



Féidhmeannacht na Seirbhíse Sláinte
Health Service Executive



Ospidéal Ollscoile Chorcaí
Cork University Hospital

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Date: 10th February 2022

PQ – 2467/23

Deputy Neasa Hourigan
Dail Eireann
Leinster House
Kildare Street
Dublin 2

To ask the Minister for Health further to Parliamentary Question No 918 of 8 November 2022, the details of any tendering process that may have applied to the assessment of trees for removal outside Cork University Hospital on 22 October 2022, and to the tree removal works subsequently contracted by the HSE for that date; and if he will make a statement on the matter

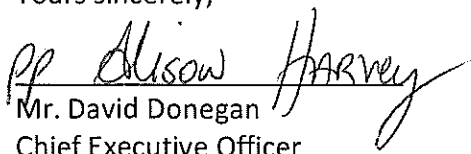
Dear Deputy Hourigan

The Health Service Executive has been requested to reply directly to you in the context of the above Parliamentary Question which you submitted to the Minister for Health for response. I have examined the matter and the following outlines the position.

I trust the detailed information in the attached documentation will be of assistance to you.

Should you have any further queries please do not hesitate to contact me.

Yours sincerely,


Mr. David Donegan
Chief Executive Officer

37(1)

Our 37(1)
Ref: 37(1) CUH.20.09.01

Ref:

Date: 01st. Sept. 2020

**Tree Survey
At
Cork University Hospital,
Wilton,
Cork
For**

37(1)

**And
Health Service Executive**

Contents	Page
1. Introduction:	3
2. Scope of Work:	3
2. Methodology:	3
4. Key Observations and Findings:	3-4
5. Proposed Tree Works:	4
6. Summary and Recommendations:	4-5
Assumptions and Limitations:	5
Credentials of Consulting Arborist:	5
Explanation of headings – Tree Survey Schedule	6
Glossary of terms used	7
Tree Survey Schedule	8-14

1. **Introduction:**

- 1.1 We have been commissioned by 37(1), working on behalf of the Health Service Executive, to carry out this Tree Survey at Cork University Hospital, Wilton, Co. Cork. The Survey was carried out on the 1st. September 2020.

2. **Scope of the Work:**

- 2.1 Our brief was to carry out a Tree Survey of mature Poplar trees growing within the grounds of the Hospital along the southern boundary adjacent to Bishopstown Road.

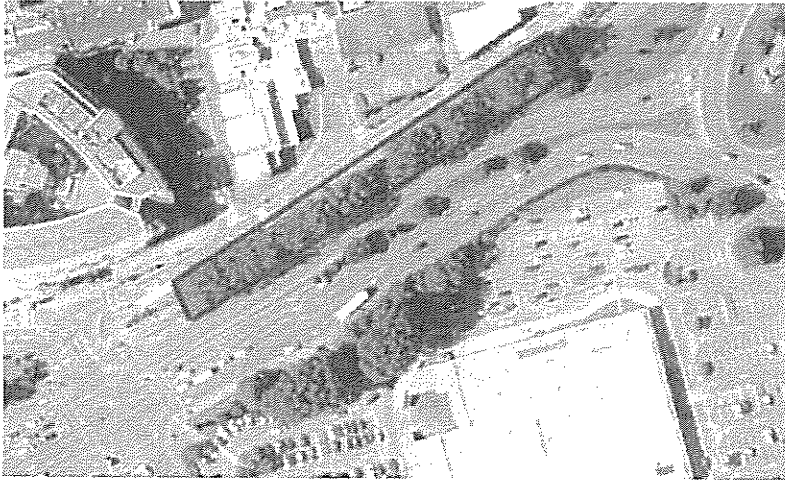


Photo 1: Aerial Location Map

3. **Methodology:**

- 3.1 The inspection of these trees has been carried out from ground level only using visual tree assessment techniques (VTA) which only give a snap-shot of what is visible not obscured or accessible on the day of the survey. The survey does not include any climbing inspections, internal investigations of the tree or inspections below ground level. The survey was carried out to the ISA's *Best Management Practices – Level 1 or Level 2 Assessment* and the *BS 5837:2012 Trees in relation to Design, Demolition and Construction – Recommendations*. The trees have been identified, measured and assessed (within the limitations described) and described in the Tree Survey Schedule outlined below. Measurements relating to height, girth diameter, and crown spread have been taken and the general condition of the trees have been assessed and described. Finally, preliminary management recommendations have been prescribed.

4. **Key Observations and Findings:**

- 4.1 We carried out the Survey on the 1st. September 2020.
- 4.2 The trees inspected comprised of mature *Populus nigra* (Hybrid Black Poplar) and *Populus nigra var. Italica* (Lombardy poplar).
- 4.3 In general the trees are mature and are in excess of 50 years old. The trees are growing in a planted row adjacent to the main access road leading to the Emergency Department of the hospital. The trees are close to buildings, boundary walls and railing, public roads and footpaths, bus shelter, street lighting, internal roads and footpaths and parking areas.
- 4.4 Tree condition varies throughout the tree population on the site. The *Populus nigra var. Italica* (Lombardy poplar) are generally in poor condition and are showing symptoms of dieback and decline. The larger and dominant *Populus nigra* (Hybrid Black Poplar) trees are generally in fair to poor condition.

