ARBORICULTURAL METHOD STATEMENT
IMPLICATIONS ASSESSMENT
AND
TREE PROTECTION
REPORT

56 Elsworthy Road,
London NW3 3BU

Produced For:	PPM (BVI) Ltd c/o Sacks Maguire Architects
Prepared By:	Nicholas van Pelt, Dip. Arb. (RFS), MRAC, Dip. REM (Cirencester)
Reference:	NvP3207
Date:	19th September 2012

Honey Arboricultural Consultancy, New Pond Road, Peasmarsh, Surrey. GU3 1JR
Tel: 01483 575447. FAX: 01483 575470. Mobile: 07884 491348. E-mail:
nick@honeyarb.com

Prepared for: PPM (BVI) Ltd c/o Sacks Maguire Architects

Site Address: 56 Elsworthy Road, London NW3 3BU

Report Prepared By: Nick van Pelt

Date: 19th September 2012

▪ Summary

The trees noted adjacent to the site should be able to be retained free of damage provided all guidelines set out in the report are followed at all times.

It is assumed that there is to be no construction outside the proposed basement footprint show on the drawing in Appendix 2.

All Root Protection Areas are to be protected by suitable barriers or anti-compaction protection, as appropriate prior to any activities commencing on site.

No activities are to commence until full approval has been given by the Local Planning Authority.

▪ Instructions

Further to your recent instructions I have pleasure in submitting the following report.

▪ Background

The report concerns the above site which consists of a residential property whose last known use was three separate flats with partial basement under the ground floor flat, with front and rear gardens and no vehicular access.

The site is subject to a development proposal which consists of the provision of a basement covering the entire footprint of the existing property and part of the rear garden

▪ Scope of Report

a) The purpose of this report is to detail how works will be undertaken throughout the course of demolition, construction and landscaping whilst providing an

adequate level of protection for the trees and hedging, which are to be retained on or adjacent to the site.

b) Recommended Root Protection Areas for these trees are listed with reference to BS5837: 2012 "Trees in relation to design, demolition and construction – Recommendations" and are included with the tree details in Appendix 1and are shown on the Tree Protection Plan in Appendix 2.

c) The assessment of the trees inspected attempts to identify any obvious arboricultural defects, which may present a hazard now or in the future. A full hazard assessment of the trees is, however, beyond the scope of this report.

▪ Design Proposal and Tree Retention

There are three major trees and one medium sized tree that are thought to require consideration in relation to the proposed development.

At the rear is a mature Red Horse chestnut, T1, which stands in an area of communal garden at the rear of the property. This is a free standing tree in a grassed area which should remain unaffected by the proposal with only minor provision for protection.

At the front T2 is a Purple leafed Norway maple in the neighbouring property 58 Elsworthy Road. This tree has lateral branches low over the site and its Root Protection Area within the site is open ground which will require full protection. The ground under this tree has already been subjected to damage from large vehicles apparently associated with the building site on the opposite side of the road. It is understood that lorries have used the pavement and the gap in the hedge at the front of 56 Elsworthy Road to turn round. Some soil amelioration work will be required under T2.

The other two trees are both London plane street trees. T3 is fairly distant from the site but along with T4 the proximity of the public highway will restrict root development to the south and despite paving and the normal underground service runs under the pavement between the trees and the property, it is considered highly likely that there will be root development from both of these trees within the front garden area of No. 56 Elsworthy Road. As a result the whole area of the front garden will for practical purposes be considered to be covered by Root Protection Areas for the trees at the front of the property. For all intents and purposes there is no practical area that is outside the Root Protection Areas of the trees inspected at the front of the property.

Since an access route will be required form getting materials and possibly machinery into the site, it will not be possible to entirely protect the front garden area using protective barriers, therefore, anti-compaction measures will be required to avoid any excavation or compaction of the existing soil.

Care will also be required to avoid chemical or toxic material spillage. The use of a completely water/liquid proof membrane in vulnerable areas is recommended.

