SylvanArb

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Site	Sunset Hill, Hillbrow Road, Bromley, Kent. BR1 4JL.
Survey Date	06 May 2014
Report Date	20 October 2014
Surveyed by	Curtis Barkel

1.0 Instructions

1.1 Sylvanarb has received instructions to provide a Tree Survey, an Arboricultural Impact Assessment and tree protection details in respect of the proposed development as detailed on the BHD Architects Proposed Site Plan Ref. 4071-PD-01.

2.0 Documents Supplied

- BHD Architects Proposed Site Plan Ref. 4071-PD-01.
- MNA Site Survey Plan, Ref. 0102/117/01, dated February 2014.

3.0 Aim of Report

3.1 To survey existing trees in accordance with BS5837 2012: *Trees in Relation to Design, Demolition and Construction* (BS5837), in order to assess the condition and quality of trees located on the site.

3.2 To assess the impact of the proposed site layout on existing trees.

3.3 To advise on tree retention/removal and provide a specification for tree protection measures required to protect trees identified for retention throughout the development of the site.

3.4 To advise on tree work required to accommodate the proposed development.

4.0 Scope of Report

4.1 The survey has been carried out in accordance with British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction* (BS5837).

4.2 The trees have been inspected considering the current and proposed site use. The assessment categories have been allocated on the condition and merits of the individual tree irrespective of the proposed development.

4.3 A detailed condition survey and hazard assessment of the subject trees has not been carried out, where obvious faults have been noted a further detailed condition assessment may be recommended in the tree survey comments column (see Appendix A).

4.4 The 'Required Tree Works' set out in Section 11.0 detail the tree works required to accommodate the proposal.

4.5 Prior to tree work being carried out the Local Planning Authority is to be consulted to ascertain whether prior permission is required to carry out such work.

4.6 A tree with internal structural faults will often display associated external evidence of such faults, these would be noted in a visual tree inspection. However such signs are not apparent at all times of the year, for example pests and diseases or leaf size and condition. The following findings and recommendations have been drawn from the evidence present on the day of inspection.

4.7 All advice given in this report is based on the information available on the day of inspection. Should additional information not available or apparent on the day of inspection come to light, the right is reserved to modify the conclusions found within this report. This report is valid for 12 months notwithstanding change of site conditions, extremes of weather or other such overriding environmental changes.

5.0 Survey Method

5.1 The survey includes those trees on and adjacent to the site with a stem diameter greater than 75mm measured at 1.5m from ground level.

5.2 Subject trees have been allocated identification numbers prefixed with 'T'.

5.3 Where appropriate several trees growing closely together have been surveyed as groups. In such cases the group value is recognised and graded as a whole as opposed to grading the individual members of the group. Groups are allocated identification numbers prefixed with 'G'.

5.4 Subject trees have been plotted on to the Tree Survey Plan and Tree Protection Plan over the locations provided on the MNA Site Survey Plan. The locations of all trees are assumed to be accurate.

5.5 The survey was carried out with the help of the following inspection aids:

- Digital Clinometer — To calculate tree heights
- Diameter tape — To measure stem diameters
- Laser measure — To plot trees where necessary and canopy extents
- Binoculars — For inspection of upper crown
- Steel probe — To test strength of wood/depth of cavities
- Mallet — To give a sound indication of cavity extent

5.6 Each tree was inspected from ground level noting external faults and features only. The inspection did not include an aerial crown inspection, detailed excavation of the root system or the use of internal decay detection equipment. A further supplementary Detailed Report may be advised as a result of the findings of this report.

6.0 Site Details

6.1 The site is located in a residential area on the northern outskirts of Bromley town centre.

6.2 Private residential properties adjoin the site to the north and east, the southern boundary adjoins Tresco Close. Access is gained via a single driveway entrance from Hillbrow Road to the west.

