

Arboricultural Impact Appraisal and Method Statement
194A Sea Front, Hayling Island



Prepared by:
Mark Wadey ND Arb CUEW MArborA MICFor

Date: 25 April 2014
Ref: 14113-AIA-MW

Validation statement

This report contains the supporting tree information relating to the development proposal to construct a new garage at 194a Sea Front, Hayling Island.

For Local Planning Authority (LPA) validation purposes, this report contains the following:

- A full tree survey compliant to the requirements of ***BS5837: (2012 Trees in relation to design, demolition and construction – Recommendations*** undertaken by a qualified arboriculturist
- A plan with a north point showing tree survey information, including BS 5837 categories
- An assessment of the arboricultural implications of development, detailing trees to be retained and the proposed protection measures (Section 1)
- An arboricultural method statement describing a feasible means of tree protection, its implementation and the phasing of works (Sections 2 and 3)

Summary

Purpose of this report

This is an arboricultural impact appraisal report describing the trees on and near the development area, what the impact of the development proposal on those trees will be and how any adverse impact will be mitigated. It also includes an arboricultural method statement describing how trees will be protected and managed during the development. Its purpose is to provide sufficient tree information for the LPA to assess the impact of the proposal on local character as part of the process of determining the planning application.

More detailed reasoning relating to the protection of retained trees can be reviewed in section 2.4 of this report.

Report contents

It includes:

- a **tree protection plan** showing the location of the trees, their categorisation, the location of the new development and the tree protection measures;
- an **arboricultural impact appraisal** in Section 1, which describes the impact of the development on trees;
- an **arboricultural method statement** in Section 2, which describes the tree protection measures, and how they will be implemented; and
- a series of **appendices** in Section 3 providing relevant background information and more detailed guidance to supplement the explanations in Section 2.

Background administrative information

Background information on our specific instructions and how we carried them out is included as Appendix 1. All the trees that could be affected were inspected and their details are listed in Appendix 2. Based on this information, guidance was provided to PGP Architects on the constraints these trees impose on the use of the site.

Summary of the impact on trees and local character

The trees close to the proposal can be retained despite there being some of the construction activity within root protection areas (RPAs). 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 not have a significant adverse impact on its health or local amenity.

Table of contents

Tree protection plan

Tree protection plan (Page 1)

SECTION 1: Arboricultural impact appraisal

- 1.1 Impact on trees from installation of garage (Page 3)
- 1.2 Protection of the retained trees (Page 4)
- 1.3 Summary of the impact on local amenity (Page 4)

SECTION 2: Arboricultural method statement

- 2.1 Arboricultural supervision (Page 6)
 - 2.1.1 General principles
 - 2.1.2 Detailed proposals
- 2.2 Programme and phasing of tree management (Page 7)
- 2.3 General tree management and protection (Pages 8 and 9)
 - 2.3.1 General site operation
 - 2.3.2 Tree works
 - 2.3.3 Protection of the Construction Exclusion Zone (CEZ) by the use of the existing boundary fencing
 - 2.3.4 Control of activities within precautionary area
 - 2.3.5 Control of activities near RPAs
- 2.4 Specific tree protection requirements (Pages 9 and 10)
 - 2.4.1 Installation of CEZ barriers
 - 2.4.2 Installation of the new garage within RPAs
 - 2.4.3 Reconditioning/upgrading of existing hard surfacing
 - 2.4.4 Installation of new services or upgrading of existing services

SECTION 3: Appendices

- 1 Administrative information, site visit and data collection (Pages 12, 13 and 14)
- 2 Tree schedule and explanatory notes (Pages 15, 16 and 17)
- 3 Protecting retained trees (Pages 18, 19, 20, 21, 22 and 23)

Explanatory notes for the tree protection plan

The tree protection plan (our reference 14113-BT1) is based on the provided information. It should 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 should be confirmed at the pre-commencement meeting before any construction activity starts. Its base is the existing land survey with the proposed layout superimposed, so the two can be easily compared. It shows:

- the existing trees numbered, with high categories (A & B) highlighted in green triangles and low categories (C & U) highlighted in blue rectangles (note that these colours are used to assist colour blind people in differentiating the categories);
- the location of the construction exclusion zone (CEZ); and
- the location of precautionary areas outside the fencing where special care will be taken.

Section 1

Arboricultural impact appraisal

This arboricultural impact appraisal describes our assessment of how the proposal will affect trees and any impact this will have on local amenity and character. The analysis of the impact to trees is detailed at the beginning in 1.1, the proposed protection measures are set out in 1.2 and the overall impact on amenity is summarised in 1.3.

