

ARBORICULTURAL IMPLICATIONS REPORT

for : 37 Queens Grove London NW8

Produced for: SHH Architects

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Arboricultural Implications and Tree Protection Methods

Summary of Conclusions and Recommendations

The proposed construction of the underground pool area and associated ancillary space will fall within the footprint of notional root protection areas of retained trees, most of which are in adjacent land.

Extensive and careful root investigation work has been undertake to assess the extent of root encroachment into the site from neighbouring trees and the spread of roots from those trees within the site. These investigations have influenced the size and form of the design.

Subject to the implementation of the proposed scheme in accordance with the recommendations set out in this report, the important trees and the landscape will not be adversely affected either directly by or resulting from the proposed development scheme.

As a consequence of the above, the scheme will have a negligible impact upon the visual character and appearance of the area.

Recommendations

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- 1. Undertake a pre-commencement site meeting
- 2. Agree the sequence of events
- 3. Adhere to the tree protection measures stipulated in this report
- 4. Monitor tree protection during construction period
- 1.0 Introduction and Scope
- 1.1 This report has been commissioned by SHH Architects Ltd to; i) assess the trees in accordance with BS 5837:2005 'Trees in relation to construction-Recommendations' (The BS); ii) detail the arboricultural consequences of the proposed project and assess its visual impact upon trees and amenity; iii) provide recommendations for effective tree protection, which are commensurate and appropriate for the scale and type of development; iv) develop a tree protection strategy for the duration of the construction including any land preparation or demolition works.

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- 1.2 Reference to 'the proposed scheme' below will mean either the approved scheme for which planning consent has been granted or the scheme under consideration by the Local Planning Authority (LPA).
- 1.3 The trees were inspected, in accordance with BS 5837:2005 'Trees in relation to construction- Recommendations' in February 2010 and a total of 11 tree records are provided. The data for the tree dimensions and quality has been taken from a previous arboricultural survey undertaken by others but which appears to provide a fair representation of the tree stock.
- 1.4 This report sets out the protection measures that will be adopted to ensure effective tree preservation. The basic principles are that; the established fenced and ground protected areas are exclusion zones for the duration of the construction (or as duly agreed) and; excavations within the BS root protection areas (RPA) will be subject to professional assessment (see Note 1).
- 1.5 A full hazard assessment of the trees (including for example the assessment of decay or defects and its implications), has not been undertaken as this information is considered beyond the scope of this report. Naturally, any obvious hazards have been identified in the schedule and, I recommend that these are acted upon as soon as practicable.
- 1.6 Any operational practices recommended in this report are to be undertaken by the appropriate specialist company. Operatives are to carry out the relevant risk assessment and record such information, prior to commencement of tasks and work in accordance with current Health and Safety standards, practices and legislation. Unless formally agreed, no contractors are assessed, appointed or monitored by ACS Consulting. Responsibility and liability of all actions, nonactions, products and services associated directly with this report will be limited to the relevant client and contractor.

General Site Description

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1.7 The construction site comprises an open area of rear garden lawn, which is associated with a residential town house. Geological and site records suggest that the local soil has a high clay content. The site is predominantly flat, with only a small rise toward the rear of the garden. The site is bounded on all three sides (East, West and South) by double brick boundary walls.

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1.8 The site falls within a conservation area and affords legal protection to trees in excess of 75mm in diameter at 1.5m above ground level. A Tree Preservation Order (TPO) also exists at the site and affords protection to the Pear tree T1.

2.0 Tree Appraisal & Implications

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- 2.1 The tree details are presented at **Appendix 1**. These details conform to those recommended by BS 5837:2005 'Trees in relation to construction-Recommendations'. The position of the trees is shown on the Tree Protection Plan (TPP) at **Appendix 2**.
- 2.2 The implications of the proposed scheme, in terms of tree pruning and other works are detailed in the table below. An assessment of the visual impact of the works resulting from the scheme OR as a consequence of sensible arboricultural husbandry is also provided.

