Arboricultural Report

Planning and Development

Arboricultural Appraisal and Impact Assessment

Project Name and Address	**St Mary's Grove Garages, Richmond, TW9 1UY**		
Prepared for	Clive Chapman Architects	**Project Ref**	-
ACS Ref	ha/aiams1/smg/22	**Client**	The Richmond Charities
Prepared by	Hal Appleyard Dip. Arb (RFS), F.Arbor. A. MICFor RCArborA		
Report Date	13th May 2022		

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List of Contents

Appendices

Executive Summary

The proposal for the demolition of existing garages and the replacement with five single storey residential units with landscaping, is proposed in the vicinity of neighbouring trees.

Roots from the neighbouring trees are likely to grow preferentially within the host land of the garden, which is more fertile, aerated watered by rain, which is commensurate with normal tree root development. The existing garages and their concrete bases together with the concrete forecourts render the soil beneath inhospitable to normal root growth because of the lack of aeration and rainwater run-off.

Some roots of trees adjacent to the site may have grown into the site and accordingly, removal of the concrete bases and forecourt should be supervised by the project arborist to ensure any significant roots (25mm diameter and over) are retained and protected. Some small over-hanging branches should be pruned back but will not be so significant as to affect tree condition or appearance.

The proposed replacement of the forecourt with soft and permeable landscaping, will be beneficial to adjacent trees because the rooting medium will be improved and accessible for more root growth.

Subject to the implementation of standard tree and root protection measures as set out in principle in this report, the impact of the proposed construction upon the trees and conservation area is assesses as being **neutral** with **positive** outcomes.

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PART ONE

1.0 Introduction and Scope

1.1 A planning application for the demolition of existing garages and the replacement with 5 single-storey residential units, is to be submitted for consideration by the Local Planning Authority.

1.2 The proposed construction is to be undertaken in the vicinity of trees within Sheen Road conservation area. In Part One of this report, an assessment of the impact of the proposals upon the trees and the implications upon them is presented. Preliminary methods of tree protection and preservation during ground works, demolition and construction are set out in Part Two, which refers to and includes a requisite a tree management and protection plan.

1.3 I have been appointed on behalf of the site owners as a competent and qualified arboricultural consultant to provide this report and to supervise any works that may have the potential to affect the protected and retained trees.

1.4 The trees have been inspected on 26th April 2022. The details are provided in accordance with the guidance set out in BS 5837:2012 'Trees in relation to design, demolition and construction- Recommendations' (the BS) and an extract from that guidance is appended herewith. The survey is not a full safety audit of the trees, but obvious, significant defects will be identified and the tree owner should take reasonable steps to manage their trees accordingly. The root protection areas (RPAs) of the relevant trees are indicated upon the plans. Some RPAs may be modified from the standard circle by the presence of structures in the ground e.g. foundations, roads or kerbs.

2.0 The Site, Trees and Implications of Proposals

2.1 The site comprises a rank of existing garages, with tarmac-covered concrete forecourt and access driveway. The garages are located between the rear gardens of residential properties within St Marys Grove, Richmond and Townshend Road. The land dips slightly from south to north. Trees and other vegetation grow in the rear gardens adjacent to the site.

Fig. 1 St Mary's Grove Garages looking south

2.2 The BS details of the trees are provided within the tree survey schedule at **Appendix 1** and their corresponding positions are shown on the tree protection plan included at **Appendix 2**.

2.3 The trees, which are most relevant to this project include a Corkscrew Willow (T2) and a Flowering Cherry (T3). These trees, as with all others, are growing in neighbouring land and within the rear gardens of adjacent residential gardens.

2.4 Trees growing adjacent to boundaries will naturally over-hang those boundaries, which has occurred in this case. The over-hang branches of trees T2 and T3 can be pruned back lightly to ensure reasonable and safe access to the site during construction. The pruning (as proposed in Table 3) will increase the availability of light to the site and the new soft landscaping. The pruning needed is significant and will preserve the quality and appearance of the trees. (**Note: a separate S211 notification to be submitted and approved by the Council for the tree works may be required prior to starting.**)

2.5 Where branches from other vegetation over-hang the site, light pruning back will be carried out in the same way as described.

2.6 Tree roots require adequate levels of soil moisture, soil nutrients and aeration (oxygen0 to grow normally. Where one or all of these are in limited supply with the soil, roots will preferentially grow in areas where the supply is in necessary proportions. Accordingly, roots of the trees immediately adjacent to the forecourt and garages, are likely to asymmetrical rooting systems. The hard surfaces will reduce soil quality and as such roots will be more abundant within the fertile soil of the host gardens and few within the site. Doubtless some roots will grow beneath the concrete surfaces but these are expected to be few in number an of little consequence to the trees. However, as a precaution against damage, I have made recommendations for the existing structures and surfaces to be removed sensitively and under the supervision of the project arboriculturist, who can advise upon tree root protection and preservation as necessary. The original soil level beneath the surfaces is to be retained, which is to support any roots which have extended beyond the garden boundaries.

Fig. 2 Some pruning back of over-hanging branches from trees and other vegetation (e.g. Privet) will be reasonable work to enable safe site access)

2.7 The BS at para. 5.3 recommends that applicants should provide justification for conducting construction works within BS root protection areas (RPAs) of trees to be retained. Where this is proposed, the reasonable protection and preservation of the trees is dependent upon a range of factors. To this end, I have identified six arboricultural impact criteria to be considered positively in order for a tree(s) to be reasonably retained and protected, where construction is proposed within an RPA.

1) The linear separation distance between construction and the tree's trunk and canopy spread is sustainable for the future.
2) The tree's maturity, condition and known species tolerance to root loss or disturbance (biological tolerance).
3) The extent of RPA used by the proposed construction
4) The nature and intensity of the proposed construction and its associated implementation
5) The level of existing constraints to tree growth and development
6) The scope of opportunities for tree root and tree growth mitigation* measures

Each of the above impact criteria carries an escalating score ranging from 0-4, where 0 represents the potential for significant impacts and 4 identifies a low to negligible impact.

