# THREATS Tree Report

**Vesta Management Ltd.**

14 Hampstead Hill Gardens,

Hampstead,

London

NW3 2PL.

**08 September 2020**

Author: Jon Hartley BSc (Hons) MArborA

## Of Instruction

Arbtech Consulting Limited (Arbtech) received written instruction on 08 August 2020 from Vesta Management Ltd. to attend 14 Hampstead Hill Gardens, Hampstead, London NW3 2PL (Site) to undertake an a tree condition survey and to produce this summary report including the Schedule of Trees; Tree Location Plan and a Summary of Tree Works, to meet with the Duty of Care to which occupiers of Site is bound to adhere, under their obligations as described in the Occupiers Liability Acts and Health and Safety at Work Act with regards to trees.

## Author

I am Jon Hartley, senior consultant at Arbtech Consulting Ltd. I undertook the tree survey on 08 September 2020 and subsequently have produced this summary of my findings.

I passed the RFS Certificate of Arboriculture in 2000 after a short time working in the industry. During a six-year spell in Australia, I passed the Australian Qualifications Framework (AQF) level 5 Diploma in arboriculture. I also hold a BSc (Hons) degree in Arboriculture and Urban Forestry and the obligatory LANTRA Professional Tree Inspector certification. I benefit from professional industry experience spanning 20 years. I have professional memberships with the Consulting Arborist Society and the Arboricultural Association and an associate membership with the Institute of Chartered Foresters.

The advice below and appended is underwritten by our Professional Indemnity insurance for the business practice of Arboricultural Consultancy in the sum of one million Pounds Sterling in each and every claim.

## The Site

The 0.1ha residential site is located on the west side of Hampstead Hill Gardens. It shares boundaries with residential properties to the north, south and west. The dwelling is currently being renovated including a basement to the rear which sits broadly within the footprint of an existing basement. The rear garden hosts a mature horse chestnut on the rear north boundary and a semi-mature ash adjacent to the southern boundary and the basement. Other smaller trees and shrubs exist along the southern and western boundaries but are not detailed in this report. Site topography climbs slightly from east to west.

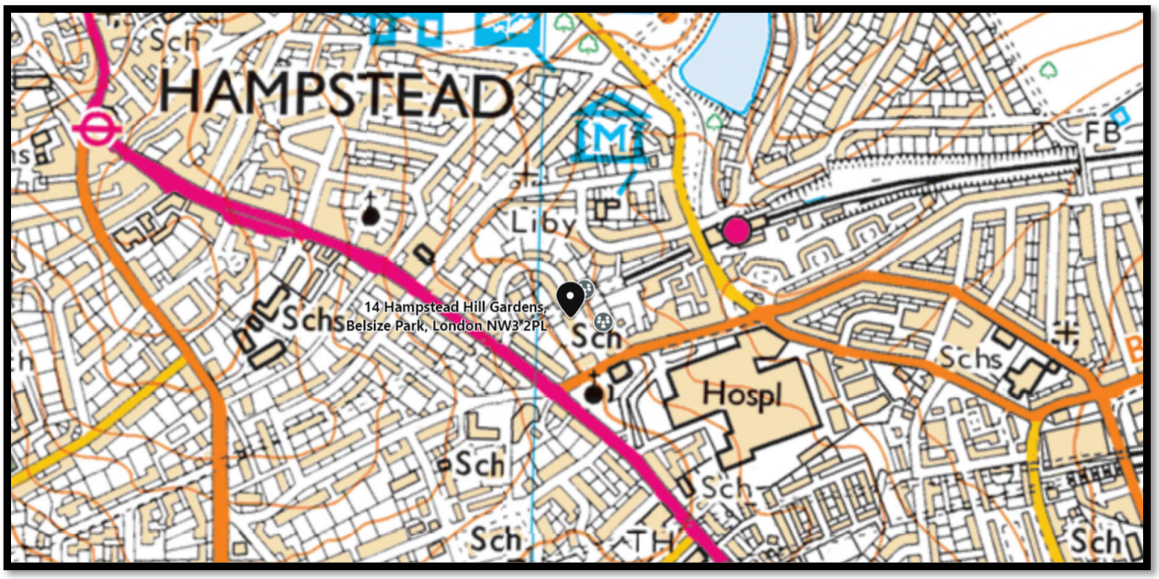



**Figure 1: OS Map (Bing Maps)**

**Figure 2: Aerial Image of site (Google Earth).**

## Tree Survey Executive Summary

An arboricultural survey of all trees within impacting distance of the site was undertaken by Jon Hartley on 08 September 2020.

