HERITAGE
TREE CARE LTD.



ARBORICULTURAL IMPACT ASSESSMENT

Prepared For: Barry's Field Ltd.
Assessment & Report Prepared By: Heritage Tree Care Ltd.
Site: Barry's Field - Greenfield Site behind Barry's Restaurant & Bar, Douglas, Co. Cork.

Heritage Reference No. *VTA240011*
Completion Date: 10.10.24

© Heritage Tree Care Ltd. 2024
Email: heritagetreesireland@gmail.com www.heritagetreesireland.com Tel: +353 (0) 832060088

Barry's Field Ltd.
Douglas
Cork

Arboricultural Impact Assessment and Report regarding ninety six (96) trees in total, divided into fifty one (51) individual trees and five (5) tree groups for the purpose of this report. The trees are within the vicinity of a proposed development, on a Greenfield Site, located adjacently South of Barry's of Douglas Restaurant and Bar, Carrigaline Road/Churchyard Lane, Douglas, Co. Cork.

To Barry's Field Ltd.

We are please to provide Barry's Field Ltd. with the following Arboricultural Impact Assessment and Report regarding the Subject trees on the Greenfield Site in Douglas, Co. Cork.

Complete use of this report is authorised under the conditions limiting its use as stated in Appendix A, in *'Arboricultural Reporting Assumptions and Limiting Conditions'*.

Should you have any queries relating to this report, its recommendations, or the options considered please do not hesitate to contact us on +353 (0) 83206 0088.

Regards,

Daisy Todd HDip. BA. MSc.
Lantra Awarded Professional Tree Inspector
ISA Certified Arborist ®

© Heritage Tree Care Ltd. 2024

HERITAGE TREE CARE LTD.

TABLE OF CONTENTS

Document Tracking & Information Page 4
Abbreviations Page 4
1.0 PROJECT SCOPE Page 5
2.0 METHODOLOGY Page 6
2.1 Data Collection Page 6
3.0 OBSERVATIONS Page 7
3.1 Site Details Page 7
3.2 The Proposed Development Page 8
3.3 Statutory & Non-Statutory Designations Page 8
3.4 Tree Works Page 8
3.5 Subject Trees Page 9
3.6 Tree Retention Values Page 11
3.7 Photographic Documentation Page 12
4.0 ARBORICULTURAL IMPACT DISCUSSION Page 14
4.1 Trees to be Removed Page 14
4.2 Proposed Pruning Page 15
4.3 Root Protection Areas Page 17
4.4 Mitigating Encroachment Impact Page 18
4.5 Minor Encroachments Within the RPAs of Subject Trees Page 19
5.0 OFFSET TREE PLANTING RECOMMENDATIONS Page 21
5.1 Accommodating Tree Loss Page 21
5.2 New Tree Planting Page 22
6.0 TREE PROTECTION RECOMMENDATIONS Page 24
6.1 Protective Fencing Specification Page 24
6.1.1 Modifications to Protective Fencing Page 26
6.1.2 Protective Fencing Inspection Page 26
6.1.3 Temporary Access into the RPAs Page 27
6.2 Trunk Protection & Limb Wrapping Page 27
6.3 Ground Protection Measures Page 27
6.4 Machinery and Equipment Use Page 28
6.5 Excavation and Trenching Page 29
6.6 Special Considerations for High Conservation Value Trees Page 29
6.7 Roles and Responsibilities Page 29
7.0 SITE SPECIFIC ARBORICULTURAL METHOD STATEMENT Page 31
7.1 Arboricultural Method Statement Overview Page 31
7.2 Order of Operations - A Time-line for Tree Protection Page 32
8.0 REFERENCES Page 38
Appendices Page 40
Appendix A - Arboricultural Reporting Assumptions and Limiting Conditions Page 41
Appendix B - Explanation of Tree Assessment Terms Page 42
Appendix C - BS5837 Tree Survey Schedule Page 45
Appendix D- Tree Constraints Plan Page 49
Appendix E- Tree Clearance Plan Page 50
Appendix F - Tree Protection Plan Page 51

© Heritage Tree Care Ltd. 2024

DOCUMENT TRACKING & INFORMATION

Project Name	Arboricultural Impact Assessment (AIA)
Consulting Arborists	Daisy Todd- ISA Certified Arborist ® & Lantra Awarded Professional Tree Inspector, Ben Mullen- City & Guilds Qualified & Lantra Certified Arborist.
Report Requested By:	Barry's Field Ltd.
Client	Barry's Field Ltd.
Site Address	OS MAP REF: 6428-03; 6428-08
Client Address	Barry's Field Ltd. Douglas, Cork.
Company Reference	*VT240011*
Author	Daisy Todd
Reviewed by	Ben Mullen
Company Information	Name: Heritage Tree Care Ltd. Website: www.heritagetreesireland.com Phone: 0832060088 Mobile: 0832060088 (Daisy) Mobile: 0896039794 (Ben) Email: heritagetreesireland@gmail.com CRO: 711542

ABBREVIATIONS

DA	Development Application	RPA	Root Protection Area
DBH	Diameter at Breast Height	TMP	Tree Management Plan
CEZ	Construction Exclusion Zone	CMP	Construction Management Plan
ULE	Useful Life Expectancy	AA	Arboricultural Association
DRB	Diameter Root Base	BS	British Standard
PA	Planning Authority	ISA	International Society of Arboriculture
NTM	National Tree Map		

© Heritage Tree Care Ltd. 2024

1.0 PROJECT SCOPE

I. Heritage Tree Care Ltd. were engaged by Barry's Field Ltd. to complete a BS5837:2012 Tree Survey Schedule, Arboricultural Impact Assessment (AIA) and Tree Constraints and Clearance Plans for ninety six (96) trees located within the tree survey area *(see Fig.2)*, on the Greenfield Site, adjacently South of Barry's of Douglas Restaurant and Bar, Carrigaline Road/Churchyard Lane, Douglas, Co. Cork (OS MAP REF: 6428-03; 6428-08).

II. The report has been requested as part of a large Scale Residential Development consisting of the development of one hundred and twenty four (124) residential units and all associated developments works.

III. The project scope is intended to identify trees to be removed; provide information on those trees to be retained; and assess and record the potential impact and conflicts which may occur between the subject trees and the proposed development.

IV. This AIA is accompanied by a Tree Constraints Plan (Appendices D), showing the location of the individual trees and tree groups to be retained; and a Tree Clearance Plan (Appendix E) showing the location of the individual trees and tree groups to be removed and a Tree Protection Plan (TPP) (Appendix F). These plans aid development and outline encroachment areas where construction must be prohibited. They outlines measures to safeguard retained trees during construction and by doing so promote the safety of the Subject trees- before, during and after any construction activities take place.

V. Observations and recommendations provided within this report are based upon information provided by the client, certified arborist site visits and guidance provided within BS5837:2012 Trees in Relation to Design, Demolition and Construction; and BS3998:2010 Tree Work- Recommendations *(BSI, 2010 & 2012)*

VI. Where tree work is specified, all recommended tree work is to be carried out in accordance to the above-mentioned standards, by an appropriately trained arborist practitioner, with an up-to-date record of training and membership recognised by the Arboricultural Association (AA) and/or the International Society of Arboriculture (ISA).

© Heritage Tree Care Ltd. 2024

2.0 METHODOLOGY

2.1 Data Collection

I. Heritage Tree Care Ltd. undertook the on-site tree survey data collection on the 23rd-24th of May 2024. The trees that are the subject of this report were identified by reviewing the Architectural Plans created by O'Mahony Pike Architecture and the Topographical Survey provided by MB Precision.

II. Data collected on-site was analysed against the supplied development documentation by Daisy Todd (ISA Certified Arborist and Lantra Awarded Professional Tree Inspector) and Ben Mullen (City & Guilds Qualified & Lantra Certified Arborist) of Heritage Tree Care Ltd. Following which relevant recommendations were formulated and collated into a report format.

III. The Subject trees were inspected from ground level. No foliage, soil or tissue sampling was conducted. No aerial or internal investigations were undertaken. Soil excavation was carried out at a later date *(see Section 4.4.VI for more information).*

IV. Tree assessment and Qualitative Visual Tree Analysis has been carried out in accordance with The International Society of Arboriculture (ISA) TRAQ guidelines *(Smiley et al. 2017)* and the requirements of BS5837:2012 *(BSI, 2012).*

V. Tree height and canopy width were assessed using long-range binoculars and measured using a Laser Tree Height Meter and have been provided to the nearest whole centimetre. Main stems were 'sounded' using a nylon hammer. Trees were numbered with aluminium identification tags, attached with aluminium nails at a 2m height from ground level. Trunk diameter at breast height (DBH) was measured with a 50m diameter tape and provided to the nearest millimetre. The RPA of each tree *(see section 4.3)* and RPA areas were calculated in accordance to BS5837:2012, and have been provided to the nearest ten centimetres *(BSI, 2012)*. The ages of the trees were calculated via circumferential measurement, with reference to species-dependent maturity rates. This information has been recorded in the BS5837 Tree Survey Schedule *(see Appendix C).*

VI. A detailed Topographical Survey of Barry's Field by MB Precision, Co. Cork, accurately mapped the locations of all trees and tree groups. Root Protection Areas (RPAs) and other essential data from the Tree Constraints, Clearance, and Protection Plans *(Appendices D, E & F)* were incorporated to ensure a clear representation of site conditions. For this Arboricultural Impact Assessment (AIA), it is assumed that the tree locations depicted in the survey are accurate, facilitating informed decisions on tree retention and site management.

VII. Trees of similar condition, species, location and/or size have been formed into tree groups. There are five (5) tree groups within the tree survey area, all of which are clearly delineated in *Appendices D & E*. In these groups only one (1) tree out of each group has been tagged.

VIII. Tree retention values have been determined based upon the trees' health, structure, dimensions, age class, life expectancy, location and environmental amenity/ significance in accordance with BS5837:2012 *(BSI, 2012).* These attributes have been reviewed collectively and used to categorise a tree value in a development context *(see Section 3.6).*

© Heritage Tree Care Ltd. 2024

3.0 OBSERVATIONS

3.1 Site Details

I. The proposed development site is centrally located in Douglas Village, Co. Cork. It is bordered by Churchyard Lane to the West and Carrigaline Road to the East. To the North, the site is adjacent to a mix of residential and commercial buildings. The Site itself is a greenfield area, approximately 0.83 hectares in size, surrounded by existing trees and stone walls along its eastern and western edges. Directly to the south lies a telecom exchange, while St. Luke's Church and its graveyard are situated to the southwest of the site.

II. The site features a greenfield landscape with level terrain, gently sloping from south to north, reaching a low point at the northern boundary, approximately 5.00 meters above sea level.



Fig. 1 Topographical survey of the Greenfield site showing the locations of 51 of the total 96 trees surveyed on-site (Ref: OPA 2404-00 _ O'Mahony Pike Architecture). The Subject trees are all located in formulaic rows along the N, S, E & W boundary lines of the site, except for the young Poplar's in G6 that are dispersed randomly to the South of the field.

© Heritage Tree Care Ltd. 2024

3.2 The Proposed Development

I. The site's proposed development involves constructing 124 apartments, comprising 50 one-bedroom, 64 two-bedroom, and 10 three-bedroom units, distributed across two separate buildings.

II. The plan also includes public open spaces, new access points for vehicles from Churchyard Lane, internal roadways and footpaths, boundary treatments, as well as hard and soft landscaping.

III. Additionally, drainage systems will be installed to support the development, along with all necessary related and supplementary works. This thorough proposal aims to create a substantial residential area that will benefit the local community by providing diverse housing options for prospective residents.

3.3 Statutory and Non-Statutory Designations

I. Heritage Tree Care Ltd. contacted Cork County Council in relation to statutory designations affecting the subject trees. There are no Tree Preservation Orders (TPO's) identified on the Site *(TCOI, 2011) and* the Site is not within an area designated by a Special Amenity Area Order *(CCC, 2015)*. The Site *is* however within the Douglas Donnybrook Architectural Conservation Area (ACA) *(CCC, 2022-28).*

3.4 Tree Works

I. Tree owners/managers, developers and contractors have responsibilities for health and safety as a result of their actions. They have a moral and legal 'duty of care' to prevent foreseeable harm. If remedial action is not carried out on trees, which are in an unstable/ hazardous condition, with obvious defects, those responsible could be subject to prosecution along with potential for further civil claims for damages.