- 4.5 The majority of the trees have high and wide-spreading crowns. Limbs extend over the boundary railing, public footpath, Bishopstown Road and in some instances, street lighting and bus shelters. Limbs also extend over the busy footpath and access road leading to the Emergency Wing of the hospital.
- 4.6 Many of the trees are displaying signs of storm damage, stem fractures, broken and hung-up limbs. Tree no. 93, at the Western end of the row, has a storm-damaged limb hanging over the adjacent public footpath and bus shelter.
- 4.7 There are signs of root damage to the tarmacadam surface of the footpath on the northern side. Poplar trees have strong and invasive root systems that can cause direct damage to structures, walls and underground Service.
- 4.8 The mechanical characteristics of the *Populus* species indicate that these trees, when exposed to strong winds are often affected by the breakage of tops and branches. Extensive decay can occur in pollarded trees at the pruning points. Regrowth from pruning cuts often have poor attachments and can subsequently fail as load increases. Therefore, topping of poplar trees is not a recommended practice.
- 4.9 The main threats or risk to persons and/or property will be from fallen limbs, deadwood, hangars or other debris falling from trees particularly during stormy conditions. Other threats may include trees that suffer from mechanical failure or uproot during times of high winds.
5. **Proposed Tree Works:**
- 5.1 Refer to the Programme of works outlined in the Tree Survey schedule below. Any proposed tree work should be carried out to *BS 3998:2010 Tree Work - Recommendations*. The works as detailed in the Tree Schedule below shall only be carried out by a competent, professional and fully insured, trained and certified Tree Surgery firm. The Contracting firm shall adhere to the Safety, Health and Welfare at Work Act 2005 and other relevant safety legislation. Works to trees near power lines or street lighting shall only be carried out personnel who are trained and certified to work in close proximity to utility power lines
- 5.2 During any felling works, care shall be taken to protect buildings and other structures. Strict safety precautions shall be put in place to safeguard patients, staff, visitors, site occupants, road users, members of the general public and vehicles. If possible, felling work should not be carried out during the bird-nesting season. While tree felling and removal works are being carried out, appropriate measures should be put in place to prevent access from unauthorised persons to the work sites. Traffic Management will be required for the duration of the works.
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6. **Summary and Recommendations:**
- 6.1 The grounds and access roads within Cork University Hospital are used extensively both by vehicular and pedestrian traffic. There is heavy vehicular and pedestrian traffic including patients, visitors, contract workers, staff and emergency vehicles. The trees are close to, and within falling distance of the busy Bishopstown Road to the south. Targets include patients, staff, visitors, vehicles, neighbouring properties, public roads, footpaths and members of the public. Thus, in the event of limb or whole tree failure, the likelihood of impacting a target can range from *high* to moderate depending on location and occupancy rates and the consequences of failure can be classed as *moderate* to *severe*.
- 6.2 Given the probable likelihood of limb or whole tree failure occurring within the *Populus* species and the risk associated with falling limbs or trees impacting a target, and the potential damage their roots can cause to infrastructure, these trees are unsuited to this site of such high usage. It is our recommendation that, in the interests of Health and Safety, the trees be felled to ground level and the resultant stumps be ground out.

6.3 **Timeframe for re-inspection:** Trees are not static objects, but growing, living organisms; and their condition, size, and relationship to buildings or other trees can change significantly and sometimes unpredictably within a relatively short period of time. The maximum interval of time for which this report and its findings remain valid shall be no more than six months from the date the Survey was carried out.

Assumptions and Limitations

Any tree, whether it has visible weaknesses or not, will fail if the force applied exceed the strength of the tree or its parts. Only those trees specified in the scope of work were assessed and assessments were performed within the limitations specified. This tree assessment was carried out from the ground as a visual survey. Our tree risk assessments represent the condition of the trees at the time of inspection. Our tree risk assessments consider known targets and visible or detectable tree conditions. No invasive or destructive evaluation techniques were used and all findings are based on the knowledge and expertise of the undersigned – a qualified Arborist. 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 question 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 trees. We have been authorized to carry out this report with the full permission and consent of O Donovan Agri Environmental Service.

37(1)

37(1)

37(1) is a Professional Forester and Certified Arborist. He has over 35 years' experience in a broad range of tree-related matters including Forestry, Arboriculture, Landscaping and related activities. He trained and worked for the semi-state Forestry Company – Coillte Teoranta for over 30 years in a number of forestry-disciplines including Tree Service, Private Afforestation and Private Timber procurement.

He is a Professional Member and Certified Arborist with The International Society of Arboriculture (ISA), Technical Member of the Society of Irish Foresters (MSIF) and an Approved Forester including Native Woodlands with the Forest Service, Department of Agriculture Food and The Marine

Explanation of terms – Tree Survey Schedule

- Tree No.:** Reference Number affixed to individual trees to allow for identification.
- Species:** Refers to the genus and species for each tree.
- Ht.:** The approximate tree height to the nearest .5/m. is given.
- DBH:** This is the trunk diameter range (in cms.) at a height of 1.5 m above ground level.
- Age:** The approximate age of the tree
Y - < 15 years old
M - 15-25 years old
MA - Tree has reached full maturity
OM - Tree is over mature and showing signs of decline.
- Physiological Condition and Comments:** Tree condition is based on a 3-tier rating system, and constitutes a general assessment of the physiological condition of the tree where a rating of:
Good = represents good health and vigour
Fair = Healthy and reasonable vigour
Poor = Showing signs of decline, disease or decay.
- Retention Category:** BS 5837: 2012 determines four retention categories following assessment
- (1) Trees whose retention is most desirable: **Category A**
Those of high quality with an estimated remaining life expectancy of at least 40 years.
 - (2) Trees whose retention is desirable: **Category B**
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
 - (3) Trees which could be retained; **Category C**
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.
 - (4) Trees for removal: **Category U**
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Preliminary Management Recommendations: Management Recommendations, comments or points to note. Includes guidance for proposed tree works, but final work specification will be at the discretion of the Climbing Tree Surgeon.

