Arboricultural Advice for Tree Protection		**Prepared by:**	**Hal Appleyard** Dip. Arb(RFS), F. Arbor.A MICFor, RC Arbor A
Project:	**1-2 Eton Villas, London NW3**	**Produced for:**	**AS Studio Ltd**
Date: 18th January 2019	**Ref:** ha/an1/etonvillas/2019		
Planning Ref:			

1.0 Introduction and Scope

1.1 I have received instructions to review the proposed plans for a new garden wall, review some images of the relevant tree and to prepare a report detailing tree protection measures and the principles of foundation design near the tree, which are to be adopted during construction.

1.2 I have been provided with a site plan an image and I have reviewed the on-line images of views of the site from the street.

2.0 The Tree and Proposal

2.1 The tree in question is a maturing Flowering Cherry located within an established, residential garden in Hampstead. The site is currently bounded by a low brick wall with a mature privet hedge, which borders Provost Road. The site is within a conservation area, which affords legal protection to trees over 75mm in diameter when measured at 1.5m above ground level.

2.2 It is proposed to construct a new garden wall to divided the existing garden into two. The wall will fall within one metre of the base of the existing Flowing Cherry.

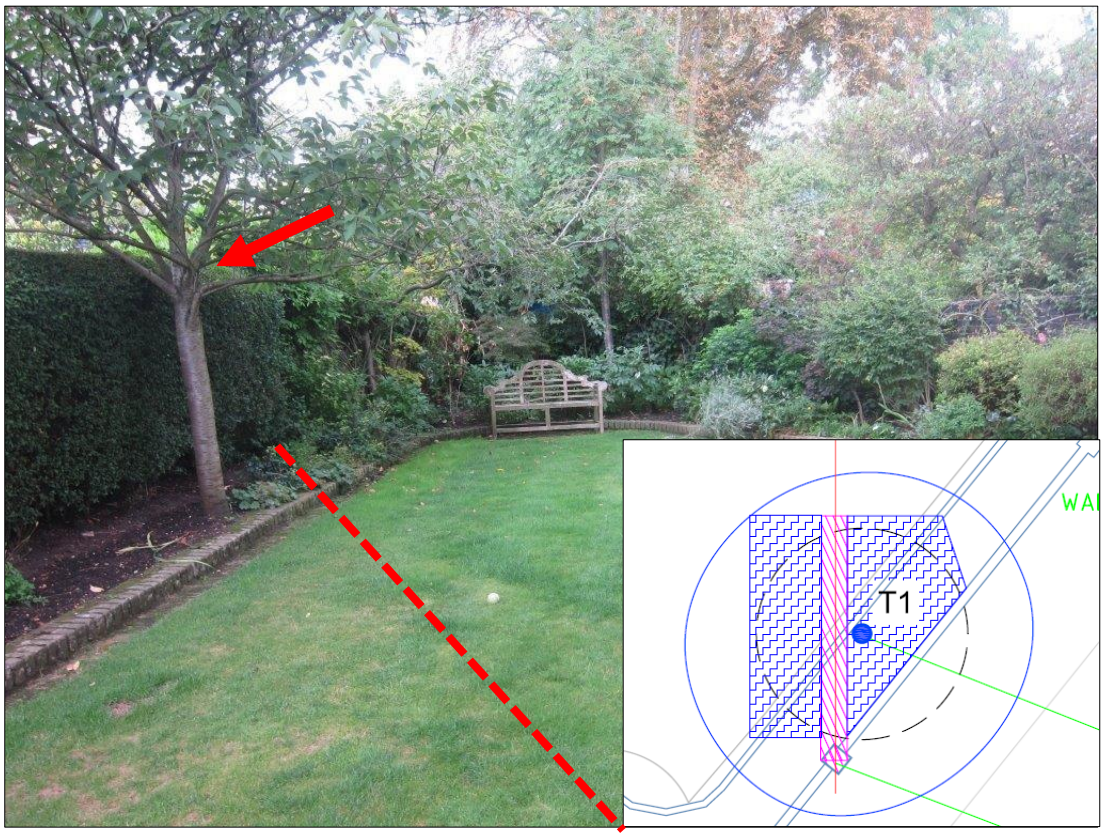
Fig. 1. Cherry tree in question T1 to the front of 1-2 Eton Villas

Image taken from Google Maps

2.3 The tree details are provided in **Appendix 1**, in accordance with the British Standard 5837:2012 Trees in relation to design, demolition and construction – recommendations (the BS). The tree appears in normal growing condition, with few defects. The tree is modest in size and hence merits B grade rather than A albeit that it is likely to grow for in excess of forty years.

