Trevor Heaps
Arboricultural Consultancy Ltd.

168 Whitby Road, Ruislip, Middlesex, HA4 9DR - Tel: 07957 763 533

Email: trevor@trevorheaps.co.uk • www. trevorheaps.co.uk

Arboricultural Method Statement

(AMS)

For

19a North Villas, Kentish Town, London

NW1 9BJ

Prepared for: Benji Howell

Prepared by: **Trevor Heaps** BSc, MICFor, M.Arbor.A,

Date: 18th May 2016

Ref: TH 1231

Institute of Chartered Foresters

Registered Consultant

1.0 Introduction

I am Trevor Heaps, Director of Trevor Heaps Arboricultural Consultancy Ltd. I have qualifications and experience in the field of Arboriculture, which are provided in Appendix 1.

2.0 Brief

I am instructed to prepare an Arboricultural Method Statement (AMS) that will make recommendations for the protection of trees during development - against British Standard 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' (hereafter referred to as BS5837).

This AMS is to be read in conjunction with the supporting Tree Protection Plan (TPP), which must be read / printed off in colour).

3.0 Limitations

The site was surveyed by me, Trevor Heaps, on the 18th May 2016. I was accompanied by Benji Howell. The weather was overcast, but visibility was good.

I surveyed the tree/s from within the site at ground level. Climbed inspections were not carried out and root/soil analysis was not undertaken. This report is designed to accompany a planning application for development, and its purpose is to assist and inform the planning process; it is not a tree risk assessment report.

This AMS and TPP comprise Stage 4 of a 5-Stage Arboricultural process relating to planning.

Stage 5 is the implementation, supervision and on-going monitoring of tree protection during development.

I have not been involved in any of the previous stages.

4.0 Drawings provided

The following document/s was used in the preparation of this report:

- Planning Drawings Proposed – Ref. 1507-0200-AP-001 – Dated 27th April 2016

5.0 Tree protection in context

The two main functions of tree roots are: (a) physical support and (b) the supply of water and nutrients from the soil.

Roots will grow wherever conditions are favourable (i.e. where there is an adequate supply of air, water and nutrients) and so most tend to grow in the upper 600 mm (2ft) of soil (see diagram below). It is for this reason that even shallow excavations or minor level changes can be harmful to trees.

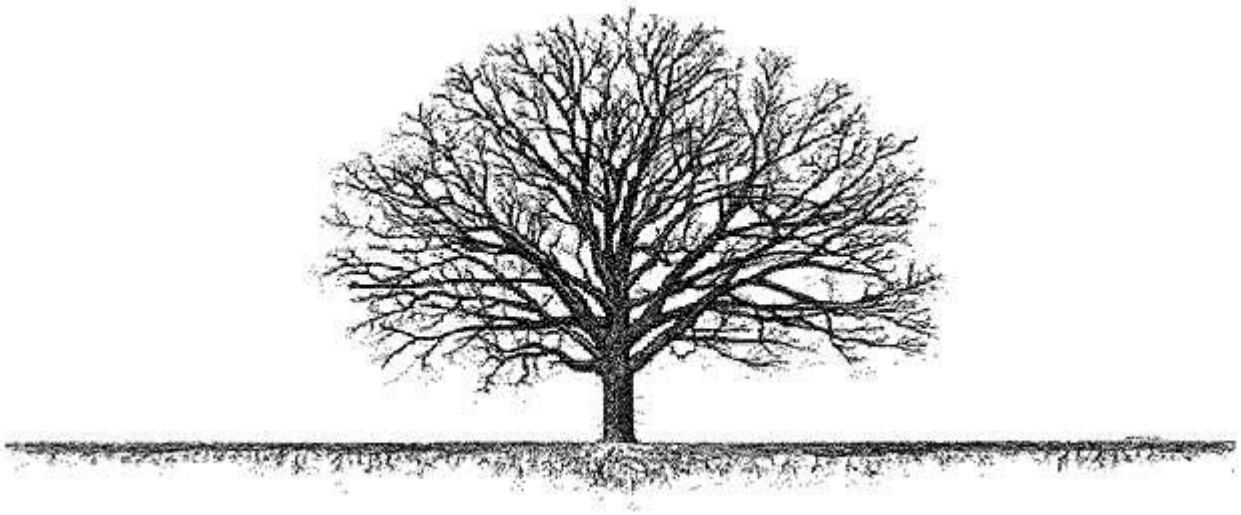

Diagram 1: The relative depth & extent of a mature tree; roots do not mirror the crown, as is often believed (http://blog.bartlett.com/wp-content/uploads/roots-diagram.jpg)

Construction near trees can also be indirectly harmful; this may be through soil compaction caused by heavy machinery, or spillage of toxic materials such as diesel and cement.

