
Arboricultural Report and Arboricultural Implications

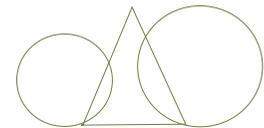
Site – 23 Buckingham Place, Epping, Essex, CM16 5AF

Client – Mr Kellinger

Contact – M P Architects, Gt Basons, Basons Lane, Ongar, Essex, CM5 9AR

Date - 21-10-2020

To be read in conjunction with – Tree Survey Plan Drawing No. MP/BUCK /01



Moore Partners Ltd

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BS5837:20012 Tree Assessment and AIA

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1.0 Instruction and client brief

- 1.1 Mr Kellinger has requested a survey of the trees around the site of the new extension at 23 Buckingham Road. The survey is to accompany the planning application for the new side and rear extension. The report should be read in conjunction with the tree constraints and protection plan, drawing number MP/BUCK/01.
- 1.2 The report was to:
- assess the trees in line with BS5837:2012
 - advise of the arboricultural implications that the proposed building works will have on the existing trees, in line with BS5837:2012 based on the site layout provided.
 - Address mitigation required as a result of the implications assessment.
 - Provide an outline tree protection plan to demonstrate what level of retention and protection of the trees is feasible.

2.0 Scope of works and survey method

- 2.1 The trees were surveyed in line with the process laid out in BS5837:2012. The trees were assessed inline with the criteria laid out in the British Standard. Data was collated on species, age, height, crown spread, stem diameter at 1.5m high. A base line assessment of physiological and structural condition was made. All trees were categorised in line with BS5837:2012 guidance. Trees of the highest quality were rated 'A', good quality 'B'. Trees rated 'C'; are worthy of retention but of lower quality. Those given an 'R' rating are poor quality with either less than 10 useful life years remaining, small and of limited significance in the wider landscape, or could easily be replaced in a new landscape scheme with a tree of similar size and impact. Greater detail on the rating is given in the key in section 5. Trees under 75mm in diameter were not recorded in line with BS5837 guidance. The details of the trees as required under BS5837:012 were recorded in section 5 of this report. Implications resulting from the proposed development are given in section 6 of the report and the tree constraints and protection plan.
- 2.2 The report is based on a ground level visual tree assessment, using recognised non-invasive techniques, (Mattheck). It is an external inspection only. Condition of the tree was assessed only on date of inspection. Physiological and structural assessments are valid for a period of no more 12 months. It remains valid only if no environmental changes occur around the tree. If any changes should occur, re-inspection should be carried out. Environmental changes around the tree will render the report invalid. There has been no assessment of potential for indirect damage because of soil heave or subsidence that trees may have on existing properties, this is outside the remit of this report.

No internal diagnostic equipment was used, and no pest and disease samples were taken or sent away for analysis. No soil samples were taken for testing. If Soil analysis is required, a soil engineer should be employed. There has been no examination of existing drains or service runs for the presence of roots. No trail pits were dug to examine roots at the time of the tree survey.

- 2.4 There has been a check with the local authority of the tree protection status of the site. However, it remains the responsibility of the tree owner to check TPO status, prior to carrying out any works on the tree.
- 2.5 Any works to the trees should comply with BS3998:2010 Tree Work and be carried out by a suitably qualified and competent operative.
- 2.6 A topographical survey was not available for the tree positions within the site. The trees were measured using simple triangulation techniques. Though care is taken discrepancies can occur and if great accuracy is needed a topographical survey should be commissioned. The tree protection plan is based on this and the current proposed site lay out available at the time of writing the report.

3.0 Site

- 2.1 The site is to the east of Buckingham Road. It is accessed by from Buckingham Road over the driveway to the south side. Within the rear garden the area of the proposed extension is laid to paved terrace the remaining garden is laid primarily to lawn.
- 2.2 Within the site there is one tree, this is covered by a Tree Preservation Order (TPO) reference TPO/EPF/25/15 see figure 2 below as T9 though it is a sycamore not a Field maple as specified on the schedule. Adjacent to the site is G3 on the TPO, a group of Field maples. These are not in the site but located in a strip of land along the north east side of the site. The TPO requires that written permission from the local authority is required prior to any works being carried out to this tree. Failure to do so can result in prosecution.
- 2.3 The ground levels within the site are relatively level. The ground along the north east boundary where the TPO trees G3 are located is approximately 60cm lower than the ground level within the site. It is considered that the ground level in the site has been raised historically, the date this was carried out is not known, but potentially when the houses were built or since then. Due to this it is considered that the presence of tree roots into this built up area, though it cannot be negated, would be minimal, due to the timescales involved.