During the survey I categorised the subject trees using Tree Hazard: Risk Evaluation and Treatment System (THREATS) as detailed in the following.

A total two individual trees were surveyed. Details for each of the trees surveyed are provided in the Schedule of Trees (**Appendix 1**). Tree positions within the site are demonstrated in the Tree Location Plan (**Appendix 2**). Risk mitigation measures are summarised in a Summary of Tree Works (**Appendix 3**)

## Trees

Tree T01, an early mature common ash, has an asymmetrical crown distribution due to proximity of companion trees. Ivy wholly obscures inspection of base, stem and primary branch unions from ground level to apex. The basement construction works are within the notional circular RPA. The basement is being 'renovated' with its the closest edge of the back face (outside) of the retaining wall at 1.98m from the stem, I am told that a staircase out of the old basement climbed to the south boundary wall which has been removed, this included soil; Root morphology in the exposed face suggests this is an accurate description, as exposed root are vertical suggesting the absence of a previous structure/barrier to root development.

Secondary branches have been broken at 5m, 3m from the stem. There is a mechanical bark wound measuring 100x100mm at 0.5m on the west side suggesting vegetation around the base of the tree has been cleared using a machine.

An orange mesh temporary fence is in place 3m from the tree acting as a physical barrier to construction activity.

The tree appears to be in good health showing no signs in the crown of significant root damage at this stage, however, it is conceded that any such symptoms may not have manifested yet as the basement construction has been within the current growing season.

It is recommended that the ivy is severed at base of removing a band of 300mm around the circumference of the tree without damaging the underlying bark.

Tree T02, is a mature horse chestnut. Ivy obscures detailed inspection of stem and primary unions. There has been no excavation within the RPA assuming that the basement has not been extended. Materials are, however, stored within the RPA.  Leaf minor moth infestation throughout the crown has denuded the tree of 90% of green foliage with most leaves brown and curling or fallen leaving petioles attached to twigs. *Ganoderma applanatum* fruiting bodies are found at the base on south side. Investigation with a nylon sounding hammer returns a thin residual wall of wood to 25% of circumference with a 200mm blunt probe easily pushed into the stem to its full extents 400mm above the lowest bracket and 200mm either side of it; the decay extends below ground.

It is recommended that this tree is removed and replaced due to root and stem decay. The planning authority may require further information regarding the extent of the decay using internal decay detection equipment prior to allowing a removal. However, given that the tree has, no doubt, been subjected to years of early defoliation it is safe to assume that its energy reserves have been depleted to such an extent that sever tree surgery to reduce the size of the tree would result in multiple large wounds. This would be likely to allow the decay fungi present to further colonise newly dysfunctional structural elements of the tree perpetuating the issues until such time as it would be ultimately removed. i.e. this would allow for a slight prolonging of the inevitable to such time that the replacement tree, if planted now, would have established.

## Survey Methodology

In order that the landowner/steward of the site is deemed to be acting in accordance with their statutory duty of care, trees should be inspected on a regular basis by a competent person. This regular inspection should be recorded in an auditable fashion. This survey report constitutes a single inspection which can be included in this auditable inspection record.

All trees greater than 75mm diameter within the site were recorded. The trees are represented located on a plan and observations pertaining to size, life stage (age), physiological condition and structural condition were recorded. Recorded trees were scored using the Tree Hazard: Risk Assessment and Treatment System (THREATS) and recommendations for remedial works, if required, are made.

The survey was made at ground level using visual observation only. Detailed examinations such as climbing inspections and decay detection (beyond use of a sounding hammer) were not employed, though may form part of the survey's management recommendations. All observations were made from within the confines of the site.

THREATS is a framework for systematically and consistently quantifying an informed arboricultural judgement allowing tree managers to arrive at their decision through a logical and transparent process.

The system is created of three parts:

**Part 1** - Tree Inspection Record;

**Part 2** - Risk Evaluation and;

**Part 3** - Implementation of Control Measures.

**Part 1: Tree Inspection Record**

The following tree features are recorded and act as a description of the tree:

- reference number (to be recorded on the tree survey plan);
- species (common or scientific names);
- age class (Newly planted, Young, Early Mature, Mature, Over Mature);
- size class (Small, Medium, Large, Very Large)
- observations, notes relating to the condition of the tree, its location and/or a description of failure indicator.

