

Arboricultural Report

Planning and Development

Arboricultural Appraisal and Implications Assessment

Project Name and Address	96 South Hill Park, London, NW3		
Prepared for	Metropolis Ltd	Project Ref	-
ACS Ref	ha/aiams1/96shp	Client	Mr L Small
Prepared by	Hal Appleyard Dip. Arb (RFS), F.Arbor. A. MICFor		
Report Date	31 st May 2018		

ACS (TREES)

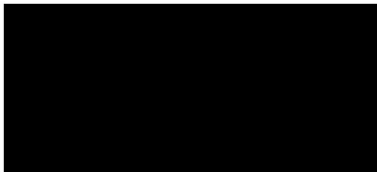
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Hal Appleyard is an Arboricultural Association Registered Consultant and a Chartered Forester

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1.0 Introduction and Scope

Executive Summary

The proposed construction of a new lower ground floor extension will be conducted within the vicinity of a protected Lime tree. The proposed footprint, falls upon a pre-existing design, which was give planning approval subject to conditions, in 2011. This report provides the details of the construction methods and tree protection and assesses the impacts of the proposal upon the tree. Subject to implementation of the proposals in accordance with preliminary recommendations set out in this report, the development scheme will have no adverse impacts upon the tree.

- 1.1 A planning application for the construction of lower ground floor extensions and refurbishment work, is to be submitted for consideration by the Local Planning Authority. Planning consent was previously granted by Camden Council in 2011 reference 2011/1279/P.
- 1.2 The proposed construction is to be undertaken in the vicinity of one Lime tree, which is protected by a tree preservation order reference C105. The implications upon the trees and the methods for tree protection and preservation during ground works, demolition and construction are set out in this report and which includes a requisite tree 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.

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- 1.4 The tree has been inspected on 21st May 2018. The details are provided 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 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 and Trees

- 2.1 The site comprises an existing three-storey, with lower ground floor level, end of terrace dwelling abutting a public footpath to the site's south. The land dips away from east to west and the front garden area is therefore higher than the rear garden, which is set at lower ground floor level. A tall brick wall separates the footpath from the site.

Fig. 1 View of 96 South Hill Park, looking west, with Lime tree T1



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- 2.2 The BS details of the tree is provided within the tree survey schedule at **Appendix 1** and its corresponding position is shown on the tree protection plan included at **Appendix 2**.
- 2.3 The tree, in question is a mature Common Lime, and which grows vigorously adjacent to the boundary wall to the rear south side of the existing dwelling. The tree has evidently been reduced (reference consent 2014/1645/T) and which has responded by producing a dense canopy of young shoots.
- 2.4 With the exception of some very minor dead branches, the tree bears few defects and appears to be in normal growing condition. The tree's roots are covered by existing hard standing surfaces and doubtless their spread has been influenced by the presence of nearby foundations including the those of the boundary wall and of the house itself.



Fig. 2 T1 has developed dense 'epicormic' growth (growth which emanates from the trunk) and which is best removed to the height shown before work commences and before tree protection is installed.

- 2.6 Pruning the tree to remove the epicormic shoots will enable effective tree protection and facilitate construction work.

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2.7 It is important to note that Lime trees are well-recognised as being tolerant to some root loss and disturbance^{1,2,3} but supervision of excavations are prudent and recommended, when carried out within the likely rooting area of the tree. Specialist supervision will prevent the loss of roots important to the tree's structural stability and condition.

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

Proposed Construction and associated works

- 2.7 The proposal involves first pruning the tree (see Table 1) and secondly erecting robust trunk protection. Where possible decking will be retained but where this not possible robust ground/root protection will be installed prior to any demolition work.
- 2.8 The proposed foundations style will be that of a piled and beam solution, where initial manual excavations, will reveal the location of roots which may influence the location of proposed piles.

