

Assessment of trees to affect extension to north west of no. 5 Hitherwood Close

for

Barratt



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1 Instruction

To inspect the trees to the west of 5 Hitherwood Close and comment upon:

- their ability to affect the adjacent extension;
- and provide recommendations for their management.

2 Limitations

Two trees adjacent to 5 Hitherwood Close were inspected. The trees distant from the property were not subject to the survey, although there are other trees in the local area contributing to the line of trees to the west of the property.

The tree survey is to be carried out in relation to the landowner's duty under the Occupier's Liability Act 1984 and common law. The tree survey was carried out from ground level, identifying significant tree features that may have significant bearing upon the condition and management of the tree and giving appropriate recommendations and priorities.

Typical significant defects that are to be identified can be referred to in "Hazards from Trees, a general guide" by David Lonsdale and "The body language of trees" by Claus Mattheck published by the Forestry Commission and the Department of the Environment respectively.

Detailed investigations were not carried out and no tree was climbed. The conclusions are based on my own observations, qualifications and experience in arboriculture. All dimensions recorded are estimated.

Trees are dynamic structures and as such their condition and health may change in a short period of time, particularly in relation to changes in their immediate environment and circumstances. As such the inspection is valid for a period of 1 year from the date of the survey providing the environment and circumstances do not significantly alter.

To carry out the tree survey reasonable access around the base of the tree is required. Where this is not feasible, these parts of the tree may not be able to be inspected. If view of the entire structure of the tree(s) is limited, for instance by the properties in private ownership, this is a limitation to the tree survey and some parts of the tree may not be able to be fully surveyed.

The tree survey can only be an assessment of the tree at the time of the survey and the tree(s) should be re-surveyed on a regular basis. An appropriate time period between surveys may be up to 3 years depending upon the condition of the trees, their maturity and the target(s). Recommendations for the period between surveys will be given.

The report is preliminary in nature as requested by the client. No drains or any part of the drainage or service system were inspected as I am not qualified to do so. No soil was examined or removed for analysis and the trees have been inspected from ground level. If there is a need for soil analysis, a more detailed climbed inspection or other further details these will be highlighted in the recommendations.

Documents provided:

- Engineers report 09/10/2549239/DJB/MOORE
- Root analysis JC/R/704
- Soils analysis RML 4587
- Monitoring report SM2883MERLIN
- Preliminary Site Investigation Results D6381
- Arboricultural Report by Marishal Thompson Group reference LS/0604111414/JB

3 General

There are two ways in which a growing tree can affect a structure: direct damage and indirect damage.

Direct damage is due to the pressure roots can exert as a result of their growth. This pressure can result in the separation or lifting of light structures, for instance driveways, paths, walls, garages and porches. Heavily loaded structures are usually resistant to this sort of damage. Direct damage can also be the impact of aerial parts of a tree hitting structures.

Indirect damage may result where a tree, as part of its normal process, takes moisture from the soil having an impact upon a structure. In a shrinkable soil this removal of moisture can cause the soil to change volume. Where this affect is in proximity to foundations, particularly under the foundation, the soil offers less support and the foundations may then sink. The downward movement of a structure caused by a loss of support of the site beneath the foundations is called **subsidence**. There are other causes of subsidence which can be more common, for instance defective drains, land slip, collapse of underground structures, fluctuation in the water table and climate. Tree related subsidence occurs on shrinkable soils.

The opposite of tree related subsidence is tree related **heave**. Heave is associated with a shrinkable soil that has been subject to a drying effect from trees over many years so that there is a "persistent moisture deficit" (where the soil is dried out and does not get wet again over the winter months). When the influence of the tree is reduced or removed (for example through the decline of the trees condition or its removal) the soil rehydrates over time causing the soil to increase in volume (horizontal and vertical movement) as the persistent moisture deficit fades through re-wetting of the soil.

4 Findings

See survey sheet for individual tree details and works recommendations.

4.1 Site visit

Site visit was made on the 6th December 2013 and the above documents were used as the basis for the consideration of the site and the issues.

4.2 Soils

The Soil report details the soil samples taken from boreholes adjacent to the foundations of the house and extension. The laboratory testing results detail that the soils have a plasticity index of 48% at 3.56m increasing to 56% at 4.5m. The plasticity index is a measure of how much volumetric change can occur to a soil between desiccation to field capacity (where

the soil holds as much water as possible whilst still retaining soil characteristics and after natural drainage has occurred).

