County Tree Care Ltd
QUALIFIED ARBORISTS
Qualified in Arboriculture & Horticulture

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Project Name :

Tree Survey and Arboricultural Impact Assessment of mature large trees and understorey tree species at a site in Carrigaline, Co. Cork

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Date : 12/09/21

Prepared For :

Cullinane Stratton Reynolds,
Copley Hall,
Cotters St,
Cork

Prepared by :

George Earle, *Dip Arb, TechArbA, Cert Hort*

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1.1 : Client Brief

County Tree Care Ltd was asked by Cullinane Stratton Reynolds to carry out a tree survey at a greenfield site in Carrigaline, Co. Cork. The aim was to survey trees with the site boundary and along the boundary edge. With the details obtained in the survey to prepare an Arboricultural Assessment and Method Statement that can be used to make sound arboricultural decisions relating to design and construction of any new development.

1.2 : Description of site

The site is a greenfield on the Western boundary of Carrigaline in Co. Cork. The site has a main road (R611) that runs along the South-west corner boundary and has the river Owenabue on the East edge and along the Northern boundary. The site is made up of grassland that hasn't been grazed in recent months. There are no tree or shrub species growing within the centre of the site. All trees that were surveyed were growing along the edges of the site. There is construction to the West where building of the Western Relief road is underway. The site is located between this developing new road on the West and a large supermarket on the East. There are dense groups of low growing trees and shrubs growing on the bank of the river but most of these are on the North and North-east bank of the river, outside of the boundary of the site.

1.3 : Methodology

Only trees over 15cm in diameter @ 1.5m were surveyed. Recommendations will be provided based on the survey. Aluminium tree tags were placed on the trees that were surveyed. They number from 811 – 829. They are placed at 1.5m high on the North side of the tree stem wherever possible.
The survey methodology follows the recommendations contained within BS : 5837 (2012), Trees in relation to design, demolition and construction. Any tree surgery work to be carried out must follow Industry Best Practice BS : 3998 (2010). The analysis of the trees was undertaken using the VTA method as developed by Mattheck and Breloer (1994).

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1.4 : Limitations of the survey

This survey should be regarded as a preliminary assessment of the trees and deals with the current condition as identified during this survey only.
Any tree whether it has visible weakness or not, will fail if the force applied exceeds the strength of the tree or its parts. The details within this survey are based on the condition of the trees during the survey period only. No invasive or destructive evaluation techniques were used and all findings are based on the knowledge and expertise of the undersigned. Trees are living organisms that are subject to the stresses of climatic extremes and attack from decay fungi and injurious diseases. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in this survey may not arise in the future. By examining the trees, rating their likelihood of causing damage and injury and recommending action to abate the hazard, we act to reduce but not eliminate the risks associated with the trees.
George Earle, County Tree Care Ltd

1.5 : Relevant Legislation

There are no Tree Protection Orders (TPOs) on any of the trees on this site. However under Section 37 of the Forestry Act : 1946, it is illegal to uproot any tree over ten years old or to cut down any tree of any age (including trees which form part of a hedgerow), unless a Felling Notice has been lodged at the Garda Station nearest to the trees at least 21 days before felling commences. A felling license can be obtained by contacting the Dept of Agriculture, forestry section. The requirement for a felling licence for the uprooting or cutting down of trees does not apply where :

- The tree in question is a hazel, apple, plum, damson, pear or cherry tree grown for the value of its fruit
- The tree in question is less than 100ft or 30m from a dwelling other than a wall or temporary structure
- The tree in question is standing in a County or other Borough or an urban district that is within the boundaries of a town council, or city council area
- The tree is considered dangerous and hazardous

Other exceptions apply in the case of local authority road construction, road safety and electricity supply operations. The Act is administered by the Forest Service, Department of Agriculture, Fisheries and Food . The Felling Section of the Forest Service is based in Johnstown Castle, Co. Wexford (053-9160200 or 1890-200223)Trees may contain bats. Bats are protected under Schedule 5 of the Wildlife Act 1976 and Schedule 1 of the European Communities (Natural Habitats) Regulations 1997. Professional advice from a licenced surveyor should be sought prior to any works commencing on trees

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1.6 : Terminology

Arboricultural Comments : Refers to the tree's condition and suitability for the site
Common name : Most widely used non botanical name
Co-dominant stems : Two branches assuming the role of leading stems. When growing close together may form a weak attachment (included bark) at their point of contact. Trees with this defect may be in danger of splitting at this weak attachment.
Included Bark : Pattern of development at branch junctions where bark is turned inward rather than pushed out
Crown spread : Measured in meters north, south, east, west
Decay Fungi : Refers to those species of fungi which degrade living wood and which may, depending on the degree of degradation, render the tree structurally unsound
Defects : Refers to cracks, storm damage and any other damage mechanical or biological
Girth : Diameter of the trunk (millimetres) at 1.5m above grade level. MS inserted after this measurement means multi-stemmed
Genus & Species : Refers to the botanical name for the tree
Height : Measured in meters given to the nearest .5m
Monitor : Refers to trees which need to be re-surveyed on a yearly basis to assess their condition. This timescale may be sooner where works or adverse weather conditions have impacted negatively on the trees
Overhaul : A reference to standard tree surgery work which consists of the removal of deadwood, crossing branches and balancing of the crown where appropriate
Recommendations : Indicates surgery work necessary for the retention or, where necessary, removal of the tree
Major deadwood : Dead branch/limb that is between 150mm – 250mm in diameter
Moderate deadwood : Dead branch/limb that is between 100mm – 150mm in diameter
Minor deadwood : Dead branch/limb that is between 50mm – 100mm in diameter
Basal Cavity : Cavity or opening located at the lower region of the tree at ground level
Stem Cavity : Cavity or opening located on the main stem/trunk of the tree
RPA : Root Protection Area, calculated as a circle with a radius of 12 times the diameter of the stem of the tree measured @ 1.5m. The RPA is then represented in m^2
ERC estimated remaining contribution that the tree can make if retained

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Terminology Continued

Tree no : Refers to numbered tag fixed to tree during survey. The tag numbers in this survey are from 811- 829. The trees will be referred to with the prefix T, for example the first tree surveyed was T811.