Guidelines within BS5837 specify measures to avoid or minimise construction damage to trees. The most important measure is that root protection areas (RPA's) are established around retained trees, so that no construction work takes places within them (unless special measures are taken).

RPA's are usually fenced off and/or covered with ground protection to exclude construction access.

6.0 Relevant background information

The trees / vegetation situated within the rear garden of 19a North Villas are protected by virtue of their location within a Conservation Area.

7.0 The site and trees

The courtyard garden contains two small trees. The mature Pittosporum (T1) is situated close to the rear wall of the house. It is not a particularly valuable specimen and does not constrain development; however, measures will be taken to protect it, to allow it to remain a landscape in the future:

There is a 6% incursion into the tree's RPA. Research has demonstrated that healthy trees of most species are able to withstand the loss of some roots (to a maximum of about 20% of the rooting area) with no long-term detrimental impact (Helliwell & Fordham 1992). However, to ensure that any root disturbance is minimised, the proposed footings in this part of the garden will be hand-dug.

The Japanese Maple (T2) will be unaffected.

In summary, the trees within this site will be safeguarded by some basic protective measures (discussed in section 7.0)

Further information about the tree/s can be found in Appendix 2. Explanatory notes can be found in Appendix 3.

7.0 Timing of operations & Arboricultural supervision

Effective tree protection relies on following a logical sequence of events AND arboricultural supervision.

This AMS lays down the methodology for any demolition and/or construction works that may have an effect upon trees on and adjacent to this site; it also suggests when arboricultural supervision should be provided (if applicable, these parts of the AMS are highlighted yellow). Although site managers can usually supervise works near trees (using this AMS), the LPA may require arboricultural supervision by way of a planning condition.

Should arboricultural supervision be required by the LPA, a written site monitoring report will be prepared following each site visit. This report will state the condition of tree protection measures and any actions required (where necessary) in the event of any digressions. The site monitoring reports will be made available to the LPA's arboricultural department on request.

It is essential within the scope of any contracts (related to this development) that this AMS is observed and adhered to. It is recommended that this document forms part of the work schedule and that specifications are issued to the building contractor(s) and these must be used to form part of their contract.

7.1 At this site, operations are to occur in the following sequence:

1. Carry out any recommended / facilitative tree work operations specified in the tree data schedule (highlighted yellow in Appendix 2). Tree works to be carried out by a competent and experienced and arborist to current British Standards (see Appendix 5 for details on how to find an arborist).

2. Hold pre-commencement site meeting with project arboriculturist, building contractors and LPA arboricultural officer (if required) prior to the commencement of any development work commencing on site. The purpose of this meeting is to ensure that the contractors are fully briefed and understand the requirements of (and reasons for) this AMS. Prior to any development work starting, attend a pre-commencement meeting with the site managers and contractors to discuss exactly what is required in order to ensure that the retained tree receives full protection in accordance with this AMS. During the initial meeting a site supervisor will be appointed to take responsibility for tree protection and to be given the duty of reporting any damage to trees or deviation from the AMS to the project arboriculturist. All contractors will also be required to read and sign the induction form (example included at the end of the AMS appendices)

3. Commence construction taking extra care with excavations within or close to the Root Protection Areas (RPA's) of retained trees (see appendix 4.3 for further details).

8.0 Signature

This report represents a true and factual account of the potential arboricultural issues, and recommended protective measures, at the subject property.

Signed

.....

Trevor Heaps
Chartered Arboriculturist
BSc (Hons), MArborA, MICFor

Dated

19th May 2016

Appendix 1 - Professional Résumé

I am Trevor Heaps, director of Trevor Heaps Arboricultural Consultancy Ltd.

I have been working within the Arboricultural industry since 1995. I spent the first seven years working as a climber and groundsman in the U.K. and Australia. Following this, I spent another seven years working for several local authorities as a tree inspector and tree officer dealing with Council-owned trees situated on highways, parks, housing and education land.

Since 2009, I have worked in a Planning Department for a London Borough assessing tree reports that support planning applications and also applications to work on protected trees.

I am a Chartered Arboriculturist, a Professional Member of the Arboricultural Association (AA) and hold a First Class Honours Degree in Arboriculture.

