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Tree Survey;	**Proposed factory extension, Oxspring Wire Mills, Penistone, Sheffield, S36 8YW.**
Client;	**Peter Robinson Esq. Director.**
Date of Survey;	**February 10th 2011.**
Weather at time of Survey;	**Fine, albeit not bright.**
File reference	Oxspring Wire 01

Updated 09.12.13. by Progressive Design and Build

Introduction.

Oxspring Wire Mill is a small industrial site on the banks of the River Don just outside the town of Penistone. The proposal here is to erect a new factory unit where there is currently hard-standing and car parking. It is apparent that the existing hard standing is constructed on made-up ground.

Tree Preservation Orders.

there are no Tree Preservation Orders (TPO) on the site and it is not a Conservation Area. However the site does lie within land classified as "green belt."

The Survey.

I have taken 'British Standard 5837 2005 Trees in relation to construction – Recommendations,' as the basis for this report. The Local Planning Authority should consider this Standard in its deliberations about this site. The Standard states its objectives of achieving "a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures."

It provides us with a 'flow diagram' that summarises how trees should be considered on a potential development site. The flow diagram suggests trees should be surveyed and categorised after the initial Land (Topographical) Survey, but prior to the initial design for the site. The categorisation process is an appraisal of the suitability of the trees for retention in the development.

The Standard recommends the preparation of a "Tree Constraints Plan" (TCP) to assist the designer in preparing the layout. It suggests that the survey should include all trees over 75mm trunk diameter. Also, trees that are outside the site but close to, or overhang the site should be considered.

I have marked the trees I have considered on a "Tree Location Plan" (TLP) appended to the rear of this report. I may have marked some of the trees on site in order to help orientation on site. I may have omitted some trees that other people might have included; there will always be differences of opinion over the significance of individual trees, but I am bearing in mind the advice of the Standard. I routinely include hedges and hedgerows and deal with some trees as groups where their proximity to one another means that their crowns have merged and their retention as individuals would be questionable.

I shall summarise the information I have tabulated, the reasons for gathering it and its uses:

1. **Tree no & species.** I hope this is self-explanatory. I routinely use common names but will use scientific names where necessary to clarify the identification. Some trees are dealt with as groups. The categorisation system suggests this is reasonable.

2. **Height.** (Ht) measured in metres. This is estimated from ground level. I use a clinometer to assist. While these are reasonably accurate, actually seeing the top of a tree from ground level can be difficult so the height should always be regarded as an estimate.

3. **Trunk Diameter.** (TD) measured in millimetres. This is required in order to calculate the "root protection area." It is usually measured at 1.5 metres above the ground but deformities or peculiarities have to be avoided. If we were to measure an 'average' tree we would find little variation in measuring the trunk anywhere between 1 & 2 metres. I have attempted to measure the trees at a 'typical' point. Where trees have multiple stems the Standard instructs us to measure below the branch union but above the root flare; I indicate this within the data with the letters 'af.' Alternatively it is acceptable to measure each individual stem and calculate an equivalent single TD[1]. Obviously a pragmatic approach needs to be adopted.

4. **Age class**. BS5837 also requires the age class of the tree. The categories are Young (Y), Middle-aged (EM for early-mature), Mature (M), Over-mature (OM) and Veteran (V). A veteran tree is one that has probably exceeded its 'normal' life span and has developed attributes such as wildlife habitat, biodiversity benefits, historic association or such-like. To quote from the Standard: It is a tree that *by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.*

5. **Category.** BS5837 requires us to assess a 'retention category' for each tree. I shall interpret the standard:

TREES FOR REMOVAL	
Category and definition	Criteria
Category 'R' Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	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 R category 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 (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality. NOTE: Habitat reinstatement may be appropriate (e.g. installation of bat box in nearby tree).
'R' category trees do not have to be removed. If the site layout does not require their removal and there are no safety issues they can be allowed to decline naturally to perhaps provide a habitat or to contribute to biodiversity.	