2.4 At **Appendix 2** I have shown the position of the tree and its BS root protection area. It is likely that some roots from the tree have grown up against the footings of the existing site boundary low wall and some may have passed beneath, into the soil beneath the pavement of Provost Road. Most roots are expected to exploit the soil of the garden however.

Fig. 2 Cherry tree T1 arrowed. Image taken from within the garden by others. Dashed line of proposed garden wall (approximate)



Inset showing alignment of effective ground protection to protect roots.

3.0 Tree Protection Measures

3.1 The tree can be protected in two basic ways; i) by design and ii) by installing tree and root protection.

Step 1 Assess Root Pattern

3.2 In order to assess the potential for harmful impacts upon the tree from traditional trench footings, it will be necessary to first carry out a manual dig exercise along the line of the proposed wall, within the BS root protection area (RPA) of the tree. This work will expose any roots of importance to the tree and should be overseen by the appointed supervising arborist. The removal of some roots will be tolerated by this vigorous tree. However, it will be important to retain all roots over 25mm in diameter if they fall within the line of the proposed footings. Where no such roots exist, it will be acceptable to adopt traditional trench foundations, provided the trench is first lined with an impervious membrane. This will prevent concrete leaching into the soil, which can be toxic to fine tree roots.

3.3 I have appended methods of root exposure, assessment and treatments to this report and where it is found that roots of importance to the tree would be compromised by the construction of traditional foundations. The supervising arboriculturist can advise accordingly, when the initial dig is carried out. I have set out a method for the initial dig below:

The methods of manual digging near trees is described with **Appendix 4** but for clarity I have set out the procedure below, which is to be overseen by the appointed arboricultural consultant:

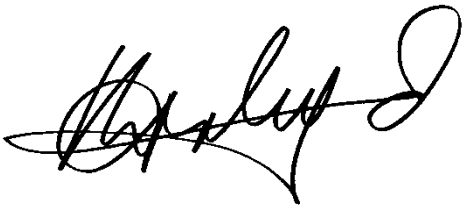
i) Install robust ground protection as per tree protection plan
ii) Clearly mark out the area for hand dig (see TPP)
iii) Using hand tools (breakers, forks and spades) remove the wall and footings
iv) Identify roots to be retained by brushing and cleaning
v) Unless after professional assessment permits 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.
vi) Unless after professional assessment permits pruning, retention of roots 50mm Ø or more will be by the use of void-formers (see **Appendix 4**).
vii) 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.

Step 2 Design the foundations

3.4 Subject to the findings of the above exercise and in consultation with an appointed engineer, a foundation design will be devised, which protects tree roots and permits the tree to grow on in the future. I have provided a 'in principle' suggestion upon the tree protection plan, which adopts a system where by a steel or concrete lintel spans across pads or piles set at positions to avoid roots of importance to the tree. The underside of the lintel will be set at ground level and therefore avoids continuous trenching.

Step 3 Construction the foundations and the wall

3.5 Having established the foundation design, the wall will be constructed with all ground/root protection retained in situ for the duration of the construction process. Following completion of construction, the tree protection is to be removed to permit re-instatement landscaping.



