



Professional
Consulting Tree Service



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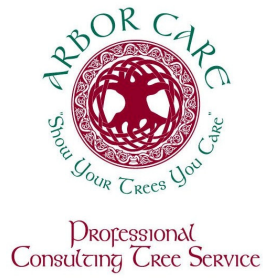
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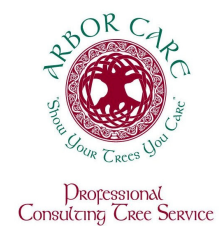


A Tree survey and Arboricultural Impact Assessment.

**For,
Patrickswell,
Co. Limerick.**

**Prepared for,
Limerick City & County Council,
Merchants Quay,
Limerick.**

**Prepared by,
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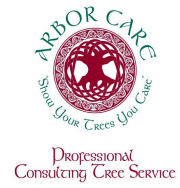


1.0 Executive Summary.

Arbor-Care Professional Consulting Tree Service was retained by Limerick City & County Council to undertake, a tree survey, an arboricultural impact assessment and a plan of preservation for the trees contained within the grounds of a proposed development at the above location that may be impacted on as a result of the proposed development and associated works. The arboricultural impact on the site is high as it will result in high tree loss from the site to accommodate the proposed development.

The surveyed trees contained within this report are located within the parameters of the proposed site. The site consists of a large green field site with tree located in hedgerows along the perimeter and centrally located.

The preservation plan in this report is based on the British standard *BS 5837:2012 Trees in relation to design, demolition and construction*, this standard gives recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures. It sets out to assist those concerned with trees in relation to construction to form balanced judgements. The survey commenced on the 16th of April 2018.



2.0 Assignment.

1. To undertake a visual tree survey to, identify any potential impact the new development would have on the trees and visa versa.
2. To provide recommendations for their preservation and or removal.
3. Present a written report on the inspection of the trees
4. To provide a tree constraints plan highlighting which trees are to be removed and or retained.

2.1 Limits of the Assignment.

Unless otherwise stated tree inspections have been undertaken from ground level and using non-invasive techniques only. Comments on the condition and safety of any tree relate to the condition of that tree at the time of the survey. It should be recognised that tree condition is subject to change due to, for example the effects of disease, wind or nearby development works. Changes in land use are also significant in respect of risk assessment. Trees should therefore be inspected at intervals relative to identified site risks.

3.0 Methodology.

An initial tree survey and visual condition assessment was on the 16th of April 2018. For the purpose of this report and in accordance with BS 5837 only trees with diameters of 75mm or greater were surveyed. Also in accordance with point 4.4.2.3 of the British standard document where trees formed obvious groups these were assessed and recorded as groups.

4.4.2.3

Trees growing as groups or woodland should be identified and assessed as such where the arboriculturist determines that this is appropriate. However, an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them, e.g. in order to highlight significant variation in attributes (including physiological or structural condition).

*NOTE The term "group" is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. **avenues** or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture), in respect of each of the three subcategories .*

The survey concentrated primarily on the significant trees located within the development (red line area, Fig 1) area. The objective of this survey was to gather information regarding the trees location on the proposed development site (Please refer to table 1) and determine the impact the proposed development may have on the trees. The survey commenced at the western boundary and worked in a southerly direction.

Significant trees can be equated as those trees whose visual importance to the surrounding area are sufficient to justify special efforts to protect/preserve and whose loss would have an irremediable adverse impact on the local environment. Significance can also be placed depending on the trees age, another variable to imply significance can be the aesthetic merit of the tree based on its unusual size, intrinsic physical features or outstanding appearance or occurring in a unique location or context, and thus provides a special contribution as a landmark or landscape feature.

