus spp.</i>	U	300	3.6	41	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
14	Sycamore <i>Acer pseudoplatanus</i>	C1	180 x2 150 x7	5.7	100	NO – there are constraints all around this tree which cancel each other out
15	English Yew <i>Taxus baccata</i>	C1	170	2.0	13	NO – there are constraints all around this tree which cancel each other out
16	Sycamore <i>Acer pseudoplatanus</i>	U	200 x2 #	3.4	36	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals
17	Wych Elm <i>Ulmus glabra</i>	U	150 #	1.8	10	NO – will be removed for sound arboricultural reasons regardless of any redevelopment proposals



Tree Constraints Plan



Qualifications & Experience



QUALIFICATIONS AND EXPERIENCE

- My name is Bernie Harverson and I am a self employed independent arboricultural consultant in private practice. I take instructions primarily in the South of England but also on occasions work nationwide and abroad and have an office at : –

The Granary, White Chimney Row, Westbourne PO10 8RS

- I hold the following arboricultural qualification – **National Diploma in Arboriculture** (Royal Forestry Society – 1976)
- I have **forty eight** years of practical and managerial experience in the arboricultural industry including periods in both the public and private sectors.
- My Local Government sector experience comprises one year as a tree surgeon with Brighton Parks and nine years spent in Arboricultural Officer posts with both Westminster City Council and Portsmouth City Council
- My past practical experience in the private sector includes two years at Tilhill Forest Nursery and over ten years for various companies as a Climbing Arborist/Tree Surgeon.
- Managerial work in the private sector includes two years as manager of Beechings Tree Surgeons and twelve years with the CBA Tree Consultancy Practice as Managing Director and Senior Arboricultural Consultant.
- As an independent self employed Arboricultural Consultant [since 2005] I now provide a comprehensive range of services including :- tree surveys, appraisals, assessments and inspections with particular reference to planning and development and tree safety audits with a service offered as a climber to undertake full climbing inspections to better understand the condition of a given tree before prescribing a management strategy.
- I also undertake litigation work appearing as an Expert Witness in Court Actions and at Planning Appeals, Hearings and Local Inquiries.

The Granary, White Chimney Row, Westbourne PO10 8RS

mob: 07875 520881 - email: bernieharverson@gmail.com - VAT Reg No 881 5056 16