County Tree Care Ltd
QUALIFIED ARBORISTS
Qualified in Arboriculture & Horticulture

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Project Name :

Tree Survey and Arboricultural Assessment at Mallow , Co. Cork

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Date : 03/10/24

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1.1 : Client Brief

County Tree Care Ltd was asked by McCuthcheon Halley, Chartered Planning Consultants to carry out a tree survey on trees at a site in Mallow, Co. Cork. With the details obtained in the survey to make an assessment of the condition of the trees. To make recommendations with regards to safety in relation to the future health of the trees for the short, medium and long term. Also, to prepare an Arboricultural Assessment and Method Statement that can be used to establish the level of impact on the existing established trees in relating to the construction of a new development.

1.2 : Description of site

The site is a greenfield site. The gross site area is 18.2ha and the net site area is 12.7ha. It is located on the East side of Mallow town. The site is presently derelict for the most part. There is a section of arable ground to the North-east of the site that is presently being used for growth of silage. The top soil on most of the site apart from the North-east corner has been removed and is seen deposited in a section to the South on the site. Because of this, the proliferation of growth of weeds and unwanted vegetation has not been seen. Despite this there is a gradual increase of pioneering hardy species such as grey willow (*Salix cinerea*) throughout the site. There are a small number (8) of trees that are in fair condition on the West section of the site. These trees were planted as amenity species as part of a broader landscape plan. They have not been maintained over the years. There are also trees along the Eastern boundary that are either dead or in poor condition.

1.3 : Methodology

The survey methodology follows the recommendations contained within BS : 5837 (2012), Trees in relation to design, demolition and construction. This provides a colour coded system that can be easily followed. It also includes the calculation of the Root Protection Area (RPA) of trees that were tagged. This is an indication of the extent of the root system and helps to offer guidance helping to protect the lifespan of any trees on site. Any tree surgery work to be carried out must follow Industry Best Practice BS : 3998 (2010). The analysis of the trees was undertaken using the VTA method as developed by Mattheck and Breloer (1994).
Recommendations will be provided based on the survey. Aluminium tree tags were placed on the trees that were surveyed. They number from 0131 to 0157 and 0182 - 0189. They are placed at 1.5m high on the North side of the tree stem wherever possible. Height is measured accurately by using an altimeter. The coordinates of each tree were captured using the Trimble Catalyst DA2 GNSS Antenna and the survey details and images were recorded using the KOREC Capture data capture application on an iPhone. Trees coordinates were plotted using the Irish Transverse Mercator (ITM) Co-ordinate System and converted to WGS84 Universal Transverse Mercator.

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1.4 : Limitations of the survey/disclaimer

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

Signed 

1.5 : Relevant Legislation

There are no Tree Protection Orders (TPOs) on any of the trees on this site. However under Section 37 of the Forestry Act : 1946, it is illegal to uproot any tree over ten years old or to cut down any tree of any age (including trees which form part of a hedgerow), unless a Felling Notice has been lodged at the Garda Station nearest to the trees at least 21 days before felling commences. A felling license can be obtained by contacting the Dept of Agriculture, forestry section.

The requirement for a felling licence for the uprooting or cutting down of trees does not apply where :

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

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

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1.6 : Terminology

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

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Terminology Continued

Tree no : Refers to numbered tag fixed to tree during survey. The trees in this survey were numbered 0131 to 0157 so the first number would be T0131.

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

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

Physiological Condition and Comments based on a three tier system :

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

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

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

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1.7 : Colour Identification of Tree Categories

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

1.8: References

- BS 5837 : 2012. Tree in Relation to Design, Demolition and Construction
- BS 3998 : 2010. Tree Work Recommendations
- Principles of Tree Hazard Assessment and Management ; David Lonsdale
- Mattheck and Breloer (1994). The body language of trees
- Neil Foulkes, Janice Fuller, Declan Little, Shawn McCourt, Paul Murphy
  Hedgerow Appraisal System Best Practise Guidance on Hedgerow Surveying, Data collection and appraisal

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1.9: Tree Classification Schedule

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0131	Sycamore (Acer pseudoplatanus)	52.1381158^{0}N 8.6290258^{0}W	EM	7 m	290 mm	Fair	N 3 m S 3 m E 1 m W 3 m	38	Straight stem, symmetrical crown structure, small tree that will grow to be very large if not maintained, tar spot (*Rhytisma acerinum*) on leaf which is commonly seen, healthy tree showing good form	Remove grass from around the base and allow the diffusion of air and water to the root zone	C1	> 20

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0132	Ornamental plum (*Prunus cerasifera*)	52.1381158^{0}N 8.6290258^{0}W	EM	4 m	150 mm	Fair	N 4 m S 1 m E 2 m W 2m	10	Tree is healthy, restricted branch growth on the East due to the crown of the nearby trees, grows a group that was planted as an amenity and part of a landscape plan, physiological condition good, but a low value tree	Remove grass from around the root zone, thin out the crown by removing crossing branches	C2	< 20