6.3 Levels fall across the site from east to west by approximately five metres.

6.4 The site accommodates a disused detached house located towards the rear (east) of the site, the main garden space between the house and Hillbrow Road is unmaintained and overgrown.

6.5 The British Geological Survey describes the underlying geology as Harwich Formation, a mixture of sand and gravel. Soil types associated with such geology are unlikely to present a high risk of vegetation related building damage, however a structural engineers advice and site specific soil samples are recommended to inform the design of building foundations in accordance with NHBC Ch.4.2.

7.0 Planning Proposal

7.1 Planning permission is sought for the construction of a three storey apartment block with associated parking.

7.2 The proposed site layout has been designed under arboricultural advice provided in the form of a Sylvanarb Tree Constraints Plan in accordance with Section 5.1-5.3 of BS5837 . The scheme recognises the constraints presented by those trees of significance in order to successfully integrate the highest value trees within the design.

7.3 Access is proposed via the existing driveway entrance.

7.4 A generous allocation of space has been provided for soft landscaping and replacement tree planting to the front of the property, presenting the opportunity for the LPA to secure satisfactory landscaping under planning conditions.

8.0 Subject Trees

8.1 In total the survey identifies thirty individual trees and five groups of trees.

8.2 The trees have been graded into quality assessment categories in accordance with recommendations given in BS5837:2012 *Trees in Relation to Design, Demolition and Construction*. Four trees are graded in Category A; two in Category B; twenty individuals and five groups in Category C; and four individuals in Category U (see Appendix A for full category definitions):

8.3 Table 1 provides a breakdown of tree quality assessment:

Table 1: Retention Category Breakdown

BS5837:2012 Category	Tree Survey Numbers	Total
A	T6-T8, T10	4 x Individuals
B	T5, T12	2 x Individuals
C	T1, T3, T4, T9, T11, T13-T19, T21, T23-T25, T27-T30	20 x Individuals 5 x Groups
U	T2, T20, T22, T26	4 x Individuals

8.4 Trees classified in Category A are considered to be high value trees with a minimum of 40 years potential in the existing setting. These four trees are large, mature specimens forming a prominent feature along the southern site boundary.

8.5 Trees classified in Category B are recognised as being trees of moderate quality and value with a minimum of 20 years potential in the existing setting. Tree T5 is a mature member of the group of Category A trees lining the southern boundary, this tree has however been downgraded due to the relatively recent failure of a large limb. T12 is located within the site, contributing to the garden setting but of no visual significance to the wider area.

8.6 Trees classified in Category C are considered to be of poor form and/or offer limited current or long-term potential. The majority of the trees graded in Category C are fruit or ornamental trees located within the garden area to the front of the existing dwelling, these are of limited public amenity value and contribute little to the character of the locality. A number of Category C trees are also located both on and off-site around the property boundaries, although of low value these trees do provide screening between properties.

8.7 Trees classified in Category U have reached a stage of late maturity and/or have specific faults identified which present limitations to their safe life expectancy.

8.8 The London Borough of Bromley have confirmed that the five Poplar (T5-T8 & T10) and one Hawthorn (T30) are protected by Tree Preservation Order; in addition tree T3 (Aspen) may also be included in the TPO, this will require clarification from the LPA.

8.9 Four other Poplar and one Cherry are also shown on the TPO plan, however these trees are no longer present on the site.

8.10 Any works to protected trees will require the prior permission of the Local Authority (unless approved under detailed planning permission).

9.0 Arboricultural Impact Assessment

9.1 *Trees Requiring Removal to Accommodate Proposal*

9.1.1 Sixteen individual trees and two small groups will require removal to accommodate the proposal. Table 2 provides brief details:

Table 2: Trees Requiring Removal to Accommodate Proposal.

