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TREE SURGEONS
F.A. BARTLETT TREE EXPERTS CO. LTD.

Bartlett Consulting

BS: 5837 ARBORICULTURAL IMPLICATIONS ASSESSMENT & DRAFT TREE PROTECTION PLAN

Our Ref: JPL/200030/R2/sh

Date: Monday 27th January 2020

CLIENT:	Mrs Svetlana Basovsky
SITE ADDRESS:	121 King Henry's Road Hampstead London NW3 3RB
DATE & TIME OF VISIT:	Thursday 23rd January 2020, 10.00am
PEOPLE PRESENT:	Mr James Percy-Lancaster (Bartlett Consulting) Mr Nicolo Parodi (Stefano Marinaz Landscape Architecture) Mrs Svetlana Gooch (Owner)
REPORT COMPLETED BY:	Mr James Percy-Lancaster

Summary:

The following report is a preliminary Arboricultural Implications Assessment (AIA), derived from the BS: 5837 Tree Survey, Report and Tree Constraints Plan, Reference: JPL/200030/R1/sh, dated Monday 27th January 2020.

The report identifies where the proposed development has the potential to result in the loss of, or damage to, trees indicated for retention due to site operations taking place within, or in close proximity to, the trees crown and/or calculated tree root protection areas.

A 'Draft' Tree Protection Plan is also appended, illustrating the location of physical tree protection measures as well as identifying areas of useable free space and other development site requirements

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1.0 SCOPE OF REPORT

1.1 Instruction

Bartlett Consulting has previously been instructed to undertake a tree survey and compose a Tree Constraints Plan (TCP) in accordance with British Standard 5837: 2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*, gathering data on trees and vegetation within the boundary of 121 King Henry's Road, as well as those on neighbouring properties considered to be within influencing distance. Data pertaining to six trees within the rear gardens of neighbouring properties were obtained.

This report takes the previously gathered tree data and constraints, and overlays that information with the proposed site plan and proposed site layout, allowing for an evaluation of how the proposed two storey side extension and single storey front infill extension will co-exist with the tree population. Where there are tree which have the potential to influence, those trees must be considered as a constraint within the project planning.

1.2 Documents & Supporting Information

Bartlett Consulting was provided with the following documentation and plans prior to the site visit & tree survey. They were sent via email in both PDF and DWG file format:

- General Arrangement Plan_Rear Garden, Drawing No. 248-000-001
- General Arrangement Plan_Front Garden – Drawing No. 248-000-002
- General Arrangement Plan_Rear Garden – For Planning Tree Removal, Drawing No. 248-P-000-003

1.3 Aspects Included within Report

The information contained within this report is fully compliant with British Standard 5837 2012: *Trees in Relation to Design, Demolition and Construction – Recommendations.*

This Arboricultural Impact Assessment (AIA) is accompanied by a 'draft' Tree Protection Plan (dTPP). This plan illustrates trees to be retained and incorporated into the proposed development, identifies where above and below ground level constraints are caused and gives consideration to statutory controls, as well as the potential loss of trees on and adjacent to the site. Issues also considered identify any necessity to undertake facilitation pruning to retained trees, either arising from accommodation, excessive shading or due to an unacceptable amount of encroachment upon a retained trees rooting zone.

The dTPP also identifies recommended locations of physical tree protection barriers, non-compacting ground protection, and site specific working methodologies.

Mitigation measures are also provided within this report, identifying the need for physical tree protection barriers, non-compacting ground protection, as well as tree replacement planting.

Modified RPA's will be illustrated if known below ground level obstructions exist, or where considered appropriate to do so, whilst tree shade patterns and future canopy spread for young trees will also be illustrated where necessary.

1.0 SCOPE OF REPORT (Continued…)

1.4 Aspects Excluded from Report

This report does not include an Arboricultural Method Statement (AMS), or a 'final' Tree Protection Plan (TPP).