Section 1: Arboricultural impact appraisal

1.1 IMPACT ON TREES FROM INSTALLATION OF GARAGE

From the provided layout, three trees (T1, T2 and T3) are close enough to be affected by the proposed installation of the garage (Image 1). From my observations, T3 is growing beyond the existing boundary line which is close to the edge of the proposed garage wall (Image 2). However, I believe there is sufficient space to install the foundation without damaging the buttress roots if care is taken during the building works. Furthermore, the majority of smaller feeder and structural roots from these trees are likely to be growing deeply beneath the existing hard standing where the garage is to be located so there is unlikely to be a significant adverse impact on them. Additionally, as a precaution, the architect has designed the base of the floor using a concrete slab foundation to minimise excavation in the RPA. On this basis, if special precautions are applied during the installation of the foundation there is unlikely to be an adverse effect on the health or visual amenity value of the trees. Some of the lower secondary and tertiary branches of T3 extend very close to the proposed garage but either removing these branches or cutting them back would not adversely affect the tree's health or have a significant impact on visual amenity as its profile from public viewpoints would remain unchanged.

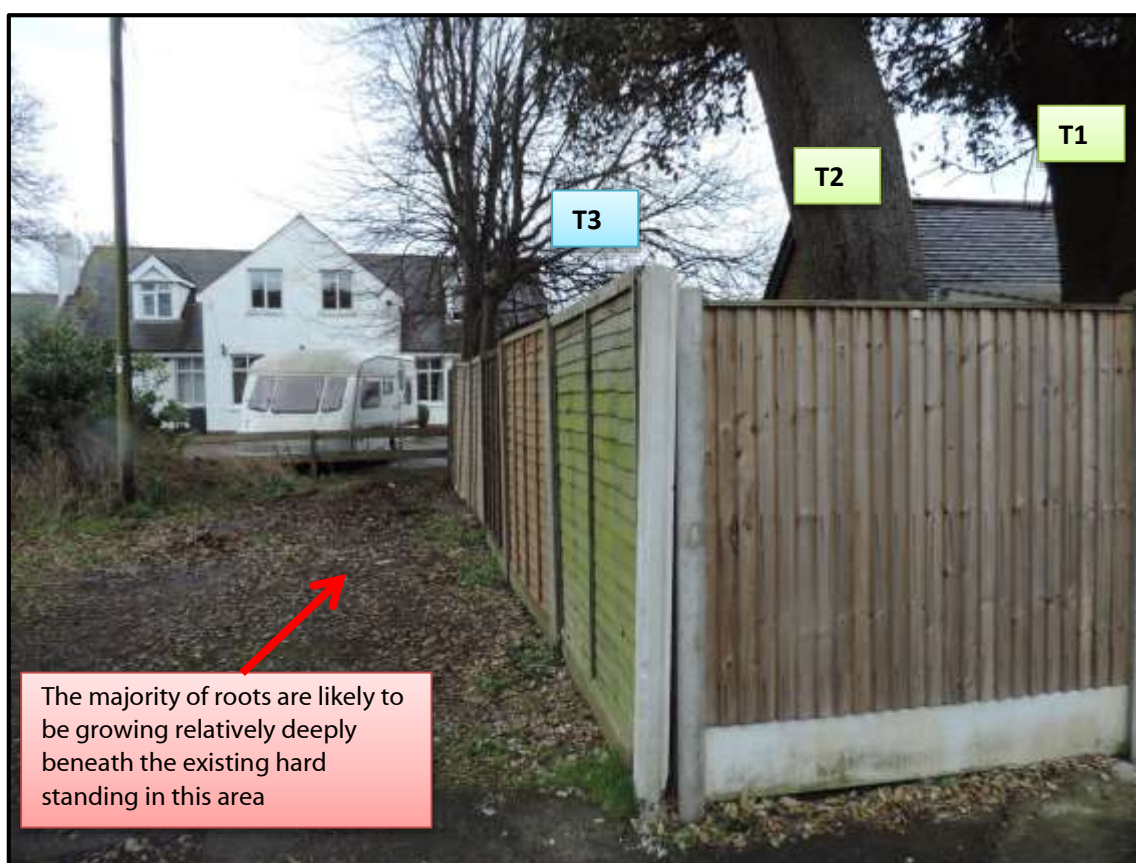


Image 1: Photo taken looking eastwards towards the area proposed for the new garage

Section 1: Arboricultural impact appraisal



Image 2: The buttress of T3 grows beyond the existing boundary line but there is enough space to install the garage. The yellow filled area represents the approximate location of the concrete floor slab next to T3

1.2 PROTECTION OF THE RETAINED TREES

The successful retention of the trees depends on the quality of pruning works and the protection during the construction works. 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 sections 2 and 3.

