Part 1: BS: 5837 Tree Survey & Tree Constraints Plan Report

Site:
14 Burgess Hill
Camden, London
NW2 2DA

Date of Site Visit:

30th March 2023

Prepared for:

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Bartlett Project Reference:

GD/230169/R1

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1.0 EXECUTIVE SUMMARY:

1.0.1 The following report evaluates the trees within and adjacent to the above site, using the criteria and guidance set out in the British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*.

1.0.2 The wider amenity and landscape values of the trees, as well as their useful life expectancies are determined, and as a result, a category grading is assigned to all trees for retention using the "Cascade Chart for Tree Quality Assessment".

1.0.3 A Tree Constraints Plan has also been drawn and appended to the report. The Plan illustrates the tree locations, their above and below ground constraints and their above ground spatial requirements with any proposed development

1.0.4 14 Burgess Hill is a detached three storey residential dwelling situated to the north-west of Burgess Hill, Cricklewood within the Borough of Camden.

1.0.5 Located on an approximate 625 square metre site, the property sits back off the road affording a double access driveway to the frontage and a moderately sized garden to the rear.

Figure 1: Photograph of the site as viewed from the Burgess Hill public highway.

1.1 Table 1: BS: 5837 (2012) Tree Quality Assessment

BS: 5837 (2012) Category	Number
A	0
B	7
C	13
U	0
Total	20

2.0 SCOPE OF REPORT

2.1 Instruction

2.1.0 Bartlett Consulting has been instructed to undertake a tree survey in accordance with British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*, for the trees and vegetation within the boundary of 14 Burgess Hill, Camden, London, NW2 2DA, that have the potential to influence a proposed development, which therefore must be considered as a constraint within the project planning.

2.2 Documents & Supporting Information

2.2.0 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:

- Topographical Drawing – Drawing Ref: EX1 date February 2022
- Existing Site Plan Drwaing Ref: 2103_EX_020
- Existing Ground Floor Drawing Ref: 2103_EX_100

2.3 Aspects Included within Report

2.3.0 The tree survey included within this report follows the guidance of Clause 4 of British Standard 5837: *Trees in Relation to Design, Demolition and Construction – Recommendations*. The tree survey schedule, included within Appendix 3, details: tree common name; various physical dimensions; notable observations; tree categorisation with respect to their landscape/cultural value and perceived life expectancy.

2.3.1 The tree survey has been conducted in accordance with the principals of the Visual Tree Assessment (VTA) method developed by Mattheck & Breloer (1994). This is a basic visual tree assessment and must not be misinterpreted as a detailed/advanced tree condition inspection or tree risk assessment.

2.3.2 Any prescribed tree works are made with regards to good tree management, irrespective of any proposed development. Management recommendations may also be made in response to a pathogen or pest of known contagion which may pose a concern to people or other trees.

2.3.3 This report is accompanied by a Tree Constraints Plan (TCP) accurately detailing the positions of surveyed trees and vegetation; illustrating the physical dimensions of the crowns as per the cardinal points; the calculated Root Protection Area (RPA) of each tree; and tree shade/shadow patterns.

2.3.4 Modified RPA's will be illustrated if known, below ground level obstructions exist.

2.3.5 Future canopy spread for young trees will also be illustrated where necessary.

2.4 Aspects Excluded from Report

2.4.0 The prescribed tree works contained within this report do not take into consideration possible facilitation pruning. This report does not include an Arboricultural Impact Assessment (AIA), Arboricultural Method Statement (AMS), or a Tree Protection Plan (TPP).

2.4.1 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.

3.0 TREE PRESERVATION ORDER & CONSERVATION AREA PROTECTION STATUS

3.1 Statutory Protection

3.1.0 The Town & Country Planning Act (Tree Preservation) (England) Regulations 2012 and the Town & Country Planning Act 1990 (as amended) provides legislative protection for trees within England. A tree protection status check was conducted by Bartlett Consulting on 31st March 2023 in way of email correspondence to the planning department for the London Borough of Camden Council:

3.2 Tree Preservation Order (TPO) Status

3.2.0 None

3.3 Conservation Area (CA) Status

3.3.0 None

3.4 Tree Management Implications

3.4.0 It has been confirmed by the Local Planning Authority (LPA) the London Borough of Camden Council via email correspondence on 31st March 2023, from the Planning Assistant Mr Rav Curry that none of the trees situated within the curtilage of the site or the neighbouring land/properties are currently subject to a Tree Preservation Order and that the property does not stand within a designated Conservation Area.