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0133	Silver birch (*Betula pendula*)	52.1381158^{0}N 8.6290258^{0}W	M	8 m	220 mm	Good	N 1 m S 2 m E 1 m W 4 m	22	Slight lean North of 10^o , stem digresses at 5 m, tree does not have symmetrical form, yet is healthy, grows as part of a small group of 4 no. trees	Remove grass from around the base and allow the diffusion of air and water to the root zone	C2	> 20

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0134	Silver birch (*Betula pendula*)	52.1381158^{0}N 8.6290258^{0}W	M	8 m	20 cm	Fair	N 2 m S 1 m E 1 m W 1 m	18	Lean of 20^o heavily North, poor crown formation due to competition from adjacent trees, heavy grass growth at the base, the lean of the tree is a concern but presently there are no targets	Remove grass at the rootzone and allow air and water to circulate to the roots	C2	< 10

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0135	Silver birch (*Betula pendula*)	52.1382770^{0}N 8.6291556^{0}W	EM	11 m	28 cm	Fair	N 3 m S 2 m E 3 m W 4 m	34	Tree leans 10^o North, bifurcation of the stem at 5 m, poor union at 5 m, good branch development, heavy grass grows around the base, healthy tree	Remove grass at the rootzone and allow air and water to circulate to the roots	C2	< 20

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0136	Ornamental plum (*Prunus cerasifera*)	52.1382770^{0}N 8.6291556^{0}W	EM	8 m	28 cm (x 2)	Fair	N 1 m S 2 m E 2 m W 1 m	17	Small ornamental tree that was planted as part of a landscape plan, an amenity tree that is overgrown with pioneering grey willow, thick grass grows at the base	Remove willow tree that intertwines the crown, remove grass from around the base	C2	< 20

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0137	Ornamental plum (*Prunus cerasifera*)	52.1383500^{0}N 8.6294798^{0}W	EM	4 m	27 cm (x 2)	Fair	N 1 m S 2 m E 2 m W 2 m	16	Twin stem from the base, overgrown by a self-seeded grey willow tree, crown has many tangled and crossing branches, dense grass grows at the base	Remove willow tree, remove grass from the base, prune to reshape and to remove any crossing branches	C2	< 20

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0138	Silver birch (*Betula pendula*)	52.1383500^{0}N 8.6294798^{0}W	EM	8 m	20 cm	Fair	N 2 m S 2 m E 1 m W 2 m	18	Tree leans slightly North 10^o, stem digresses at 4 m, poorly shaped crown with restricted branch growth on the West	Crown raise to 3 m, remove grass from around the base	C2	< 20

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0139	Silver birch (*Betula pendula*)	52.1383500^{0}N 8.6294798^{0}W	EM	7 m	15 cm	Fair	N 1 m S 1 m E 1 m W 1 m	10	Tree leans North 20^o , poorly developed branch structure, a weak tree	Remove grass from around the base, retain for the short term, no work required presently	C2	< 10

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0140	Wych elm (*Ulmus glabra*)	52.1380224^{0}N 8.6243675^{0}W	EM	6 m	35 cm	Dead	N 2 m S 2 m E 2 m W 2 m	NA	Dead tree that leans against an old stone wall	Fell and remove	U	< 1

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0141	Sycamore (*Acer pseudoplatanus*)	52.1378891^{0}N 8.6242857^{0}W	M	7 m	54 cm (x 2)	Fair	N 4 m S 3 m E 3 m W 4 m	38	Grows against an old stone wall, ground level has been changed, the soil has been pushed up around the base, the roots covered on the South side, squat shape, a low quality tree and will never be a tree of any merit	Remove to facilitate the development	C3	< 1

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0142	Wych elm (*Ulmus glabra*)	52.1374471^{0}N 8.6240289^{0}W	M	6 m	35 cm	Dead	N 2 m S 2 m E 2 m W 2 m	NA	Dead tree that leans against an old stone wall	Fell and remove	U	< 1

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0143	Elder (*Sambucus nigra*)	52.1372291^{0}N 8.6239182^{0}W	M	7 m	40 cm (x 2)	Poor	N 3 m S 3 m E 2 m W 2 m	72	Grows against a stone wall, very heavily engulfed with ivy, twin stem, broken branches throughout the crown, unhealthy tree and low quality specimen	Fell and remove	U	< 1

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0144	Wych elm (*Ulmus glabra*)	52.1371378^{0}N 8.6238860^{0}W	M	6 m	26 cm	Dead	N 2 m S 2 m E 2 m W 2 m	NA	Dead tree that leans against an old stone wall	Fell and remove	U	< 1

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0145	Sycamore (*Acer pseudoplatanus*)	52.1371553^{0}N 8.6238706^{0}W	M	9 m	30 cm	Fair	N 3 m S 3 m E 1 m W 2 m	41	Grows against a stone wall, large branch twists and grows against the stem, cambium damage at 1 m, poorly shaped tree, basal sweep North from 1 m, low quality specimen	Remove to facilitate the development	C3	< 1