All above parts of the trees were visually examined. Tree diameters (DBH) were estimated at 1.5 meter above grade as per standard arboricultural practice. Tree height was measured with the use of a clinometer (Where practical). A generalised system was employed to describe the overall health of the trees. The system uses a five tier rating scale with the following descriptors,

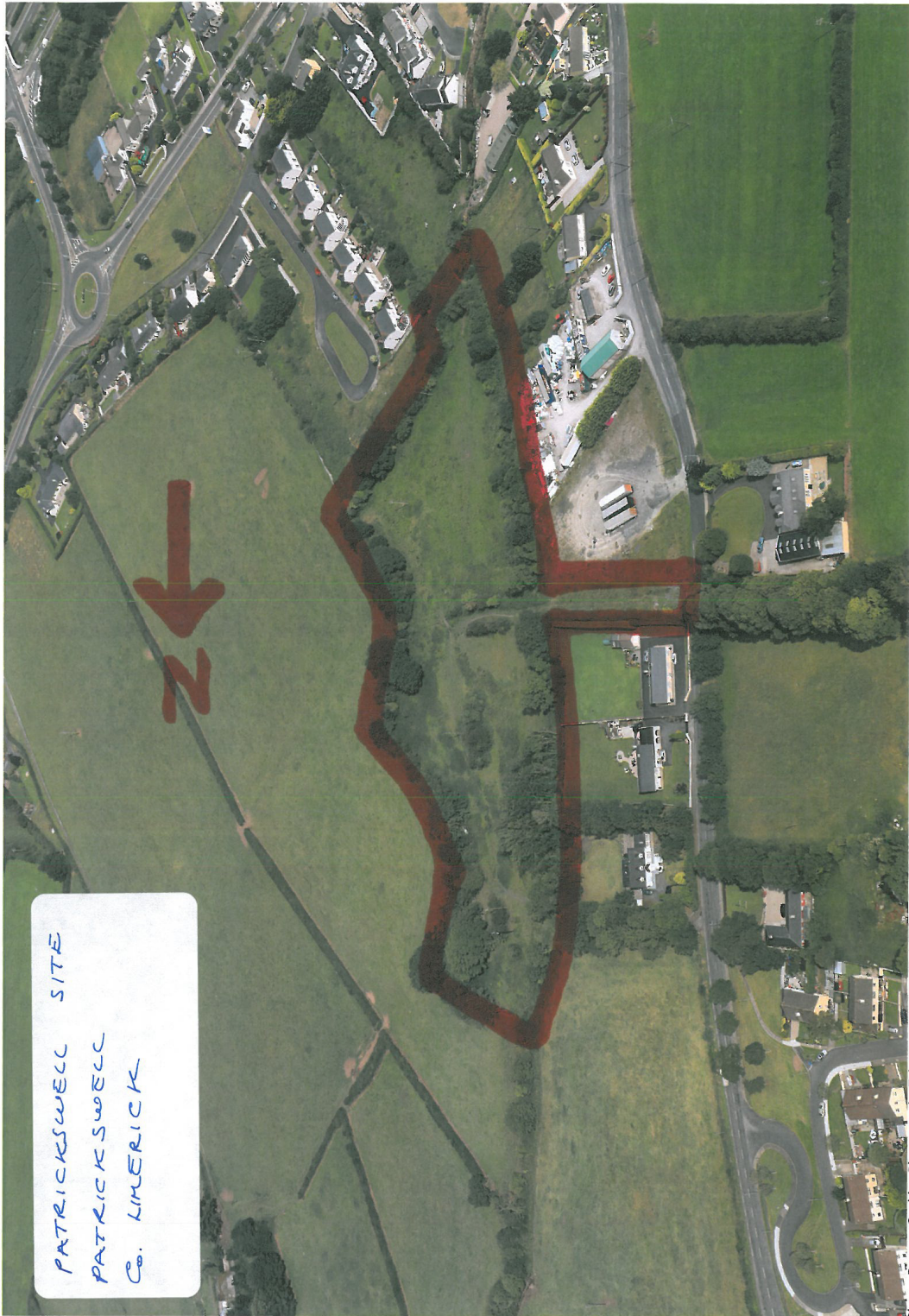
Note:

Specimen condition is based on a 5-tier rating system:

- Very poor-1-20%
- Poor- 21-40%
- Fair- 41-60%
- Good- 61-80%
- Very good 81-100%

Where 100% would be a perfect species phenotype.