1.3 SUMMARY OF THE IMPACT ON LOCAL AMENITY

The trees close to the proposal can be retained despite there being some of the construction activity within root protection areas (RPAs). 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 not have a significant adverse impact on its health or local amenity.

Section 2

Arboricultural method statement

This is an arboricultural method statement describing how trees will be protected and managed during the development of the site. As explained in Table B1 of BS 5837, it is based on the best available information at this stage in the planning process and may need to be updated in the context of a specific planning condition when the full detail is known. Its purpose is to explain how and when the protection measures should be installed, and how they will be maintained for the duration of the development activity.

The following explanations relate specifically to this site and they should be read in conjunction with the attached plan. Please note that this plan is not a 'dimensioned tree protection plan' at this stage because BS 5837 advises in Table B1 that this is not required at the planning application stage. Appendix 3 sets out further guidance to supplement the following explanations.

A copy of this report must be permanently available on site for the duration of the development activity. It can be:

- included in tendering documentation to identify and quantify the tree protection and management requirements;
- used to plan the timing of site operations to minimise the impact on trees; and
- referenced on site for practical guidance on how to protect important trees.

Section 2: Arboricultural method statement

2.1 ARBORICULTURAL SUPERVISION

2.1.1 General principles

An arboricultural consultant will be appointed by the developer to advise on the tree management for the site and to attend:

1. the pre-commencement meeting before any work starts;
2. regular supervision visits as agreed at the pre-commencement meeting; and
3. as needed to oversee any specific works that could affect trees.

Additionally, the consultant will have a supervisory input into operations that could adversely affect protected trees (see 2.2 below).

2.1.2 Detailed proposals

More specifically, the form and purpose of the supervision will be as follows:

- **Pre-commencement meeting:** A pre-commencement meeting should be held on site before any of the site clearance and construction work begins. This would normally be attended by the site manager, the arboricultural consultant and a LPA representative. In the event that a LPA representative declines to be present, the arboricultural consultant will inform the LPA in writing of the details of the meeting. All tree protection measures detailed in this document will be fully discussed so that all aspects of their implementation and sequencing are understood by all the parties. This will include agreeing the form and location of the most appropriate barriers for the CEZ. Any agreed clarifications or modifications to the consented details will 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, which will then form the basis of any supervision arrangements between the arboricultural consultant and the developer.
- **General 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 will be available on site and the site manager will brief all personnel who could have an impact on trees on the specific tree protection requirements. This will be a part of the site induction procedures and written into appropriate site management documents.
- **Ongoing supervision of operations that could affect trees:** Once the site is active, the arboricultural consultant will visit at an interval agreed at the pre-commencement site meeting. The supervision arrangement will be sufficiently flexible to allow the supervision of all sensitive works as they occur. The arboricultural consultant's initial role is to liaise with the developer and the LPA to ensure that protective measures are fit for purpose and in place before any works start on site. Once the site is working, that role will switch to monitoring compliance with arboricultural planning

Section 2: Arboricultural method statement

conditions and advising on any tree problems that arise or modifications that become necessary.

- **Proof of compliance to help refute liability and facilitate the discharge of planning conditions:** All supervisory visits will be formally confirmed in writing and circulated to all relevant parties, including the LPA. The purpose of these written records is firstly to provide proof of compliance that will allow the developer to robustly demonstrate adherence to best practice in the event of any disputes, and secondly to help the LPA efficiently discharge the relevant planning conditions.

2.2 PROGRAMME AND PHASING OF TREE MANAGEMENT

In overview, it is anticipated that arboricultural input is likely to be needed for the following operations:

1. Pre-commencement meeting
2. Preliminary pruning
3. Installation of the new garage
4. Installation of new services or upgrading of existing services if necessary

More specifically, a preliminary programme for the arboricultural input is set out below:

Finalising tree management details after consent, but before work starts	
Action	Arboricultural input
Review of tree protection and any emerging design issues that may affect trees with the construction team	• Meeting/discussion with relevant members of the developer's team to explain the extent of the tree constraints • Review working space requirements to consider CEZ fencing and ground protection adjustments to improve site functionality • Review drainage proposals and identify potential conflicts with RPAs • Review any post-consent layout changes that may affect trees • Review all works within RPAs that may affect trees • Identify any potential conflicts and work towards resolutions • Preparation of working drawings, if necessary
Review consented tree protection proposals for discussion at pre-commencement meeting	If necessary: • prepare revised plans and specifications • liaise with LPA to discuss modifications
Pre-commencement site meeting with supervising arboriculturist, site manager and the LPA representative (if appropriate)	• Meeting on site • Agree detail of supervision requirements, i.e. frequency of visits and reporting • Review tree protection, if already installed • Agree any changes to CEZ barrier combinations of fencing and ground protection
Site operations before construction starts on site	
Action	Arboricultural input
Tree works carried out	• Review the site requirements with the tree work contractor
Installation of tree protection for agreement by the LPA	• If appropriate, preparation of any revised plans and specifications for agreement by the LPA • Photographs showing relevant aspect of installed tree protective measures • Liaise with the contractor installing protection until satisfactorily completed