4.3 Tree roots

The Root report details the tree root identification of the roots found in the borehole at 4.5m as being:

- Quercus (Oak) or a shrub

4.4 Crack / Level Monitoring

The level monitoring (Monitoring report SM2883MERLIN) records data between 2/3/2012 and 20/8/2013. The greatest drying effect trees are understood to have is during late summer. This is modified by the weather that occurs, for instance (from a lay point of view) the spring of 2012 was dry followed by one of the wettest years on record. This may account for some of the aberrant level monitoring where changes have occurred for instance:

- 2.3mm at point 6 14th December 2012 from 0.5mm on the 26th September 2012 - increased change when recovery closer to c0.0mm is anticipated.
- 4.7mm at point 6 28th May 2013 to 2.0mm on the 20th August 2013 - when seasonal drying is anticipated and therefore the gap ought to have widened.

4.5 Heave

The trees were present before the proposed buildings. I believe that historical maps are likely to show that the line of trees to the west of the site is part of an historical route / road. As the trees are likely to be present prior to the construction of the properties there is the potential for a pre-existing persistent moisture deficit.

4.6 Foundations

It is understood that the extension has 3m deep foundations. Shrinkable soils were found at a depth of (at least) 4.5m. I do not know whether the depth of foundations constructed followed the current guidance at the time. This issue can be looked at in more detail by an appropriately qualified engineer.

4.7 It is worth noting that the main house foundations are detailed (D6381) as concrete on a pile structure rather than a 3m foundation. In the 'Initial Customer Appraisal Report' it states that the Architect specified that the foundations to the extension must be to the same depth as the original house. No details in the reports provided detail of the depth of the piling nor give justification as to why a 3m deep foundation was used instead of a piled foundation. The 'Initial Customer Appraisal Report' states that the Building Control Officer approved of the 3m deep foundations. From a lay perspective, it may be possible that the difference between the two foundation types may have allowed differential movement to occur.

4.8 Consideration

The trees T1 Oak and T2 Oak adjacent the site are c14.4m and c12.1m respectively from the main house construction and therefore closer to the extension for T2. The trees are within distances recorded where Oaks have had an influence on soil moisture.

- 4.9 Due to the presence of roots in the borehole adjacent to the property, the trees probably have an influence upon the soil moisture adjacent and underneath the extension foundations. Therefore they can exacerbate the damage due to the shrinkable nature of the soil.
- 4.10 The level monitoring demonstrates that movement is occurring, although is an unusual manner.
- 4.11 Retention of trees and shrubs will always have the potential to influence the property in the future and their potential will vary depending upon the climate and the management of the trees and shrubs. The dryer the climate the increased potential for harm to occur.
- 4.12 Whilst it is possible to limit water uptake through restricting the size of the above ground canopy (crown reduction) it would need to be repeated annually to have any long term impact [paraphrased from the Hortlink project 'Controlling water use of trees to alleviate subsidence risk' 2004]. There are several problems with this potential approach:
- The amount of vegetation removal would need to be quantified to achieve the necessary reduction in soil drying to have the desired affect on soil moisture.
 - The vegetation management is likely to need to be varied in relation to the climate occurring. Dryer weather would require more pruning.
 - If the management lapses and the vegetation regrows the future damage is foreseeable.
- 4.13 Against the pressure to remove or prune the trees, they are likely to be part of the historic landscape. The option for their removal must be balanced with the cost of repairs. The trees contribute significantly to the local area being part of a line of trees that form the main structure of the local tree landscape and are clearly visible as a distinct line on aerial photography. Removal of these trees would deteriorate the structure of the landscape feature and have a detrimental impact upon the local character of the area.

5 Conclusion

The trees T2 and T1 (to a lesser extent - condition / size / distance) are likely to have some form of influence to the extension as their roots were found in the trial hole.

Vegetation management is temporary and it is not currently possible to quantify the necessary vegetation management regime to achieve the desired soil rehydration. Failure to manage the vegetation sufficiently is likely to lead to either continuing or future damage.

Due to the urban location it is common for property owners to plant trees and shrubs. These may grow to impact upon the property in the future.

Appropriate repairs may allow the trees to be retained, for all the benefits that they provide.

6 Recommendations

1. Assess what construction standards were in force at the time of construction. This will help determine whether the 3m foundation was within current standards at the time of construction and detail why there is a difference from the Architect's specification for foundations.
2. Assess the cost of repairs in relation to the cost of tree removal and impact upon the wider landscape character.
3. Assess potential for heave and consider the implications.
4. Determine course of action (retain trees and carry out repairs to extension or removal of trees and carry out repairs to extension).