Age : Age cannot be exact unless invasive drilling technique are used. Therefore an estimate is given and categorised as

- Young (Y) - < 15 years old
- Early Mature (EM) -15-25 years old
- Mature (MA) – Tree has reached full maturity, over 25 years old
- Over Mature (OM) – Tree is over mature and showing signs of decline

Physiological Condition and Comments based on a three tier system :

- Good = Good health and vigour displayed
- Fair = Healthy and reasonable vigour
- Poor = Showing signs of decline, disease or decay

BS 5837 : 2012 determines four retention categories following assessment
Retention Category (RC)

- Category **A** : Trees whose retention is most desirable. Those of high quality and in such condition to make a substantial contribution
- Category **B** : Trees whose retention is desirable. Those of moderate quality and value so as to make a significant contribution
- Category **C** : Trees which could be retained. Those of low quality and value, but can make a contribution until new planting is established.
- For trees in categories A to C there are further subcategories (1,2,3)
- Subcategories 1,2 and 3 are intended to reflect arboricultural and landscape qualities and cultural values, respectively.
- Category **U** : Trees for removal. Trees that should be removed for reasons of sound arboricultural management

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1.7: Colour Identification of Tree Categories

Tree Class	Colour Code
Class A	
Class B	
Class C	
Class U	

1.8 : References

BS 5837 : 2012. Tree in Relation to Design, Demolition and Construction

BS 3998 : 2010. Tree Work Recommendations

Principles of Tree Hazard Assessment and Management ; David Lonsdale

Mattheck and Breloer (1994). The body language of trees

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Appendix 2

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
811	Sycamore (*Acer pseudoplatanus*)	M	16m	105cm (X 2)	Poor	N 7m S 6m E 8m W 5m	499	Hazardous tree, Tall tree on the edge of a earth ditch, drainage dyke running 1m from West side, co-dominant stems @ the base, Northern stem sub-divided @2m, cracking bark and signs of a shear crack on Northern stem from base – 2m East side, Union @2m Northern stem is poor - compressed wood, Large rip out on Southern stem from base to 2m, lack of sufficient structural wood to ensure good structural integrity	Fell Tree	U	< 5

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
812	Ash (*Fraxinus excelsior*)	M	7m	45cm	Poor	N 1m S 1m E 1m W 1m	92	Pollarded tree, Main trunk has a proliferation of epicormic growth on the top of the stem and on the sides where branches were cut back all the way to the main stem. It has no shape and offers nothing going forward, epicormic growth in time will be a hazard	Fell Tree	U	< 5

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
813	Turkey oak (*Quercus cerris*)	M	15m	90cm	Good	N 11m S 4m E 12m W 9m	366	Healthy oak, growing on an earth bank, dyke running 2m from base on West, crown growing extensively North and East, Some minor dieback on tips @5m NE, NW, dead branches @ 3m N & 5m W, Fine bole to 3m, divides into 5 major limbs at this point, good healthy crown, flush and showing signs of good vigour, lower crown is close to the ground @1.5m	Clean crown of any dead of cracked branches, crown raise to 3m all around NB : Spikes are not to be worn by climbing arborist	A2	50+

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814	Sycamore (*Acer pseudo platanus*)	EM	12m	20cm	Fair	N 4m S 3m E 3m W 2m	18	Crown unbalanced, tree is growing into T813 on West, 90^0 of crown is on North and East, Heavy ivy on main stem, tree will never develope in its position and will restrict the oak	Fell Tree	U	<20

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
815	Sycamore (*Acer pseudo platanus*)	EM	6m	30cm	Poor	N 1m S 1m E 1m W 1m	41	Tree was pollarded severely in the past and there is no crown left. Much epicormic growth, much sucker growth at the base. The tree offers nothing to the site presently or going forward.	Fell Tree	U	<10

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816	Leylandii cypress (*Cupressus X leylandii*)	EM	5m	30cm	Fair	N 2m S 2m E 2m W 2m	41	Stand alone leylandii as opposed to being in a hedge, Poor crown formation, lower crown all removed, crowded by grisilinia species at the base East & West side, growing in neighbour's garden	Tree is not posing a hazard at present	C3	10+

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
817	Sycamore (*Acer pseudo platanus*)	Y	6m	40cm (X 2)	Good	N 3m S 1m E 2m W 2m	72	Twin stemmed from from the base, crown unbalanced, growing Northwards, will never be a tree of significance and a possible hazard in time	Fell Tree	U	<20

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There is a group of 3no. hawthorn (*Crataegus monogyna*) on North-east side of site. Un-healthy and showing signs of decline with dieback in the crowns of each. Weak branch structure, growing on the edge of the river bank. It is recommended to consider these trees for removal as they are unsightly and are dying. However, they are not posing a hazard so there is no urgency in removing them. Consideration should be given to pruning the trees and reshaping all around. These trees are growing 3m South of T818

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
818	Alder (*Alnus glutinosa*)	M	6m	60cm	Good	N 3m S 2m E 4m W 4m	163	5no. stems @ .5M, growing on edge of river bank, healthy crown showing good vigour, even crown spread, minor deadwood in midcrown, some ivy on main stem, lower crown on West side close to the ground	Clean crown, remove ivy, raise crown on field side to 3m and cut back to field edge	B2	20+

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819	Willow (*Salix caprea*)	M	5m	85cm (X 3)	Fair	N 6m S 7m E 7m W 5m	327	Very wide spreading willow growing from a river bank over the river to the East. Relatively healthy, dense crown, many crossing branches, stem leaning East, much sucker growth, crown growing out into the field on the West	Cut back branches to field edge on the West, Clean crown, remove suckers at the base, reduce height to 4m, retains as part of riverbank hedgerow	C2	10+

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
820	Willow (*Salix caprea*)	M	4m	30cm	Poor	N 3m S 2m E 6m W 4m	41	Growing on the side of the riverbank, signs of decay on the main stem @2m, deadwood @1m,2m & throughout crown	Retain as part of riverbank hedgerow, cut back to field edge on West reduce to 4m in height	C2	10+

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
821	Hawthorn (*Crataegus monogyna*)	M	6m	30cm	Fair	N 2m S 1m E 2m W 2m	41	Mature tree growing on the side of a river bank, leaning 80^0 East, minor ivy on main stem, poor lower crown formation, no branches due to poor light levels from dense crown overhead of T820, growing into T820 on South	Clean crown, cut top to 4m and cut West side, retain, as with willows, as part of riverbank hedgerow	C1	10+

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
822	Alder (*Alnus glutinosa*)	M	5m	65cm (X 3)	Fair	N 4m S 3m E 3m W 3m	191	Growing over river to the North, crown heavy over river, broken branches @2m, South side lower crown, branches growing into field on South by 1m	Cut back branches to field edge on South, clean crown of any broken branches, retain as part of a riverbank tree group	B3	20+