Figure 1. Proposed site within the redline





4.0 Tree Preservation

Prior to any construction or demolition works on this site all trees destined for retention need to be protected by the use of protective barriers and or ground protection, fit for the purpose of ensuring the successful long-term preservation of the trees. In order for the retained trees to be adequately protected on the site a construction exclusion zone needs to be identified. This zone is calculated based on the root protection area (RPA), which is the minimum area in m² which should be left undisturbed around each retained tree. The RPA should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter for a single stem tree and 10 times basal diameter measured immediately above the root flare for trees with more than one stem arising below 1.5m above ground level.

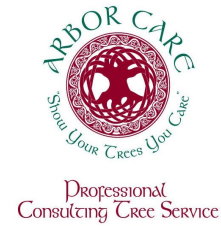
Number of Stems	Calculation
Single Stem Tree	$\text{RPA (m}^2\text{)} = \frac{\{\text{stem diameter (mm) @ 1.5m x 12}\}^2 \times 3.142}{1000}$
Tree with more than one Stem arising below 1.5m above Ground level	$\text{RPA (m}^2\text{)} = \frac{\{\text{Basal Dia. (mm) x 10}\}^2 \times 3.142}{1000}$

Note

The Calculated RPA should be capped to 707m², e.g. which is the equivalent to a circle with a radius of 15m or a square with approximately 26 m sides.

Maintenance

All trees that are destined for removal shall be removed prior to occupation in the interest of health and safety. Any tree remedial works that are required shall also be undertaken prior to any construction or demolition activity on the site. All the above shall be carried out by qualified and insured tree surgeons.



5.0 Protective Barriers and Ground Protection.

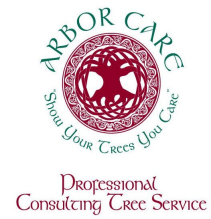
Trees that are destined to be retained must be protected by barriers and or ground protection prior to any materials or machinery being brought on site and prior to any development, demolition or soil stripping takes place. Areas that are designated for new plantings should be similarly protected. Barriers should be fit for the purpose of excluding construction activity. In most cases barriers should consist of a scaffold framework (Refer to Appendix 1) comprising a vertical and horizontal framework, well braced to resist impacts. To ensure the protective barriers are respected, clear concise signage must be affixed to the barrier in an unrestricted easily viewed location. The signage must state the following;

- No construction activity is to take place within the R.P.A. (unless pre-agreed the arborist)
- No materials of any kind are to be stored within the R.P.A.
- No "Spilling out" of materials shall take place within the R.P.A.
- No fires are to be lit within the R.P.A.

The protective barriers shall remain in an undisturbed condition and only removed on completion of all construction activity finished grading and sodding. Any breach of the protective fence shall be reported to the consulting arborist. "Tree protection fencing shall follow the line of the RPA in general. However, should there be a requirement to encroach on the RPA, this shall be done with the advice of the Arborist".

Ground Protection

For pedestrian movements within the R.P.A. the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable. For wheeled or tracked movements within the R.P.A. the ground protection should be designed by an engineer to accommodate the likely loading.



**5.1 Predicated Impact of The Proposed Development.
(Arboricultural Impact Assessment) (A.I.A.)**

The arboricultural impact on the site is high. In total 44 trees plus 1 hedgerow are proposed to be removed in order to facilitate the proposed design. The majority of the trees are proposed to be removed along the eastern boundary to accommodate a 2m high boundary block wall. The removal of these trees will have a negative impact on the amenity and aesthetics of the local area and on the local ecology. The proposed design is not conducive to sustainable development.

Trees to be removed to facilitate development (Please review table 1 for further information.