Glossary of Arboricultural Terms used:

Bow: Leans characterized by the top of the tree bending over more than the lower trunk, creating a curve.

Cavity: open or closed hollow within a tree stem, usually associated with decay.

Codominant stem: Forked stems or branches nearly the same size in diameter, arising from a common junction and lacking a normal branch union.

Crown: upper part of a tree, measured from the lowest branch, including all the branches and foliage.

Crown cleaning: In pruning, the selective removal of dead, dying, diseased and broken branches from the tree crown.

Crown raising: In pruning, the selective removal of lower limbs from a tree crown to provide clearance.

Crown reduction: Method of reducing the height and/or spread of a tree crown by making appropriate pruning cuts.

Crown thinning: In pruning, the selective removal of live branches to reduce crown density.

Deadwooding: removing dead and dying branches from a tree.

Decay: an area of wood that is undergoing decomposition

Decline: gradually diminishing health or condition of a tree.

Dieback: condition in which the branches in the tree crown die from the tips towards the centre.

Failure: Breakage of stem, branch or roots, or loss of mechanical support in the root system.

Hangar: Broken branch hung up in the tree crown.

Heart rot: Any of several types of fungal decay of tree heartwood, often beginning with infected wounds in the living portions of wood tissue.

Included bark: bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.

Lean: Angle of the trunk

Level 2 Assessment consists of a detailed visual examination of the tree and its surrounding site and a synthesis of the information collected. It requires walking around each tree looking at the site, buttress roots, trunk, crown and branches and noting any defects, outward signs of possible internal defects and response growth. Data is then analysed and mitigation measures (tree works) are derived.

Pruning: Removing branches from a tree using approved practises, to achieve a desired objective.

Scope of work: The defined project objectives and requirements

Sucker growth: Shoots arising from the roots close to base of tree.

Stem: woody structure bearing foliage and buds.

Strength: Defined as the ability to withstand stress without failure.

Structural defect: Feature, condition or deformity of a tree that indicates a weak structure or instability that could contribute to tree failure.

Stump grinding: Removing tree stumps by grinding away the solid wood using specialist machinery. Helps prevent regrowth.

Target: Person, object, or structure that could be harmed (damaged or injured) by a tree or tree part in the event of failure.

Tree Survey Schedule

Tree No. Old no. ()	Species	Ht. m.	DBH (cms.)	Drip.	Age	Physiological Condition and comments	Retention Category	Preliminary Management Recommendations
0068 (419)	<i>Populus nigra var. Italica</i> Lombardy poplar	19.0	43	1N 2S 3E 0W	MA	<ul style="list-style-type: none"> • Good • Fair • Poor • Dead Poor. <u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north. <u>Stem:</u> Leaning to east. Forked at 3m. <u>Crown:</u> Asymmetrical crown. Suppressed on west side. Minor debris in crown. Dead stem on southern side.	U	Fell the tree to ground level and stump grind resultant stump.
0069	<i>Populus Nigra</i> Poplar	21.0	57	4N 5S 2E 1W	MA	Fair. <u>Root:</u> Dominant tree. On sloping bank. 2m. from boundary to south and 1.5m. from path to north. Signs of root damage to path surface on northern side. <u>Stem:</u> Straight stem to 2m. <u>Crown:</u> Wide-spreading crown. Heavy and over-extended limbs over path and road to south. Heavy lateral limb over path to south. Limbs overhang road to north. Minor storm damage in crown. Deadwood throughout crown.	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0070	<i>Populus Nigra</i> Poplar	19.0	31	2N 2S 1E 0W	MA	Fair. <u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north. Signs of root damage to path surface on northern side. <u>Stem:</u> Straight stem to 2m. <u>Crown:</u> Light crown. Slightly suppressed crown on west side. Limbs overhang railing, footpath and spur road to south.	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0071	<i>Populus Nigra</i> Poplar	18.0	30	4N 4S 1E 0W	MA	Poor. <u>Root:</u> On sloping bank. 2.5m. from boundary to south and 1.5m. from path to north. Signs of root damage to path surface on northern side. <u>Stem:</u> Straight stem to 3m. <u>Crown:</u> Suppressed crown on west side. Light crown. Limbs overhang railing, footpath and spur road to south.	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.

0072	<i>Populus nigra</i> Poplar	18.0	50	4N 5S 1E 2W	MA	Fair. <u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north. Signs of root damage to path surface on northern side. <u>Stem:</u> Straight stem. Forked at about 4m. Weak forking point. <u>Crown:</u> Wide-spreading crown. Limbs overhang railing and footpath and road to south. Storm damage in crown. Deadwood throughout crown. Street light on northern side.	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0073	<i>Populus nigra var. Italica</i> Lombardy poplar	14.0	32	1N 1S 1E 0W	MA	Poor. <u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north. Manhole/duct at base on northern side. <u>Stem:</u> Straight stem to 3m. then forked. Decay present at forking point at 3m. <u>Crown:</u> Light crown. Signs of decline in crown. Dead stem on northern side at 3m. Dead limbs on southern side.	U	Fell the tree to ground level and stump grind resultant stump.
0074	<i>Populus nigra var. Italica</i> Lombardy poplar	14.0	28	1N 1S 1E 0W	MA	Poor. <u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north. <u>Stem:</u> Clear stem to 3m. then forked. Decay and dead stems from forking point. <u>Crown:</u> Signs of decline in crown. Deadwood throughout crown. Minor hangars in crown.	U	Fell the tree to ground level and stump grind resultant stump.
0075 (426)	<i>Populus nigra</i> Poplar	20.0	57	5N 8S 3E 2W	MA	Fair. <u>Root:</u> On sloping bank. 3m. from boundary to south and 1.5m. from path to north. Signs of root damage top path on northern side. <u>Stem:</u> Clear stem to 2m. Forked from 4m. <u>Crown:</u> Wide-spreading crown. Heavy scaffold limbs and over-extended limbs over path and road to south. Limbs overhang railing and footpath and road to south. Minor storm damage in crown. Deadwood throughout crown.	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0076	<i>Populus nigra var. Italica</i> Lombardy poplar	15.0	35	1N 2S 0E 0W	MA	Poor. <u>Root:</u> On sloping bank. 2.5m. from boundary to south and 2m. from path to north. <u>Stem:</u> Clear stem to 2m. Forked at 2m. Dead stems from forking point. <u>Crown:</u> Signs of decline in crown. Low leaf area. Deadwood throughout crown. Light crown. Suppressed crown on east and west sides. Dead stems in centre of crown.	U	Fell the tree to ground level and stump grind resultant stump.