4.0 GENERAL SITE DETAILS

4.1 Description of the Site

4.1.0 As detailed within the Executive Summary, 14 Burgess Hill is a detached three storey residential dwelling situated to the north-west of Burgess Hill, Cricklewood within the Borough of Camden.

4.1.1 Located on an approximate 625 square metre site, the property sits back off the road affording a double access driveway to the frontage and a moderately sized garden to the rear.

Figure 2: Photograph showing the application site as viewed from the rear garden.

4.2 Local Landscape and Amenity Evaluation

4.2.0 The trees growing within the rear residential garden of 14 Burgess Hill consist of relatively young and semi-mature specimens, planted predominantly to the rear boundary, affording a level of effective screening from the adjacent apartment block.

4.2.1 There are a number of prominent trees growing adjacent to rear of the site of which provide further screening from the adjoining property. The larger trees are also considered to be providing a positive contribution to the public amenity and the local landscape. However, they are only partially visible from the public highways of Lyndale and Burgess Hill due to the scale and density of the surrounding residential architecture.

4.2.2 As such the trees subject to the report are considered to have moderate to low public visibility and amenity value.

4.3 Previous Surveys & Site History

4.3.0 We are not aware of any other surveys being conducted with regards to the tree, other than the Topographical Site Survey. Nor are we aware of any historical or cultural values relating to the trees.

5.0 GENERAL TREE DETAILS

5.1 Tree Identification & Location

5.1.0 The trees subject to this report are located within the curtilage of 14 Burgess Hill and within adjacent third-party land.

5.1.1 The locations of the surveyed trees are illustrated on the Tree Constraints Plan (TCP) accompanying this report.

5.1.2 The accuracy of the tree locations is, where possible, based upon the provided Topographical Site Survey Drawing, referenced in Section 2.2 above. Limited information was provided regarding location of trees within third party land and as such these trees have been surveyed and plotted by Bartlett Consulting using a laser distometer, a measuring tape and fixed points. Whilst this method does not guarantee accuracy provided by a land or topographical site survey, it is considered sufficient to allow the plotting of calculated Root Protection Areas.

5.1.3 Trees that have been plotted using this method include: T1, G2, T6, T7, T11, T14 & T15.

5.1.4 Where deemed appropriate to do so, based on tree species, age, size and proximity to one another, some trees have been referenced and surveyed as a group. The dimensions of the largest tree in each group have been recorded within the tree survey schedule.

5.2 Trees Included within Survey

5.2.0 Only trees that are present at the time of the site visit, with a measured stem diameter equal to or greater than 75 millimetres (at 1.5 metres above ground level) are included within the survey.

5.2.1 Where possible to do so, all trees on adjacent third-party land which are located within influencing distance of the site will be recorded. As there was no access to the third-party land, stem diameters have been estimated, unless it was possible to measure the stem diameter with a measuring tape.

5.2.2 Tree and canopy height, as well as canopy spread of third-party trees could be accurately recorded with the laser range finder. Estimated canopy spreads and stem diameters will be accompanied with a * suffix in the tree survey schedule.

5.2.3 It must be noted that those trees beyond the boundary line of the site are under the ownership and responsibility of a third party. Pruning and management of these trees by the site owner will fall within the restrictions of Common Law.

5.3 Categorisation & Gathered Data

5.3.0 All gathered data contained within the Tree Survey Table is provided within Appendix 1 of this report follows the guidance set out within Clause 4.4 of British Standard 5837 (2012): *Trees in Relation to Design, Demolition and Construction – Recommendations*.

5.3.1 Furthermore, each tree within the Tree Survey Table at Appendix 1 is categorised as per the "Cascade Chart for Tree Quality Assessment" given as Table 1 within British Standard 5837:2012 – a copy of which is provided within Appendix 2 of this report.

6.0 TREE CONSTRAINTS PLAN

6.1 Below Ground Level Constraints

6.1.0 The below ground level constraint on any site will include the root system and rooting environment of trees being retained. The data gathered during the tree survey permits the creation of a Tree Constraints Plan (TCP). The TCP illustrates the tree location within and adjacent to the site, the physical dimensions of the main stem and crown above ground as well as the constraints below ground level caused by the calculated Root Protection Area (RPA) of each tree.