Tag #	Species	Condition	Action
2804-2805	Hawthorn hedgerow	Good	Remove to facilitate the development
2806	Ash	Good	Remove to facilitate the development
2807	Ash	Good	Remove to facilitate the development
2808	Ash	Good	Remove to facilitate the development
2809	Elder	Fair	Remove to facilitate the development
2810 x 3	Hawthorn	Good	Remove to facilitate the development
2811	Ash	Good	Remove to facilitate the development
2812 x 2	Hawthorn	Good	Remove to facilitate the development
2813	Hawthorn	Good	Remove to facilitate the development
2814	Ash	Good	Remove to facilitate the development
2815 x 3	Hawthorn	Good	Remove to facilitate the development
2816	Ash	Good	Remove to facilitate the development
2817 x 3	Elder Hawthorn x2	Good	Remove to facilitate the development
2818	Ash	Good	Remove to facilitate the development
2819	Sycamore	Good	Remove to facilitate the development
2820	Hawthorn	Good	Remove to facilitate the development
2821	Hawthorn	Good	Remove to facilitate the development
2822 x 2	Sycamore	Good	Remove to facilitate the development
2823 x 3	Hawthorn	Good	Remove to facilitate the development
2824 x 3	Hawthorn	Good	Remove to facilitate the development
2825 x 3	Ash Hawthorn x 2	Fair	Remove to facilitate the development
2826	Ash cluster	Good	Remove to facilitate the development
2827	Ash	Good	Remove to facilitate the development
2828	Ash	Good	Remove to facilitate the development
2829	Ash	Good	Remove to facilitate the development
2830	Ash	Good	Remove to facilitate the development
2831	Ash cluster	Good	Remove to facilitate the development
2832	Sycamore	Good	Remove to facilitate the development
2833	Ash x 2	Good	Remove to facilitate the development
Total Trees to be removed	44 + 1 hedgerow		Remove to facilitate the development

6.0 Arboricultural Impact Assessment. (A.I.A) (Please refer to tree constraints plan (PWL-TS-002)

6.1 The object of this arboricultural method statement/tree protection plan is to provide information for the building contractor/site manager on how the trees on the site need to be protected pre, during and post development works so that they can prepare their own site specific detailed method statement for their works

6.2 it is necessary for the protective fencing to be erected and all other mitigation measures required to be put in place *prior to any development works commencing on site* to ensure all retained trees and their critical rooting zone are protected for the duration of the works. Refer to tree protection plan (PWL-TS-002) for the position of protective fencing and additional mitigation measures

6.3 The protection for trees shown for retention will occur in three stages known as pre, during and post development.

6.4 Stage 1. (Pre development works)

Prior to works commencing on site the following needs to be planned

- 1. The developer needs to appoint an arboriculturist for the duration of the project. The arborist is to make regular site visits to ensure that the protection measures are in place and are being adhered too.**
- 2. The main contractor and sub-contractors are to be briefed on the tree protection plan and ensure all measures are kept in place for the duration of the project**
- 3. All personnel are to adhere to the recommendations of the appointed arborist**
- 4. Any issues in relation to trees shown for retention must be discussed with the appointed arborist and the necessary mitigation measures put in place without delay and prior to the works taking place.**

6.5.0 Site meeting

Prior to any works on site, it is necessary that a meeting be arranged between the project manager, site foreman, the project landscape architect, the project arborist and the local authority to identify and finalise the trees for removal and the line of protective fencing and any other mitigation measures.

6.6 Tree works

6.6.1 The developer or the main contractor is to appoint a professional tree surgery company to undertake any tree removal or surgery works identified. The works are to be undertaken in accordance with BS 3998 2010.

6.7.0 Erection of protective fencing/Mitigation measures

6.7.1 The erection of protective fencing is to be erected to the fence line shown in tree protection plan. The fencing must adhere with BS 5837 2012 (Appendix 1). Signage (figure 1) must be placed on the fence to highlight its importance. Once the fencing is erected works can commence on-site. Ground protection will be installed along the eastern boundary to protect the trees in this area. A cell web geotextile material will be put in place.

Stage 2.

6.8.0 The construction works stage

6.8.1 Protective Fencing-During the course of the construction works the integrity of the fencing must be respected and remain in place at all times. No building materials or soil heaps are to be stored within this area. Should essential works need to take place with the root protection area the project arborist must be informed in advance and any mitigation measures are to be put in place. The protective fencing must remain in situ for the duration of the project and must only be removed upon completion of all works.