## Part 2: Risk Evaluation

Three elements contribute to the calculation of a given risk:

- **Failure Score-**features that may be considered defects are considered and scored in relation to species/clone history, established failure criteria and time of year - See Table 1;
- **Target Score** - the impact radius of the identified defect is considered in relation to potential targets. If on a vehicular transit line, forward visibility of the driver is considered along with the potential for the vehicle to be stationary for a period. If children and/or the elderly or infirm are likely to be present, the target category score is upgraded by one category – See Table 2;
- **Impact Score** - the likely damage/harm that would result from the failed part striking the target is considered. This includes the height/momentum and size of the scored part upon impact – See Table 3.

The **Risk Evaluation Score** is a function of these three scores**:**

Risk Evaluation=Failure Score X Target Score X Impact Score

**Table 1: Failure Score**

| Score | Likelihood of failure | Example indicators |
|---|---|---|
| 50 | Imminent/Immediate | Uprooting; Extreme root loss; Collapsing structure (i.e. primary failure has already occurred) |
| 8 | Probable/Soon | Altered exposure; Primary decay fungus; Severe inclusive bark/root loss; Fragile dead wood |
| 2 | Likely, foreseeable | Lapsed pollard; Overweight/subsiding limbs; Poor stem taper; Dieback |
| 0.8 | Potentially with time | Early development of inclusive bark; Robust dead wood |
| 0 | None apparent | No significant defects observed |

**Table 2: Target Score**

| Score | Value | Static target examples | Target occupancy examples |
|---|---|---|---|
| 40 | Very High | Building 24-hour use | Constant vehicular traffic/busy playground |
| 25 | High | Building 12-hour use, ≥11Kv power lines | Frequent vehicular traffic/constant pedestrian use |
| 20 | Medium | Building/structure occasional use, <11Kv lines | Peak times traffic/intermittent use, PFV, e.g. commuter run |
| 15 | Low | Garage, Summer house, Listed wall | Occasional traffic/sporadic use, GFV e.g. quiet rural road |
| 7 | Very Low | Unlisted wall, paving, garden features | Infrequently used access/public right of way/bridleway |
| 0 | None | Grass | Hardly ever used, e.g. remote path |

**Table 3: Impact Score**

| Score | Degree of harm & consequences (examples) | **Agent: trees, mm, or branches, kg** (NB size/weight for guidance only) | | |
|---|---|---|---|---|
| 10 | Severe structural damage, vehicles crushed – passenger fatalities very probable | VL | >750mm | >500kg |
| 6 | Moderate structural/ severe vehicle damage – fatal/disabling injuries likely | L | 350-750mm | 50-500kg |
| 4 | Minor damage/probable disabling/hospitalising injury to pedestrians | M | 100-350mm | 10-50kg |
| 1 | Fragile objects destroyed, superficial/recoverable injury to pedestrians | S | <100mm | <10kg |

## Part 3: Implementation of Control Measures

An appropriate response to the risk evaluation is provided by banding the risk evaluation score. This categorises the risk on a seven-point scale between 'extreme' and 'insignificant' and guides the surveyor to prioritised appropriate mitigation actions. Colour coding these priorities allows quick reference for the reader. See tables 4 & 5.

### Table 4: Appropriate Response

| Score range | Threat category | Recommended action & Completion deadline | Code |
|---|---|---|---|
| 4000+ | 7 Extreme | Evacuate/prevent access to impact site, emergency call-out of contractors | E |
| 2001-3999 | 6 Serious | Close site if practical; arrange for work to be completed within 7 days | 7D |
| 1000-2000 | 5 Significant | Arrange for work to be completed within four weeks maximum | 4W |
| 330-999 | 4 Moderate | Remediate within 13 weeks, reinspect after severe weather event meantime (Inc. gales to Force 7+) | 13W |
| 160-329 | 3 Slight | Reinspect annually /after storms (Force 10+), expect to schedule work within 2 yrs. | A |
| 50-159 | 2 Minimal | Reinspect within 3 yrs. if public access, schedule work as required | 3Y |
| 0-49 | 1 Insignificant | Reinspect within 5 yrs. if general public access or 3 yrs. if child-specific access & TS ≥20 | 3/5Y |