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Appendices
1 – Tree data
2 – Tree Protection Plan (TPP)
3 – Ground protection recommendation
4 – Root exposure and protection methods

APPENDIX 1

ACS (Trees) Consulting
Tree Management Consultants
E:info@acstrees.co.uk

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Tree Survey Schedule

ACS CONSULTING

Site:1-2 Eton Villas, Hampstead NW3

Date: 18th January 2019

Surveyor:H. Appleyard
Ref:ts1/1-2etonvillas

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T1	Cherry, Flowering	7	4 4 4 4	2/N2	Mature	200e	12	2.4	Normal	Good	Medium	B	1,2	20-40	Over hanging branches Garden ornamental

Notes:

1. Height describes the approximate height of the tree in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, E, S, W) clockwise.
3. Ground Clearance is the height in meters of crown clearance above adjacent ground level together with the height and direction of the lowest branch
4. Stem Diameter is the diameter of the stem 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. Protection Multiplier is 12 for single-stemmed trees; for multi-stemmed a cross-sectional area is calculated to derive the DBH, which in turn is multiplied by 12.
6. Protection Radius is a radial distance measured from the trunk centre and is used to calculate the BS RPA.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present or suspected.
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat. refers to British Standard 5837:2012 Table 1 category and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove or very poor quality.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservation/ecological, historic and commemorative.
12. Useful Life is the tree's estimated remaining effective contribution in years.

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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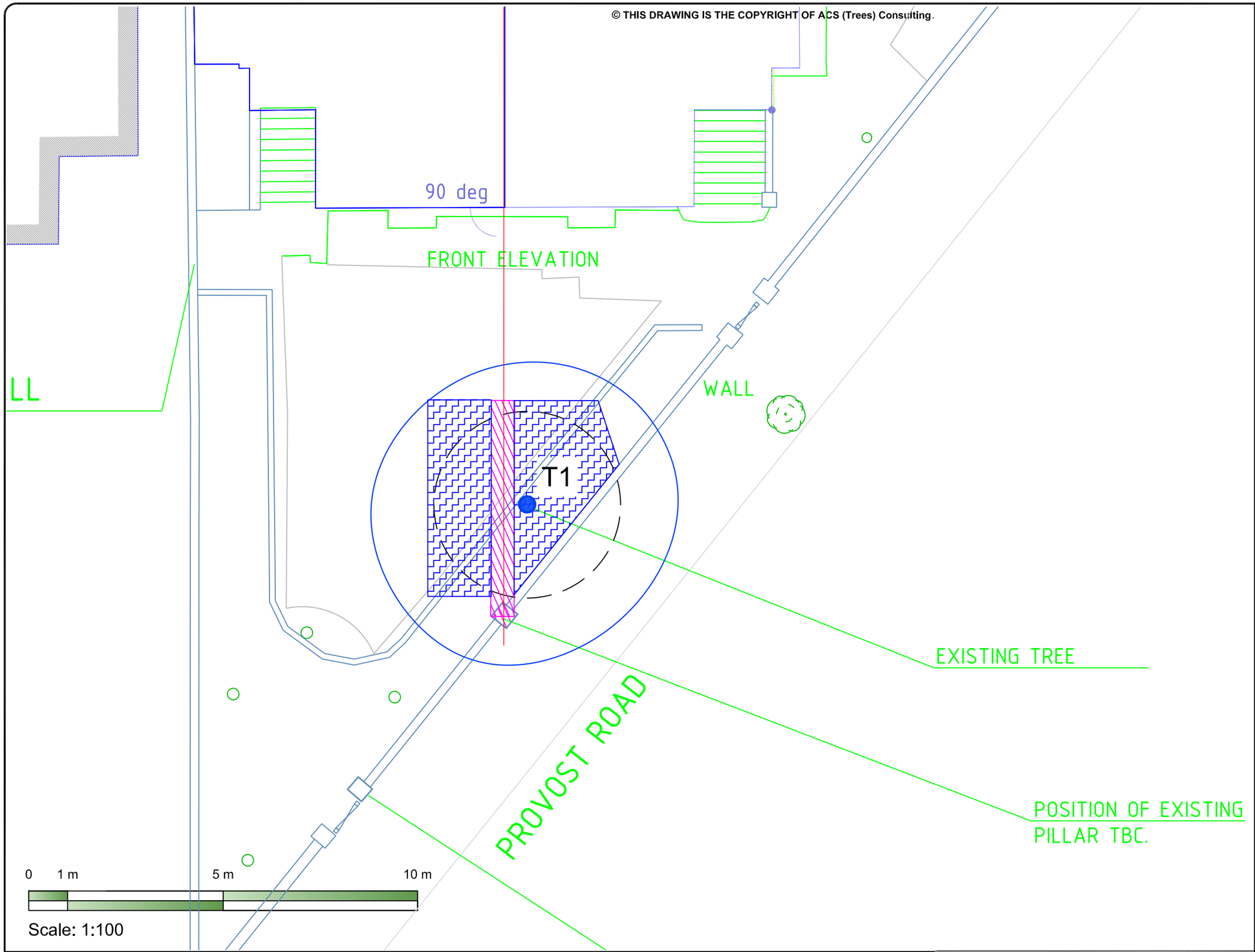
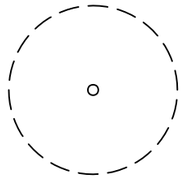
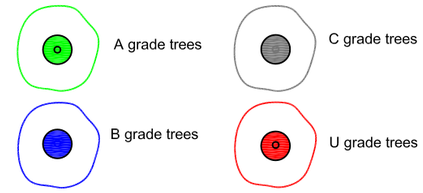