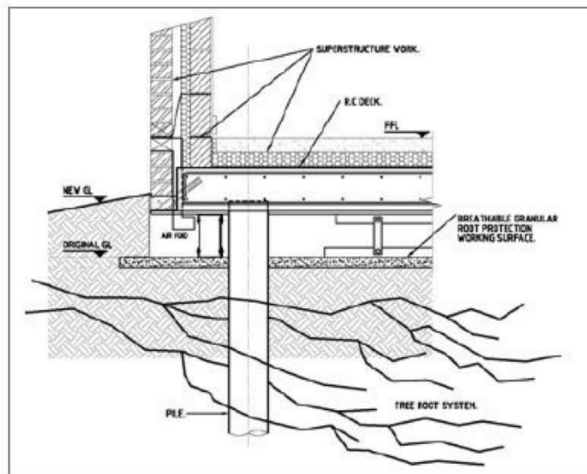


Fig. 3 Extract diagram from construction method statement

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- 2.9 Subject to the implementation of the tree protection measures from the outset of construction, the trees of importance to the landscape, will not be adversely affected by the proposals.

Table 1 **Proposed/Recommended Tree Works**

Tree Works (Spec.)	Tree Nos	Visual Landscape Impact of Works*	Space Available for Replacement Planting(Y/N)	Comments
Remove epicormic growth to 5m above ground (Sp10)	T1	None	-	Removal of new epicormic shoots will have no impact upon appearance or tree condition
Root assessment and pruning (Sp8)	T1	None	-	Specialist supervision of any root pruning
Crown thin by 25% (sp5) and Cut back from building (Sp2.1)	T1	None	-	General tree maintenance
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:

General

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. All works and processes are to comply with all relevant Planning, Wildlife, Environmental, Conservation and Health and Safety legislation.

Sp1. Crown reduction will include reducing the height and spread of a tree's canopy (branching structure) whilst retaining the tree's natural tree form (species determined). The amount of reduction is described in linear metres e.g. 2m (from 6m to 4m radial spread) or 3m (from 15m to 12m tree height). Crown reduction work will be undertaken for a specific purpose, which may include containing tree growth in a given location or reducing wind purchase and stress.

Sp2. Part reduction (selective pruning) includes pruning back from structures or boundaries and which is normally applied to no more than two sides of a tree's canopy. The amount of pruning is

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specified in metres. The result form will be even and provide a framework for re-growth in an even form. The extent of pruning will not impinge upon tree condition and seek to preserve so far as possible, the natural outline of the tree, which is species determined. All pruning cuts are to be made to a suitable growing point (secondary shoot) or removed from the parent branch or stem and no inter-nodal cuts are to occur.

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.

Sp3.Crown Cleaning involves the removal of all dead wood small and large diameter, stubs and broken branches. Some small, densely arranged shoots (including epicormic shoots) will be thinned out or removed as recommended.

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.

Sp5.Crown thinning involves the removal of sub-lateral (secondary) branches to appropriate branch/shoot unions, removal of dead and damaged (crossing branches) with a view to reducing the crown density by a specified %, normally no higher than 30%.

Sp6.Felling involves the careful removal of a tree to ground level (or other specified height), either in sections or in one unit (straight felling). The method of felling will be suited to the constraints of the site and judged by the competent operator undertaking the task. Removing the stump may be part of the requirements and this will be carried out using a mechanical stump grinder where accessible.

Sp7.Pollarding means the removal of all stems and branches to a given point above ground level. Re-pollarding means removal of all re-growth to but not beyond the point of previous pollarding.

Sp8.Root 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.

Sp9.Coppicing refers to the practice of cutting the stems to a point above ground level to create a 'coppice stool'. The process is normally carried out on a cyclical basis and to tree species, which respond to this type of management e.g. Sweet Chestnut, Hazel, Ash or Hornbeam.

Sp.10 Removal of Epicormic Growth and Suckers (Brashing). Epicormic growth is any amount of shoots arising from activated buds situated at bole of the tree and on the main stem(s), the base of the crown. Sucker growth is shoots arising either from the bole of the tree or from roots belonging to a tree. Epicormic Growth, Suckers and low branches shall be removed by use of a hand saw or secateurs to a height above ground level of no less than 2.5m.