**Table 5: Outline of Work Required**

| Control measure | Example indicators |
|---|---|
| Target management | Target value / vulnerability reduced by exclusion, diversion or relocation: e.g. antisocial Target value / vulnerability reduced by exclusion, diversion or relocation: e.g. antisocial planting / fence off & warn; re-route paths; relocate benches |
| Further investigation | Decay mapping to establish significance of defect: set results against failure criteria |
| Install support | Non-invasive brace to support vulnerable member / dividing union |
| Localised pruning | Reduce weight loading on vulnerable limb (including shortening dead= branches to retain habitat) |
| Limb removal | Prune out dead/damaged/vulnerable growth |
| General pruning | Reduce crown by specified amount |
| Crown removal | Leave stem as a standing carcass (consider habitat piling cord wood, preferably in dappled light) |
| Tree removal | Takedown and fell to ground level (consider habitat piling & also stump grinding |

The above described information for each surveyed tree can be found in tabular form at **Appendix 1.**

# Definitions

## Arboriculturist

An arboriculturist (or arboricultural consultant) is a person who has, through relevant education, training and experience, gained recognized qualifications and expertise in the field of trees in relation to construction.

## Tree Survey

A tree survey should be undertaken by an arboriculturist and should record information about the trees on a site independently of and prior to any specific design for development. As a subsequent task, and with reference to a design or potential design, the results of the survey should be included in the preparation of a tree constraints plan, which should be used to assist with site layout design.

## Tree Location Plan

A Tree Location Plan (TL) is plan, is typically delivered as a scalable plan and in a.pdf format. However, in some instances this may be delivered as a non-scalable hand draw (sketch) plan, prepared by an arboriculturist for the purposes of identifying the locations of the surveyed trees, this is dependent upon the information supplied by, or requirements of, the client.

## Limitations

Trees were inspected from using visual observation from ground level only. Trees were not climbed or inspected below ground level. Inaccessible trees will have best estimates made about the location, physical dimensions and characteristics. Trees have been grouped where it is expedient to do so. Trees have been excluded from the survey if they are found by us to be sufficiently far away from the site as agreed and set out by our Client for the extent of the survey. Unless specifically stated and requested to do so we have performed no statutory protection checks; such as Conservation Areas (CA) or Tree Preservation Order (TPO. Consequently, we do not seek to offer any comparison between or infer any difference in the quality or importance of TPO trees and other trees.

## Caveat

This advice and all appendices are subject to caveat as follows:

1. This report is nullified if any remedial works are undertaken on any area of the site, on or after the date of study/survey.
2. The report is only valid on the date on inspection and any deletion, editing or alteration will void it in its entirety.
3. The responsibility for any works undertaken on the basis of the recommendations of this report does not form part of this contract. No responsibility is assumed by the author of this report or by ARBTECH for any legal matters that may arise as a consequence.
4. The report is not valid in adverse or unpredictable weather conditions or for any failure due to Force Majeure.
5. No liability is assumed by the author or by Arbtech for any misuse, misinterpretation or misrepresentation of information contained herein.
6. This report has been compiled using only the information made available to the author as at the above date of inspection.
7. The assessment, unless described as “detailed” was of a preliminary nature, conducted from ground only; no soil samples were taken for analysis, no trees were climbed or inspected below ground level (including roots).
8. The author did not have at the time of writing any information as to the integrity of the site’s main structures, annexes or the drainage system.
9. Arbtech is not responsible for any works other than those invoiced for.
10. All tree work is to be undertaken in accordance with British Standard BS 3998:2010, Recommendations for tree work.
11. Prior to any and all specified trees works it is the duty of the landowner/steward and or contractor to undertake a check to see if there are any statuary protections upon the land and trees.
12. All tree works are to be undertaken at an appropriate time and any and where necessary a suitably qualified ecologist has been consulted so not to damage or destroy any protected species and or habitats.

## Appendices

The following documents were released to the Client as appendices to this report:

1. Schedule of Trees (.pdf)
2. Tree Location Plan drawing (.pdf)
3. Summary of Tree Works (.pdf)
4. Photos (.pdf)

If you require clarification of information contained herein, please do not hesitate to contact us via 01244 661170.