- **Protection of Trees During Construction**

General Principles

Existing trees can be easily damaged directly through root severance and inadvertently through soil compaction which disrupts the soil structure causing asphyxiation of roots and subsequent root dysfunction. Spillage of toxic materials can also cause root death. Protection for selected trees for retention is essential to ensure their lasting effect on the proposed scheme which will include a proportion of the tree/soil zone.

Damage to trees is quite commonly caused by careless positioning of lorries loading and off-loading of materials, especially when using loading cranes.

It is equally important therefore to ensure the protection of trees both above and below ground. Guidance is provided in BS5837: 2012 "Trees in relation to design, demolition and construction – Recommendations" as to the protection of existing trees before, during and after development.

Additionally, guidance is given specifically with respect to driveways in the publication "Driveways Close to Trees" produced by the Arboricultural Advisory and Information Service.

Trenching and excavation close to trees can have a serious detrimental effect on tree physiology and stability. It will be necessary to consider alternatives to open trenching near trees in order to avoid damage.

Landscaping is often carried out after all the tree protection has been removed and not all landscapers fully understand tree protection. After the trees have been protected all through the main development they can quickly be damaged by poor practice during the landscaping process. To ensure that any such damage is kept to a minimum, the landscape operatives should have a copy of this report available to them at all times. In addition a meeting between the landscape

contractor and the Local Planning Authority Tree Officer should be held prior to the commencement of any works.

Protective Distances and Fencing

With reference to BS5837: 2012, recommendations for Root Protection Area for the trees inspected for this report has been included within the tree details in Appendix 2.

These Root Protection Areas are included on the drawing in Appendix 2 as part of the tree protection plan. The Root Protection Areas where possible and appropriate should be enforced by the use of robust protective fencing as outlined in BS5837: 2012 for those trees which are to be retained.
In this instance due to limited space it is going to be more practical in much of the area to be protected to use anti-compaction ground protection instead of protective barriers

Where trees can be protected by fencing, I would recommend fencing, a minimum of 2 metres high consisting of a scaffold framework supporting weld mesh panels (fig. 2, BS5837: 2012, see Appendix 3), which is to be erected prior to any demolition and construction activities.

Where construction processes are to be carried out within Root Protection Areas and fencing cannot be practically installed, any exposed ground between the protective fencing and building will be protected against compaction set out below and in Appendix 4.

Due to the restricted access availability, protecting full Root Protection Areas will not be achievable for the street trees. As well as the anti-compaction protection within the front garden, these trees will have their trunks protected by robust 2.4m high, 18mm thick plywood boxes built around them and braced against but not attached to them.

I understand that some form of loading system is to be installed over the pavement, on a scaffold framework which will be positioned to give maximum protection to the street trees. This system will be given arboricultural consideration and will not be installed before it is approved in writing by the Local Planning Authority.

Protective areas should be identified by high visibility tapes bearing the inscription "Tree Protection Area - Keep Out".

Site Access for Demolition and Construction Traffic

The proposed site access will cross the front garden and will therefore be located within the enforced Root Protection Areas for trees T2, T3 & T4.

The existing pathways will be adequate as pedestrian access routes, but special considerations will be required for access for any machinery or materials for demolition and construction activities.

The majority of a tree's roots exist in the top 60 centimetres of soil throughout the Root Protection Area. Any excavation or additional compaction, therefore, can be detrimental to a tree's health and stability.

Ground protection during demolition and construction

Taken from section 6.2.3 BS5837: 2012 "Trees in relation to design, demolition and construction – Recommendations"

Where access is required within Root Protection Areas consideration must be given to protecting the soil against compaction.

Where there is no existing suitable hard surfacing that can be retained temporarily or permanently any unmade ground that is exposed within a Root Protection Area should be protected by the installation of new temporary ground protection.

- For pedestrian movements only a single thickness of scaffold boards placed on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane.
- For pedestrian-operated plant up to a gross weight of 2 tons, proprietary, interlinked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane.
- For wheeled or tracked construction traffic exceeding 2 tons gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Serious root damage can occur from a single passage of a heavy vehicle, especially in wet conditions.