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Table 2 Summary of Implications of Construction on Trees*

Tree Ident.*	Landscape Contribution	Implications /Impact	Mitigation measures	Impact Assessment**
T1	High	Construction within rooting spread	1. Erect tree protection and install ground protection, where needed 2. Initial manual dig and root assessment 3. Specialist supervision for root pruning as necessary 4. Maintain tree and root protection	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

3.0 Recommended Tree Protection Methods

- 3.1 In order to afford protection from general construction processes associated with the building of the extensions, it will be necessary to erect robust tree protection barriers (hoarding style in this case) in the position indicated on the Tree Protection Plan at **Appendix 2** (TPP1_SHP). A recommended example of the type BS grade tree protection is included at **Appendix 3**.
- 3.2 Following erection of the tree protection and following the completion of the tree works, I recommend installing ground protection (refer to the TPP), where existing surfacing must be removed, to ensure that roots under the surface are not damaged by compaction during regular passing by operatives and light machinery. I have included recommended examples of ground protection at **Appendix 3** also.
- 3.3 In order to ensure that roots of significance to the tree's condition and stability are retained, I recommend that a supervised initial manual dig is conducted, at minimum in line with the position of piles and any ground beams. The methods of manual digging near trees is described with **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

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- 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.

- 3.4 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) 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.

- 3.5 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.
- 3.6 The details pertaining to tree protection as set out in this method statement, specifically include:
- i) erection of tree protection barriers;
 - ii) the installation of ground protection;
 - iii) 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

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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.

3.7 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

3.8 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.)

3.9 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 3 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	Installation of tree protection and ground protection	Y	PRIOR to ground/demolition works
4	Initial manual dig exercise and any root treatment	Y	SA to advise AS prior to commencement
5	Ground works and Construction phase	Y	AS to monitor tree protection at agreed and suitable intervals
6	Remove tree protection fencing/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

- 3.9 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 and then by agreement.

Table 4 Contact List (to be completed **PRIOR** to commencement)

Interested Party	Name	Company/LPA	Contact Number(s)	Comment/ Responsibilities
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	Mr N Bell	L B Camden	0207 7974 1544	Tree protection and enforcement
Site Engineers	TBA			Technical advice and design
Architects	Ms A Zie	Architecture Assembly	07778 772 947	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.**

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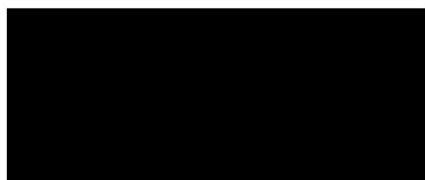
4.0 General site care (trees)

- 4.1 No fires will be lit on site.
- 4.2 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.
- 4.3 No materials, equipment or debris will be stored within the fenced areas unless agreed with the arboricultural supervisor.
- 4.4 Areas for mixing are to be located beyond RPAs of trees and contained to prevent leaching into the soil.
- 4.5 A copy of this report and the Tree Protection Plan is to remain on site at all times.

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Please note that all relevant planning approvals and approval to planning conditions must first have been issued by the relevant planning authority in order for this report to become effective. We strongly advise that you consult your planning advisors before implementing any recommendations set out in this report.



Hal Appleyard
Date: 31st May 2018

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APPENDIX 1

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Tree Survey Schedule

Page 1



Site: 96a South Hill Park, London NW3

Surveyor: H. Appleyard
Ref: ts1/96shp

Date: 18th May 2018

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	Lime, Common	18	5 5 5	2/N3	Mature	600	12	7.2	Normal	Good	High	B	1.2	>40	Awkward location adjacent to boundary wall Reduced in past and dense canopy Minor dead wood; vigorous re-growth

Notes:

- Height describes the approximate height of the tree in meters from ground level.
- 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.
- Ground Clearance is the height in meters of crown clearance above adjacent ground level together with the height and direction of the lowest branch
- 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.
- 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.
- Protection Radius is a radial distance measured from the trunk centre and is used to calculate the BS RPA.
- Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
- Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present or suspected.
- Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
- 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.
- 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.
- Useful Life is the tree's estimated remaining effective contribution in years.