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
823	Alder (*Alnus glutinosa*)	M	7m	40cm (X 2)	Poor	N 3m S 2m E 2m W 0m	72	Dieback in the tips of the crown, tree is growing out from base of T824, leaning East 70^0 poor crown formation, weak tree	Fell tree as it will present a hazard in time	U	< 5

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824	Alder (*Alnus glutinosa*)	M	7m	40cm (X 2)	Poor	N 4m S 4m E 2m W 3m	72	Poorly shaped crown, impeded on East by T823 and West by T825, growing North over river, minor crown growth to the South, Heavy ivy on main stems and into crown, crowded and will not develop	Fell Tree and create space for T825 to develop its crown	U	< 2

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825	Alder (*Alnus glutinosa*)	M	8m	30cm	Fair	N 3m S 4m E 2m W 5m	41	Co-dominant stems from the base, heavy ivy growth on main stems into upper crown, poor crown formation, impeded on West by T824 and East by T826	Remove ivy, clean the crown of any defective branches, cut back branches on South to field edge, retain tree as part of a riverbank tree group	B3	20+

Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
826	Alder (*Alnus glutinosa*)	M	9m	40cm	Fair	N 4m S 4m E 3m W 1m	72	Congested in its space, co-dominant stems from the base, poor crown formation, heavy ivy on main stem into crown, many crossing branches in mid & upper crown	Remove ivy, clean crown of any defective or crossing branches, cut back on field side to edge of field	B3	20+

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
827	Alder (*Alnus glutinosa*)	EM	7m	60cm (X 4)	Fair	N 4m S 3m E 1m W 2m	163	Multi-stemmed @.5m, poorly developed crown, branch structure is weak and the tree has ivy growing on the main stem into the upper crown. Growing within 2m of T826 on the East and spreading its branches West resulting in light branches that could break	Remove ivy and re-assess for any defects, reduce crown all around by 30% to encourage new growth, clean crown of any defective branches	C3	<10

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Tag No.	Species	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
828	Alder (*Alnus glutinosa*)	M	6m	90cm (X 5)	Fair	N 6m S 4m E 3m W 4m	387	Multi-stemmed tree, congested crown, heavy ivy growth on main stem into upper crown, large stems growing over river on North, heavy lower crown growing into field on South, weak hawthorn understorey on East & West growing into the crown impeding its development	Remove understorey hawthorns, they are weak insignificant trees that are impeding the growth of the alder	B3	20+

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829	Ash (*Fraxinus excelsior*)	M	9m	40cm	Poor	N 4m S 3m E 4m W 3m	72	Growing on the side of an earth bank, 4m from roadside on South, extremely congested understorey of bramble (*Rubus sp*), ivy(*Hedera sp*), bindweed(*Convulvus sp)*, stem has very dense ivy growth on main stem into upper crown, crown is poorly developed, no lower crown, sparse branch formation, weak tree and not contributing to in any effective way to the site, possible hazard at the roadside	Fell Tree	U	< 5

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Appendix 3


Image A1 : T811


Image A2 : T812


Image A3 : T813


Image A4 : T814


Image A5 : T815


Image A6 : T816


Image A7 : T817


A8 : Hawthorn


Image A9 : T818


Image A10: T819

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Image A11 : T820


Image A12 : T821


Image A13 : T822


Image A14 : T823


Image A15 : T8124


Image A16 : T825


Image A17 : T826


Image A18 : T827


Image A19 : T828


Image A20 : T829

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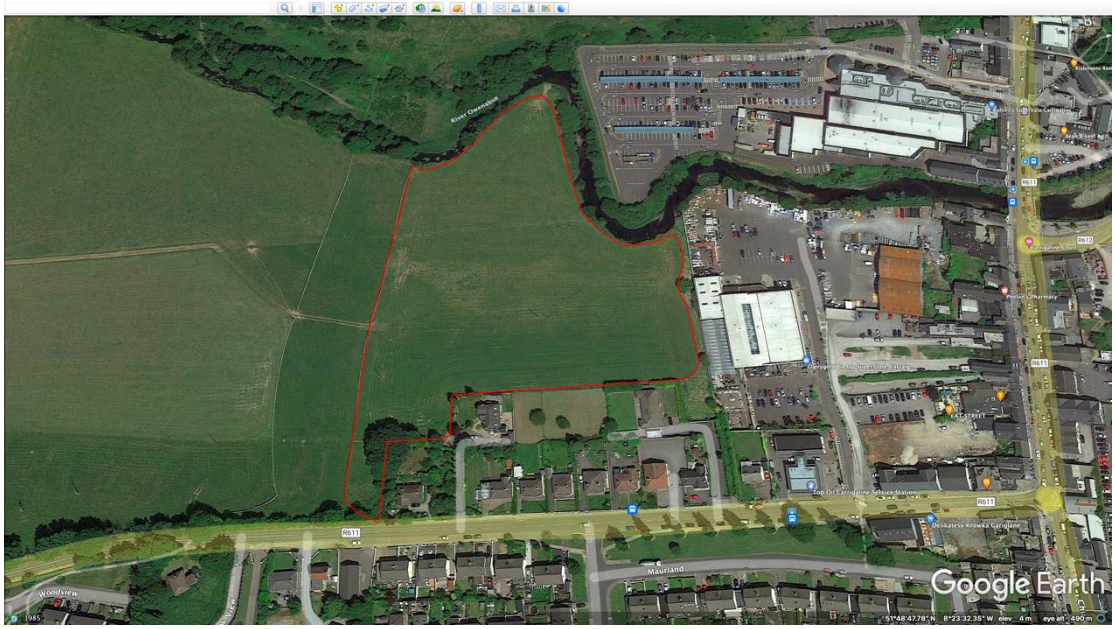