6.1.1 The calculated RPA is indicated by the orange broken circle on the TCP and shows the minimum area around each tree or groups of trees, subject to the tree survey, which is deemed to contain sufficient roots and rooting environment to maintain the current vitality of the tree. This area is as per the recommendations of Clause 4.6 of British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction - Recommendations*.

6.1.2 In the first instance, the RPA should remain a construction exclusion zone and all proposed development should be planned and located outside the RPA for trees of such quality and value to be retained, essentially leaving the RPA sacrosanct.

6.2 Modification of RPA

6.2.0 Whilst not affecting the total area of the calculated RPA, in some circumstances, the shape of the RPA has been modified from the default circle. This decision has been made by Bartlett Consulting when taking into account the morphology and disposition of roots as influenced by topography of the site and existing site conditions such as the presence of hard surfacing, kerbing, concrete etc.

6.2.1 The nominal RPA of a number of surveyed trees has been modified or off-set to account for a number of landscape features, including areas of hardstanding, existing building, significant structures and changes in levels.

6.3 Above Ground Level Constraints

6.3.0 The above ground level constraints on a development site can be numerous, resulting primarily from the current and/or ultimate crown height and spread of the retained tree; tree species characteristics such as evergreen or deciduous; the height of the tree crown above ground level; and any "nuisance" that might be the result of a tree's proximity to living areas.

6.3.1 Proposed structures should be designed and/or located with due consideration of above ground constraints so as to prevent direct damage from occurring to the structure, as well as the need for unnecessary and possibly damaging tree management works due to shade and/or falling leaves affecting amenity space and living areas.

6.3.2 Where considered appropriate to do so, this report will give consideration to the growth potential of younger trees and the possible effects caused of this above ground constraint on the site.

6.3.3 Proposed structures should be designed and/or located with due consideration to above ground constraints as shown on the TCP so as to reduce the potential for direct damage to proposed structures and/or existing trees, as well as the need for unnecessary and possibly damaging tree management.

7.0 CONCLUSIONS

7.1 Initial Considerations

7.1.0 The early-mature, third-party trees growing adjacent to the rear garden of 14 Burgess Hill pose the most notable and significant constraints within regards to any development of the site. Care must be taken within the initial design stage to avoid any unnecessary encroachment within the RPA of these trees.

7.1.1 Once works commence on site a mixture of robust tree protection fencing and suitably specified non-compacting ground protection could be effectively installed to prevent both direct and indirect impacts on the retained trees.

7.1.2 There are a number of young trees growing within the site providing an effective level of screening from the adjacent property. Although it would be preferable to retain these trees, they should not pose any significant constraints upon proposed development as they could be easily and effectively relocated or replaced.

7.1.3 As detailed in discussions above, all of these trees are important in the landscape as amenity and screening assets, as well as for wildlife habitat, with the potential for post-development pressure providing grounds for objection from the London borough of Camden Council as contrary to Policy A3 Biodiversity of the Camden Local Plan 2016-2031.

7.1.4 Where the loss of trees or vegetation of value cannot be avoided or would adversely affect their future growth, the Council will require suitable replacements capable of providing at least equal amenity and ecological value. Where this cannot be achieved on-site, the Council will require a financial contribution towards re-provision. Tree planting should, as a minimum, offset the capacity of trees lost as a result of the development to absorb carbon, taking account of the time needed to reach maturity.

7.2 Future Considerations

7.2.0 Once a more detailed scheme has been presented, an Arboricultural Impact Assessment (AIA) can be undertaken, formally taking into account any issues relating to the proposed development design and site layout, with regards to the existing trees.

7.2.1 The AIA will identify any trees that will require facilitation pruning or removal, and the appropriateness of such works, as well as the requirement for replacement tree planting.

7.2.2 Where the AIA has identified potential tree and development conflicts, we will provide recommendations for design modification and adjustment of the proposed footprint where necessary. The AIA will also provide methods of mitigation to ensure potential conflict does not cause damage to any retained trees.