Tree Works	Tree Nos	Visual Landacape Impact of Viorio*	Available Replacements Planasatvat	Conventió
Root exposure and professional treatment	T1, T4, T6- T7, T9	None	-	Previous hand excavations have identified small numbers of fine roots and insignificant quantity of roots up to 25mm Ø.
Fell	Т3	None	Y	Refer to landscape submission
Crown Clean and thin by 15%	T6-T8	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.

2.3 As a consequence of my assessment above, I believe the visual impact of the scheme to be negligible in the context of trees and their sustainable contribution to the landscape and local amenity.

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- 2.4 It will be necessary for all tree work to conform to BS 3998:1989 'Tree Work' (with amendments) and to current arboricultural best practice. Tree works are to be undertaken by a professional and specialist arboricultural contractor with appropriate equipment and PPE and who has the appropriate experience and insurance cover. Commencement of all or some of the proposed works may be subject to written authorisation from the Local Planning Authority (LPA) should planning consent be obtained. We strongly advise that authorisation for any tree works is obtained from the LPA prior to commencement.
- 2.5 In addition, prior to the commencement of any tree works, an ecological assessment of specific trees may be required to ascertain whether protected species (e.g. bats, badgers and invertebrates etc) may be affected. This appears to be unlikely to be needed in this case.
- 2.6 Specific Comments on Tree Stock in Relation to Scheme (Impact of scheme on trees)
- 2.6.1 The trees that have influenced the designs include T1 the Pear and T8 the dominant Sycamore to near to the rear (southern) boundary of the site. Root trial holes were excavated (as indicated on the plan TPP1 at Appendix 2). These excavations were professionally supervised and assessed on 10th February 2010.

Trench No	Depth	Observation	Comment/Recommendation
1	250mm	Fine roots from shrubby vegetation. 2 X roots possibly from T9 20mmØ.	The vast majority of woody roots appear to be prevented from crossing the boundary by the presence of the boundary wall acting as a barrier. Pruning of the two roots of negligible impact upon T9.
2	150-200mm	Profuse rooting of fine and woody roots from T6-T8. Fine roots to 450mm. 7 x 25mm roots exposed.	At 3.2m from trunk of T8 dense mats of roots occur at shallow soil profile. Multiple woody and anchorage roots (>25mmØ). Recommend incursions into RPA no more than 10%.
	450mm	Rooting ceases	No roots of any significance exposed in profile deeper than 450mm.
3	300mm	Few fine roots. 1 X Sycamore root of 25mmØ.	Professional treatment of the thicker root will be prudent, if necessary. Impact on tree will be negligible.

2.6.2 Records of the rooting nature found are recorded below.

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P1 - Trench 1



Roots from shrubby plant growth in the upper soil horizons. The two roots can be pruned professionally. Most roots are inhibited from growing across the boundary by the boundary wall foundations.

P2 – Trench 2



Profuse small-diameter roots and larger roots exploit the upper soil profile. There is no wall foundation barrier and roots can spread laterally in a northern direction.

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P3 Trench 3

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One root of a significant size has been found. Professional treatment of this root will avoid any impacts upon the long term retention of the neighbouring tree.

- 2.6.3 The boundary walls to the west and east are more substantial and taller than the southern boundary wall. As a consequence, I expect foundations to be more robust and deeper than for lower walls for example. The southern wall is one such wall and consequently, the foundation is expected to be shallower and more pervious to the lateral spread of roots from trees Nos 6-8. Whilst some roots are likely to have been deflected from growing south past the wall; many roots, (possibly 50% of the norm), are likely to have grown under the foundations and into the garden soil beyond. As a consequence, I have recommended that no more than 10% of the BS root protection area should be used for construction that would result in root pruning. This is extent is half of the 20% tolerance suggested as may be acceptable within the BS.
- 2.6.4 With respect to the other trees, T4, T5 and T9 it seems that the root investigation work as demonstrated that root encroachment from neighbouring trees into the site has been maintained to a low degree. On this basis, simple hand-digging for the upper 600mm along the line of the proposed line of piling and professional root pruning and treatment is undertaken prior to the commencement of full construction works, the impacts upon off site trees will be negligible.
- 2.6.5 A small proportion (incursion by 1m or 4%) of the rooting area of the Pear T1 is to be used for construction (see TPP1). The vigorous tree will be able to tolerate this level of root loss, where previous root spread investigations have identified the majority of the root systems grows south and south west. This tolerance can

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be improved by landscape measures including removal of the turf layer and introduction of a mulch layer to reduce the competition for moisture and elements from the surrounding grass.

- 2.6.6 A small ornamental Crab Apple may need to be pruned at least to accommodate the construction processes at the front of the house (erection of a gantry and general access). The pruning of this tree will be determined by site logistics.
- 2.6.7 The relationship between trees, their growth and living space is a common cause for conflicts, through excess shading, dropping of debris such as leaves and fruits and the mere size of trees can cause concern. In this current proposal, there are no windows and the proposal is maintained at the subterranean level and as such no impacts of this nature are to be experienced.
- 2.6.8 In summary, the landscape trees at and neighbouring this site have been carefully considered and investigations in respect of their rooting patterns has been undertaken professionally. The consequences of these investigations have lead to the current design, which when implemented with due care and in accordance with the tree protection measures set out in the method statement below, will have no adverse impacts upon retained trees.

3.0 Tree Protection Measures

General

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- 3.1 A tree's BS root protection area (RPA) is based upon a radius measurement taken from the trunk centre and is included with reference to Table 2 of the BS (See Appendix 1). Professional arboricultural judgement may identify modifications to the morphology of an RPA. Any work within a tree's RPA will be subject to professional advice and the guidance set out in this report, particularly where construction is required within this area but beyond the position of fixed tree protection fencing.
- 3.2 Effective tree protection will be afforded subject to following a logical sequence of events, which will follow a pre-commencement site meeting (see 4.0). Invitees will include LPA representatives and the site agents and any specialist supervisors:

('S' refers to the stage in order)



- S1 Undertake any agreed and or necessary tree works.
- S2 Erect in position the tree protection fencing and ground protection
- S3 Undertake the hand dig and root treatment work in line with the proposed piling within the BS rooting areas of the retained trees
- S4 Carry out the main ground works (piling) and the excavations for walls and foundations
- S5 Monitor the tree protection measures

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- S6 Remove the tree protection undertake re-instatement landscaping works
- 3.3 The protection fencing will be erected in the position indicated on the Tree Protection Plan (TPP) at **Appendix 2**.
- 3.4 The type of fencing and its recommended specification is attached at Appendix
 3. In this case both, hoarding or fixed Heras fencing will be effective. The positioning of site accommodation can be effective tree protection. Its suggested location is shown on the TPP Appendix 2.
- 3.5 The protection fencing will remain in position for the duration of the construction phases for the pool area, including the main re-instatement works (landscaping). Clear signs will be attached to the fencing once erected suggested wording will be **'Protected Trees No Access and Do Note Move this Fence'**.
- Fig 1. Example of site signage





Any alteration to the position of fencing will be agreed with the LPA.

- 3.6 Where, for construction purposes, it is necessary to position tree protection fencing within the BS RPA of tree Nos 6-8, suitable ground protection will be installed to prevent undue soil/root compaction from pedestrian traffic. At **Appendix 4** are recommended examples of effective ground protection suited for this location. Included in the Appendix also is a diagrammatic indication of how ground protection or hard surfacing offers effective root/soil protection.
- 3.7 In order to identify significant roots which would be lost to the piling exercise, hand-dug trenches, within the root protection areas of the retained trees T1 and T4 T9 will be carried out prior to the piling work. The purpose will be to enable professional root pruning to be carried out to avoid unnecessary damage being inflicted.
- 3.8 Although soil excavation near trees and root pruning is outlined in **Appendix 6**, specifically in this case however the treatment of roots will be undertaken in the following ways:
 - 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 or taken from site.
 - iii) Identify roots to be retained by brushing or the use of compressed air
 - iv) Roots <25mm Ø will be pruned using sharp pruning tools. Roots will be pruned back to a side shoot or suitable position, ensuring the exposed face is kept to a minimum.