Section 2: Arboricultural method statement

Operations within precautionary areas that could affect trees during construction	
Action	Arboricultural input
Installation of new garage	Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant
Installation of new services if necessary	Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant

The precise order and timing of some of these operations may change due to site operating requirements, but all operations that can affect trees will remain under arboricultural supervision.

2.3 GENERAL TREE MANAGEMENT AND PROTECTION

2.3.1 General site operation

The day-to-day running of the site will take full account of the tree protection measures set out in this document, a copy of which will be kept on site at all times. All site personnel will be briefed on the tree protection requirements as part of the site induction procedures.

2.3.2 Tree works

The proposed tree works are set out in the work recommendations column of the tree schedule in Appendix 2. These are made on the basis that all trees will be re inspected within a year of the original inspection and the management advice only remains valid for up to a year after that inspection date.

2.3.3 Protection of the CEZ by the use of the existing boundary fence

BS 5837 (3.6) describes the CEZ as the *"area based on the RPA from which access is prohibited for the duration of a project"*. In practice, this can normally be done by using any combination of fencing and ground protection. However, in this case that is unlikely to be practical or necessary because the existing boundary fence will provide adequate protection.

2.3.4 Control of activities within precautionary area

The precautionary area is shown on the tree protection plan as a yellow filled area outside the main CEZ. It indicates where agreed activities can be carried out within the RPA, provided sufficient care is taken to ensure that any impact on the retained magnolia tree is minimised. This specifically applies to excavation, but also covers all other development operations with the potential to adversely affect the tree. **All activities within the precautionary area must be carried out in accordance with the guidance principles set out in Appendix 3 and be supervised by an arboricultural consultant.**

Section 2: Arboricultural method statement

2.3.5 Control of activities near the RPA

Any risk to the trees from activities outside the RPA, but close enough to have a knock-on impact, will be assessed during the day-to-day running of the site and appropriate precautions put in place to reduce that risk. More specifically, all cement mixing and washing points for equipment and vehicles will be outside the RPA. Where the contours of the site create a risk of polluted water or toxic liquids running into the RPA, a precautionary measure of using heavy-duty plastic sheeting and sandbags with the ability to contain accidental spillages will be put in place to prevent contamination.

2.4 SPECIFIC TREE PROTECTION REQUIREMENTS

The specific tree protection operations, in roughly the order that they will be carried out, are explained in detail in the following subsections. Where appropriate, more detailed guidance is referenced in Appendix 3 to supplement the following explanations.

2.4.1 Installation of CEZ barriers

The CEZ boundary is shown on the tree protection plan as the heavy black dashed line. In this case, the existing boundary fence can be used as a barrier but if an alternative solution is required then the guidance in Appendix 3 (paragraphs 3–6) should be followed.

2.4.2 Installation of the new garage within RPAs

Following my discussions with the architect, the garage is to be installed using a concrete slab on top of the existing hard surface. From the provided drawings, and specifically the cross-section of the proposed slab illustrated on plan BT1, the proposal will not be below the existing sub-base, i.e. up to 150-200mm, so there will be no significant excavation that is likely to encroach on roots in this area. All of these installations can be carried out without any significant new excavation into existing soil levels, which should allow any roots below the existing building to be left intact. This work will be done in accordance with the guidance in Appendix 3 (paragraphs 18–20).

2.4.3 Reconditioning/upgrading of existing hard surfacing

The existing hard surfacing will be retained and utilised where possible. Any surfacing disrupted during the course of the construction activity will be reconditioned or upgraded as necessary following the guidance in Appendix 3 (paragraphs 7–17). These works will be subject to arboricultural supervision.

2.4.4 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 RPAs. However, where existing services within RPAs

Section 2: Arboricultural method statement

require upgrading or new services have to be installed in RPAs, great care must be taken to minimise any disturbance. Any excavation must be carried out by hand according to the guidelines in Appendix 3. If unexpected services do need to be installed within RPAs, written approval must be obtained from the LPA before any works are carried out.

