STAGE 2 ARBORICULTURAL IMPLICATIONS ASSESSMENT & METHOD STATEMENT TO SUPPORT A PLANNING APPLICATION

CONSULTING ARBORIST: GARY MARSDEN
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ARBORICULTURAL REPORT FOR:
Brandon Allison
The Eaves
Pendleton Rd
Wiswell
BB7 9BZ

LAND OWNER:
Brandon Allison
The Eaves
Pendleton Rd
Wiswell
BB7 9BZ

SITE LOCATION:
The Eaves
Pendleton Rd
Wiswell
BB7 9BZ

DATE OF SITE INSPECTION: 25th May 2011

DATE OF REPORT COMPLETION: 16th June 2011

Validation statement for council registration of this report

In accordance with the ***Department for Communities and Local Government circular 02/2008*** and its guidance document ***Validation of Planning Applications,*** this report fulfils the recommended national list criteria for tree survey/arboricultural information. More specifically, it contains the following:

- A full tree survey compliant to the requirements of ***B55837; (2005) Trees in Relation to Construction - Recommendations*** undertaken by a qualified arboriculturist.

- A plan to a suitable scale with a north point and showing tree survey information, retention categorisation and root protection areas.

- An assessment of the arboricultural implications of development detailing trees to be retained / removed and appropriate protection measures.

- An arboricultural method statement detailing the means of tree protection, implementation and phasing of works.

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Summary

The development proposal at this site is to demolish the existing property and rebuild a newly designed property encompassing the existing footprint. I have inspected all the relevant trees that could influence the development of this site and listed there implications within this report along with a method statement to abate any issues, a tree constraints plan has also been included to indicate areas with specific issues to be addressed on this site.

This information has been used to assist the architect in producing there design and methods of construction, while still retaining and protecting any retained trees in compliance with *BS 5837:2005 Trees in relation to construction*.

This proposal will result in the loss of 10 low category trees, one marginal high category tree and 3 and 1/3 groups of trees.

All the significant boundary tree cover located on the eastern boundary will remain intact. There is plenty of space for new planting and a comprehensive new landscape scheme with heavy standard sized tree planting is included as part of the proposal. The establishment of these twenty four new trees will significantly enhance the contribution of this site to local amenity and more than compensate for the loss of the trees.

The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, the new sustainable planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term.

Gary Marsden **FDSc Arb M.Arbor.A**

1.0 Introduction

1.1 **Instructions:**

I am instructed by Brandon Allison via Wighton Jagger Shaw Architects Ltd to produce an Arboricultural Implication Assessment (AIA) and Arboricultural Method Statement (AMS) at 'The Eaves' Pendleton Rd, Wiswell, based on the initial tree report that I produced on 31st July 2011 reference number 0178, any designs of the site by the architect Wighton Jagger Shaw Architects Ltd and to provide the following information to comply with the planning approval conditions given by the local authority:

- Tree Protection Plan (TPP).
- Details of any root protection and protective fencing needed.
- A programme of arboricultural input on site.
- Schedule of tree works and timings on site.
- Details of any replacement planting.

1.2 **Purpose of this report:**

This report provides an analysis of the implications of the development proposal on trees and local amenity with additional guidance on appropriate management and protective measures. Its primary purpose is for the council to review the tree information in support of the planning submission and use as the basis for issuing a planning consent or engaging in further discussions towards that end.

Within this planning process, it will be available for inspection by people other than tree experts so the information is presented to be helpful to those without a detailed knowledge of the subject.

1.3 **Qualifications and experience:**

I have based this report on my site observations and any provided information and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture, and include a summary in Appendix 1.

1.4 **Documents and information provided:**

Wighton Jagger Shaw Architects Ltd provided me with copies of the following documents:

- Their e-mail of instruction dated 8th June 2011
- Drawing number 11-0608 (02)003 Proposed Site Plan, received by email on 8th June 2011

1.5 **Relevant background information:**

Prior to the site visit:

- I have previously visited this site to carry out a stage 1 BS5837 survey on 25th May 2011 from which the report, reference 0178, was written.

1.6 **Scope of this report:**

This report is only concerned with the prominent trees within or around the proximity of the site that could influence the development of this site. It takes no account of any trees outside this remit or any building structural issues. It includes a preliminary assessment based on the site visit and any documents provided, listed in 1.4 above.

This report is based on the initial tree survey report by GM Tree Consultants: Ref 0178; and should be made available for referencing if appropriate.

The survey is based upon information that was available at the time of the inspection.
Further inspections are necessary over time to give a fuller picture of the health of trees.

ARBORICULTURAL IMPLICATIONS ASSESSMENT

2.0 Arboricultural Implications Assessment

2.1 **Summary of the impact on trees:**

I have assessed the impact of the proposal on the trees / groups by the extent of disturbance in and around the RPAs and the current and future canopy height and spread. All the trees / groups that may be affected by the development proposal are listed in table 1.

Table 1: Summary of the trees / groups that may be affected by the development on this site if the current proposed plans are implemented.

Impact	Reason	Important trees		Unimportant trees	
		A	B	C	R
Trees / groups to be removed	Building construction, new surfacing, tree quality and / or, proximity	#	T06	33% of group G1d, 100% of groups G1a, G1b, G1e T05, T08, T09,T11, T12, T13, T14,	T03, T07, T10
Trees / groups that may be adversely affected by the tree canopy or through disturbance to RPAs	Removal of existing surfacing / structures / landscaping and or installation of new surfacing / structures / landscaping	T04	#	T02, T15, T16, T17, T18	#

2.2 **Category A and B trees to be removed:**

There are no category 'A' trees located on or immediately adjacent to the site that are to be removed.

Only one category 'B' tree (T06) will be removed. Although this single individual tree has been classified as a high category tree it must be stressed that this categorization is marginal due to its relatively poor canopy framework.

Its removal may be noticeable in the immediate vicinity in the short term but there will be no significant impact on local amenity character in the wider setting in the medium to long terms. Furthermore its removal will provide an opportunity to establish a new tree within this location.

2.3 **Category A and B trees that may be adversely affected through RPA disturbance:**

One category 'A' tree (T04) may be adversely affected by the movement of site traffic / workforce during construction and the landscaping of the site post construction.

This tree is considered important for retention and has the potential to contribute to amenity values, so any adverse impacts on it should be minimised. I have reviewed the situation carefully and my experience is that this tree could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.

2.4 **Category C trees to be lost:**
The seven trees to be removed are category 'C' because of their limited potential for long term retention. As such they are considered to be unworthy of influencing any layout. I believe it is not important in the overall planning context and its loss should not influence the determination of this application.

2.5 **Retained category C trees that may be adversely affected through RPA disturbance:**
The single tree T02 that may be damaged through root disturbance, is category C because it is in poor condition, and is considered to have limited potential for long term retention.

As such it is considered to be unworthy of influencing any layout. However, it is proposed for retention and so special precautions will be necessary to ensure that any adverse impact is minimized. These are set out in more detail in section 4 of this report. Although this tree is proposed for retention, I believe it is not important in the overall planning context and any risk of damage to it should not influence the determination of this application.

2.6 **Presence of Tree Preservation Orders (TPO) or Conservation Area Designation:**
There are Tree Preservation Orders in place on the trees within the proposed development site at the time of writing this report.

2.7 **Effects of new buildings on amenity value on or near the site:**
The effect of the new construction on this site have been assessed and have been found not to have any significant effect on the amenity value of the remaining trees on site due to the retained trees being located to the front of the site and the proposed development taking place away from the public road.

2.8 **Above and below ground constraints:**
No construction of foundations or the installations of services are to take place within any Root Protection Area (RPA).

Access for site personnel and site vehicles <3.5T will be needed to facilitate the construction of the property on the existing driveway that passes through the RPA of T04, T15, T16, T17, T18. After assessment this has been deemed permitted on the condition that tree protective fencing is installed prior to any demolition / construction

The existing driveway within the RPA of T04 will be affected post construction when this area is landscaped. This landscaping is to be completed without soil compaction or soil stripping.

No conflict with above ground constraints are foreseen with the planned proposal.

Tree felling works will be required to enable the construction of the property. All tree surgery works will be undertaken prior to construction activity and in accordance with the Arboricultural Method Statement 6.15 (Remedial Tree Works).

Any resurfacing of the road / driveway is to be carried out without any excavating below the existing tarmac layer and laid in accordance with the Arboricultural Method Statement section 6.7 (Hard Surfaces).

2.9 **Construction processes of the proposed development:**

Development processes that lead to soil compaction in tree rooting zones and physical damage to trees can adversely affect long-term tree health. This can lead to unnecessary tree loss if not controlled properly on site during the demolition of a building and then the construction phases that follow.

No access to the RPAs of any retained tree will be permitted before or during construction activity apart from the existing tarmac driveway highlighted on the TPP. Therefore there is no risk of machinery causing damage to trunks and low branches.
The processes of construction are highly unlikely to have a detrimental effect upon the health of the retained trees assuming recommendations made in this report are adhered to at all times by the contractors e.g. the positioning of a stout fence between the retained trees construction activities is placed prior to commencement of works and remains intact and in position throughout the duration of the construction activities.

2.10 **Modifications proposed to accommodate trees:**

The siting of the dwelling dispenses with a need to modify building construction to accommodate retained trees. The retained trees are far enough away from the siting of the dwellings so as to permit light infiltration to the windows. This will negate the need for subsequent calls for tree pruning due to shading

2.11 **Infrastructure requirements – highway visibility, lighting, CCTV, services etc:**

The installation of services within the rooting zones of trees can have a large detrimental impact on the long-term survival of retained trees leading to their unnecessary loss or root failure in high winds. No services are to be installed within any tree RPA.

The trees on site do not have any impact on highway visibility.

Undisclosed sighting of above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary pruning of tree crowns or root loss during or post development. There are no such developments planned to take place adjacent or within the RPA of any retained trees.

2.12 **Mitigating tree loss / new planting:**

Some tree loss will take place as a result of the development of the site. A landscape plan has been drawn up. This will incorporate any new planting of trees sympathetic to the environment and to the benefit of the new development and the surrounding landscape.

2.13 **Proximity of trees to structures:**

With the impact of trees on buildings, and vice versa, allowances for future growth have all been considered in the sighting of the new dwellings. Tree size, future growth, light / shading, leaf and fruit nuisance etc have received due attention and are not considered to be an issue. This is due to the distance of the retained trees from the development.

The structure has been placed well outside of the RPAs of retained trees and therefore exceeds the recommendations of BS 5837.

3.0 Proposals to mitigate any impact

3.1 Protection of retained trees:

The successful retention of trees depends on the protection and the administrative procedures to ensure those protective measures remain in place whilst there is an unacceptable risk of damage. An effective means of doing this is through an arboricultural method statement that can be specifically referred to in a planning condition. An arboricultural method statement for this site is set out in detail in Section 4.

3.2 New planting:

In the context of the loss of trees, a comprehensive new landscaping scheme is proposed including twenty four new heavy standard trees, to be established in sustainable and prominent locations throughout the site. Any future selection of species and location should remain provisional until all relevant parties had been fully consulted. However, these new trees should be selected on their potential to reach a significant height without excessive inconvenience and be sustainable into the long term, significantly improving the potential of the site to contribute to local amenity and character.

Below is a list of suitable species that would be suitable for this site. The precise location of the planting sites and species selection will be made by the appointed landscape architect; suggested possible tree planting locations are illustrated on the drawing number 11-0608 (02)003 Proposed Site Plan .

3.3 Summary of the impact on local amenity:

This proposal will result in the loss of 10 low category trees, one marginal high category tree and 3 and 1/3 groups of trees.