Impact Criteria Scores

0-10 Tree unsuitable for retention
11-20 Tree suitable for retention; protection and preservation methods available
>20 Tree unaffected by the proposals

Table 1

Impact Criteria	Distance from Tree	Biological Tolerance	Extent of RPA	Construction Type	Existing Constraints	Mitigation[1]	Total
			Score				
T1	4	3	3	3	3	2	18
T2	4	3	2	3	3	3	18
T3	4	3	2	3	3	3	18
T4	4	3	2	3	3	2	17
T5	4	4	4	4	4	0	20
T6	2	3	2	1	3	0	11
T7	2	4	2	1	3	0	11
T8	2	4	2	1	3	0	11

1.Mitigation means soil/rooting area environment improvement works e.g. applications of mulch, bio stimulants or soil aeration.

NOTES on Impact Criteria:

1 – Distance from tree - Within the canopy merits up to 2 points; up to 2m beyond the canopy merits 3 points; more than 2m separation from the canopy merits 4 points.
2 – Biological Tolerance - Veteran/very mature tree or tree with low vitality merits 0-2 points; mature tree with normal vitality merits 3; maturing tree with normal vitality merits 4 points.

3 – Extent of RPA - Use of more than 20% of the RPA merits 0-2 points; between 10-20% merits 3 points; less than 10% or use of engineering solutions, merits 4 points – **Note to be considered in the context of criterion 2 above.**
4 – Construction Type - High intensity construction and excavations through expected rooting profile merits 0-2 points; moderate intensity work or excavations no deeper than 50% of the rooting profile merits 3 points and low invasive or no-dig work, retaining 100% of the rooting profile merits 4 points
5 – Existing Constraints - Lateral root and canopy spread restricted in more than one compass direction merits 0-2 points; lateral growth of roots or canopy in one direction merits 3 points; no constraints to roots or canopy merits 4 points
6 – Up to 50% of the existing RPA available for mitigation but no compensatory root growth area merits 0-2 points; more than 50% of the RPA available for mitigation and compensatory root growth areas merits 3 points; 100% of RPA available for mitigation and compensatory root growth area merits 4 points.

The extent of proposed works within the BS root protection areas and the justification for same, is set out in Table 2 below:

Table 2 Construction Activities within RPAs of trees

Tree Ident.*	Maturity	Vitality	% of RPA*	Tolerance** Acceptability	Justification/Recommendation
T1, T2, T3, T4	Mature	Normal	Up to 20%	High	1. Root spread limited within the site 2. Remove the hard surfaces only under supervision 3. Retention of original soil level 4. Replace hard surfaces with soft, permeable surfacing over RPAs
T6, T7, T8	Early Mature and Young	Normal	Up to 20%	High	1. Most roots growing within gardens 2. Manual break out of foundations in RPAs 3. Protection of important roots

* % of BS RPA used for construction
** Tolerance to construction activities is described as High (no adverse effects); Medium (potential for temporary stress, mitigation recommended) and Low (Potentially unsustainable adverse impacts, tree replacement to be considered)

Table 3 **Proposed/Recommended Tree Works**

Tree Works (Spec.)	Tree Nos	Visual Landscape Impact of Works*	Space Available for Replacement Planting(Y/N)	Comments
Crown lift east side to 3.5m(Sp4)	T2, T3	None	-	Prune back over-hang only (Note: S211 notification will need to be submitted in advance of work starting)
Root inspection and treatment (Sp8)	T6-T8	None	-	Prune out insignificant roots (<25mmØ); (Note: S211 notification will need to be submitted in advance of work starting)
Total		None		

*This is a preliminary visual appraisal based upon the opinion of the author having inspected the trees in the context of their current surroundings. – None (no change or beneficial impact) Negligible or indiscernible difference to treed landscape; Low – Noticeable but mitigated by retention of other landscape trees and features; Medium – Obvious but temporary alteration to the treed landscape; High – Obvious and permanent alteration to the landscape.
Visual receptors include the public or community at large, residents, visitors or other groups of viewers together with the visual amenity of potentially affected people.

Specifications for recommended tree works:

All work is to conform to BS 3998:2010 'Tree work – Recommendations' and with current arboricultural best practice. Tree works are to be undertaken by a professional and specialist arboricultural contractor, who carries the appropriate experience and insurance cover, equipment and PPE. Unless stated within this report, no checks have been or will be made by ACS (Trees) Consulting, upon the presence of Tree Preservation Orders or conservation areas. All works and processes must comply with all relevant Planning, Wildlife, Environmental, Conservation and Health and Safety legislation. All works and processes are to comply with all relevant Planning, Wildlife, Environmental, Conservation and Health and Safety legislation.

Sp2.1 Any branch shortening work, (including as part of crown reduction work) will be conducted by pruning back to a suitable growing point, e.g. a shoot or smaller branch, which can continue to support branch growth.

Sp4.Crown lifting includes the removal of the lowest lateral branches and shoots, (which would not result in irrevocable tree injury), to a specific height above ground level measured in metres.

Sp8.Root protection and pruning is to be carried out or supervised by a competent person (arboricultural contractor). Only sharp and specific pruning tools will be used for the root pruning exercise. No roots are to be pruned if it is considered that their loss (or shortening) will adversely impact upon tree condition or anchorage, immediately or in the future. Any exposed roots will be covered with a material to prevent desiccation. All exposed cut root surfaces will be made as small as possible. If possible roots will be pruned back to side shoot.