Image A21 : Satellite photo of the site outline

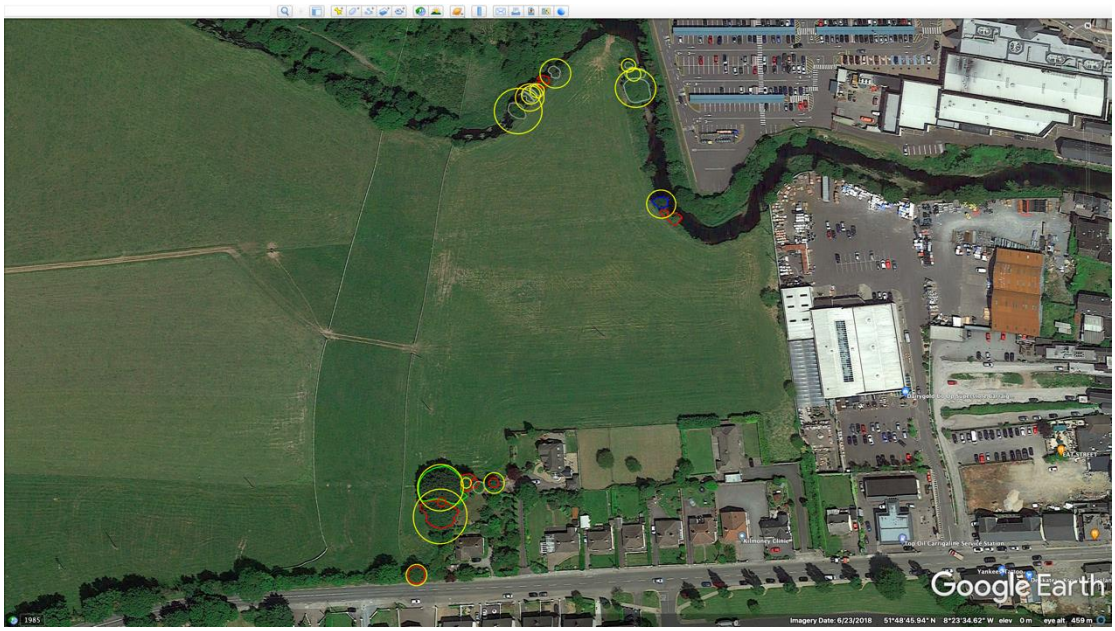

Image A22 : Satellite photo of the overview of the Tree Contraints Plan

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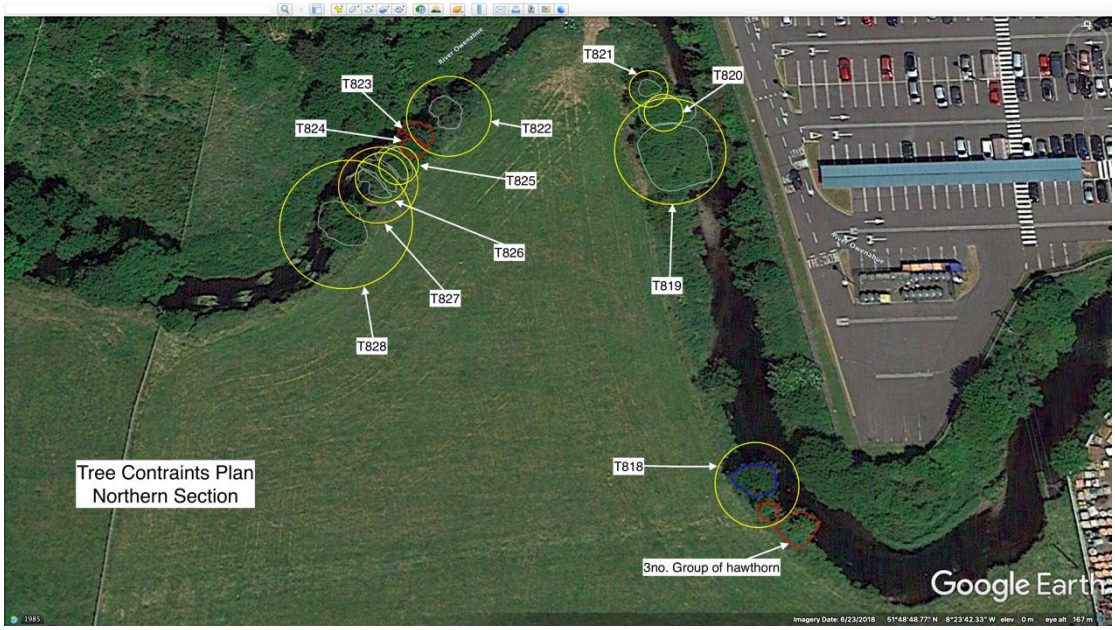