Demolition& Site preparation

There was not any apparent demolition required within any of the Root Protection Areas, however, some demolition materials from within the house will require removal in the event that any demolition should be required within any Root Protection Areas the following guidelines will be followed.

Demolition will be undertaken with great care in order not to damage retained trees. Demolition within root protection areas should be carried out by hand where possible. If this is not possible arboricultural consideration will be given prior to commencement and authorised in writing by the Local Planning Authority.

All demolition materials to be demolished into existing footprint area and moved to designated storage area. No demolition material will be stored within root protection areas. Materials to be removed from site by designated access routes.

Excavation of old foundations should be restricted to their existing depths and no greater, this is to includes pathways, bases for sheds or greenhouses and any old walls or other hard landscaping features.

Any excavated area within a Root Protection Area that is not to be utilised within the development, should be back filled with inert granular material mixed with top soil.

No bonfires will be lit within 10m of the canopy spread of any tree, shrub or hedging that is to be retained.

Tree Protection and Utilities

It is assumed that existing underground service route will be utilised for the proposed redeveloped building.

If new service runs are required, the location and siting of all utilities should ideally be outside of the Root Protection Areas of trees to be retained, which would be impossible at the front of the property.

Where utilities need to encroach upon Root Protection Areas , their installation will be subject to arboricultural consideration prior to commencement and authorised in writing by the Local Planning Authority.

It is my suggestion that all possible alternatives are examined before any consideration is given to passing through the Root Protection Areas of trees to be retained.

Where utilities need to encroach upon these areas thrust bore excavation techniques can be considered. These should be at least 1m deep in this instance and preferably would extend from one side of the Root Protection Areas to the other.

Alternatively where the service uses a flexible pipe, such as modern water and gas supplies and electrical supply, a trench can be carefully dug by hand using an air-spade, retaining all roots over 25 millimetres in diameter and keeping exposed roots damp at all times. The supply pipe/cable is then threaded through the roots. The trench is then carefully back filled with inert granular material mixed with top soil.

Tree Protection and Storage of Materials

All materials for construction purposes should be carefully stored outside of the enforced root protection areas. All toxic substances such as oils, bitumen and residues from concrete mixing should be retained by effective catchment areas.

Furthermore, materials toxic to trees will be stored at least 10m away from any Root Protection Areas and with specialist considerations as follows:

- Diesel: To be held on site in bunded tanks, which are double insulated tanks, i.e. if a puncture occurs it leaks into a secondary skin.

- Bitumen: Will not be stored on site. Only used by specially qualified contractors and only delivered to site when and in the amounts required.

- Cement: Will be stored on pallets on raised hard standing to avoid any contact with the ground, using plastic cement bags which are much are durable, i.e. they don't split, get damp etc... Concrete wash waters will be dealt with as required by The Environmental Permitting Regulations (EPR) 2010.

- All other materials are dealt with by the COSHH Assessment, which will be kept on site.

Landscaping Works

No landscaping details were available at the time of preparing this report and there is no indication that any landscaping will be necessary, however, should any be proposed or undertaken the following guidelines should be followed.

Some form of soil amelioration is required for arboricultural reasons under tree T2, where heavy lorries have left wheel ruts indicting compaction. It is likely this area would be part of a future landscaping scheme, which will follow the guidelines below. It would be beneficial to the tree for the ground under the canopy to be gently forked, by hand, taking care not to cause root disturbance, to alleviate compaction and to assist natural transpiration through the soil. If necessary the ruts can be levelled by filling with a light sandy topsoil.

All landscaping should avoid soil re-grading and disturbance within the Root Protection Areas. This includes cultivations for the preparation of soil for turf, seeding or planting.

Where possible it is best to leave the tree protection area undisturbed or consider the use of a non-nitrogenous mulch such as composted wood-chips or bark. Grass rarely thrives under trees and is highly competitive for nutrients and moisture.

All landscaping works within tree protection areas should be carried out by hand where possible.

All landscaping works should be subject to arboricultural consideration prior to commencement and authorised in writing by the Local Planning Authority Tree Officer.

Grade Changes

There are to be no grade change alterations within the Root Protection Areas of any trees.