7.2.3 An Arboricultural Method Statement (AMS) will be the final phase of the project, whereby specific construction methods and details pertaining to mitigation measures are provided.

7.2.4 The Tree Protection Plan (TPP) is typically composed at the same time when the AMS is written, following finalisation of a development design/ site layout. The TPP will identify trees to be retained, removed, and pruned for facilitation purposes, as well as the location and specification of tree protection barriers and non-compacting ground protection to be installed on site.

7.2.5 The AMS will consider construction activities where they are in close proximity to retained trees, dealing with issues such as site access, intensity of activity, the provision of a suitable working space, designated areas for delivery and storage of building materials, and if know at the time of writing the location of service runs and soakaways.

APPENDIX 1 TREE SURVEY KEY

Tree Reference Number	The tree number of physical tree tag (if applicable) provided to an individual tree or group of trees, as shown on the Tree Constraints Plan.
Species	Generally the common name given to the tree species. The Latin name is sometimes provided as clarification where deemed necessary.
Height	This figure is given in metres. Measurements are obtained using a digital clinometer. A black asterisk * will denote that the measurement is estimated.
Stem Diameter	This figure is given in millimetres. Measurement are obtained using a standard diameter tape, whilst measured from 1.5 metres above ground level, or otherwise indicated. A black asterisk * will denote that the measurement is estimated.
Crown Spread	This figure is given in metres. Measurements are obtained radially for all four cardinal points using a laser range finder. A black asterisk * will denote that the measurement is estimated.
Crown Clearance	This figure is given in metres. Measurements are obtained radially for all four cardinal points, between the crown and ground level, and obtained using a digital clinometer. A black asterisk * will denote that the measurement is estimated.
Height to first major branch	This is an approximate figure given in metres. Measurements are obtained by identifying the lowest lateral branch within the crown. Recorded information will also refer to a cardinal direction, and obtained using a digital clinometer. A black asterisk * will denote that the measurement is estimated.
Age	The following abbreviations are used to give the age of the tree; NP = Newly Planted, Y = Young, aged less than one quarter of its life expectancy, SM = Semi-Mature, trees of approx. one quarter of its life expectancy, EM = Early-Mature, between one quarter & half of its life expectancy, M = Mature, trees of over half of its life expectancy, OM = Over Mature, trees exceeding their life expectancy, V = Veteran, over mature trees which contain multiple wildlife habitat features & associations.
Physiological Condition	The following considerations are used to evaluate the physiological conditions of a tree (foliage & vitality): Dead, Poor, Fair & Good, with intermediate descriptions using same phrasing.
Structural Condition	Standard comments referring to the visible structural condition of tree: Hazardous, Poor, Fair, Good, with intermediate descriptions using same phrasing.
Observations	These are brief comments which relate to observations from ground level, unless otherwise stated. These observations are made to assist in categorising the tree. They do not provide or replace a comprehensive condition survey.
Preliminary Management Recommendations	These recommendations will only identify the need for more detailed assessment/inspection or tree management due to tree hazards of features which present an immediate risk to persons & property. The tree works do not consider general husbandry or required management of the trees, nor do they consider tree works that may be required prior to development or to facilitate access to the site.
Estimated Remaining Contribution	This is the number of estimated years that the tree will remain present and contribute to the local landscape. The following bands are used; <10 years, 10+ years, 20+ years & 40+ years.
Categorisation	This is the grading category applied following the tree survey. Trees are categorised in accordance with the cascade chart provided within Table 1 in BS: 5837 (2012). A copy of this chart is provided within Appendix 2 of this report. A red asterisk * will denote that the categorisation as given will be dependent upon information gained from further detailed inspection of the tree.
Root Protection Area & Root Protection Radius	The RPA is a figure given in metres squared, the minimal area which should be left undisturbed. The RPR is a figure given in metres, a measured radial distance away from the trees main stem.

APPENDIX 2 BRITISH STANDARD: 5837 (2012) TABLE 1: TREE CATEGORISATION

TREES UNSUITABLE FOR RETENTION		
CATEGORY & DEFINITION	**CRITERIA**	**IDENTIFICATION ON PLAN**
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	Trees that have serious, irremediable, structural defects, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. NOTE: Category U trees can have existing or potential conservation value which might be desirable to preserve.	**DARK RED**

TREES TO BE CONSIDERED FOR RETENTION				
CATEGORY & DEFINITION	**CRITERIA (subcategories)**			**IDENTIFICATION ON PLAN**
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation. Historical, commemorative or other value (e.g. veteran trees or wood-pasture)	**LIGHT GREEN**
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management & storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	**MID BLUE**
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significant greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	**GREY**
	NOTE: Whilst category C trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.			