Yours Sincerely,

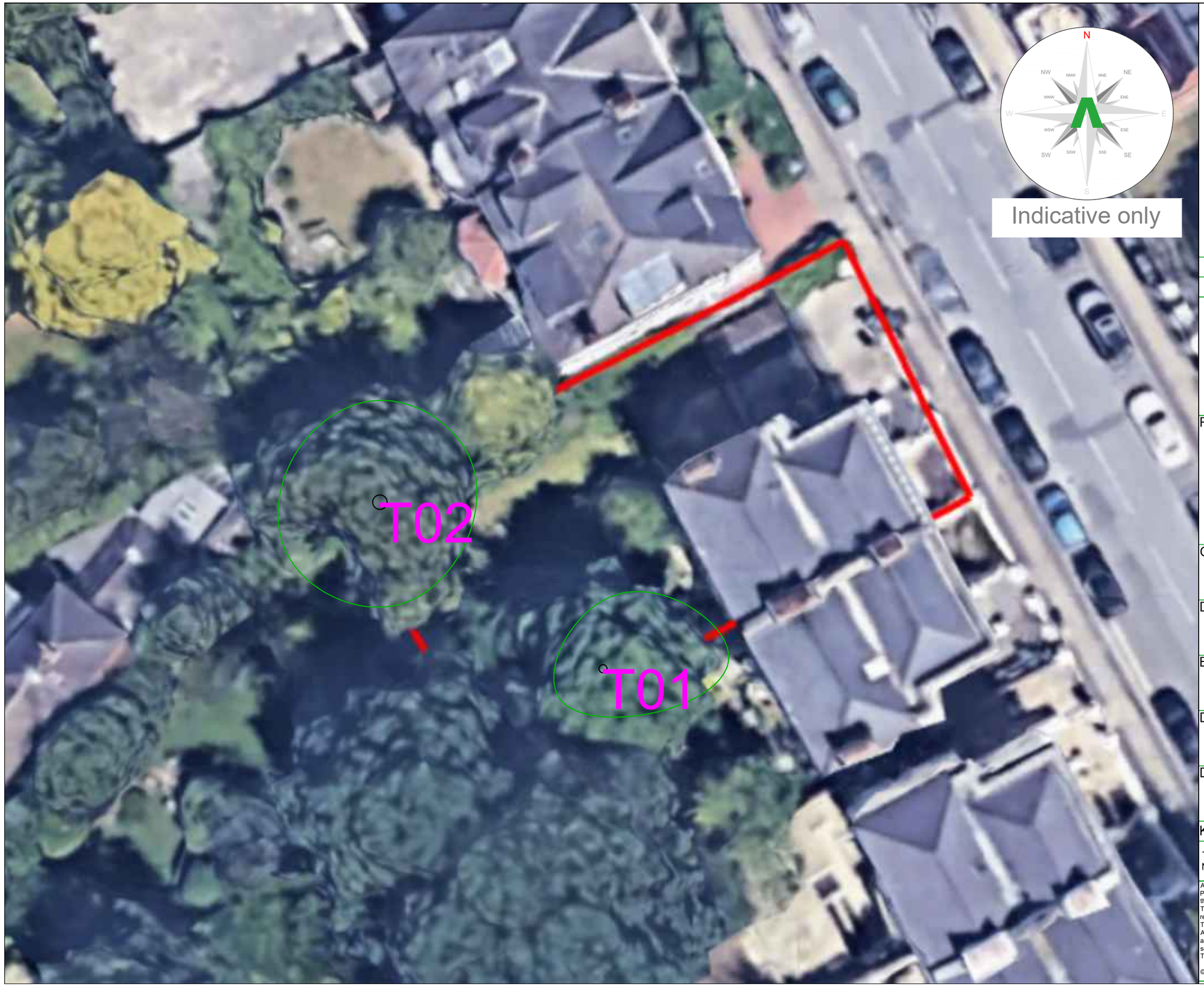
Jon Hartley BSc (Hons) MArborA
Senior Consultant