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Tree Condition Survey Sheet

Site: Land to the west of 5 Hitherwood Close
 Date: 6th December 2013
 Weather: Clear with light winds
 Surveyed by: Ben Abbatt

No	Species	Height (m)	Branch Spread (radius) (NESW) (m)	Age Class	Condition	Recommendations (in relation to condition)	Priority / Works to be complete by	Resurvey to be complete by
T1	Oak <i>Quercus robur</i>	c12	4 5 4 3	Mature	POOR Intermediate / suppressed canopy. Poor vitality shown by distinct separated foliage groups. Previously crown reduced with moderate regrowth. Wildlife potential (loose bark).	No works required.	Not applicable.	September 2015
T2	Oak <i>Quercus robur</i>	c18	5 8 6 8	Mature	Fair. Intermediate canopy. Good vitality. Previously crown reduced with mature regrowth. Large (>100mm diameter) dead wood occasionally throughout and moderate (25 to 100mm diameter) dead wood throughout. Wildlife potential (loose bark and pruning wound cavities on branch ends).	Remove dead wood >25mm diameter.	Moderate / March 2014	September 2015

General notes:

I have not checked whether the site is within a Conservation Area or whether the trees are under Tree Preservation Order (TPO). Prior to any tree works confirmation of whether these legal restrictions apply to the site or trees ought to be sought from the Local Planning Authority (LPA). If the trees stand within a Conservation Area designated under the Town and Country Planning Act the LPA will normally require 6 weeks notice of intention to carry out any tree works as detailed in the survey. If the trees are under TPO then the LPA will normally require an application for any tree works. Some tree works are exempt, for instance if the trees are dead, dying or dangerous, and certain works can be carried out without application. It is prudent to give the LPA at least five days notice prior to carrying out any of these tree works under these exemptions. This survey, with recommendations, can be used to support any such application or notice.

Wildlife issues are of significant concern to the general public. A balance has to be found between the protection of wildlife and the need for safety when managing trees. The Wildlife and Countryside Act (1980) and Countryside Rights of Way Act (2000) give statutory protection to wild birds, bats, mammals, some invertebrates and plants. It is important to ensure that this legislation is properly considered when carrying out any works to trees. No nests were identified within the canopy of the trees. Any Arborist carrying out the tree works should ensure that there is no disturbance to nesting birds prior to the works being carried out. Further guidance upon the appropriate timing of the works can be sought from DEFRA if necessary. Where nesting birds are found further information should be sought from DEFRA 08459 33 55 77 or helpline@defra.gsi.gov.uk. In this instance considering the size of the trees, their location and features I believe that there is a medium probability of bats using the more mature trees as a roost site due to the features of the trees (cavities, loose bark, ivy, etc.). A bat survey prior to tree works is not recommended. However, during the tree works the contractor should carry out the works with bats as an active consideration and follow the current industry best practice, e.g. Arboricultural Association Guidance Note 1 Trees and Bats 2003, which a competent tree contractor should be familiar with.

Photosheet



1. Tree 1 and Tree 2.



2. Tree 1.



3. Tree 2.

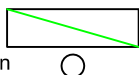
Site plan



General / Key:

Indicative canopy

Indicative tree position



Site: 5 Hitherwood Close

Data: Ordnance survey data provided under licence 100019980. Crown copyright. All rights reserved.

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Position of extension not shown on Ordnance Survey data.

Drawing title:

Tree survey plan

Drawing reference: J686

Revision: -

Date: December 2013

Scale: 1/500 on A4

Sheet: 1 of 1

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CONDITIONS OF ENGAGEMENT

1. Interpretation

'Client' means the person named on the Quotation for whom the Contractor has agreed to provide Specified Services in accordance with these terms.

'Contract' means the Contract for the provision of the Specified Services.

'Contractor' means Sapling Arboriculture Ltd.

'Quotation' means the Quotation to which these Terms and Conditions apply.

'Specified Services' means the service to be provided by the Contractor to the Client, as referred to in the Quotation.

2. The responsibilities of the Contractor

- 2.1 The Contractor shall provide the Specified Services to the Client as set out in the Quotation.
- 2.2 Timescales for the Specified Services will be agreed with the Client and adhered to as far as is reasonable. Where information received is out of date, inaccurate or if scheme design changes, it may not be possible to adhere to agreed timescale.
- 2.3 The Contractor shall provide his opinion on those matters in respect of which he has given the Client express written confirmation and subject to the limitations and conditions stated. The Contractor will not purport to express an opinion about or advise upon the condition of un-inspected parts of the land or trees and should not be taken as making any implied representation or statements about such parts.
- 2.4 The Contractor will only provide advice on matters within his arboricultural experience and qualifications.