II. It is advised that the tree-work recommendations, *annotated in the BS5837 Tree Survey Schedule in Appendix C,* are carried out prior to construction. This is to ensure the health and safety of all the trees and personnel on-Site throughout the construction process. The work recommendations are not only for planning purposes, but have been recommended to ensure the prolonged health and continued longevity of the subject trees to be retained *(see Section 4.2 for more information).*

III. In general the optimum period for significant pruning works is between November and February, and July to August, when trees are dormant or outside periods of high-functional activity. This reduces the overall impact on energy available to the tree for growth and processes, as the tree is better placed to respond to wounding and a reduction in leaf surface area *(Lilly, 2010).*

IV. Tree work should, if possible, be carried out outside the typical bird nesting season of March to September. This report should be viewed alongside an ecology report, carried out by a qualified ecologist. Full consideration must be given to the presence of species protected under the Wildlife Act *(ISB 1976, as amended)* and other relevant legislation protecting wildlife and habitats, with special focus on the County Cork Protected Sites and Species document, the EC Natural Habitats Regulations *(EC, 1997)* and the Habitats Directive *(European Commission, 1992).*

© Heritage Tree Care Ltd. 2024

V. Any person who injures protected bird or animal species, of conservation concern and special conservation significance, or wilfully interferes with their breeding or resting places is guilty of an offence under Section 23 of the Wildlife Act *(ISB 1976).*

VI. Any tree surgery recommendations contained in this report are to be undertaken in accordance with BS3998:2010 *(BSI, 2010)* by suitably qualified and insured contractors.

3.5 The Subject Trees

I. Within the Tree Survey Area, there are a total of 96 trees, which have been sub-divided into 51 individual trees and 5 tree groups, for the purposes of this report. *Complete attributes for trees to be retained can be found in the Tree Survey in Appendix C of this report.*

II. There are eight (8) species of tree within in the tree survey area; fifty percent (50%) of which are native the other half non-native/introduced species *(see Table. 1).*

III. All significant trees, located in the tree survey area have been included in this report. Pursuant with BS5837-2012 *(BSI, 2012)* all trees within this area, with a stem diameter of over 75mm have been assessed. Small trees/shrubs within the Sites may have been omitted from the report based on their species, current size and/or potential future size and contribution to local amenity.

Table. 1 Summary of the Subject Trees in the Tree Survey Area.

Species	Botanical Name	Native	Total No. trees on the Site	No. Trees to be removed to facilitate development	Category A	Category B	Category C	Category U
Common Lime	*Tilia x europaea*	N	20	0	**1**	**10**	**4**	**5**
Sycamore	*Acer pseudoplatanus*	N	26	4		**9**	**17**	
Ash	*Fraxinus excelsior*	Y	2	0	**1**	**1**		
Hawthorn	*Crataegus*	Y	29	15		**15**	**14**	
Field Maple	*Acer campestre*	N	4	1		**4**		
Lombardy Poplar	*Populus nigra italica*	N	11	5		**6**	**5**	
Alder	*Alnus glutinosa*	Y	2	0			**2**	
Silver Birch	*Betula pendula*		2	0		**1**	**1**	
		Total	**96**	**25**	**2**	**46**	**43**	**5**
		Total Number of Trees being removed from Site		**30**	*(25 to facilitate development & 5 Category U)*			

© Heritage Tree Care Ltd. 2024

IV. Barry's Field is encircled by mature, broadleaf, deciduous trees, the predominant species being Common Limes, Lombardy Poplars and Sycamores. These species flank the South and West boundary lines. Although each of these species are non-native, they have each become naturalised and key parts of the Irish landscape. Poplar's are a high canopy tree species with tall maturing heights (>12m) and add visual diversity, beauty and are a definite focal point of the Site *(see Fig.3)*.

V. The North and East boundaries add visual and bio-diversity to the site. They are populated by Field Maples, Silver Birch, more Sycamore and Alder *(see Fig.6)*.

VI. Along the West and East boundaries too, there is a thick understory of scrub species, including bramble, hawthorn, ivy etc. which has significant wildlife and habitat amenity *(Rushforth, 1999 & IAPT, 2018)*.

VII. The uniform rows of trees delineating the Site boundary lines, are all considered to have been planted. These conjectures are based on the trees' species type (not all native, many do not easily self-seed), current size, life stage/ age class (most are of similar height to their neighbouring trees, and are well-established and semi/mature), and location within the Sites (the trees are relatively evenly dispersed with semi-formulaic planting patterns).

VIII. Two of tree species on Site, the Lombardy Poplar (*Populus nigra)* and the Alder *(Alnus glutinosa)* are know to have invasive root systems. Invasive roots systems are known to interfere with building structures. They can cause foundation damage, soil movement, pipe and sewer damage, damage to driveways, patios and can compromise waterproofing membranes:

i. Alder have a HIGH level of invasiveness, with an average roots span of up to 90m. Alder's grow fast, from 6-9ft per year. Their roots seek out water, spreading in around and across all available soil. They are notorious for causing damage underground pipes.

ii. Poplars have a MEDIUM level of invasiveness. There are many different varieties of Poplar trees, all of which are extremely fast-growing and tall in maturity. Their narrow excurrent form means that their roots extend far out from their narrow drip-line; anywhere from 50m-90m span.

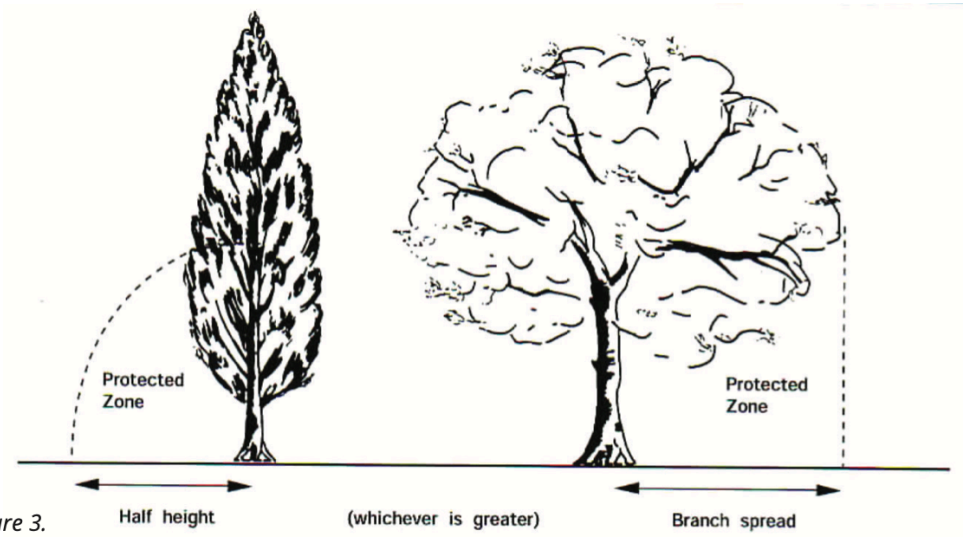


Figure 3.

Fig.2 Showing critical root zones extend further than the drip-line on trees with an excurrent habit.

3.6 Tree Retention Values

Please see Appendix C for the BS5837 Tree Survey Schedule, which provides a detailed inventory of all surveyed trees, including their species, dimensions, condition, retention status, and recommended management.

I. Two (2) trees (2% of the total trees on-site), were of a **Category A (High)** Retention Value. Category A trees are of high quality with an estimated useful life expectancy (ULE) of at least 40 years. They are typically trees that are particularly good examples of their species; have particular visual importance as arboricultural and/or landscape features; or those of significant historical commemorative, or conservation value.

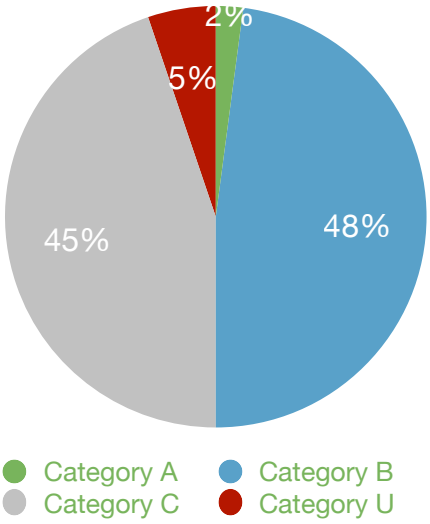
II. Forty six (46) trees (48% of the total trees on-site) were of a **Category B (Moderate)** Retention Value. Trees in this category are typically of medium size, have good structure, fair health and a ULE of more than 15 years. Four (4) of the tree groups are in Category B, and constitute many of the number.

III. Forty three (43) trees (45% of the total trees on-site) were of a **Category C (Low)** retention value. Trees in this category are of low quality, limited value or impaired condition, with an estimated remaining life expectancy of 5-15 years.

IV. Five (5) (5% of the total trees on-site), were of **Category U (Very low)** Retention Value and require removal due to their poor/dead/hazardous condition. These trees are arguably not suitable for long term retention, and cannot realistically be retained as viable trees in the context of the current land use for longer than 5 years. As per established arboricultural and silvicultural principles; the appropriate management/ removal of these Category U trees will promote the development of better specimens elsewhere on the Site *(see Appendix B for more information).*

Table. 2 Summary of Retention Values for the Subject Trees on Site.

Impact	Category A	Category B	Category C	Category U
Tree Tag Numbers	T324, T330.	T301, T303, T305, T307, T309, T310, T311, T312, T313, T314, T315, T317, T318, T322, T323, T326, T327, T329, T332 (G3), T334, T336, T337, T340, T341, T343, T344, T349, T350, T351, T352.	T302, T316 (G1), T320, T321, T328, T321 (G2), T333 (G4), T335, T338, T339, T342, T345, T346, T347, T348, T353, T354, T355, T356.	T304, T306, T308, T319, T325.
Total Number of Trees	**2**	**46**	**43**	**5**



3.7 Photographic Documentation

All photographs were taken at the time of the site inspection by Daisy Todd and have not been altered.



Fig.3 The South boundary line, a row of Lime and Sycamore trees of equal height interspersed with Lombardy Poplars of high maturing height.





Figs. 4 & 5 Showing mechanical damage and temporary grade-changes to and around the Subject trees from the preliminary clearing of the Site. It is vital that tree work recommendations be carried out prior to construction works.

© Heritage Tree Care Ltd. 2024

Fig.7 Showing the density of the understory scrub layer that populates the site.



Fig.6 The North East boundary line populated by a variety of broadleaf trees, including Field Maple, Sycamore, Silver Birch and Alder.



Fig.7 The West boundary line viewed from the South East corner of Barry's field (entrance point). Groups of Sycamore a few Ash and a understory of Hawthorn.

© Heritage Tree Care Ltd. 2024

4.0 ARBORICULTURAL IMPACT DISCUSSION

4.1 Trees to be Removed

I. A review of the proposed development has been undertaken in the context of tree retention and removal in relation to the subject trees. A brief summary of the trees to be removed, tree works and incursions related to the Proposed Development are detailed below.

II. The residential development has been designed with the objective of preserving the Subject trees in mind. Upon request of the Cork Planning Department, the Eastern boundary line trees require removal, so that the development can be easily accessed, and become a part of the Douglas village community.

III. Thirty (30) trees, sub-divided into 15 individual trees and one tree group, have been selected for removal *(see Table 3)*. This totals 31% of the total trees on-site. This total includes three (3) individual trees and one (1) tree group of moderate retention value (Category B), and seven (7) individual trees of low retention value (Category C). In addition five (5) Category U trees are being removed due to their dead or hazardous condition. These trees are to be removed regardless of the Proposed Development.

Table. 3 Summary of the Trees to be removed from Site.