APPENDIX 3 BRITISH STANDARD: 5837 (2012) TREE SURVEY SCHEDULE

Tree Ref No.	Species	Ht. (m)	Stem Dia. (mm)	Crown Spread				Crown Clearance				Ht. to 1st limb (m)	Age	Phys. Cond.	Structural Condition			Observations	Preliminary Management Recommendations	Life Exp.	Cat.	RPA in m2 (Radius/ m)
				North	East	South	West	North	East	South	West				Basal	Stem	Crown					
T1	Sycamore *Acer pseudoplatanus*	7	100	2	2	2	2	1	1	1	1	1	Y	Fair	F	F	F	• Third party tree • Growing within proximity to the building • Self set specimen • Multiple stem specimen	• Remove to ground level and poison stump	<10	C1	5 1.2
G2	Group of Leyland CypressX *Cupressocyparis leylandii*	9	400	4	4	4	4	1.5	1.5	1.5	1.5	1.5	EM	Fair	F	F	F	• Third Party trees • Single and multiple stem specimens • Previously managed since lapsed • Significant lateral re-growth	• Top and trim	10+	C2	72 4.8
T3	Whitebeam *Sorbus aria*	8	350	5	5	5	5	2	2.5	2.5	2	2	EM	Fair	F	F	G	• Third party street tree • Limited rooting environment • Good crown formation	• No works currently required	20+	B2	55 4.2
T4	Silver Birch *Betula pendula*	2	80	1	0.5	1	1.5	0.5	0.5	0.5	0.5	1.8	Y	Good	G	G	G	• Single stem • Pendula form • Asymmetrical crown	• No works currently required	10+	C1	3 1
T5	Common Holly *Ilex aquifolium*	6	170	2.5	2.5	2.5	2.5	2	2	2	2	1.8 m west	SM	Good	G	F	G	• Single stem specimen • Bifurcation at 2.0m • Good crown formation	• No works currently required	20+	B1	13 2
T6	Field Maple *Acer campestre*	10	450	5	5	5	5	4	4	4	4	4.0 m south	SM	Fair	F	F	G	• Third party tree • Unable to inspect at base • Tariffication of main stem at 1.5 • Growing beyond retaining wall approx 2.0m below garden level	• No works currently required	20+	B1	92 5.4

Tree Ref No.	Species	Ht. (m)	Stem Dia. (mm)	Crown Spread				Crown Clearance				Ht. to 1st limb (m)	Age	Phys. Cond.	Structural Condition			Observations	Preliminary Management Recommendations	Life Exp.	Cat.	RPA in m2 (Radius/ m)
				North	East	South	West	North	East	South	West				Basal	Stem	Crown					
T7	Common Hornbeam *Carpinus betulus*	12	300	5	5	5	5	4	4	4	4	2.0 m north	SM	Good	G	G	G	• Third party tree • Unable to inspect at base • Growing beyond retaining wall approx 2.0m below garden level	• No works currently required	20+	B2	41 3.6
T8	Holm Oak *Quercus ilex*	6	110 80	0	3	3	2	2	2	2	2	2	Y	Good	G	F	F	• Bifurcation of main stem at 0.5m resulting in the formation of an included union • Significant asymmetrical crown bias to east and south	• No works currently required	10+	C1	8 1.6
T9	Cherry Laurel *Prunus laurocerasus*	8	190	4	4	3	3	2	2	2	2	1.5 m north & south	SM	Good	G	F	F	• Bifurcation of main stem at 1.5m adequate union formed • Significant asymmetrical crown bias to north & east	• No works currently required	10+	C1	17 2.3
T10	Cherry Laurel *Prunus laurocerasus*	5	80	1	3	1	1	2	2	2	2	1.5 m east & west	Y	Good	G	F	F	• Single stem specimen • Lean and asymmetrical crown bias to east	• No works currently required	10+	C1	3 1
T11	Sycamore *Acer pseudoplatanus*	17	700 700	9	9	9	9	5	5	5	5	5.0 m south	EM	Good	G	G	G	• Third party tree • Unable to inspect at base • Bifurcation of the main stem at 2.0m with secondary bifurcation at 4.0m • Growing beyond retaining wall approx 2.0m below garden level	• No works currently required	20+	B1	222 11.9