Section 3

Appendices

Appendix 1: Administrative information, site visit and data collection

Administrative information

1. Instruction

We are instructed by Mr Ivan Snell to inspect the significant trees that could be affected by the construction of one garage at 194A Sea Front, Hayling Island, and to provide a tree survey or Arboricultural Implications report to accompany the planning submission. In particular, reference was made to the protection of the TPO trees (T1 and T2 Holm Oaks at the rear of 192 Sea Front) as requested by Havant Borough Council in their letter dated 19 March 2014 to Peter Galloway Partnership:

2. Documents provided

The tree protection plan is derived from the following provided information:

- Land survey, drawing number 14/01/P02 Rev B, received by email on 2 April 2014
- Layout, drawing number 14/01/P02 Rev D, received by email on 7 April 2014

3. Limitations of this report

The following limitations apply to this report:

- **Statutory protection:** The existence of tree preservation order or conservation area protection does not automatically mean trees are worthy of being a material constraint in a planning context. Trees can be formally protected, but be in poor structural condition or in declining health, which means that they are unsuitable for retention or influencing the future use of the site. Furthermore, a planning consent automatically takes precedent over these forms of protection, which makes them of secondary importance. For these reasons, we do not check statutory protection as a matter of course in the process of preparing this report. However, if any tree works are proposed before a planning consent is given, then the existence of any statutory protection must be checked with the LPA.
- **Ecology and archaeology:** Although trees can be valuable ecological habitat and can grow in archeologically sensitive locations, we have no specialist expertise in these disciplines and this report does not consider those aspects.
- **Tree assessment and management advice:** Our inspection of the trees for the purposes of assessing their condition and work requirements is made on the basis that they will be annually inspected in the future to identify any changes in condition and review the original recommendations. For these reasons, the tree assessment advice only remains valid for one year from the date that the trees were last inspected.

4. Technical references

This arboricultural method statement is based on the following primary technical references:

- British Standards Institution (2012) BS 5837: *Trees in relation to design, demolition and construction – Recommendations*
- National Joint Utilities Group (2007) Volume 4, Issue 2: *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees*

Appendix 1: Administrative information, site visit and data collection

5. Qualifications and experience

This report is based on my site observations and the provided information, interpreted in the context of my experience. I have experience and qualifications in arboriculture that can be reviewed at www.barrelltreecare.co.uk/about-us.php.

Site visit and data collection

6. Site visit

I visited the site on 07 April 2014. All my observations were from ground level without detailed investigations and I estimated all dimensions unless otherwise indicated. I had access to trees on other private properties and the weather at the time of inspection was clear, still and dry with good visibility. During my visit, I took photographs to illustrate specific points in this report.

7. Brief site description

The Sea Front is located in the residential suburbs of Hayling Island. Number 194A is set back from the road within a shared group of residential properties. The area proposed for the new garage is on existing hard standing adjacent to the rear of 192 Sea Front where there are three trees growing. These trees are publically visible, but mainly through glimpses between buildings from the Sea Front roadside.



Image 3: The site access and area proposed for the new garage is approximately indicated by the red boundary

Appendix 1: Administrative information, site visit and data collection

8. Collection of basic data and compliance with BS 5837

Each tree was inspected and the numbering scheme is indicated on the tree protection plan. For each individual tree, information was collected on species, height, diameter, maturity and potential for contribution to amenity in a development context. As advocated in BS 5837, each tree was then allocated to one of four categories (A, B, C or U), which reflected its suitability as a material constraint on development. Each category A, B and C tree was automatically assigned BS sub-category 1 unless otherwise stated. When collecting this information, specific consideration was given to any low branches that may influence future use, age class, physiological condition, structural condition and remaining contribution. Where appropriate, crown spreads were also noted where they differed from those shown on the provided land survey. This data with explanatory notes is set out in the tree schedule included as Appendix 2 and the supporting plan information. Each tree inspection was of a preliminary nature and did not involve any climbing or detailed investigation beyond what was visible from accessible points at ground level. BS 5837 (4.4.2) sets out recommendations for the collection of data and this report is fully compliant with that advice in the context of the BS 5837 Foreword, which states: *"Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations."* In that context, we will justify any deviation in this report from the strict BS 5837 recommendations on request.

9. Calculation of RPAs

Following the recommendations in Table D1 of BS 5837, the diameter of each tree was rounded up to the next 2.5cm increment, with the radius of a nominal circle and the resultant RPA taken directly from that table. This information is listed for each tree in the tree schedule in Appendix 2.

10. Plan updates

During the site visit the position of one tree (T3) shown on the plan did not accurately reflect that which was on site. This was estimated and the tree protection plan has been annotated to more accurately reflect its number of stems, location and canopy spread.