	Category A	Category B	Category C	Category U
Tree Tag Numbers		T349, T350 (G5), T351, T352.	T321, T345, T346, T347, T348, T353, T354.	T304, T306, T308, T319, T325.
Number of Trees to be Removed	**0**	**18**	**7**	**5**
Total Number of Trees to be Removed from Site	**30**			

IV. All Tree removals are listed in the BS5837 Tree Survey Schedule included in Appendix C and annotated on the Tree Clearance Plan in Appendix E.

V. Tree removals assume a reasonable worst case and in practice some trees may be feasible to retain subject to investigation by a suitably qualified arboriculturist. All further tree removals or pruning activities should be discussed with the tree owner/ manager and appropriate Planning Authority (PA).

VI. Following site-clearance, where a large number of trees in close proximity to one another have been removed; an arboriculturist must carry out a site walkover immediately to determine the stability and suitability of retained trees which may/ or may not have been impacted by a loss of companion shelter.

VII. It is *vital* that work priority and timescales be applied to the work recommendations, after planning has been approved. This is in keeping with professional best standards and statute law in regards to negligence surrounding our professional duty of care.

© Heritage Tree Care Ltd. 2024

4.2 Proposed Pruning

I. A total of sixty-six (66) trees require pruning as part of pre-construction preparations on-site. These pruning measures, outlined in Table 5 and detailed in the BS5837 Tree Survey Schedule (Appendix C), are essential to safeguard both personnel and the trees themselves during construction. The recommended works are designed to ensure the health and safety of individuals on-site and in adjacent areas, minimise the risk of mechanical or incidental damage, and promote the long-term health and vitality of the trees.

Table.4 Retention values of the trees that require pruning prior to construction.

	Category A	Category B	Category C	Category U
Tree Tag Numbers	T324, T330	T301, T303. T305. T307. T309, T310, T311, T312, T313, T314, T315, T317, T318, T322, T323, T326, T327, T329, T332 (G3), T334 , T336, T337, T340, T341, T343, T344	T302, T316 (G1), T320, T328, T331 (G2), T333 (G4), T335, T338, T339, T342, T355, T356	N/A
Number of trees to be pruned to facilitate the Proposed Development	2	28	36	0
Total Number of Trees to be pruned	**66**			

II. Extra pruning may be required in response to site-changes (grade change, soil profile, wind-funnelling etc.) to further facilitate development or to mitigate risk to persons on-site. Additional tree work identified should be discussed with the Project Arborist.

III. The pruning practices recommended include:

i. **Weight-reduction**, used to reduce the weight of over-extended limbs (often over roads or high-target areas). Weight reductions can also be used to reduce the load on weak unions in a tree- for example unions with included bark on co-dominant stems.
ii. **Crown-cleaning**, used to remove deadwood, diseased, broken and/or weakly attached branches as well as 'hangers'; from the interior canopy.
iii. **Crown raising,** used to ensure a clear height of 2-2.5m where new areas of access are proposed *(Lilly, 2010)*.
iv. **Ivy severance**, to encourage the ivy to die-off, making it easily removable from the host tree. Ivy severance will aid further inspection, create a 'tidy' appearance suitable for a newly managed area, and minimise the retained tree's competition for light, water and nutrients. Not all Ivy should be removed from the site however- it is a preferred habitat for many wildlife species, including birds, butterflies and insects *(Perrin et al. 2008)*.
v. **Removal of epicormic growth**, to enhance the structural integrity of the tree. Epicormic growth can drain resources from the tree, diverting water, nutrients, and energy away from the main branches and the overall structure. Removing the weakly attached bushy growths will also; improve the overall aesthetic appeal; improve air circulation and improve light penetration around the main stem, reducing risk of fungal disease and pests.

© Heritage Tree Care Ltd. 2024

IV. Crown-raising has been recommended for several trees, particularly the Lime trees along the southern border, due to their low-hanging canopies. This process, also known as 'facilitation pruning,' involves raising the tree crown to a clearance height of 2.5 meters, in accordance with best practice, to allow for vehicular access during site works. Given the site's layout, crown-raising may be necessary for multiple trees or tree groups, as they surround the boundaries of the site. It is important to note that crown-raising is commonly performed in areas with high foot traffic, such as residential zones, to ensure safe access and movement.

V. Reduction pruning should focus on the removal of smaller diameter branches where feasible, and remove no greater than 25% of the total crown. Branches no greater than 50cm diameter are to be removed unless specifically approved on-site by the Project Arborist.

VI. Four (4) trees have been recommended for monitoring *(for tree tag numbers see Table 5)*- every two (2) years, due to their condition and proximity to targets, both proposed or already existing. The tree owner/ manager will be responsible for organising the periodic inspection of the retained tree.

Table.5 Summary of the tree pruning recommendations annotated in the Tree Survey Schedule (Appendix C).

Pruning Method	Tree Tag Number	Total Number of Tree Requiring Specified Pruning Method
Weight-reduction	T301, T316 (G1), T329, T330, T331 (G2), T332 (G3), T334 (G4), T335, T336, T337, T338, T341, T342, T343.	10 trees + 4 tree groups = 40 trees
Ivy severance	T301, T303, T305, T307, T309, T310, T311, T312, T313, T314, T315, T317, T318, T320, T322, T323, T324, T326, T327, T328, T329, T330, T332 (G3), T334 (G4), T335, T336, T337, T338, T339, T340, T341, T343, T344, T355.	32 trees + 2 tree groups = 48 trees
Crown-raising	T302, T303, T305, T307, T309, T317, T318, T320, T322, T323, T324, T326, T327, T328, T356.	15 trees
Bi-annual monitoring	T330, T341, T342, T344.	4 trees
Reassessment post-construction	T355.	1 tree
Crown-cleaning	T303, T307, T309, T317, T318, T320, T322, T323, T324, T326, T327, T328, T336, T339.	14 trees
Epicormic growth removal	T307, T309, T317, T318, T320, T322, T323, T324, T326, T327, T328, T329.	12 trees

VII. All tree work must comply with British Standard BS 3998: 2010 Tree Work – Recommendations (BSI, 2010), and be carried out by a qualified and insured arborist. Pruning should not negatively affect the health or amenity of the tree. Climbing spikes should only be used in emergencies when inspecting or pruning live trees.

VIII. A post-construction survey is recommended to assess tree health and identify any immediate risks. A follow-up survey should be conducted three years later to evaluate the long-term impact of construction. A Certificate of Completion must be signed off by the Project Arborist after these surveys.

© Heritage Tree Care Ltd. 2024

4.3 Root Protection Areas

I. There are two types of zones that need to be considered when undertaking an arboricultural impact assessment:
   i. **Root Protection Area:** The RPA is the optimal combination of crown and root area that requires protection during the construction process so that the tree can remain viable. The RPA is calculated by measuring the diameter at breast height (DBH) and multiplying it by twelve (12); with DBH being nominally measured at 4.5ft from ground level. The resulting value is applied as a radial measurement from the centre of the trunk to delineate the RPA.
   ii. **Structural Root Zone (SRZ):** The SRZ is the area of the root system used for stability, mechanical support, and anchorage of the tree.

II. Encroaching into the Structural Root Zone (SRZ) of a tree during construction is prohibited, as it can damage the tree's root system, compromising its stability, nutrient uptake, and overall health. Such disturbances can lead to tree decline, increased susceptibility to disease, and a heightened risk of instability, which may pose safety concerns. Furthermore, damaging the SRZ can negatively impact surrounding vegetation and threaten the tree's long-term viability.

III. Encroachment within the RPA is acceptable, providing that the arborist can demonstrate that the tree will remain viable. There are three (3) levels of encroachment:
   i. **Nil encroachment** (0%): No encroachment within the TPZ.
   ii. **Minor encroachment** (<10%): The encroachment is less than 10% of the TPZ.
   iii. **Major encroachment** (>10%): The encroachment is greater than 10% of the TPZ.

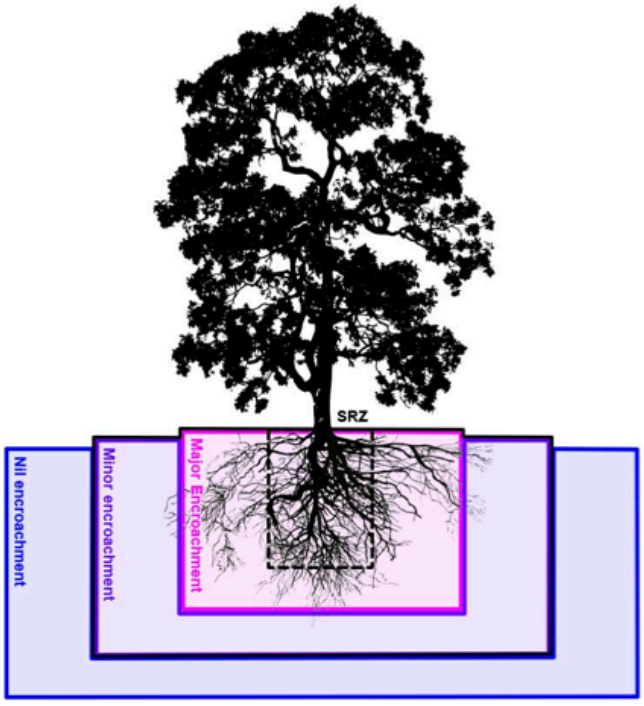


Fig.8 Diagram showing the 3 levels of encroachment. Encroachment into the RPA is permissible within reason. Encroachment within the SRZ is prohibited.

© Heritage Tree Care Ltd. 2024

4.4 Mitigating Encroachment Impact

I. Any encroachment within the Root Protection Area (RPA) must be addressed with appropriate mitigation measures to minimise impacts on the affected tree(s).

II. Trees will remain viable if they are of an appropriate age, species, and condition to withstand the disturbance, with a general threshold of no more than 20% impact to the overall RPA (BSI, 2012).The level of mitigation should align with the extent of encroachment and the tree's stress tolerance, ensuring the continued viability of the tree(s). Tree stress tolerance is documented in the Tree Survey Schedule *(Appendix C).*

III. Construction works within or near the RPAs of retained trees require pre-construction mitigation measures to minimise long-term impacts. Compliance with these measures is crucial to prevent cumulative incursions into the RPA.

IV. For detailed guidance on sensitive construction practices and permissible activities near retained trees, refer to *Section 6.0: Tree Protection Recommendations, Section 8.0: Site Specific Arboricultural Method Statement and the Tree Protection Plan (Appendix F).*

V. While development considerations involve multiple factors, the tree-related constraints, both above and below ground, have been incorporated into the site layout design to ensure compliance with BS 5837:2012. Consequently, **no major encroachments into tree RPAs are expected.**

Table.6 Summary of mitigation measures for the three levels of encroachment:

Encroachment	***Mitigation Measure***
Nil Encroachment (0%)	N/A
Minor Encroachment (<10%)	i. The areas lost to this encroachment should be compensated for elsewhere, continuous with the RPA. ii. Detailed Root investigations are not required. iii. Tree Protection must be installed.
Major Encroachment (>10%)	i. The project arborist must confirm the tree(s) will remain viable. ii. Non-destructive root investigation may be required for trees proposed for retention. iii. Relevant factors such as root location and distribution, tree species, condition, site constraints, and design considerations must be taken into account. iv. Any area lost due to encroachment must be compensated for elsewhere, in continuity with the RPA. v. The project arborist must supervise any works within the RPA. vi. Tree protection measures must be implemented.