Tree No.	Species	Condition/Comments	Reason for Removal	BS5837 Cat.
T1	Eucalyptus	Young tree of limited visual amenity value.	Construction of bin store.	C1
T2	Leyland Cypress	Semi-mature, dieback, reduced vigour.	In interests of safety.	U
T4	Prunus	Semi-mature, suppressed.	To provide clearance over driveway.	C1
T9	Oak	Semi-mature, suppressed.	To provide construction access and clearance from proposed building.	C1
T12 T13 T14	Birch x 3	Three trees forming group within garden of limited wider significance.	Construction of proposed apartment block.	B1 C1 C1
T20 T22	Leyland Cypress x 2	Mature tree, low vigour.	Construction of proposed apartment block/in interests of safety.	U U
T21	Purple Plum	Mature ornamental, limited future potential.	Construction of proposed apartment block.	C1
T23	Pride of India	Young tree, poor form.	Construction of proposed apartment block/parking area.	C1
T24	Lawson Cypress	Semi-mature, torn out stem from base to 2m.	Construction of proposed parking area.	C1
T25	Magnolia	Semi-mature garden ornamental.	Construction of proposed apartment block/parking area.	C1
T26	Leyland Cypress	Off-site, reduced vigour.	In interests of safety.	C1
T27 T28	Lawson Cypress x 2	Young trees of limited visual amenity value.	Suppressed by adjacent T26 which is to be removed due to reduced vigour and to provide new landscaping.	C1 C1
G3	Mixed trees & shrubs	Young garden ornamentals of limited visual amenity value.	Construction of proposed parking area.	C2
G4	Apple x 4	Semi-mature garden fruit trees.	Construction of proposed parking area.	C2

9.1.2 With the exception of tree T12 all trees identified for removal are graded in Categories C and U.

9.1.3 Trees graded in Category C are not considered to be of such value or significance as to impose significant constraints to the proposed development of the site. The majority of these trees are located within the main garden area where their loss will not be detrimental to the wider visual amenity of the local area.

9.1.4 Tree graded in Category U are likely to require removal within the next 10 years and as such need not be considered in the planning process.

9.1.5 Tree T12 is a mature Birch graded in Category B being a tree of moderate value, this tree contributes and compliments the existing garden setting, however is not of such prominence as to be of significance to the character of the wider locality.

9.1.6 The loss of these trees is to be mitigated through the planting of replacement specimen trees as part of a wider landscaping scheme, providing specifically designed areas of soft landscaping to compliment the proposed development and improve the general visual amenity of the site.

9.2 *Impact of Development on Trees Identified for Retention*

9.2.1 Assuming that the recommended tree protection measures provided herein are applied all trees shown for retention on the Tree Protection Plan may be successfully retained within the proposal in accordance with BS5837:2012.

9.2.2 Tree protection fencing is to be erected as specified at Section 10.0 and Appendix C in order to provide protection for retained trees throughout the development of the site.

9.2.3 The proposed building footprint requires minor incursions into the Root Protection Areas (RPA) of tree T10 and the off-site conifer group G2.

9.2.4 With G2 having been planted as a hedge and with the proposal requiring the reduction of overhang and ongoing maintenance of the group as a hedge, the required incursion within the outer standard RPA not considered to present a risk to the health or longevity of the subject hedge.

9.2.5 Contractor access and scaffolding will be required within the RPA of group G2. As recommended at Section 6.2.3 of BS5837 a pedestrian access route for contractors has been provided across the RPA of these trees. Temporary ground protection is to be installed over the unfenced sections of RPA (see Section 10.3 and Appendix D).

9.2.6 The incursion of 26m² within the RPA of T10 (334m²), is not considered to be of such significance as to present a risk to tree health. An area of 52m² of existing impermeable hard surfacing across the main section of the RPA is to be removed and converted to soft landscaping. The removal of the existing hard surfacing will significantly improve the tree rooting environment, outweighing any detrimental impact that the required incursion may have.

9.2.7 The proposed parking area within the front section of the site is to be served by the existing driveway entrance. The parking area itself is to be of a permeable nature to ensure the hydrology of the site is not significantly altered. The regrading of soils within the RPA's of retained trees will be required, however these works will be within the existing driveway location and also within the location of existing trees identified for removal (G4). The presence of the competing root systems from those trees to be removed will allow the required works to be achieved at the outer extent of the retained trees RPA's without risk to tree health.