Table 4 Summary of Impact of Proposed Construction on Trees*

Tree Ident.*	Landscape Contribution	Implications /Impact	Mitigation measures	***Tolerance[1,2,6]	Impact Assessment**
T1-T4	Medium/Low	Replacing hard standing with soft, permeable landscaping over RPAS	1. Remove hard surfaces under supervision by the arborist. 2.Install all tree and ground protection 3. Permeable pathway construction	High	Neutral to Positive
T6-T8	Low	Reconstruction of boundary wall within RPAs	1. Supervised demolition of garages 2. Manual dig within RPAs	High	Neutral

* Main trees selected for comment included above. Refer to previous notes on other trees.
** Negative – adverse impact upon trees and landscape; Neutral – no material impact (negative or positive); Positive – improvement (potential) to tree quality and landscape
*** Tolerance to proposed work within extent of RPA, in association with proposed tree protection – High - No adverse impacts; Medium - Temporary reduction in vitality only; Low - Susceptible to longer-term reduction in vitality and likely to require follow-up management.

3.0 Summary and Conclusions

3.1 The proposed demolition of the garages and associated forecourts will be conducted within the vicinity of retained, third-party owned trees. The trees and their root systems can be effectively protected by undertaking careful and manual removal of foundations, within the RPAs. The original soil level beneath the garage and forecourt bases is to be retained.

3.2 The concrete and tarmac forecourt will be replaced with soft landscaping and permeable footpaths to improve the soil and rooting medium suitable for better tree growth for adjacent trees.

3.3 Subject to the implementation of the tree protection measures from the outset of demolition and construction, there will be a **neutral impact** upon the trees of importance to the local landscape.

3.4 Opportunities for soil improvement for better and more root growth as well as new tree and shrub planting exist around the site, which will be a **positive** contribution to the landscape now and for the future.

PART TWO – Trees and their Protection

4.0 Recommended Tree Protection Methods

4.1 Normally, tree protection barriers and ground protection would be installed prior to demolition and construction. However, this site requires the demolition of the forecourts and garages prior to being able to erect tree protection barriers and install ground/root protection.

4.2 An appointed arboriculturist will oversee the removal of the forecourts ensuring that roots of significance (25mmØ or more) from adjacent trees are retained and protected as necessary. With regard to the replacement of the boundary wall to the west of the site, its replacement will be subject to a manual dig exercise within the RPAs of the retained trees T6-T8.

4.3 The methods of manual digging near trees are described within **Appendix 5** but for clarity I have set out the procedure below, which is to be overseen by the appointed arboricultural consultant:

i) Clearly mark out the area for hand dig (using biodegradable marker paint) (see TPP)
ii) Use hand tools (forks and spades) to remove the spoil and deposit beyond RPA.
iii) Identify roots to be retained by brushing or the use of compressed air
iv) Unless after professional assessment permits pruning, roots in excess of 25mm Ø are to be retained in-situ by manually clearing around (with compressed air for example), wrapping with non-woven geotextile (e.g.Terram), covering with a void former e.g. split, rigid polythene piping.
v) Unless after professional assessment permits pruning, retention of roots 50mm Ø or more will be by the use of void-formers (see **Appendix 5**).
vi) Roots <25mm Ø will be pruned using sharp pruning tools ensuring that no splits or tears occur and that the pruning wound is made as small as possible. Roots will be pruned back to a side shoot where possible or to a suitable position.

NOTE: THE APPOINTED ARBORICULTURAL SUPERVISOR IS TO BE CONSULTED BEFORE ANY WORK, EITHER SCHEDULED OR UNSCHEDULED, IS CONSIDERED WITHIN THE EXCLUSION ZONE OR ROOT PROTECTION AREAS OF ANY RETAINED TREE. FAILURE TO DO SO MAY LEAD TO ENFORCEMENT ACTION BY THE LPA.

4.4 In order to afford protection from general construction processes associated with the demolition of the garages and forecourt, it will be prudent to erect robust tree protection barriers (normally wire mesh panels) in the position indicated on the Tree Protection Plan at **Appendix 2** (TPP1_SMG). A recommended example of the type BS grade tree protection is included at **Appendix 3**.

4.5 Following erection of the tree protection barriers and following removal of the existing surfaces, I recommend installing the ground protection (refer to the TPP for its location), to ensure that roots under the surface are not damaged by compaction during regular passing by operatives and light machinery. **Note**: where ground protection is to be installed, no excavations are to take place in this location. I have included recommended examples of suitable ground protection at **Appendix 3** also.

4.6 The rooting environment for the retained trees T1-T4 can be improved by manual aeration using hand tools to 'fork over' the upper 200mm of soil and the addition of well-rotted wood chip mulch to a maximum depth or 75mm and maintained for the duration of the build. The mulch is to be maintained in a moist but not water-logged condition. Refer to **Appendix 6**.

4.7 In order to ensure that the tree protection measures are implemented effectively, a site monitoring exercise will be undertaken to confirm:

i) The efficacy and accuracy of the fencing and ground protection
ii) The root inspection and treatment exercise
iii) Effective maintenance of tree and ground protection

An example of a site record (tree protection) is provided at **Appendix 4**. In this case, the form will be used as confirmation that all practical precautions have been undertaken in accordance with this method statement.

4.8 A copy of this method statement is to be retained on site for the duration of the build process together with a scaled, colour copy of the Tree Protection Plan.

4.9 The details pertaining to tree protection as set out in this method statement, specifically include:

i) removal of structures from within RPAs

ii) erection of tree protection barriers:

iii) the installation of ground protection;

iv) lines of communication and incident reporting,

are to be explained to the Site Agent at the pre-commencement site meeting. It will be the responsibility of the Site Agent to ensure that all personnel working on site are aware to the tree protection measures processes. A copy of this method statement is to be retained on site for the duration of the build process together with a scaled, colour copy of the Tree Protection Plan.

4.10 Key times for site supervision include:

1. Completion of agreed/necessary tree works
2. Erection of tree protection barriers
3. Installation of ground protection
4. Works within RPAs of retained trees
5. Landscaping

4.11 Effective site monitoring will be undertaken from the outset of the project and at agreed intervals thereafter. The frequency of monitoring may well decrease following the proper installation of all tree protection measures. Below is a recommended programme of arboricultural supervision. (This programme may alter dependent upon site circumstances or by agreement.)