All the significant boundary tree cover located on the eastern boundary will remain intact. There is plenty of space for new planting and a comprehensive new landscape scheme with heavy standard sized tree planting is included as part of the proposal. The establishment of these twenty four new trees will significantly enhance the contribution of this site to local amenity and more than compensate for the loss of the trees.

The construction activity and proposed changes may adversely affect further trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal will have no adverse impact on the contribution of trees to local amenity or character. Indeed, the new sustainable planting proposals will increase the potential of the site to contribute to local amenity well beyond the short term.

ARBORICULTURAL METHOD STATEMENT

4.0 Introduction

4.1 Terms of reference:

The impact appraisal in sections 1 and 2 identified the impact on trees and how that affects local character. The following sections are an arboricultural method statement setting out management and protection details that must be implemented to secure successful tree retention.

It is based on the assumption that the minimum general standards for development issues are those set out in British Standards Institution (2005) BS 5837: *Trees in relation to construction - Recommendations* and the National Joint Utilities Group (2007) Volume 4, Issue 1: *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.*

I have used my arboricultural expertise to interpret these references in the context of evolving good practice and the specific circumstances on this site.

4.2 Tree Protection Plan (TPP):

The Tree Protection Plan in Appendix 2 is illustrative and based on the first site visit and report. This plan can only be used for dealing with the tree issues and all scaled measurements must be checked against the original submission documents. The precise location of all protective measures must be confirmed at the pre-commencement meeting before any demolition, site preparation or construction activity starts. The TPP shows all existing trees on site with their corresponding colours indicating:

- Tree classification.
- Trees to be retained – identified with a continuous Green, Blue or Grey line
- Trees to be removed - identified with a broken Red line
- Protective fence positions therefore the Construction Exclusion Zones (CEZ)
- Any root protection area outside the protective fencing where special precautions must be taken.
- Any new tree planting.
- Sitting of site huts, storage space etc

5.0 Tree protection on site

5.1 Construction Exclusion Zone:

The Construction Exclusion Zone (CEZ) required by the current edition; BS 5837:2005 Trees in Relation to Construction; relates to the stem diameter of each tree when measured at a height of 1.5m from ground level. The CEZ are to be afforded protection at all times and will be protected by fencing and / or ground protection. No works will be undertaken within any CEZ that causes compaction to the soil or severance of tree roots.

5.2 Protective Fencing:

Illustrative guidance for fencing design based on BS 5837 recommendations is included as Appendix 7. The location of the fencing and the RPAs is illustrated on the TPP as set out on the plan key.

The precise location of the fencing must be agreed with the council on site before any development activity starts e.g. before any materials or machinery are brought on site, development or the stripping of soil commences.

The fence will have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS ARE PERMITTED WITHIN THE FENCE OR GROUND PROTECTION**. The protected fence may only be removed following completion of all construction works.

There are no new areas of planting to be protected during the construction phase.

No access to the site from any other part of the property, other than the two main entrances off Pendleton Rd will be permitted for construction traffic or delivery of supplies.

5.3 Ground protection:

Any RPAs outside protective barriers must be covered in ground protection, so that there is no risk of damage from construction / vehicle activities.

Due to the nature of the site and the intended method of construction, ground protection will need to be established by the use of a three dimensional cellular sub base product or another method designed by an engineer and passed by the local planning authority. This is to allow the construction of the new driveway that passes on the fringe of T04 close to the new property. This driveway should be constructed after all major construction has taken place to minimise the impact on the tree.

This area will have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS ARE PERMITTED WITHIN THE FENCE OR GROUND PROTECTION**. The fence may only be removed following completion of all major construction works.

This product will be installed adjacent to tree T4, after any construction activity but protected by fencing during construction.

- The cellular confinement system will be placed on top of existing ground levels, (subject to limited clearance of 50mm to remove any spoil) before being filled with 40/20mm angular stone as per the manufacturers' specification.
- A geotextile fabric will then be placed in position before a temporary aggregate surface is deployed to act as a wearing course for the construction phase of the project.
- Once all construction activities are complete this temporary wearing course will be removed, to allow for the installation of a permeable final wearing course.
- Edge retention will be custom designed to avoid any significant excavation into existing soil levels either using pre-formed edging or wooden boards secured by metal pins or wooden pegs.
- Illustrative specifications for special surfacing are included as Appendix 8 and installation methods should accord with guidance set out in Appendix 9.

5.4 Precautions when working in RPAs / CEZ:

Any work in RPAs must be done with care as set out in Appendix 9 and with appropriate reference to section 4.2 above.

If temporary access is required to a CEZ then access may only be gained after consultation with the Local Planning Authority and following placement of materials such as geo-textile fabrics that will spread the weight of any vehicular load and prevent compaction to the soil.

For pedestrian movements within any CEZ then a single thickness scaffold board on top of a compressible layer laid onto a geotextile fabric may be acceptable.

On this site, special precautions must be taken near trees as illustrated on TPP and summarized below:

Add headings as needed and reference specific trees as needed

1. **Installation of new soft landscaping:**
   All landscaping activity within RPAs has the potential to cause severe damage and any adverse impact must be minimized by following the guidance set out in Section 5 of Appendix 9.

2. **Installation of new services or upgrading of existing services:**
   It is often difficult to clearly establish the detail of services until the construction is in progress. Where possible, it is proposed to use the existing services into the site and keep all new services outside CEZ. However, where existing services within CEZ require upgrading or new services have to be installed in CEZ, great care must be taken to minimize any disturbance, Trenchless installation should be the preferred option but if that is not feasible, any excavation must be carried out by hand according to the guidelines in Appendix 9. If unexpected services do need to be installed within CEZ, written approval must be obtained from the council before any works are carried out.

3. **Access through the CEZ of T4:**
   During construction the existing tarmac drive will be left open to allow site access and egress. The remaining RPA will be protected be protective fencing. A weight limit of 3.5t will be imposed for site vehicles over this area.

6.0 Other tree related site works

6.1 Tree work recommendations:

Tree work proposals based on my preliminary inspection are set out in the management recommendations column of the tree schedule in Appendix 3. The location of each tree is shown on Tree Protection Plan and all trees to be removed are indicated with a red dashed crown outline.

6.2 Site storage, cement mixing and washing points:

All site storage areas, cement mixing and washing points for equipment and vehicles must be outside CEZ unless otherwise agreed with the council.

Where there is a risk of polluted water runoff into CEZ, heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination.

No storage or discharge of any materials likely to be injurious to the tree, i.e. oil bitumen, cement within 10m of a tree stem.

No fires are to be lit under or within 20m of a tree stem and will take into account fire size and wind direction so that, (where wind or radiated heat may be a problem) no flames come within 5m of any foliage or canopy of any retained tree.

No signs, cables or telephone wires or other services etc, are to be attached or fixed to trees

Care must be exercised when using cranes or similar equipment near the canopies of trees. **Note:** No high-sided vehicles or cranes have access to the site therefore their movement on the site is not an issue.

No retained trees are to be used as anchorage for equipment used to remove stumps or other trees, nor for any other purpose.

6.3 Protection of soil in areas for proposed new planting:

There are no plans to protect the structure of the soil in these areas from being degraded due to the minimal construction activity in this area throughout this development.

6.4 Access Details:

There is no requirement for any special measures related to the retained trees as all access for construction vehicles will be from the 2 access points off Pendleton Rd.

6.5 Site Gradients

No alterations of soil levels will take place within the CEZ of the protected trees.

6.6 Demolition:

Demolition of the existing property will take place as the first phase of the construction process to enable the new property to be built.

Prior to demolition activity, protective fencing must be installed and constructed as per figure 2 in BS 5837 2005 and be fit for the purpose of excluding any construction activity. The location of the fencing can be seen on the Tree Protection Plan (See appendix 3). This fencing forms part of the CEZ.

6.7 Hard Surfaces:

No hard surfaces are to be constructed within the CEZ except that of the driveway to the north of T04 and constructed without soil compaction or soil stripping and laid in accordance with the Method Statement.

The construction of the driveway will only take place following completion of construction.

6.8 **Soft landscaping:**
Soft landscaping is scheduled to be carried out in the CEZ of T4 and T2. This must be carried out without soil compaction or stripping.

6.9 **Use of Herbicides:**
IF any herbicide is used within the RPA of a retained tree, it shall be systemic, spot applied, and mixed according to manufacturer's recommendations.

6.10 **On site Monitoring Regime:**
All operations will be monitored by the main contractor.

6.11 **Use of subcontractors:**
The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

6.12 **Contractors Parking:**
Off-site away from any retained trees

6.13 **Site Huts and Toilets:**
Off-site away from any retained trees

6.14 **Emergency Procedures:**
Should any problem or emergency that relates to any tree or its protection arise, work in that area is to cease and the area is to be secured against the risk of further damage or possible injury to any person or property.

Once the area is secured both the Consulting arborist and the LPAs tree officer are to be informed so that appropriate action may be taken to remedy the situation.

Water is readily available on site and will be used to flush spilt materials through the soil and avoid contamination to tree roots. At the time of any spillage the main contractor will contact an arboriculturist for advice.

6.15 **Remedial Tree Works:**
Tree works will be undertaken prior to any demolition / construction on site and the erection of protective fencing or ground protection to form the CEZ. All tree works are to be carried out in accordance with BS 3998: 2010 British Standard Recommendations for Tree Work.

6.16 **Responsibilities:**
It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.

The main contractor will be responsible for contacting the Local Planning Authority at any time issues are raised related to the trees on site.

If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998: 2010 British Standard Recommendations for Tree Work.

The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.

The fencing and signs must be maintained in position at all times and checked on a regular basis by an onsite person designated that responsibility.

7.0 Specifications for new tree planting

7.1 **Site preparation, supply and planting of semi-mature, heavy standard and standard trees:**

Twenty four new trees must be planted according to the relevant illustrative specification included within Appendix 11 at the locations illustrated on the Drawing number 11-0608 (02)003 Proposed Site Plan.

Extensive site preparation beyond the immediate planting pit must be carried out in compliance with this specification to maximize the chances of successful establishment of the new trees.

7.2 **Maintenance:**

These trees must be maintained according to the illustrative specification included as Appendix 11 for 3—5 years as necessary until successful establishment is confirmed by the council. Any trees that die or progressively decline within this period will be replaced and the replacements will be maintained until successful establishment is confirmed by the council.

7.3 **Root barriers / deflectors:**

All new trees that are planted close to or adjacent to hard surfacing will require a root guidance product and must be installed according to the detailed specification in Appendix 10. This is to minimise any possible disturbance to this surface material due to the trees future root growth.

7.4 **Structured tree soil:**

No structured tree soil will be required in the planting of the trees on this site.

8.0 Programme of tree protection and supervision

8.1 Overview:

Tree protection cannot be reliably implemented without arboricultural input. The nature and extent of that input varies according to the complexity of the issues and the resources available on site. For this site, a summary of the level of arboricultural input that is likely to be required is set out in Appendix 12. An arboricultural consultant must be instructed to work within this framework to oversee the implementation of the protective measures and management proposals set out in this arboricultural method statement.

8.2 Supervision and the discharge of planning conditions:

Arboricultural planning conditions cannot be reliably or effectively discharged without supervision by an arboricultural consultant. The framework in Appendix 12 must form the basis for the discharge of planning conditions through site visits by an arboricultural consultant. These supervisory actions must be confirmed by formal letters / emails circulated to all relevant parties, including the council. These permanent records of each site visit will accumulate to provide the proof of compliance and allow conditions to be discharged as the development progresses. The developer must instruct an arboricultural consultant to comply with the supervision requirements set out in this document before any work begins on site.

8.3 Phasing of arboricultural input:

Trees can only be properly budgeted for and factored into the developing work programme if the overall project management takes full account of tree issues once consent is confirmed. An arboricultural consultant must be involved in the following phases of the project management:

1. **Administrative preparation before work starts on site:**
   It is normal for a development proposal to vary considerably from the expectations before consent as the detailed planning of implementation evolves. The early instruction of an arboricultural consultant ensures that tree issues are factored into the complexities of site management and can often help ease site pressures through creative approaches to tree protection. Pre-commencement discussions between the arboricultural consultant and the developer's team is an effective means of project managing the tree issues to maximize site efficiency within often difficult constraints.

2. **Pre-commencement site visit:**
   A pre-commencement meeting must be held on site before any of the site preparation or construction work begins. This must be attended by the site manager, the arboricultural consultant and a council representative. If a council representative is not present, the arboricultural consultant must inform the council in writing of the details of the meeting. All tree protection measures detailed in this document must be fully discussed so that all aspects of their implementation and sequencing are understood by all the parties. Any clarifications or modifications to the consented details must be recorded and circulated to all parties in writing. This meeting is where the details of the programme of tree protection will be agreed and finalised by all parties, which will then form the basis of any supervision arrangements between the arboricultural consultant and the developer.

3. **Site supervision:**
   Once the site is active, the arboricultural consultant must visit at an interval agreed at the pre-commencement site meeting. The supervision arrangement must be sufficiently flexible to allow the supervision of all sensitive works as they occur. The arboricultural consultant's initial role is to liaise with developer and council to ensure that appropriate protective measures are designed and in place before any works start on site. Once the site is working, that role will switch to monitoring compliance with arboricultural conditions and advising on any tree problems that arise or modifications that become necessary.

8.4 **Site management:**

It is the developer's responsibility to ensure that the details of this arboricultural method statement and any agreed amendments are known and understood by all site personnel. Copies of the agreed documents must be kept on site at all times and the site manager must brief all personnel who could have an impact on trees on the specific tree protection requirements. This must be a part of the site induction procedures and written into appropriate site management documents.

8.5 **Programme of arboricultural input:**

The sequence set out in Appendix 12 and may only be altered or deviated from with the written consent of the LPA

9.0 How to use this report in the planning process

9.1 Limitations:

It is common that the detail of logistical issues such as site storage and the build programme are not finalized until after consent is issued. As this report has been prepared in advance of consent, some of its content may need to be updated as more detailed information becomes available once the post-consent project management starts. Although this document will remain the primary legal reference in the event of any disputes, some of its content may be superseded by authorised post-consent amendments.

9.2 Suggestions for the effective use of this report:

The Arboricultural method statement of this report, including the relevant appendices, is designed as an enforcement reference. It is constructed so the council can directly reference the detail in a planning condition, Referencing the report by name and relating conditions to specific subsections is an effective means of reducing confusion and facilitating enforcement in the event of problems during implementation. More specifically, the following issues should be directly referenced in the conditions for this site:

1. Pre-commencement meeting (3.2 and Appendix 12)
2. Barriers (4.1 and Appendices 5, 6 & 7)
3. Ground protection (4.2 and Appendix 8)
4. Installation of new surfacing (Appendix 9)
5. Services (4.3.4 and Appendix 9)
6. Tree planting (6.0 and Appendices 10 & 11)
7. Installation of new landscaping (4.3.3 and Appendix 9)
8. Programming of tree protection (7.0 and Appendix 12)
9. Arboricultural supervision (7.0 and Appendix 12)

Each of the above matters must be supervised by an arboricultural consultant and the relevant conditions can only be discharged once that supervision has been confirmed in writing to the council. The last column of the table in Appendix 12 is for council use so that the various supervision issues can be recorded as they are confirmed by supervision letter. This is intended to act as a summary quick-reference within the council file to help keep track of the progress of the supervision.

Gary Marsden FDSc Arb M.Arbor.A

10.0 Bibliography

This report has been compiled with reference to the following publications and interpreted in the context of evolving best practice.

- British Standards 5837: 2005; Trees in Relation to Construction - Recommendations
  British Standards Institute.

- British Standards 3998: 2010; Tree work - Recommendations
  British Standards Institute.

- NJUG Vol. 4: (2007); Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.
  National Joint Utilities Group.

- Arboricultural Practice Note 12. Through the Trees to Development. (2007). Derek Patch & Ben Holding,
  Arboricultural Advisory and Information Service.

- The Town & Country Planning Act; 1990

- The Town & Country (Trees) Regulations; 1999

APPENDIX 1

Brief qualifications and experience of Gary Marsden:

Qualifications:

- National Certificate in Arboriculture – August 1998
- The Leonard Cheshire Home Award , Practical Award – September 1998
- NVQ in Amenity Horticulture Level 1 – November 2003
- Foundation Degree In Science - Arboriculture - June 2005
- BTEC Higher National Diploma in Arboriculture – June 2005

Practical experience:

After qualifying at NC level in arboriculture I gained full time employment with Blackburn with Darwen Borough Council as an Arborist / Climber (September 1998) where I gained a wide range of practical Arboricultural experience ranging from pruning, dismantling and planting.

In January 2004 I was promoted to Team Leader Arborist were I developed my skills in Arboriculture, leadership, organisation and prioritising workloads.

In August 2005 I was promoted to 'Arboricultural Officer' this job involves:

- Health and Safety of all Arboricultural aspects
- Inspection and scheduling of tree complaints
- Tree surveys and report writing
- Staff management

In July 2008 I set up my own tree consultancy company – GM Tree Consultants – which I am constantly developing and evolving.

Continuing professional development:

As a conscious effort to stay in touch with the progression in modern techniques and practices in the arboricultural industry, I attend seminars, receive regular arboricultural literature and maintain membership of professional bodies, examples of which are listed below:

- Arboricultural Association Professional Member since November 2006
- Professional Member of the Consulting Arborist Society since May 2009
- Quantified Tree Risk Assessment licensed user since October 2008
- Attendance of Arboricultural Association annual conferences
- Attendance of specialist short courses in relation to specific fields in arboriculture including: tree preservation orders, subsidence and mortgage reports, planning legislation and tree inspection methods and skills.

A detailed breakdown of qualifications and continued professional development training is available; please contact me directly for this information if requested.

APPENDIX 2

Tree survey Index:

Tree Locations:
This has been measured from known datum points and plotted on the site plan using a digital laser connected to a laptop. The accuracy given for the tree stem location is ±1m.

Tree Number:
Each surveyed feature is assigned an individual number:
e.g. – Tree A072014013 is made up of:

- 'A' –this represents the tablet pc that was used to record the data
- '07' – this is the month that the inspection was recorded
- '20' – the day of the month when the tree was recorded
- '14' – the hour in the day when the tree was recorded
- '013' – the tree number recorded in that hour of the day (when the hour changes this resets to 001

Alternatively;

Each surveyed feature is assigned a number prefixed by a 'T' for individual trees, 'G' for groups of trees and 'H' for hedgerows.

This is used to locate the tree in the data survey and the relevant position on the plan.

Species:
The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. The botanical name is followed by the abbreviation sp if only the genus is known.

Height:
Overall height of tree recorded in meters. Height is recorded using a clinometer.

Potential Height of tree:
The expected mature height of the tree

Number of stems:
The number of stems of each tree.

Height of clear stem:
Height in metres of crown clearance above adjacent ground level at the base of the tree (to inform on ground clearance, crown stem ratio and shading).

Stem Diameter (DBH):
These figures relate to DBH, Diameter at Breast Height 1.5m above ground level and are recorded in centimetres (on sloping ground, taken on the upslope side of the tree base) or immediately above the root flare for multi-stemmed trees. This is accurately measured using a girthing tape.

Root Protection Area:
This is the minimum area as a radius or m^2 which should be left undisturbed around each retained tree.

Minimum Barrier Distance:
This is the minimum distance the protective barrier should be located prior to any construction work being carried out on site.

Percentage of Compromised Rooting Area:
This is the area of ground the tree is unable to occupy with roots due to a physical barrier or obstruction, i.e. retaining wall.

Adjusted RPA:
This is the new minimum radius in meters that the protective fencing should be erected due to a percentage of compromised rooting area.

Branch Spread:
This is measured in meters taken at the four cardinal points to derive an accurate representation of the crown.

Age Class:
Described as young, semi mature, mature, over-mature, veteran.

Physiological Condition:
Described as good, fair, poor, dead and notes as needed.

Structural Condition:
Described as good, fair, poor, dead and notes as needed.

Preliminary management recommendations:
Practical arboricultural operations that are suggested and described as needed.

Remaining Contribution:
Estimated remaining contribution in years: e.g. less than 10, 10-20, 20-40, more than 40. This is based upon Jeremy Barrels'' system of SULE (Safe Useful Life Expectancy).

Tree Retention Category Grading:
R or A to C category grading as referenced from BS 5837:2005 Trees in relation to construction (see Table 1 in Appendix 6)

Tree Works Pre Construction:
Works that are required to allow construction to proceed, this will include felling of 'R' category trees.

Tree Works Post Construction:
Works that are required post construction; this may include balancing of tree crowns after demolition works.

APPENDIX 3

Inserted Tree Protection Plan (TPP) showing all relevant tree information including:

- Tree classification.
- Trees to be retained – identified with a continuous green, blue or grey line
- Trees to be removed - identified with a broken red line
- Protective fence positions therefore the Construction Exclusion Zones (CEZ)
- Ground protection positions therefore the Construction Exclusion Zones (CEZ)
- Any root protection area outside the protective fencing where special precautions must be taken.
- Any new tree planting.
- Sitting of site huts, storage space etc

Tree Protection Plan

Site: The Eaves, Pendleton Road
Job Ref: 0179

0 2.5 5 10 15 20 Metres

Date: 16th June 2011
Scale (@ A2): 1:250

Tree Retention and Protection Measures

- Root Protection Area / Fencing
- Area of construction Inside Root Protection Area (existing tarmac driveway)
- Trees / Tree Groups to be removed
- Trees / Tree Groups to be retained

Tree Key

Root Protection Area Extent — Canopy Spread

Tree Label Key

Tree Ref Number	Species	BS Retention Category & Value
T06	Sycamore	B1
Ht: 12m	DBH: 420mm	RPA_Rad: 10.6m
Tree Height	Tree Diameter	Radius of Root Protection Area

N

Access to garages sunken into landscape to reduce visual impact from across the valley

Drive down to garages gradually cut into topography to reduce impact on landscape

New trees to be planted as part of overall site landscaping scheme to provide privacy to site and adjacent properties

House to extend no further thn existing fence line of existing dwelling

Formal terrace to house to extend no further than existing adjacent kennels

Existing entrance utilised with new gate posts, estate fencing and gates set back from road

New trees to provide privacy and continuation of tree belt adjacent road

Pool sunk into land to minimise visual impact and massing. Terrace over pool accessed from ground floor of house

Additional parking provided to south of dwelling

Existing entrance realigned to avoid existing trees. New gate posts and gate set back from road. Existing hedge to be cut

PEPPER HILL

PENDLETON ROAD

RIDGE

EAVES

438150N 438150N

438100N 438100N

438050N

TREE OVERHANG

TREES

GRASS

NOTES

- All dimensions and levels are to be checked on site.
- Any discrepancies are to be reported to the WJS Architects Ltd before any work commences.
- This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
- This drawing shall not be reproduced without express written permission from WJS Architects Ltd.
- Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. WJS Architects Ltd cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.

Existing Trees

Proposed Trees

Trees to be removed

New estate fencing

Contours every 0.5m

rev	date	drawn	checked
A	01/01/07	XYZ	XYZ

REVISION DESCRIPTION

drawing stage: Stage

drawing status: Status

client:
Client 1
Client 2
Client 3

project:
Project 1
Project 2
Project 3

drawing title:
Title 1
Title 2
Title 3

date	01/01/07	drawn	XYZ
scale	1:500 @ A3	checked	XYZ

wighton jagger shaw architects

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Harrogate
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info@wjsarchitects.co.uk
www.wjsarchitects.co.uk

Job No	DWG No	Rev
000/00	(00)000	A

PROPOSED SITE PLAN - Scale 1:500 @ A3

APPENDIX 4

Inserted tree schedule from initial tree survey report and the tree work schedule pre and post construction:

GM TREE CONSULTANTS BS:5837 TREE SURVEY DATA

TREE SPECIFICS

Tree number	Species (common)	Number of stems	Trunk dia. @ 1.5m (mm)	Height (M)	Potential height of SPECIES (m)	Height of clear stem (meters)	C/S NORTH (m)	C/S EAST (m)	C/S SOUTH (m)	C/S WEST (m)	AGE CLASS	Physiological Condition		Structural Condition		Preliminary management recommendations to ensure SULE is at least 10 years	REMAINING CONTRIBUTION	TREE QUALITY ASSESSMENT	
												Abr.	comments (- and +)	Abr.	comments (- and +)			CAT.	VALUE
1	ash	1	710	25	30.0	5	7	7	7	7	m	good	sparce canopy but consistant for species at time of survey	good	old limb tear at 4m with good occlusion, no extencive decay - slight deadwood in the crown	monitor annually for signs of decline	>40	a	1
2	ash	2	840	20	30.0	6	6	4	6	4	m	fair	tree appears stressed with reduced canopy foliage	fair	die back in the cambium at the base of the tree on the NE stem - dieback within the crown	monitor annually for signs of decline	10>20	c	1
3	cherry	1	210	5	18.0	1	2	2	2	2	y	poor	dead tree	poor	dead but not unstable	fell	<10	r	#
4	lime	1	720	20	30.0	3	4	4	4	4	m	good	good canopy and leaf cover	good	no issues	no work needed	>40	a	1
5	ash	1	330	24	30.0	8	4	4	4	1	sm	good	no issues	good	no issues	no work needed	20>40	c	1
6	sycamore	1	450	20	30.0	6	4	1	4	4	sm	good	no issues	good	suppresed by T6 leading to a non uniform canopy	no work needed	>40	b	1
7	ash	1	310	17	30.0	5	3	1	3	3	sm	poor	die back within the crown deadwood present	poor	rooting area compromised with basal area compromised by wall and concrete foundation	fell	<10	r	#
8	cherry	1	250	10	18.0	5	3	3	3	3	sm	good	no issues	good	no issues	no work needed	20>40	c	1
9	cherry	1	100	6	18.0	2	2	2	2	2	y	good	no issues	good	no issues	no work needed	20>40	c	1
10	cherry	1	150	6	18.0	2	2	2	2	2	y	fair	slight deadwood	poor	decay at the base of the tree	fell	<10	r	#
11	cherry	1	100	6	18.0	2	1	1	1	1	y	good	no issues	good	no issues	no work needed	10>20	c	1
12	conifer	1	200	3	30.0	0	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	c	1
13	conifer	1	200	3	30.0	0	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	c	1
14	conifer	1	250	6	30.0	0	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	c	1
15	conifer	1	250	6	30.0	0	1	1	1	1	y	good	no issues	good	starting to encroch onto power line	reduce to give minimum of 2m clearance	>40	c	1
16	conifer	1	250	6	30.0	0	1	1	1	1	y	good	no issues	good	starting to encroch onto power line	reduce to give minimum of 2m clearance	>40	c	1
17	cherry	1	400	8	18.0	2	4	4	4	1	sm	fair	no issues	poor	hard crown reduction back to poor pruning points	monitor annually for signs of decline	10>20	c	1
18	cherry	1	360	8	18.0	2	2	1	2	2	sm	fair	no issues	poor	hard crown reduction back to poor pruning points	monitor annually for signs of decline	10>20	c	1
19	sycamore	1	500	25	30.0	18	4	1	4	4	m	good	no issues	fair	has been pruned to give clearance for utility power line	no work needed	20>40	b	1

GM TREE CONSULTANTS BS:5837 TREE SURVEY DATA

TREE SPECIFICS

Tree number	Species (common)	Number of stems	Trunk dia. @ 1.5m (mm)	Height (M)	Potential height of SPECIES (m)	Height of clear stem (meters)	C/S NORTH (m)	C/S EAST (m)	C/S SOUTH (m)	C/S WEST (m)	AGE CLASS	Physiological Condition		Structural Condition		Preliminary management recommendations to ensure SULE is at least 10 years	REMAINING CONTRIBUTION	TREE QUALITY ASSESSMENT	
												Abr.	comments (- and +)	Abr.	comments (- and +)			CAT.	VALUE
Ga	hedge - conifer	**<20**	**100**	**3**	**30.0**	**0**	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	**c**	**2**
Gb	hedge - beech	**>20**	**100**	**2**	**30.0**	**0**	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	**c**	**2**
Gc	hedge - hawthorn	**<50**	**100**	**4**	**5.5**	**0**	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	**c**	**2**
Gd	hedge - beech	**<50**	**100**	**4**	**30.0**	**0**	1	1	1	1	y	good	no issues	good	no issues	no work needed	>40	**c**	**2**
Ge	mixed	**5**	**130**	**6**	**9.0**	**2**	2	2	2	2	y	good	no issues	good	no issues	no work needed	10>20	**c**	**2**

GM TREE CONSULTANTS BS:5837 TREE WORKS SCHEDULE

TREE SPECIFICS

Tree number	Species (common)	Number of stems	Trunk dia. @ 1.5m (mm)	Height (M)	Potential height of SPECIES (m)	Height of clear stem (meters)	C/S NORTH (m)	C/S EAST (m)	C/S SOUTH (m)	C/S WEST (m)	AGE CLASS	TREE WORKS PRE CONSTRUCTION	TREE WORKS POST CONSTRUCTION
1	ash	1	710	25	30.0	5	7	7	7	7	m	#	#
2	ash	2	840	20	30.0	6	6	4	6	4	m	#	monitor annually for signs of decline
3	cherry	1	210	5	18.0	1	2	2	2	2	y	REMOVE	#
4	lime	1	720	20	30.0	3	4	4	4	4	m	#	#
5	ash	1	330	24	30.0	8	4	4	4	1	sm	REMOVE	#
6	sycamore	1	450	20	30.0	6	4	1	4	4	sm	REMOVE	#
7	ash	1	310	17	30.0	5	3	1	3	3	sm	REMOVE	#
8	cherry	1	250	10	18.0	5	3	3	3	3	sm	REMOVE	#
9	cherry	1	100	6	18.0	2	2	2	2	2	y	REMOVE	#
10	cherry	1	150	6	18.0	2	2	2	2	2	y	REMOVE	#
11	cherry	1	100	6	18.0	2	1	1	1	1	y	REMOVE	#
12	conifer	1	200	3	30.0	0	1	1	1	1	y	REMOVE	#
13	conifer	1	200	3	30.0	0	1	1	1	1	y	REMOVE	#
14	conifer	1	250	6	30.0	0	1	1	1	1	y	REMOVE	#
15	conifer	1	250	6	30.0	0	1	1	1	1	y	reduce to give minimum of 2m clearance from power line	#
16	conifer	1	250	6	30.0	0	1	1	1	1	y	reduce to give minimum of 2m clearance from power line	#
17	cherry	1	400	8	18.0	2	4	4	4	1	sm	#	monitor annually for signs of decline
18	cherry	1	360	8	18.0	2	2	1	2	2	sm	#	monitor annually for signs of decline
19	sycamore	1	500	25	30.0	18	4	1	4	4	m	#	#
Ga	hedge - conifer	<20	100	3	30.0	0	1	1	1	1	y	REMOVE	#
Gb	hedge - beech	>20	100	2	30.0	0	1	1	1	1	y	REMOVE	#
Gc	hedge - hawthorn	<50	100	4	5.5	0	1	1	1	1	y	#	#
Gd	hedge - beech	<50	100	4	30.0	0	1	1	1	1	y	REMOVE 1/3	#

APPENDIX 5

Inserted Root Protection Area (RPA) calculations:

GM TREE CONSULTANTS BS:5837 RPA DATA

*Calculations giving **MINIMUM** root protection area needed around each tree on site - NOTE - the number of stems denotes which set of calculations are used - trees with one stem use the "single stem results" all other trees use the "multi stem results"

** if the **'optimum'** calculation is used then you will be exceeding the minimum requirements recommended by BS 5837 - therefore minimising any impact to the tree and reducing the chance of rejection / conflict with the Local Planning Authority.

***The tree maps produced use the **minimum** calculations / dimensions

Tree Data				Single Stemmed Tree						Multi-Stemmed Trees					
Tree Number	Species	Number of stems	Stem Diameter @ 1.5m or above root flair (mm)	**Optimum MIN** Circle Radius if available (m) **(x12 + 20%)**	Min Circle Radius (m) (x12)	Min Radius Squared (m2)	Min Root Protection Area (m2)	Min Length of Sides Of Square (m)	Max 20% offset Value for Open Grown Trees (linear m)	**Optimum MIN** Circle Radius if available (m) **(X10 + 20%)**	Min Circle Radius (m) (X10)	Min Radius Squared (m2)	Min Root Protection Area (m2)	Min Length of Sides Of Square (m)	Max 20% offset Value for Open Grown Trees (linear m)
1	ash	**1**	**710**	10.22	8.52	72.59	228.05	15.10	1.70						
2	ash	**2**	**840**							10.08	8.40	70.56	221.67	14.89	1.68
4	lime	**1**	**720**	10.37	8.64	74.65	234.52	15.31	1.73						
15	conifer	**1**	**250**	3.60	3.00	9.00	28.27	5.32	0.60						
16	conifer	**1**	**250**	3.60	3.00	9.00	28.27	5.32	0.60						
17	cherry	**1**	**400**	5.76	4.80	23.04	72.38	8.51	0.96						
18	cherry	**1**	**360**	5.18	4.32	18.66	58.63	7.66	0.86						
19	sycamore	**1**	**500**	7.20	6.00	36.00	113.10	10.63	1.20						
Gc	hedge - hawthorn	**<50**	**100**							1.20	1.00	1.00	3.14	1.77	0.20
Gd	hedge - beech	**<50**	**100**							1.20	1.00	1.00	3.14	1.77	0.20

APPENDIX 6

Advanced interpretation of tree data and explanatory notes:

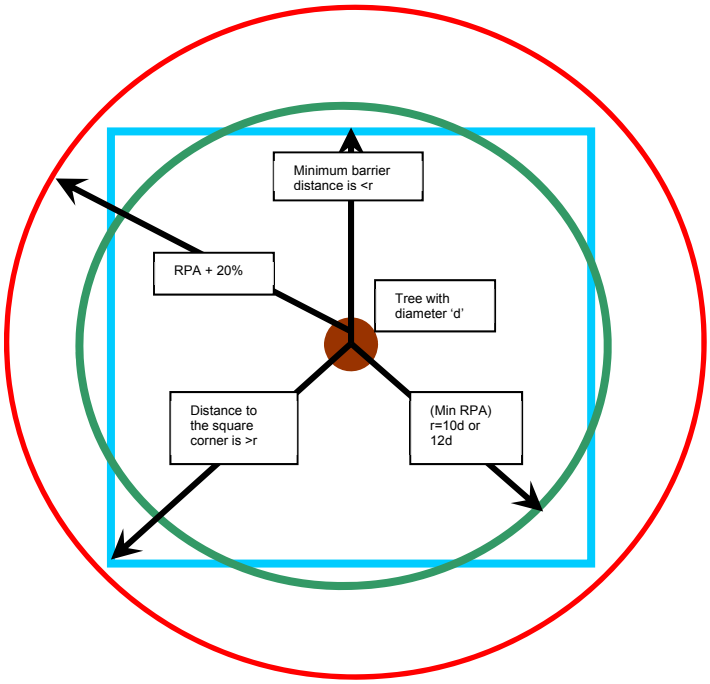


Figure 1: Explanatory diagram for RPA assessment

In Figure 1, a tree with diameter d is in the centre. Its RPA radius is established by measuring its diameter (d) at 1 .5m or at ground level (See Clause 5.2.2 of BS 5837) and multiplying that by 12 or 10 respectively.