© Heritage Tree Care Ltd. 2024

4.5 Minor Encroachments into the RPAs of Subject Trees

I. There are three areas on the proposed development Site where **minor encroachments** into the RPA's of the Subject trees occur:

II. **The Western Boundary Line:** Two trees on the Western boundary line will be subjected to minor incursions. One tree, T329 is a mature Sycamore of moderate retention value (Category B), and the other, T330 is an over-mature Ash of High retention value (Category A).

i. The RPA of the over-mature Ash was extensive (12m) given the species' low stress tolerance and the tree's wide DBH (1000mm) showing its over-mature age. To ascertain whether the extensive RPA was necessitated, it was agreed that root excavation would be carried out.

ii. In this process trial holes were dug in four (4) evenly spaced-apart locations, between the edge of the critical root-zone (drip-line) and the edge of the RPA. The trial holes were dug by hand and measured 800mm long by 400mm wide. Within each of these trial holes only small root hairs and small feeder roots were found (<40mm). No large roots were exposed. Consequently it was decided that the RPA of T330 could be drawn back in-line with the drip-line (and by doing so accommodate the plans for the proposed development).

iii. If roots are discovered during construction then they must be treated with care. Minor roots (<40mm diameter) pruned with a sharp sterile handsaw or secateurs. All significant roots (>40mm diameter) are to be recorded, photographed and reported to the project arborist. This is applicable not only to T330 but to *all trees on-Site.*

Table. 7 Detailed summary of RPA encroachments for individual trees to facilitate the Proposed Development

Impact	Category A	Category B	Category C	**Total**
Trees with major incursions in their RPA (>10%)	0	0	0	**0**
Individual trees with minor incursions in their RPA (<10%)	T330	T329, T310, T311, T312, T315, T301, T303, T305.	T302	**10**
Total Number of trees with encroachment into their RPAs	**1**	**8**	**1**	**10**

II. **The South Boundary Line:** The second area of trees that will be impacted by the proposed construction are the trees located centrally on the South boundary line. In this area there are four (4) Category B trees (T310, T311, T312 and T315) of moderate retention value that have minor incursions.

i. The trees numbered T310, T311, T312 and T315 are Lombardy Poplars. Their excurrent form means that their invasive roots extend far out from their narrow drip-line. Lombardy Poplar roots take the path of least resistance, as such it is speculated that the majority of their roots will expand to the North, into the field, rather than to the parking area to the South, or between their neighbouring tree roots to the East or West.

© Heritage Tree Care Ltd. 2024

ii. Excavations must be carried out carefully following best practice guidelines- as root severance is known to cause the trees to dieback (Neville 2002). To try and prevent root damage, careful root pruning should be carried out within the RPA perimeter.

iii. Poplar's require an expansive root-system to provide sufficient anchorage for their high maturing height. These Subject trees are far taller than their surrounding trees and thus are exposed to from all sides to high winds and other extreme weather events. As such, it is recommended that the proposed 10% encroachment into the RPA's of these trees is mitigated by a crown reduction- reducing each Poplar in height by 2-3m. This will reduce the stress and load on the compromised root system.

III. **The South West Corner:** The third area of of Subject trees impacted by the proposed development are in the South West corner. In this area, there are three (3) Category B trees (T301, T303 and T305) and 1 Category C tree (T302) that will be impacted by construction.

IV. This area is a proposed car-parking area, and as such it is speculated that if root-safe construction methods (outlined in the AMS Ref.24001), and appropriate 'Green' ground surface treatments are installed then the risks to the Subject trees could be mitigated. Surface treatment should be installed above existing grade and be of a permeable nature. This will reduce soil compaction and to promote water and air penetration into the sub-soil. If the surfacing is to be load bearing, then it is suggested that a Geogrid/ web or similar is incorporated to ensure the rooting area below does not become compacted.

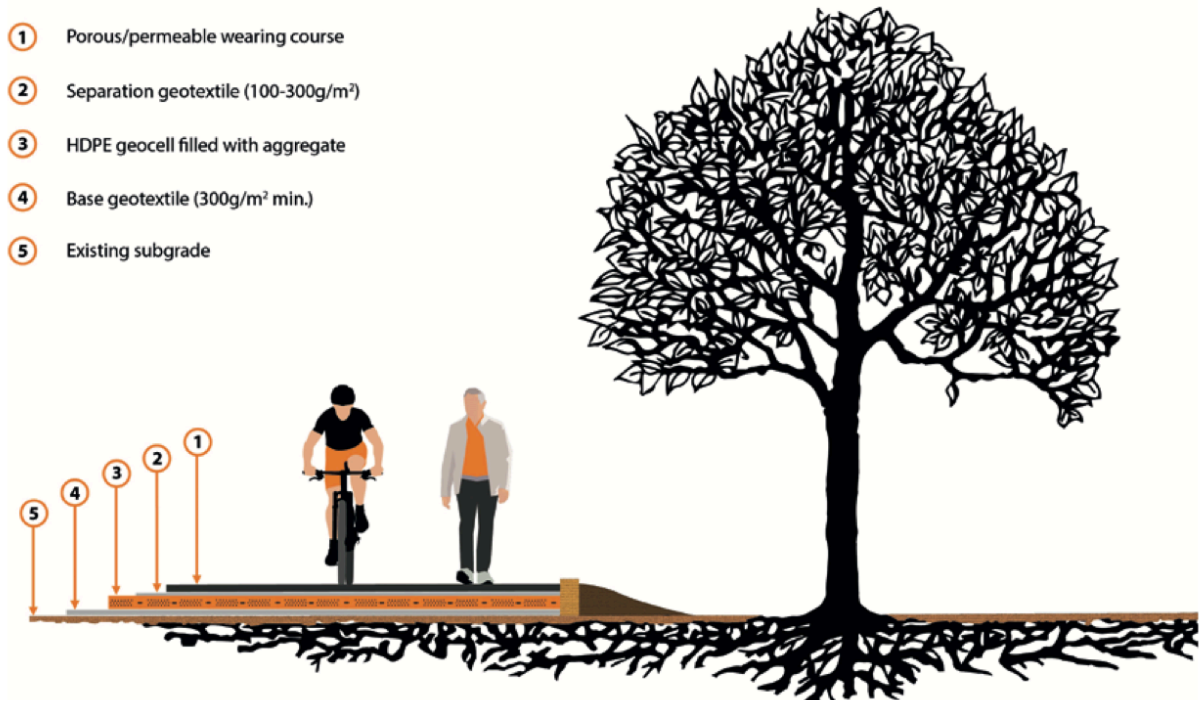


Fig.9 Diagram showing the basic approach to using cellular confinement systems for ground protection near trees (The Arboricultural Association 2020).

5.0 OFFSET TREE PLANTING RECOMMENDATIONS

5.1 Accommodating Tree Loss

I. **Policy Alignment:** The County Development Plan (Objective BE15-6) emphasises retaining and integrating existing trees into developments. Where retention is not feasible, high-quality replacement planting, focused on native species, is essential to meet sustainable development objectives.

II. **Tree Removal Overview:** Thirty (30) trees, comprising 15 individual trees and one tree group, are selected for removal, representing 31% of the total trees on-site *(see Table 3)*. These include Hawthorn (*Crataegus monogyna*), Sycamore (*Acer pseudoplatanus*), Field maple (*Acer campestre*), Lime (*Tilia* species), and Poplar (*Populus nigra var. italica*).

III. **Tree Removal Impact:** The removal of these trees will result in the loss of ecosystem services, including carbon sequestration, air purification, and water regulation *(Cullen, 2007)*.

IV. **Replacement and Ecological Value:** To align with best practices, compensatory planting must consider the guidance set out in the European Arboricultural Standards document *Tree Value Calculation Standard for Arborists – 2024*. This standard emphasises that compensatory planting schemes should:

   i. Restore Lost Value: Address the ecological, aesthetic, and functional value lost due to tree removal, ensuring replacement trees provide equivalent or superior services at maturity.
   ii. Match Carbon and Biomass Potential: Replacement trees should match or exceed the carbon sequestration potential of the removed trees *(London Tree Officers Association 2023)*.
   iii. Compensate for Size and Form: A higher ratio of smaller replacement trees may be required to offset the loss of mature trees, as outlined in the *Tree Value Calculation Standard*.

V. **Offset Planting Scheme:** A comprehensive offset planting plan should replace removed trees at a minimum one-to-one ratio, prioritising species capable of achieving mature heights of at least 10m and providing a broad, spreading canopy. Native species such as oak (*Quercus robur*), birch (*Betula pendula*), and rowan (*Sorbus aucuparia*) are recommended for their ecological contributions and alignment with biodiversity enhancement goals *(Regini 2000)*.

VI. **Genetic Potential and Environmental Considerations:** As recommended by the *Tree Value Calculation Standard for Arborists – 2024*, species must be chosen for their genetic potential to reach a size comparable to or exceeding the removed trees' maturity. This ensures long-term ecological and aesthetic value while safeguarding their suitability to the site's conditions.

© Heritage Tree Care Ltd. 2024

5.2 New Tree Planting

When planting new trees on development sites, it's crucial to follow best practices to ensure the trees establish well and thrive in their new environment. Key considerations include:

I. Proper Site Selection

i. **Soil Type and Drainage:** Assess the soil quality and drainage of the planting site. Trees require well-drained soil that isn't prone to water-logging. Amend soil if needed, using compost or organic matter.

ii. **Space for Growth:** Ensure enough space for the tree to grow to its full size. Consider the tree's mature height and spread to avoid future conflicts with buildings, power lines, or other infrastructure.

iii. **Environmental Conditions:** Choose species that are suited to the local climate, soil type, and exposure. This will improve tree survival rates and minimise the need for extensive care.

II. Correct Planting Technique

i. **Dig a Proper Hole:** The planting hole should be twice the width of the root ball and just as deep. This allows the roots to spread out and establish themselves.

ii. **Root Care:** Remove any burlap or wire mesh from around the root ball, but leave it intact at the bottom if it's made of biodegradable material. Avoid damaging the roots during planting.

iii. **Plant at the Right Depth:** The tree should be planted so that the root flare (where the roots meet the trunk) is level with or slightly above the surrounding soil surface. Planting too deep can suffocate the roots and stunt growth.

III. Watering

i. **Thorough Watering:** Water the tree thoroughly after planting, ensuring the entire root zone is soaked. In the first year, trees may require consistent watering, especially during dry spells, to help establish a healthy root system.

ii. **Watering Method:** Use a soaker hose or drip irrigation to ensure deep, consistent watering that reaches the root zone.

IV. Mulching

i. **Apply Mulch:** Use organic mulch, such as wood chips or bark, around the base of the tree to retain moisture, regulate soil temperature, and suppress weeds. Keep the mulch away from the tree trunk to prevent rot.

ii. **Mulch Depth:** A layer of 2-4 inches is ideal, but ensure it doesn't touch the trunk. Too much mulch around the base can lead to moisture buildup and potential fungal issues.

V. Tree Staking and Support

i. **Proper Staking:** Staking should be used to prevent movement in high winds, but it should be loose enough to allow the tree to move slightly, encouraging stronger root growth. Stake the tree for only one growing season unless necessary.

ii. **Remove Stakes Promptly:** Remove stakes as soon as the tree is stable enough to stand on its own to avoid damaging the trunk.

© Heritage Tree Care Ltd. 2024

VI. Protection from Damage

i. **Avoid Soil Disturbance:** Prevent soil compaction or excessive digging near the root zone, especially during construction phases. Compact soil can hinder root growth and make it difficult for the tree to establish.

ii. **Tree Guards:** Use tree guards or protection fencing around newly planted trees to prevent damage from animals, machinery, or foot traffic.

VII. Ongoing Maintenance

i. **Pruning:** Perform formative pruning to remove dead, damaged, or poorly placed branches, encouraging a strong and well-shaped structure. Do not remove too much of the canopy in the first few years.

ii. **Regular Monitoring:** Check for pests, diseases, and signs of stress. Proper maintenance in the first few years of growth is critical for long-term health.

VIII. Follow relevant planting standards, such as BS8545:2014 *Trees: From Nursery to Establishment in the Landscape* and *BS5837:2012* for tree planting and protection in development projects. These guidelines provide detailed instructions for planting, care, and protection of trees in urban and development settings. Following these best practices ensures that newly planted trees have the best chance for healthy growth, contributing to the long-term success of the development project and enhancing the site's environmental value.