4.12 The process for recording the tree protection measures will involve:

i) Site Agent to contact Arboricultural Supervisor with a minimum of 5 days' notice of any site work commencement.

ii) Arboricultural Supervisor to monitor site to agree tree protection fencing

iii) When all tree protection is installed in accordance with the tree protection plan, the Arboricultural Supervisor is to arrange with LPA tree officer and relevant contractors **the pre-commencement site meeting** in order to agree the tree protection and subsequent works within RPAs of retained trees and importantly the lines of communication between the on-site contractors, the Arboricultural Supervisor and the LPA tree officer and incident reporting,

iv)Arboricultural Supervisor to record all site visits and distribute reports to LPA tree officer and contractors for their records

v)Subsequent to completion, Arboricultural Supervisor to sign-off and complete.

vi) Any incidents resulting in potential tree damage are to be reported in line with the 'Incident Reporting Flow Chart in **Appendix 4**.

Table 5 Preliminary site supervision schedule

Stage	Action	Arboricultural Supervisor (AS) (Required – Y/N)	Notes
1	Pre-commencement meeting*	Y	Site Agent(SA) and LPA tree officer, contractor to attend
2	Tree works	Y	Following completion of tree works
3	Demolition and Initial supervised manual dig exercise and any root treatment	Y	SA to advise AS prior to commencement
4	Installation of tree protection and ground protection	Y	PRIOR to ground/demolition works
5	Ground works and Construction phase	Y	AS to monitor tree protection at agreed and suitable intervals
6	Remove tree/ground protection	N	No tree protection to be removed without prior agreement with the AS
7	Tree planting/landscaping	Y	Brief landscape company & sign off

4.11 The frequency of tree protection monitoring depends upon the nature of the project. In this case, it will be appropriate for the SA to organise with the AS monitoring visits to be twice in the initial 28 days from commencement and thereafter once every 28 days for two months.

Table 6 Contact List (to be completed **PRIOR** to commencement)

Interested Party	Name	Company/LPA	Contact Number(s)	Comment/ Responsibilities
Planning Consultant(s)	TBA			Planning submissions & Conditions
Site Agent	TBA			Day to day site management; co-ordination of timings; **contact with project Arboriculturist**
Main Contractor	TBA			Legal and administrative running of the project; finance; appointment of and liaison with all project consultants
Arb. Supervisor	TBA			Tree protection and management; dissemination of tree-related information
LPA Tree Officer	TBA	L B Richmond		Tree protection and enforcement
Site Engineers	TBA			Technical advice and design
Architects	A Gilbert	Clive Chapman Architects		Design

TBA – to be advised

***Pre-commencement means i) before any works including tree felling or pruning and ii) before any ground works or demolition commences and upon completion of the initial installation of the tree protection, including ground protection.**

5.0 Precautions during Landscape Work

5.1 The following steps (both general and site specific), are advisable in relation to implementing any landscape works, which may have the potential to affect retained and or protected trees:

1. Advise arboricultural supervisor of intended time frame of landscape work in advance of commencement.
2. Re-locate existing tree protection fencing/ground protection to enable landscape work to proceed.
3. With bio-degradable spray paint or site pins with plastic tape, mark out the position of the relevant tree root protection areas (RPA) as per the tree protection plan.
4. Within the RPAs, avoid using any mechanical tools or vehicles (e.g. tracked or wheeled machinery).
5. Spread any mulch or top soil manually, with the use of wheel barrows and hand tools. It will be acceptable to use of the back actor of a tracked excavator to spread piled top soil or

mulch into the RPAs of protected trees provided the bucket does not come in contact with the ground and that the power unit is positioned outside of the RPAs at all times.

6. Any planting pits are to be excavated manually within the RPAs of any retained trees.
7. Multiple passes within the RPAs along one route, pedestrian and with wheel barrows will require some ground protection to be installed prior to working. Ground protection can be scaffold boards over wood chip for example.
8. A record of the landscape working method is to be made and provided to the Council for their file.
9. Hard landscaping features will be constructed under supervision within the RPA of retained trees and will avoid, where possible, the re-grading of soil.

6.0 General site care (trees)

6.1 No fires will be lit on site.

6.2 No access will be permitted to within the fenced or otherwise protected areas (unless for site accommodation or Authorised agreement) at any stage during construction.

6.3 No materials, equipment or debris will be stored within the fenced areas unless agreed with the arboricultural supervisor.

6.4 Areas for mixing are to be located beyond RPAs of trees and contained to prevent leaching into the soil.

6.5 A copy of this report and the Tree Protection Plan is to remain on site at all times.

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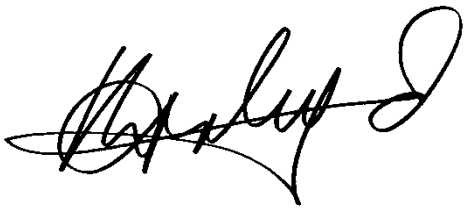

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Date: 13th May 2022

References:

1. Matheny. N, Clark. J. R, 1998. 'Trees and development; A technical guide to the preservation of trees during land development'. ISA
2. Costello, L.R, Jones. K. S, 2003. 'Reducing infrastructure damage by roots: A compendium of strategies.' ISA Western Chapter.
3. Roberts. J, Jackson. N, Smith. M, 2006. 'Tree roots in the built environment.' TSO DCLG
4. Lindsey, P. Bassuk, N. 1991 'Specifying soil volumes to meet the water needs of mature urban street trees and trees in containers'. Journal of Arboriculture vol. 17 No 6.
5. Harris et al, 1999 'Arboriculture, Integrated Management of Trees, Shrubs and Vines' Third Edition Prentice Hall
6. Watson, G.W., Costello, L., Scharenbroch, B. & Gilman, E. 2008 The landscape below ground III The international society of arboriculture
('Tree root system response to woody root severing and fine root desiccation' – 'The root severing location producing the greatest decay or discolouration varied among species. Defect development as a result of severing roots of any size root at any distance is not likely to result in a threat to the health or the stability of the tree.')
7. Dobson, M 1995 Tree Root Systems AAIS 130/95/ARB
8. Hirons, A D, & Thomas, A P 2018 Applied Biology Wiley Blackwell
9. R D Macleod and W J Cram 1996 'Forces Exerted by Tree Roots' Arboricultural Advisory Information Service 134/96/EXT

APPENDIX 1

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No.	Species	Height	Trunk Dia.	Radial Crown Spread	Crown Clear-ance	Height to 1st Branch	Life Stage	Physi-ology	Struct. Condition	Landscape Value	Est. Years	Cate-gory	Comments	RPA Radius	RPA m2
T1	Plum *(Prunus Domestica)*	6m	250(e)	2m	2m	2m N	Mature	Fair	Fair	Low	20+	C (12)	Off site tree; garden fruit tree; incomplete inspection; limited access.	3.0m	28.3m²
T2	Corkscrew Willow *(Salix matsudana Tortuosa)*	9m	350(e)	N2m E3m S4m W4m	2m	3m W	Mature	Good	Good	Medium	20+	B (12)	Off site tree; low, over-hanging branches; garden ornamental; incomplete inspection; limited access.	4.2m	55.4m²
T3	Flowering cherry *(Prunus sp.)*	10m	400(e)	N3m E2m S3m W5m	2m	3m W	Mature	Good	Good	Medium	20+	B (12)	Garden ornamental; off site tree; incomplete inspection; limited access.	4.8m	72.4m²
T4	Apple *(Malus sp.)*	6m	150(e)	3m	2m	2m N	Mature	Fair	Fair	Low	20+	C (12)	Off site tree; garden fruit tree; incomplete inspection; limited access.	1.8m	10.2m²
T5	Cider gum *(Eucalyptus gunnii)*	10m	250(e)	3m	3m	3m W	Early Mature	Poor	Fair	Low	10+	C (1)	Off site trees; dying top; slender form.	3.0m	28.3m²
T6	Sycamore *(Acer pseudoplatanus)*	10m	300(e)	3m	3m	3m N	Early Mature	Good	Good	Low	20+	C (1)	Off site tree; incomplete inspection; limited access.	3.6m	40.7m²
T7	Purple Japanese maple *(Acer palmatum 'Atropurpureum')*	5m	100(e)	2m	2m	2m N	Early Mature	Good	Good	Low	20+	C (1)	Off site tree; garden ornamental; incomplete inspection; limited access.	1.2m	4.5m²
T8	Ash *(Fraxinus excelsior)*	6m	100(e)	2m	2m	3m N	Young	Fair	Fair	Low	10+	C (1)	Off site tree; self-set sapling with risk of Ash Dieback disease; incomplete inspection; limited access.	1.2m	4.5m²

Notes to the tree survey schedule

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Notes:

1. No refers to the tree identification number e.g. T1, T2 etc. numbers preceded by 'G' refer to Groups and 'H' refer to Hedges
2. Species refers to the tree name as an English and botanical. (Sometimes the botanical name will not be included)
3. Height describes the approximate height of the tree in meters from ground level.
4. Trunk Diameter is the diameter of the stem/trunk measured in millimetres at 1.5m from ground level. The diameter may be estimated (e), where access is restricted. An average (a) may be taken for tree groups. A full inspection is always recommended.
5. Radial Crown Spread refers to the crown's radius in meters from the stem centre. This dimension is estimated.
6. Crown Clearance is the height in meters of crown clearance above ground level together with the height and direction of the lowest branch
7. Height to first branch is the height in metres from ground level to the first main branch
8. Life stage is the tree's maturity **Y**oung; **S**emi **M**ature, **E**arly **M**ature, **M**ature, **O**ver **M**ature, **V**eteran
6. Physiology describes the tree's general vitality as **Good** (normal), **Fair** (sub normal), **Poor** (weak), **Dead**.
8. Structural Condition - **Good** (no or only minor defects), **Fair** (remediable defects), **Poor** - Major defects present or suspected.
9. Landscape Value (Contribution) - **High** (prominent landscape feature), **Medium** (visible in landscape), **Low** (secluded/among other trees).
10. Estimated Years – Estimated remaining useful years: **10yrs+**, **20yrs+**, **40yrs+**
11. Category - refers to the British Standard 5837:2012 Table 1 Category and refers to the tree/group quality and value; **'A'** - **High**, **'B'** - **Moderate**, **'C'** - **Low**, **'U'** - **Remove or very poor quality**. The sub-category in brackets refers to the retention criteria values where **1** is **Arboricultural**, **2** is **Landscape** and **3** is **Cultural** including **Conservation/ecological, historic and commemorative**.
12. Comments include observations regarding tree condition, setting and function/properties and characteristics
13. RPA radius refers to the radial distance measured in metres from the trunk centre. It is a function of the tree's diameter (s). RPA means root protection area
14. RPA m^2 means the area of the BS standard root protection area derived from the RPA radius.

NB: Column headings may alter and some of the above notes are not applicable to the schedule in question.

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those 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) • Trees 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, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

APPENDIX 2

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ST MARY'S GROVE

38 36 34 20 18

'THE MITRE' PUBLIC HOUSE

REFUSE & RECYCLING PICKUP POINT FOR COLLECTION DAYS (TO BE MOVED BY CARETAKER)

EXISTING PARKING RETAINED

CHURC ALMS 15

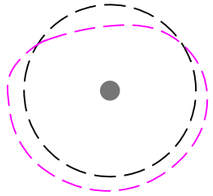
6 5 7 8 4 3 2 1

Supervised removal of surfacing

0 5 m 10 m 25 m

Scale: 1:250

ACS (Trees) Consulting LEGEND



BS Root Protection Area, (RPA) shown uniform (above left) but site features such as roadways, retaining walls and foundations, may modify root patterns and therefore the RPA shape.

Indicative

A grade trees

C grade trees

B grade trees

U grade trees

CEZ Position of tree protection barriers; denotes **C**onstruction **E**xclusion **Z**one for the duration of the project.

NDA Area for effective ground protection suitable for the project - No Dig Area. Retain original ground level.

NDA Area for supervised removal of existing surfaces - No Dig Area. Retain original ground level.

Area identified for hand excavations prior to construction of foundations. All work to be supervised by an arborist to advise upon root treatment where necessary.

Tree Management Methods to be adopted on site.

1. Undertake pre-commencement site meeting to agree tree protection methods and timings.
2. Carry out any permitted tree works - ask before beginning.
3. Install all tree and ground protection (see Appendix 3).
4. Undertake demolition and ground works.
5. Construction phase.
6. Remove tree protection and carry out landscaping.

Client : Richmond Charities

Project : St Mary's Grove Garages, Richmond, TW9 1UY

Title : Tree Survey & Protection Plan

Scale : 1: 250 A3 | Dwg No : TPP1_SMG | Rev : -

Date : May 2022

Do not scale from this drawing. Any discrepancies are to be reported to ACS (Trees) Consulting.
This drawing is to be used when printed to scale & in colour.

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ACS (TREES) Consulting
Urban & rural tree management

APPENDIX 3

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Tree Protection Barriers

Specifications (specifically identified by outline box and shading)

2.4m Hoarding

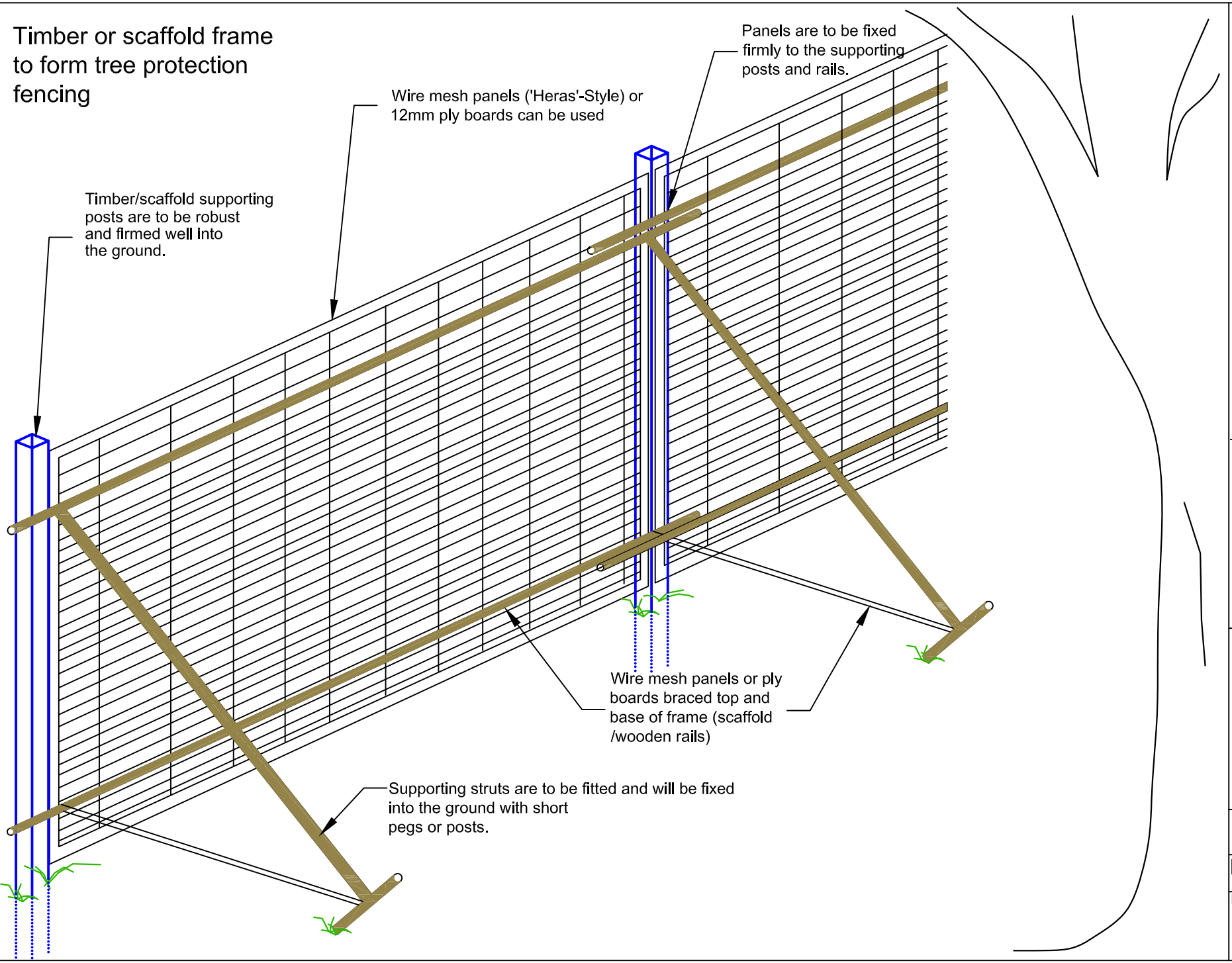
3.0m 100 X 100mm square wooden posts
3 X 38 X 87mm wooden rails affixed to posts
2.4m X 1200 outside grade ply panels (12mm) affixed to rails.
50 X 100mm angled supporting struts affixed internally (quantity as required).