Professional Training

- Visual Tree Assessment (Arboricultural Association) - October 2015
- Trees and the Law (Dr Charles Mynors) - June 2015
- Mortgage (Home Buyers) Report Writing (LANTRA / CAS) - February 2015
- Tree Preservation Orders - effective application (LANTRA / CAS) - November 2014
- Professional Tree Inspection 3 day course (LANTRA / AA) - July 2014
- Arboricultural Consultancy Course (AA) - May 2014
- Further down the subsidence trail 1 day course (AA) - April 2013
- Getting to grips with subsidence 1 day course (AA) - November 2012

Appendix 2 - Tree Data Schedule

Ref	Name	Age	DBH (mm)	Hgt (m)	Can hgt (m)	Can N (m)	Can E (m)	Can S (m)	Can W (m)	Physio cond	Struct cond	Life Exp	Ret Cat	Comments	Rec's
T1	*Pittosporum tenuifolium* (Black Matipo)	M	160	6	3	1.7	1.3	1.2	2	Normal	Normal	10+	C1	Small rear garden tree situated close to rear of house	Tip-reduce lateral branches on eastern side of tree by up to 1m to provide improved clearance during works
T2	*Acer palmatum* (Japanese Maple)	M	150	4	2	1.2	1.2	1.2	1.2	Normal	Normal	20+	C1	Small tree situated at end of rear garden	No works required at present

Appendix 3 - Tree Survey Schedule Explanatory Notes

This section explains the terms used in the **Tree Data Schedule**.

Ref: Each item of vegetation has its own unique number prefixed by a letter such that:

T1=Tree **S2**=Shrub or stump **G3**=Group **H4**=Hedge **W5**=Woodland

Species: Common and Latin names are given.

Age:

- **Y - Young** - Usually less than 10 years' old
- **SM - Semi-Mature** - Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy)
- **EM - Early-Mature** - Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy)
- **M - Mature** - Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy)
- **V - Veteran** - A level of maturity whereby significant management may be required in order to keep the tree in a safe condition
- **OM - Over Mature** - As for veteran except management is not considered worthwhile

DBH (mm): Stem diameter, measured in mm, taken at 1.5m above ground level where possible. On trees with two to five stems, the combined stem diameter is calculated as follows:

$\sqrt{}$ (stem diameter 1)^2 + (stem diameter 2)^2... + (stem diameter 5)^2

For trees with more than five stems, the combined stem diameter is calculated as follows:

$\sqrt{}$ (mean stem diameter)^2 x number of stems

Hgt (m): Height: Measured from ground level to the top of the crown in metres.

Can Hgt (m): Crown Height: Measured from ground level to the height at which the main crown begins in metres. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

Can: - Canopy extents N, E, S, W:
Radial crown spread approximately measured to the four cardinal points (for individual trees only)

Physio cond: Indicates the physiological condition of the tree as one of the following categories:

- **Normal** - Healthy tree with no symptoms of significant disease
- **Fair** - Tree with early signs of disease, small defects, decreased life expectancy, or evidence of less-than-average vigour for the species
- **Poor** - Significant disease present, limited life expectancy, or with very low vigour for the species and evidence of physiological stress
- **Very poor** - Tree is in advanced stages of physiological failure and is dying
- **Dead** - No leaves or signs of life

Struct cond: Indicates the structural condition of the tree as one of the following categories:

- **Normal** - No significant structural defects noted
- **Fair** - Some structural defects noted but remedial action not required at present
- **Poor** - Significant defects noted resulting in a tree that requires regular monitoring or remedial action
- **Very poor** - Major defects noted that compromise the safety of the tree. Remedial works or tree removal is likely to be required.
- **Dead** - No leaves or signs of life

Life Exp: Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

Ret. Cat.: - Retention Category: BS5837:2012 Category where:

- **U = Trees unsuitable for retention**. Trees in such a condition that cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. These trees are shown on the tree plans with red centres.

- **A = Trees of high quality**. Trees of high quality with an estimated remaining life expectancy of at least 40 years. These trees are shown on the tree plans with green centres.

- **B = Trees of moderate quality**. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. These trees are shown on the tree plans with blue centres.

- **C = Trees of low quality.** Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. These trees are shown on the tree plans with grey centres.

Trees of notable quality are graded as Category A or Category B. These trees are sometimes divided further into sub-categories:

- Sub-category 1 is allocated where it has been assessed that the tree has mainly arboricultural qualities.

- Sub-category 2 is allocated where it is assessed that the tree has mainly landscape qualities.

- Subcategory 3 is allocated where it is assessed that the tree has mainly cultural qualities, including conservation.

Trees may be allocated more than one sub-category. All sub-categories carry equal weight, with for example an A3 tree being of the same importance and priority as an A1 tree.

Comments: Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.

Rec's - Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

Appendix 4 – Specifications for tree protective measures

4.1 Ground Protection

Ground protection will be used within the areas shown with blue diagonal lines on the TPP. In some cases, existing hard surfaces (such as concrete paths and driveways) provide an adequate level of ground protection. Any hard surfaces that are to be used as ground protection must remain in situ throughout the duration of development. Where there are no hard surfaces, or if the hard surfaces require supplementary protection, the following guidance shall be followed:

Temporary ground protection shall comprise a geotextile membrane (e.g. *Terram* - http://www.terram.com/products/geotextiles/weedguard.html), topped with a **minimum** depth of 100mm compressible fill (such as wood chip); these are the base layers.

For the main, top layer: In the event that only pedestrian access is required over the protected areas, then exterior grade (marine) ply boards shall be used (usually 2.4 x 1.2m in size).

If vehicular access is required, proprietary ground protection such as Greentek 'ground guards' (http://www.ground-guards.co.uk/products/multitrack/) shall be used. These ground protection mats range in sizes from 2.4 x 1.2m down to 1.8 x 0.6m.

The temporary ground protection shall remain 'fit for purpose' throughout the duration of development and so the compressible fill layer may need topping up on occasion. An example of this specification is shown in Figure 1.

Figure 1: An example of ground protection to protect against vehicular access

If temporary ground protection is required close to an excavated area (i.e. basements or deep foundations), then a site-specific scaffold framework shall be constructed to provide a 'floating walkway'. This is to avoid the protected area subsiding into the excavated area (see Figure 2 for an example).

Figure 2: An example of 'floating' ground protection

4.2 Protective Fencing

Before the commencement of any demolition / construction work on-site, protective fencing is to be erected in the positions shown by the solid red line/s on the TPP. The position of the protective fencing has been determined using recommendations set out in BS5837.

Durable, all-weather signs are to be attached to the fencing; a suggested sign to be used has been included at the end of this AMS. This shall be printed out, laminated and attached to every third fence panel.

Once erected, the protective fencing is to be regarded as sacrosanct. There is to be no access by pedestrians into the area protected by the fencing and no works whatsoever shall be carried out in this zone; this includes: storage of materials; any form of excavation or changes in ground levels.

The protective fencing is to be maintained in good order so that it is fit for purpose throughout the construction process. The fencing will not be altered in any way, or prematurely removed without prior consent of the project arboriculturist and/or (if necessary) the Local Planning Authority (LPA).

The protective fencing is to be constructed of 2.2 metre height weld-mesh (Heras type) panels, as set out on the insert on the TPP (see link below).

http://www.herasreadyfence.co.uk/original-heras-fencing-panel

The panels are to be fixed to a scaffold framework either with wire ties or with scaffold clamps. The scaffolding shall comprise a vertical and horizontal framework, well-braced to resist impacts, with vertical tubes spaced at a maximum of 3 metres or alternatively at panel width, and driven into the ground by 0.6 metres (if this is impractical due to existing hard surfaces, it may be necessary to place the vertical tubes in rubber or concrete 'boots').

An example specification is shown in Figure 3.

Figure 3: An example of protective fencing erected to the correct specification

4.3 Excavations within or close to the Root Protection Areas (RPA's) of retained trees

To minimise root damage to tolerable levels during construction, the following guidance should be followed:

The affected area/s within or close to the trees' RPA will be excavated by hand (using hand tools such as a fork, spade, trowel, stiff brush or an air spade).

If roots below 25mm in diameter are uncovered, they will be severed cleanly back to a suitable growth point with sharp secateurs or a sharp pull saw. If roots over 25mm in diameter are uncovered, they will be bent / relocated (horizontally if possible) as best as possible. If this is not possible, then they will be severed cleanly back to a suitable point with sharp secateurs or a sharp pull saw.

Once excavated, the sides of the excavated area will be covered with damp hessian to protect any retained roots from desiccation and maintain soil moisture.

All spoil from the piling process shall be removed from site using a wheelbarrow.