Appendix 2: Tree schedule and explanatory notes

NOTE: Colour annotation is A & B trees with green background; C & U trees with blue background;

Tree No	Species	Height (m)	Diameter (cm) @ 1.5m	Maturity	Low Branches	Category	Notes	Tree Works	RPA radius (m)	RPA area (m2)
All retained trees & hedges							Carry out safety check and lift over site to 3-4m as necessary.			
T1	Holm oak	8	67.5*	Mature	-	B	Heavily pruned in past	-	8.1	206
T2	Holm oak	10	55*	Mature	-	B	Heavily pruned in past	-	6.6	137
T3	Lime	10	45	Maturing	-	C	Two stems, heavily pruned in past	Prune lowest overhanging secondary and tertiary branches to provide a 1m separation between the branch ends and the edge of the proposed garage	5.4	92

Appendix 2: Tree schedule and explanatory notes

Explanatory notes for schedule

- **Abbreviations:**

RPA : Root protection area

- **Botanical tree names:**

Holm oak : *Quercus ilex*

Lime : *Tilia* sp

- **BS 5837 (2012) compliance:** All data has been collected based on the recommendations set out in subsection 4.4 of BS 5837.

- **Future tree safety inspections:** Our assessment of the trees was carried out on the basis that a re-inspection would be carried out within a year of the assessment visit and our advice on tree condition must be reviewed annually from the date of that visit.

- **Site limitations:** Where there is restricted access to the base of a tree, its attributes are assessed from the nearest point of access. Climbing inspections are not carried out during a walkover tree survey and, if heavy ivy is present, tree condition is assessed from what can be seen from the ground. A separate note is recorded if further investigation may be required to clarify its status.

- **Crown spreads:** Crown spread dimensions are not listed in the tree schedule because they are illustrated on the land survey base to all the plans in this document. Where crown spreads of significant trees on site are found to deviate from those shown on the provided land survey, we have noted it in the text of the report and annotated it on our plans.

- **Dimensions:** All dimensions are estimated unless annotated with a '*'.

- **Species:** Species identification is based on visual observations. Where there is some doubt over tree identity, sp is noted after the genus name in the botanical names section above to indicate that the species cannot be reliably identified at the time of the survey. Where there is more than one species in a group, only the most frequent are noted and not all the species present may be listed.

- **Height:** Height is estimated to provide an indication of the size of the tree.

- **Trunk diameter:** Trunk diameter is estimated or measured and recorded in 2.5cm increments as advised in BS 5837 Table D1. It is measured with a diameter tape unless access is restricted, direct measurement is not possible because of ivy on the trunk or the tree is assessed as poor quality. The point of measurement and the adjustments for stem variations are as advised in Figure C1 of BS 5837.

- **Maturity:** In a planning context, maturity provides a simplistic indication of a tree's ability to cope with change and its potential for further growth. For the purposes of this report, young indicates a potential to significantly increase in size and a high ability to cope with change, maturing indicates some potential to increase in size and some ability to cope with change, and mature indicates little potential to increase in size and limited ability to cope with change.

- **Low branches:** Any low branches that would not be feasible for removal during normal management and should be considered as a design constraint are noted here and explained in the notes.

- **Category:** Our assessment automatically considered tree physiological/structural condition (BS 5837, 4.4.2.5h), and so these are not listed separately in the schedule. Additionally, the category accounts for the remaining contribution (BS 5837, 4.4.2.5i) as greater than 40 years for A trees, greater than 20 years for B trees, at least 10 years for C trees and less than 10 years for U trees, so this

Appendix 2: Tree schedule and explanatory notes

is also not listed separately in the schedule. Category A, B and C trees are automatically listed as sub-category 1 unless otherwise stated.

- **Notes:** Only relevant features relating to physiological or structural condition and low branches that may help clarify the categorisation are recorded. If there are no notes, then the presumption should be that no relevant features were observed.
- **Tree works:** The inspection of all trees was of a preliminary nature and only defects visible from the ground have been identified. Each individual tree may not have been inspected closely because of access difficulties and only defects visible from the inspection point have been noted. In addition to tree removals for development and management reasons, further works are listed to reduce the threats from retained trees. All trees on the site should be checked by the contractor at the time of carrying out the main tree works to deal with any emerging safety issues in the context of the consented development. Additionally, where appropriate to facilitate access, all crowns should be lifted to 3–4m above the site. Only works in excess of this have been listed for individual trees. The following points should also be noted before carrying out any works:
 1. **Reporting during work operations:** In the context of the preliminary nature of the tree inspection, any defects that may affect tree safety discovered by the contractor when carrying out the work recommendations should be reported to the supervising officer. Modification to the schedule of works may be required because of these reports. The contractor should be specifically instructed on this point.
 2. **Implementation of works:** All tree works should be carried out to BS 3998 *Recommendations for Tree Work* as modified by more recent research. It is advisable to select a contractor from the local authority list and preferably one approved by the Arboricultural Association. Their Register of Contractors is available free from The Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire GL10 3DL; phone 01242 522152; website www.trees.org.uk.
 3. **Statutory wildlife obligations:** The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 provides statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions and advice from an ecologist must be obtained before undertaking any works that might constitute an offence.
 4. **Stumps:** Stumps to be removed within the RPAs of retained trees should be ground out with a stump grinder to minimise any disturbance unless otherwise authorised by the supervising officer.
 5. **Future tree inspections:** Due to the time that may elapse between the original survey and the start of development, all trees should be re-inspected as part of the standard risk management process before any works start on site.