Image A23 : Satellite photo of Tree Contraints Plan Northern section of the site

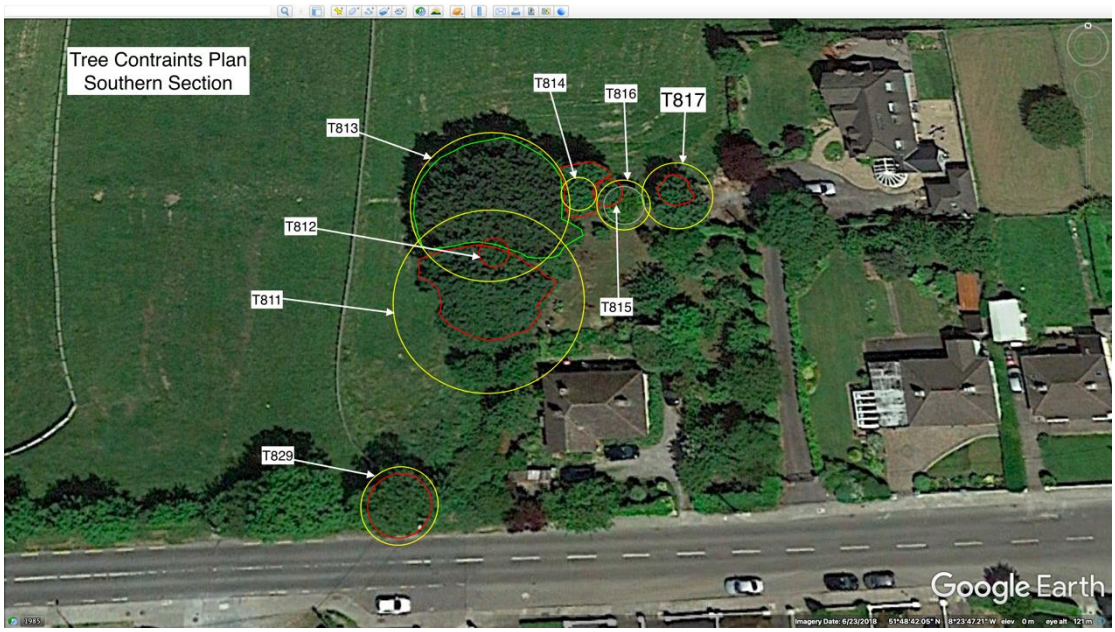

Image A24 : Satellite photo of Tree Contraints Plan Southern section of the site

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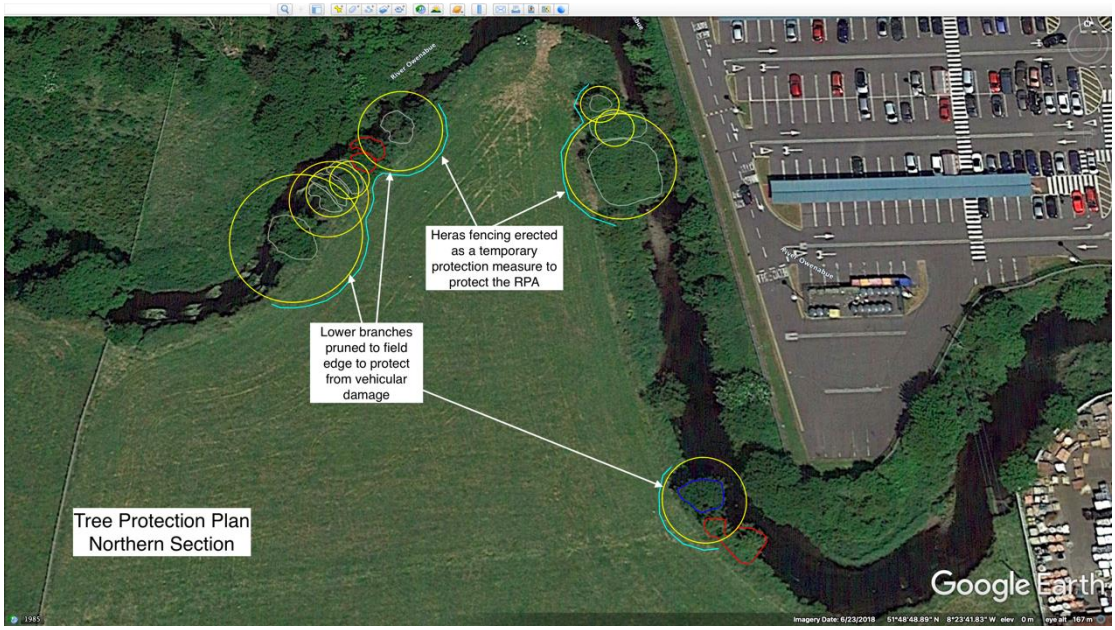

Image A25 : Photo of the Tree Protection Plan Northern section of the site

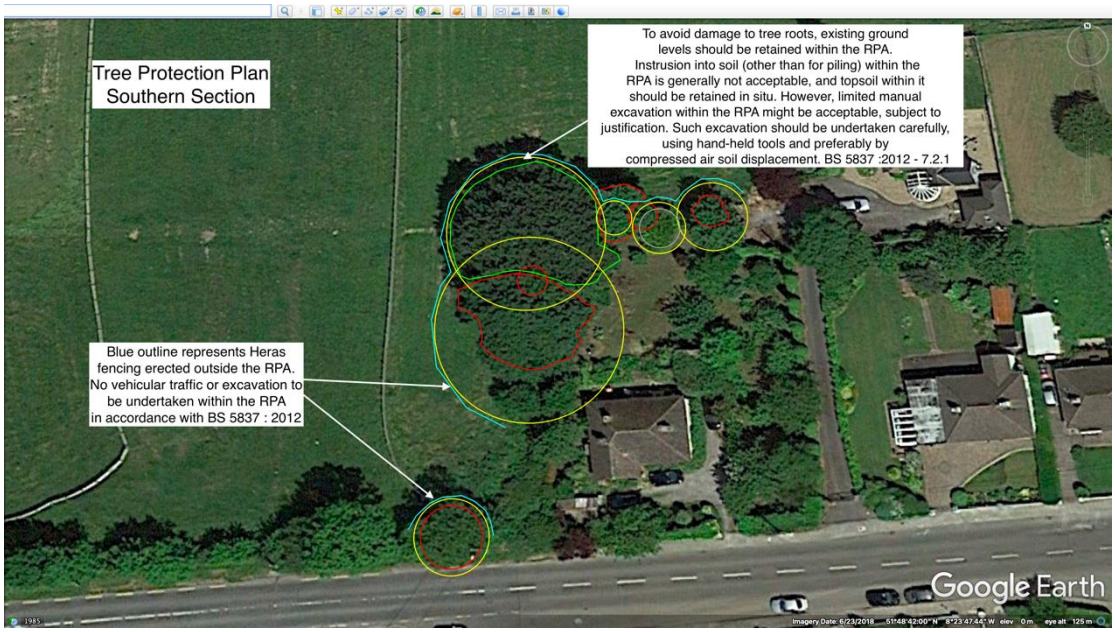

Image A26 : Photo of the Tree Protection Plan Southern section of the site

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<u>Appendix 4</u> :
Identification of Preliminary Tree Contraints :

- Please read in conjunction with image A24 and the topographical AutoCAD file 'Tree Contraints Plan'

In accordance with BS 5837 : 2012, below ground constraints, or root protection areas (RPAs), for the surveyed trees have been plotted onto the tree survey plan for the site. These are represented as a circle centred on the base of each tree stem with a radius of 12 times diameter measured at 1.5m above ground level. In this plan the RPA of any tree that might be affected by construction activity is defined by a blue circle around each tree in the supplied Map A.3.

With reference to BS 5837 : 2012, a root protection area (RPA) is defined as 'a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure should be treated as a priority'. 'The default position (when considering design layout in relation to RPAs) should be that structures are located outside the RPAs of trees to be retained'.

BS 5837 : 2012 states (4.6.2) that, 'where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced' The BS goes on to state that, ' modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution', and that any deviation from the original circular plot should take into account :

- Morphology and disposition of roots
- Topography and drainage
- Soil type and structure
- The likely tolerance of the tree to root damage / disturbance

Root systems can be damaged in a number of ways as follows :

- Severance of a root will destroy all parts of the root beyond that point. The larger the root severed, the greater the impact on the tree. If the roots are damaged close to the trunk, the anchorage and stability of the tree can be affected.
- The root bark protects the root from decay and is essential for further root growth. If damage to the bark extends around the whole circumference, the root beyond that point will be killed.
- Soil compaction, which may occur from storage of material or passage of heavy equipment over the root area, can restrict and even prevent gaseous diffusion through the soil, and thereby asphyxiate the roots. The roots must have oxygen for survival, growth and effective functioning.
- Lowering the soil level will strip out the mass of roots near the surface

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Below Ground Tree Contraints continued :

- Raising soil levels will have the same effect as soil compaction
- Incorrect selection and application of herbicide
- Spillage of oils or other harmful materials

Above Ground Contraints :

- The current and ultimate height and spread of the trees, in relation to any new building final position.
- The effect that construction requirements might have on the amenity value of trees, both on and near the site, including pruning to facilitate access and working space. This may be the case with tree No. 671 and neighbouring trees overhanging branches.
- The requirement to protect the overhanging canopies of trees where they could be damaged by machinery, vehicles, barriers or scaffolding, where, it will be necessary to increase the extent of the tree protection barriers to contain the canopy.
- The proposed end use of the space adjacent to the retained trees.