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0146	Wych elm (*Ulmus glabra*)	52.1371001^{0}N 8.6238481^{0}W	Y	4 m	15 cm	Fair	N 1 m S 3 m E 1 m W 1 m	10	Small tree that grows as an understorey to the sycamore, a low quality specimen that will eventually succumb to elm disease	Fell and remove	U	< 1

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0147	Sycamore (*Acer pseudoplatanus*)	52.1370431^{0}N 8.6238139^{0}W	M	9 m	50 cm	Poor	N 4 m S 4 m E 4 m W 4 m	113	Grows against a stone wall, very heavily engulfed with ivy, stem digresses East, dieback seen throughout the crown, multiple broken branches throughout the crown, low quality specimen	Fell and remove	U	< 1

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0148	Sycamore (*Acer pseudoplatanus*)	52.1368455^{0}N 8.6237020^{0}W	EM	6 m	58 cm (x 3)	Fair	N 2 m S 3 m E 3 m W 3 m	150	Multiple stems (3) from the base, compressed union at the base, soil has been pushed up around the base by machinery, poorly shaped tree and low quality	Fell and remove	U	< 1

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0149	Grey willow (*Salix cinerea*)	52.1348049^{0}N 8.6275952^{0}W	EM	5 m	72cm (x 6)	Fair	N 2 m S 2 m E 2 m W 2 m	41	Multiple stems (6) from the base, compressed union at the base, self-seeded tree, low value pioneering specimen	Retain for the short to medium term	C2	< 10

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0150	Grey willow (*Salix cinerea*)	52.1348317^{0}N 8.6273568^{0}W	M	5 m	30 cm	Fair	N 2 m S 2 m E 2 m W 2 m	41	One main stem with multiple branches growing from .5m, self-seeded tree and a low value specimen	Retain for the short to medium term	C2	< 10

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0151	Sycamore (*Acer pseudoplatanus*)	52.1349624^{0}N 8.6273300^{0}W	EM	8 m	28 cm	Fair	N 4 m S 4 m E 4 m W 4 m	35	Stem divides into multiple branches at .5 m, straight main stem, symmetrical crown, an evenly balanced branch structure	Retain for the short to medium term	C1	> 20

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0152	Oak (*Quercus* Ssp)	52.1350465^{0}N 8.6267241^{0}W	M	15 m	85 cm	Dead	NA	NA	Dead Tree	Fell and remove	U	< 1

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0153	Grey willow (*Salix cinerea*)	52.1352318^{0}N 8.6265548^{0}W	M	4 m	150 cm (x 10)	Fair	N 1 m S 1 m E 1 m W 1 m	65	Multiple stems (10) from the base, compressed union at the base, poorly shaped tree and low quality	Retain for the short to medium term	C2	< 10

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0154	Common lime (*Tilia x europea*)	52.1353128^{0}N 8.6258846^{0}W	M	21 m	137 cm (x 4)	Poor	N 4 m S 4 m E 3 m W 3 m	222	Multi-stemmed tree (4), dieback seen throughout the crown and upper tips, major cavity on West stem @ 1.5 m, major cambium damage at 2 m East stem, cavity at 2 m on North stem, multiple pocket cavities on all stems throughout the crown, tree is lacking in vigour and is a potential future hazard	Fell and remove	U	< 1

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0155	Horse chestnut (*Aesculus hippocastanum*)	52.1353470^{0}N 8.6255902^{0}W	M	19 m	180 cm (x 2)	Poor	N 5 m S 7 m E 5 m W 3 m	707	Twin stem from the base, two very large stems, major cambium damage on main stem West side @ .5 m, large cavity on Southerly stem @ 1.5 m, large cavity on Northerly stem @ 2 m, cavity@ 3 m Northerly stem, cavity @ 5 m Northerly stem, major dieback in the crown, tree is in poor health and will be a potential hazard	Fell and remove	U	< 1

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0156	Horse chestnut (*Aesculus hippocastanum*)	52.1354452^{0}N 8.6249787^{0}W	M	17 m	114 cm (x 2)	Poor	N 5 m S 7 m E 3 m W 6 m	290	Large tree in poor health, large branch rip out and cavity on main stem @ 1 m West side, tree is infected with honey fungus (Armillaria Ssp), major dieback in the crown, large rip out and cavity on main stem on East side @ 3 m, large rip out @ 15 m North side on main stem, tree will be a future hazard	Fell and remove	U	< 1

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0157	Common lime (*Tilia x europea*)	52.1354024^{0}N 8.6240678^{0}W	M	24 m	220 cm (x 2)	Poor	N 4 m S 6 m E 4 m W 7 m	707	Large tree, enormous bole to 2 m, multiple stems from 3 m, two main stems @ 2 m, multiple branch failure throughout the crown, major dieback in upper crown	Fell and remove	U	< 1

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0182	Bird cherry (*Prunus padus*)	^{0}N 8.373936^{0}W	M	12 m	280 mm	Fair	N 3 m S 3 m E 3 m W 3 m	35.4	Tree grows 2 m South of the pathway, lower branches have been cut, minor deadwood throughout the crown, healthy tree	Deadwood - remove major deadwood	B2	>25