9.2.8 Access facilitation pruning works are required in order to provide access for construction operations and to avoid mechanical damage to tree canopies. A specification for the required works is provided at Section 11.0.

10.0 Tree Protection Measures

10.1 *Monitoring and Maintenance*

10.1.1 The trees identified for retention are likely to be protected under planning conditions, as well as some individuals being protected by Tree Preservation Order legislation. To cause damage to protected trees, even unintentional damage, is a criminal offence carrying potentially heavy penalties. It is imperative that the recommended tree protection measures are installed in accordance with the following recommendations and maintained throughout development.

10.1.2 The site manager is to be made aware of their responsibility to ensure that the protection of retained trees is maintained throughout the development of the site. Casual daily inspections of fencing by site staff are recommended, with a weekly written record of inspection held on site.

10.1.3 On sites hosting trees protected by Tree Preservation Order a periodic written record of inspection by an arboriculturist is recommended in order to ensure that protective measures are suitably maintained and that development activity does not result in the unintentional damage of protected trees. Arboricultural monitoring will be required at the following stages:

- Prior to commencement to mark out the location of tree protection measures;
- Prior to commencement to approve the installation of tree protection measures;
- Periodically during development to ensure that tree protection is maintained and to advise on any unforeseen circumstances involving trees.
- Prior to completion to approve the removal of tree protection measures.

10.1.4 The location and reason for tree protection measures is to be highlighted at the induction of all new contractors visiting the site.

10.2 *Tree Protection Fencing*

10.2.1 Tree protection fencing is to be installed in the locations specified on the Tree Protection Plan at Appendix B. The fenced off areas are to be treated as Construction Exclusion Zones with no contractor access permitted without the prior approval of the Local Authority Tree Officer.

10.2.2 Tree protection fencing is to be installed upon completion of access facilitation pruning and tree removal work (see Section 11.0) and prior to the commencement of any demolition/development operations on the site.

10.2.3 Tree protection fencing is to be installed in accordance with BS5837: 2012 Fig.2 (see Appendix C), comprising of a braced scaffold framework, with vertical tubes driven into the ground and weldmesh panels secured to the framework.

10.2.4 Informative signs (model sign provided at Appendix B) are to be laminated and attached to the fencing at maximum intervals of five to ten metres.

10.2.5 Once installed protective fencing is to be approved by the arboricultural advisor or the LPA Tree Officer.

10.2.6 The fencing is to be maintained throughout the development of the site and through to completion of the project. Fencing is not to be removed or altered without the prior approval of the LPA Tree Officer or project arboriculturist.

10.3 *Temporary Ground Protection Measures*

10.3.1 Temporary Ground Protection (TGP) is required to protect the soil profile where contractor access is required within the unfenced Root Protection Area of group G2.

10.3.2 The location for TGP is shown on the Tree Protection Plan (Appendix C). TGP is to be installed in conjunction with the installation of tree protection fencing.

10.3.3 TGP is to be installed in accordance with the principles provided at 6.2.3 of BS5837: 2012, the details of which are provided at Appendix D.

10.3.4 Ground protection is to be maintained throughout the development phase through to completion and is not to be removed or altered without the prior approval of the LPA Tree Officer.

10.4 *General Protection Measures*

10.4.1 No access into Construction Exclusion Zones is permitted without the prior approval of the LPA Tree Officer.

10.4.2 Other than approved development no level changes, service runs or storage of materials are permitted within Construction Exclusion Zones.

10.4.3 No fires are permitted where flames will reach within 5m of a tree canopy.

10.4.4 No storage or discharge of materials harmful to tree health is permitted on unsealed surfaces within 10m of any retained tree, including storage of fuels, tarmac, cement and oil.