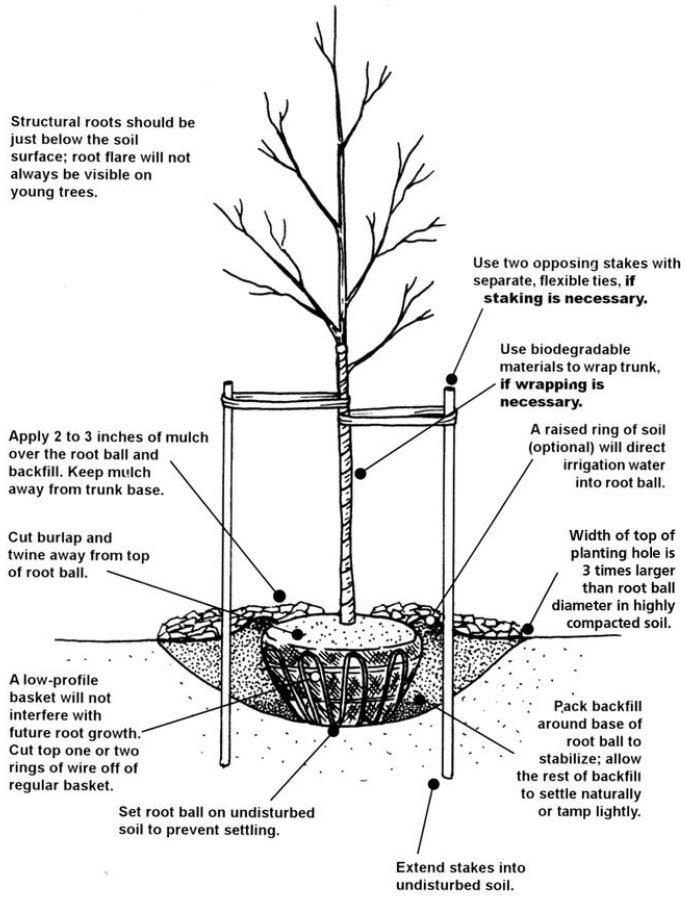


Fig.9 Standardised tree planting diagram showing how to plant a juvenile tree according to best practices

© Heritage Tree Care Ltd. 2024

6.0 TREE PROTECTION RECOMMENDATIONS

I. These Tree Protection Recommendations have been prepared to ensure the successful protection of retained trees during the construction and development works at Barry's Field Site. The purpose of this section is to outline measures to protect trees from damage during demolition, excavation, construction, and post-construction activities in line with BS 5837:2012 Trees in Relation to Design, Demolition, and Construction and other relevant arboricultural standards.

II. The British Standard BS 5837:2012 "*provides recommendations and guidance on tree protection measures during development to ensure trees are not adversely affected by the construction process*" (BSI, 2012). Adopting these standards ensures the continued health of retained trees and their contribution to the ecosystem.

6.1 Protective Fencing Specification

I. The Barry's Field site is surrounded by existing road boundaries and hard surfaces, making external protective fencing unnecessary. However, within Barry's Field, retained trees at risk of damage must be safeguarded in line with BS 5837:2012 requirements. Robust protective fencing should be installed to prevent construction activities from impacting these trees.

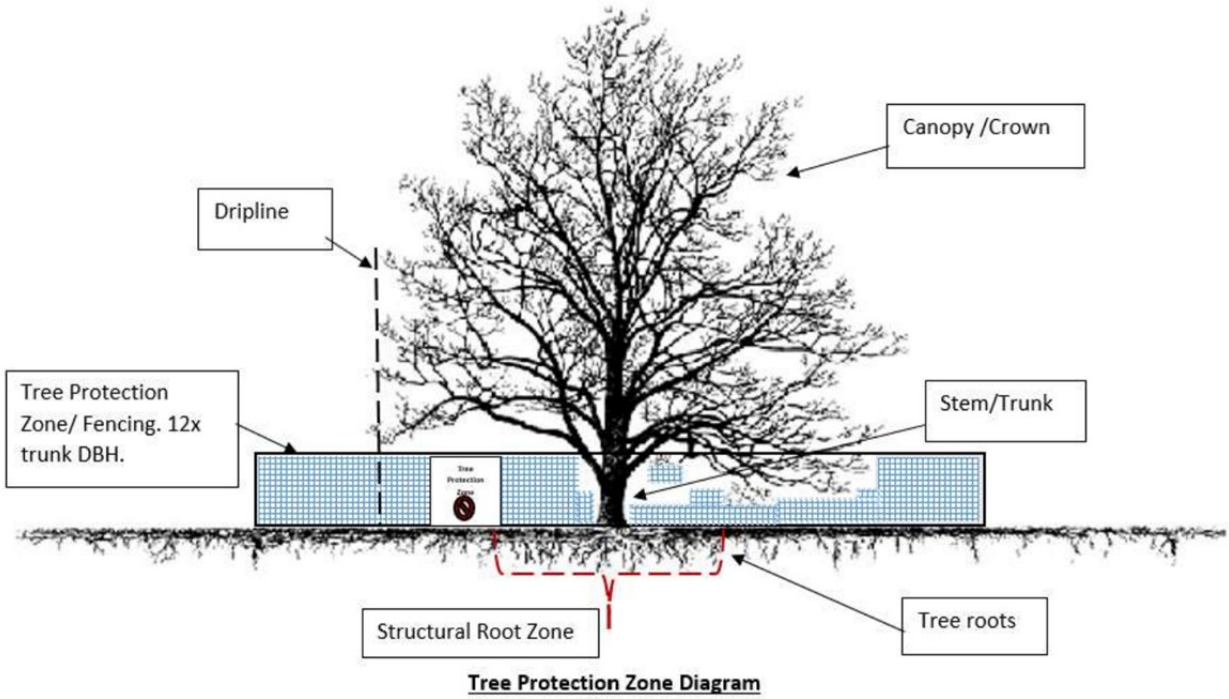


Fig. 10 Tree Protection Zone diagram, showing the location of the Structural Root Zone, the Tree Protection Fencing (placed around the RPA perimeteR) and the drip line of the trees (TrueGrid 2024).

II. The first and most effective line of protection for retained trees is robust and clearly marked fencing, as specified in BS 5837:2012. All trees to be retained on-site must be enclosed by protective fencing, which will act as a physical barrier against construction activities and machinery. According to BS 5837:2012: *"The minimum specification for protective barriers shall be a welded mesh construction to a height of 2.0 metres, supported by a vertical scaffold framework" (BSI, 2012).*

III. The fencing must be positioned at the outer edge of the Root Protection Area (RPA) or the crown spread, whichever is greater. Installation must follow the continuous line guidance in BS 5837:2012, clauses 7.1 and 7.2 (BS Appendix A and drawings 2675/6 & 7). Failure to correctly position barriers may result in enforcement actions by the Planning Authority, including temporary stop notices, requiring stricter barriers and potentially costly remedial measures.

IV. Protective fencing should be constructed with a sturdy framework of vertical and horizontal scaffold poles supporting securely attached chain-link or weld-mesh panels *(see Fig.11).* Plastic construction or snow fencing is discouraged unless it is hung from a heavy wire attached to sturdy posts, as these materials are easily displaced or damaged during construction activities.

V. Specifications for fencing:
   i. Construct fences 5-8 feet high.
   ii. Use 2-inch diameter galvanised iron posts driven at least 2 feet into the ground, spaced no more than 10 feet apart.
   iii. If posts cannot be driven due to structural roots or underground utilities, use alternative methods such as block trays or counterweights.
   iv. Include a 3-foot wide access point for arborists.

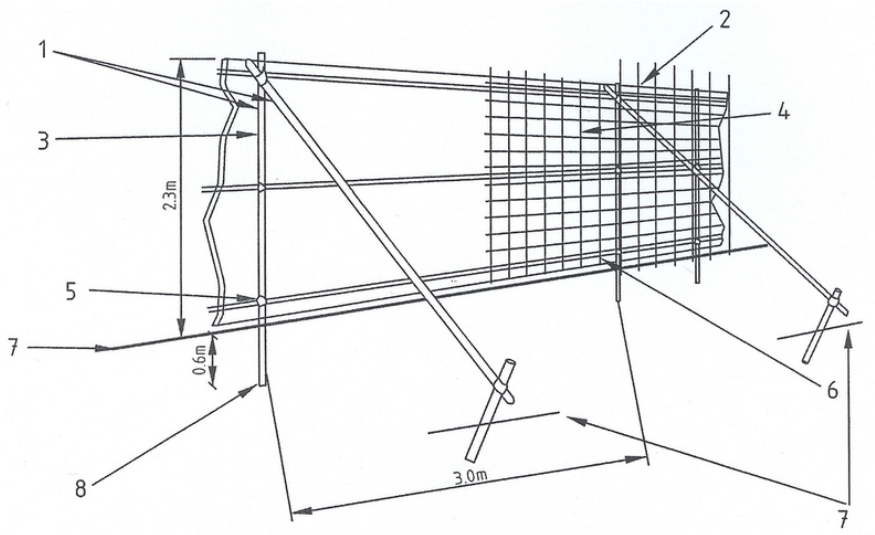


Fig. 11 Diagram showing ideal protective fencing for RPAs (BSI, 2012).

© Heritage Tree Care Ltd. 2024

VI. RPA barriers should be clearly marked with signs indicating the area is protected and access is restricted. These signs must include information in languages commonly spoken on-site for clarity.

VII. All fencing installations must adhere to permitting requirements, and fencing contractors should ensure that no damage, such as ruts, occurs when accessing the site. Tree stems must not be used as billboards for advertising; affixing nails or screws to trees damages their integrity and is not permitted.

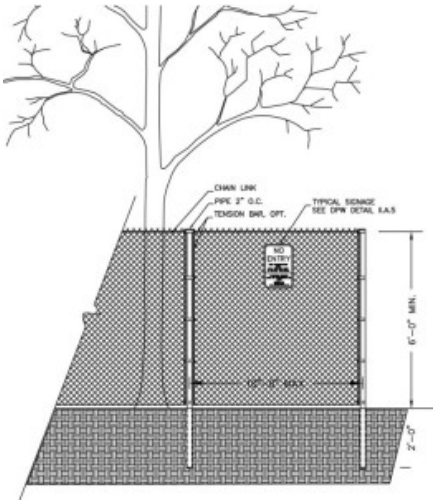


Fig.12 Protective Fencing must be clearly marked as a protected area with access restrictions (ISA, 2024)

6.1.1 Modifications to Protective Fencing

I. The area within the protective fencing, referred to as the Construction Exclusion Zone (CEZ), is sacrosanct and must not be altered or removed without prior approval from the Project Arborist. Should modifications be necessary due to spatial restrictions or other factors, these must be discussed and agreed upon with the Project Arborist before implementation.

II. Any damage to tree protection measures must be reported immediately. Failure to address such damage could compromise tree preservation efforts and lead to enforcement actions.

6.1.2 Protective Fencing Inspection

I. To ensure continued effectiveness, measures should be implemented for protective fencing inspections:
    i. **Initial inspection:** Project Arborist will inspect the fencing after installation and before construction begins.
    ii. **Responsibility:** Construction Manager will oversee fencing condition throughout the project.
    iii. **Regular checks:** Construction Manager and Project Arborist will conduct regular inspections to verify that the fencing is intact and functioning as intended.
    iv. **Repairs:** Any required repairs will be authorised and promptly addressed.

© Heritage Tree Care Ltd. 2024

6.1.3 Temporary Access into the RPAs

I. The architectural plans for the Barry's Field site are designed to preserve subject trees. However, the proposed development's proximity to RPA boundaries necessitates stringent measures to protect trees when temporary access within the RPA is unavoidable.

II. In such cases, temporary additional protection for trunks, branches, and soil will be required (see Section 6.2). All activities must remain at least **1.5 meters (5 feet)** from the trunk, even with protective measures. If access occurs under the tree's drip line, the lowest branch height must be considered to avoid equipment contact. Facilitation pruning should be undertaken prior to works if necessary.

III. Where temporary access routes require branch removal, this should be avoided whenever possible. Tying branches out of the way is preferable to cutting. Any branch removal or pruning must be performed under the supervision of the Project Arborist and conform to established arboricultural best practices.

IV. For works within the Construction Exclusion Zone (CEZ), the following measures apply:

   i. **Ground protection**: Use steel plates or rumble boards strapped over mulch or aggregate.

   ii. **Supervision**: The Project Arborist must be present to monitor all activities within the CEZ.

   iii. **Equipment clearance**: Ensure machinery, including exhaust systems, does not come into contact with branches or stems.

