

Arboricultural Impact Assessment		Prepared by:	Hal Appleyard Dip. Arb(RFS), F. Arbor.A MICFor, RC Arbor A
Project:	2a Ferry Road, Barnes SW13 9RX	Produced for:	Ms C Hall
Date: 6th May 2021	Ref: ha/an1/2aferryrd/2021		
Planning Ref:			

1.0 Introduction and Scope

- 1.1 I have been instructed to carry out a tree survey at 2a Ferry Road, SW13 and to provide advice in respect of the trees and any impacts, which may be realised from proposed construction of the new gates.
- 1.2 The site and trees were inspected on 26th April 2021 and in accordance with BS5837 trees in relation to design, demolition and construction – recommendations (the BS). This report is not a full tree condition or hazard assessment. Tree owners are to reasonably ensure their trees are maintained safely.

2.0 Site and Trees

- 2.1 The site comprises an existing, single storey dwelling with courtyard garden area, which is accessible from Ferry Road via a concrete surfaced crossover. The courtyard is also surfaced with concrete. The western boundary consists of a brick wall beyond which is No 2 Ferry Road. Within the front garden, adjacent to the boundary wall is a mature Horse Chestnut tree, which is referred to as T1.
- 2.2 The details of the one tree in question at this site are provided in the Appendix. The Horse Chestnut is mature and growing in normal vitality, with no obvious structural defects. The canopy is dense, possessing regrowth triggered by previous pruning work. The tree has an approximate trunk diameter of 750mm meaning that an unmodified BS root protection area (RPA) is based upon a radial distance of 9.0m.
- 2.3 Given that the base of the tree is adjacent to the site's western boundary wall, it is likely that roots have breached the boundary and grown beneath the footings of the wall and extended into the courtyard of the site.
- 2.4 The tree is prominent in the landscape and construction that might harm the tree, causing it to prematurely deteriorate in condition or die off, are to be avoided. This report sets out the impact of the proposed construction, subject to adopting normal tree protection measures.

Fig. 1. Horse Chestnut viewed from Ferry Road.



3.0 Impacts of Construction upon trees

- 3.1 Tree roots tend to be deflected by subterranean obstructions such as inhospitable soil or solid structures e.g. foundations or footings. Some roots may pass beneath shallow footings. I have assumed that some roots may have grown into the soil beneath the concrete forecourt.



Fig. 2 Courtyard garden area adjacent to the road and No 2 Ferry Road. Line of new gates (dashed)

- 3.2 The proposed new gates require three posts for support and security. The posts are mild steel. The posts are to be fixed into the ground in post holes, backfilled with concrete. The depth of the post holes is expected to be 500mm. Excavations for form the hole will be necessarily 300mm x 300mm. Refer to the Appendix 2 for post hole locations.
- 3.3 Whilst it is possible that roots may grow within the courtyard soil, the likelihood of conflicts with roots of importance to the tree, during excavation of three vey modes post holes, is very low indeed. The post hole area equates to 1.2m². The BS RPA for the tree is 254m². The courtyard area is 25m². Accordingly, the proposed area for construction is 0.05% of the BS RPA or 5% of the courtyard. In the worst case, where the majority of roots have been confined to the courtyard, 95% of the RPA will be undisturbed. Clearly, this scenario is impossible but it demonstrates the negligible impact of proposed construction upon the tree.
- 3.4 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	Total
Score							
T1	2	3	3	3	2	0	13

*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; than 10-20% merits 3 points; less than 10% 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 H. Chestnut	Mature	Normal	0.05%	High	1. Negligible excavations proposed 2. All existing surfaces retained 3. Tree roots of 25mmØ to be retained by adjusting location of post hole

* % 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 4 Summary of Impact of Proposed Construction on Trees*