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0183	Norway maple *(Acer platanoides)*	52.833514^{0}N 8.373946^{0}W	M	16 m	800 mm	Poor	N 10 m S 3 m E 8 m W 3 m	289.3	Large Norway maple, extensive basal decay on main stem, infected also with Hypoxilon canker, major dieback in upper crown, large branches and weight extending North over pathway, tree is a hazard, fell ASAP	Tree is an immediate hazard, Fell and remove ASAP	U	< 1

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0184	Sycamore *(Acer pseudoplatanus)*	52.834769^{0}N 8.373983^{0}W	M	12 m	280 mm	Fair	N 3 m S 3 m E 3 m W 3 m	35.4	Tree grows 2 m South of the pathway, lower branches have been cut, minor deadwood throughout the crown, healthy tree	Deadwood - remove major deadwood	B2	>25

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0185	Bird cherry *(Prunus padus)*	52.134368^{0}N -8.627827 ^{0}W	M	9 m	220 mm	Fair	N 4 m S 1 m E 3 m W 2 m	22	Leaning tree over the pathway, of fair health	Reduce height by 2 m to reduce lever arm at the base	C2	< 25

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Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0186	Silver birch *(Betula pendula)*	52.13439 ^{0}N -8.6279 ^{0}W	M	6 m	120 mm	Fair	N 5 m S 1 m E 2 m W 2 m	7	Small diameter tree, leans 80 degrees North over pathway, typical woodland specimen	No work required	C2	>25

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0187	Sycamore *(Acer pseudoplatanus)*	52.13454 ^{0}N -8.628274 ^{0}W	M	9 m	200 mm	Fair	N 5 m S 1 m E 3 m W 2 m	18	Tree leans North over pathway, is starting to correct @ 5 m to straighten up, leans North over pathway, is starting to correct @ 5 m to straighten up, healthy tree	No work required	C2	>25

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0188	Bird cherry *(Prunus padus)*	52.134583 ^{0}N -8.62836 ^{0}W	M	10 m	400 mm	Good	N 4 m S 4 m E 4 m W 4 m	72	Fine example, straight stem, balanced branch structure, symmetrical form	Deadwood - remove major deadwood	B1	>30

Tag No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
0189	Sycamore *(Acer pseudoplatanus)*	52.134397 ^{0}N -8.627675 ^{0}W	M	13 m	800 mm	Good	N 4 m S 4 m E 4 m W 4 m	290	Lapsed coppice stool, 3 no. Stems from 2 m, evenly spreading crown, healthy tree	No work required	B2	>30

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Group No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
1	Birch (*Betula* sp.),Willow (*Salix* sp.),Sycamore (*Acer pseudoplatanus*)	52.134721 ^{0}N -8.626842 ^{0}W	Y	3 - 7m	120 mm	Fair	N 1m S 1 m E 1 m W 1 m	7	Group of young self-seeded pioneering species, these trees have proliferated in this section as water and nutrient run down the hill, these tree species are of low value and typical of what one might see on a derelict site	Fell to ground	C1	>20

Group No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
2	Sycamore *(Acer pseudoplatanus)*	52.134297 ^{0}N -8.627713 ^{0}W	Y	3 m	70 mm	Fair	N 2 m S 1 m E 1 m W 1 m	3	Group of self-seeded sycamores that grow on the edge of the pathway, these will need to be thinned out in the medium term future	No work required	C2	>30

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Group No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
3	Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*)	52.134561 ^{0}N -8.628366 ^{0}W	SM	4- 6m	170 mm	Fair	N 2m S 1 m E 1 m W 1 m	13	Group of self-seeded trees that grow on the edge of the woodland	No work required	C1	>20

Group No.	Species	Coordinates	Age	Height	Diameter	Condition	Crown Spread	RPA (M^2)	Comments	Recommendations	RC	ERC
4	Sycamore *(Acer pseudoplatanus)*	52.134297 ^{0}N -8.627713 ^{0}W	Y	3 m	70 mm	Fair	N 2 m S 1 m E 1 m W 1 m	3	Group of self-seeded sycamores that grow on the edge of the pathway, these will need to be thinned out in the medium term future	No work required	C2	>30

