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BS5837:2012 TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT: 194 Goldhurst Terrace, London, NW6 3HP

Dated: 20th December 2023

Our reference: GHA/DS/160222:23

CONTENTS

Arboricultural Impact Assessment

Location: 194 Goldhurst Terrace, London, NW6 3HP
Our reference: GHA/DS/160222:23
Client: 194 Goldhurst Terrace (Cowell) Limited
Dated: 20th December 2023
Prepared by: Glen Harding MICFor, MSc (Forestry), MArborA
Date of Inspection: 28th July 2023

Instructions

Issued by – 194 Goldhurst Terrace (Cowell) Limited

TERMS OF REFERENCE – GHA Trees were instructed to survey the subject trees within and adjacent to 194 Goldhurst Terrace, London, in order to assess their general condition and to provide a planning integration statement for the indicative proposed development that safeguards the long term wellbeing of the retained trees in a sustainable manner.

Executive Summary

The proposal for the site is the Demolition of the single storey east extensions and replacement with a new three storey side extension, together with excavation of part basement to create 8no. flats. Dismantling of the detached garage and reconstruction in a new location to the west of the existing garage, and single storey extensions to the east and rear to create 1no. house (together with basement excavation). The proposed scheme requires the removal of a small number of trees and shrubs, which will not significantly impact the local or wider landscape. The retained trees require protection in accordance with industry best practice and BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations, in order to ensure their longevity.

Documents Supplied

The client supplied the following documents:

- Topographical survey
- Existing layout plans
- Proposed layout plans

Scope of Survey

1.1 The survey is concerned with the arboricultural aspects of the site only.

1.2 The planning status of the subject property was not investigated in detail.

1.3 It is known that the site is in a Conservation Area.

1.4 A qualified Arboriculturist undertook the report and site visit and the contents of this report are based on this. Whilst reference may be made to built structure or soils, these are only opinions and confirmation should be obtained from a qualified expert as required.

1.5 Dense vegetation or climbers (such as ivy) also prohibited full inspections for some trees; this is noted where applicable.

1.6 No discussions took place between the surveyor and any other party.

1.7 The trees were inspected on the basis of the Visual Tree Assessment method expounded by Mattheck and Breleor (The body language of tree, DoE booklet Research for Amenity Trees No. 4, 1994)

1.8 The survey was undertaken in accord with British Standard 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.

1.9 Underground services near to trees will need to be installed in accord with the guidance given in BS5837.

1.10 The client's attention is drawn to the responsibilities under the Wildlife and Countryside Act (1981).

Survey Method

2.1 The survey was conducted from ground level with the aid of binoculars if needed.

2.2 No tissue samples were taken nor was any internal investigation of the subject trees undertaken.

2.3 No soil samples were taken.

2.4 The height of each subject tree was estimated using a clinometer and recorded to the nearest half metre.

2.5 The stem diameter for each tree was measured in line with the requirements set out in BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.

2.6 The crown spreads were measured with an electronic distometer and recorded to the nearest half metre. Where the crown radius was notably different in any direction this has been noted on the Plan (appendix A) and within the tree table (Appendix B). The crowns of those trees that are proposed for removal, or trees where the crown spread is deemed insignificant in relation to the proposed development are not always shown on the appended plan; however their stem locations are marked for reference.

2.7 The Root Protection Area (RPA) for each tree is included in the tree table, both as an area, and as the radius of a circle.

2.8 The crown clearance was measured using a clinometer and recorded to the nearest half metre. Where it is significantly lower in one direction, this is noted within the tree table at appendix B.

2.9 All of the trees that were inspected during the site visit are detailed on the plan at Appendix A; this plan was produced in colour and **MUST** only be scanned or reproduced in colour. The trees on this plan are categorised and shown in the following format:

COLOUR CODING AND RATING OF TREES:

Category A – Trees of high quality with an estimated remaining life expectancy of at least 40 years. Colour = light green crown outline on plan.

Category B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Colour = mid blue crown outline on plan.

Category C – Trees of low quality with an estimated remaining life expectancy of at least 10 to 20 years, or young trees with a stem diameter below 150mm. Colour = uncoloured crown outline on plan.

Category U – Those in such a condition that they cannot realisitically be retained as living trees in the context of the current land use for longer than 10 years. Colour = red crown outline on plan.

All references to tree rating are made in accordance with BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations', Table 1.

The Site

3.1 The site is located on Goldhurst Terrace, a residential through road located in north west London.

The Subject Trees

4.1 The details of the subject trees are set out in the Schedule at Appendix B.

4.2 The overall quality of the trees is good.

4.3 Of the twenty-three individual trees, and groups of trees surveyed, nineteen have been assessed as BS category B, C with the remaining trees being assessed as BS 5837 category C.