[1] This system of calculating a trunk diameter was suggested by Rodney Helliwell and is widely accepted by the Arboricultural industry. The cross sectional area of each stem is measured and calculated. The figures are added and an equivalent single trunk diameter is then calculated.

TREES FOR RETENTION			
Category and definition	Criteria - Subcategories		
	1. Mainly arboricultural values	**2. Mainly landscape values**	**3. Mainly cultural values**
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits.
	The Standard states that C category trees *"will usually not be retained where they would impose a significant constraint on development."*		
NB. This is an interpretation not a reproduction of BS5837's table 1.			

6. **Comments**. This column is simply to impart additional information and may cover reasons for the trees' categorisation or anything else that I feel is worthy of mention. Peculiar crown formation might be mentioned, or an unusual branch configuration. BS5837 recommends we measure the *"radius of branch spread at the four cardinal points."* This section will contain that information if I feel it necessary to measure unusual crown formation. Otherwise the presumption is that the trees are fairly typical for the species. The Standard also suggests that we record the height of crown-clearance; that is how far from the ground the branches grow. I shall not mention this unless it is unusual or particularly relevant. I shall broadly confine my assessment of the trees physiological condition to poor, fair, good, or dead and mention it here. All trees are assumed to be in good condition unless mentioned otherwise. The Standard asks us to include the *"estimated remaining contribution in years."* This is rather a "how long is a piece of string" question. I shall include a rough assessment of remaining life where I deem it necessary. By and large this will have been included as part of the 'category' assessment. If necessary I shall comment here.

7. **Root Protection Area.** (RPA) Measured in square metres**.** This is calculated as a circular area with a radius of 12 times the diameter of the tree if measured at 1.5 metres, or 10 times the diameter if measured below the fork and above the root flare (af). An 'R' category tree obviously will not require any RPA. (See BS5837's table 2) I shall round the figure up to the nearest square metre. The Standard suggests that the area does not need to be round but may change shape where this can be achieved while maintaining the necessary tree to building distances. The square root of the RPA gives us the length of the sides if the shape was a square. Half the side conveniently gives us a minimum 'tree to building distance.' The Standard suggests this distance can be reduced by 20% in one direction as long as the protected area can be maintained. (The circular area can be "offset"). Peculiar site restrictions might also have a bearing on the layout. For example if root growth might have been anticipated in a certain area due to a nearby building or road restricting root development, then obviously this area cannot be omitted from the RPA. In reality such a situation would probably mean the tree would be graded as category 'R.'
(The RPA is 'capped' at 707m^2, i.e. a circle with 15m radius or a square with 26m sides.)

Tree Constraints Plan.

BS 5837 is quite clear about the TCP being a 'tool' for the designers of a site layout. It is not clear to me whether a Planning Department can reasonably ask to see a tool that an applicant has used in order to design a layout. The ODPM has issued guidance on the use of planning conditions (circular 11/95). Suffice to say that a planning condition needs to be reasonable.

BS5837 also suggests that trees be coloured on the TCP in the following way: R category - Dark Red, A category - Light Green, B category – Mid Blue, C category – Grey. It occurs to me that a plan marked with RPAs, actual crown spreads, and then areas likely to be shaded by trees, would be at best complicated, and at worst hopelessly confusing.

The Trees.