Direct Damage to Roots and Foundation Design

The design proposal does not include the construction of foundations within the Root Protection Areas of any trees.

The construction of the basement area will not involve any excavation outside the footprint of the proposal shown on the drawing in Appendix 2.

A method statement showing foundation design and construction method will be produced so that it can be given consideration by the Local Planning Authority.

Soil Compaction

The British Geological Survey Sheet No. 256 "North London" , indicates that the geology of the area is likely to be one of London clay. This soil type is susceptible to compaction by loading. Compaction can be minimised by dissipating the load to the soil surface and by reducing the sites of contact with the soil to a minimum as previously discussed.

Site Inspections

Site inspection to ensure that protective measures are employed and protective distances are strictly enforced should be carried out by the Local Authority arboriculturalists as part of their Statutory Obligations. This can include regular visits during demolition and construction and a final visit on completion, as well as unannounced spot checks.

A site supervision and reporting procedure may be agreed with the Local Planning Authority and may be made the subject of a Planning Condition.

Sequence of Events

A schedule of the sequence of events should be drawn up to ensure all protective measures are adhered to. All relevant construction and development personnel should be informed with respect to Tree Protection and a copy of this report including the Tree Protection Plan in Appendix 1, should be made available to them at all times.

Here is a suggested sequence of events schedule:

Stage 1	Erect protective barriers and install anti-compaction measures
Stage 2	Pre-commencement site meeting with Local Planning Authority Tree Officer to ensure that all protection is adequate and in place.
Stage 4	Demolition and construction.
Stage 5	Site meeting before removal of protective fencing.
Stage 6	Only with expressed approval of the Local Planning Authority Tree Officer, dismantle tree protection.

Conclusion

All relevant demolition, construction and landscape personnel will be informed with respect to this report and tree protection and a copy will be made available to them on site at all times.

All personnel will be made aware that irregular visits by Local Planning Authority Officers are likely and that any breach of the agreed tree protection guidelines may result in Stop Notices being served on the site and possible legal action being taken by the Local Planning Authority. Legal action can be pursued against individuals found to be in breach of planning conditions or other relevant tree legislation.

This Arboricultural Implications Assessment, Method Statement and Tree Protection Report can be endorsed by Planning Conditions, agreement or obligations as appropriate by arrangement between the developer and the Local Planning Authority. Further discussion between these parties might, therefore, be necessary in order to finalise the document.

This concludes my report but if I can be of any further assistance, or should you require any further information, please do not hesitate to contact me.

N. J. S. van Pelt

Nick van Pelt
Honey Arboricultural Consultancy

APPENDICES

Appendix 1	Tree Inspection Details
Appendix 2	Tree Protection Plan
Appendix 3	BS5837: 2012 Figure 2 Protective Fencing
Appendix 4	Anti-compaction Protection

Appendix 1

Tree Inspection Details

PREDEVELOPMENT TREE SURVEY INSPECTION FORM

Inspection date: 17/9/12
Client: Mr G Shaw c/o Sacks Maguire Architects
Site: 56 Elsworthy Road, London NW3 3BU

REF: NvP3207
Surveyor: Nick van Pelt
Weather: Dry with light breezes

Tree No	English Name	Ht m	D cm	Spread m	Age	Vig	BS Cat	BS RPA	Comments	Work
T1	Horse chestnut	16	80	N6 S8 E7 W8 LB 5m S	M	N	B	9.6m	In communal garden area to north (rear) of site. Some bark suppuration and staining on lower trunk below graft line. Various cankers on trunk and large scaffold branches, but no significant visible abnormalities.	No work
T2	Purple leafed Norway maple	10	30	4 LB 2m W	SM	N	B	3.6m	In neighbouring property to west. Canopy down to 2.5m over site. Lower branches could be removed to lift canopy to 5m but would require entry to neighbouring property in order to carry out to current standards. Compaction and rutting of soil under canopy within site will require careful anti-compaction treatment.	Anti-compaction treatment to soil under canopy within site
T3	London plane	17	87@1m	5 LB 4m W	M	N	B	10.44m	Street tree on edge of pavement. Regular heavy lopping to maintain reduced canopy.	Continue heavy reduction work or pollard
T4	London plane	17	82	5 LB 4m W	M	N	B	9.84m	Street tree on edge of pavement. Regular heavy lopping to maintain reduced canopy.	No work