V. By adhering to these measures, the health and structural stability of retained trees can be safeguarded throughout the construction process.

6.2 Trunk Protection & Limb Wrapping

I. In instances where tree stems or limbs are at risk from machinery or construction activities, they should be protected using cushioning materials such as hessian or carpet felt. The British Standard emphasises the need for protection of both the trunks and branches: *"Where protection is required, it should be provided by the use of chestnut paling or similar materials, and should be securely fixed in place" (BSI, 2012).*

   i. **Trunk protection:** Double layers of chestnut paling fencing or equivalent hardwood battens, secured with wire (not directly pinned to the tree).

   ii. **Limb protection:** Mesh tubes filled with straw or straw wattles wrapped around limbs.

   iii. These protective measures should be removed once work is completed to avoid girdling or damage to the tree.

6.3 Ground Protection Measures

I. To avoid soil compaction within the RPAs, a range of ground protection strategies should be implemented. According to BS 5837:2012, **6.2.3.2** specifies: *"New temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site."* Additionally, it states, *"Where access within the RPA is necessary, ground protection shall be provided to prevent damage to the soil structure"* (BSI, 2012).

© Heritage Tree Care Ltd. 2024

II. Ground protection materials include *(see Section 5.2.5 for more information):*
    i. Logging mats or steel road plates (minimum 0.75" thickness) placed over a 4" layer of wood-chip mulch.
    ii. Proprietary HDPE boards with compression-resistant layers, which are environmentally preferable.
    iii. Gravel layers (4-6") should not be applied directly to the soil surface, as this will mix with topsoil and harm the root systems.

6.4 Machinery and Equipment Use

I. To minimise disturbance to tree roots and preserve their health, all machinery and equipment must adhere to specific protection protocols based on their weight. *This includes machinery used by arborists, when pruning trees prior to construction (wood-chippers, mini-loaders etc.)* These measures are critical in ensuring that the underlying soil structure remains undisturbed, safeguarding tree roots from damage.

    ii. **Soil Compaction**: Heavy machinery should avoid compacting soil, especially in wet conditions, as this can limit root function.
    iii. **Temporary Ground Protection**: Before machinery operates within the Root Protection Area (RPA), protective ground measures must be in place to avoid direct contact with tree roots, ensuring the soil's structure remains intact.

II. BS 5837:2012 Guidelines:

6.2.3.3: *"New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil."*
6.2.3.5: *"The objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired."*

III. These guidelines emphasise the need for temporary ground protection measures to prevent soil compaction. Soil compaction can significantly damage tree roots, disrupting their function, particularly in wet conditions when compaction is more likely to occur.

IV. By following weight protocols, the movement of machinery across sensitive areas can be controlled, reducing the risk of compaction and ensuring that the tree roots remain undisturbed throughout the construction process:

    i. **Up to 10t**: Double thickness of 13mm HDPE boards with a 150mm layer of wood-chip.
    ii. **10t - 20t**: Double thickness of 23mm HDPE boards with the same wood-chip layer.
    iii. **Above 20t**: Ground protection must meet specific engineering specifications, developed in consultation with arboricultural experts.

V. The Project Arborist or Site Manager must supervise all machinery operations within 5m of retained trees, especially when using long-reach machinery or heavy equipment that may affect root systems.

VI. Following these guidelines helps to maintain tree health and prevents root damage during construction activities.

© Heritage Tree Care Ltd. 2024

6.5 Excavation and Trenching

I. In the event that excavation or trenching is required within the RPAs of retained trees, all works must adhere to BS 5837:2012 and National Joint Utilities Group (NJUG) guidelines. This includes:

   i. **Root protection:** Excavation must avoid damaging tree roots. Any excavation near roots should be conducted using sensitive methods such as manual excavation, hydro-vac, or air spade techniques.
   ii. **Low pressure excavation:** This should be prioritised to minimise damage to roots and soil compaction.
   iii. **Trenchless techniques:** Where possible, trenchless methods should be employed to reduce disturbance to the tree root systems.
   iv. **Root barriers:** For invasive species such as Alder and Lombardy Poplar, root barriers must be installed to prevent root encroachment into critical infrastructure.

II. The British Standard provides specific guidelines for excavation:
"Where excavation is required in the RPA, the use of low-pressure methods or air spades should be considered to minimise root damage" (BSI, 2012).

6.5.1 General Principles for the Management of Tree Roots

When excavation is agreed to take place within the Root Protection Area (RPA) using hand tools or compressed air, the following principles must apply:

- Individual or small groups of roots less than 25 mm in diameter should be preserved where possible. If necessary, they may be severed using sharp tools, such as secateurs or pruning saws, with a clean cut (preferably 100 mm back from the excavation face to allow for future regrowth) if they obstruct the work.
- If roots larger than 25 mm in diameter or significant groups of smaller roots are encountered, the advice of the Project Arboriculturist must be sought to determine the appropriate action, in consultation with the Planning Authority (PA) where necessary.
- Roots must be exposed for the shortest time possible. During any period of exposure, roots (including excavation faces within the RPA) must be kept covered with dampened hessian sacking, which may need to be re-wetted periodically, to prevent drying out or exposure to light. When backfilling, the original soil material should be used where possible, and it must not be excessively compacted.

6.6 Special Considerations for High Conservation Value Trees

I. If any trees on the site are identified as having high conservation or ecological value (for example the mature Ash T330 on the West boundary line), they should receive additional protection measures. This could include:

   i. **Buffer zones:** Expanding the buffer zone around these trees to minimise potential risks.
   ii. **Additional monitoring:** Increased frequency of monitoring to assess the long-term impact of construction activities.
   iii. **Air-spade excavation:** In some cases, the use of an air-spade may be required to expose roots safely.

© Heritage Tree Care Ltd. 2024

6.7 Roles and Responsibilities

I. Clear roles and responsibilities must be outlined for all personnel involved:
   i. **Project Arborist:** Responsible for overseeing tree protection measures and providing guidance on tree care.
   ii. **Construction Manager:** Ensures compliance with the TPP and coordinates with the Project Arborist.
   iii. **Site Supervisor:** Implements and monitors tree protection on-site, ensuring that workers adhere to the protection protocols.

II. To ensure that all personnel understand their responsibilities and the importance of tree protection:
   i. **Induction:** All workers should be trained on tree protection measures during a site induction.
   ii. **Signage:** Visible signage should be posted on-site to remind workers of the importance of tree protection and the boundaries of the RPAs.
   iii. **Communication protocol:** Establish a clear communication protocol for reporting any issues or damage to trees, ensuring quick and effective responses.

By following these guidelines and adopting best practices, the trees at Barry's Field will be properly protected during construction, ensuring their long-term health and contribution to the site's ecology. These recommendations, in line with BS 5837:2012and NJUG guidelines, will provide the necessary steps to safeguard these valuable trees from damage during the construction process.

© Heritage Tree Care Ltd. 2024

7.0 SITE SPECIFIC ARBORICULTURAL METHOD STATEMENT

7.1 Arboricultural Method Statement Overview

I. This Arboricultural Method Statement outlines the procedures for protecting trees and conducting operations near trees to be retained on the Barry's Field site. It also addresses how site activities will be managed to prevent accidental damage to these trees.

II. **Adherence to the agreed methods is essential** to avoid breaching planning conditions, damaging important trees- those most notably being the Category A trees (T330 & T324), and the 6 Poplars on the South boundary (T310-315). Damage to the retained trees on-site may trigger enforcement action by the Planning Authority (PA). Any changes to the content or application of this Method Statement require prior written approval from the PA.

III. Throughout the design process, concerns have been raised regarding the proximity of the proposed buildings to the Poplar trees (T310-315), particularly due to their extensive, shallow, and invasive root systems (see Section 3.2 of the AIA for further details). Damage to the roots of these trees could compromise their stability, making them more vulnerable to wind-throw, especially given their significant height (approximately 23 meters). While the hazardous effects of root damage may not be immediately apparent after construction, they could take years to manifest, potentially leading to severe consequences. In response to these concerns, the architectural plans for Barry's Field have been carefully developed to minimize encroachment into the Root Protection Areas (RPAs) of all trees on-site, limiting it to less than 10%. This approach aims to protect and promote the long-term health and stability of the trees on the site. **To mitigate any future risks, it is critical that all personnel on-site strictly adhere to the tree protection measures outlined.**

IV. Revisions to this document may be necessary as more detailed or updated information becomes available. The final version must be used alongside the approved Tree Protection Plan, and both documents should remain accessible on-site throughout the development process. All site personnel must familiarise themselves with the contents of this Method Statement and understand its implications for their work.

V. Once planning permission is granted, aspects such as layout, services, materials, tree protection measures, and the sequence of works may need adjustment. However, no changes should be implemented without the prior written consent of the PA. The Method Statement must also be reviewed before the start of any site activities.

© Heritage Tree Care Ltd. 2024

7.2 Order of Operations - A Time-line for Tree Protection

1. **Pre-commencement site meeting.**
2. **Preliminary tree works** (all pre-construction pruning works for the Subject trees in Barry's Field are documented in detail in the Tree Survey schedule in Appendix C).
3. **Site Organisation, Storage, and Mixing of Materials**
4. **Site briefing for all personnel**
5. **Installation of protective fencing** - installation to be carried out via accurate adherence to the measurements annotated on the Tree Protection Plan.
6. **Installation of ground protection as required**
7. **Construction activities -** Movement of Vehicles, People, and Machinery
8. Further **adjustments to protective fencing** and ground protection as required.
9. **Installation of new hard surfaces and landscaping features**.
10. **Site inspection and sign-off** upon completion of major development works.
11. **Removal of protective measures**.
12. **Soft landscaping within the RPAs** of retained trees.
13. **Post Construction Monitoring and Aftercare**

1. Pre-Commencement Site Meeting

Before any work begins on-site, a meeting must be held involving the Site Manager, Project Arboriculturist, and a representative from the Planning Authority. This meeting will provide an opportunity to review the work schedule, tree protection measures, and the designated areas for storage and site organisation. Any necessary amendments to the Method Statement will be discussed, formally updated, and approved during this process.

2. Preliminary Tree Works

All tree works specified in the Tree Survey Schedule (Appendix C) and described in Section 4.2 of the Arboricultural Impact Assessment, must adhere to the principles set out in BS3998: 2010 Tree Work – Recommendations and be conducted carefully to prevent damage to any trees designated for retention. Contractors must avoid creating ruts on unmade ground.

The trees on the Barry's Filed Site are well established and the most-part mature. Their scope for rapid growth between the planning and construction phases is limited, however depending on how long the process takes (if years per se), then a walkover survey may be required by the site team and the Project Arboriculturist before work begins in any area. This survey will assess whether additional tree works are necessary to support the development.

All approved tree works must be performed by suitably qualified and insured contractors and completed before protective fencing is erected or any site activities commence. Any additional tree work must be pre-approved by the Planning Authority (PA). If unforeseen tree works become necessary during the development, the Project Arboriculturist must be consulted for guidance. To minimise risks, tree works should occur outside the typical nesting bird season (March to September). If work during this period is unavoidable, each tree must be inspected for nesting birds by a qualified individual prior to commencing.

© Heritage Tree Care Ltd. 2024

3. Site Organisation, Storage, and Mixing of Materials

The final locations for temporary site organisation and compound areas will be agreed upon at the pre-commencement site meeting with the Project Arboriculturist and confirmed in writing.

A single site compound location is proposed, and when agreed upon will be shown in the Tree Protection Plan. Any areas within or surrounding compounds that are subject to constraints due to retained trees will be fenced off as an exclusion zone from the outset.

All storage, material mixing, and refuelling activities must take place at least 5 meters away from the RPA of any retained trees. To mitigate runoff risks, appropriate measures such as impermeable polythene sheeting and sandbags must be installed to prevent accidental runoff from reaching tree root zones.

No alterations to ground levels are allowed within the RPA of retained trees. Additionally, no fires shall be set within an RPA or within 5 meters of any part of a retained tree. No signs, cables, or other items should be attached to any part of a retained tree.