10.4.5 No cement mixing is to be carried out on unsealed surfaces within 10m of any retained tree.

10.4.6 Details of proposed soft or hard landscaping within Root Protection Areas is to be submitted for approval by the LPA Tree Officer in order to avoid damage to tree root systems.

11.0 Required Tree Works

11.1 Table 3 provides details of the tree work required to accommodate the proposal.

Table 3: Proposed Tree Work

Tree No.	Schedule of Works
T1, T2, T4, T9, T12-T14, T20-T28	Fell and grind/grub-out stumps.
T29	Crown lift over parking bays to 2m.
T30	Crown lift over parking bays and driveway to 3m.
G2	Reduce overhang to 1m.

11.2 The specified tree works are considered to be required to accommodate the proposed development. Should detailed planning approval for the development be granted it will be assumed, unless the LPA informs otherwise, that the tree works detailed at Table 3 may be carried out under the planning approval without any additional notification of intent or application for tree works.

11.3 All tree work is to be carried out prior to the commencement of any demolition/development operations on the site.

11.4 All tree work is to be carried out by a competent arborist in accordance with the British Standard for tree work BS3998: 2010 'Recommendations for Tree Work'.

11.5 Upon completion of all tree works the prescribed tree protection measures are to be installed as detailed on the Tree Protection Plan (SH/TPP/888-03).

12.0 Conclusion

12.1 All trees identified for retention on the Tree Protection Plan may be retained and protected in accordance with BS5837:2012.

12.2 The proposed development has been designed around the constraints presented by the protected trees on the site, incorporating these trees within the design and improving their rooting environment through the removal of existing impermeable surfacing from within Root Protection Areas.

12.3 The design of the scheme ensures that all but one tree identified for removal are individuals of low arboricultural and visual amenity value (BS5837 Category C and U). The loss of these trees will be of no significance to the wider visual amenity of the local area, with all boundary screening retained to reduce the visual impact of proposals for neighbours and the general public.

12.4 Overall the proposal makes good use of the developable area, presenting the opportunity to remove impermeable surfacing from the Root Protection Areas of protected trees, as well as the opportunity for the Local Authority to secure a replacement tree and landscaping scheme to mitigate for the required tree losses and provide sustainable, long-term tree cover for the future.

13.0 Recommendations

13.1 The recommended tree protection measures detailed herein are to be adhered to at all times. Should any need arise to alter or not comply with any of the recommendations given within this report the prior written permission of the Local Authority Tree Officer is required.

13.2 It is recommended that an arboriculturist carry out periodic monitoring of tree protection measures on the site in order to ensure unintentional damage to retained trees is avoided.

13.3 Details of the location of service runs have not been provided, ideally no trenching or excavations are to be carried out within the specified Root Protection Areas of retained trees. Contractors responsible for the installation of services are to be instructed to carry out such works in accordance with recommended guidelines given in NJUG Vol.4.

13.4 An individual (such as the Site Manager) is to be appointed with responsibility for all arboricultural affairs during development. This individual is to be fully aware of the arboricultural requirements on the site and is to be responsible and held accountable for the monitoring and enforcement of tree protection measures.

13.5 Site logistics require careful management in order to avoid tree protection areas, the location of site offices/cabins, the storage of materials, contractor parking, access routes and deliveries etc. requires planning so as not to breach specified tree protection measures.

13.6 Prior to any tree work being carried out enquiries are to be made to the LPA to clarify whether prior permission is required. To carry out unauthorised work to a protected tree carries heavy penalties.

13.7 Trees may provide host sites for legally protected wildlife such as birds and bats. It is essential that prior to tree work being carried out the tree work contractor is instructed to assess trees for the presence of protected species, bat roosts and birds nests. It is an offence to disturb or destroy such sites. Advice on bats can be obtained from the Bat Conservation Trust (tel:0845 1300 2280), advice on nesting birds can be obtained from Natural England (tel:0845 600 3078).

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