Category B	19 trees
Category C	4 trees / groups

The Proposal

5.1 The proposal for the site is the Demolition of the single storey east extensions and replacement with a new three storey side extension, together with excavation of part basement to create 8no. flats. Dismantling of the detached garage and reconstruction in a new location to the west of the existing garage, and single storey extensions to the east and rear to create 1no. house (together with basement excavation).

5.2 The proposed location of the above structures can be seen on the appended plan.

Arboricultural Impact Assessment

PROPOSED TREE REMOVAL / RETENTION:

6.1 The following trees are proposed for removal as part of the new development, as these specimens could not be effectively retained as they are located within the outline of the new structures, or located too close to make their retention feasible / sustainable.

T19, T20, G21, T22, T23

6.2 The assessed grading (as per BS5837 table 1) of each of the trees to be removed, as well as any relevant comments on their condition can be seen in the tree table at appendix B.

6.3 T20, G21, T22, T23 are all Category C and as such not of significant amenity, historic, cultural or ecological value.

6.4 T19 is the only notable tree for removal; the loss of this tree will be well compensated for by the remaining eighteen lime trees on the site frontage. New trees will also be planted to compensate for the loss of this tree.

TREE PRUNING TO ACCOMODATE THE PROPOSAL OR ACCESS TO THE SITE

6.5 The implementation of the proposal does not lead to the requirement to prune any of the retained trees, or shrubs.

6.6 There is no part of the new structure which will have tree canopies (from trees to be retained) overhanging it and the building works can progress safely without the need for any facilitation pruning.

ASSESSMENT OF RETAINED TREES ROOT PROTECTION AREAS

6.7 Section 4.6.3 of BS 5837: 2012 states that the Root Protection Area (RPA) of each tree should be assessed by an arboriculturalist considering the likely morphology and disposition of the roots, when known to be influenced by past or existing site conditions.

6.8 The RPAs of several trees have been amended to take account of the existing structures; these adjustments can be seen on the appended plan.

ASSESSED IMPACT ON RPAS BY PROPOSED STRUCTURES

6.9 There is a small encroachment into the RPAs of T2 (3.05%), T17 (3.5%) and T18 (2.66%). All of these are therefore assessed to be within acceptable levels. These are all healthy trees which will tolerate this small amount of root loss and recover quickly, to develop new root growth.

6.10 The proposed new structures are situated outside of the assessed RPAs of all of the other trees proposed for retention, therefore these trees pose no below ground constraints on the new structures or vice versa.

HARD LANDSCAPING IN RPAS

6.11 Where new paths are in tree RPAs, a no-dig construction will be necessary, to ensure that all existing ground levels are retained in their current form, as well as ensuring that satisfactory moisture and oxygen can be obtained from the underlying soil by any tree roots in this area. A design for this proposed access route must be drawn up by a structural engineer, in close co-ordination with the retained arboriculturalist. Porous materials must be used to ensure rainwater can penetrate the soil beneath the new patio.

INSTALLATION OF SERVICES

6.12 The full details of existing and proposed new services have not been made available at the time of writing.

6.13 The installation of underground apparatus and drainage systems with the use of mechanical excavators will undoubtedly sever any roots that may be present and can change the hydrology and structure of the nearby soil in a way that will adversely affect the health of any nearby trees. Particular care should therefore be taken when assessing the layout of new services and consideration MUST be given to the methods of installation of ALL underground apparatus.

Post Development Pressure

FUTURE TREE AND STRUCTURE RELATIONSHIPS

7.1 The retained trees are at a satisfactory distance from the proposed new building outline and highly unlikely to give rise to any inconvenience.

7.2 Regular inspections of the retained trees by a suitably qualified Arboriculturalist and subsequent remedial works will ensure that the trees are maintained in a suitable manner, to exist in harmony with the new structures and its occupants for many years to come.

REMEDIATION / REPLACEMENT PLANTING AND SOFT / HARD LANDSCAPING

7.3 An assessment of suitable planting sites within the proposed development area confirms that the loss of trees discussed in section 6.1 can be addressed by the planting of new trees that would complement the existing landscape.

7.4 Any new trees that are planted should be selected to ensure they do not become a nuisance and that the level of routine maintenance is low.

Tree Protection Measures and Preliminary Method Statement for Development Works

8.1 TREE PROTECTION BARRIERS

The position of the fence **MUST** be marked out with biodegradable marker paint on site and agreed with appropriate representatives from the LPA and contractor. The fencing **MUST** be erected **prior** to any works in the vicinity of the trees and removed only when all development activity is complete. The protective fencing **MUST** be as that shown in BS 5837 (see Appendix C). The herras panels **MUST** be joined together using a minimum of two anti-tamper couplers which **MUST** be installed so they can only be removed from the inside of the fence. The panels **MUST** supported by stabilizer struts, which **MUST** be installed on the inside and secured to the ground using pins or appropriate weights.