Tree No.	Species.	Ht	TD	Age class	Cate-gory	Comments.	RPA
1.	Sycamore	11	420	M	C1	Appears somewhat moribund, that is lacking vitality. Very close to access route, hence lower branches have been removed excessively.	80
2.	Sycamore	11	500af	M	C1	At water's edge, 3 stems.	79
3.	Sycamore	11	370	M	C1	Also moribund, possibly due to soil level being raised over the roots.	62
4.	Alder	11	320	M	C1	Soil level raised.	47
5.	Pussy Willow	11	310	M	C1	Soil level raised.	44
6.	Alder	10	500af	M	C1	At water's edge, dying back.	79
7.	Sycamore	13	380	M	C1	Fair.	66
8.	Sycamore	11	537	M	C1	3 stems, TD calculated.	131
9.	Sycamore	16	700	M	C1	At water's edge. TD estimated.	222
10.	Sycamore	16	1000 af	M	C1	At water's edge. TD estimated.	315
11.	Alder	8	200	Y	C1	A couple of saplings.	19
12.	Pussy Willow	9	500af	OM	C1	OK but quite elderly considering Pussy Willows are quite short-lived trees.	79
13.	Pussy Willow	7	200	M	C1	Slender	19
14.	Alder	10	500af	OM	C1	Dying back.	79
15.	Ash	11	350	M	C1	At water's edge. Fair.	56
16.	Sycamore	17	500	M	C1	At water's edge, soil level raised. Dead stump adjacent.	114

Tree No.	Species.	Ht	TD	Age class	Cate-gory	Comments.	RPA	
17.	Alder	15	700	M	B2	4 similar sized stems, possibly coppice growth, a pleasing specimen. TD calculated.	222	
18.	Oak	10	540	M	B3	2 trees on the edge of the woodland, some tipping at the base.	132	
19.	Sycamore	17	600	M	C1	Appears moribund.	163	
20.	Sycamore	17		M	C1	Fire damaged, could not be measured due to lock and fence. Probably not worth attempting to retain.		
21.	Alder	17	510	M	C1	Festooned with flood lights and wires. Some decay, probably best removed.	118	
22.	~~Ash~~	~~18~~	~~730~~	~~OM~~	~~C1~~	~~Has suffered some damage, some fungal infection and is festooned with cables. Appears to have had excavations at the base, probably best removed.~~	~~241~~	Now removed
23.	~~2 trees~~	~~10~~	~~400~~	~~M~~	~~C1~~	~~Sycamore and Alder, suffered similar excavations to tree 22. Probably best removed.~~	~~73~~	Now removed
24.	~~Sycamore~~	~~10~~	~~260~~	~~M~~	~~R~~	~~Festooned with wires and the trunk has been girdled with something, best removed.~~	~~0~~	Now removed
25.	Woodland	12	600 max	M	A2	On the embankment/ rock outcrop. Overhead cables means that numerous trees have been cleared and allowed to coppice. Mainly Oak, with Rowan and some Hazel.	163	

Discussion.

This is a very attractive site; there cannot be many factories in a waterside setting with farmland and trees in such close proximity and I imagine the people employed on the site are aware of their good fortune. I understand the proposal here will be entirely within the area already utilised for outdoor storage and car parking. That said the waterside setting is something of a double-edged sword and the site was flooded in 2007. I only mention these factors because I am aware that the Environment Agency (formerly the National Rivers Authority) has undertaken fairly extensive riparian tree removal works recently. The flooding problems of 2007 were

exacerbated by trees obstructing the flow of flood waters. The Environment Agency is empowered to demand the removal of riparian trees if they see fit, and this power over-rides any Conservation Area or TPO considerations. This does not mean they will be unsympathetic, but it does mean that their management might be taken out of our hands.

In fact the clearing of trees from the embankment is another example of how tree management can be taken out of our hands without reference to any local planning authority protection. In this case the people responsible for the overhead transmission lines are at liberty to undertake whatever tree work they see fit. Again this does not mean that they are unsympathetic, merely that the safe operation of their service over-rides any aesthetic or tree considerations.



Photograph 1.



Photograph 2.