Appendix 3: Protecting retained trees

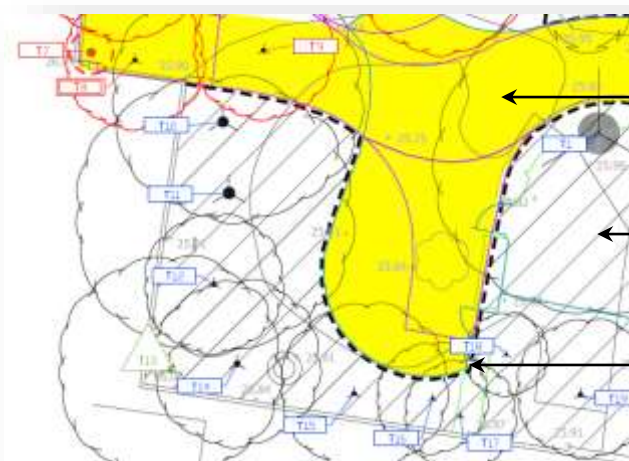
Introduction

1. Purpose and use of this guidance

This guidance is for construction site management to help protect trees that have been agreed for retention. It must be read in conjunction with the site-specific proposals shown on the tree protection plan and explained in the body text of this report. It supplements and expands upon the principles set out in the British Standards Institution (2012) BS 5837: *Trees in relation to design, demolition and construction – Recommendations* (www.bsigroup.com) and the National Joint Utilities Group (NJUG) (2007) Volume 4, Issue 2: *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees* (www.njug.org.uk). More specifically, it describes useful practical precautions that can be taken when working close to retained trees and provides sources of further information. Important terms include:

- **Root protection areas (RPAs):** RPAs are the areas surrounding retained trees where disturbance must be minimised.
- **Construction exclusion zone (CEZ):** This is the RPA where no construction activity should occur and damage is prevented in this case by using the existing boundary fencing to restrict access, while protecting the rooting environment below.
- **Precautionary area:** This is RPA outside the CEZ where limited works are proposed, but must be carried out with care to minimise any impact on the tree rooting environment.

These areas are illustrated on our attached plan and annotated as follows:



The yellow fill is the precautionary area

The light black diagonal hatch is the CEZ

The heavy black dashed line is the CEZ boundary

At the planning stage, this guidance describes practical methods and examples of how trees can be protected to assist the local planning authority (LPA) in deciding whether the proposal is feasible. If the LPA issues consent, this guidance, in conjunction with the report and tree protection plan, will act as a written record for reference during the construction process. Once work starts on site, this guidance is designed to help the site personnel implement effective tree

Appendix 3: Protecting retained trees

protection. All personnel working in RPAs must be familiar with this document and be properly briefed about their responsibilities to protect important trees.

2. Arboricultural supervision

All work within RPAs requires a high level of care. Qualified arboricultural supervision is essential to minimise the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed about protecting retained trees before any work starts. Ongoing work near trees must be inspected regularly by an arboriculturist and, on completion, the work must be signed off to confirm compliance by the contractor. This supervision arrangement will normally include a pre-commencement meeting and sufficient flexibility to allow for visits as necessary to deal with emerging tree protection issues.

Primary tree protection

3. Primary tree protection

The CEZ is the RPA surrounding retained trees that must be protected from any disturbance by the construction activity. In this case, the existing boundary fence will be used to protect trees T1, T2 and T3 from the construction activity.

Guidance for working in precautionary areas

4. Excavation and dealing with roots

Precautionary areas are RPAs outside the CEZ, i.e. they are areas where construction activity can take place, but it must be carried out with care to avoid damaging the sensitive rooting environment. BS 5837 (7.2) makes provision for excavating in RPAs, explaining that all excavation must be carried out carefully using hand-held tools and preferably by compressed air soil displacement, taking care not to damage the bark and wood of any roots (photo 1, 2 and 3).