The contents of this report do not include discussions regarding subsidence and/or heave as a result of retention or tree removal, nor does this report consider the water demands of trees present to determine foundation design and depth. If required, this can be provided on request.

Following the initial site visit and tree survey, we believe that there is a low potential for wildlife and ecological associations with the tree subject to this report. Ecological associations are considered to be limited to nesting birds within the crowns of neighbouring trees.

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, provides statutory protection to birds, bats, insects and other species that inhabit trees, hedgerows, or other associated vegetation. Ecological considerations that involve EU Habitats Directive will over rule any arboricultural recommendations as given within this report.

It is the recommendation of Bartlett Consulting that professional, detailed, advice from an ecologist is sought (if not done-so already) to confirm the consideration of Bartlett Consulting and to check if any such constraints apply to this site and its development proposals.

All trees must be thoroughly and properly assessed for nesting birds prior to the commencement of any recommended tree works.

2.0 IMPLICATIONS OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION

2.1 Description of the Proposed Development

From the information provided to us and listed in Section 1.2 above, it is our understanding that the following aspects of proposed development which influence, or are influenced by the existing trees are:

1. Demolition of existing Anderson Air-Raid Shelter
2. Levelling of imported soils within rear garden area
3. Construction of glass house & routing of underground services (water/electricity)
4. Planting of 2x staggered Yew hedgerows

2.2 Table 1: Implications of Proposed Development upon the Existing Tree Population

Tree Ref.	Species	Category	Removal due to		Mitigation Required		Aspect of Development affecting retained tree
			Works	Condition	Crown	RPA	
T01	Magnolia *(Magnolia sp.)*	C1	N/A	N/A	N/A	N/A	• None
T02	Japanese Maple *(Acer palmatum)*	B1	N/A	N/A	✓	✓	• Completion of patio area surfacing, existing encroachment of calculated RPA.
T03	Whitebeam *(Sorbus aria)*	C1	N/A	N/A	N/A	N/A	• None
T04	Copper Beech *(Fagus sylvatica* Purpurea)	C1	N/A	N/A	N/A	N/A	• None
T05	Cotoneaster *(Cotoneaster frigidus)*	U	N/A	N/A	N/A	✓	• Planting of Yew hedgerow to occur within calculated RPA.
T06	Sweetgum *(Liquidamber styraciflua)*	B1	N/A	N/A	N/A	N/A	• None
T07	Aspen *(Populus tremula)*	U	N/A	N/A	N/A	✓	• Demolition of Anderson Air-Raid Shelter to occur within calculated RPA. • Construction of Glass House raft foundation slab to occur within calculated RPA.
T08	Aspen *(Populus tremula)*	C2	N/A	N/A	N/A	✓	• Demolition of Anderson Air-Raid Shelter to occur within calculated RPA. • Construction of Glass House raft foundation slab to occur within calculated RPA.
T09	Aspen *(Populus tremula)*	C2	N/A	N/A	N/A	✓	• Demolition of Anderson Air-Raid Shelter to occur within calculated RPA. • Construction of Glass House raft foundation slab to occur within calculated RPA.
T10	Cotoneaster *(Cotoneaster frigidus)*	C1	N/A	N/A	N/A	N/a	• None
T11	Blackthorn *(Prunus spinosa)*	C1	N/A	N/A	N/A	N/A	• None

2.0 IMPLICATIONS OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION (continued…)

2.3 Table 2: Mitigation Measures Required for the Proposed Development & Existing Tree Conflicts

Tree Ref	Species	Category	Mitigation Required
T01	Magnolia *(Magnolia sp.)*	C1	None required
T02	Japanese Maple *(Acer palmatum)*	B1	Surfacing of patio area to not exceed current dimensions, mixing of concrete to not occur with calculated RPA.
T03	Whitebeam *(Sorbus aria)*	C1	None required.
T04	Copper Beech *(Fagus sylvatica* Purpurea)	C1	None required.
T05	Cotoneaster *(Cotoneaster frigidus)*	U	If retained, all tree roots encountered during trench excavation must be cleanly pruned using secateurs.
T06	Sweetgum *(Liquidamber styraciflua)*	B1	None required.
T07	Aspen *(Populus tremula)*	U	Re-levelling of imported soils within rear garden to be completed using hand tools only. Excavations to not exceed 400mm below existing.
T08	Aspen *(Populus tremula)*	C2	Re-levelling of imported soils within rear garden to be completed using hand tools only. Excavations to not exceed 400mm below existing.
T09	Aspen *(Populus tremula)*	C2	Re-levelling of imported soils within rear garden to be completed using hand tools only. Excavations to not exceed 400mm below existing.
T10	Cotoneaster *(Cotoneaster frigidus)*	C1	Re-levelling of imported soils within rear garden to be completed using hand tools only. Excavations to not exceed 400mm below existing.
T11	Blackthorn *(Prunus spinosa)*	C1	None required.

2.0 IMPLICATIONS OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION (continued…)

2.4 Table 3: Tree Work

Tree Ref	Species	Category	Schedule of works prior to erection of tree protection barriers
T01	Magnolia *(Magnolia sp.)*	C1	• No works presently required.
T02	Japanese Maple *(Acer palmatum)*	B1	• Removal of deadwood throughout crown.
T03	Whitebeam *(Sorbus aria)*	C1	• No works presently required.
T04	Copper Beech *(Fagus sylvatica* Purpurea)	C1	• No works presently required. (Permission granted for removal valid till January 2022).
T05	Cotoneaster *(Cotoneaster frigidus)*	U	• Fell & remove, or alternatively crown reduce to a height of 2.5m and lateral spread of 2.0m ø.
T06	Sweetgum *(Liquidamber styraciflua)*	B1	• No works presently required.
T07	Aspen *(Populus tremula)*	U	• No works presently required.
T08	Aspen *(Populus tremula)*	C2	• No works presently required.
T09	Aspen *(Populus tremula)*	C2	• No works presently required.
T10	Cotoneaster *(Cotoneaster frigidus)*	C1	• No works presently required.
T11	Blackthorn *(Prunus spinosa)*	C1	• No works presently required.

3.0 SUMMARY OF IMPLICATIONS ASSESSMENT

3.1 Table 4: BS: 5837 Categories & Tree Loss

BS: 5837 Category	Number
A	0
B	0
C	0
U	0/1
Total	0/1

3.2 Tree Loss

The proposed scheme does not necessitate the removal of any individual tree, however permission has already been granted the LPA for the removal of T04 – Copper Beech, as the consented Section 211 Notice, dated January 2020. This permission remains valid for a period of 2 years.

The owner has come to the decision that T04 – Copper Beech shall in fact be retained and incorporated into the landscaping scheme as it provides valued screening and maturity to the garden. As such the tree shall be retained in the short term.

One of the proposed staggered Yew hedgerows is to be planted in very close proximity to the T05 – Cotoneaster. Whilst this is actually regarded as a shrub, it has now attained the stature of a small tree. In order to plant the Yew hedgerow, a trench must first be excavated, it is anticipated that roots shall be encountered during this exercise. If T05 is to be retained all roots encountered must be cleanly severed using secateurs or similar sharp hand tool. T05 is graded as a Category U, due to its poor structural form and anticipate short life expectancy (approx. <10 years).

Ideally, this specimen should be removed to permit the unimpeded development of a high quality Yew hedgerow. If it is to be retained, it must be reduced significantly in height and lateral spread, please refer to Table 3 for specification of tree works.

The anticipated tree/shrub loss associated with this project could be effectively mitigated for with appropriate tree and shrub planting, throughout the rear amenity garden.

A tree planting plan can be provided on request.

3.0 SUMMARY OF IMPLICATIONS ASSESSMENT (continued…)

3.3 Discussion of Impacts

Direct Impacts:

The rear of the property features a modest patio area spanning from each side boundary wall. During the recent construction works on site, the patio has been recast using a reinforced concrete slab. It presently occupies approximately 20% of the calculated RPA of T02 - Japanese Maple. It now requires a final surface to be laid with stone pavers, as such, no further impact shall be caused to this tree.

The rear garden features a timber garden shed, located to the western boundary, this structure shall be demolished in a controlled manner using hand tools only.

Adjacent to the garden shed is a dilapidated Anderson Air-Raid Shelter, all the remains now is the brick masonry dwarf walls and foundations. This structure is located within the calculated Root Protection Areas of T07, T08 & T09 – Poplars, all of which are located beyond the rear boundary brick wall on third party land. The demolition of the brick masonry dwarf walls must be undertaken with great care and attention, so as not to cause damage to the supporting soils beneath.

The rear most extent of the rear garden has in recent years been used to accommodate excess excavated soils, as such the land levels have increased by approximately 300-400 millimetres. The proposed stone surfacing and accompanying glass house will be located in this area, as such it will be necessary to reduce the land levels in this area, back to the original levels, circa 300-400 millimetres. These works shall similarly to above, be undertaken in a careful and controlled manner.

The glass house shall require suitable foundations to be constructed prior to erection. It is understood that a reinforced concrete raft slab foundation shall be cast on site to achieve this. This will necessitate a degree of excavations, circa 100 millimetres, to accommodate hardcore and sharp sand to provide a suitable levelled surface prior to casting.

Due to the proximity of the rear boundary brick masonry wall, it is presumed that the foundations serving this wall have acted as an effective root barrier, deflecting the majority of tree roots away from the application site.

The remaining area of the rear garden shall accommodate a large trampoline. This are shall not be surface in hard standing, but rather a fully permeable loose wood chip surface, which will continued to provide water filtration and gaseous exchange to the neighbouring trees.

Whilst no information regarding underground services has been provided at the time of writing, it is presumed that electricity and water shall be routed to the glass house. The service route must not be permitted to trespass into a calculated RPA of any retained tree on or adjacent to the site.

3.0 SUMMARY OF IMPLICATIONS ASSESSMENT (Continued…)

3.3 Discussion of Impacts (Continued…)

Indirect Impacts:

All access for personnel shall be obtained from the front of the property, no machinery shall be used to construct any part of the proposed scheme.

There is sufficient space within the rear garden area to accommodate a designated material storage area, whilst avoiding conflict with the existing tree population.

The proposed glass house due to its orientation shall experience a degree of shading, albeit transient throughout the day, it will not cause a significant constraint upon its use.

3.4 Infrastructure Requirements

Ground use planning should form part of the development project, with existing and/or proposed utility corridors identified on the proposed plans. It is strongly recommended that service ducts are shared across the service providers to limit further ground works and site disturbance.

Proposed service runs should be designed with full consideration to the guidance and recommendations of National Joint Utilities Guidelines No.10 – Volume 04: *Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* and avoid the notional RPA of retained trees in all circumstances, in the first instance.

If services are proposed through a notional RPA of any retained tree, professional arboricultural advice must be sought to ensure that any potential impact is kept to a minimum. Proposed trenches will be highlighted for excavation using an air spade or thrust boring techniques should be employed to install underground utility services beneath the trees rooting zone. These matters will be detailed in the Arboricultural Method Statement.

3.5 Erection of Tree Protection Barriers and Laying of Non-Compacting Ground Protection

Due to the small scale of this project, it is considered unnecessary to further safeguard the retained trees on and adjacent to the site with the erection of standard BS: 5837 specification tree protective barriers.

There is sufficient space throughout the rear garden to ensure direct damage is not incurred during the construction of the glass house. If considered necessary, each retained tree can be provided with a lesser specification using orange plastic mesh barrier fence netting, pegged out using road side pins, please refer to Figure 1 for an illustration of this form of protection.