4.4 Non-invasive foundation designs

To minimise root damage to tolerable levels during construction, the foundations will be of pile and beam (or similar non-invasive) design and the following guidance should be followed:

Working off either suitable ground protection or an existing hard surface, the optimal location for the piles will be determined by hand-dug excavations (using tools such as a fork, spade, trowel, stiff brush or an air spade). If working off an existing hard surface such as paving slabs or block paving, the minimal number of individual slabs will be removed to facilitate this exploratory process. If working off a concrete surface, a jack hammer can be used to break through to the soft surface below.

If roots below 25mm in diameter are uncovered, they will be severed cleanly back to a suitable point with sharp secateurs or a sharp pull saw. If roots over 25mm in diameter are uncovered, they will be bent / relocated as best as possible. If this is not possible, then the process to determine the optimal location for the piles will be repeated until successful.

Once the locations are determined, the pile holes will be as small as is practically possible and the piling rig shall again be situated on top of either suitable ground protection or a pre-existing hard surface.

All spoil from the piling process hall be removed from site using a wheelbarrow.

The lowest part of the proposed extension will sit on top of the highest level of the trees' RPA's (i.e. there will no significant alteration of ground levels)

If required, it is also possible to use engineering methods to direct moisture to the underlying tree roots (by inserting a gravel filter medium above ground and below the foundations).

It is usually appropriate for final foundation designs to be agreed either by way of a suitably worded condition or separately by a structural engineer.

4.5 Installation of no-dig surface

The site will be carefully prepared by removing all debris and the existing turf layer using hand tools.

An even surface profile will be achieved by filling in any localised depressions with sharp sand (not builder's sand, which has a high salt content). The area will not be 'rolled' or consolidated in any way.

Timber edging boards (or similar) will be installed along the perimeter of the no-dig area. Fixing posts and pegs will be installed carefully to avoid damaging to tree roots.

A layer of Geotextile Fabric will be laid across the area, overlapping adjacent rolls by a minimum of 150mm. It may be necessary to lightly pin the Geotextile in place until the overlying layers are installed.

Open out and lay a 100mm deep cellular confinement system (such as *Terram Geocell* – see link below) and pin in place between the edging boards (it may be necessary to cut the cellular confinement system to size using a sharp knife or it can be left uncut and folded up against the edgings if preferred).

http://www.terram.com/products/geocells/tree-root-protection-geocell.html

The cellular confinement system will be pinned in place using steel fixing pins to keep it open and fully expanded position whilst the cells are being filled and also to stop the structure from being pushed up by migrating aggregate during the filling process. The fixing pins will be driven in so that they are just touching the top of the cells but do not compress the fabric.

The cellular confinement system will be filled with clean, open graded angular aggregate, normally in the particle size range of 5mm - 45mm, working toward the tree/s from the furthest point away and using the filled sections as a platform.

A light vibratory compaction plate (whacker) will be used to settle the stone into the cells.

The permeable surface will then be installed on top of the filled, cellular confinement system.