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Tree Protection Plan

- Please read in conjunction with image A25 & A26 and the topographical AutoCAD file 'Tree Protection Plan'

Protection of trees. A protective barrier, 2.3m high and comprising a vertical and horizontal framework of scaffolding, well braced to resist impacts and securely supporting weldmesh panels, (as illustrated in Fig 1 & Fig 2 supplied), shall be erected around the base of all trees to be retained on site. This barrier shall be clearly identified on site by the attachment of all – weather signs of suitable dimension stating : 'CONSTRUCTION EXCLUSION ZONE – NO ACCESS'. The line of this fence shall be at least the distance defined in the attached RPA map A.3. No construction traffic, materials or debris will be permitted within this zone of protection.

Access facilitation pruning. If it is deemed appropriate to trim back retained trees to provide adequate access to approved construction works, all such tree works should be undertaken by a competent and suitably qualified tree surgeon. Such works shall remedy any tree related conflict with proposed structures or access in a way that ensure that not less than 70% of live buds are retained within the tree canopy. The aim of the tree works shall be to retain the general form of the tree by a combination of crown thinning, reduction of end weight and the re-forming of the trees crown to create a pleasing and balanced crown. No branch, limb of trunk greater than 100mm diameter shall be cut in the process of reducing end weight.

Demolition within the zone of protection. If it is deemed necessary to carry out demolition works within a construction exclusion zone surrounding retained trees, for example to remove existing paths or kerbs, only pedestrian operated plant or low ground pressure plant that is less than 2 tonnes gross weight fully loaded shall be permitted. Such plant shall only be operated on existing hard surfaces, or where temporary surfaces have been established. No excavations within the root protection zone of these retained trees shall be permitted, except only under supervision, with the use of an air spade or by careful use of hand tools in a way that retains, without damage, all exposed roots with a diameter greater than 25mm.

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Scaffolding within zone of protection. Where scaffolding is to be established within the 'zone of protection' surrounding retained trees, the existing undisturbed ground surface shall be protected by a layer of sharp sand, aprox 50mm thick, overlaid with a geotextile membrane. Stout planks, such as closely side butted scaffold boards, will be laid over the geotextile membrane and scaffolding will be constructed on these planks with additional stays as directed by a competent person. Adequate protection fencing as illustrated in Fig 1 and Fig 2 will be maintained between scaffolding and adjacent trees.

Construction of hard surfaces close to retained trees. Where permanent surfaces are to be constructed close to retained trees, within the zone of protection as defined by BS 5837 : 2012, carefully remove accumulated organic material and loose soil, leaving existing topsoil in situ. Protect the root zone with a layer of sharp sand and geotextile membrane and a three dimensional cell product as defined by a competent Civil or Structural Engineer. Construct the paved area on this sub-base using established design guidelines and a no fines granular material with a porous surface finish such as pavers or porous bitmac

Alterations of levels on lands adjoining construction exclusion zones. Where it is deemed appropriate to lower ground levels on land adjoining a root protection zone established around a retained tree, all excavations and the subsequent construction supporting structures shall be managed in a way that excludes access by construction traffic to the construction exclusion zone. Where such alterations result in the lowering of existing surfaces, the existing ground water environment within the root protection zone shall be maintained by the insertion of a root barrier behind proposed supporting structures. This shall consist of a non-porous barrier carefully inserted in a way that maintains the existing soil moisture regime surrounding the retained tree. Where alterations result in the raising of levels, these shall be designed and detailed by a competent Civil of Structural Engineer to ensure no alterations to ground conditions within the root protection zones.

Landscaping within the root protection zone. If it is deemed necessary to carry out landscaping, planting or re-instatement works within a construction exclusion zone surrounding retained trees, only pedestrian operated plant, or low ground pressure plant that is less than 2 tonnes gross weight fully loaded, shall be permitted. Such works should be supervised by a competent Horticulturalist and be timed and designed to ensure that no soil compaction occurs. No excavations within the root protection zone of these trees shall be permitted, except under supervision using an air spade or by carful use of hand tools in a way that retains, without damage, all exposed roots with a diameter greater than 25mm

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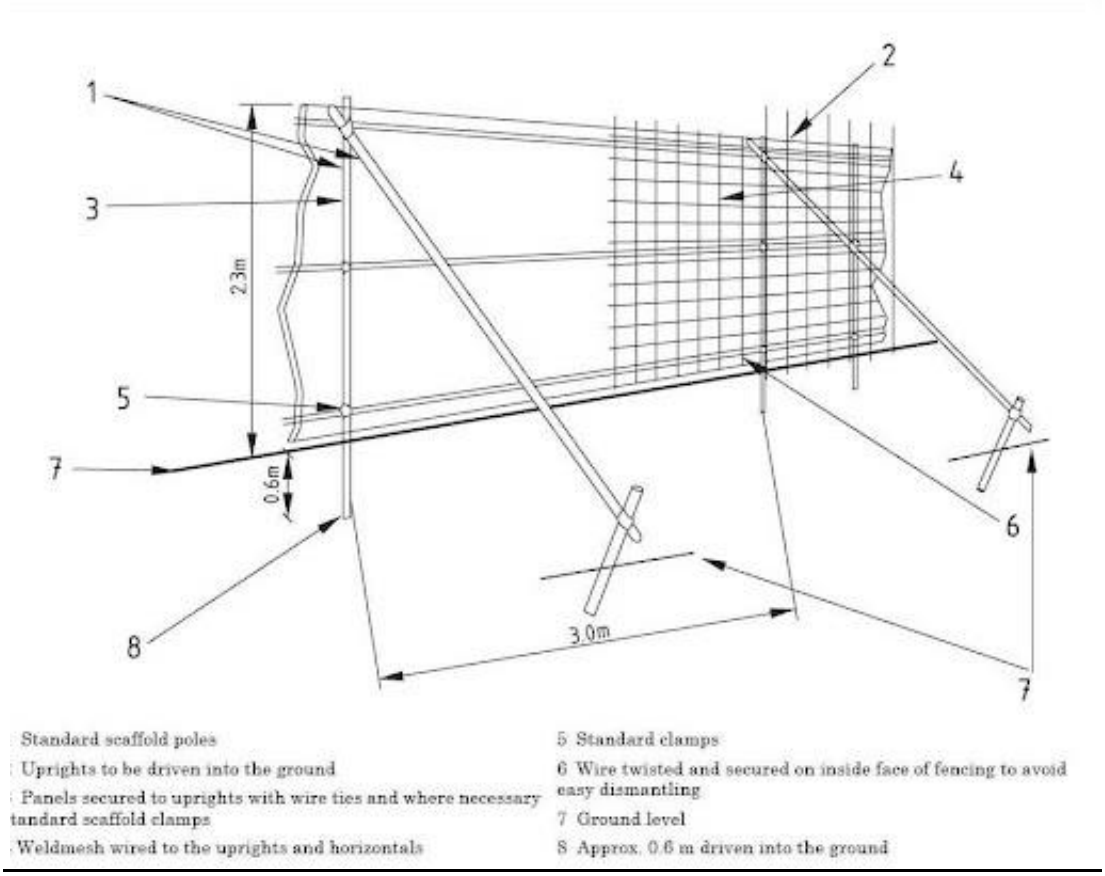