0077	<i>Populus nigra</i> var. <i>italica</i> Lombardy poplar	14.0	24	1N 0S 1E 0W	M/A	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 2.5m. from boundary to south and 1.5m. from path to north.</p> <p><u>Stem:</u> Forked at 2.5m. Dead stems present from forking point.</p> <p><u>Crown:</u> Street light on northern side. Dead stem at 2m. north side. Light crown. Deadwood throughout crown.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0078	<i>Populus nigra</i> var. <i>italica</i> Lombardy poplar	15.0	40	1N 2S 0E 0W	M/A	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Straight stem.</p> <p><u>Crown:</u> Dead central stem. Deadwood throughout crown. Limbs overhang railing to south. Misshapen crown. Suppressed crown on east and west sides. Signs of decline.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0079	<i>Populus Nigra</i> Poplar	22.0	69	5N 9S 6E 3W	M/A	<p>Fair.</p> <p><u>Root:</u> On sloping bank. Dominant tree. 2.5m. from boundary to south and 1.5m. from path to north.</p> <p><u>Stem:</u> Forked at about 3m. Crooked stem on northern side.</p> <p><u>Crown:</u> Wide-spreading high crown. Heavy and over-extended limbs over path and road to south. Minor storm damage in crown. Deadwood throughout crown. Hangars in crown. Broken stem at 5m. north side.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0080	<i>Populus nigra</i> var. <i>italica</i> Lombardy poplar	14.0	31	1N 2S 1E 0W	M/A	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 2m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Slight lean to northeast. Crooked stem. Forked at about 4m. Dead stems from forking point.</p> <p><u>Crown:</u> Unbalanced crown. Suppressed on west side.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0081	<i>Populus nigra</i> var. <i>italica</i> Lombardy poplar	20.0	48	2N 3S 1E 0W	M/A	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Forked at 2m. Dead stems from forking point.</p> <p><u>Crown:</u> Suppressed crown on west side. Deadwood throughout crown. Limbs overhang barrier and road to south.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0082	<i>Populus nigra</i> var. <i>italica</i> Lombardy poplar	18.0	35	0N 4S 1E 0W	M/A	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 3m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Forked at 2m. Slight lean to south. Dead stems along main trunk.</p> <p><u>Crown:</u> Suppressed crown on west side. Deadwood throughout crown. Street light on northern side.</p>	U	Fell the tree to ground level and stump grind resultant stump.

0083	<i>Populus nigra</i> var. <i>Italica</i> Lombardy poplar	19.0	46	1N 3S 1E 0W	MA	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 2m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Leaning to south. Forked at 2m. Dead stems from forking point.</p> <p><u>Crown:</u> Street light on northeastern side. Minor limbs overhang railing to south. Deadwood throughout crown. Suppressed crown on west side.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0084	<i>Populus nigra</i> var. <i>Italica</i> Lombardy poplar	19.0	37	1N 2S 0E 0W	MA	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 1.5m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Forked from about 2m. Crooked main stem.</p> <p><u>Crown:</u> Suppressed crown on east and west sides. Debris in crown. Light crown.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0085	<i>Populus nigra</i> var. <i>Italica</i> Lombardy poplar	20.0	39	1N 1S 1E 0W	MA	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 2m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Large open cavity on northern side to 1m. Extensive heartwood decay. Structurally weak. Forked at 2m.</p> <p><u>Crown:</u> Suppressed crown on west side. Deadwood throughout crown. Dead stems on southern side.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0086	<i>Populus nigra</i> var. <i>Italica</i> Lombardy poplar	20.0	29	2N 1S 1E 0W	MA	<p>Poor.</p> <p><u>Root:</u> On sloping bank. 2m. from boundary to south and 2m. from path to north. Signs of root damage to path surface on northern side</p> <p><u>Stem:</u> Forked from about 2m.</p> <p><u>Crown:</u> Suppressed crown on west side. Deadwood throughout crown. Light crown. Minor hangars in crown.</p>	U	Fell the tree to ground level and stump grind resultant stump.
0087	<i>Populus Nigra</i> Poplar	23.0	62	4N 4S 4E 0W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1.5m. from boundary to south and 2m. from path to north.</p> <p><u>Stem:</u> Forked at 4m. Possible retention of water at forking point. Forked also at 10m.</p> <p><u>Crown:</u> Wide-spreading crown. Heavy leaning stem over railing and road to south. Limbs overhang road to north. Minor storm damage in crown. Deadwood throughout crown.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.