6.8.2 Excavations- Excavation works are only to commence once the protective fence line is in place

The excavations need to be viewed on site once marked out with the project manager, site foreman and the project arborist in advanced of excavation to determine the extent of the impact and the works space required to allow the construction works proceed and to assess any additional mitigation measures that may be required to protect the retained trees. In certain areas it may be necessary to use alternative methods of excavation to prevent encroachment into the RPA of the trees to be retained and this may include such methods as retaining walls, no dig technique etc.

6.8.3 Working within the RPA-If it becomes necessary to undertake works within the RPA of a tree/trees, these must be discussed and agreed with the project arborist. All works must be carried out manually root pruning is to be undertaken by an arborist using hand held equipment such as a handsaw.

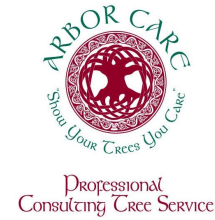
For pedestrian movements within the R.P.A. the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable. For wheeled or tracked movements within the R.P.A. the ground protection should be designed by an engineer to accommodate the likely loading.

6.8.4 Finished ground levels/Landscaping-The existing ground levels within the RPA of the retained trees must be retained and incorporated into the finished landscaped development. Where changes in level occurs these are to be either graded into the finished levels starting outside the RPA or alternatively, retaining wall structures are to be used differentiating between the different levels.

All soft and hard landscaping within the RPAs must be carried out manually and the soil levels must not be lowered or raised resulting in root damage to the trees. All finished surfaces are to be porous to allow the free movement of water and gaseous exchange to the roots.

Stage 3-Post Development Works

The project is not to be considered complete until the arborist has inspected all retained trees and signed off to ensure that there has been no impact



Comments/Terminology.

Tree Categorization. (Reference to Table 1-Cascade chart for tree quality assessment) of Bs. 5837 2012 should be reviewed for further information.

Category U

This category signifies those trees that are 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.

Category A.

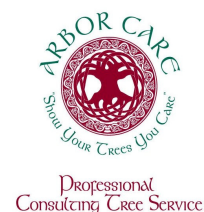
Those trees of a high quality and value, in such a condition as to be able to make a substantial contribution. (A minimum of 40 years is suggested)

Category B

This category signifies those trees of a moderate value and in such a condition as to be able to make a substantial contribution (A minimum life expectancy of 20 yrs is suggested)

Category C

This category signifies those trees of a low quality and value that are currently in an adequate condition to remain until new planting could be established (A minimum life expectancy of 10yrs is suggested), or young trees with a stem diameter below 150mm. Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.



Sub-Categories

1. Mainly Arboricultural values

Trees which are particularly good examples of their species, especially if rare or unusual, or essential components of groups.

2. Mainly landscape values

Trees that might be included in the high category, but are down graded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)

3. Mainly cultural values, including conservation

Trees, group or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees)

Terminology.

Deadwood-Wood/tissue that has become dysfunctional,

Minor deadwood-dead wood with a diameter less than 100mm

Moderate deadwood-deadwood with a diameter between 100-200mm

Major Deadwood-deadwood with a diameter greater than 200mm

Age Class:

Young: A tree, which has been planted in the last 10 years.

Semi -mature A tree that is less than 1/3 the expected height of the species in question.

Early mature: A tree, which is approximately 2/3's the expected height of the species in question.

Mature: A tree that has reached the expected height of the species in question, but still increasing in size.

Over mature: A tree at the end of its life cycle and the crown is starting to break up and decrease in size.

Table 1. Tree Inventory, Patrickswell.

Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Recommendations
2801	<i>Fraxinus excelsior</i> Ash	M	600	14	N=1 S=1 E=3 W=3	1	Fair	A large mature ash tree, it has suffered basal damage on the eastern side, a tree of low quality	C2	7m	Retain
2802-2803	Hedgerow	SM	280	6	N=2 S=2 E=2 W=2	1	Poor	Consists of a low lying hedgerow of hawthorn, willow and ash is poor condition	C2	3.5m	Retain
2804-2805	<i>Crataegus monogyna</i> Hawthorn	M	220	6	N=2 S=2 E=2 W=2	1	Fair	Represents a hawthorn hedge along the eastern boundary in good condition. This would require removal to accommodate the design	C2		Remove to facilitate the development
2806	Ash	M	550	14	N=4 S=4 E=4 W=4	3	Good	A mature ash contained within the eastern hedgerow, displaying a good overall condition	B2		Remove to facilitate the development
2807	Ash	M	420	14	N=3 S=3 E=3 W=3	3	Good	A mature ash contained within the eastern hedgerow, displaying a good overall condition	B2		Remove to facilitate the development
2808	Ash	M	600	16	N=4 S=4 E=4 W=4	3	Good	A mature ash contained within the eastern hedgerow, displaying a good overall condition	B2		Remove to facilitate the development

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2809	<i>Sambucus nigra</i> Elder	M	250	6	N=2 S=2 E=2 W=2	1	Fair	A mature elder displaying a good overall condition	C2		Remove to facilitate the development
2810	Hawthorn x 3	SM	250	6	N=2 S=2 E=2 W=2	1	Good	Represents three mature hawthorns in good condition	B2		Remove to facilitate the development
2811	Ash	M	350	10	N=2 S=2 E=2 W=2	2	Good	A large mature ash tree displaying a good overall condition	B2		Remove to facilitate the development
2812	Hawthorn x 2	M	240	6	N=2 S=2 E=2 W=2	1	Good	Represents 2 hawthorns displaying a good overall condition	C2		Remove to facilitate the development
2813	Hawthorn	M	240	8	N=3 S=3 E=2 W=2	2	Good	A large mature hawthorn displaying a good overall condition	B2		Remove to facilitate the development
2814	Ash	M	870	18	N=6 S=6 E=6 W=6	2	Good	A large mature ash displaying a good overall condition	B2		Remove to facilitate the development

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2815	Hawthorn x 3	SM	300	8	N=2 S=2 E=2 W=2	1	Good	Represents three mature hawthorns in good condition	B2		Remove to facilitate the development
2816	Ash	M	280	14	N=4 S=4 E=4 W=4	2	Good	A large mature ash displaying a good overall condition	B2		Remove to facilitate the development
2817	Elder Hawthorn x 2	SM	250	5	N=2 S=2 E=2 W=2	2	Good	Represents two trees displaying a good overall condition	C2		Remove to facilitate the development
2818	Ash	M	750	18	N=4 S=4 E=4 W=4	2	Good	A large mature ash displaying a good overall condition	B2		Remove to facilitate the development
2819	<i>Acer pseudoplatanus</i> Sycamore	M	630	18	N=5 S=5 E=4 W=4	2	Good	A large mature Sycamore displaying a good overall condition	B2		Remove to facilitate the development
2820	Hawthorn	M	280	7	N=2 S=2 E=2 W=2	2	Good	A large mature Hawthorn displaying a good overall condition	B2		Remove to facilitate the development

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2821	Hawthorn	SM	240	8	N=2 S=2 E=2 W=2	1	Good	Represents a multi-stemmed mature hawthorn in good condition	C2		Remove to facilitate the development
2822	Sycamore x 2	SM	280	8	N=2 S=2 E=2 W=2	2	Good	Represents two sycamores displaying good condition.	B2		Remove to facilitate the development
2823	Hawthorns x 3	SM	250	8	N=2 S=2 E=2 W=2	2	Good	Represents three hawthorn displaying a good overall condition	C2		Remove to facilitate the development
2824	Hawthorns x 3	SM	250	8	N=2 S=2 E=2 W=2	2	Good	Represents three hawthorn displaying a good overall condition	C2		Remove to facilitate the development
2825	Ash 2 x Hawthorn	M	300	18	N=5 S=5 E=4 W=4	2	Fair	Represents an ash and 2 hawthorns, displaying fair condition	C2		Remove to facilitate the development
2826	Ash cluster	M	380	10	N=3 S=3 E=3 W=3	2	Good	Represents an ash cluster displaying a good overall condition	B2		Remove to facilitate the development