Photograph 1 is taken looking roughly east from the centre of the car park. The new building will sit on the car park and finish roughly where the coils of steel currently are stored. The trees on the embankment appear to have been left alone for many years. The transmission lines were behind me when I took this photograph and photo 2 shows a view of the trees beneath the

transmission lines. The trees here are much smaller due to their being coppice growth, that is when the transmission people cut down the trees beneath the lines they were simply allowed to grow back again. While this sounds somewhat haphazard, in actual fact this sort of management is extremely environmentally beneficial. The rejuvenated growth that results from coppice management is usually more dense and provides good cover for small birds and mammals and the rejuvenated trees may very well produce more flowers and fruit with increased benefits to the food chain. Not only that but the increased light levels will help to prevent the ground florae from being suppressed. There are also benefits from increased carbon sequestration; it's generally accepted that young or coppiced trees putting on increment rapidly must sequester more atmospheric carbon than elderly moribund trees.

While this might seem like an argument for coppice management of the whole embankment, we need to remember that elderly trees, in the UK especially Oaks, provide cavities nooks and crannies, and dead wood which might be important "niche habitats." I think it is fair to say that the existing management of the trees on the embankment is pretty well ideal, even if it has come about by luck rather than a specific intervention. Also I do not see that the proposed building is going to change this situation.



Photograph 3.

Photograph 3 to the left shows tree 1. The access route will be unaffected by this project although it is plain that tree 1 has had a lot of branches removed, presumably so they didn't catch goods vehicles.

Photograph 4 shows tree 2 at the water's edge. This is the sort of tree that might cause flooding problems.



Photograph 4.



Photograph 5.



Photograph 6.



Photograph 7.

Photograph 5 shows a tree at the opposite side of the River Don to the site, I took it because it illustrates how roots develop but may have soil washed away. While this tree is probably not unstable, the 2007 inundations toppled many trees like this, which then became the cause of the problems when they were washed downstream and caused blockages.

Photograph 6 shows the base of tree 3 with the soil level having been raised at one side. The car park and driveway is to the left in this photograph. I presume that the soil level must have been raised when the drive was constructed. Trees are badly affected by changes in soil level over their root system, this has probably led to this tree's lack of vigour.

Photograph 7 shows tree 17, which I think is a fine specimen. This tree at the far end (NW) of the site grows at a lower level than the site although the spoil used to raise the level of the yard is spreading towards the tree. I'm not sure if it is growing in made-up ground or if this is merely the original ground level; I presume the River Don used to meander here. Note the Alder saplings in the background forming quite a dense thicket. Alders have evolved to tolerate flooding and can become established on quite poor soils.



Photograph 8.



Photograph 9.