Image A27 : Tree Protective Barrier

The protective barrier will be appropriate to the degree and proximity of likely construction works. The default specification of BS 5837 : 2012 recommends a vertical and horizontal, scaffold framework, well braced to resist impacts, with vertical tubes at no more than 3m intervals. These should be driven into the ground. Weld mesh panels should be affixed to this framework with scaffold clamps – see image A26 and A27. Heras fencing is a reliable option or a similar structure of sturdy, wooden construction would be acceptable. It should typically comprise of the following :

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Figure 3 Examples of above-ground stabilizing systems

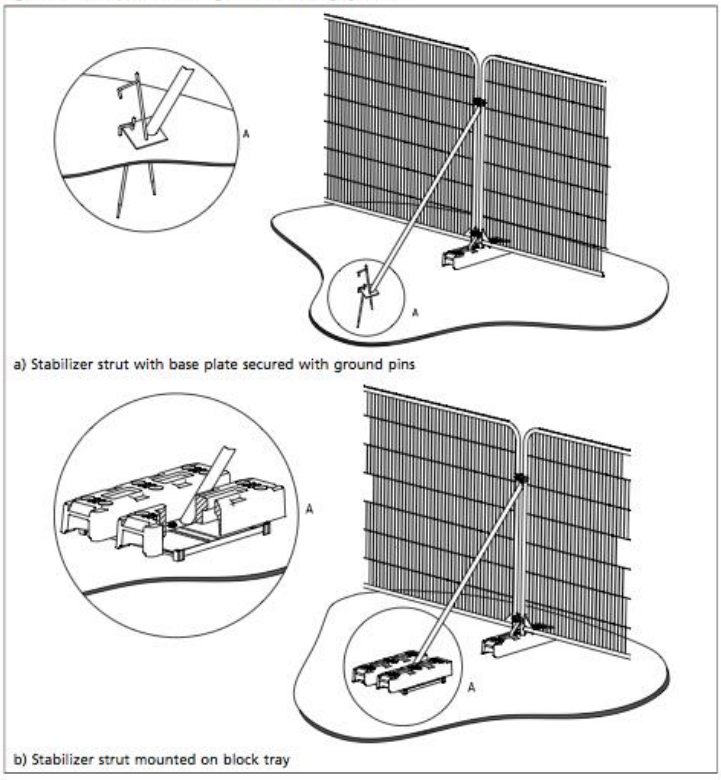

Image : A28

- Temporary protective fencing panels should be weldmesh Heras panels of at least 2.0m in height
- The panels shall stand on rubber or concrete feet
- The panels shall butt together and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence
- The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45^0 angle and extended back into the Construction Exclusion Zone and shall be attached to a base plate, which shall be secured to the ground with pins
- No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts
- A 600mm x 300mm warning sign reading 'Construction Exclusion Zone Keep Out' shall be fixed to every 10.0 metre length of protection fencing
- On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery or plant and materials, the Consulting Arboriculturist shall inspect the Temporary Protective Fencing

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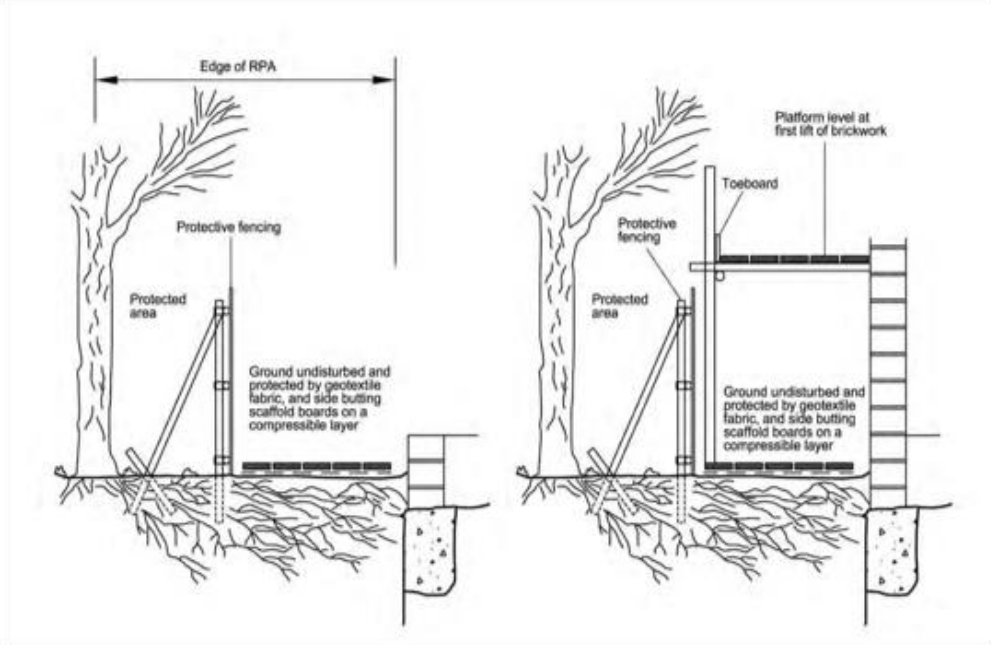

Image : A29

Temporary surfaces within zone of protection. Where temporary access is to be established within the 'zone of protection' surrounding retained trees, ground surfaces will be protected by a layer of sharp sand, approx. 50mm thick, overlaid with a geotextile membrane on which temporary surface of no fines granular material (compression resistant for example woodchip) at least 150mm thick is laid. Where traffic is turning on this surface, stout planks will be laid over the geotextile membrane and below the granular material.