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Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Recommendations
2827	Ash	M	M	5	N=1 S=1 E=1 W=1	1	Poor	A mature ash that has suffered severe damage to its upper canopy	U		Remove to facilitate the development
2828	Ash	M	400	12	N=3 S=3 E=3 W=3	2	Good	A mature co-dominant ash displaying a good overall condition	B2		Remove to facilitate the development
2829	Ash	M	600	22	N=5 S=5 E=5 W=5	2	Good	A large mature ash displaying a good overall condition, one of the better quality trees on the site	B2		Remove to facilitate the development
2830	Ash	M	500	22	N=5 S=5 E=5 W=5	2	Good	A large mature ash displaying a good overall condition, one of the better quality trees on the site	B2		Remove to facilitate the development
2831	Ash cluster	M	300	12	N=3 S=3 E=3 W=3	2	Good	Represents an ash cluster, displaying good condition	B2		Remove to facilitate the development
2832	Sycamore	M	300	16	N=3 S=3 E=3 W=3	2	Good	Represents a mature co-dominant Sycamore, displaying good condition	B2	4m	Remove to facilitate the development

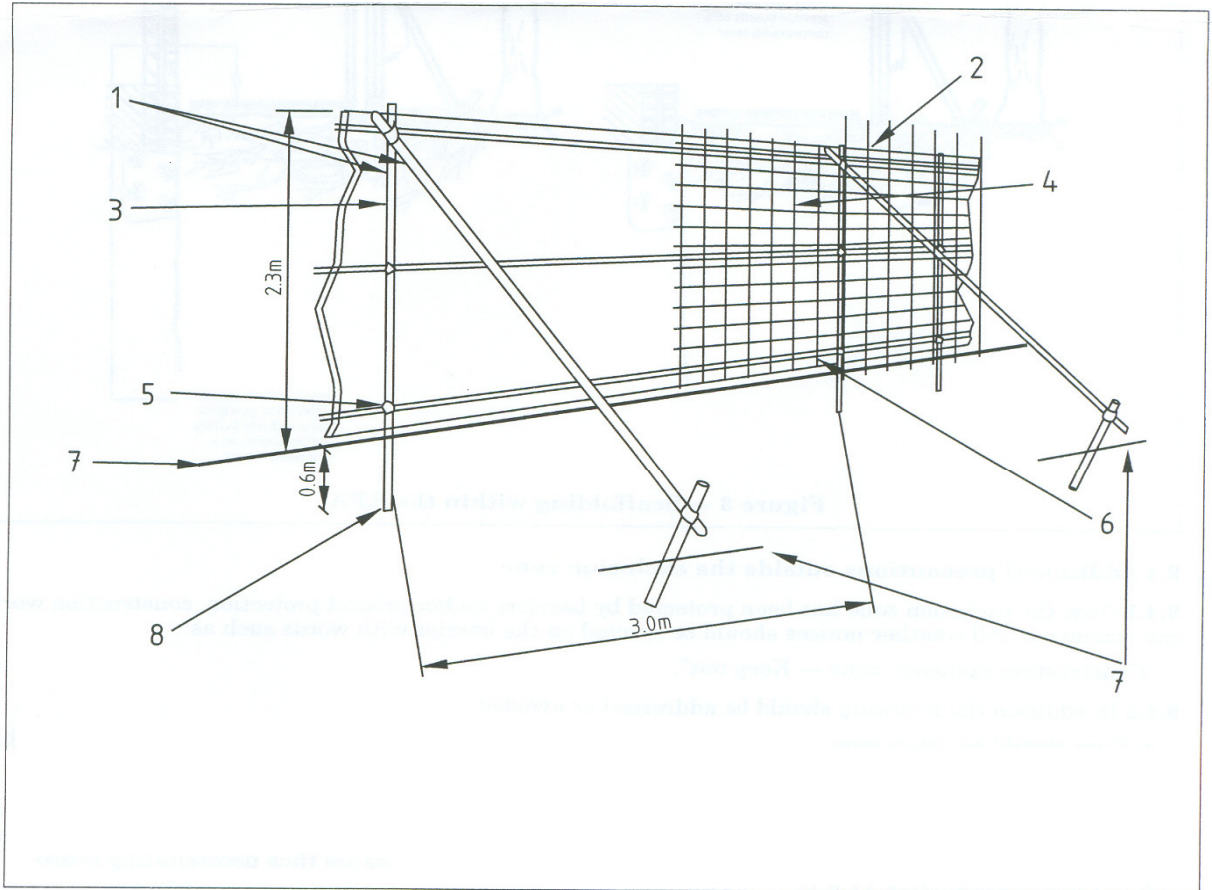
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2833	Ash cluster x 2	M	300	12	N=3 S=3 E=3 W=3	2	Good	Represents an ash cluster, displaying good condition	B2		Remove to facilitate the development
2834-35	Ash x 9	M	340	12	N=3 S=3 E=2 W=2	2	Good	A row of mature ash displaying a good overall condition	B2	5m	Retain
2836	Ash x 3	M	300	8	N=2 S=2 E=2 W=2	2	Fair	Represents two ash a low lying hawthorn in fair condition.	C2	4m	Retain
2837	Ash x 3	M	320	14	N=2 S=2 E=2 W=2	2	Fair	Represents three mature ash displaying a fair condition they have some limbs loss	C2	5m	Retain
2838	<i>Populus tremula</i> Trembling aspen	OM	1000	28	N=4 S=4 E=4 W=4	4	Good	Represents a large over-mature aspen, located on the bank of the drain,. It would not be appropriate for a new development	B2	11m	Retain
2839	Aspen	M	600	22	N=3 S=3 E=3 W=3	2	Good	Represents a large mature aspen, located on the bank of the drain,. It would not be appropriate for a new development	B2	7m	Retain