4.0 Underground Services & Foundations

- 4.1 The proposed scheme can make use of some existing services (e.g. main drainage and electricity). There is no requirement for new excavations in the vicinity of retained trees at this stage.
- 4.2 In order to retain the soil abutting the elevations of the pool area, contiguous piling will be carried out following the hand dig exercise.

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4.3 Prior to installing foundations, any overhanging branches will be pruned back to permit the safe of the use of piling rig. The power unit of the piling rig will be located away from the tree and its protection.

5.0 Site Supervision - Arboricultural Specialist

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- 5.1 It is important to recognize that the Local Planning Authority Officers (Enforcement Departments) have stringent powers to serve a **Temporary Stop Notice** through recent changes in the legislation governing planning and development. Circular 02/2005 (see Note 2). It is therefore important that works, which may impact upon trees and amenity, are suitably controlled by competent personnel. Identified below are details of a site monitoring process designed to minimize potential risks to retained trees on or off site.
- 5.2 A **pre-commencement** site meeting, involving invited representatives from the developer, contractors and engineers (as appropriate) and relevant LPA officers, will be undertaken to establish the principal timings and actions.
- 5.3 So as to ensure that the tree protection measures are implemented, an arboricultural specialist will be appointed to record the condition of the trees to be retained and the position and type of tree protection erected and or installed. The specialist will make a record of visits and which will be retained by the contractor/developer and or left on site for inspection (see Appendix 5).
- 5.4 Key times for site supervision include:
 - 1. Completion of agreed/necessary tree works
 - 2. Erection of tree protection fencing and ground protection
 - 3. Works within RPA's of retained trees (hand dig exercise)
 - 4. Landscaping

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

5.5 Site monitoring will be at regular intervals, (beyond that stated above) and at minimum three-week intervals (subject to development scale). Below is a recommended programme of arboricultural supervision. (This programme may alter dependant upon site circumstances or by agreement.)

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Stage	Action	Specialist Arboncultural Consultant (Required YAV)	Notes
1	Pre-commencement meeting	Y	LPA, SA and AS to attend
2	Tr e e works	Y	Following completion of tree works - SA
3	Installation of Tree protective fencing and ground protection	Y	PRIOR to ground works commencing SA to provide notice
4	Undertaking of enabling works to expose and treat roots	Y	Specialist supervision to advise
5	Construction phases	Y	At agreed intervals
6	Remove tree protective fencing/ground protection	Y	SA to advise
7	Tree planting/landscaping	Y	Brief landscape company

Note: Site Agent - SA; Arboricultural Supervisor - AS

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Contact List (to	o be completed	PRIOR to	commencement)
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Interested Party	Name	Company/LPA	Contact Number(s)	Commont
Site Agent	ТВА	ТВА		
Arb. Supervisor	Hal Appleyard	ACS Consulting	020 8687 1214	Arb. Consultant
LPA Tree Officer	Mr A Hutson	London Borough of Camden	020 7974 5616	
Site Engineers	Mr A Colquhoun	Mace Ltd	020 7392 2400	
Architects	Mr S McClaughlin	SHH Architects	020 8600 4171	

TBA - to be advised

7.0 General Site Care

- 7.1 No fires will be lit on site.
- 7.2 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.



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

Note 1. RPA to be assessed by an arboriculturalist. BS 5837:2005 'Trees in Relation to Construction - Recommendations' paras. 5.2.4 and 11.1.1.

Re-building of existing structures located within the protection distances, such as retaining walls, may require soil excavation and root treatment.

Note 2. The Circular 02/2005 gives guidance on the temporary stop notice provisions in Part 4 of the Planning and Compulsory Purchase Act 2004 which inserted sections 171E to 171H to the Town and Country Planning Act 1990.

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