Notes:

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

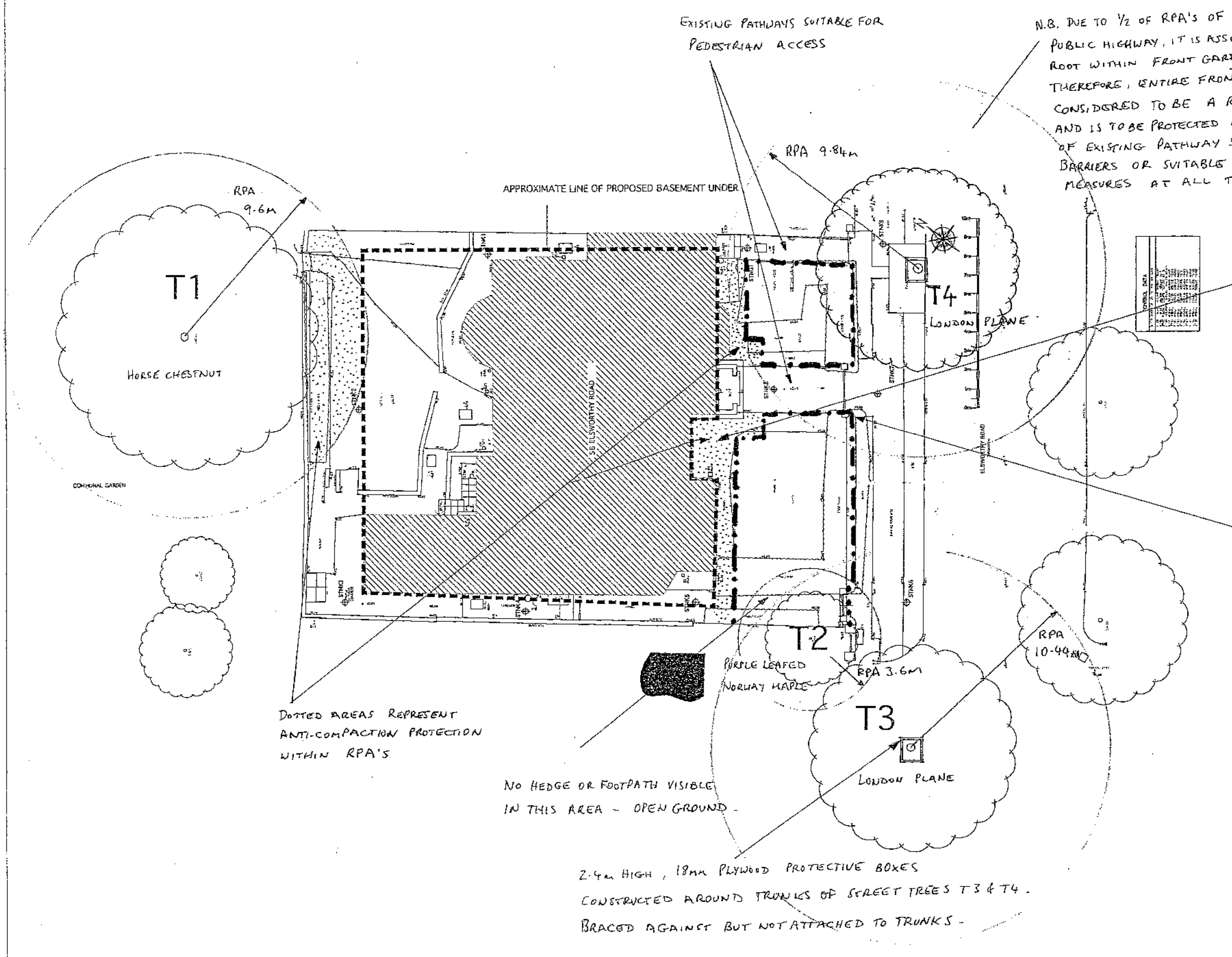
1. Height describes the height of the tree from ground level.
2. DBH is the diameter of the trunk at 1.5m from ground level or as defined in the text. arf is the stem diameter for multi-stemmed trees measured above root flare
3. Spread refers to the crown radius from the trunk centre and is expressed as an average or NSEW aspect, as appropriate.
4. Age range is represented as Y-young, SM-Semi mature, M-mature, OM-over mature.
5. Vigour is described as N- Normal, INT- Intermediate, L- Low or D-Dead and refers to the general condition of the tree.
6. BS Cat. refers to BS5837: 2012 retention category table1, where A category retention most desirable (life expectancy 40 yrs +) B retention desirable (20 yrs +) C could be retained (min. 10 yrs) and U (Undesirable). Colours:- A=LIGHT GREEN B=MID BLUE C=GREY U=DARK RED where indicated on plans.
7. BS RPA is BS5837: 2012 recommended Root Protection Area given as the radius in metres of a circle equal to that area; The final RPA may not be represented by a circle within tree protection drawings. All construction operations to take place outside this area.