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2.0: Photographs


Fig 1: T0131


Fig 2: T0132


Fig 3: T0133


Fig 4: T0134


Fig 5: T0135


Fig 6: T0136


Fig 7: T0137


Fig 8: T0138


Fig 9: T0139


Fig 10: T0140


Fig 11: T0141


Fig 12: T0142

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Fig 13: T0143


Fig 14: T0144


Fig 15: T0145


Fig 16: T0146


Fig 17: T0147


Fig 18: T0148


Fig 19: Scrub


Fig 20: Scrub


Fig 21: T0149


Fig 22: T0150


Fig 23: T0151


Fig 24: T0152

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Fig 25: T0153


Fig 26: T0154


Fig 27: T0155


Fig 28:T0156


Fig 29: T0157


Fig 30: Bramble

Fig 31: T0182

Fig 32: T0183

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Fig 33: T0184


Fig 34: T0185

Fig 35: T0186

Fig 36: T0187

Fig 37: T0188

Fig 38: T0189

Fig 39: Group 1

Fig 40: Group 2

Fig 41: Group 3

2.1: Maps - Satellite Imagery

Fig 42: general Site Location

Fig 43: Site Outline in red

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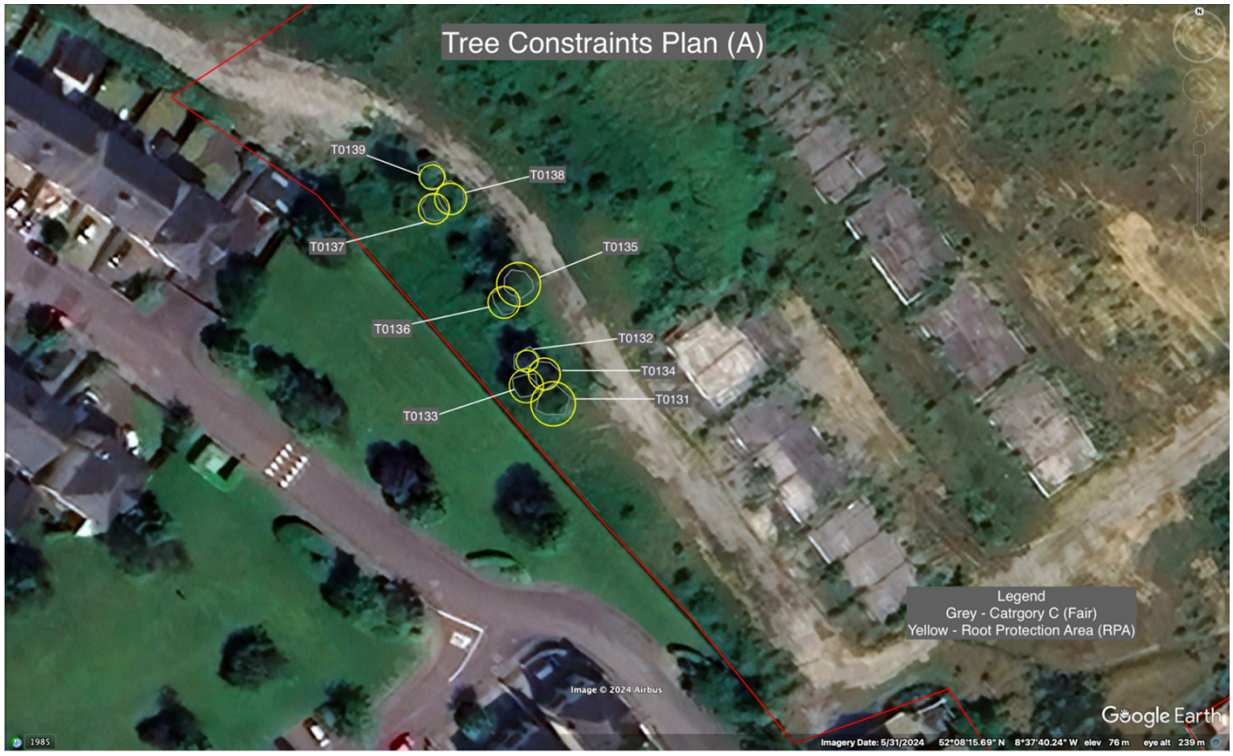

Fig 44: Tree Constraints (A)

Fig 45: Tree Constraints Plan (B)

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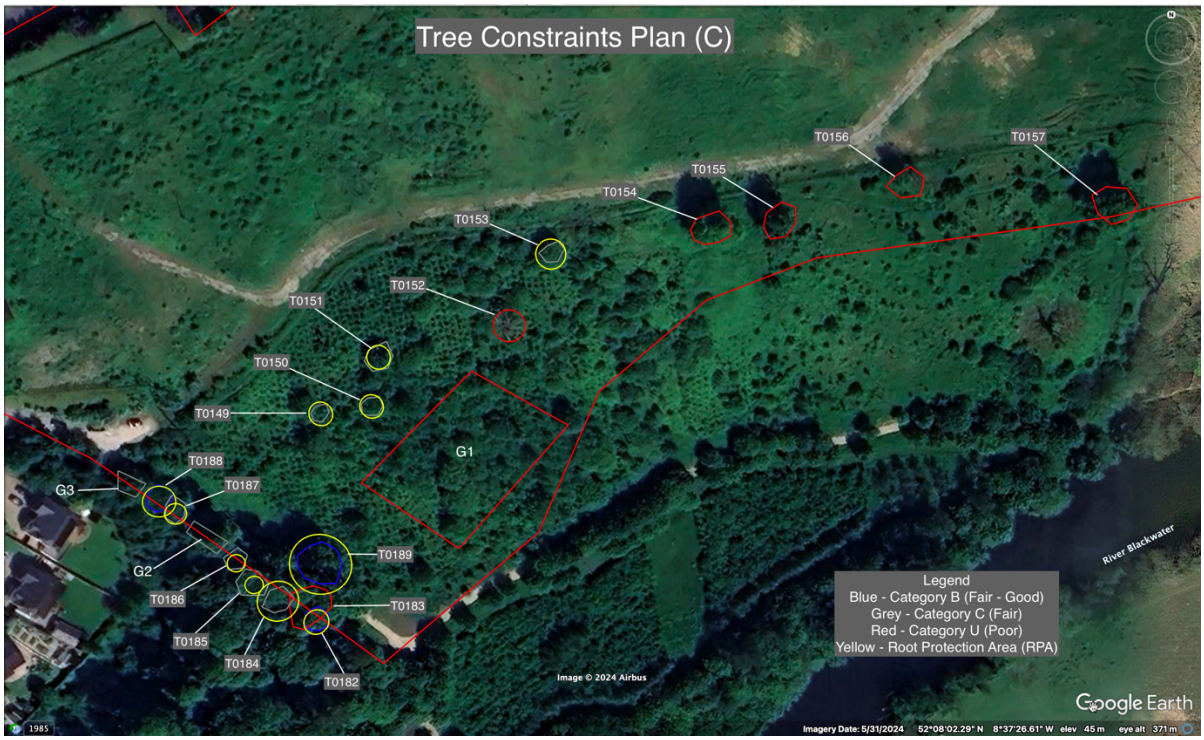