The Fence must be marked with a clear sign reading:

"Construction Exclusion Zone – No Access"

8.2 GROUND PROTECTION – LIGHTWEIGHT ACCESS ONLY

Where any additional ground protection is required, these areas **MUST** be covered with a permeable membrane, with 150mm layer of compressible woodchip overlaying it; an 18mm marine ply boards will then be secured on top of the woodchip to allow a 1.5tonne mini-digger to access the area without causing major compaction or soil erosion.

8.3 SITE HUTS, WELFARE FACILITIES AND STORAGE OF EQUIPMENT, MATERIALS AND CHEMICALS

All site huts **MUST** be positioned outside of the retained trees RPA's.

8.4 MIXING OF CONCRETE

All mixing of cement / concrete **MUST** be undertaken outside of the RPA of all of the retained trees.

8.5 USE CRANES, RIGS AND BOOMS

Precautionary measures **MUST** be observed to avoid contact of any retained trees when manoeuvring cranes rigs or booms into position.

8.6 INCOMING SERVICES, DRAINAGE AND SOAKAWAYS

Any new underground services which are to be located within (any portion of) the RPAs of any trees which are to be retained **MUST** be installed in accord with the guidance given in BS5837 together with the National Joint Utilities Group Booklet 4: 2007 Guidelines for the planning, installation and maintenance of utility services in proximity to trees (NJUG4). Service installation layouts **MUST** be planned to keep apparatus together in common ducts, in order to minimise the need for excavations. Service trench excavation within the RPAs **MUST NOT** be undertaken with the use of any mechanised machinery (minidiggers, JCBs or alike).

8.7 ON SITE SUPERVISION

Regular site supervision is essential to ensure all potentially damaging activities near to trees are properly supervised. A pre start site meeting **MUST** occur to ensure all parties are aware of their responsibilities relating to tree protection on site; this **MUST** include a site induction for key personnel.

Key personnel:

Name	**Position**	**Contact number / email:**
Glen Harding	Retained arboriculturalist	07884 056 025 Or info@ghatrees.co.uk
TBC	Local authority Arboricultural Officer	TBC
TBC	Site manager	TBC

At this pre start meeting, a supervision programme **MUST** be devised by the site manager and retained Arboriculturalist, ensuring that Arboricultural supervision is present at the appropriate periods during construction. The critical phases as listed below will be supervised inspected on site by the retained Arboriculturalist. After this pre start meeting, day-to-day responsibility for tree protection will be devolved to the site manager who will make contact with the retained arboriculturalist as needed.

8.8 OTHER TREE PROTECTION PRECAUTIONS

- **NO** fires lit on site within 20 metres of any tree to be retained.
- **NO** fuels, oils or substances with will be damaging to the tree shall be spilled or poured on site.
- **NO** storage of any materials within the root protections zone.

Conclusion

9.1 Subject to precautionary measures as detailed above, the proposal will not be injurious to trees to be retained.

9.2 T19 is the only notable tree for removal; the loss of this tree will be well compensated for by the remaining eighteen lime trees on the site frontage.

9.3 New trees and shrubs can be planted following approval from the Local Planning Authority to ensure a sustainable tree stock for the future.

Recommendations

10.1 Site supervision – An individual e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. This person must:

a. Be present on the site the majority of the time.
b. Be aware of the arboricultural responsibilities.
c. Have the authority to stop any work that is, or has the potential to cause harm to any tree.
d. Be responsible for ensuring that all site personnel are aware of their responsibilities towards trees on site and the consequences of the failure to observe those responsibilities.
e. Make immediate contact with the local authority and / or retained arboriculturalist in the event of any related tree problems occurring whether actual or potential.

10.2 It is recommended, that to ensure a commitment from all parties to the healthy retention of the trees, that details are passed by the architect or agent to any contractors working on site, so that the practical aspects of the above precautions are included in their method statements, and financial provision made for these.