0088 (434)	<i>Populus Nigra</i> Poplar	24.0	64	4N 75 2E 3W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1.5m. from boundary to south and 2m. from path to north. Signs of root damage and upheaval and cracking of path surface on northern side.</p> <p><u>Stem:</u> Main forking point at 4m. Street light on southern side.</p> <p><u>Crown:</u> Wide-spreading crown. Heavy and over-extended limbs to south over railing and footpath and road to south at 4m.</p> <p>Could be prone to stem breakage. Limbs overhang road to north. Broken and storm-damaged limbs in crown. Hangars in crown. Deadwood throughout crown.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0089	<i>Populus Nigra</i> Poplar	24.0	52	3N 5S 2E 1W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1.5. from boundary to south and 2.5m. from path to north. Early signs of root damage and upheaval of path surface on northern side.</p> <p><u>Stem:</u> Forked from 2m. Street light on northeastern side.</p> <p><u>Crown:</u> Broken and storm-damaged limbs in crown. Heavy and over-extended limbs to south over railing and footpath and road to south. Limbs overhang road to north. Minor storm damage in crown. Deadwood throughout crown. Hangars in crown. Street light on northern side.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0090	<i>Populus Nigra</i> Poplar	23.0	55	5N 8S 2E 1W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1m. from boundary to south and 2m. from path to north. Early signs of root damage and upheaval of path surface on northern side</p> <p><u>Stem:</u> Forked at about 4m.</p> <p><u>Crown:</u> Wide-spreading crown. Heavy and over-extended limbs to south over railing and footpath and road to south. Limbs overhang road to north. Minor storm damage in crown. Deadwood throughout crown.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.
0091	<i>Populus Nigra</i> Poplar	21.0	52	5N 8S 1E 0W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1m. from boundary to south and 3m. from path to north.</p> <p><u>Stem:</u> Forked at 2m.</p> <p><u>Crown:</u> Wide-spreading crown. Heavy and over-extended limbs to south over railing and footpath and road to south. Limbs overhang access road to north. Minor storm damage in crown. Deadwood throughout crown.</p>	U	In consideration of the species, age, condition and surrounding targets, it is our recommendation to: Fell the tree to ground level and stump grind resultant stump.

0092	<i>Populus Nigra</i> Poplar	25.0	47	2N 4S 1E 0W	MA	<p>Fair.</p> <p><u>Root:</u> On sloping bank. 1m. from boundary to south and 2.5m. from path to north. Signs of root damage and upheaval of path surface on northern side</p> <p><u>Stem:</u> Forked from 4m. x 3 stems. Weak forking point and prone to stem breakage.</p> <p><u>Crown:</u> High and wide-spreading crown. Over-extended limbs to south. Limbs overhang railing and footpath and road to south. Limbs overhang path to north. Street light on northwestern side. Minor storm damage in crown. Deadwood throughout crown.</p>	U	<p>In consideration of the species, age, condition and surrounding targets, it is our recommendation to:</p> <p>Fell the tree to ground level and stump grind resultant stump.</p>
0093	<i>Populus Nigra</i> Poplar	25.0	68	4N 5S 3E 3W	MA	<p>Fair.</p> <p><u>Root:</u> Adjacent to path on northern side. 1m. from boundary to south. Signs of upheaval of path surface on northern side.</p> <p><u>Stem:</u> Forked at 4m.</p> <p><u>Crown:</u> High and wide-spreading crown. Over-extended limbs to south. Broken and storm-damaged limbs in crown. Limbs overhang bus shelter, railing, footpath and road to south. Hanging storm-damaged limb in crown on southern side. Deadwood throughout crown. Street light on western side. Limbs overhang road to north.</p>	U	<p>Fell the tree to ground level and stump grind resultant stump.</p>

37(1) 37(1)

Our Ref: 37(1) HSE.11.22.01

Report Title: Tree Planting Works

Project Title: Tree Planting on HSE Lands, CUH, Wilton, Co. Cork

Client(s): Health Services Executive

Date: 4th. November 2022

PLANTING WORKS SCHEDULE

1. Proposed Works:

1.1 The planting of trees on HSE lands at CUH, Wilton, Co. Cork. A costings sheet and Bill of Quantities is outlined in Appendix 3:

1.2 The planting of up to 21nr. semi mature trees to be planted along the centre line of the sloping shrub bed on the right-hand side of the main entrance to the Hospital following the removal of the row of *Populus spp.* Polar trees. It is proposed to start at a distance of 6m. east of the first tree stump where the shrub bed margin width is at 4m. Then, continuing eastwards, trees shall be planted at even spacing of 7m. apart ending at the eastern end and about 4m. west of the pedestrian steps. See Planting Plan - Appendix 1. The choice of species suited to the location x quantities is outlined in Table 1 below. Given the confined nature of the site and the close proximity to the busy public road, footpath and bus lane, it is recommended that a species with an upright branching habit, and a species suitable for growing in an urban environment.

Note final numbers and spacing will be determined by the presence of services on the site. Final species selection may also be determined by plant availability at the time.

1.2.1 The existing shrubby vegetation is to be retained as is, but stump grinding and treatment of poplar regrowth will be required before planting works commence.

2. Trees and Carbon Sequestration:

2.1 The increase in the greenhouse gases, particularly carbon dioxide, into our atmosphere is thought to be the main causes of greenhouse gases. Trees play an important role in the role of removal of carbon dioxide from the atmosphere during the process of photosynthesis. Carbon dioxide is taken in by trees and stored as carbon in the trunk, branches, leaves and roots.