4. Site Briefing

It is fundamental that the Site Manager informs all personnel about the restrictions associated with retained trees on-site and the protective measures in place. This includes providing on-site access to the Arboricultural Method Statement and Tree Protection Plan (TPP).

To reinforce understanding, it is recommended that the Project Arboriculturist participates in the site briefing to clearly communicate all constraints and tree protection requirements.

5. Protective Fencing

To safeguard retained trees at risk of damage, **BS 5837:2012** requires the installation of robust protective fencing ideally positioned at the outer edge of the Root Protection Area (RPA). *See Section 6.1 For a default specifications for protective fencing.*

Given the close proximity of the development to the Subject trees**, the protective fencing will have to be placed inside the RPA's of eighteen (18) subject trees.** A width of 1.5-2m extending out from the boundary wall of the development to accommodate the scaffolding will have to intrude into the RPAs *(see Fig.13)*. This intrusion is most notable on the South Boundary Line trees (numbered in a row T309-327), and the Ash tree on Western Boundary (T330). To mitigate the risk foot traffic/ access within the RPA *(see Sections 4.5, 6.3 and 6.4 for more details)* sufficient ground protection measures have to be put in place prior to any works commencing.

All site operations that are not absolutely vital to be carried out within the Construction Exclusion Zone (CEZ) must be confined to areas outside the tree protection fencing. Protective measures will be implemented as outlined in the Tree Protection Plan.The area within the fencing, along with any additional tree protection measures, is strictly off-limits and must not be altered or removed without prior approval from the Project Arboriculturist.

© Heritage Tree Care Ltd. 2024

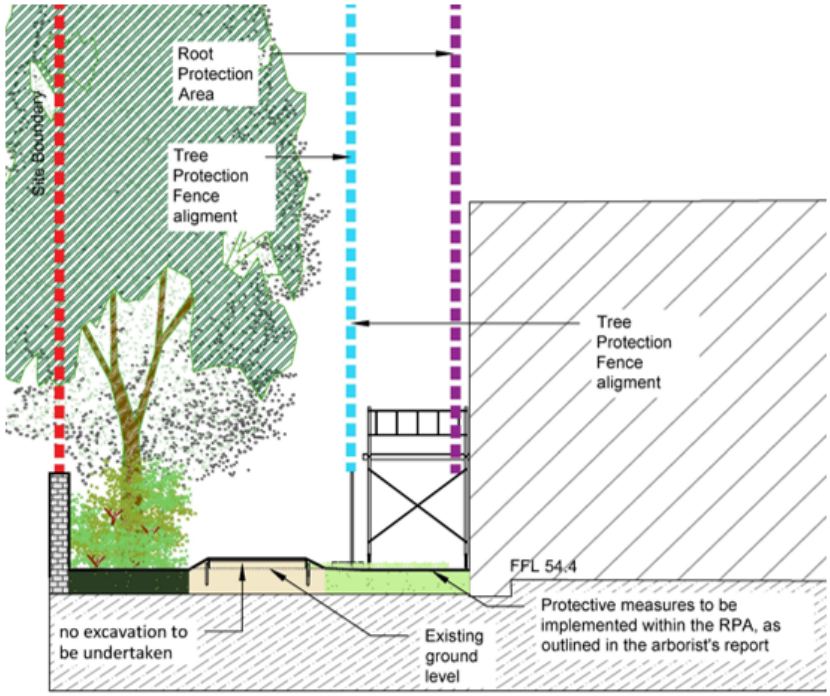


Fig.13 Proposed ground protection and protective fencing placement inside the RPA's of 18 Subject Trees

6. Ground Protection

There is no existing hard surfacing within the Root Protection Area (RPA) of retained trees. So for unsurfaced ground within RPAs where construction access is unavoidable, appropriate ground protection measures must be installed to prevent soil compaction. These measures should also be applied in areas designated for new tree planting *(see Sections 6.1 and 6.3 for more details about ground protection specifications).*

In line with **Section 6.2.3.3 of BS5837:2012**, the following ground protection measures are recommended:

- For pedestrian access only: a single layer of scaffold boards placed on a compressible layer of 100mm wood-chip over a geo-textile separation layer.
- For pedestrian-operated machinery up to two tonnes: a proprietary ground protection system (e.g., Ground Guards, Eki mats, Eve Trakway, or equivalent) installed over at least 150mm of wood-chip or sharp sand.
- For heavier loads: ground protection must meet an engineering specification, developed in consultation with an arboricultural expert.

As a general guideline, root development is significantly impacted when soil bulk density exceeds 1.4g/cm^3 for clay soils or 1.75g/cm^3 for sandy soils.

7. Construction Activities - Movement of Vehicles, People, and Machinery

Given the spatial limitations on-site, construction activities, especially the use of machinery, must be carefully coordinated to prevent damage to retained trees. A banks-man must be present during any operations occurring within 5 meters of a retained tree to ensure safe movement. Special attention must be given when using long-reach machinery with jibs, booms, or counterweights.

© Heritage Tree Care Ltd. 2024

If there is a risk of impact damage to trees from machinery that cannot be mitigated by fencing or careful working methods, access facilitation pruning may be required. This must be discussed and agreed upon in advance with the Project Arboriculturist, the local authority officer, and the tree owner, where applicable.

8. Site Monitoring & Toolbox Talks

A robust system for site monitoring must be established to guide contractors, ensure adherence to tree protection measures, and demonstrate compliance with planning conditions to the Planning Authority (PA). This system will include site visits by the Project Arboriculturist to verify the proper installation of protective fencing, oversee sensitive works within the Root Protection Area (RPA) of retained trees, and approve the site upon completion of works before the removal of fencing.

The frequency of site monitoring will be agreed upon in writing with the Local Authority Officer prior to the commencement of works. It is recommended that monitoring occurs at least every four weeks, with additional checks conducted during particularly sensitive operations near retained trees. An example of a site monitoring form can be found in Appendix E.

A toolbox talk should be conducted for site workers to emphasise the importance of operating machinery safely and working within designated corridors to prevent accidents and potential damage to trees not protected by tree protection measures. The Tree Protection Plan (TPP) should be used during the briefing to clearly explain the steps required to safeguard retained trees. Copies of both the TPP and this Method Statement must be kept in the site office and remain accessible at all times.

9. Adjustments to Protective Fencing

The placement of protective fencing and ground protection materials will need to be adjusted once the main construction works are complete. This adjustment is necessary to accommodate hardscaping and additional groundworks on-site. All adjustments must be carried out under the supervision of the Project Arborist.

10. Installation of New Hard Surfacing and Landscape Features

For very small areas of new hard surfacing at the outer edges of an RPA, hand excavation may be conducted under the supervision of the Project Arboriculturist. Roots greater than 25mm in diameter must not be severed without the Project Arboriculturist's consent. If significant roots are encountered, the methodology outlined below must be followed to prevent root damage.

For larger areas of new surfacing, such as footways within RPAs, 'no-dig' construction methods will be employed. The surfacing will be engineered to withstand the heaviest anticipated loads, including construction traffic, while ensuring permeability for air and water. A minimum clearance of 500mm will be maintained from the base of any retained tree, with any gaps filled using granular material as necessary.

Three-Dimensional Load-Bearing Raft Construction

- **Cellular Confinement System:** A proprietary 3D cellular confinement system (e.g., Cellweb or equivalent) will be used to enable installation without excavation.
- **Timing:** Work should preferably occur during dry conditions from May to October when the ground is less prone to compaction.

© Heritage Tree Care Ltd. 2024

- **Vegetation Clearance:** Existing ground vegetation will be treated with an approved herbicide (e.g., glyphosate) 2-3 weeks before construction. Dead vegetation may be removed with a hand scrape up to 50mm deep. Arisings must be removed to avoid anaerobic soil conditions.
- **Hollow Filling:** Hollows will be filled with inert granular material such as sharp sand or washed gravel. Builder's sand must not be used due to its salt content, which is harmful to tree roots.
- **Object Removal:** Rocks, stumps, or other protrusions must be removed manually. Stumps must be ground below ground level.
- **Geo-textile Membrane:** A robust geo-textile membrane must be laid across the area, with overlaps of 300mm, stapled together. This layer must resist punctures from angular stone and filter pollutants.

10. Site Inspection and Sign-Off

After construction is complete, a final site inspection will be conducted by the Project Arboriculturist to assess the condition of retained trees and ensure compliance with the Arboricultural Method Statement. This inspection will confirm that all protective measures were adhered to and that retained trees have not suffered damage during construction. A formal sign-off will then be provided, documenting the findings and identifying any required remedial actions to mitigate risks and support the long-term health of the trees. This process ensures accountability and satisfies planning conditions or agreements with local authorities.

11. Removal of Protective Measures

Protective fencing and ground protection must remain in place until all construction activities are completed and their removal is approved by the Project Arborist.

Once the development is finished, all drainage and service installations are completed, and the primary site machinery has been cleared, the temporary protective fencing will be carefully dismantled. This process must be carried out with caution and under supervision to ensure that heavy machinery is not used.

Root protection materials will likely need to be removed at the end of the construction phase. Care must be taken to avoid scraping the soil and roots below during the removal operation.

Wood-chip mulches will break down and be beneficially incorporated into the soil if left on the soil surface. Mulches are an effective way to conserve soil moisture, moderate soil temperatures, promote soil organisms, and protect the soil from compaction. Coarse mulch, such as fresh or partially composted arborist wood chips, should be maintained 2-4" (5-10cm_ deep within the RPA, to protect roots and soil. Mulch should never be placed against the trunk of a tree.

12. Soft-landscaping within the RPAs

Soft landscaping within the Root Protection Area (RPA) of retained trees must be carried out with care to avoid root damage. Works should be limited to shallow hand cultivation (no deeper than 100mm) using non-mechanical tools. Existing soil levels must not be altered, and no heavy machinery, compacting equipment, or stockpiling of materials is permitted within the RPA. Mulching with organic matter is encouraged to improve soil health, but care must be taken to avoid piling mulch against tree trunks. Any planting should use small-sized plants or container-grown stock to minimise disturbance, and irrigation should be provided as necessary to support establishment.

© Heritage Tree Care Ltd. 2024

13. Post Construction Monitoring and Aftercare

After the completion of construction activities, it is essential to continue monitoring tree health and provide aftercare. The following practices should be observed:

- **Post-construction monitoring:** Continue site visits to assess the long-term health of retained trees, focusing on symptoms of damage such as leaf wilting, premature leaf drop, and pests. Monitoring should occur at least every four weeks, or as required for sensitive operations.
- **Aftercare:** Trees should receive appropriate care, including watering, mulching, and pruning, to help them recover from construction stress. An aftercare plan should be implemented to ensure the trees' long-term viability.
- **Emergency care:** In case of damage, the Project Arborist should be contacted immediately to provide emergency care, such as temporary stabilisation or soil de-compaction.