Tree Ref No.	Species	Ht. (m)	Stem Dia. (mm)	Crown Spread				Crown Clearance				Ht. to 1st limb (m)	Age	Phys. Cond.	Structural Condition			Observations	Preliminary Management Recommendations	Life Exp.	Cat.	RPA in m2 (Radius/ m)
				North	East	South	West	North	East	South	West				Basal	Stem	Crown					
T12	Pear *Pyrus*	5	470	2.5	3	3.5	2	2	2	2	2	2.0 m south	EM	Good	P	P	F	• Seam on lower stem resulting in decay, probed vertically to a depth of 300mm • Poor resonance when sounded around seam • Previous heavy crown reduction resulting in multiple regrowth	• No works currently required	10+	C1	99 5.6
T13	Common Holly *Ilex aquifolium*	6	110 60	1	1	1	1.5	2	2	2	2	2	Y	Good	G	G	F	• Single stem specimen • Slight asymmetrical crown bias to west • Growing under crown of dominant neighbouring tree	• No works currently required	10+	C1	7 1.5
T14	Common Holly *Ilex aquifolium*	7	300	4	4	4	4	2	2	2	1	2.0 m west	SM	Fair	F	F	F	• Third party tree • Unable to inspect at base • Growing in proximity to boundary fence • Previous pruning of lower overhanging eastern crown	• No works currently required	10+	C1	41 3.6
T15	Common Oak *Quercus robur*	17	850	8	8	8	8	6	6	6	6	-	EM	Fair	F	F	F	• Third party tree • Unable to inspect at base • Evidence of previous storm damage and pruning within crown • Major deadwood within crown	• No works currently required	20+	B1	327 10.2
T16	Common Oak *Quercus robur*	17	850	7	10	10	4	4	4	4	4	4.0 m east	EM	Good	G	G	F	• Third party tree • Unable to inspect at base • Growing on slightly lowered ground level • Asymmetrical crown bias to north & east • Crown overhanging garden approx 3.5m from building	• No works currently required	20+	B1	327 10.2

Tree Ref No.	Species	Ht. (m)	Stem Dia. (mm)	Crown Spread				Crown Clearance				Ht. to 1st limb (m)	Age	Phys. Cond.	Structural Condition			Observations	Preliminary Management Recommendations	Life Exp.	Cat.	RPA in m2 (Radius/ m)
				North	East	South	West	North	East	South	West				Basal	Stem	Crown					
T17	Cherry Laurel *Prunus laurocerasus*	4	130	2	3	2	1	2	2	2	2	1.5 m east	Y	Good	G	F	F	• Single stem specimen • Asymmetrical crown bias to east	• No works currently required	10+	C1	8 1.6
T18	Common Holly *Ilex aquifolium*	6	100	1	1	2.5	1	2	2	2	2	2	Y	Good	G	G	F	• Single stem specimen • Asymmetrical crown bias to south • Growing below crown of dominant neighbouring tree	• No works currently required	10+	C1	5 1.2
T19	Magnolia *Magnolia*	4	120	1	2.5	2	1	2	2	2	2	2.5 m east	Y	Fair	G	F	F	• Single stem specimen • Lean to east and asymmetrical crown bias • Previously topped resulting in multiple regrowth	• No works currently required	10+	C1	6 1.4
T20	Apple *Malus*	6	300	1	3	3	2.5	2	2	2	2	2.0 m east	EM	Fair	G	F	F	• Bifurcation of the main stem at 1.5m • Previously topped at 4.0m resulting in multiple regrowth from pruned points	• No works currently required	10+	C1	41 3.6

APPENDIX 4 LIMITATIONS OF REPORT

Limitations of the Tree Survey & Scope of the Report

- This report is restricted to those trees & vegetation shown on the attached Tree Constraints Plan, described within the tree survey schedule, as identified within the instruction as per Section 1.1.
- All plans are illustrative of the discussions within the report and based entirely on the drawings provided to Bartlett Consulting. All scaled measurements must be checked against the original submission documents as well as confirmed on site.
- The survey was based on unaided, visual observations made from ground level only, using the principles of a Visual Tree Assessment (VTA).
- The trees were not climbed at the time of the survey.
- All observations were made from within the curtilage of the site or from a public open space unless otherwise stated.
- The tree survey is preliminary in its nature and must not be interpreted as a detailed tree condition inspection.
- This report does not consider the possible implications to any existing or proposed built structures. These matters will be dealt with in future reports as deemed necessary/ as and when instructed.