- **RPA radius:**
  The RPA is calculated by multiplying the square of the radius by π (3.142), i.e. the RPA = πr^2, which is shown by the green circle above.

- **Minimum RPA area:**
  The RPA has been assessed according to the recommendations set out in Table 2 and section 5 of BS 5837; It is calculated by multiplying the radius squared by 3.142, derived from the area of a circle being πr^2.

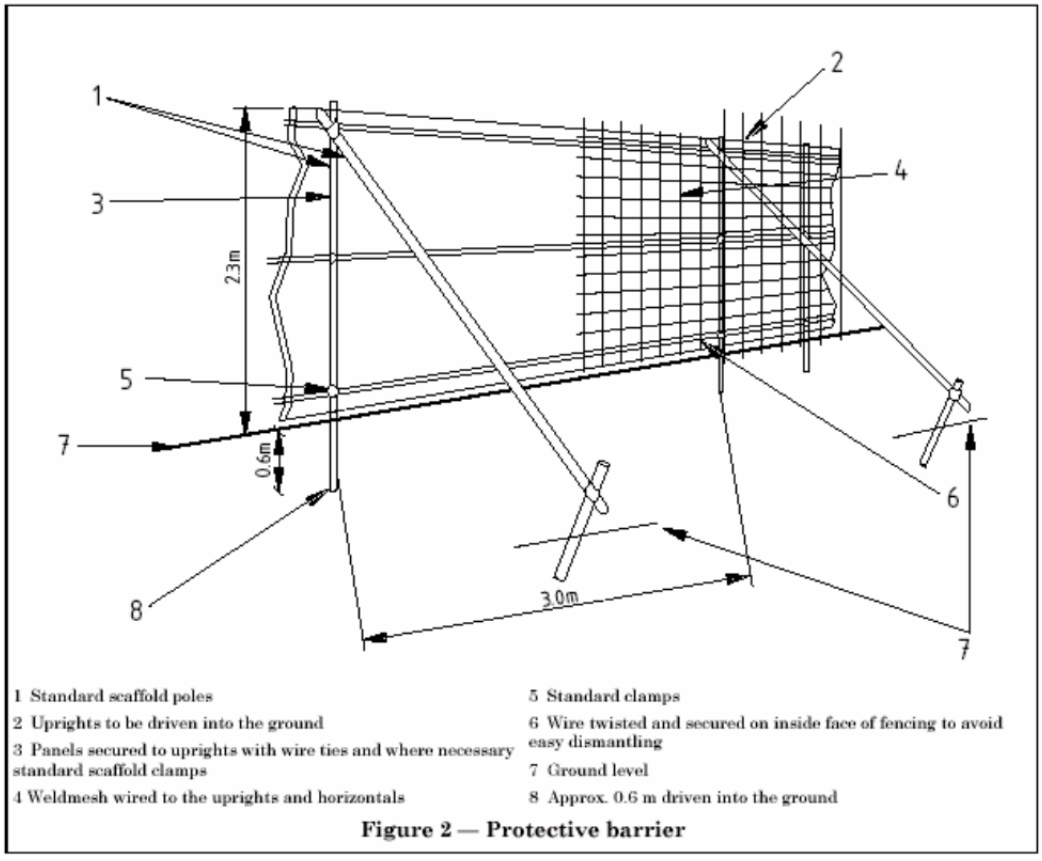
- **Minimum barrier distance:**
  The minimum barrier distance has been assessed according to the recommendations set out in Clause 5.2.3 of BS 5837; it sets out that the RPA can also be represented by a square centred on the trunk of the tree as shown by the blue square above. This square has the same area as the circle but, unlike the circle, where the distance to the centre remains the same for any point on the circumference, the distance of the sides from the centre vary from a minimum that is less than r to a centre-to-corner distance that is greater than r. This is why the minimum barrier distance can be less than r if there is a distance greater than r that allows the RPA to remain the same.

- **Explanation of any minimum barrier distance adjustment in clause 5.2.4 of BS 5837:** It is recommended that the RPA may be changed in shape, taking into account local site factors as assessed by an arboriculturist. Where such an adjustment is appropriate and results in a reduced minimum barrier distance. The minimum barrier distance is calculated by finding the square root of the RPA, which gives the length of one side of the square, and dividing that by two to give the distance from the side to the centre.

APPENDIX 7

Illustrative specifications for:

1. **Tree protective fencing.**
2. **Ground protection inside the Construction Exclusion Zone.**
3. **Construction Exclusion Zone Warning Signs.**



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
7 Ground level
8 Approx. 0.6 m driven into the ground

Figure 2 — Protective barrier

Example of scaffold framework with 'Heras' fencing attached

Illustrative specification for protective fencing located **inside** the Root Protection Zone:

BS 5837:2005 Ground Protection

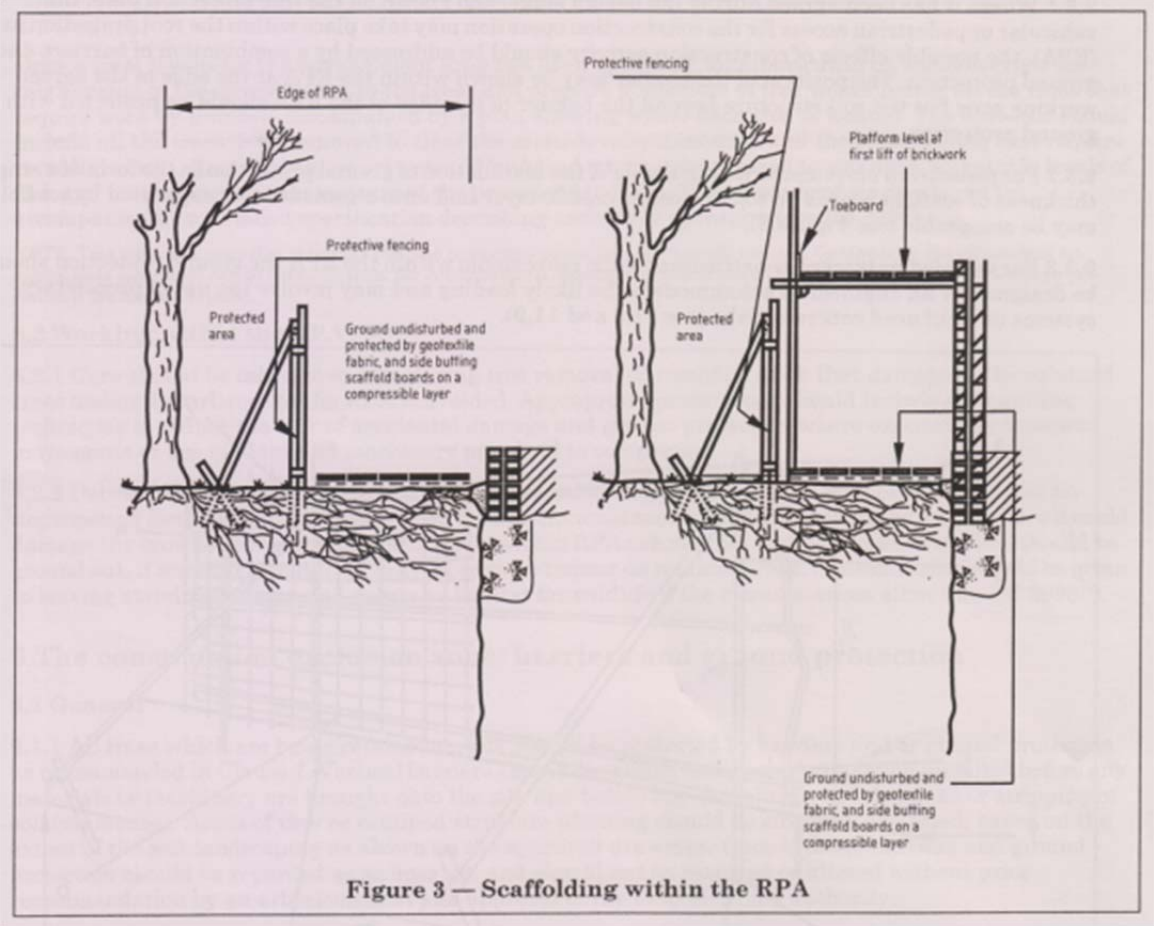


Figure 3 — Scaffolding within the RPA

Example of a warning / information sign to be fixed to the tree protection fencing

**** A PDF copy of this sign or a laminated version can be supplied if requested (costs may be incurred for laminated version).**

A site photo of protective fencing on site with warning / information sign fixed to the fencing

APPENDIX 8

Illustrative specification for ground surface protection measures and special surfacing **within** root protection areas:

Laying of geotextile fabric with the cellular confinement system pined in place

Appropriate aggregates are back filled filling all of the cells

Geotextile fabric laid over filled cells then covered with temporary / permanent wearing course as per construction specifications

APPENDIX 9

Site guidance for working in root protection areas (RPAs)

1.0 GENERAL GUIDANCE FOR WORKING IN RPAs

1.1 **What is the purpose of this guidance?** This guidance sets out the general principles that must be followed when working in RPAs. Where more detail is required, it will be supplemented by illustrative specifications in other appendices in this document. Before work starts on site, the purpose of this guidance is to demonstrate to the council that tree protection issues have been properly considered and to provide a written record of how they will be implemented. Once the site works start, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in RPAs must be properly briefed about their responsibilities towards important trees based on this guidance.

1.2 **What are RPAs?** RPAs are the areas surrounding important trees where disturbance must be minimised if they are to be successfully retained. All RPAs close to the construction area are illustrated on the tree protection plans accompanying this guidance. Damage to roots or degradation of the soil through compaction and/or excavation is likely to cause serious damage. Any work operations within RPAs must be carried out with great care if trees are to be successfully retained.

1.3 **When should this guidance be followed?** Anyone entering a RPA must follow this guidance if important trees are to remain unharmed. Anyone working in a RPA must take care to minimize excavation into existing soil levels and limit any fill or covering that may adversely affect soil permeability. There are two main scenarios where this guidance must be followed when entering and working within a RPA:

1. Removal of existing surfacing / structures and replacement with new surfacing, structures and / or landscaping.
2. Preparation and installation of new surfacing, structures and / or landscaping.

Broad definitions of surfacing, structures and landscaping are set out in the following sections.

1.4 **Where does this guidance apply?** This guidance should always be read in conjunction with the site plans illustrating the areas where specific precautions are necessary. Each area where precautions are required is annotated on the plans as identified on their keys. All plans are illustrative and intended to be interpreted in the Context of the site conditions when the work is started. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the appropriate supervising officer before any demolition or construction work starts.

1.5 **What references is this guidance based on?** This guidance is based on the assumption that the minimum general standards for development issues are those set out in British Standards Institution (2005) BS 5837: *Trees in relation to construction — Recommendations* and the National Joint Utilities Group (2007) Volume 4, Issue 1: *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.* It is interpreted in the context of our experience of managing trees on development sites.

1.6 **Preventing adverse impact to the RPA beyond the immediate work area:** Any part of the RPA beyond the agreed work area must be isolated from the work operations by protective barriers or ground protection to at least the minimum standard described in BS 5837 for the duration of the work. Appendix 7: Site guidance for working in root protection areas (RPAs)

1.7 **Excavation and dealing with roots:** All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air may be an appropriate alternative to hand digging, if available. All soil removal must be undertaken with care to minimize the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of smaller roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage. If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Once roots have been located, the trowel should be used to clear the soil away from them without damaging the bark. Exposed roots to be removed should be cut cleanly with a sharp saw or secateurs 10—20cm behind the final face of the excavation. Roots temporarily exposed must be protected from direct sunlight, drying out and extremes of temperature by appropriate covering. Roots greater than 2.5cm in diameter should be retained where possible. Roots 2.5—10cm in diameter should only be cut in exceptional circumstances. Roots greater than 10cm in diameter should only be cut after consultation with the appropriate supervisory officer.

1.8 **Arboricultural supervision:** Any work within RPAs requires a high care. Qualified arboricultural supervision is essential to minimize the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any work starts. Ongoing work must be inspected regularly and, on completion, the work must be signed off by the arboriculturist to confirm compliance by the contractor. In the context of this guidance, an appropriate supervising officer would normally be an arboriculturist.

2.0 REMOVING SURFACING / STRUCTURES IN RPAs

2.1 **Definitions of surfacing and structures:** For the purposes of this guidance, the following broad definitions apply:

- **Surfacing:** Any hard surfacing used as a vehicular road, parking or pedestrian path including tarmac, solid stone, crushed stone, compacted aggregate, concrete and timber decking. This does not include compacted soil with no hard covering.

- **Structures:** Any man-made structure above or below ground including service pipes, walls, gate piers, buildings and foundations: Typically, this would include drainage structures, car-ports, bin stores and concrete slabs that support buildings.

2.2 **Access:** Roots frequently grow adjacent to and beneath existing surfacing/structures so great care is needed during access and demolition. Damage can occur through physical disturbance of roots and / or the compaction of soil around them from the weight of machinery or repeated pedestrian passage. This is not generally a problem whilst surfacing / structures are in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once they are removed and the soil below is newly exposed, damage to roots becomes an issue and the following guidance must be observed:

1. No vehicular or repeated pedestrian access into RPAs unless on existing hard surfacing or custom designed ground protection.

2. Regular vehicular and pedestrian access routes must be protected from compaction with temporary ground protection as set out in BS 5837.

3. RPAs exposed by the work must be protected as set out in BS 5837 until there is no risk of damage from the development activity.

2.3 **Removal:** Removing existing surfacing/structures is a high-risk activity for any adjacent roots and the following guidance must be observed: Appendix 7: Site guidance for working in root protection areas (RPAs)

1. Appropriate tools for manually removing debris may include a pneumatic breaker, crow bar, sledgehammer, pick, mattock, shovel, spade, trowel, fork dud wheelbarrow.

Secateurs and a handsaw must also be available to deal with any exposed roots that have to be cut.

2. Machines with a long reach may be used if they can work from outside RPAs or from protected areas within RPAs. They must not encroach onto unprotected soil in RPAs.

3. Debris to be removed from RPAs manually must be moved across existing hard surfacing or temporary ground protection in a way that prevents compaction of soil. Alternatively, it can be lifted out by machines provided this does not disturb RPAs.

4. Great care must be taken throughout these operations not to damage roots as set out in 1.7 above.

5. If appropriate, leaving below ground structures in place should be considered ~ their removal may cause excessive root disturbance.

3.0 INSTALLATION OF NEW SURFACING IN RPAs

3.1 **Basic principles:** New surfacing is potentially damaging to trees because it may require changes to existing ground levels, result in localized soil structure degradation and / or disrupt the efficient exchange of water and gases in and out of the soil. Mature and over mature trees are much more prone to suffer because of these changes than younger and maturing trees. Adverse impact on trees can be reduced by minimizing the extent of these changes in RPAs. Generally, the most suitable surfacing will be relatively permeable to allow water and gas movement, load spreading to avoid localized compaction and require little or no excavation to limit direct damage. The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.

3.2 **Establishing the depth of excavation and surfacing gradient:** The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing in RPAs should be no-dig, i.e. requiring no excavation whatsoever, but this is rarely possible on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut. Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of a turf layer up to 5cm is unlikely to be damaging to trees. It may be possible to dig to a greater depth depending on local conditions but this would need to be assessed by an arboriculturist if excavation beyond 5cm is anticipated. On undulating surfaces, finished gradients/levels must be planned with sufficient flexibility to allow on-site adjustment if excavation of any high points reveals large unexpected roots near the surface. If the roots are less than 2.5cm in diameter, it would normally be acceptable to cut them and the gradient formed with the preferred minimal excavation of up to 5cm. However, if roots over 2.5cm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels must be adjusted to take account of these high points by filling with suitable material. If this is not practical and large roots have to be cut, the situation should be discussed with the supervising officer before a final decision is made.

3.3 **Base and finishing layers:** Once the sub-base has been formed, the load spreading construction is installed on top without compaction. In principle, the load spreading formation will normally be cellular and filled with crushed stone although the detail may vary with different products. Suitable surface finishes include washed gravel, permeable tarmac or block paviours set on a sand base. However, for lightly loaded surfacing of limited widths (<3m) such as pedestrian paths, pre-formed concrete slabs may be appropriate if the sub-base preparation is as set out above. In some situations, limited width floating concrete

rafts constructed directly on to the soil surface may be acceptable but the design must not include any strip-dug supports.

3.4 **Edge retention:** Conventional kerb edge retention set in concrete filled excavated trenches is likely to result in damage to roots and should be avoided. Effective edge retention in RPAs must be custom designed to avoid any significant excavation into existing soil levels. For most surfaces, the use of pre-formed edging secured by meta' pins or wooden pegs is normally an effective way of minimizing any adverse impact on trees from the retention structure.

3.5 **Installing new surfacing on top of existing surfacing:** In some instances surfacing can be retained and used as a base for new surfacing. Normally, this will not result in significant excavation that could expose roots so special precautions are not necessary. However, if large roots already protrude above the proposed sub-base level, then the precautions and procedures set out above must be observed.

4.0 INSTALLATION OF NEW STRUCTURES IN RPAs

4.1 **Basic principles:** New structures in RPAs are potentially damaging to trees because they may disturb the soil and disrupt the existing exchange of water and gases in and out of it. Mature and over-mature trees are much more prone to suffer because of these changes than young and maturing trees. Adverse impact on trees can be reduced by minimizing the extent of these changes in RPAs. This can be done by constructing the main structures above ground level on piled supports and redirecting water to where it is needed. The detailed design and specification of such structures is an engineering issue that should be informed and guided by tree expertise.

4.2 **Small sheds and bin stores:** These light structures do not normally require substantial foundations and can have permeable bases. Ideally, their bases should be of a no-dig, load-spreading construction set directly on to the soil surface. They require a flat base and so an undulating site will need leveling to provide a suitable surface. Excavation of any high points by up to 5cm and filling depressions with permeable fill to provide a flat base will normally be acceptable provided no roots greater than 2.5cm in diameter need to be cut. If large roots are found, the preferred course of action would be to raise the base level of the structure by filling rather than cutting roots. However, if this is not practical and large roots have to be cut, the situation should be discussed with the supervising officer before a final decision is made. Above the base, there will often be a protective covering fixed onto a frame that can rise directly from the base or be fixed to supports either banged into the ground or set in carefully dug holes. Provided the supports are well spaced, i.e. greater than 1 .5m apart, and of a relatively narrow diameter, i.e. not in excess of 15cm, it is unlikely they will cause any significant disturbance to RPAs.

4.3 **Walls, gate piers, buildings and bridges on new foundations:** Conventional strip foundations in RPAs for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, disturbance can be significantly reduced by supporting the above ground part of the structures on small diameter piles and beams or cast floor slabs set above ground level. The design should be sufficiently flexible to allow the piles to be moved if significant roots are encountered in the preferred locations. Before the actual installation of the new structure starts, all RPAs that may be affected should be covered with temporary ground protection as set out in BS 5837. Gaps in the ground protection should be left where it is expected to install the piles or dig the holes for gate piers. Pile locations should be initially hand dug to a depth of 75cm to establish if there are any significant roots over 2.5cm in diameter that could be damaged. If significant roots are found, then the pile location must be moved slightly and a new exploratory hole dug. Once the piles have been installed, the lowest points of the supporting beams for the structure must be above the ground level between the piles and there should not be any further excavation. The beams between the piles can be pre-cast and imported to the site ready to fix or can be cast in position using shuttering for the sides and a biodegradable void-former for the base. Gate piers generally require larger holes and have less flexibility for relocation if large roots are found. Localized loss of roots may be unavoidable so each situation should be assessed on its own merits by an appropriate supervising officer once the careful

excavations have been completed. Any roots found should be dealt with as set out in 1.7 above. When installing any of these structures, the ground protection must remain in place until the construction is completed and there is no risk of damage to RPAs.

4.4 **Walls on existing foundations:**
A free-standing wall on an existing foundation is unlikely to require any additional excavation and so its construction should have no adverse impact on RPAs if the appropriate protection is in place. However, replacing walls that retain the soil of RPAs normally requires some limited excavation back into the exposed soil face to provide a working space of at least 10—20cm behind the inside wall face. This should be done carefully and limited to no more than required to construct the new wall. Any roots found should be dealt with as set out in 1.7 above. Once the wall is completed, any voids behind it should be filled with good quality top soil and firmed into place but not over compacted. Specific difficulties with large roots that emerge during the course of the construction should be referred to the supervising officer.

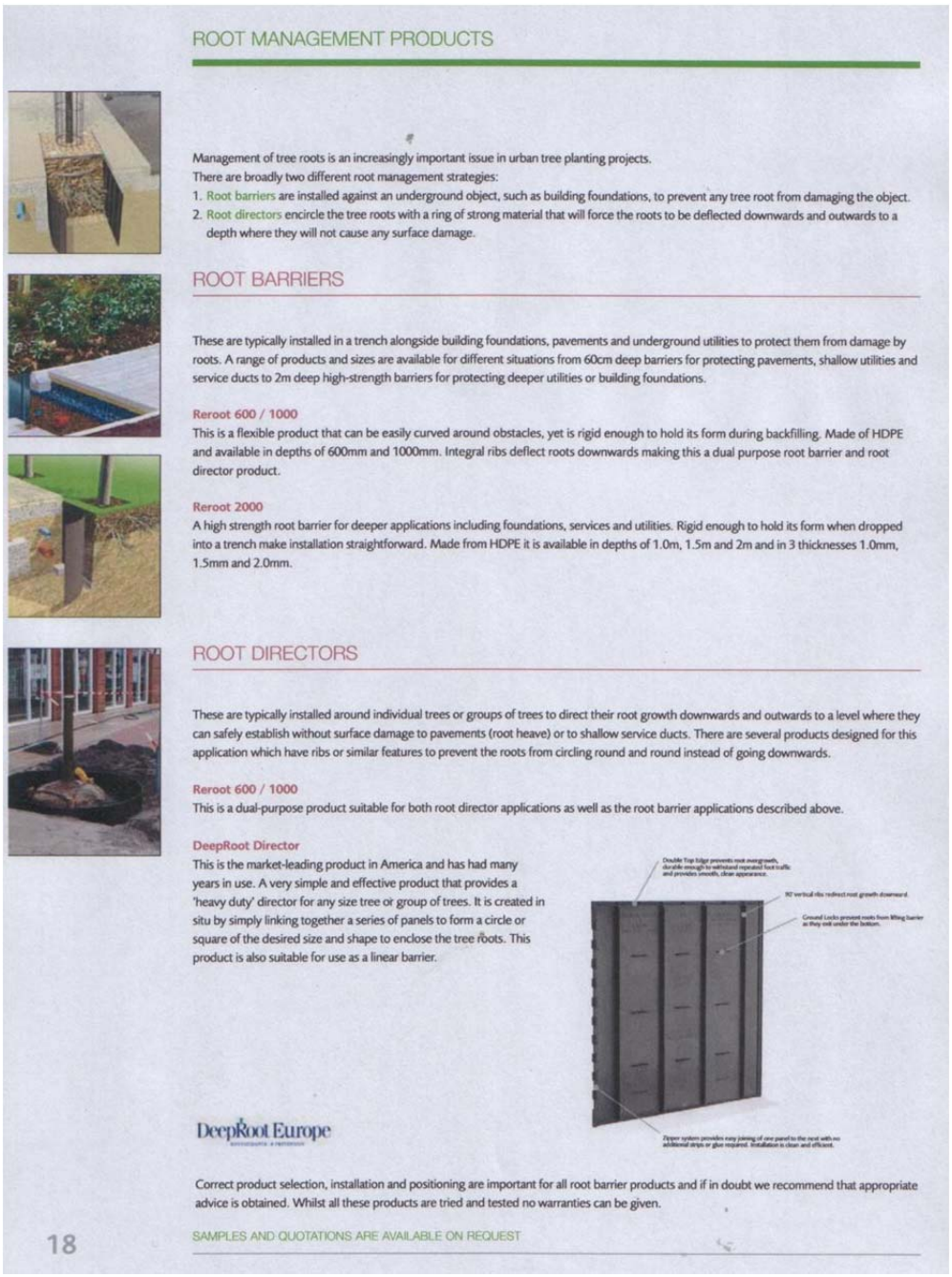
4.5 **Services:** For the purposes of this guidance, services are considered as structures. Excavation to upgrade existing services or install new services in RPAs may damage retained trees and should only be chosen as a last resort. In the event that excavation emerges as the preferred option, the decision should be reviewed by the supervising officer before any work is carried out. If excavation is agreed, all digging should be done carefully and follow the guidance set out in 1.7 above.

5.0 SOFT LANDSCAPING IN RPAs

5.1 Upgrading existing soft landscaping or replacing existing surfacing/structures with new soft landscaping: For the purposes of this guidance, soft landscaping includes the re-profiling of existing soil levels and covering the soil surface with new plants or an organic covering (mulch). It does not include the installation of solid structures or compacted surfacing. Soft landscaping activity after construction can be extremely damaging to trees. No significant excavation or cultivation, especially by rotovators, should occur within RPAs. Where new designs require levels to be increased to tie in with new structures or the removal of an existing structure has left a void below the surrounding ground level, good quality and relatively permeable top soil should be used for the fill. It should be firmed into place but not over compacted in preparation for turfing or careful shrub planting. Ideally, all areas close to tree trunks should be kept at the original ground level and have a mulched finish rather than grass to reduce the risk of mowing damage.

APPENDIX 10

Illustrative specification for the construction of tree pits with structured soil, root deflectors, irrigation surfaces finishing in hard standing areas.



ROOT MANAGEMENT PRODUCTS

Management of tree roots is an increasingly important issue in urban tree planting projects.
There are broadly two different root management strategies:

1. Root barriers are installed against an underground object, such as building foundations, to prevent any tree root from damaging the object.
2. Root directors encircle the tree roots with a ring of strong material that will force the roots to be deflected downwards and outwards to a depth where they will not cause any surface damage.

ROOT BARRIERS

These are typically installed in a trench alongside building foundations, pavements and underground utilities to protect them from damage by roots. A range of products and sizes are available for different situations from 60cm deep barriers for protecting pavements, shallow utilities and service ducts to 2m deep high-strength barriers for protecting deeper utilities or building foundations.

Reroot 600 / 1000
This is a flexible product that can be easily curved around obstacles, yet is rigid enough to hold its form during backfilling. Made of HDPE and available in depths of 600mm and 1000mm. Integral ribs deflect roots downwards making this a dual purpose root barrier and root director product.

Reroot 2000
A high strength root barrier for deeper applications including foundations, services and utilities. Rigid enough to hold its form when dropped into a trench make installation straightforward. Made from HDPE it is available in depths of 1.0m, 1.5m and 2m and in 3 thicknesses 1.0mm, 1.5mm and 2.0mm.

ROOT DIRECTORS

These are typically installed around individual trees or groups of trees to direct their root growth downwards and outwards to a level where they can safely establish without surface damage to pavements (root heave) or to shallow service ducts. There are several products designed for this application which have ribs or similar features to prevent the roots from circling round and round instead of going downwards.

Reroot 600 / 1000
This is a dual-purpose product suitable for both root director applications as well as the root barrier applications described above.

DeepRoot Director
This is the market-leading product in America and has had many years in use. A very simple and effective product that provides a 'heavy duty' director for any size tree or group of trees. It is created in situ by simply linking together a series of panels to form a circle or square of the desired size and shape to enclose the tree roots. This product is also suitable for use as a linear barrier.

DeepRoot Europe

Correct product selection, installation and positioning are important for all root barrier products and if in doubt we recommend that appropriate advice is obtained. Whilst all these products are tried and tested no warranties can be given.

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SAMPLES AND QUOTATIONS ARE AVAILABLE ON REQUEST

Illustrative specification for the construction of tree pits with structured soil, root deflectors, irrigation surfaces finishing in hard standing areas.

ARBORESIN AND TREE SAND

ARBORESIN TREE PIT SURFACE

Arboresin is a method for binding loose aggregate together to create a hard-wearing, attractive, porous tree-pit surface. Pavement sweepers can run over the surface without displacing the stone.

The surface allows a free flow of water and air through its structure, thus allowing a tree pit to breathe.

Arboresin is supplied in packs, each containing 750ml resin with hardener, along with 25kg washed and dried 6-10mm pea gravel.

Arboresin should be installed at a thickness of 50mm for pedestrian areas or 75mm for areas subject to vehicular overrun. At 50mm thick 4 packs will complete 1 square metre. At 75mm thick 6 packs will be required to cover 1 square metre.

PLEASE CONTACT THE OFFICE FOR A QUOTATION.

AMSTERDAM TREE STAND

Amsterdam Tree Sand is used for planting trees in urban situations. The specific purpose of the sand is to prevent subsidence and so maintain the integrity of the surrounding paved area.

The material is installed, before planting, in the tree pit and compacted in layers of 250-300mm. The special structure of the sand resists further compaction - and therefore subsidence - by pedestrian and vehicular traffic, yet allows space for air, water and root growth. The tree pit is then dug within the sand and the tree is planted.

Normal use is about 5m³ per tree pit. 1m³ compacted is approximately equivalent to 1.6 tonnes.

Typical Analysis	
pH	7.5
Phosphorus	20-50mg per 100g
Potassium	10-20mg per 100g
Magnesium	100-300mg per 100g
Organic matter	4-6%

AVAILABLE IN BULK LOADS OR BULK BAGS.
PLEASE ASK FOR FURTHER DETAILS.

Call 01435 862992 Fax 01435 867742 Email sales@englishwoodlands.com Online englishwoodlands.com

ARBORESIN AND TREE SAND

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Illustrative specification for the construction of tree pits with structured soil, root deflectors, irrigation surfaces finishing in hard standing areas

GREENLEAF TREE PIT IRRIGATION

By far the biggest contributor to the high mortality rates suffered by urban trees is drought stress.

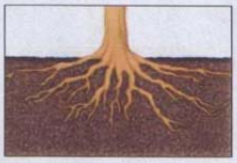
Water is vital for the growth of trees. It is not only required for all the biochemical requirements for growth photosynthesis, respiration and transport, but also mechanical support to leaf and stem tissue.

Insufficient (or inefficient) watering will result in loss of leaf turgor and consequent reduction in new shoot extension. Eventually this will lead to die-back and, if not remedied, the loss of the tree.

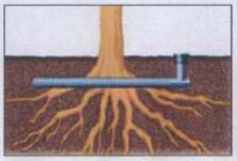
Waiting until the tree shows signs of drought stress before watering is known as 'reactive' irrigation. Whilst this might keep the tree alive, it will often result in stem die-back and possibly long term structural defects in the tree.

Research has shown that trees irrigated 'proactively' i.e. by implementing a regular watering regime, have over three times the weight of new roots growing into backfill soil material compared to those watered 'reactively'.

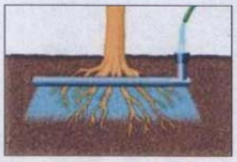
Surface irrigation is rarely efficient for trees, the topsoil layer waterlogs, leading to surface run off, soil capping, compaction and wastage. Water has difficulty penetrating the deeper root zone.



If surface is irrigated regularly to a shallow depth, roots will remain near the surface leading to a long term susceptibility to drought.



Root Rain waterers deliver water directly to the root zone. This eliminates wastage and reduces the risk of surface compaction.



The roots are encouraged to establish at a greater depth improving long term drought resistance and tree stability. Provides an access point for air and feeding with soluble fertilisers.

Benefits

- Quick and easy to install
- Extremely cost effective
- Improved drought tolerance
- Fast watering (60 litres per minute in porous soil)
- Reduces water volume by eliminating wastage

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SAMPLES AND QUOTATIONS ARE AVAILABLE ON REQUEST

APPENDIX 11

Illustrative specification for the planting of tree stock – (Semi Mature)

Civic Trees
SUPPLY PLANT RELOCATE

102 High Street Tring
Hertfordshire HP23 4AF
Tel: 01442 825401
Fax: 01442 890275
www.civictrees.co.uk

Specification for semi-mature tree planting for both root-ball and container grown stock

Introduction

Semi-mature trees are defined by the British Standards Institution and HTA as:-

"Trees with an overall height in excess of 4 metres and or a stem girth measurement (circumference) of 20 centimetres or larger."

They will have been transplanted several times and are likely to be more than 10-15 years old.

Specification

1. Planting locations are agreed and inspected, a site assessment made with consideration given to tree species, access, overhead and underground services plus general safety to operatives and members of the public.
2. The planting site shall be naturally or physically drained or raised to prevent the trees from being waterlogged at any time. The soil texture and structure will retain and release moisture and nutrients to the trees and have a structure that will promote root growth. The planting site can be improved with the addition of peat-free compost, water retaining polymer, fertiliser and good topsoil where necessary.
3. The excavated hole shall be of sufficient size to accommodate the root-ball or container, allowing approximately 500mm clearance. Before planting the sides of the pit shall be broken up and the base dug over to a depth of 150mm to improve drainage. The tree will be planted to the same depth as it was in the nursery. Backfill will be firmed in around the rootball to prevent any air pockets.
4. An irrigation/aeration system will be installed comprising of a 60mm diameter, perforated pipe around the rootball 100mm below the surface.
5. Installation of a supporting system for the tree will be necessary. This will either be overhead or underground guying. The overhead guying comprises of 4mm steel cable attached to the main stem of the tree and to 1m metal stakes to secure the root-ball in the ground.
6. Any necessary formative pruning will be carried out and where appropriate woodchip/bark mulch applied to a depth of 50mm, and to at least the edge of the planting pit.
7. A properly planned maintenance programme should be kept up until successful establishment of the trees. This may include watering when necessary, checking of the support systems, weed control and further mulching. Support guys or stakes should be removed once the trees are established, usually after 2-3 years.

Summary

Successful establishment of trees will depend on:-

1. The planting site being properly prepared, with suitable drainage and being compatible with the chosen tree species.
2. The trees being specially grown to produce semi-mature stock, being healthy and having been correctly lifted, stored and transported as relatively fragile living organisms.
3. The planting being done correctly and in the right season, relative to the growing medium, followed by proper aftercare.

growing since 1963

Civic Tree Care Limited Registered No 1338726
Civic Trees (Tree Movers) Limited Registered No 761079
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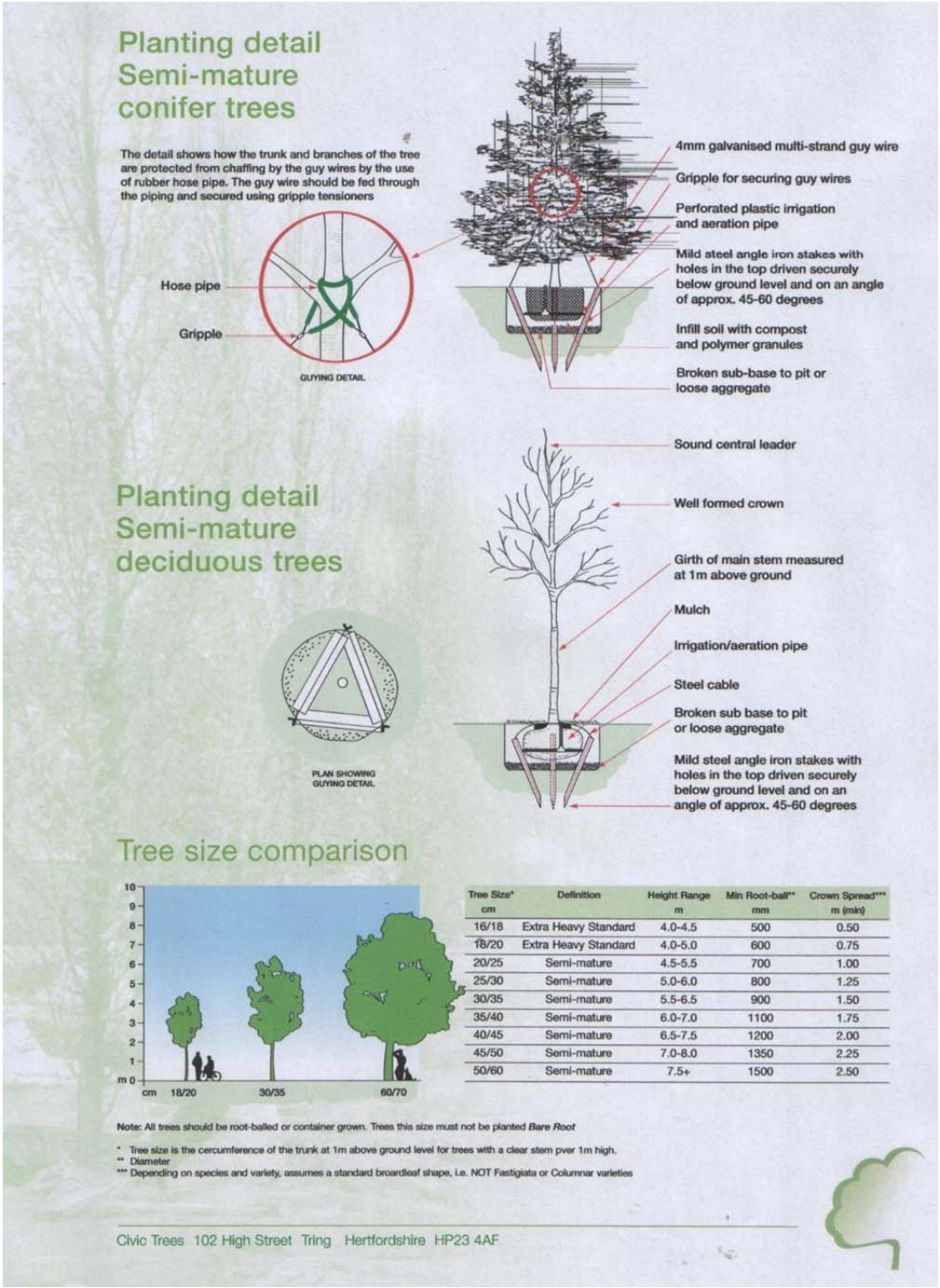
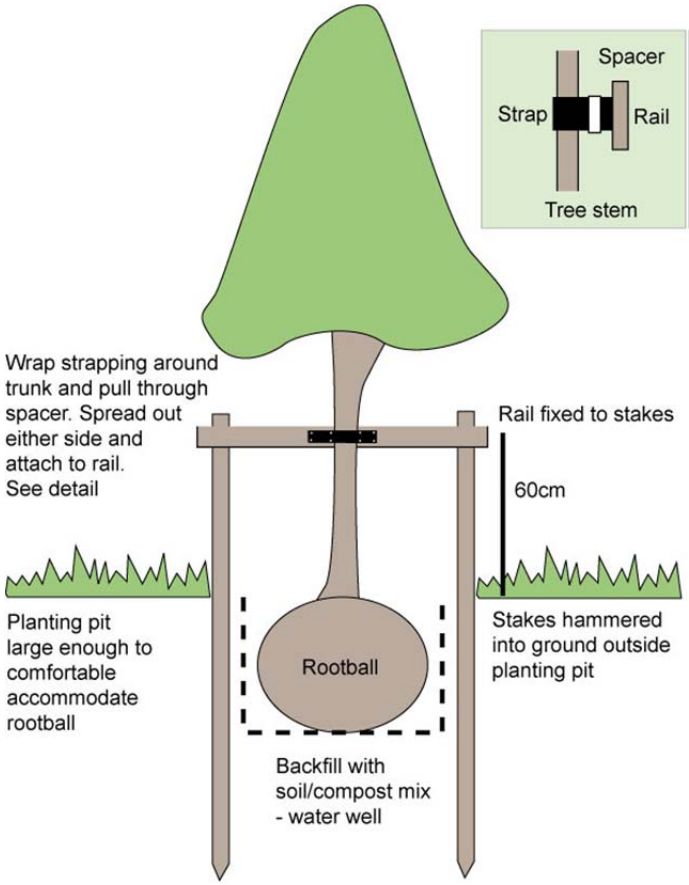
Illustrative specification for the planting of tree stock – (Semi Mature)



Illustrative specification for the planting of tree stock – (Heavy Standard and Standard)

Dig a hole twice as wide as the size of the root system and just deep enough so that when the root-system rests on the bottom of the hole the levels of the surrounding ground and top of the root-system are the same.

NB. In wet, heavy or clay soils, it is desirable that the root-system is planted up to 15cms above the surrounding soil level and the excavated soil is mounded up to the newly created level to encourage rooting into an area less likely to suffer water-logging.



Remove the container from pot grown plants, but in the case of root-balled plants leave the hessian and wire packaging intact below the ground to maintain the integrity of the root-ball, and to give the plant a better start with less disturbance – the fabric and wire will rot away in due course. You should pull back any fabric and wire at the surface after planting to give the plant unobstructed access to surface water.

In the case of tree planting use stakes and tree-ties to give the new tree support until it becomes established. The stake should be driven into firm ground to the outside of the planting pit. Do not drive the stake into the root-system as this will damage the roots. Check and adjust tree-ties regularly to accommodate growth.
Back fill the hole with a mixture of one part compost and two parts soil, making sure that the plant is firmly held in by the soil. Watering immediately after planting will remove air pockets; this will reduce the risk of disease, as well as giving the plant a drink.

The roots of your plant need air and water so check soil conditions regularly. During the first growing season ensure that the plant does not dry out. However, do not over water as this will also damage the plant. Do not over feed in the first year as this will result in too much canopy growth for the new roots to support.
Keep the area around the plant free from weeds by mulching with bark or compost to a depth of 5cms.

APPENDIX 12

Inserted table of arboricultural site supervision:

Arboricultural Action	Programme of Action	Extent of arboricultural input	Nature of Supervision	Date of inspection	Signed off (Council Use)
Meeting with construction team to discus tree protection and any emerging design issues that may affect trees	Before any site activities start	• Meeting with relevant members of the developers team to explain the extent of the tree constraints, i.e. architect, site manager, engineer, landscape architect, etc • Review working space requirements to consider barrier and ground protection adjustments to improve site functionality • Review drainage proposals and identify conflicts with RPAs • Review any post consent layout changes that may affect trees • Identify any potential conflicts and work towards resolutions • Preparation of draft working drawings if necessary			
Updated tree protection proposals in the context of the above meeting for discussion at pre-commencement meeting	Before any site activities start	• Preparation of revised plans and specifications			
Briefing landscape architect on restrictions imposed on new landscape design by RPAs	Before landscaping design is finalised	• • Supply appointed landscape architect with a plan of the RPAs, a description of the restrictions that apply and details of agreed new tree planting • Review final landscaping plans to make sure there are no conflicts between tree protection and landscaping	letter / email and plan to landscape architect		
Pre-commencement site meeting with supervising arboriculturalist, site manager and council tree officer	Before any site activities starts or once tree protection measures have been installed	• Meeting on site • Review any updated proposals • Confirm tree protection measures are acceptable if already installed	Site meeting and letter / email		
Tree works carried out	Before protective measures are installed	• Meeting with contractor if necessary at the discretion of supervising arboriculturist	Site meeting and letter / email		

Arboricultural Action	Programme of Action	Extent of arboricultural input	Nature of Supervision	Date of inspection	Signed off (Council Use)
Finalising tree protection proposals and installation for agreement by council	Before any heavy machinery enters the site	• Preparation of final plans and specification for agreement by the council • Provide photos of relevant aspect of installed tree protection measures • Meeting with contractor to finalise specification and locations before installation with a further visit on completion to verify correct installation, at the discretion of the arboricultural consultant	Site meeting and letter / email		
Demolition	After protective measures are installed	• Meeting with contractor if necessary, at the discretion of the arboricultural consultant	Site meeting and letter / email		
Construction of the new development and Installation of new services	At the discretion of the developer	• Meeting with contractor for briefing before work starts with further visits as necessary , at the discretion of the arboricultural consultant	Site meeting and letter / email		
Removal of barriers and ground protection	When construction activity has been finished	• Meeting with contractor for briefing before work starts	Site meeting and letter / email		
Removal of surfacing retained as ground protection	When construction activity has been finished	• Meeting with contractor for briefing before work starts	Site meeting and letter / email		
New Tree planting	After barriers and any ground protection have been removed	• Arboricultural consultant checks plant compliance with specification and oversees site preparation and planting	Site meeting and letter / email		
General Landscaping	After barriers have been removed and new tree planting has been finished	• Meeting with contractor for briefing before work starts with further visits as necessary, at he discretion of the arboricultural consultant	Site meeting and letter / email		
Tree planting maintenance	For a period of 3 – 5 years after planting until successful establishment confirmed by council	• Supervision provided by supplier and planting contractor	Letters / emails by planting contractors after each maintenance visit		

I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact me.

Signed

Gary Marsden

Gary Marsden FDSc Arb M.Arbor.A
Professional Member of the Arboricultural Association (AA)
Member of the Consulting Arborist Society (CAS)

For and on behalf of ***GM TREE CONSULTANTS***

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