Fig 46: Tree Constraints Plan (C)

Fig 47: Tree Protection Plan

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2.2: Identification of Preliminary Tree Constraints

- Please read in conjunction with the AutoCAD file 'Tree Constraints Plan' in appendix 1 and with Fig 44, Fig 45, Fig 46. Also, see AutoCAD drawing Tree Constraints Plan.

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

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

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

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

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

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

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Below Ground Tree Constraints continued :

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

Above Ground Constraints :

- The current and ultimate height and spread of the trees, in relation to any new building final position.
- The effect that construction requirements might have on the amenity value of trees, both on and near the site, including pruning to facilitate access and working space. This may be the case with the trees on the entrance driveway and neighbouring trees overhanging branches.
- The requirement to protect the overhanging canopies of trees where they could be damaged by machinery, vehicles, barriers or scaffolding, where it will be necessary to increase the extent of the tree protection barriers to contain the canopy.
- The proposed end use of the space adjacent to the retained trees.

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2.3: Tree Protection Plan

- Please read in conjunction with the AutoCAD file 'Tree Protection Plan' and with Fig 47 Tree Protection Plan. See also AutoCAD drawing Tree Protection Plan in the appendix.

Protection of trees. A protective barrier, 2.3m high and comprising a vertical and horizontal framework of scaffolding, well braced to resist impacts and securely supporting weldmesh panels, (as illustrated in Fig 39 & Fig 40 supplied), shall be erected around the base of all trees to be retained on site. This barrier shall be clearly identified on site by the attachment of all – weather signs of suitable dimension stating : 'CONSTRUCTION EXCLUSION ZONE – NO ACCESS'. The line of this fence shall be at least the distance defined in the AutoCAD file Tree Protection Plan. No construction traffic, materials or debris will be permitted within this zone of protection.

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

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

Scaffolding within zone of protection. Where scaffolding is to be established within the 'zone of protection' surrounding retained trees, the existing undisturbed ground surface shall be protected by a layer of sharp sand, approximately 50mm thick, overlaid with a geotextile membrane. Stout planks, such as closely side butted scaffold boards, will be laid over the geotextile membrane and scaffolding will be constructed on these planks with additional stays as directed by a competent person. Adequate protection fencing as illustrated in Fig 39 and Fig 40 will be maintained between scaffolding and adjacent trees.

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

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

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

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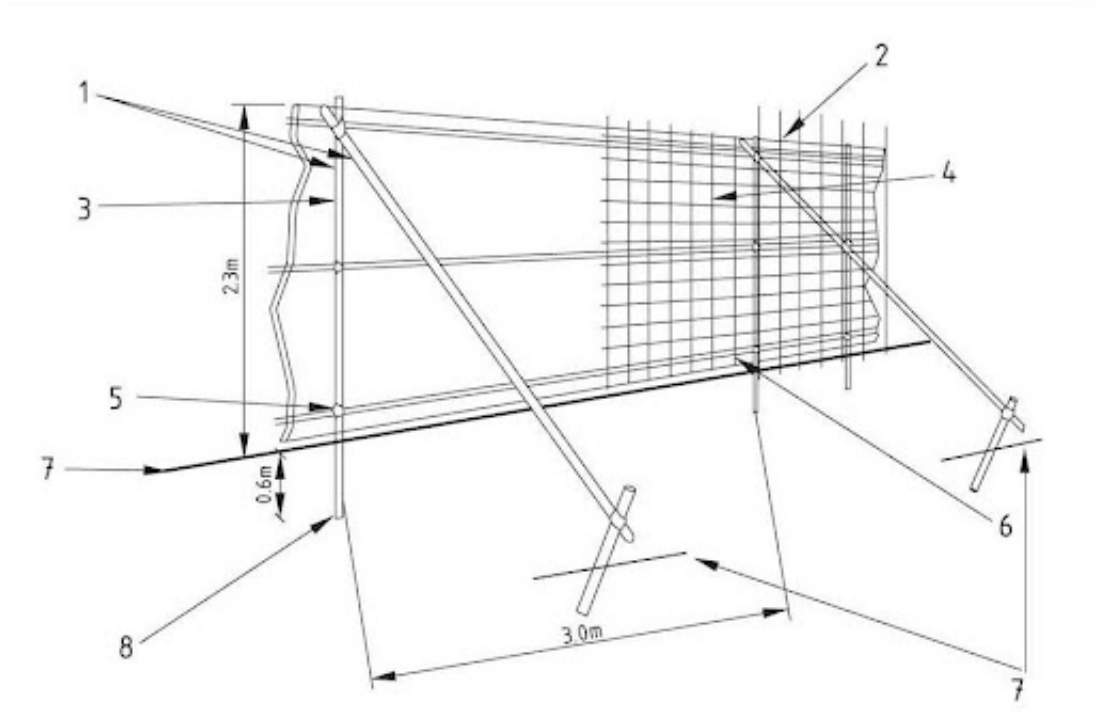