07860951396
01227373287
jh@arbtech.co.uk

# Appendix 1: Schedule of Trees

| Tree No. | Tag No | Species | Age Class | Height (m) | Crown Spread radius (m) | No of Stems | Calculated Stem Diameter (mm) | Failure Indicators Present | Failure indicator most hazardous | FS | TS | IS | Risk score | Threat Cat. | Priority Code | Mitigation | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T01 | | Common Ash (Fraxinus excelsior) | Early mature | 16 | 6 | 1 | 510 | Root damage;Prolific ivy;Other | Prolific ivy | 0.8 | 25 | 4 | 300 | 2 | 3Y | Sever ivy (Sever ivy at base removing a band of 300mm around the circumference of the tree without damaging the underlying bark.) | Asymmetrical crown distribution due to proximity of companion trees; ivy wholly obscures inspection of base, stem and primary branch unions not ground level to apex; construction works ongoing within the notional circular RPA; a basement is being 'renovated' with its the closest edge of the back face (outside) of the retaining wall at 1.98m from the stem, I am told that a staircase out of the old basement climbed to the south boundary wall which has been removed, this included soil; secondary branches have been broken at 5m, 3m from the stem; there is a mechanical bark wound measuring 100x100mm at 0.5m on the west side suggesting vegetation has been cleared using a machine; an orange mesh temporary fence is in place 3m from the tree. |
| T02 | | Common Horse Chestnut (Aesculus hippocastanum) | Mature | 13 | 5 | 1 | 900 | Dieback;Root decay | Root decay | 2 | 25 | 6 | 300 | 3 | A | Tree removal (Fell tree to ground level; grind out stump.) | Ivy obscures detailed inspection of stem and primary unions; there has been no excavation within the RPA assuming that the basement has not been extended; materials are stored within the RPA; heavy leaf minor moth infestation throughout crown with 90% of leaves brown and curling or fallen leaving petioles attached to twigs; Ganoderma applanatum fruiting bodies at base on south side; sounding hammer returns a thin residual wall of wood to 0.25 of circumference with a 200mm blunt probe easily pushed into the stem to its full extents 400mm above the lowest bracket and 200mm either side of it; the decay extends below ground. |

# Appendix 2: Tree Location Plan (Not to Scale)




| Rev: | Date: | Notes: |
|---|---|---|
| | | |

ARBTECH

Unit 3, Well House Barns, Chester, CH4 0DH
https://arbtech.co.uk, 01244 661170

Project:

14 Hampstead Hill Gardens,
Hampstead,
London,
NW3 2PL

Client:

Vesta Management Ltd.

Drawing:

Tree Location Plan

Based on:

Google Earth

| Drawing No: | Rev: |
|---|---|
| Arbtech TLP 01 | -- |

| Date: | Scale: | Drawn: |
|---|---|---|
| Sept 2020 | Not to scale | JCH |

Key:

| Tree Nos.: | T01 | Tree Canopies: | | Trunks: | |
|---|---|---|---|---|---|

All dimensions should be checked on site. No dimensions are to be scaled from this drawing.
Please notify us of any discrepancies found. Arbtech Consulting Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based.
This drawing is designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees.
This drawing is not to be read as a definitive part of the engineering or construction designs or method statement. An architect or structural engineer should be contacted over any matters of construction, detailing or specification and for any standards or regulatory requirements relating to proposed structures, hard surfacing or underground services.
This drawing was produced in colour - a monochrome copy should not be relied upon.

# Appendix 3: Summary of Tree Works/Risk Mitigation Measures

| Tree No. | Tag No | Species | Priority Code | Mitigation |
|---|---|---|---|---|
| T01 | | Common Ash (Fraxinus excelsior) | 3Y | Sever ivy (Sever ivy at base removing a band of 300mm around the circumference of the tree without damaging the underlying bark.) |
| T02 | | Common Horse Chestnut (Aesculus hippocastanum) | A | Tree removal (Fell tree to ground level; grind out stump.) |

**Notes**

All tree work is to be undertaken in accordance with British Standard BS 3998:2010, Recommendations for tree work. All arising's are to be removed and the site is to be left as found. Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber Lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

**Tree removal**

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species (see Annex A).
Where restrictions (e.g. lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) cannot be overcome, trees should be dismantled in sections.
This also applies where a tall stump is being retained but where branches are to be removed/pruned.
Extensively decayed trees can be unpredictable when they are being felled, and special precautions should therefore be taken, such as the use of a winch to guide the direction of fall.