2.2 While forests play an important role in maintaining a balance of carbon through sustainable forestry, little or limited research has been carried out on individual tree species and their role in the removal of carbon from the atmosphere. It is thought that some trees appear to be more effective than others over time. According to Cleac, School of environmental and Natural Resources at Fleming College, Ontario, the best species are deciduous species, particularly those that are long-lived such as sugar maple, Oak, black walnut and hickory. Softwoods such as red and white pine are also good at storing carbon. Next comes softer deciduous trees such as birch, red or silver maple and poplar. According to the Tree Council of Ireland, Sitka Spruce our most common forestry species, sequesters a lot of carbon over a 30-year cycle and that a broadleaf woodland sequesters carbon dioxide more slowly although it may store more carbon in the long-term.

2.3 In one New York study, the top carbon storer was the Tulip tree, followed by Silver Maple, then Oak, Horse Chestnut, Red Mulberry, London Plane, Sweetgum and Dogwood.

2.4 According to the above and by combining site suitability and potential sequestration, I have ranked Lime var. 'Greenspire' which has an upright branching habit as the most suitable species for this site, followed by Silver Birch, Hornbeam and Oak. Rowan and Whitethorn. The choice of Silver Birch species would mirror the planting scheme on the left-hand side of the entrance. See Table 1 below:

Choice of one of the following species								
Species	Common Name	Rootballed	Size	Qty	Comments	A. Species Sequestration of Carbon ranking 1-6	B. Site suitability	A+B 1-6 1=most suited
<i>Carpinus betulus</i>	Honbeam	Yes	wire rootballed 18/20; 3-4m. Ht.	21	Select with clear stem to 1.2m. Fastigiated upright crown. Slow-growing. Densely branched. Valuable mid-sized street tree	4	2	3
<i>Tilia cordata</i> 'Greenspire'	Lime	Yes	wire rootballed 18/20; 3-4m. Ht.	21	Upright branching habit. Adaptable to all type of soils. A good street tree and very resistant to heat, drought and pests.	2	1	1
<i>Betula Pendula</i>	Silver Birch	Yes	wire rootballed 18/20; 3-4m. Ht.	21	Wide-spreading crown. Native. Attractive bark. Demands little of the soil. Resistant to drought, frost and winds. Good street tree.	1	4	2
<i>Sorbus aucuparia</i>	Rowan	Yes	wire rootballed 18/20; 2.5-3.5	21	Compact crown. Native; Nice Autumn colour. Red berries. Tolerant to lime, but prefers a slightly acid soil. Splendid yellow-orange Autumn colour.	5	5	5
<i>Crataegus laevigata</i> 'Pauls Scarlet'	Pink Flowering W	Yes	wire rootballed 18/20; 2.5-3.5	21	Good habitat for small birds. Sharp thorny branches. Extremely winter-hardy. Resistant to urban climate.	6	6	6
<i>Quercus robur</i> 'Fastigiata'	Cypress Oak	Yes	Wire rootballed 200-250 ht.	21	Slow growing; Compact upright crown. Resistant to frost and winds and even drought. Decorative tree for parks and as a street tree.	3	3	4

Table 1: Choice of Species suited to the location x Quantities:

3. Planting - General guidelines:

3.1 Trees

All trees shall conform fully to the specification in respect of species, size and quality. All plants shall be well grown, sturdy and bushy and free from all defects, pests and diseases.

All trees shall comply with the minimum requirement of the relevant British Standards namely:

- BS 3936 Part 1: Specification for trees and shrubs.
- BS 4043 Recommendations for transplanting semi-mature trees.

3.2 Topsoil

Good topsoil is important for healthy plant establishment. In general after subsoil formation, the minimum depth for topsoil formation shall be:

Tree and Shrub areas 500mm.

Topsoil shall be from an original surface layer of grassland and shall be fertile and well aerated. Once the topsoil has been spread, then no access should be allowed over these areas with site machinery.

3.3 Topsoil for Tree Pits:

Planting pits for Semi-mature trees will be dug to the following dimensions 1200 X 1200 X 1000mm. In areas where this is not possible the Landscape Contractor is to agree all dimensions for tree pits on site prior to proceeding. Tree pits in mounds or other made up ground shall be backfilled with topsoil. Tree pits for trees planted in undisturbed ground will be backfilled with excavated material.

3.4 Existing above ground and underground Services

In consultation with the HSE, the Contractor shall obtain service plans and drawings from each utility and private bodies with services including powerlines on site, and shall confirm and mark the precise location of all above-ground and underground services in the field. The Contractor shall seek and conform to the guidelines laid down by each utility regarding works in the vicinity of each service.

3.5 General Tidiness and Workmanship:

All areas of work and surroundings shall be kept in a tidy condition. Existing shrubbery shall be protected and retained during the planting works. Excess soil, rubble and rubbish shall be removed off site. not be tipped against any hedgerow, into any ditch or stream nor under the canopy of any tree. The Contractor shall provide a tip for disposal of subsoil excavated from tree pits, and for stones, rubble and rubbish.

3.6 Semi-Mature Trees

Semi-mature trees shall be in accordance with B.S. 4043: 1989. Trees shall be at least 3.00 metres in height, a clear stem at least 1.2 metres high to the lowest branch, a single, reasonably straight leading shoot, with lateral branches giving a well-shaped, balanced crown.

Trees shall be supplied with roots balled and wrapped with hessian or other woven fabric, secured with webbing and chains. The wrapping shall keep the rootball intact and moist during transport. The rootball dimensions shall be in line with the recommendations of Appendix A of B.S. 4043: 1966. Trees shall be lifted only by means of a collar attached to the rootball, without damage to the stem or crown.

3.7 Planting of Trees - See Planting Plan Appendix 1

All trees shall be planted according to the general directions on planting given above. Trees shall not be planted within 2m. of boundary walls, buildings or underground services Trees shall be planted at least 7m. apart.

The excavated pits shall be of dimensions shown on the contract drawing and stated in the Bill of Quantities - Appendix 3. A mixture of slow release fertilizer and approved tree compost in quantities stated in the Bill of Quantities shall be placed at the bottom of each pit prior to spreading out roots.

Backfilling shall be with good quality topsoil to BS 3882: 1965 and shall conform to the above specification. The finished surface to the filled tree pit shall be slightly cambered.

3.8 Stakes and Ties for Trees - See Appendix 2.**STAKING GENERALLY**

Stakes: Softwood milled round, straight and free from projections and large or edge knots with pointed lower end.

Nails: To BS 1202: part 1, galvanised, minimum 25mm long and with 10mm diameter heads.

Minimum stake sizes:

Tree size	Overall length of stake	Diameter
Advanced Nursery Stock	1500mm	100mm

3.9 Short Double Staking:

For all Advanced Nursery stock (16-18 and 18-20 cm girth). Drive stakes vertically at least 300mm into the bottom of the pit on either side of the tree position before planting. Consolidate material round stakes during backfilling. Cut stakes to approximately 600mm above ground level.

Secure tree firmly but not rigidly with: Belts and spacers from J Toms Ltd. Or similar approved.

Special Nylon Reinforced 37.5mm Rubber belt (ref.L5) and Rubber Sleeves (RS), cut to length, rubber belt looped around tree stem, through 2 no. rubber spacer sleeves cut to correct length to each stake use one nail fixing per stake.

3.10 Watering:

All root balled trees shall be well soaked before planting. All planting shall be watered after planting, to consolidate soil around the roots, unless ground is so wet as to make additional water unnecessary.

3.11 Mulch: Bark

Spread horticultural graded bark from coniferous trees, particles 25-75 mm, free of fine material, dust or wood. Spread to 50 mm deep, around the base of each tree in a circle radius of 500mm and along both sides of planted hedge.

3.12 Workmanship

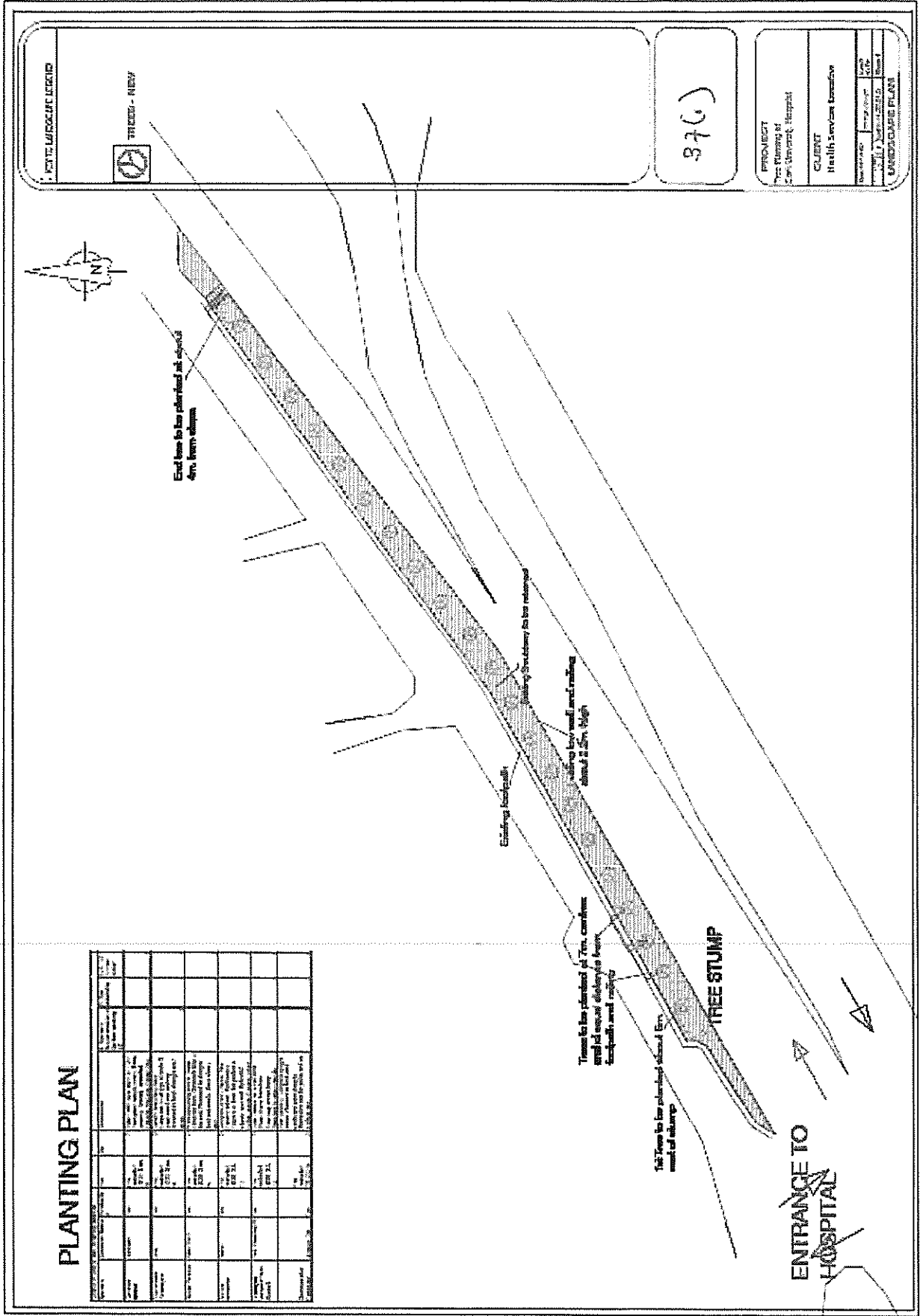
A high quality of finish will be expected at all times on this prominent site.