(Supporting posts fixed into position using concrete. All post holes to be hand excavated. Post holes to be no larger than 300 X 300mm.)

'Heras' (Style) Fencing

'Heras' fencing describes the 2.4m galvanised steel mesh panelled fencing normally supplied with block bases and block trays. Block bases are to be used in conjunction with angled scaffold struts only. The use of blocks only is not effective. For extra barrier vertical stability, scaffold poles set at a 45^0 angle upon the 'tree-side' of the barrier and fixed to the ground at the end of each panel. Up-right supporting posts will be braced at the top and the base for added support.

Timber or scaffold frame to form tree protection fencing



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Title:

Example of Tree Protection Fencing

Note:

Steel scaffold or timber can be used to support boards or wire mesh panels

Date: Jan. 07

Ref:

Note: Sketch Plan Only - Not to Scale

Tree Protection Fencing

Scaffold Framework supporting ‘Heras’ type panels with signs attached.

Wooden Framework with ‘Heras’ type panels attached.

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Ground/root protection with these ‘SignaRoad mats’. Specially-designed proprietary products to afford the ground and associated roots effective protection from compression or soil compaction during construction.

Image courtesy of Signature Systems

Interlocking system prevents buckling or slippage to afford lasting and effective ground and root protection.

The high density polythene sheets dissipate loads of 400psi to prevent soil compaction from vehicle traffic of all kinds used in construction.

Ground Protection using heavy-duty ground plates.

(Courtesy of Eve Trackway UK – Tel: 08700 767676)

Robust aluminum, interlocking plates deflect heavy loads and prevent soil compaction beneath.

Effective use of X Trackpanel for site access.

Suitable for

- Heavy Duty Roadway
- Medium Duty Roadway
- Light Duty Roadway
- Walkway
- Eve Install

Specification

- Width: 3m
- Length: 2.5m
- Height: 50mm
- Weight: 254kg

1. Lay min. 75m depth of sharp sand/wood chip over identified ground area
2. Lay 15mm aluminium road plates over sand/wood chip
3. Fix ground protection cover into place with road pins or similar
4. Erect protection fence as per BS grade.
5. Monitor condition and efficacy and maintain as appropriate.
6. Remove ground protection upon completion/landscaping only.

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APPENDIX 4

ACS (Trees) Consulting
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Arboricultural Site Supervision

ACS CONSULTING

Site:	Project Site Address/Name
Inspected By:	Arboricultural Supervisor (AS)
Client:	Client
Site Agent:	Site Agent's Name (SA)
Date of Inspection:	24/02/2017
Time of Inspection:	8:15:00

Tree Protective Fencing

Tree protection in correct location

Comments/Action

Ground protection - temporary concrete and existing paving

Agreed Construction Exclusion Zone

No debris within construction exclusion zone

Comments/Action

Robust hoarding and temporary concrete ground protection

Amendments to Documentation Required

No amendments required

Comments/Action

Tree protection Hoarding and ground protection over sharp sand.