**Stump removal – stump grinding**

Stump grinding should be to a minimum of 300mm deep or to extend through the base of the stump leaving the major roots disconnected if the intention is to reduce the potential for the spread of Honey fungus.
The grinding residue should be treated as arising's and removed from site.
*NOTE Mechanical destruction of a stump by stump grinding is less disruptive to the site than digging out.*
The hole left by stump removal, should be filled with soil or other material. The filling should be appropriate for future site usage, and for any surface treatment that is to be installed.
Where future plant growth is desired, the backfill material should be firmed in 150 mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

**Stump removal - digging**

Stump removal by digging out should include disposal/utilisation of woody material (see Clause **13**).
*NOTE Whether done by hand or machine, digging out can cause severe disturbance of the site.*
Where possible, when winching out a stump, a ground or other type of anchor should be used rather than a tree to be retained. If there is no alternative to using such a tree as an anchor, appropriate protective measures should be adopted.

**After stump removal**

The hole left by stump removal, whether by digging out or grinding, should be filled with soil or other material. The filling should be appropriate for future site usage and for any surface treatment that is to be installed.
Where future plant growth is desired, the back-fill material should be firmed in 150mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

**Cut Ivy**

Cutting of ivy is to be undertaken using hand tools such as hand saws or secateurs to prevent damage to the bark of the tree; the use of chain saws is prohibited. A 300mm high section of ivy is to be cut and removed from within 1m of ground level.

## Protected Species (general informative for tree work)

**Conservation Status of British Bats**

The consensus in Britain and Europe is that virtually all bat species are declining and vulnerable. Our understanding of population status is poor as there is very little historical data for most bat species. Certain species, such as the horseshoe bats, are better understood and have well documented contractions in range and population size.

Given this general picture of decline in UK Government within the UK Biodiversity Action Plan has designated five species of bats as priority species (greater and lesser horseshoe bats, barbastelle, Bechstein's and pipistrelle). These plans provide an action pathway whereby the maintenance and restoration of the former populations' levels are investigated.

**Legal Status of British Bats**

Given the above position all British bats as well as their breeding sites and resting places enjoy national and international protection.

All bat species in the UK are fully protected under the Wildlife and Countryside Act 1981 (as amended) through inclusion in Schedule 5. All bats are also listed on Annex IV (and some on Annex II) of the EC Habitats Directive giving further, European protection. Taken together the act and Conservation of Habitats and Species Regulations 2012 (as amended)* make it an offence to; intentionally or deliberately kill, injure or capture (take) bats;

- Deliberately disturb bats (whether in a roost or not);
- Damage, destroy or obstruct access to bat roosts;
- Possess or transport a bat or any part of a bat, unless acquired legally;
- Sell, barter or exchange bats, or parts of bats

The legislation although not strictly affording protection to foraging grounds does protect roost sites. Bat roosts are protected at all times of the year whether bats are present. Any disturbance of a roost due to development must be licensed.

**the regulations that delivered by the UK's commitments to the Habitats Directive.*

**Breeding birds**

All nesting birds are protected under the Wildlife and Countryside Act (as amended) 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. Furthermore, several birds enjoy further protection under that Act and are listed on Schedule 1 of the Act. These further protected birds are also protected from disturbance and it may be necessary to operate “no-go” buffer zones around such nests – typically out to 100m.

Planning policy guidance on the treatment of species identified as priorities under the biodiversity action program suggests that local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents and should ensure that they are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. The conservation of these species should be promoted through the incorporation of beneficial biodiversity designs within developments

# Appendix 4: Photos

Photo1: Tree T01, common ash

Photo 2: Tree T02, common horse chestnut

Photo 3: Proximity of basement to tree T01

Photo 4: Vertical roots demonstrating removal of previous structure

Photo 5: Fungal fruiting body on southern base of tree T02 with probe

Photo 6: Fungal fruiting body on southern base of tree T02 with probe fully inserted to left.

Photo 7 Fungal fruiting body on southern base of tree T02 with probe fully inserted above

Photo 8: Fungal fruiting body on southern base of tree T02 with probe fully inserted to right.

## Document Production Record

| Document number | Editor | Signature | Position | Issue number | Date |
|---|---|---|---|---|---|
| Arbtech TTR 01 | Jon Hartley |  | Senior Consultant | 1 | 09/09/20 |

### Limitations

Arbtech Consulting Ltd has prepared this Report for the sole use of the abovenamed Client/Agent in accordance with our terms of business, under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us. This Report may not be relied upon by any other party without the prior and express written agreement of Arbtech Consulting Ltd. The assessments made assume that the sites and facilities will continue to be used for their current purpose without significant change. The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from third parties has not been independently verified by Arbtech Consulting Ltd.

### Copyright