Tree Ident.*	Landscape Contribution	Implications /Impact	Mitigation measures	***Tolerance ^{1,2,6}	Impact Assessment**
T1 Horse Chestnut	High	Minor excavations within 0.05% of RPA	1. Retain all existing surfaces 2. Manual excavation for post holes 3. Line post holes with durable non-pervious liner 4. Retain all roots of 25mmØ and over	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 extent of construction, within the BS root protection area of the Horse Chestnut tree T1, is negligible at 0.05%. The tree is in normal vitality with no obvious signs of structural weaknesses or malaise. The tree is naturally protected by the presence of the boundary wall and the existing hard surfaces.
- 3.2 Subject to retaining excavations to the minimum as recommended and retaining all the existing surfaces, there is a neutral impact of the proposals upon the tree.

4.0 Tree Protection Measures to be adopted on site

- 4.1 As a precaution against exposing roots and the risk of damage, the existing concrete surfaces are to be retained.
- 4.2 The three post holes are to be manually excavated, confining the opening to 300mm x 300mm, using hand-held breakers to first break out the upper concrete surface area. The sub base and soil below is to be removed manually.

- 4.3 In the unlikely event of roots in excess of 25mm diameter being encountered, the post hole is to be adjusted slightly to accommodate the root. Any exposed roots to be retained are to be wrapped in hessian for protection.
- 4.4 Before pouring concrete to set the posts in position, the post holes are to be lined with a durable, non-pervious liner such as thick gauge (1mm) polythene or similar. (Rubble bags are useful for this purpose – see Fig. 3). The liner is to prevent potentially tree root-toxic materials (e.g. lime within concrete) from leaching into the local soil.

Fig. 3 Liners inserted into the post hole before setting the post in position with concrete



- 4.5 The methods of manual digging near trees are described within **Appendix 3** 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 3**).
- 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.

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

- i) The manual dig exercise (images to record the lack of roots or root 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.

4.7 A copy of this method statement is to be retained on site for the duration of the

5.0 General site care (trees)

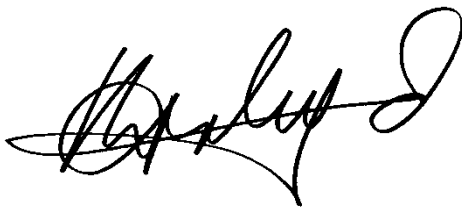
- 5.1 No fires will be lit on site.
- 5.3 No materials, equipment or debris will be stored within unprotected ground within the RPA of retained trees.
- 5.4 Areas for concrete or mortar mixing are to be located beyond RPAs of trees or contained to prevent leaching into the soil.
- 5.5 A copy of this report and the Tree Protection Plan is to remain on site at all times.

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2. Costello, L.R, Jones. K. S, 2003. 'Reducing infrastructure damage by roots: A compendium of strategies.' ISA Western Chapter.
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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.')

Appendices

- 1 – Tree survey data
2. – Proposed plan with tree
- 3 – Tree root assessment and protection

APPENDIX 1

No.	Species	Height	Trunk Dia.	Radial Crown Spread	Crown Clearance	Height to 1st Branch	Life Stage	Physiology	Struct. Condition	Landscape Value	Est. Years	Category	Comments	RPA Radius	RPA m2
T1	Horse chestnut (<i>Aesculus hippocastanum</i>)	13m	750(e)	5m	3m	3m N	Mature	Good	Good	High	20+	B (12)	Off site tree with dense canopy; pruned in past; dense re-growth; incomplete inspection owing to site access.	9.0m	254.5m ²