Timing of the Tree Survey & the Report

- The observations & findings of this report remain valid for one year, from the date of issuance.
- The observations & findings will be invalidated if any building works are undertaken, soil levels altered or tree works implemented.
- In the instance where building works have occurred, soil levels are altered or tree works completed, it is recommended that a new tree survey and report is completed.

Trees in Relation to Other Properties

- The tree survey and report consider only those trees in relation to the site as identified.
- It does not comment upon the possible effects of trees on neighbouring properties, including matters concerning subsidence or heave, or with regards to potential hazards presented by trees surveyed.
- Neighbouring land/tree owners that are identified as posing a potential risk to the site should seek their own independent advice.
- Damage to, or potential damage to any existing structures that are not referred to within this report is not considered, unless otherwise specified. This is inclusive of built structures within and neighbouring 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.

Trees 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 may be 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 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 5 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 have evolved from industry material including the following:

- O'Callaghan & Lawson (1995) *Trees and Development Conflicts: Importance of Advanced Planning & Site Control in Tree Preservation Plans*
- Matheny & Clark (1998) *Trees and Development a Technical Guide*
- 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
- Mattheck, C, Bethge K, Weber K. (2015) *The Body Language of Trees – Encyclopaedia of Visual Tree Assessment*
  Karlsruhe Institute of Technology Campus North.

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 6 GLOSSARY

Abiotic. Pertaining to non-living agents; e.g. environmental factors.
Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients
Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress.
Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading.
Ancient tree. A specimen that has passed maturity, is very old in comparison to other trees of the same species and is in the final stage of its life. Ancient trees are important ecological assets in the landscape.
Architecture. In a tree, a term describing the pattern of branching of the crown or root system.
Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms.
Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, hard and rigid with protective capabilities.
Bifurcation. The junction where single stems/branches divide into two at a union, sometimes implying that the two stems above the union are of similar size (see co-dominance).
Biotic. Pertaining to living agents; e.g. viruses, bacteria, fungi, plants & animals.
Bracing. The use of rods or cables to restrain the movement between parts of a tree.
Branch:

- **Scaffold.** A first order branch arising from a stem
- **Lateral.** A second order branch, subordinate to a scaffold branch or stem and bearing sub-lateral branches
- **Sub-lateral.** A third order branch, subordinate to a lateral or scaffold branch, or stem and usually bearing only twigs

Branch bark ridge. The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem.
Branch collar. A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base.
Brown-rot. A type of wood decay in which cellulose is degraded, while lignin is only modified.
Buckling. An irreversible deformation of a structure subjected to a bending load.
Canker. A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria
Co-dominance. In a woodland, a tree whose crown is at the general level of the canopy. Alternatively, within the crown of a tree, branches/stems of equal size above a union.
Compartmentalization. The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region.
Compression strength. The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices.
Compression. A force which pushes and tends to compress. The material fails by being crushed or by buckling (following sideways deflection).
Condition. An indication of the physiological vitality of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree
Conservation Area (CA). A geographical area recognized in the Town and Country Planning Act 1990 as being *'of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance'.*
Crown/Canopy. The main foliage bearing section of the tree
Crown Clean. The removal of dead, dying, damaged or diseased branches from the crown of a tree. Sometimes called 'dead wooding'.
Crown Lifting. The removal of limbs and/or small branches to achieve a specified vertical clearance above ground level or other surface.
Crown Reduction/shaping. An operation that results in an overall reduction in the height and/or spread of the crown of a tree by means of a general shortening of twigs and/or branches, whilst retaining the main framework of the crown and preserving, as far as possible, the natural tree shape.
Crown Thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure.
Defect. Any feature of a tree that is likely to make it less safe (in the case of a structural defect) or otherwise to reduce its health, longevity, landscape prominence or conservation value for any other reason.
Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips.
Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms.
Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours.
Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5m or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified.
Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard.
Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot.
Felling licence. In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber.
Formative pruning. Pruning of young trees to modify their form at maturity, either to avoid future structural defects (for instance by singling a twin-stem) or to create a desired cultivated tree form.
Flush-cut. A pruning cut which removes part of the branch bark ridge and or branch-collar.
Girdling root. A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue
Habit. The overall growth characteristics, shape of the tree and branch structure.
Harm. Personal injury or death, property damage, or disruption of activities.
Hazard. An element of tree risk: the tree part(s) with a capacity to cause damage or injury.