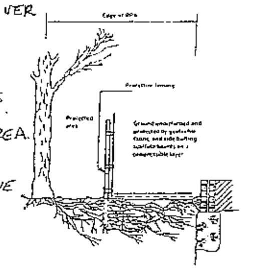
* RPA based upon canopy spread rather than BS5837: 2012

Appendix 2

Tree Protection Plan

1. This drawing must not be scaled
2. The contractor is to check all dimensions on site





Illustrative cross section of anti-compaction protection for pedestrian movements

Serious root damage can occur from a single passage of a heavy vehicle, especially in wet conditions.

BS 5837:2012 — BRITISH STANDARD

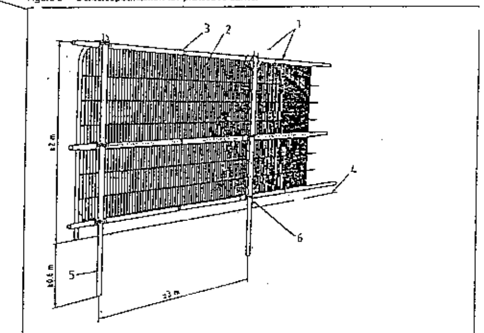
on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

NOTE 1 Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

NOTE 2 It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 Default specification for protective barrier



Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

no. revision	date
dwg type	GENERAL ARRANGEMENT
dwg status	PLANNING
Sacks Maguire Architects 155 Regents Park Road, London NW1 8BB Telephone 020 7722 9298 Fax 020 7586 9059	
Project	56 ELSWORTHY ROAD LONDON NW3 3BU
Title	PROPOSED SITE PLAN – TREE PROTECTION
Client	PPM (BVI) LTD — REF: NvP3207
scale 1:100 @ A1	drawn ET
job number 477	drawing number 016
revision	Aug 2012 — TPP