Appendix 5 – General precautions and further information

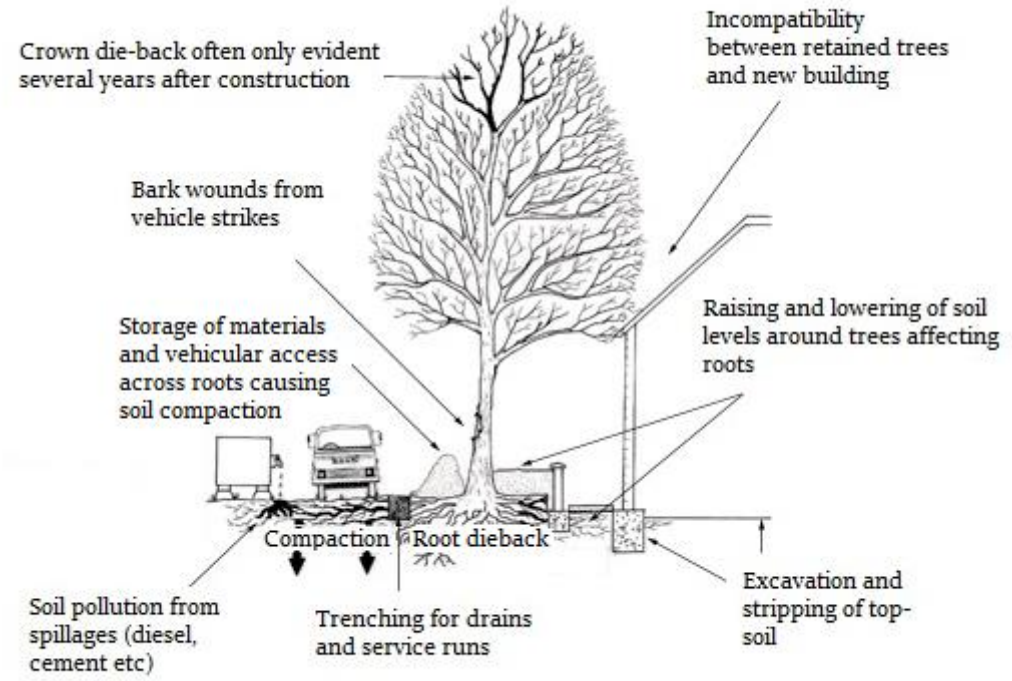

Diagram 2: Common problems for trees on development sites
(http://www.leics.gov.uk/highway_req_development_part7_appendix_f)

5.1 Services and drainage: If it becomes apparent that trenching is required within the RPA of retained trees to provide routes for services, this work shall be undertaken in accordance with guidelines set out in National Joint Utilities Group (NJUG) Volume 4 (2007) under supervision by the project arboriculturist. This document can be downloaded at no charge using the link below:

http://www.njug.org.uk/document-download/?URL=http://www.njug.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf

5.2 Storage of materials: No materials or spoil are to be stored within the area/s protected by protective fencing and/or ground protection. The same applies for existing hard surfaces that are being used as ground protection.

5.3 Spillages: If any cement residues fall within root protection areas, it shall be swept up, bagged and removed from site – it shall NOT be washed away with water.

5.4 Demolition: Where any existing structures are to be demolished, they will be done so inwardly (away from root protection areas / retained soil).

5.5 **Levels:** There is to be no alteration of ground levels within the area protected by protective fencing and/or ground protection, unless previously specified and agreed upon. The same applies for existing hard surfaces that are being used as ground protection.

5.6 **Fires:** No fires are to be lit within 20 metres of the stems of retained trees.

5.7 **Above ground damage to trees:** Care must be taken in planning the location and operation of machinery to avoid above ground damage to trees. BS5837 (2012) Section 6.2.4.1 states '*Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs) in order that they can operate without coming into contact with retained trees. Such contact can result in serious damage to trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance of trees is maintained at all times. Access facilitation pruning should be undertaken where necessary to maintain this clearance.*

5.8 **Remedial works and soil improvement:** Exposed soils are easily compacted resulting in loss of water and gaseous exchange; this can lead to root death (and subsequently tree death).

To relieve ground compaction, which may have resulted from the use of vehicles or by the storage of materials, the soils should be broken up to allow air to penetrate and for the soil structure to be restored. There are various methods to achieve this, such as: auguring the soil by hand / fork or pneumatic excavation (e.g. with an air spade); both should be combined with soil structure improvements:

The soil structure can be improved by incorporating a compost or mulch within the topsoil, of 75-100mm in depth. This can be spread over the surface and gently forked into the soil. If bark chip is used as mulch, NPK fertilizer should be added to counteract the nitrogen depletion of the soil. There is also the option of adding mycorrhizal fungal which may also improve root function.

5.9 **Choosing an arborist:** When appointing a tree works contractor, please only use properly qualified and experienced companies who comply with current British Standards (3998) and always check that they carry Public Liability Insurance within a minimum of £2,000,000 cover, and the relevant Employers Liability Insurance. A list of contractors approved by the Arboricultural Association can be found at www.trees.org.uk or by calling 01242 522 152.

TREE PROTECTION FENCING

KEEP OUT

This fencing must not be removed or altered in any way without prior consultation with the project Arboriculturist!

Please report any damage to trees and/or fencing to the site manager or the project Arboriculturist

Trevor Heaps

07957 763 53

Induction Form for all site personnel:

Site name: .....

- I have had explained to me by the Site Manager the key implications of the Arboricultural Method Statement relating to the development at the above site.

- I am aware that the tree protective fencing / ground protection must remain in its original position and must not be moved without the approval of the appointed Arboricultural Consultant.

- I understand that certain operations must be supervised by the appointed Arboricultural Consultant and that these operations must not start until the consultant is present and has given approval.

- I confirm that I will bring any concerns about potential damage to trees to the attention of the Site Manager.

- I am aware that I must not cause damage to any of the retained trees on or adjacent to the site. Damage may be caused by direct means (i.e. physical damage caused to roots or the trunk/branches of the tree) or by indirect means (e.g. by fire or toxic materials entering the rooting environment of the tree).

Print Name: .....

Sign Name: .....

Date: .....