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Tree	Species Botanical Name	Age class	Size (mm)	Height (M)	Crown Sp. (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	R.P.A. Meters Radius	Recommendations
2840	Aspen Ash Hawthorn	M	280	8	N=2 S=2 E=2 W=2	2	Fair	Represents a mixed row of trees consisting of aspen, ash and scrub hawthorn	C2	3.5m	Retain
2841	Ash x 2	M	340	10	N=1 S=1 E=1 W=1	2	Fair	A mature ash that has suffered from limb loss	C2	5m	Retain
2842	Ash x 3	SM	220	8	N=2 S=2 E=2 W=2	2	Good	Represents three ash displaying a good overall condition.	C2	3.5m	Retain
2843	Ash x 2	SM	220	8	N=2 S=2 E=2 W=2	2	Good	Represents three ash displaying a good overall condition.	C2	3.5m	Retain
2844	Ash	M	320	12	N=2 S=2 E=2 W=2	1	Good	Represents two mature ash displaying a good overall condition	B2	4m	Retain

Appendix 1. - Protective Barrier



The above displays an example of a suitable protective barrier as recommended by *BS. 5837 2012 Trees in Relation to Construction*

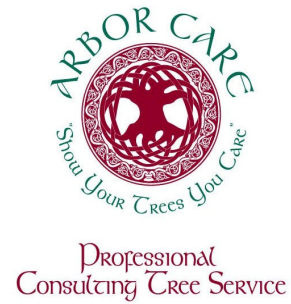
1. Standard scaffold poles
2. Uprights to be driven into the ground
3. Panels secured to uprights with wire ties and where necessary standard scaffold poles
4. Weld mesh wired to the uprights and horizontals
5. Standard clamps
6. Wire twisted and secured on the inside of fencing to avoid easy dismantling
7. Ground level
8. Approx. 0.6m driven into the ground

Figure 2. Displays the southern boundary.



Figure 3.
Eastern boundary, there are examples of quality trees along this boundary that screen the proposed development from the existing housing estate.





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Yours in Conservation,

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