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Arboricultural Method Statement

Roadway/Driveway

If the case arises whereby a driveway or roadway has to be moved or situated within the RPA of a tree then any proposal for new surfacing within the RPA must be able to demonstrate a minimal impact on soil structure and roots and this includes the ability for movement of water and air in and out of the soil. The use of no-dig cellular confinement systems using porous sub-base and finished surface materials can be acceptable in some circumstances.

Hand dig exploratory holes is suggested to try and locate feeder roots and or determine how much of a root system exists.

Services

If it is unavoidable for new services to be installed in the RPA, conventional excavation techniques are unacceptable. Trenchless installation should be the preferred option but if that's not feasible, any excavation is likely to have to be carried out by hand or by using a compressed air lance under arboricultural supervision. The methodology used must comply with *NJUG Volume 4 : Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.*

Plant/Machinery

Piling rigs, cranes and other high and wide plant and machinery have the potential to damage trees and site operations must be planned to take account of retained trees in advance of any potential conflict. Proposed locations and routes on and off the site should be supplied to the project arboriculturist.

Contamination

Accidental spillage of any materials which could cause damage to a tree even if outside of an RPA, including dust.

Barriers and other protection must remain in place until all construction activity is complete and there is no realistic risk of damage to soil surfaces

Fires must be avoided where heat could affect foliage or branches

It is the responsibility of the main contractor or assigned agent to ensure that details regarding tree protection are understood and followed by all site personnel and should be incorporated into site inductions.

The location of site facilities, areas for loading, unloading and storage of materials must be sited to ensure minimal impact on the tree. No discharge of potential contaminants should occur within 10m of any tree on the site or where there is a risk of run off into an RPA

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Arboricultural Assessment

Generally the trees on the site are of fair standard. There are 9no. trees that are recommended to be removed. At the Southern end of the site there are 6no. that are in poor condition. One of these trees T811 is a sycamore (Acer *pseudoplatanus*). This is a hazardous tree and should be removed immediately. The other 5no. in this section are recommended to be felled because of their poor appearance and lack of contributory value to the landscape presently or going forward into the future. This is primarily due to past work that was done on them. T812 is an ash (*Fraxinus excelsior*) . This has had all of its branches removed by cutting them back to the main trunk. The result is a burst of epicormic growth (resembling suckers) from the cuts and this means that the tree is now displaying a huge amount of soft leafy growth at different points on the trunk. Aesthetically not pleasing and physiologically compromising. The tree will never have a proper branch structure again and the epicormic growth as it gets heavier can become a hazard as it tends to break off in high winds.

There is another tree a sycamore (*Acer pseudoplatanus*) T815 in this section that had the same work done to it as the ash with the same results and prognosis going forward. There is another sycamore T814 that is growing into the Turkey oak (*Quercus cerris*) and will eventually create cambium damage in the oak and restrict branch and leaf development because it is growing withing its crown on the North-east side. The sycamore itself will never develop into a well formed tree because of the oak.
There is another sycamore T817 in this section that is growing in South-east corner of the site. It has co-dominant stems from the base. These flex and create stress at the union between the two stems and as the tree gets bigger so too does the stress loading on the union. One stem is growing outwards North and the other is straight but beginning to show signs of restriction within its own crown by the Northern stem. The tree will never develop into a well formed specimen and is recommended for removal before it becomes too big and is a hazard.

T819 is an ash in the South side of the site on the road edge. This is a poorly developed tree with no lower or mid-crown. It is growing on the edge of a bank of a drain and would not have developed its root system in a radial way. The tree is tangled in deep bramble and bindweed and has mature ivy covering its stem very densely. The crown is sparse and uneven. It is recommended to fell this tree for aesthetic reasons and because the tree will never have a well balanced shape. It is growing on the edge of a bank 4m from a busy road. It is not contributing culturally or historically to the site and is recommended for removal.

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Arboricultural Assessment continued

Image A30

Retention Category	A High Value	B Moderate Value	C Low Value	U Removal
Quantity	1	5	5	8

Image A30 shows the quantities of the trees surveyed within the retention categories. There are two more trees in the Northern section of the site that should be removed. These are two alders (*Alnus glutinosa*) that are weak and overcrowded and offering nothing to the site on a longterm basis. Their removal can only help the other trees around them.
There is one tree in category A. It is a Austrian oak (*Quercus cerris*) more commonly referred to as Turkey oak. It is not indigenous and was brought to the British isles in the 1800s as an ornamental tree. It is considered by some to be an invasive species. It is also the host of the knapper gall wasp which can damage native oaks. This tree is growing on the edge of an earth bank next to a drain on the West. Its roots would not have spread extensively Westward. Its crown is slightly underdeveloped on the South because of T811. There is some evidence of minor dieback at the tips on the North-east upper crown and North-west upper crown, but this is minor and not reflective of the health of the tree. The leaf is a good colour and the crown is flush with growth. The main scaffold branches that divide off at 3m are strong and well balanced.
The other trees on the site are of fair to low quality. One is T816 a leylandii cypress (*Cupressus X leylandii*) Category C3 is located in what might be the neighbour's property and the remaining trees are in the Northern section of the site. There are 2no. Willows (*Salix caprea*) C2, 1no. hawthorn (*Crataegus monogyna*) C1. The others are Alders (*Alnus glutinosa*) 4no. B3, 1no. B2, 1no. C3. These trees that are not great examples structurally or aesthetically but they are of benefit to the site. They are indigenous trees that are commonly found in riparian settings. Alder has many benefits to wildlife. The pollen from the catkin is an early source of pollen for bees and the seeds on the branches are a source of food for fish. They and the willow on the East are densely growing together and offer good shelter on the river bank to small animals and birds.

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Qualified in Arboriculture & Horticulture

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Summary

As an overview, the site is basic and fairly level. The trees that are growing on the edges are indigenous and commonly found in our countryside. They have not been maintained and are suffering structurally because of congestion and sharing of nutrient in the soil. Work is needed to rejuvenate them all and instruction was given to this effect in the survey. Trees that might be of concern are located in the Southern part of the site. They are on the boundary line and close to a neighbour's dwelling house. Care should be taken to follow the recommendations in the survey and ensure that safety is paramount at all times.

If you have any questions please do not hesitate to contact me by telephone, email or post. The details are below.

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