ACS (Trees) Consulting LEGEND



Indicative

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.



A grade trees

C grade trees

B grade trees

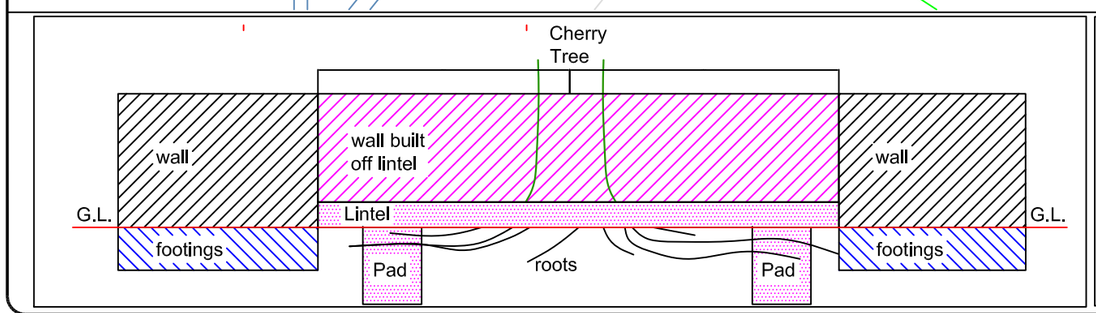
U grade trees

Area for effective ground protection suitable for the project

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. Install ground protection (see Appendix 3).
3. Undertake ground works including supervised manual dig as shown on TPP.
4. Construction phase.
5. Remove tree protection and carry out landscaping.



Suggested foundation style, should roots of importance to the tree be uncovered in the initial dig process. Wall to be constructed off a ground-level lintel, supported by pads or piles. Engineers to advise upon final design.

NOT TO SCALE

Client :
Mrs T Gottesman

Project :
1-2 Eton Villas
London NW3

Title :
Tree Protection Plan

Scale : 1: 100 A3

Dwg No : TPP1_EV_1

Rev : A

Date : Jan. 2019

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.

ACS (Trees) Consulting
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ACS (TREES)
Consulting
Urban & rural tree management

APPENDIX 3

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Fig. 1 Ground protection – hoarding over sharp sand and wood chip

Installing heavy-duty OSB boarding over a depth (min. 50mm) of sharp sand and/or wood chip between the tree protection fencing and the foundation line of new development is effective in protecting roots, which grow in the soil beyond the position of the fencing.

Fig.2 Side-butting scaffold boards and covered and fixed with 20mm OSB boarding

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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 (<25mmØ) using sharp pruning tools, avoiding tears or splits and making the pruning cut as small as possible. Roots in excess of 25mmØ 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.