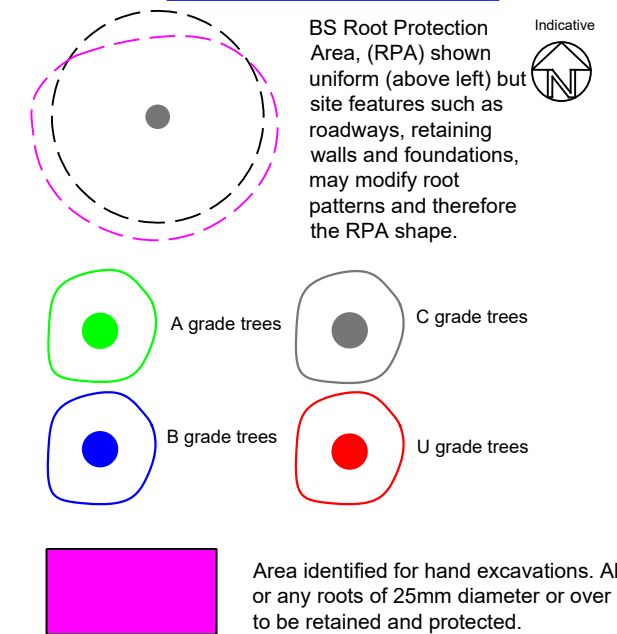
Notes to the tree survey schedule

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 **Young**; **Semi Mature**, **Early Mature**, **Mature**, **Over Mature**, **Veteran**
9. Physiology describes the tree's general vitality as **Good** (normal), **Fair** (sub normal), **Poor** (weak), **Dead**.
10. Structural Condition - **Good** (no or only minor defects), **Fair** (remediable defects), **Poor** - Major defects present or suspected.
11. Landscape Value (Contribution) - **High** (prominent landscape feature), **Medium** (visible in landscape), **Low** (secluded/among other trees).
12. Estimated Years – Estimated remaining useful years: **10yrs+**, **20yrs+**, **40yrs+**
13. 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**.
14. Comments include observations regarding tree condition, setting and function/properties and characteristics
15. 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
16. RPA m² means the area of the BS standard root protection area derived from the RPA radius.

APPENDIX 2

ACS (Trees) Consulting LEGEND



Tree Protection Methods to be adopted on site.

1. Mark out the position of the post holes.
2. Retain all existing concrete surfacing.
3. Using a hand-held breaker, break out the concrete no more than 300mm x 300mm.
4. Using post-hole spades remove the soil from the post hole.
5. Retain all/any roots of 25mm diam. or more. Adjust location of post hole accordingly.
6. Line the post hole with non-pervious material (e.g. thick gauge polythene), to seal the post hole.
7. Pour concrete to set post.
8. Hang gates.

No 2

T1
Horse Chestnut

5254

concrete
(existing)

existing
surfaces to be
retained

No 2a

Manual
excavation of
post holes

concrete
crossover
(existing)

Pavement

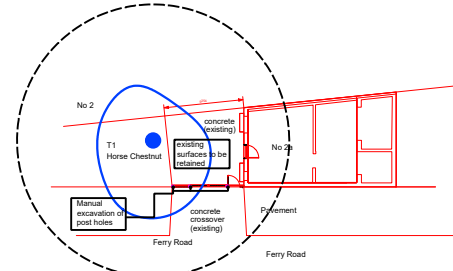
Ferry Road

0 1 m 2 m 5 m



Scale: 1:50

1: 500 A3



Client : Ms C Hall		
Project : 2a Ferry Road Barnes SW13 9RX		
Title : Tree Protection Plan		
Scale : 1: 50 A3	Dwg No : TPP1_FR_2a	Rev : -
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APPENDIX 3

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Root exposure, pruning and protection measures during construction



Mark out area to be excavated by manually and set ground protection at the side of the excavation area



Expose the roots manually and with compressed air as necessary



Undertake root pruning (<math><25\text{mm}\varnothing</math>) using sharp pruning tools, avoiding tears or splits and making the pruning cut as small as possible. Roots in excess of 25mm \varnothing may be pruned following arboricultural advice. Line the exposed soil with an impervious liner before protecting any retained roots.

Contd. Root exposure, pruning and protection measures during construction


Identify the roots for retention and prepare a void-former (root protection 'sleeve').



Wrap the identified roots in hessian before fitting the void-former and sealing with duct tape or similar.



Back-fill the construction area (e.g. footing or base slab) following root protection.