Hazard beam. A curved woody stem, where loading tends to bend it against the direction of curvature. They have a tendency to split longitudinally through the centre due to strongly opposing internal stresses.
Heartwood/false-heartwood/ripe wood. Sapwood that has become dysfunctional as part of the natural aging processes.
Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact.
Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism.
Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch.
Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to end-loading.
Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure.
Longitudinal. Along the length (of a stem, root or branch)
Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting.
Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree.
Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material.
Natural bracing. A natural/grown structure formed above a union in the crown of a tree, which restricts the movement of the constituent union parts. Without mechanical stimulus, the centre of a union may not develop normally.
Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it.
Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products.
Pollarding. The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species.
Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs.
Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth).
Risk. The combination of the likelihood of an event and the severity of the potential consequences.
Risk Assessment. The process of risk identification, analysis and evaluation.
Root zone. Area of soils surrounding a tree likely to contain absorptive and/or structural roots of the tree/s. The Primary root zone is that which we consider of primary importance to the physiological well-being of the tree.
Saprophyte: a fungi which uses non-living organic material and works beneficially for its host, recycling carbon, nitrogen, and other nutrients.
Sapwood. Living xylem tissues.
Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose.
Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate.
Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole.
Shrub species. Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees.
Stem/s. The main supporting structure/s, from ground level up to the first major division into branches.
Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature.
Stress. In mechanics, the application of a force to an object
Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree.
Stub (snag). In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point.
Taper. In stems and branches, the degree of change in girth along a given length.
Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.
Tension. A force which pulls and tends to stretch. A material in tension may suffer ductile failure or brittle failure.
Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it.
Tree Preservation Order (TPO). An order made by a local planning authority in England to protect specific trees, groups of trees or woodlands in the interests of amenity.
Understorey. A layer of vegetation beneath the main canopy of woodland or forest or plants.
Union. The area of physiological division of one primary tree stem/branch into two or more secondary members, commonly referred to as 'fork'.
Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional.
Veteran tree. A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned.
Vigour. The health and resilience of a tree (from the Latin 'to be strong'), reflected in the capacity of the whole tree to grow. The term is often used as a description of overall condition on a qualitative scale from 'high' to 'low'.
Vitality. A close synonym of vigour reserved for active processes in a tree that do not result in the capacity for growth, for instance a tree's response to injury, insect attack or disease.
VTA. Visual Tree Assessment. A structured and systematic evaluation of a tree considering biological and mechanical functions and systems, arriving at a failure criteria and tree management recommendations.
White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.
Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity.
Wind pressure. The force exerted by a wind on a particular object.
Windthrow. The blowing over of a tree at its roots.
Woundwood. Wood with atypical anatomical features, developed in response to a wound, often resulting in a swelling (as round a pruning wound) which gradually occludes the wound.

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:	Part 1: BS: 5837 Tree Survey & Constraints Plan
REPORT STATUS:	Final
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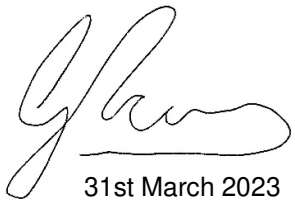
SIGNATURE:	
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REPORT REVIEWED BY:	Ruth Le Poidevin **Consultancy Adminstrator**
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TREE CONSTRAINTS PLAN

SCALE :	DATE :
1 : 250 @ A4	4/6/2023

14 Burgess Hill, Camden
London, NW2 2DA

GD/230169/TCP

LEGEND

Crown Spread

Root Protection Area

Category 'A' Category 'B' Category 'C' Category 'U'

0 15m