The proposals do not necessitate the installation of non-compacting ground protection either.

3.0 SUMMARY OF PROPOSED DEVELOPMENT UPON EXISTING TREE POPULATION (continued…)

3.6 Shading of Retained Tree/s

Other 'common nuisance' issues such as leaf litter, flowers and sap can be addressed through careful and site specific design including: filtration for rainwater guttering of either mesh or "bristle" inserts; the incorporation of discreet ladder attachment points under the eaves; sufficient clearance between the edge of the roof and the guttering to facilitate ease of maintenance; fitting the downpipes with easily cleanable traps.

Further design features can be roof lighting, wider bay windows and doors, or reviewing the orientation of floor plans and living spaces where sunlight is more desirable to ensure natural and ambient light reaches these spaces.

3.7 Potential Growth and/or Nuisance of Retained Trees

The designers should be minded that trees T08 & T09 located on third party land will require continued management as these trees have been previously managed using pollarding techniques. They will need to be re-pollarded on a cyclical basis to ensure that the supporting boles are not overloaded.

Leaf fall must be considered at this stage, as drains and guttering would potentially be affected by fallen leaves/needles, particularly during autumn months. As a result, the installation of gutter guards are considered to be pertinent to nuisance mitigation.

APPENDIX 1 LIMITATIONS OF REPORT

Limitations of the Arboricultural Implications Assessment

- This assessment is based upon information obtained from the BS: 5837 Tree Survey.
- All dimensions and measurement are based upon previously obtained data the BS: 5837 Tree Survey and from drawings provided to Bartlett Consulting.
- This assessment considers the possible implications to the proposed built structures. Suggestions from an arboricultural perspective may be provided outlining an alternative site layout. Such suggestions must be considered by the project Architect/Designer/or Engineer before implementing any suggestions.

Data on which the Assessment is Based

- Validity, accuracy and findings of the report are directed by the accuracy of information provided to Bartlett Consulting at the time of conducting the tree survey and during report writing.
- Checking of independent data/information will not be undertaken, with particular reference given to scaled maps and drawings provided to Bartlett Consulting

Validation of the Assessment

- The assessment considerations/findings in this report remain valid for a period of one year, from the date of issuance.
- Such considerations/findings will become invalid if any building works are undertaken, soil levels altered, or any unsolicited tree works undertaken.
- If any alterations to the existing building structures, or soil levels, or if any unsolicited tree works have been completed, it is the recommendation of Bartlett Consulting that a new BS: 5837 Tree Survey/report is undertaken to reflect these changes.

Tree in Relation to other Properties

- This assessment only considers the trees in relation to the site and the proposed structures within it, as identified.
- The assessment does not comment upon trees in relation to structures beyond the boundaries of the site as identified (third party properties).
- Consideration of potential impact upon neighbouring built structures may be provided if pertinent, in the instances where boundary tree planting is proposed/required.
- Damage to, or potential damage to, any other built structures that is not referred to within this report are not considered, unless otherwise stated. This includes both neighbouring structures as well as any other structure on the site.

Trees in Relation to Subsidence, Heave and Direct Damage

- This report does not deal with matters concerning subsidence or heave to any existing built structure on or neighbouring the site. It may be prudent to consider the effects of heave on any built structure if trees are to be removed.
- Similarly, the issue of direct damage (physical damage caused by tree roots) is not dealt with in this report.

Tree Subject to Statutory Controls

- Whilst Bartlett Consulting has made attempts to ascertain if any of the trees subject to this report are 'protected', their status is always subject to change. Therefore the final responsibility for checking statutory protection for trees rests with the employed contractor and not with Bartlett Consulting
- Any prescribed tree works to a protected tree are provided due to perceived hazard and risk, and should be considered acceptable by the Local Planning Authority (LPA). However appropriate notification must still be provided to the LPA as they may take an alternative point of view.