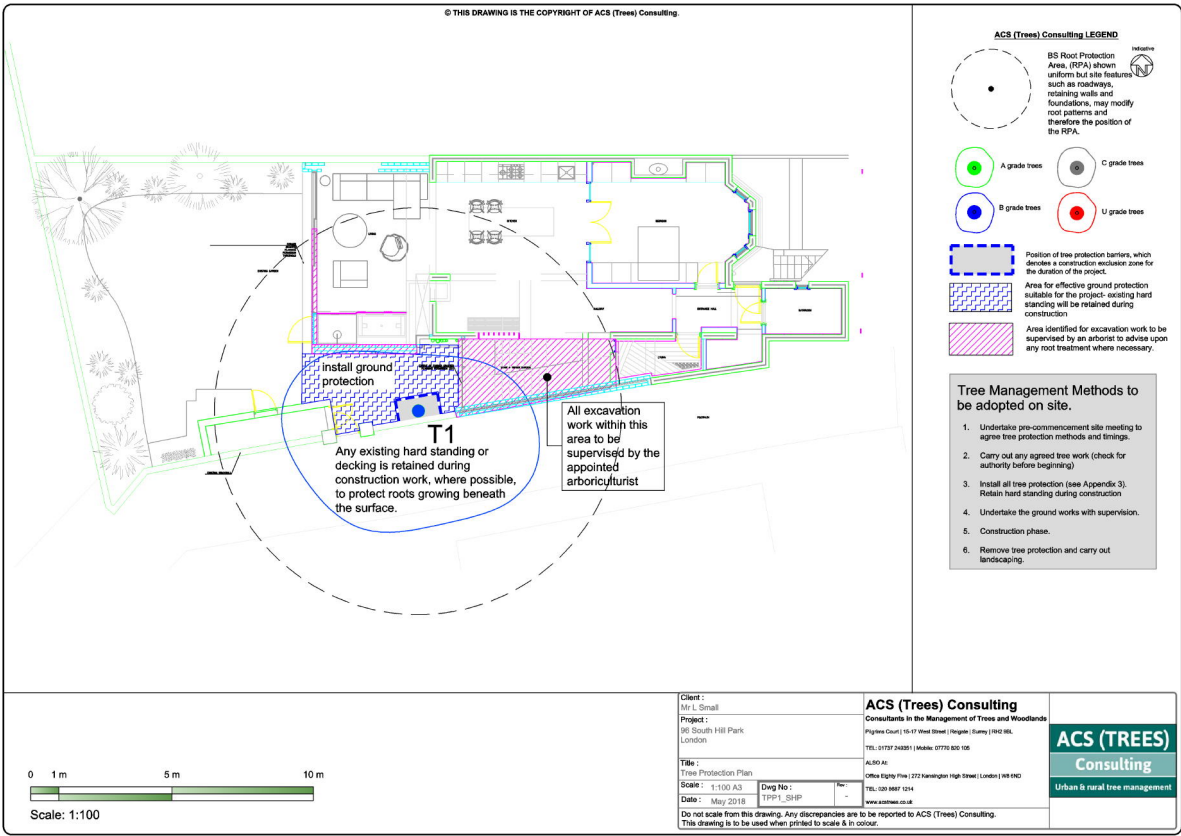
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Table 1 Cascade chart for tree quality assessment

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	<ul style="list-style-type: none"> 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 <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2
<p>1 Mainly arboricultural qualities 2 Mainly landscape qualities 3 Mainly cultural values, including conservation</p>		
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
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
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 with material conservation or other cultural value
		Trees with no material conservation or other cultural value
		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
		See Table 2

APPENDIX 2

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APPENDIX 3

Example of Tree Protection Box Frame

Designed to provide immediate protection from impacts and damage to the trunk and root crown.



Specification:

Uprights x 4, min. 100 X 100 treated wood

Batons top, middle and base min. 25mm x 75mm

45° angled batons to and base for rigidity 25mm x 75mm

Fix 12mm OSB sheeting to framework

Affix 'Tree Protection' signage.

Example of a suspended work platform - ground/root protection.



Scaffold poles supporting work platform of OSB boarding

Work platform

scaffold clamp

Root zone

Root zone

Short scaffold driven firmly into the ground

existing ground level

Tree protection fencing or frame

Note:
Effective for confined work areas

Do not drive scaffold poles through roots

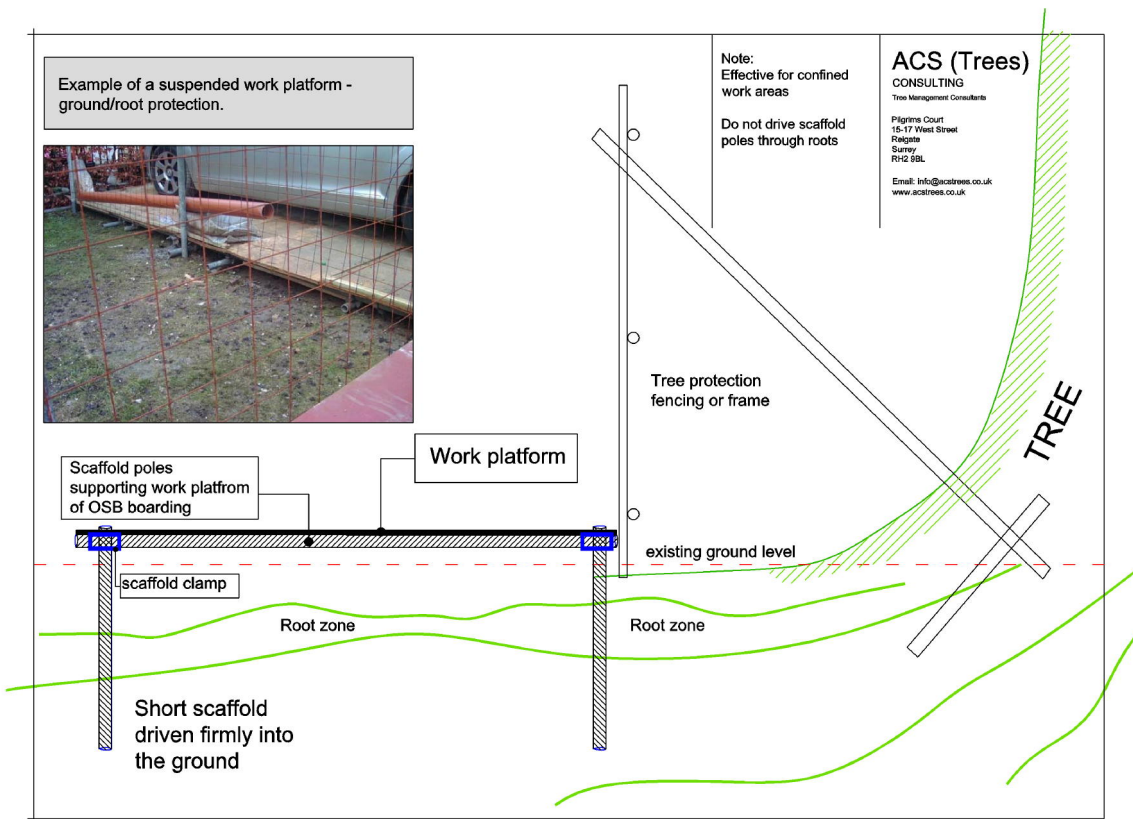
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TREE



APPENDIX 4

Arboricultural Site Supervision

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

Amendments to Documentation Required

No amendments required

Comments/Action

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



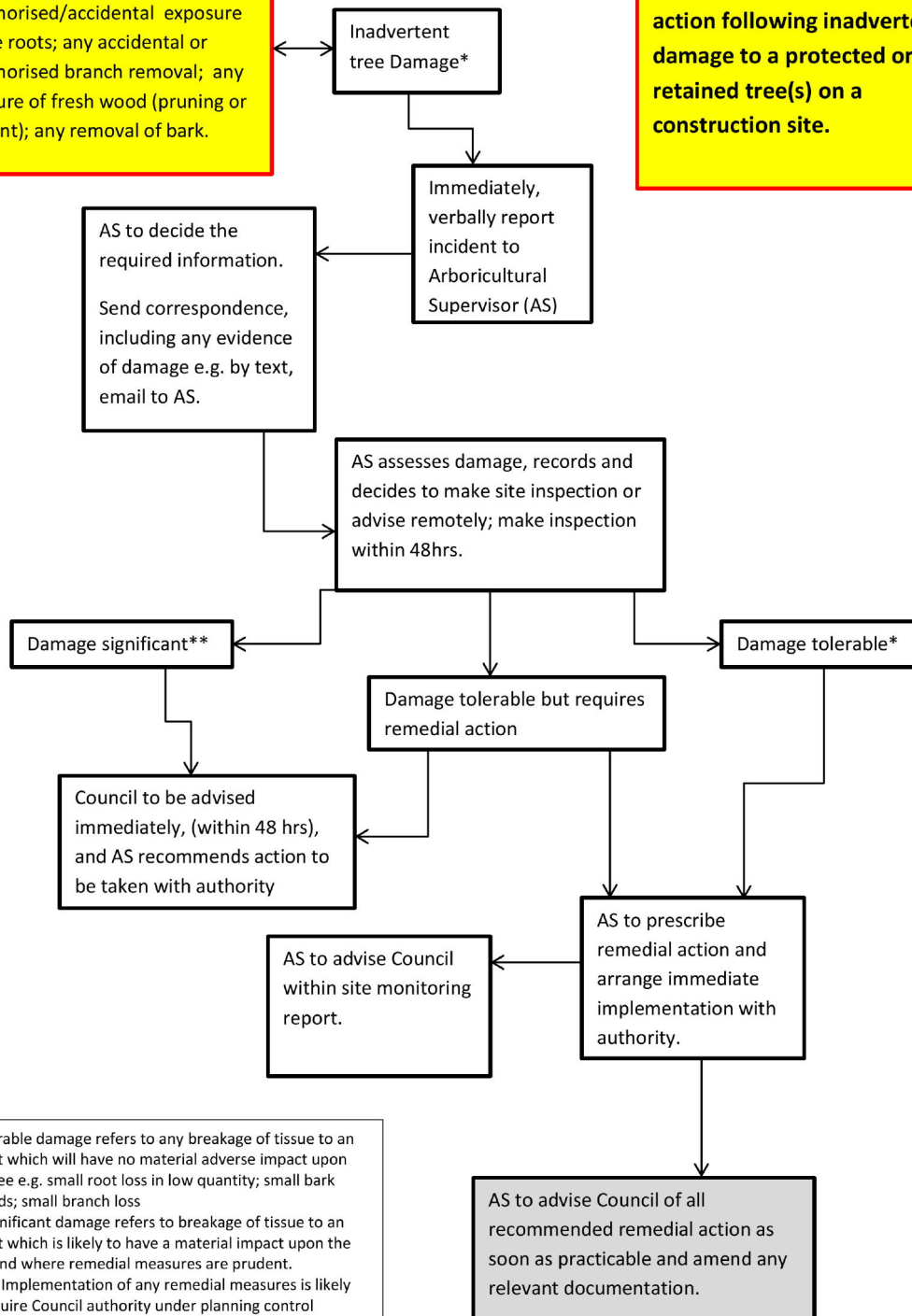
Robust hoarding and temporary concrete ground protection



Tree protection Hoarding and ground protection over sharp sand.

*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.

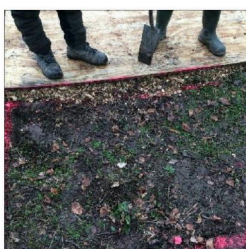


*Tolerable damage refers to any breakage of tissue to an extent which will have no material adverse impact upon the tree e.g. small root loss in low quantity; small bark wounds; small branch loss
 ** Significant damage refers to breakage of tissue to an extent which is likely to have a material impact 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.

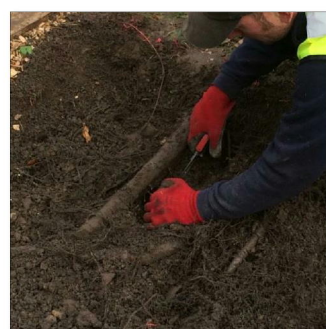
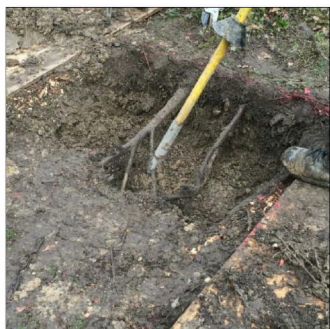
APPENDIX 5

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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.