1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary tandard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
7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

Figure 48 : Tree Protective Barrier

The protective barrier will be appropriate to the degree and proximity of likely construction works. The default specification of BS 5837 : 2012 recommends a vertical and horizontal, scaffold framework, well braced to resist impacts, with vertical tubes at no more than 3m intervals. These should be driven into the ground. Weld mesh panels should be affixed to this framework with scaffold clamps – see image 39 and 40. Heras fencing is a reliable option or a similar structure of sturdy, wooden construction would be acceptable. It should typically comprise of the following :

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Figure 3 Examples of above-ground stabilizing systems

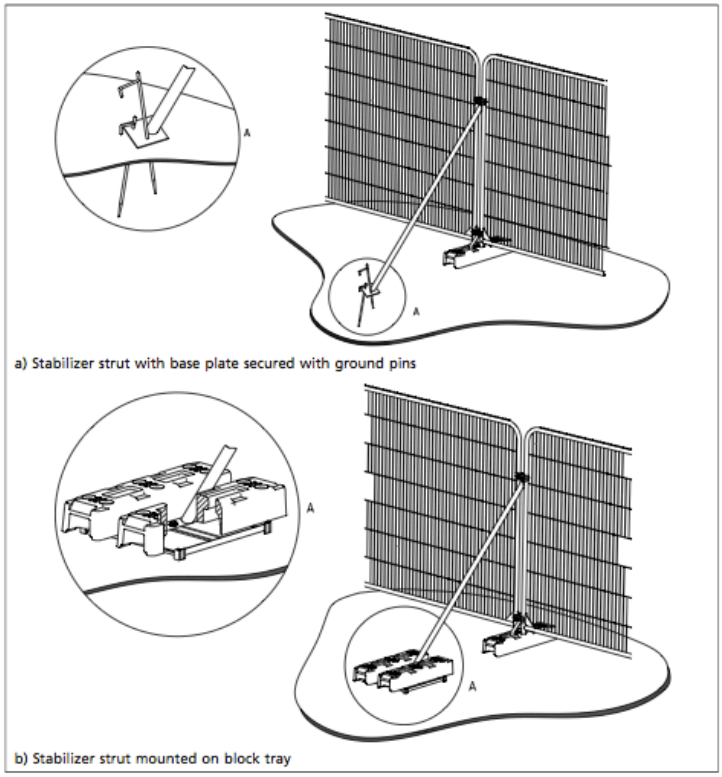

Figure 49

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

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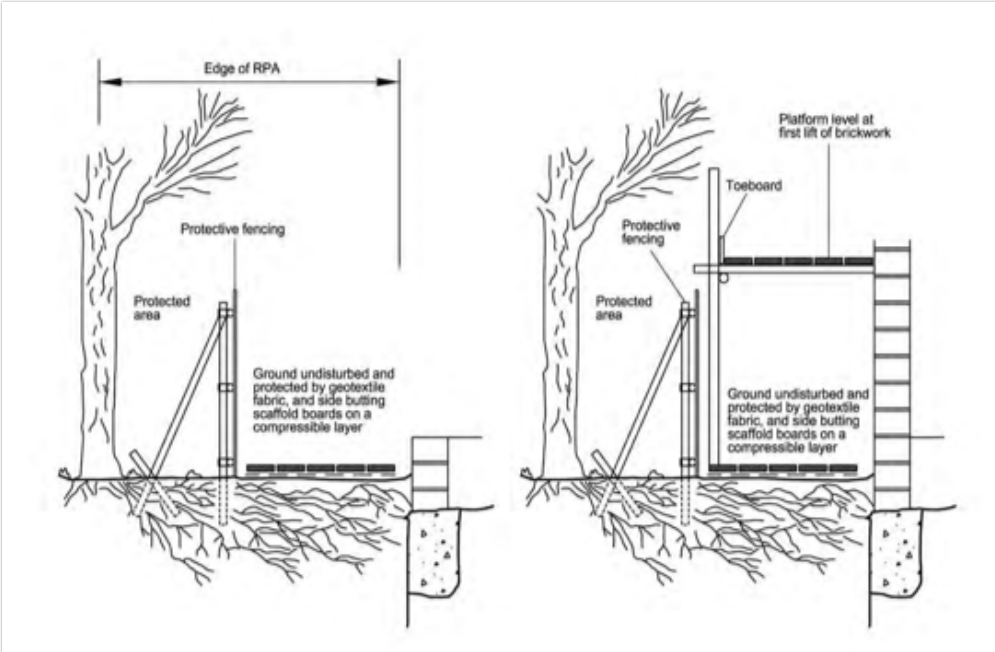