Remedial Works

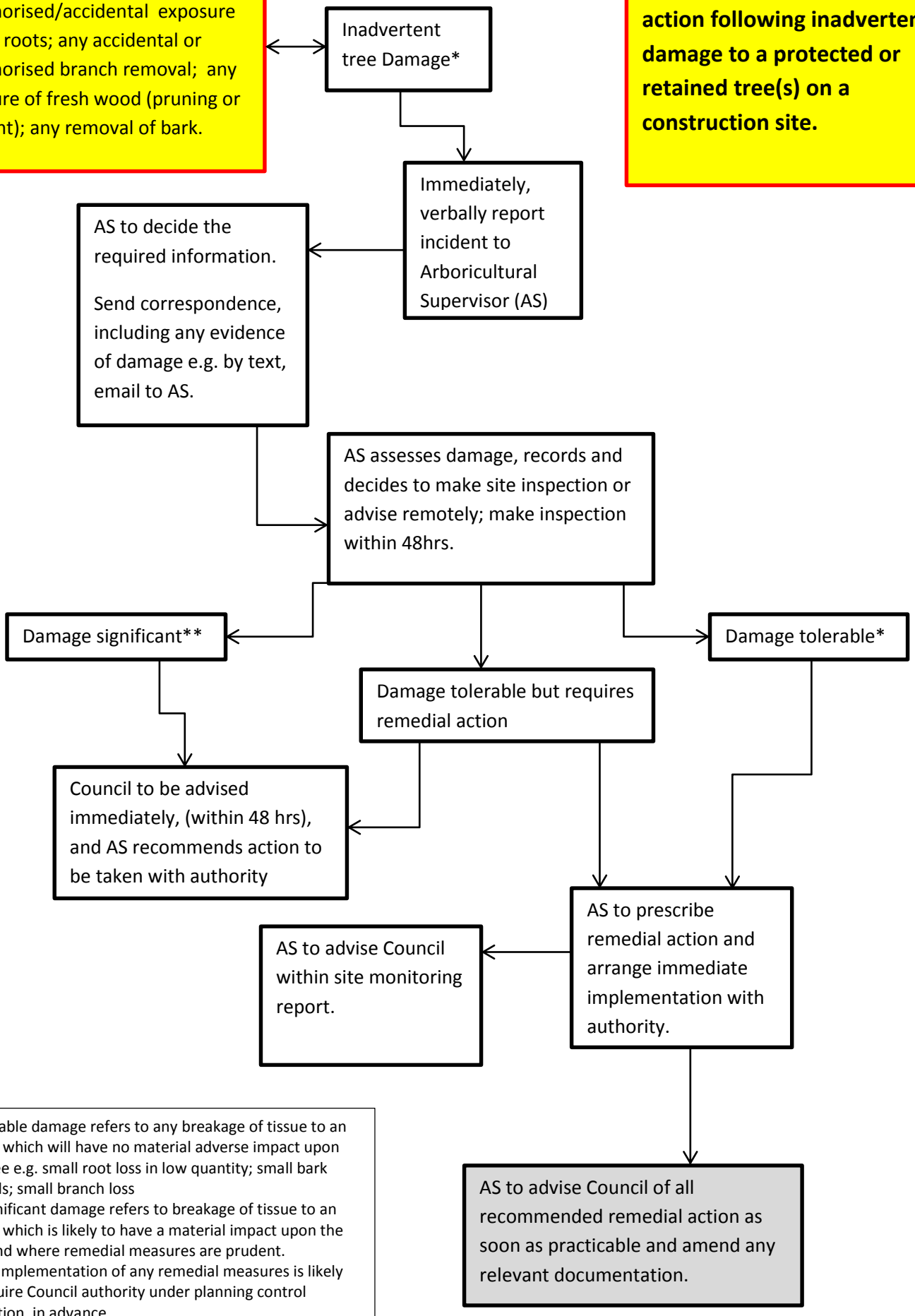
General Comments

1. Tree protection in position and effective
2. Position of site huts used as tree protection for T7 and T10
3. Temporary concrete used for ground protection for T10
4. Hoarding style tree and ground protection effective and in position

Next Inspection April 2017

*Tree Damage is defined as: any unauthorised/accidental exposure of tree roots; any accidental or unauthorised branch removal; any exposure of fresh wood (pruning or accident); any removal of bark.

Procedure for reporting and action following inadvertent damage to a protected or retained tree(s) on a construction site.



*Tolerable damage refers to any breakage of tissue to an extent which will have no material adverse impact upon the tree e.g. small root loss in low quantity; small bark wounds; small branch loss
** Significant damage refers to breakage of tissue to an extent which is likely to have a material impact upon the tree and where remedial measures are prudent.
Note: Implementation of any remedial measures is likely to require Council authority under planning control legislation, in advance.

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Also at: Office Eighty Five, 272 Kensington High Street, London W8 6ND | Tel: 0208 687 1214
E: hal@acstrees.co.uk | Partners: H.Appleyard and A. Appleyard

APPENDIX 5

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Brief for Hand-excavated tree root investigation trial pits/trenches

1. Obtain any necessary licences/authorisation for excavation works from the appropriate agency or land owner.

2. Undertake Health and Safety risk assessments **before** proceeding with any excavation e.g. use of Cable Avoidance Tool; reference to utility maps.

3. Obtain details (plan) of exact dimensions and location of proposed trial pits, site access details and existing surface types. Trial pits are to be no less than 1.2m deep unless otherwise agreed.

4. Subject to written agreement, arrange access, protect the work area(s) with barriers and commence excavation works.

5. Mark out the area to be excavated with biodegradable spray paint. Where soft landscaping (lawn, planted areas), lay ground protection (e.g. 25mm OSB boards over 50mm wood chip mulch), alongside the proposed work area.

6. Within the identified area, carefully lift existing surfaces and place stones, paving or flagstones, where possible in a retrievable location. Where turf or grass is the surface, cut the turf out for the entire trial pit area and store in a retrievable location for re-instatement when appropriate.

(Note: where it is necessary to remove concrete or other very hard surfaces, the use of light mechanical or hydraulic hand machinery would normally be acceptable. Provisions for making good of all hard and soft surfaces will be required and agreed prior to commencement).

7. With the use of hand tools in combination with specialised pneumatic tools (e.g. 'Air Spade' or 'Air Knife'), manually remove the soil, preferably using an industrial soil vacuum, to expose roots to the agreed depth of the trial pit. **All roots in excess of 25mm diameter are to be retained for specialist assessment**.

8. Use a hand brush (or compressed air) or similar to clear excess soil away from encountered roots before proceeding to use spades, forks and trowels to remove further soil. **Note: Hand excavations must avoid, so far as reasonably practicable, damage to the root bark or root wood or retained roots.**

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9. The exposed roots are to be wrapped for easy identification with a material. To prevent desiccation (drying out) of all roots, the trial pit and retained roots should be covered with a damp material e.g. hessian or similar. **No roots are to be left exposed for more than four hours**. All exposed trial pits must be covered with robust boarding overnight for safety reasons.

Fig. 1 Protect the site (left) and mark out the area for excavation and lay ground protection

Fig. 2 Use compressed air to remove soil from roots

Fig. 3 Lift pavings and use boards to cover pits and trenches for safety

10. All spoil is to be placed upon boards, paving or sheeting in an agreed location, ready for backfilling when appropriate.

11. Exposed trial pits are to be fenced off and covered for safety reasons. All site users are to be made aware of their precise location.

12. Following root exposure – obtain expert advice on any root treatments (e.g. pruning or the use of void formers).

Fig. 4 Roots wrapped for identification and assessment by the appointed arboricultural consultant

APPENDIX 6

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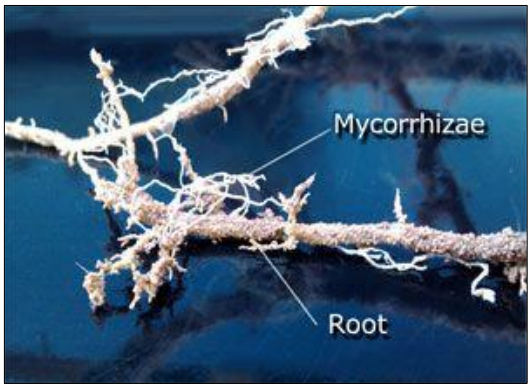
Tree rooting zone improvement

- Aeration
- Improve soil biosphere (microbial/mycorrhizal content and function)
- Improve soil structure, moisture content and fertility

Aeration of the soil improves soil structure and irrigation



Soil ameliorates can be added such as Organic Matter and Mycorrhizae (specialised fungi)

Simple applications of decomposed woodchip mulch over the bare earth under the canopy spread helps to retain moisture, suppress weed and grass competition and improve soil flora and fauna.