20th December 2023
Signed:

Glen Harding MICFor, MSc (Forestry), MArborA
For and on behalf of GHA Trees

Appendix A
TREE PLAN
(see separate PDF)

Appendix B
TREE TABLE

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	Radius toward road (m)	Radius toward road (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T1	Lime	13	340	1	4.08	2.6	2.1	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T2	Lime	13	420	1	5.04	2.4	2	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T3	Lime	13	410	1	4.92	2	2.5	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T4	Lime	13	380	1	4.56	3.5	2.8	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	Radius toward road (m)	Radius toward road (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T5	Lime	13	350	1	4.20	1.8	1.5	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T6	Lime	13	270	1	3.24	1.8	1.4	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T7	Lime	13	360	1	4.32	2	1.8	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T8	Lime	13	320	1	3.84	1.9	1.3	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	Radius toward road (m)	Radius toward road (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T10	Lime	13	430	1	5.16	1.8	1.8	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T11	Lime	13	410	1	4.92	2.1	2	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T12	Lime	13	450	1	5.40	2	2.4	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T13	Lime	13	420	1	5.04	3	3.5	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	Radius toward road (m)	Radius toward road (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T14	Lime	13	320	1	3.84	3	2.8	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T15	Lime	13	280	1	3.36	3.2	2.7	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T16	Lime	13	300	1	3.60	1.2	2.7	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T17	Lime	13	420	1	5.04	3	2.5	M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	Radius toward road (m)		Radius toward road (m)		Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T18	Lime	13	400	1	4.80	3		2.8		M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m.
T19	Lime	13	350	1	4.20	3.2		2.8		M	2 over site and over pavement	20-40	B1 and B2	Vegetation near base of tree and ivy on main stem of tree prevented full and detailed inspection. Previously pollarded at 4m in past and crown reduced at approx 11m. Recommend: to be removed.
T20	Lime	13	173	3	2.08	2.1		3		M	2 over site and over pavement	10-20	C1	Regrowth from old stump.Recommend: to be removed.
G21	Apple, holly, elder, ash	6	100	1	1.20	2	2	2	2	MA	1	10-20	C2	Scrub growth. Recommend: to be removed.
T22	Apple	9	256	2	3.07	2	4	2.5	2	MA	2	10-20	C1	Small tree of limited value in the wider landscape. Recommend: to be removed.
T23	Ash	6	60	1	0.72	1.5	1.5	1.5	1.5	MA	2	10-20	C1	Self set tree of little value. Recommend: to be removed.

KEY :

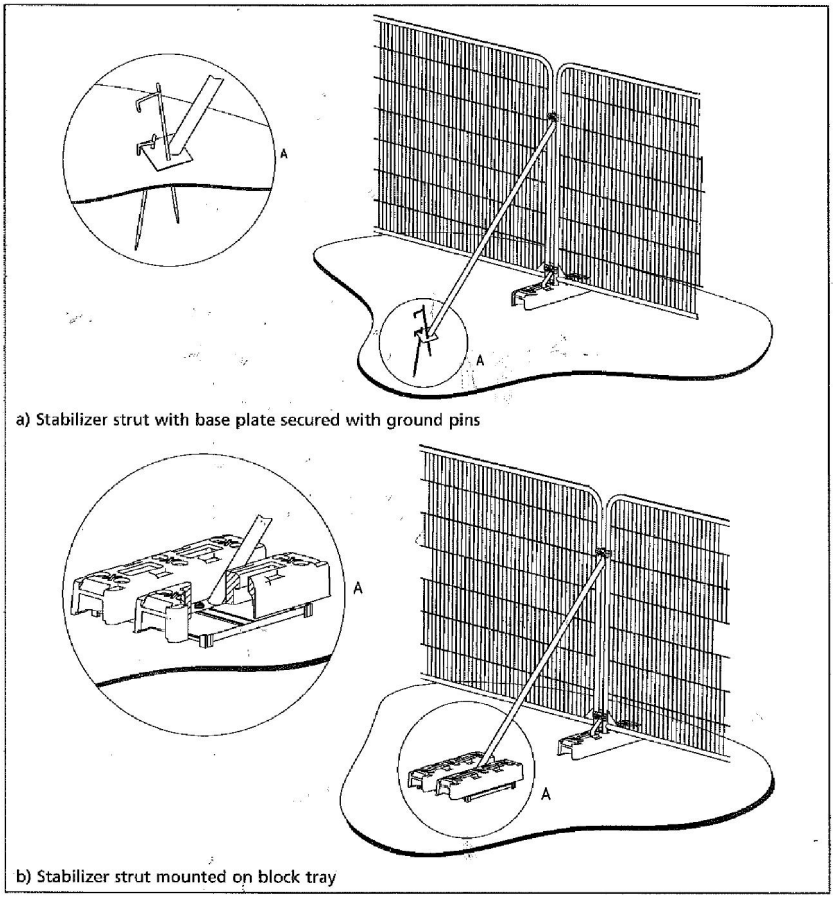
Tree No: (T= individual tree, G= group of trees, W= woodland)

Age class: Young (Y), Middle aged (MA), Mature (M), Over mature (OM), Veteran (V)

Height (Ht): Measured in metres +/- 1m

Appendix C
TREE FENCING DETAIL

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray