



ARBORICULTURAL IMPACT ASSESSMENT & METHOD STATEMENT *for*

214a Stakes Hill Road, Waterloo

-prepared on behalf of Mr Chris Butler –

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Section	Subject Heading
1	INTRODUCTION & CLIENTS BRIEF
2	DOCUMENT DISCLOSURE STATEMENT
3	TREE SURVEY & ROOT PROTECTION SCHEDULE
4	IMPACT ASSESSMENT & TREE PROTECTION MEASURES RECOMMENDED
5	PRE – DEVELOPMENT TREE WORK
6	MONITORING & SITE SUPERVISION
7	CONCLUSIONS

<u>Appendices</u>	<u>Subject</u>
BH1	Figure 1- Flow Diagram from BS5837 + Tree Survey Notes + RPA calculation methodology
BH2	Combined Tree Survey Plan BJH 01 & Root Constraints Plan – BJH 02
BH3	Examples of materials and techniques
BH4	Qualifications & Experience

1.0 INTRODUCTION & CLIENTS BRIEF

- 1.1 My client– **Mr Chris Butler** - is wishing to construct a detached garage facility within his site but under the canopy of a mature off site Lime tree.
- 1.2 This tree is TPO'd and it is my understanding that the Havant Tree Officer – Jamie Gargett has visited the site and advised that it will be necessary for Mr Butler to employ the services of an arboricultural consultant to submit details of how the garage can be constructed with minimal disturbance to the roots of this tree.
- 1.3 I have duly been commissioned to consider the impact that development will have on this tree and prepare a report & plans to satisfy planning requirements.
- 1.4 My work is to be compiled in accordance with the Recommendations contained within BS5837:2012.

2.0 DOCUMENT DISCLOSURE STATEMENT

- 2.1 A copy of the Planning Layout drawing for the garage has not yet been prepared by Mr Butlers Architect who is awaiting the outcome of this report before designing a bespoke unit to fit on the site.
- 2.2 I have been provided with a 1:500 scale ordnance survey plan for the purposes of my work on this project and also took my own tape measurements out on site to verify the location of the tree relative to development. I have subsequently reproduced the plan base at a more useable scale of 1:250.

3.0 TREE SURVEY & ROOT PROTECTION SCHEDULES & IMPACT ASSESSMENT

3.1 I visited the site on **11th February 2014** and carried out a tree survey exercise in accordance with BS5837:2012 recommendations (please see explanatory tree survey notes [at appendix BH1](#)).

Tree No.	Species	Ht m	Diam mm	Brch Sprd m	GC m	LMB m	LS	Condition Comments	Preliminary Management Recommendations	Rem Con yrs	Cat
1	Broad Leaved Lime <i>Tilia platyphyllos</i>	24	1000	N8 E9 S7 W9	2	4 n	M	Outwardly sound and healthy and of good shape and form	Crown lift on north side to clear from building roof and avoid low overhang of boundary	>40	A1

3.2 From this I have been able to prepare a Tree Root Protection Schedule in accordance with BS5837:2012 recommendations - (please see Plans BJH 01 & 02 [at appendix BH2](#))

Tree No.	Tree Species	Cat	Diam mm	BS5837:2012 Table D1 Radial Protect. Zone m	BS5837:2012 Table D1 Root Protect. Area m ²	Is An Offset Required To Cater For Existing Rooting Pattern Restrictions
1	Broad Leaved Lime <i>Tilia platyphyllos</i>	A1	1000	12.0	452	NO – there are constraints all around this tree which cancel each other out

4.0 IMPACT ASSESSMENT & TREE PROTECTION MEASURES RECOMMENDED [Method Statement]

4.1 The finalised planning layout drawing has been provided to me and an assessment made as to the viability of retaining trees as part of this layout in order that they meet the RPA requirements of BS5837 - The data is presented here in tabular format:-

Key: UF = Under footprint **YES** = tree can be retained and fully protected **YES (1)** = tree can be retained subject to mitigation measures being applied

NO-RSAM = tree will be removed for sound arboricultural management reasons **NO-RTFD** = tree cannot be retained and will be removed to facilitate development

Tree No	Species	Cat	Stem Diam mm	BS5837:2012 Radial Protection Area m	Distance from Site Features (see key above)	Can Tree Be Retained
1	Broad Leaved Lime <i>Tilia platyphyllos</i>	A1	1000	12.0	3.1m between tree centre and trunks of conifer hedge 6.35m to footpath back edge 8.15m to road edge	YES (1)

4.2 YES (1)

- Clearly the RPA for this tree covers a lot of the area in front of the house at 214a therefore special treatment will be required to ensure that no significant damage occurs to the roots either directly or indirectly.
- Levels and surfacing are such that this area of ground has traditionally been utilised and various sections of tarmac surfacing and bare earth and other hard surfacing once made up this area. This has now all been broken out and redistributed across the area resulting in an uneven surface layer throughout.
- It would be futile to now insist on a totally 'No Dig' treatment across this entire zone [in essence 'shutting the door after the horse has bolted'] but if we treat the current disturbance as going no deeper than 150mm on the assumption that below this there is undisturbed ground which is free for the tree to root into. The key thing here will be to proceed with caution from hereon in and come up with a porous surface treatment that respects the tree whilst allowing Mr Butler to have a detached garage and hard surfaced access leading to it. Disturbance to a depth of 150mm is very unlikely to involve significant root loss and this tree shows good vigour and vitality and as a species Lime is hardy and tolerant of minor root disturbance of this nature.
- The current level of the road is significantly below that of the soil surface in front of the property and close to the tree and this cannot be improved on without significant changes in levels throughout which would definitely have an adverse effect on this specimen tree.
- The solution to this would be to bring in a small piling rig to auger holes at strategic locations [as determined by a Structural Engineer subject to the final design of the garage and loadings being applied over the ground] which can then be filled with reinforced concrete and a pile cap formed at the surface sunk to no greater depth than 150mm.
- This will provide the solid platform onto which either a suspended solid floor can be laid or CellWeb filled with small diameter aggregate.
- I have been advised that Mr Butler would wish to have the garage positioned as close to the site boundary as is feasible allowing for future access/maintenance. He is I understand currently negotiating with his neighbour over the exact alignment of the boundary and ownership details. He advises me that the neighbour would prefer him to remove the current scruffy conifer hedge and is happy to have the new barn style wooden clad fascia boards facing his property. The exact positioning of this structure is therefore not fixed [and no doubt will be an ongoing matter to pursue with Planners] but has little relevance to tree issues since wherever it goes it will be within the RPA of this tree and therefore the principles discussed in this report and

the solution proposed will apply whatever the final location of the building. The loss of the hedge is of no real importance provided that the boundary is ultimately defined and secured either by the building itself and/or the planting of a new hedge (perhaps Beech).

- I am advised that Planners would not wish this structure to exceed 4m in height. There are two low branches on this side of the tree which arise at 4m on the trunk and grow downwards through this zone and across the site as well as currently touching the building. I recommend that these are completely removed and final cuts formed in accordance with BS3998 recommendations and this will then leave the tree well clear of the roof of the new structure and also a safe distance from the roof of the house. This is minor tree surgery and will not affect tree health or visual amenity value.
- As to the finishing treatments for the remainder of the drive leading up to the garage I recommend that the area is raked over and a basic level achieved with no greater depth of disturbance across this zone to a depth of 150mm. Then peg out a porous geotextile membrane and pin expanded CellWeb to this and fill this with small diameter aggregate. It may be possible to then cover this with a proprietary porous block paver such as 'Aquapave' but this will greatly depend on the final levels entering the garage and this cannot be stipulated at this time.
- In overview I can see that in principle there is a way forward to satisfactorily deal with this matter to all parties approval without detriment to tree health and vitality - but it is not possible to be definitive with levels and materials at this juncture so I can see the need for carefully worded Planning Conditions to ensure that the Council sees and approves all materials specifications; Architects drawings and Structural Engineers cross section drawings prior to any works taking place on site.