3. The responsibilities of the Client

- 3.1 The Client shall provide the Contractor with accurate and up to date information as requested by the Contractor in a timely manner and in the format requested.
- 3.2 The Client shall notify the Contractor in writing of any changes to the Specified Services brief in the Quotation, scheme design or works instructions.
- 3.3 If a report suggests further investigation works be carried out by a specialist firm or person (e.g. Structural Engineer, Surveyor) the Client is responsible for sourcing such services and information. On no account will liability be accepted by the Contractor in respect of such matters nor if the client proceeds or acts without obtaining and acting upon the relevant further advice.

4. Assumptions

- 4.1 That the land, which is the subject of the inspection or survey, is not subject to any unusual or especially onerous restrictions, encumbrances or outgoings and that good title can be shown;
- 4.2 That the land and its value are unaffected by any matters which might be revealed by a local land search or replies to conveyancing enquiries or by any statutory notice and that neither the land nor its condition nor its uses nor its intended uses is, or will be unlawful or contrary to planning or building regulations;
- 4.3 That inspection of those parts of the land or soil strata or any tree which have not been inspected would neither reveal material defects nor cause the Contractor to alter his opinion materially;
- 4.4 That there are no underground pipes, wires, cables or others services or installations which might be damaged as a result of work recommended or necessary; and
- 4.5 That no tree is subject to legislation relating to Conservation Areas, Tree Preservation Order or terms of a planning consent, in relation to which the Client must make his own enquiries of the Local Planning Authority.

5. Charges

- 5.1 The Client shall pay the Contractor its fee regardless of any outcome as well as reimbursing the cost of all reasonable out of pocket expenses incurred.
- 5.2 Payment in full (including VAT) must be paid within 14 days of the date of the invoice.
- 5.3 No discount nor retention or set off against the amount due is allowed unless previously agreed by the Contractor in writing.
- 5.4 The Contractor reserves the right to charge interest on any monies which are not received within 14 days. In accordance with the Late Payment of Commercial Debts (Interest) Act 1998 the Contractor will be entitled to charge interest (both before and after any judgement of the amount unpaid) at the rate of 10% per month over the Bank of England base rate until payment in full is made (part of the month shall be treated as a full month for the purpose of charging interest).
- 5.5 All unpaid accounts will be referred to the County Courts. Sapling Arboriculture Ltd reserves the right to claim compensation in respect of debt recovery costs.

5.6 Sapling Arboriculture Ltd reserves the right to withhold the release of reports and other Specified Services until payment is received in full.

6. Contractor liability

- 6.1 Any report is provided for the sole use of the named client and is confidential to the client and his professional advisors. The Contractor accepts responsibility to the Client alone for the stated purposes of the report, which will be prepared with the skill, care and diligence reasonably expected of a competent Arboricultural Consultant, but no responsibility whatsoever is accepted to any person other than the client himself. Any other such person relying on the report does so at his own risk. Neither the whole nor any part of the report or any reference thereto may be included in any published document, circular or statement nor may it be published in any way without the Contractor's prior written approval of the form and context in which it may appear. Liability is limited to the amount that the Contractor is insured to. Intellectual Property Rights shall remain in the ownership of the Contractor.
- 6.2 The Contractor shall not be held liable to the Client or deemed to be in breach of the Contract by reason of any delay in performing, or failing to perform any of the Contractor's obligations in respect of the Specified Services, if the delay or failure was beyond the Contractor's control.
- 6.3
- (i) Subject as expressly provided in these conditions, and except where the client is sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by the statute or common law are excluded to the fullest extent permitted by law.
 - (ii) Any claim by which the client is based on any defect in the nature or quality of the Company's services shall be notified to the Company within 7 days from the date of supply.
 - (iii) Except in respect of death or personal injury caused by the Company's negligence, the Company shall not be liable to the client by reason of any representation, or implied warranty, condition or other term, or any duty at common law, or under the express terms of any contract, for any consequential loss or damage (and whether caused by the negligence of the Company, his employees or agents or otherwise) which arise out of or in connection with the Contractor's services, except as expressly provided in these conditions.

7. Miscellaneous

- 7.1 Quotations are valid for 28 days from the date of the quotation.
- 7.2 Any dispute arising out of or in connection with the contract between the client and the Company shall be referred to the arbitration or a single arbitrator appointed by agreement between the parties or, in default of agreement, nominated on the application of either party to the Arboricultural Association.
- 7.3 The Contractor reserves the right to refuse work(s) if a conflict of interest is identified or arises.
- 7.4 The report is valid for a period of one year from the date on the report.
- 7.5 Each provision of these conditions limiting or excluding liability operates separately in itself and survives independently of the others.
- 7.6 The Contract between the Client and the Contractor shall be governed by the laws of England.