Figure 50

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

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2.4: Arboricultural Method Statement

Roadway/Driveway

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

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

Services

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

Plant/Machinery

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

Contamination

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

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

Fires must be avoided where heat could affect foliage or branches

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

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

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2.5: Arboricultural Impact Assessment

Category	A	B	C	U	Total
Trees on site in their Categories	0	T182, T184, T188, T189	T131, T132, T133, T134, T135, T136, T137, T138, T139, T141, T145, T149, T150, T151, T153, T185, T186, T187	T140, T142, T143, T144, T146, T147, T148, T152, T154, T155, T156, T157, T183	35
Trees proposed for removal to facilitate the development	0	0	T141, T145	0	2
Trees to be removed for reasons of sound arboricultural management				T140, T142, T143, T144, T146, T147, T148, T0152, T0154, T0155, T0156, T0157, T183	13

Fig 50

Fig 50 shows the trees within the classification categories in total for the whole survey. There are 18 no. trees that are placed in the grey retention category. There are two trees recommended to be felled to facilitate the development.

The trees Northern section of the site were planted for amenity reasons as part of a landscape plan originally. All of these specimens are of fair quality and are placed in category C (grey). They have not been maintained and heavy grass grows around the base which would take valuable nutrient and water from the roots. They are still alive and reasonably healthy. Of these trees there are 5 no. silver birch (*Betula pendula*). This species is a good choice in developed areas due to the fact that they don't get too large and do not have a dense crown. The small leaves and light branches offer dappled shade and they don't block out the sun to a large degree. There are 3 no. ornamental plum (*Prunus cerasifera*). These are small trees and were recommended to be retained due to the purple leaf colour and contrast in growing habit to the birch, as was the intention with the original design. There is one sycamore (*Acer pseudoplatanus*) that has possibly self-seeded and is at odds with the other species choice. It is healthy, has a straight stem and is fairly symmetrical in form. These trees are all of fair quality and could offer something to the site in relation to softening the background of the already developed housing to the South. The root protection area (RPA) of these trees have been outlined in yellow in Fig 44, Fig 45 and Fig 46 and in magenta outline in the Tree Constraints Plan in the AutoCAD drawing file.

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On the East side there are 9 no. trees that are recommended to be felled. Two of these, no's T141, T145 are in the grey category but are low quality trees and are to be felled for reasons connected to the development.

There are elm trees along this boundary that are dead T140, T142, T144, and one very weak small elm T146. The sycamores are multi stemmed and show poor form. Soil has been pushed up around the base of these trees and generally they will never become trees of great quality. They will be growing on the boundary of the rear gardens of the newly built houses. It can be predicted that in time they will become large and present issues in relation to shade, and possible limb loss. They were recommended to be felled based on their unsuitable growing position and long term potential.

In the Southern section of the site, there are 8 No. trees in category C and coloured grey and 3 no. in the B category coloured blue. There are 6 no. trees that are classed as U (red). The trees to be felled are mature and are in very poor condition. Presently, five of these do not pose a hazard because there are no relative 'targets' such as pedestrian walkways or roads. However, there is one Norway maple (*Acer platanoides*) T183 that is severely decayed and poses an immediate hazard to pedestrians. The remaining U category trees are in decline and are severely compromised structurally but do not have 'targets'.

The pedestrian relief pathway is recommended to be located in the Southern section and cuts through existing tree and shrub species. This area of ground has seen the proliferation of pioneering species such as grey willow (*Salix cinerea*), silver birch (*Betula pendula*) and sycamore (*Acer pseudoplatanus*), see G1 in Fig 39. These species are in the young stage and are densely populating the available ground. There are no mature or quality species in this area.

The Root Protection Area of all trees to be retained is defined by a black dashed circle in the AutoCAD file. Heras fencing should be placed around all trees to be protected. This is defined by a cyan outline in the Tree Protection Plan. Recommendations have been made with regards to the pruning of retained trees. Branches will need to be cut back and up to a height of 3 m to avoid been broken by passing construction vehicles. These branches are defined by a magenta outline in the Tree Protection Plan. It is essential that no vehicles enter the RPA at any time due to the lasting damaging effects of compaction on the tree's roots and the health of the tree.

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

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2.6: Appendix 1- Tree Constraints plan

Fig 43: Tree Constraints Plan

2.7: Appendix 2- Tree Protection Plan

Fig 44: Tree Protection Plan