5.0 PRE-DEVELOPMENT TREE WORKS

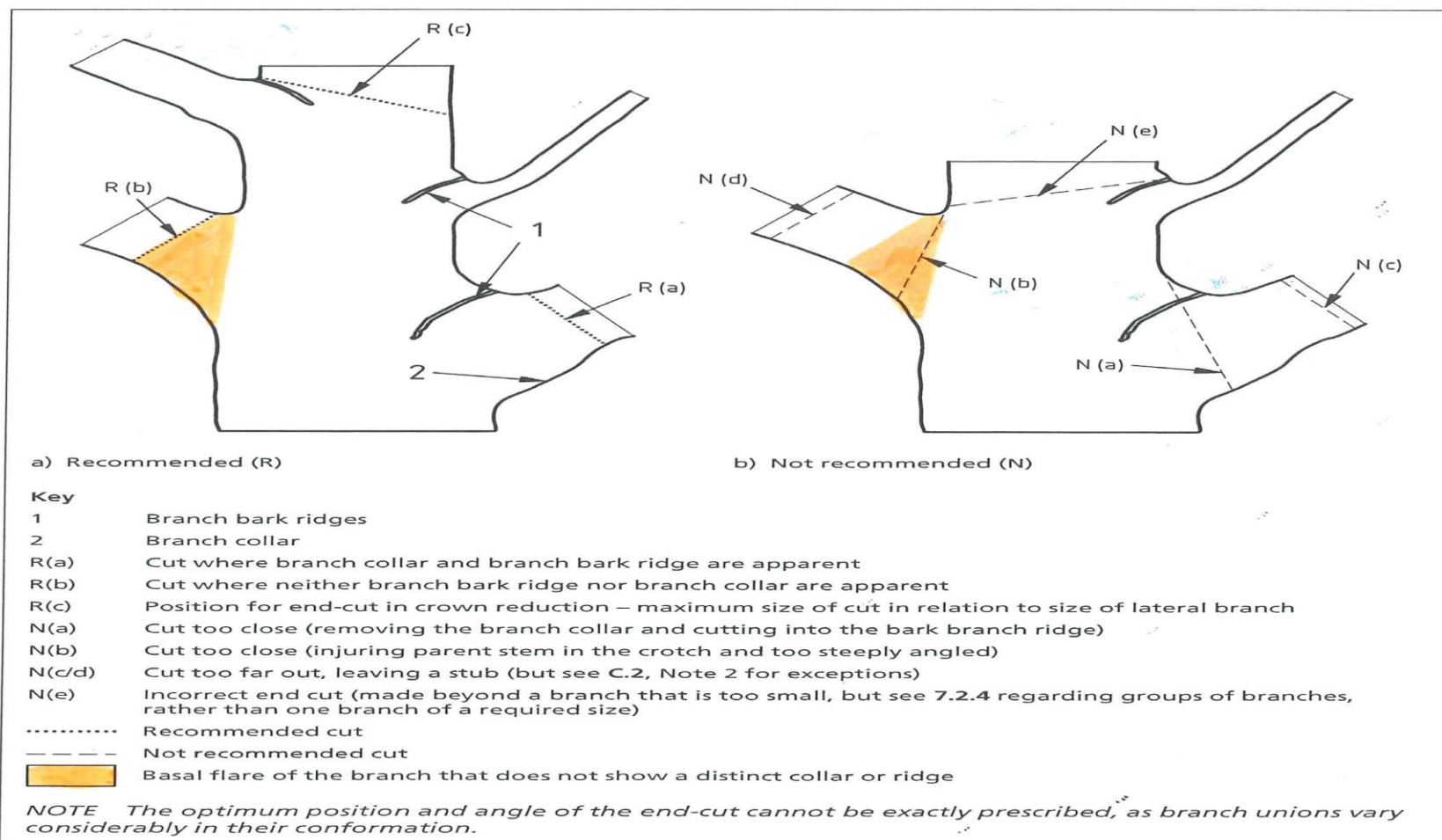
No	Species	Tree Works Recommended
1	Broad Leaved Lime <i>Tilia platyphyllos</i>	• Completely remove the two lowest branches from the north side of the tree – one of approx. 170mm diameter and the other of approx. 100mm diameter. • Make all final cuts in accordance with BS3998 recommendations.



The two lowest branches that are proposed for removal



Figure 2 Positions of final cuts



6.0 MONITORING & SITE SUPERVISION

- 6.1 Given that the works proposed will all be taking place within the RPA of the retained Lime tree and it will not be possible or indeed practical to erect protective fencing across this zone it will be necessary for an Arboricultural Expert to monitor the works at various stages to ensure that the principles outlined in this report are being strictly adhered to. This programme of visits cannot be defined at this juncture so will need to be submitted to satisfy a carefully worded Planning Condition.