Hedge Transplants: Leave ground free of superficial debris including all stones and debris over 50 mm diameter.

The planting will be inspected in Spring and again in the September following planting. Any tree or shrub found to have died from any cause except as provided below or the work of other contractors shall be replaced by the Contractor at his own expense. Replacement planting shall conform in all respects with this Specification.

PLANTING WORKS CUH WILTON CORK
 Appendix 1: Sketch of Planting Site:

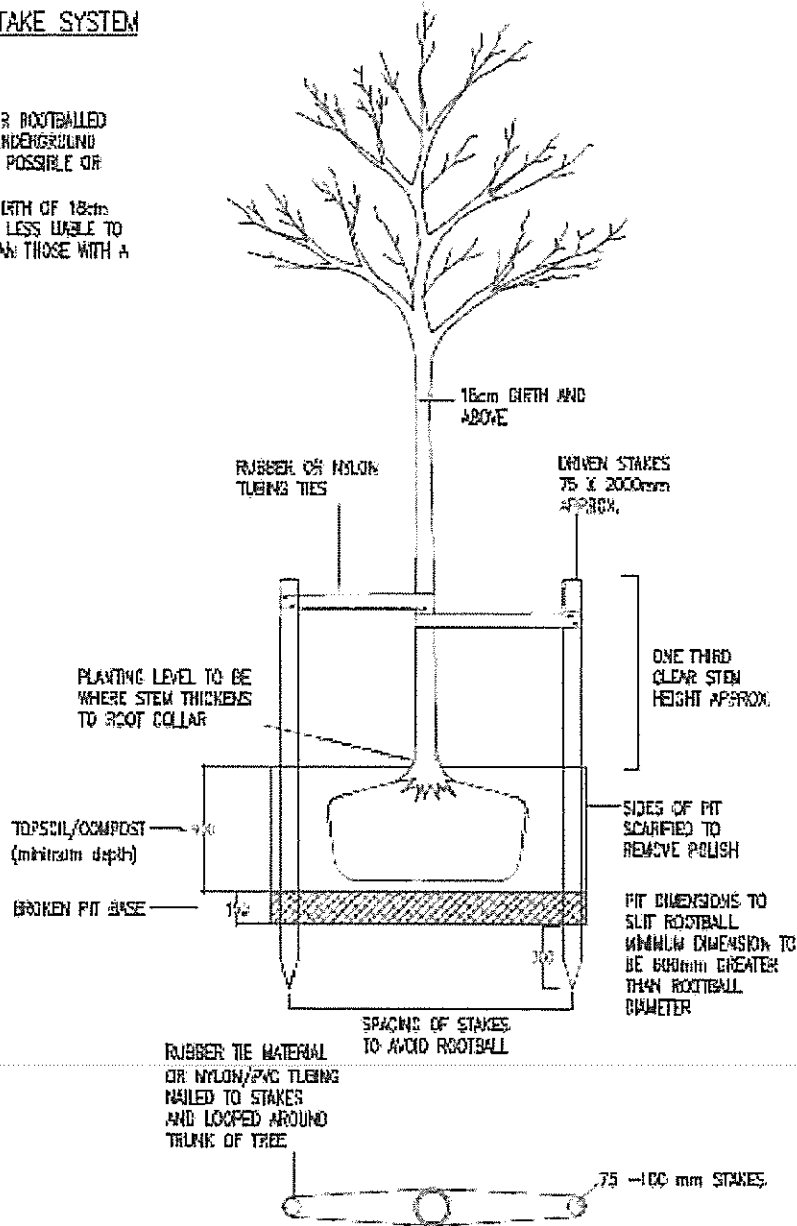
04-11-22



Appendix 2: Planting of Rootballed Trees

DOUBLE STAKE SYSTEM

TO BE USED FOR ROOTBALLED TREES WHERE UNDERGROUND STAKING IS NOT POSSIBLE OR DESIRABLE
 TREES WITH A GIRTH OF 18cm AND ABOVE ARE LESS LIKELY TO BE SHAPED THAN THOSE WITH A SMALLER GIRTH



Appendix 3 Bill of Quantities

Bill Of Quantities				
ITEM	Unit	Quantity	Unit Price €	Total Rate €
<p>Supply of trees Source and supply suitable semi-mature tree; Semi-mature trees shall be in accordance with B.S. 4043: 1989. Trees shall be at least 3.00 metres in height, a clear stem at least 1.2 metres high to the lowest branch, a single, reasonably straight leading shoot, with lateral branches giving a well-shaped, balanced crown</p>	tree	21	€	
<p>Tree Planting Excavate Tree Pit 1200 x 1200 mm by hand or small mini-digger; Fork over bottom of pit; Plant rootballed tree. Install and wrap rootball with 100mm diameter perforated flexible agricultural drainage irrigation pipe and leave 50mm proud of ground surface; Incorporate slow release fertilizer at a rate of 50g/pit into soil and backfill with excavated material, incorporating manure mixture at 1 m3 per 3 m3 of soil; two tree stakes and two ties; tree pits square in sizes shown.</p>	nr	10	€	
<p>Mulch Apply Amenity Bark mulch to base of planted trees 1m. In diameter and 50 mm thick.</p>	m2	16.5	€	
Sub-Total				
VAT @ 13.5%				
Total Cost				€