© Heritage Tree Care Ltd. 2024

9.0 REFERENCES

- (BSI) British Standards Institution (2010) *BS 3998: 2010 Tree Work – Recommendations.* <http://www.treesource.co.uk/bs-3998%3A-2010--tree-work---recommendations~439>
- (BSI) British Standards Institution (2012) *BS5837: 2012: Trees in Relation to Design, Demolition and Construction* <https://www.nhbs.com/british-standard-bs-58372012-trees-in-relation-to-design-demolition-and-construction-recommendations-book>
- (BSI) British Standards Institution (2014) *BS8545: 2014 Trees: from the nursery to independence in the landscape - Recommendations* <https://www.nhbs.com/search?q=trees+nursery&qtview=212238>
- Byrnes, E (2007) *A History of Woodland Management in Ireland: An Overview. Native Woodland Scheme Information,* Note No. 2. Woodlands of Ireland, Dublin.
- (CCC) Cork County Council (2015) *Cork County Development Plan 2022-2028* <https://www.corkcoco.ie/en/resident/planning-and-development/cork-county-development-plan-2022-2028>
- Cross, JR (2008) *Native Woodland Scheme Classification System.* Native Woodland Scheme Manual (Appendix 7)
- Cullen, S. (2007). Putting a value on trees - CTLA guidance and methods. *Arboricultural Journal*, *30*, 21–43.
- The Department of Housing Planning and Local Government (2018), *National Planning Framework for Project Ireland 2040* <https://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf>
- Department of Housing, Local Government and Heritage (2010) *Ancient and Long-established Woodland Inventory 2010 <https://data.gov.ie/dataset/ancient-and-long-established-woodland-inventory-2010>*
- European Arboricultural Standards (2024) *Tree Value Calculation Standard,* The Arboricultural Association, UK.
- (EC) European Communities (1997) *National Habitats Regulations <https://www.irishstatutebook.ie/eli/1997/si/94/made/en/print>*
- European Commission (1992) *Habitats Directive <https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm>*
- (eISB) Electronic Irish Statute Book (2000) *Planning and Development Acts 2000-2020* <https://www.irishstatutebook.ie/eli/2000/act/30/enacted/en/html>
- Fay, Neville. (2002). Environmental Arboriculture, Tree Ecology & Veteran Tree Management. Arboricultural Journal. 26. 10.1080/03071375.2002.9747336.
- (ISB) Irish Statute Book (1976) *Wildlife Act* <https://www.irishstatutebook.ie/eli/1976/act/39/enacted/en/print>
- International Association for Plant Taxonomy (2018) *International Code of Botanical Nomenclature For Algae, Fungi & Plants* <https://www.iapt-taxon.org/nomen/main.php>
- Lilly, SJ (2010) *Arborists' Certification Study Guide*, (ISA) International Society of Arboriculture, Premier Print Group, Illinois.
- London Tree Officers Association. (nd). Capital Asset Value for Amenity Trees (CAVAT). Retrieved from https://www.ltoa.org.uk/documents-1/capital-asset-value-for-amenity- trees-cavat. [accessed 29 October 2023]
- Malone, T, Liang, J & Packee, N (2009) *Cooperative Alaska Forest Inventory <https://www.researchgate.net/figure/Methods-for-measuring-diameter-at-breast-height-DBH-when-a-the-tree-is-on-level_fig6_237253016>*
- Matteck, C (2015) *The Body Language of Trees,* KS Druck GmBH, Kronau, Germany.
- National Joint Utilities Group (2007) *NJUG Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees, Vol.4* <http://streetworks.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf>
- (NHBC) National House Building Council Standards (2021) *Chapter 4.2: Building Near Trees*
- (NTSG) National Tree Safety Group (2011) *Common sense risk management of trees. Forestry Commission. Dublin City Development Plan 2016-2022 Written Statement (2016). Dublin City Council.*
- Perrin, P, Martin, J, Barron, S, O'Neill, F, McNutt, K & Delaney, A (2008) *National Survey of Native Woodlands, 2003-2008. Unpublished report to the National Parks and Wildlife Service, Dublin.*
- Perrin, P & Daly, O (2010) *A provisional inventory of ancient and long established woodland in Ireland,* NPWS <https://www.npws.ie/sites/default/files/publications/pdf/IWM46.pdf>
- Pryor, SN, Curtis, TA & Peterken, GF (2002) *Restoring Plantations on Ancient Woodland Sites: Conversion to native woodland or conservation of ancient woodland communities?* The Woodland Trust, Lincolnshire.

© Heritage Tree Care Ltd. 2024

- Regini, K. (2000). Guidelines for ecological evaluation and impact assessment. In Practice, 29, 1-7.
- Rushforth, K (1999) *Trees of Britain and Europe,* Harper Collins, London.
- Smiley, T, Matheny, N & Lilly, S (2017) Best Management Practices- Tree Risk Assessment, 2nd Ed. <https://www.isa-arbor.com/store/product/4484/>
- (SA) Standards Australia (2009) Protection of Trees on Development Sites AS 4970-2009
- (TCOI) Tree Council of Ireland (2011) *Heritage Trees by County,* <https://www.treeregister.ie/aacounty.htm>
- (UN) United Nations Department of Economic and Social Affairs (2022) *Sustainable transport*, The Sustainable Development Goals <https://sdgs.un.org/topics/sustainable-transport>

© Heritage Tree Care Ltd. 2024

HERITAGE
TREE CARE LTD.



APPENDICES

Appendix A: Arboricultural Reporting Assumptions and Limiting Concerns
Appendix B: Explanation of Tree Assessment Terms
Appendix C: BS5837 Tree Survey Schedule
Appendix D: Tree Constraints Plan

© Heritage Tree Care Ltd. 2024
Email: heritagetreesireland@gmail.com www.heritagetreesireland.com Tel: +353 (0) 832060088

HERITAGE
TREE CARE LTD.

APPENDIX A

Arboricultural Reporting Assumptions and Limiting Concerns

I. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership of any property are assumed to be good. No responsibility is assumed for matters legal in character.

II. Inspections is limited to visual examination of accessible components, without dissection, excavation or probing. There is no warranty or guarantee expressed or implied that the problems or deficiencies of the plants or property in question, may not arise in the future.

III. It is assumed that any property/ project is not in violation of any applicable codes, ordinances, statutes or other government regulations.

IV. Information contained in the report covers only those items that were examined and reflect the condition of those items at the time of inspection.

V. Care has been taken to obtain all information from reliable sources. All data has been verified in so far as possible, however the consultant can neither guarantee nor be responsible for the accuracy of the information provided by others.

VI. Sketches, diagrams and photographs in this report, are intended as visual aids, and and are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise.

VII. The consultant shall not be required to give testimony or attend court by reason of this report, unless subsequent contractual arrangements are made; including payment of an additional fee for such services.

VIII. The report and any values expressed herein represent the opinion of the consultant and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

IX. Loss or alteration of any part of this report invalidates the entire report.

X. Neither all nor any part of the contents of this report, nor any copy thereof, shall be used for any purpose by anyone but the person to whom it is addressed, without the written consent of the consultant. Nor shall it be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the written consent of the consultant.

XI. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone but the person to whom it is addressed, without the prior written consent of the consultant.

© Heritage Tree Care Ltd. 2024

HERITAGE TREE CARE LTD.

APPENDIX B

Explanation of Tree Assessment Terms

I. **Tree Name:** Provides the botanic name (Genus, species, sub-species, variety and cultivar where applicable) in accordance with the International Code of Botanical Nomenclature (ICBN), and an accepted common name.

II. **Age:** Refers to the life cycle of the tree.

Category	Description
Young	Newly planted tree not fully established, may be capable of being transplanted or easily replaced.
Juvenile	Tree is small in terms of its potential physical size and had not reached its full reproductive ability.
Semi-Mature	Tree in active growth phase of life cycle and has not yet attained an expected maximum physical size for its species and/or its location.
Mature	Tree has reached an expected maximum physical size for the species and/or location and is showing a reduction in the rate of seasonal extension growth.
Senescent	Tree is approaching the end of its life cycle, and is exhibiting a reduction in vigour often evidenced by natural deterioration in health and structure.

III. **Physiological Condition:** Summarises the health and vigour of the trees

Category	Description
Excellent	Canopy full with dense foliage coverage throughout, leaves are entire and are of an excellent size and colour for the species, with no visible pathogen image. Excellent growth indicators, e.g. seasonal extension growth.
Good	Canopy full with minor variations in foliage density throughout, leaves are entire and are of a good size and colour for the species, with minimal or no visible pathogen damage. Good growth indicators.
Fair	Canopy with moderate variations in foliage density throughout, leaves not entire with reduced size and/or atypical in colour, moderate pathogen damage. Reduced growth indicators, visible amounts of deadwood/dieback, and epicormic growth.
Poor	Canopy density significantly reduced throughout, leaves are not entire, are significantly reduced in size and/or are discoloured, significant pathogen damage. Significant amounts of deadwood and/or epicormic growth, noticeable dieback of branch tips, possibly extensive.
Dead	No live plant material observed throughout the canopy, bark may be visibly delaminating from the trunk and/or branches.

© Heritage Tree Care Ltd. 2024

IV. **Structural Condition:** Summarises the structure of the tree from roots to crown.

Category	Description
Good	Good form and branching habit. Minor structural defects that are insignificant and atypical or common within the species. E.g. included bark, co-dominant stems. No fungal pathogens present. No visible wounds to the trunk and/or root plate.
Fair	Moderate structural defects present that impact longevity, e.g. apical leaders sharing common union(s). Minor damage to structural roots. Small wounds present where decay could begin. No fungal pathogens present. A fair representation of the species.
Poor	Significant structural defects present that have a significant impact on longevity and result in a poor representation of the species, e.g. Branch/stems with included bark, with failure likely within 0-5 years. Wounding evident with cavities and/or decay present. Damage to structural roots.
Hazardous	Serious structural defects with failure determined to be imminent (<12 months). Defects may include active splits and/or partial branch or root plate failures. Tree requires immediate arboricultural works to alleviate the associated risk.

V. **Useful Life Expectancy (ULE):** Useful Life Expectancy refers to an expected period of time the tree can be retained within the landscape before its amenity value declines to a point where it may detract from the appearance of the landscape and/or becomes potentially hazardous to people and/or property. ULE values consider tree species, current age, health, structure and location. ULE values are based on the tree at the time of assessment and do not consider future changes to the tree's location and environment which may influence the ULE value.

VI. Tree Quality:

		Health**			
		Excellent/ Good	Fair	Poor	Dead
	Good	A	B	C	U
	Fair	B	B	C	U
	Poor	C	C	U	U
	Hazard*	U	U	U	U

** Structural hazard that cannot be remediated through mitigation works to enable safe retention.*
*** Trees of short term reduced health that can be remediated via basic, low cost plant heath care works (e.g. mulching, irrigation etc.) may be designated in a higher health rating to ensure correct retention value nomination.*

© Heritage Tree Care Ltd. 2024

HERITAGE TREE CARE LTD.

VII. Tree Retention Value:

Based upon *BS5837:2012: Trees in relation to design, demolition and construction- recommendations.*

Category and Definition	**Criteria (including sub-categories where appropriate)**		
Category U			
Trees in such a condition that they cannot realistically be retained as viable trees in the context of the current land use for longer than 5 years.	• Trees that have a severe structural defect that are not remediable such that their failure is expected within 12 months. • Trees that will become unviable after removal of other Category U trees (e.g. where for whatever reason the loss of companion shelter cannot be mitigated by pruning). • Tres that are dead or are showing signs of significant, immediate and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby. • Low quality trees suppressing adjacent trees of better quality. • Noxious weeds or species categorised as weeds within the local area. **Note:** Category U trees can have existing potential conservation value* which might make it desirable to preserve.		
	1. Arboricultural Qualities	**2. Landscape Qualities**	**3. Cultural & Environmental Values**
Category A			
Trees of High Quality with an estimated remaining life expectancy of at least 25 years and of dimensions and prominence that it cannot be readily replaced in <20 years.	Trees that are particularly good examples of their species, especially if rare or unusual (in the wild or under cultivation); or those that are important components of groups or avenues.	Trees or groups of significant visual importance as arboricultural and/ or landscape features (e.g. feature and landmark trees).	Trees, groups or plant communities of significant conservation, historical, commemorative or other value (e.g. remnant trees, critically endangered plant communities, trees listed specifically within a Heritage statement of significance).
Category B			
Trees of Moderate Quality with an estimated remaining life expectancy of 15-25 years and of dimensions and prominence that cannot be readily replaced within 10 years.	Trees that might be included within Category A but are downgraded because of diminished conditions such that they are unlikely to be suitable for retention beyond 25 years.	Trees that are visible from surrounding properties and/or the street but make little visual contribution to the wider locality.	Trees with conservation or other cultural value (trees within conservation areas or landscapes described within a statement of significance).
Category C			
Trees of Low Quality with an estimated remaining life expectancy of 5-15 years, or young trees that are easily replaceable.	Trees of very limited value or such impaired condition that they do not qualify in higher categories.	Trees offering low or only temporary/ transient landscape benefits.	Trees with no material conservation or other cultural value.

** Where trees would otherwise be categorised U, B, or C, but have significant identifiable conservation, heritage or landscape value even though only for the short term, they may be upgraded, although they might be suitable for retention only.*

© Heritage Tree Care Ltd. 2024