7.0 CONCLUSIONS

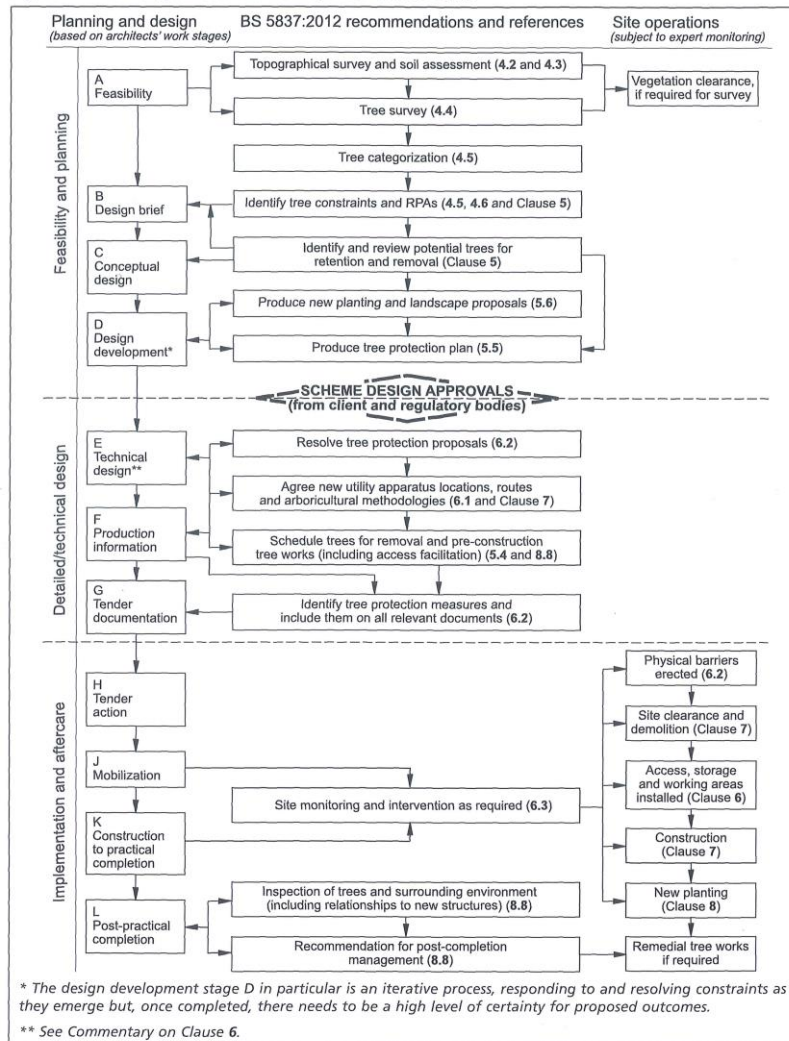
- This report covers the potential impact upon this tree and recommends a way of keeping this to an absolute minimum.
- In my opinion there is an effective solution which can be applied which secures the protection of the tree but also allows Mr Butler can have his garage and driveway access to serve the property at 214a.
- Subject to strict adherence to the principles outlined in this report and the application of appropriately worded Planning Conditions accompanied by an agreed programme of arboricultural monitoring of the work in progress I would see this as a fully supportable scheme in arboricultural terms.



BH 1

Figure 1 - Flow Diagram
& Tree Survey Notes

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 :- **U** (dark red); **A** (light green); **B** (mid-blue) and **C** (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 U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	- 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 A 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 B 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 C 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

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
R105	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



BH 2

Tree Survey & Root Protection Plans

BJH 01/02



BH 3

Examples of Construction Materials



BH 4

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 offices at : –
3 Foxcombe Cottages, South Harting, West Sussex GU31 5PL and also at Cedar Court, 5 College Street, Petersfield
- I hold the following arboricultural qualification - **Master of Arboriculture** (Royal Forestry Society – 1976)
- I have over **forty** 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 surgery company and twelve years with CBA Trees as an Arboricultural Consultant.
- As an independent self employed Arboricultural Consultant 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 Public Local Inquiries.

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