Trees are Subject to Environmental Factors

- The statements, findings and preliminary recommendations made within this report do not take into account any effects of extreme climate and weather incidences, vandalism, changes in the natural and built environment around the tree(s) after the date of this report, nor any damage whether physical, chemical or otherwise.

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APPENDIX 2 REPORT REFERENCES

As a progressive company, we keep abreast of research data relating to Arboriculture. All observations, recommendations and works are based on current industry standard reference material and a selection of pertinent items is shown below.

This survey and report has evolved from industry material including the following:

• BS 5837: (2012) *Trees in Relation to Design, Demolition and Construction – Recommendations*
• BS 3998: (2010) *Tree Works - Recommendations*
• Town & Country Planning Act (Tree Preservation) (England) Regulations 2012
• Town & Country Planning Act (As amended) 1990
• Mattheck, C, Bethge K, Weber K. (2015) *The Body Language of Trees – Encyclopaedia of Visual Tree Assessment*
Karlsruhe Institute of Technology Campus North.
• National Joint Utilities Group (2007) *Publication Volume 4: Issue 2 Guidelines for the planning, installation and*
Maintenance of utility apparatus in proximity to trees.
• National House Building Council Standard, Part 4.2 – *Building Near Trees*

Bartlett Consulting's arboricultural expertise has been used to interpret these references for practical application to the site and the trees which are the subject of this report, and to provide the most appropriate advice and guidance at this stage of project planning.

APPENDIX 3 TREE PROTECTION PLANNING

The draft Tree Protection Plan (dTPP) referenced JPL/200030/dTPP can be found as an appendix at the end of this report. The TPP has been prepared in accordance with Section 7.1 of British Standard 5837:2012.

Either tree protective fencing or ground protection will be required to safe-guard the trees against damage which may be sustained throughout redevelopment of the site, and this plan is indicative of the anticipated locations and/or zone of tree protection measures. The TPP has also been annotated to show indicative locations where, from an Arboricultural perspective, there is free space for the various demolition and construction requirements as well as site huts, outside of the zone of influence for tree protection & preservation.

The TPP has been drafted at this early stage to inform the client and landowners of these requirements, as well as illustrate how the tree protection measures and tree constraints may influence the free space around the site once development commences.

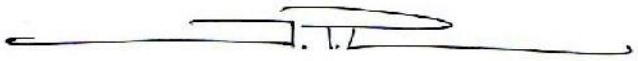
Vertical Barriers: physical protection measures for the retained trees, which will ensure that the designated RPA becomes an exclusion zone during any stage of development. Fencing will prevent men, materials, and other site activities from occurring within the RPA or damaging the tree crown.

Vertical barriers should be fit for the purpose of excluding construction activities, and appropriate to the degree and proximity of the site operations. A final specification will be provided once the layout has been finalised and agreed by all parties. An illustration has been included below for reference however.

The vertical barriers shall completely exclude access during all phases of site operations. The protected areas shall not be used for the storage of materials or spoil, nor for the mixing of substances or the disposal of any residues. Materials, equipment and arising debris will not be stacked against the vertical barrier, even temporarily. A4 sized Notice Signs must be laminated and attached to the vertical barrier at regular intervals so all visitors and operatives are aware of the tree protection requirements.

Figure 1: Illustration of Vertical Tree Protection Barrier

We trust that the contents and recommendations contained within this report were informative, easy to understand and helpful to you, with regards to managing your tree. Should you have any further questions or concerns, please do not hesitate to contact us again.

REPORT CLASSIFICATION:	BS: 5837 Arboricultural Implications Assessment & Draft Tree Protection Plan
REPORT STATUS:	Final
REPORT COMPLETED BY:	Mr James Percy-Lancaster **Senior Arboricultural Consultant**
SIGNATURE:	
DATE:	Monday 27th January 2020