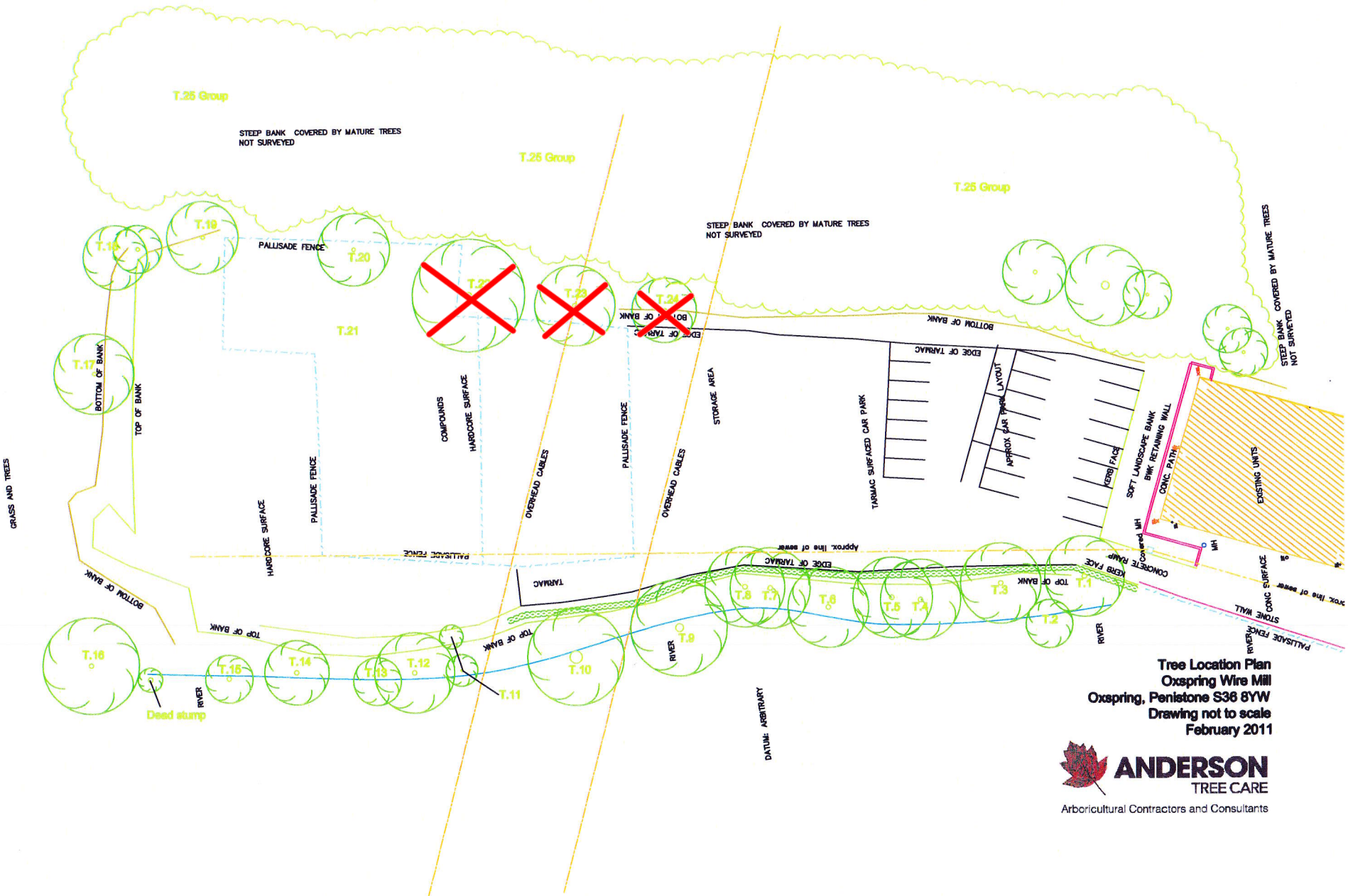
Photograph 10.

Photograph 8 shows tree 21 which has been used as a convenient lamp post. While the project is not actually reaching this far it would probably be sensible to take these lights and cables down and then remove the tree. The disturbance around its roots is likely to hasten its demise and having the tree fall down would be bad enough without it dragging live cables across the yard as well. Photograph 9 shows tree 22, this has suffered some damage and there appear to have been excavations very close to its trunk. Photograph 10 shows tree 24 festooned with wires. It appears as if something has been fastened around the stem which has lead to the deformity. This might break. I suggest tree 24 is removed along with trees 21, 22, and 23. Trees 22, 23 & 24 now removed

In summary I think it is fair to say that the most important trees on this site are the ones on the embankment, which possibly by luck more than planning have been managed rather well. This is not to say that the riparian trees have anything desperately wrong they are in a location where the management might be taken out of your hands.

Conclusion.
The most important and most interesting trees on this site are those on the embankment. This project ought not to change the current situation with regard to those trees. Nonetheless measures should be taken to prevent casual incursion onto the embankment by site machinery for the duration of the construction period.

W. L. Anderson. Dip.Arb. (RFS) M.Arbor.A.
ANDERSON TREE CARE. February 2011.



Tree Location Plan
Oxspring Wire Mill
Oxspring, Penistone S36 8YW
Drawing not to scale
February 2011

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Arboricultural Contractors and Consultants