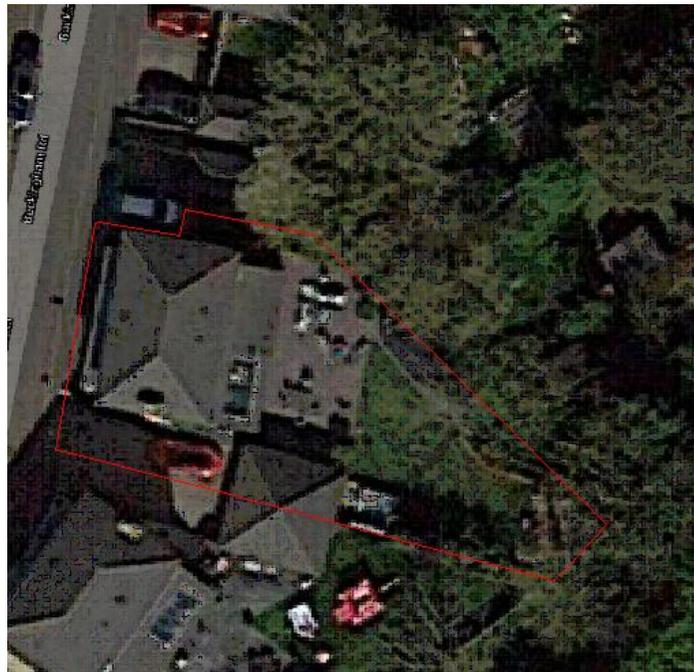


Fig 1 – aerial view with site outlined in red



Fig 2 – copy of TPO plan

4.0 Proposed Development

- 4.1 The proposal is to construct convert the existing single storey section of the house into two storey and to construct a new single storey extension along the rear and side elevations, as shown on drawings by M P Architects LLP fig 3 below.



Fig 3 – floor plan,

- 4.2 No trees would be removed to facilitate the build, and all trees would be protected during the build. However, there would be encroachment into the root area of the low quality tree T1, covered by a TPO, for details on the impact on each tree please see section 6 of the report.

5.0 Tree assessment

No.	Species English & Latin	Approx Height (M)	Dia. @ 1.5 (CM)	Spread (M)	Height Crown Clearance (m)	Age Class	Physiological condition	Structural condition	Preliminary management recommendation	Years remaining	Category grading
T1	<i>Field Maple</i> <i>Acer campestre</i>	10	42	N 2 S 0.5 E 1.5 W 1.8	4.5 not over site.	ma	fair/poor there is dense ivy through out the crown which is competing for light.	Poor see below	na	20	C2
<p>Structural condition - the trunk divides into 3 codominant limbs at 1.2m high. One of the limbs has very little secondary growth on it. Below this there is a wound on the east side of the trunk, running from ground level to 60cm high. The heartwood is exposed, and some decay is evident. The tree is covered with a dense covering of ivy, this makes full structural assessment not possible. It also increases the sail area of the crown significantly during the winter months when weather conditions can be adverse and increase the risk of branch failure.</p> <p>The ground level around the tree is approximately 60cm lower than the ground level in the site. The ground seems to have been made up in the past within the garden area.</p> <p>The tree is covered by a TPO as part of G3</p>											
T2	<i>Field Maple</i> <i>Acer campestre</i>	11	40	N 4.5 S 3.6 E 4.0 W 6.0	6.4 over site	ma	fair	fair	na	20-40	B2,3
<p>Located outside the site at the lower level. It is covered by a TPO. Only the periphery of the crown is over the site.</p>											
T3	<i>Field Maple</i> <i>Acer campestre</i>	11	18 18 18 35	N 4.5 S 1.5 E 2.75 W 2.75	5 first main limb at 6.2m high on all sides	ma	fair	fair	na	20-40	C23

No.	Species English & Latin	Approx Height (M)	Dia. @1.5 (CM)	Spread (M)	Height Crown Clearance (m)	Age Class	Physiological condition	Structural condition	Preliminary management recommendation	Years remaining	Category grading
T4	<i>Sycamore</i> <i>Acer psuedoplatanus</i>	12	54	N 5.5 S 2.6 E 3.7 W 5.6	6.7 First main limb at 3.1m high south side	ma	fair/poor see below	fair	na	20	C3
The crown shows signs of physiological stress, the foliage is smaller and more spares than would be expected. The lowest two main limbs show signs of the start of the fungal infection of sooty bark disease. The bark is discoloured with typical black staining, there are also section so of nark peeling from these main limbs. The sycamore in the adjacent garden also show signs of this infection.											
T5	<i>Oak</i> <i>Quercus robur</i>	14	esti 90	N 5.6 S 6.6 E ? W 6.0	4 first main limb at 4m high south side	ma	fair	fair	na	40+	B123
located outside the site some of the measurements have been estimated											
T6	<i>Sycamore</i> <i>Acer psuedoplatanus</i>	11	32	N 2.5 S 2.5 E 2.5 W 2.5	7	em	fair	fair	na	20-40	C3

Key to survey schedule

Tree number on plan - T1 individual tree on the site

BS 5837:2012 Age class

Y – Young first third of life expectancy, EM – Early mature second third of life expectancy, Ma – Mature final third of life expectancy, OM – Over mature showing signs of senescence, V – Veteran over mature and of special conservation value

Remaining years in age bands - <10, 10-20, 20-40, >40

Physiological or structural condition - **Good** no significant health problems, or no significant structural problems, **Fair** some symptoms of ill health, or currently insignificant or remediable structural problems, **Poor** significant symptoms of ill health, or significant structural problems

Moribund (physiological only in serious and irreversible decline, **Dead** (physiological only) not alive

Other Abbreviations.

Esti estimated

M/S multi stem the number of stems and diameter are given in line with BS5837:2012 requirements.

N north, E east, S south, W west

BS 5837:2012 Category of quality/retention

Category	Description		
A Green	Trees of high quality A1 – Mainly arboricultural value A2 - Mainly landscape value A3 – Mainly cultural value, including conservation	C Grey	Trees of low quality C1 – Mainly arboricultural value C2 - Mainly landscape value C3 – Mainly cultural value, including conservation
B Blue	Trees of moderate quality B1 – Mainly arboricultural value B2 - Mainly landscape value B3 – Mainly cultural value, including conservation	U red	Trees that are in a poor condition, so that any existing value will be lost in the next 10 years, and should, for reasons of sound arboricultural management, be removed.

6.0 Arboricultural Impact Assessment

6.1 The arboricultural impact is based on the following parameters

- All trees that are to be retained will be protected by tree protection fencing in line with BS5837:2012 section 6.2
- Should be read in conjunction with Tree Constraints and Protection Plan drawing number MP/BUCK/01.

6.2 The root protection area (RPA) is an area of ground around the tree that should be retained, undisturbed, for the benefit of the tree roots. The RPA is calculated, as set out in BS5837:2012. This determines the square metres of ground area that should be retained. This is often shown as a circle, with a radius as determined by the calculation. However, it is not always essential that this is a circle and, in some situations, the geography of the site can make an alternative shape more appropriate. It must still equate to the same area as the circle calculated under the approved calculation.

Tree no.		RPA m/sq	Radi of RPA (M)	Tree implications assessment	Mitigation
T1	<i>Field maple</i>	81	5.1	<p>Crown The proposed works are outside the crown</p> <p>Roots The new footings would encroach into the root protection area.</p>	<p>The tree is low quality with a dense covering of ivy throughout the main scaffold and crown. It is outside the site and protected by a TPO as part of G3. Ownership of the tree is not clear.</p> <p>Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01 along the site boundary.</p> <p>Roots the new footings should be a pile and beam construction as recommended in BS5837 to minimise damage to the root zone The ground level has been made up within the site to a depth of around 600mm, due to this it would not be expected that many significant roots would be within this zone. If any excavation for a beam or pad was within this zone damage to the roots would be minimised.</p>

					The area is already non-porous hard surface over this part of the root zone.
T2	<i>Field maple</i>	72	4.8	<p>Crown The proposed works are on the edge of the crown</p> <p>Roots The new footings would encroach into a small area of the root protection area.</p>	<p>Crown The tree has a good ground clearance of 6.4m over the site, this would clear a single storey extension.</p> <p>Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01 along the site boundary.</p> <p>Roots the new footings should be a pile and beam construction as recommended in BS5837 to minimise damage to the root zone The ground level has been made up within the site to a depth of around 600mm, due to this it would not be expected that many significant roots would be within this zone. If any excavation for a beam or pad was within this zone damage to the roots would be minimised.</p> <p>The area is already non-porous hard surface over this part of the root zone.</p>

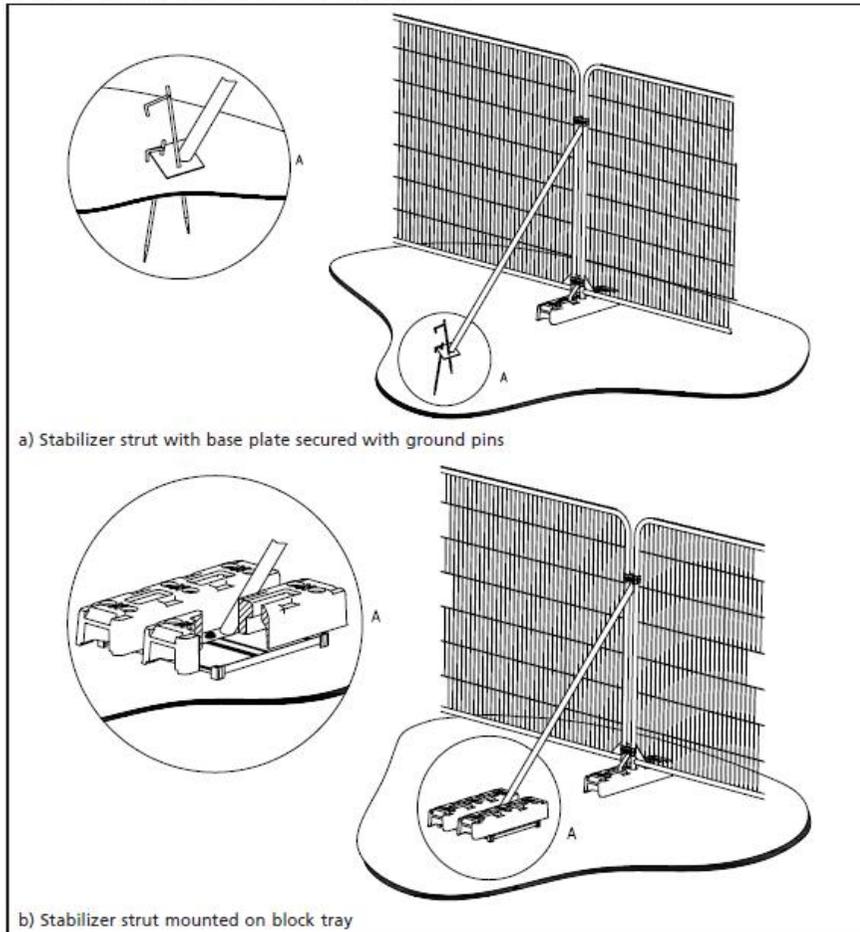
T3	<i>Field maple</i>	99	5.6	<p>Crown The proposed works are outside the crown</p> <p>Roots The new footings would encroach into the root protection area.</p>	<p>Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01 along the site boundary.</p> <p>Roots the new footings should be a pile and beam construction as recommended in BS5837 to minimise damage to the root zone The ground level has been made up within the site to a depth of around 600mm, due to this it would not be expected that many significant roots would be within this zone. If any excavation for a beam or pad was within this zone damage to the roots would be minimised.</p> <p>The area is already non-porous hard surface over this part of the root zone.</p>
T4	<i>Sycamore</i>	137	6.6	The proposed works are outside the root area and the crown spread of the retained tree.	Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01.
T5	Oak	366	10.8	The proposed works are outside the root area and the crown spread of the retained tree.	Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01.
T6	Sycamore	48	3.9	The proposed works are outside the root area and the crown spread of the retained tree.	Protect the tree for the duration of the build with an exclusion zone enclosed with tree protection fencing in line with BS5837, appendix 1 of this report and drawing MP/BUCK/01.

- 6.3 The root protection areas (RPA) of retained trees should be protected for the duration of the works with tree protection fencing, in line with BS5837:2012, prior to the developer commencing on site. The fencing is to be of 1.8m steel mesh, heras fencing, to be installed as detailed in BS5837:2012 section 6.3.2 figure 3. (See appendix 1). Once erected, the fencing will have all weather notices attached to the barrier worded "Construction Exclusion Zone –Keep out". The fencing will not be moved without prior written consent from the, local authority.
- 6.4 Where access is required over an RPA to facilitate the build, additional ground protection in line with BS5837:2012. This should be as follows: For pedestrian access only, a single thickness of scaffold board either, suspended on a driven scaffold frame to form a suspended walkway, or on a non-compressible layer (e.g. 100mm layer of bark mulch) laid over a geotextile. For pedestrian operated plant, up to a gross weight of 2t, proprietary inter linked ground protection boards, placed on a non-compressible layer (e.g. 100mm layer of bark mulch) laid over a geotextile. For wheeled or tracked plant over 2t in gross weight, an alternative system (e.g. proprietary system or pre-cast reinforced concrete slabs) to an engineering specification, designed to accommodate the likely load it will be subject to, is required.
- 6.5 Where the proposed building is within the root protection areas (RPA) of retained tree the footings should adhere to the following in line with BS5837:2012. For significant encroachment into the root area (RPA) of retained tree this recommends that root damage is minimised by using a piled footing. Site investigation should be carried out by hand or with compressed air tools, to determine the location of the piles, to avoid roots important for the structural stability of the tree. The piling machine will be the smallest practicable machine and will work off ground protection piling mats. It will be lowered when manoeuvring between piling operations when close to the crown of the tree. The beams should be laid at or above ground level and cantilevered as necessary to avoid roots identified by the site investigation. If raft footings are used the raft too should be above ground level to minimise disturbance into the root zone.
- For short runs, any footing trench should be carefully excavated by hand. Any roots more than 25mm in diameter, which cannot be preserved, will be pruned cleanly with a sharp saw or secateurs or hand saw, by a suitably qualified person. Exposed roots will be covered with damp Hessian and sharp sand until back filled. Any trench will be lined with a non-porous root barrier to stop leaching of concrete compounds into the root area.

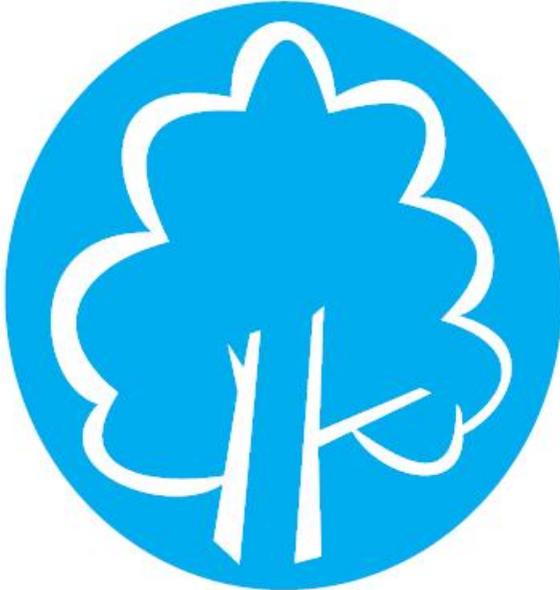
- 6.6 Any new hard surface within the root zone should also be a no-dig construction. They should be designed by the architect or engineer to comply with the following within the RPA of the retained trees.
The new parking will be designed by the engineer to comply with the following within the RPA of the retained trees.
There will be no excavation into the soil within the root protection area
The grass sward is to be removed by hand along with any rocks, debris or organic matter. Create a level surface by filling hollows with clean angular stone or sharp sand.
A geotextile will be laid over the surface of the soil, at the existing level, over lapping joints by 300mm. A cellular subbase, of cellweb root protection system or similar, will be laid over the area. This will be at a depth as advised by an engineer
This will be filled with clean angular stones type 4/20 or 20/40, with no fines. Minimum 25mm over fill.
This should not be tipped within the root area and should be spread from one end, by hand.
Use a light roller to encourage settlement do not use a whacker plate
Excavations for kerbs should be avoided within the root zone. The edgings should be designed as wooden sleepers, kerb edges over the cellular confinement system plastic or metal edgings. that the roots are not damaged.
The surface finish will be a porous allowing water and air to percolate through the joints.
- 6.7 Any Utilities trenches should where possible avoid the RPA's of retained trees. If a service route cannot avoid the RPA of a retained tree, it should be installed in one of the following two ways, to avoid excavation with machinery in the RPA or precautionary area:
For short runs, the service trench will be carefully excavated by hand. Any roots over 25mm will be retained and protected by wrapping in damp Hessian. Any roots less than 25mm in diameter, which cannot be preserved, will be pruned cleanly with a sharp saw or secateurs or hand saw, by a suitably qualified person. Exposed roots will be covered with damp Hessian and sharp sand. Back fill is to be of excavated soil or an inert granular fill.
For long runs, a trenchless installation method, such as directional drilling or impact moling, is to be used. Retrieval and access chambers should be located outside the RPA of the trees.
The works should comply with current safety practices for excavating trenches.
- 6.8 There will no changes in ground levels, within the root area of any retained tree.

Appendix 1 – Protective fencing

Figure 3 Examples of above-ground stabilizing systems



Tree protection fencing should be installed in the position as shown in the tree constraints and protection plan for the site.



PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.



**TREE PROTECTION AREA
KEEP OUT !**
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Appendix 2 – Temporary ground protection

If the drive is removed the root area within it, shown on drawing MP/65AH/01, will be protected using additional ground protection, prior to commencing building and demolition works.

This will protect the roots, and the soil around them, from damage by compaction, spillage and excavation.

For pedestrian access, only, a single thickness of scaffold board either suspended on a driven scaffold frame to form a suspended walkway, or on a non compressible layer (eg 100mm layer of bark mulch) laid over a geotextile.

For pedestrian operated plant, up to a gross weight of 2 ton, proprietary inter linked ground protection boards, placed on a non compressible layer (e.g. 100mm layer of bark mulch) laid over a geotextile.

For wheeled or tracked plant over 2 ton is gross weight, an alternative system (e.g. proprietary system or pre-cast reinforced concrete slabs) to an engineering specification designed to accommodate the likely load it will be subject to.

Appendix 3 – Report Caveats

1. The report is based on a ground level visual tree assessment (Mattheck).
2. No soil samples were taken for testing. If Soil analysis is required a soil engineer should be employed.
3. No pest and disease samples were taken or sent away for analysis.
4. It remains the responsibility of the tree owner to check TPO status prior to carrying out any works on the tree.
5. Physiological and structural assessments are valid for a period of 12 months. It is an external inspection only.
6. VTA of the tree was assessed only on date of inspection; it remains valid only if no environmental changes around the tree. If any changes should occur re-inspection should be carried out.
7. Environmental changes around the tree will render the report invalid.
8. No internal diagnostic equipment was used.
9. Any works to the trees should comply with BS3998:2010 Tree Work

Appendix 4 – References

BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.

NHBC Chapter 4.2 Building near trees

D Lonsdale 'Principles of Tree Hazard Assessment and Management'
Forestry Commission 2007

Strouts and Winter 'Diagnosis of ill health in trees'
Forestry Commission 2007

C Mattheck and H Breloer 'Body Language of Trees'