Appendix 3

BS5837: 2012 Protective Fencing

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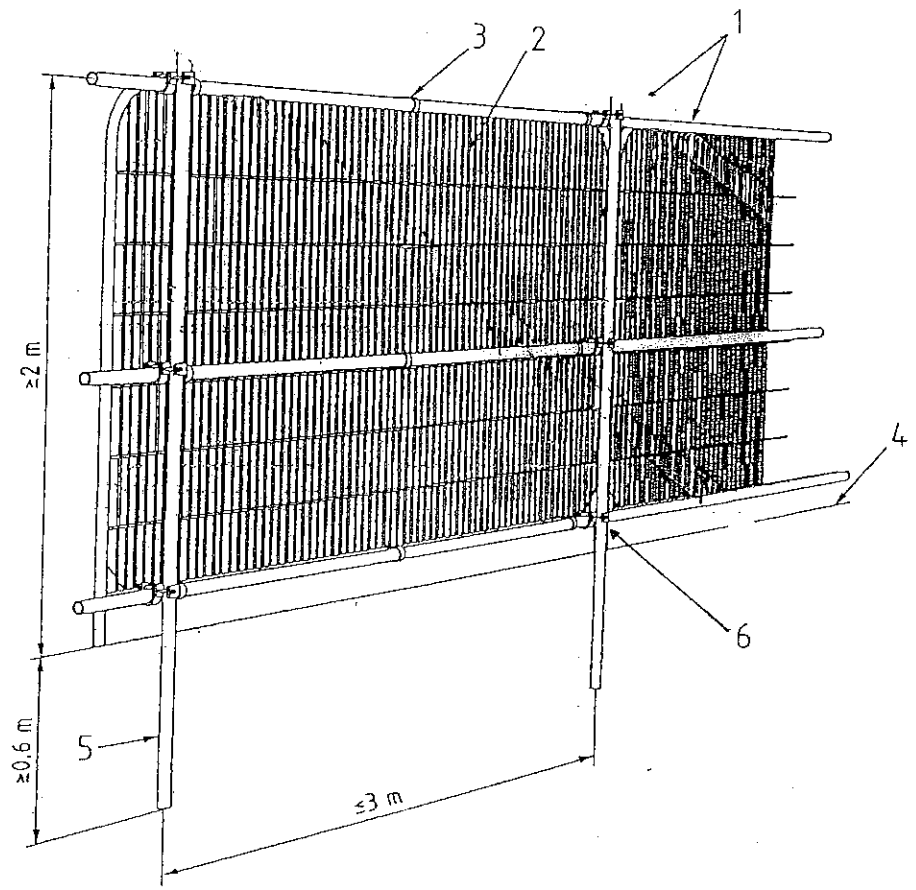

Key

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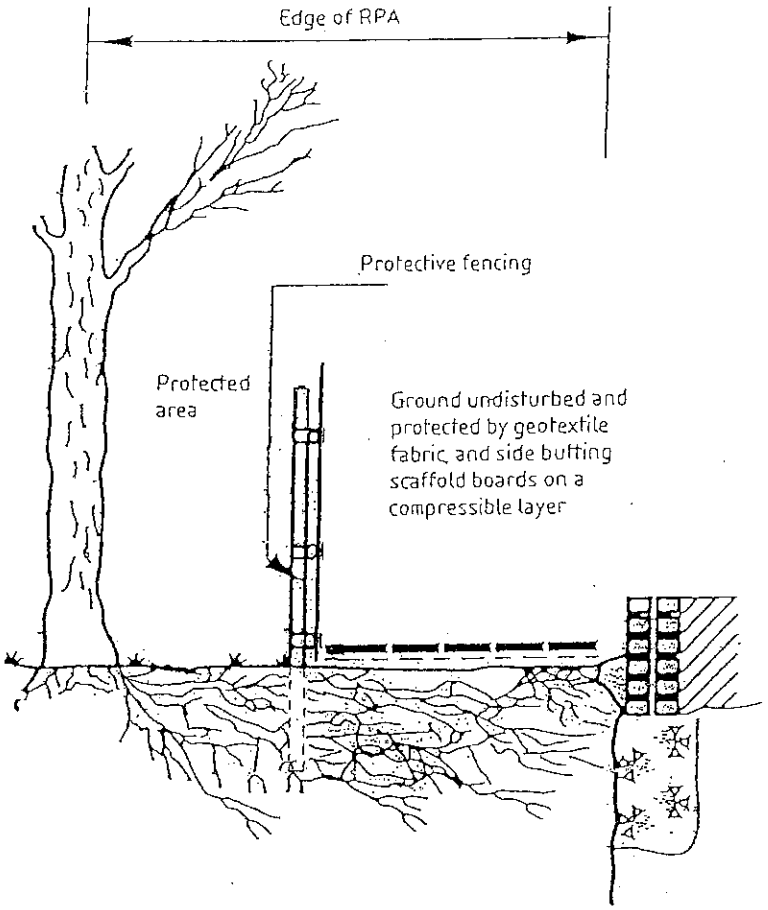
Appendix 4

Anti-compaction Protection



Illustrative cross section of anti-compaction protection for pedestrian movements

Ground protection during demolition and construction

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