All soil removal must be done with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of smaller 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 such as dampened hessian sacking (photo 4). If necessary, roots less than 2.5cm in diameter can be cut cleanly without consultation with the supervising arboriculturist. Roots greater than 2.5cm in diameter should be retained where possible and only cut after consultation with the supervising arboriculturist.

Appendix 3: Protecting retained trees



Photo 1: Careful hand-digging using conventional tools is acceptable for exposing roots in RPAs.



Photo 2: Air spades are very effective at exposing roots and services with minimal damage.



Photo 3: Air spades are particularly useful where roots are very dense.



Photo 4: Exposed roots must be protected from light, drying out and extremes of temperature by covering with hessian sacking and boards until they can be covered back with soil.

5. Removing hard surfacing and structures in precautionary areas

For the purposes of this guidance, the following broad definitions apply:

- **Hard 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.

6. Access

Roots frequently grow adjacent to and beneath existing surfacing and 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 and structures remain in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once that protection is removed and the soil below is newly-exposed, the potential for damage to roots becomes an issue.

Appendix 3: Protecting retained trees

In summary, there should be no vehicular or repeated pedestrian access unless existing ground protection is retained or new protective measures are installed (photo 5). All exposed RPAs must be protected until there is no risk of damage from the development activity.



Photo 5: Ground protection must be used where repeated foot or vehicle traffic could cause compaction in sensitive RPAs. It can be as simple as plywood for pedestrians, but must be more robust for vehicles.



Photo 6: Machines with a long reach can be used to lift out heavy surfacing and structures as long as the machine sits outside the RPA and the exposed surface is protected before there is any further access.

7. Removal of material

Removing existing surfacing and structures is a high-risk activity for any adjacent roots and the following guidance must be observed:

1. Appropriate tools for manually removing debris may include a pneumatic breaker, crow bar, sledgehammer, pick, mattock, shovel, spade, trowel, fork and wheelbarrow (photos 7 and 8). 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 (photo 6), but 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 (photo 6).
4. Great care must be taken throughout these operations not to damage roots as set out in paragraph 4 above.
5. If appropriate, leaving below ground structures in place should be considered if their removal may cause excessive root disturbance.

Appendix 3: Protecting retained trees



Photo 7: Careful lifting of cemented-in sets round this tree allowed them to be re-laid on a permeable sand base, improving the water input into the soil around the trunk.



Photo 8: These trees had impermeable surfacing right up to their trunks, which had to be removed by hand before installing new structures.

8. Installing new surfacing on top of existing surfacing

In some instances, existing surfacing can be retained and used as a base for new surfacing. Normally, this will not result in significant excavation that could expose roots and 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. If the retained surfacing is impermeable, it may improve conditions for tree roots if it is punctured before the new surfacing is laid, but this is detail that should be agreed with the supervising arboriculturist.

9. Installation of new structures in precautionary areas

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 minimising the extent of these changes in RPAs. In this case, the garage will be constructed using a concrete raft foundation above the existing ground levels to minimise harm to tree roots. This design principal is shown as a section on the tree protection plan but the exact detail and specification is an engineering issue that should be informed and guided by tree expertise.

10. Services

Excavation to upgrade existing services or install new services in RPAs may damage retained trees. Where possible, all services should be outside RPAs and installation in RPAs should only be chosen as a last resort. If installation within RPAs is being considered, as advised in 4.1.3 of the NJUG guidance, the decision should be made in consultation with the LPA or the supervising arboriculturist before any work is carried out. If service installation is agreed within RPAs, the NJUG protocol as set out in 4.1.3 of its guidance should be used to decide the most appropriate method. In summary, this sets out that "*Acceptable techniques in order of preference are; a) trenchless, ... b) Broken trench – hand-dug ... c) Continuous trench – hand-dug*". If trenchless methods are to be used, there is normally a starting pit and a finishing pit that have to be dug at each end of the service run and these must be outside RPAs. Where a hand-digging option is agreed, any roots discovered during the excavations should be dealt with as set out in paragraph 7 above. Where possible, backfilled material around excavated services must not be heavily compacted, with specific advice provided in 4.1.5 of the NJUG guidance.

Appendix 3: Protecting retained trees

11. Fuel and chemical storage

Spilt chemicals that can soak into RPAs will kill existing roots and may prevent new roots growing, so provision must be made to minimise the risk of contamination to soil within the normal risk management protocols for the site. This would normally include means of containing spillages and procedures for clearing them up if they occur (photo 9).



Photo 9: Where fuel or other chemical are stored on site, it is now standard practice to have emergency spillage kits available to restrict the environmental impact of accidents.



Photo 10: Soil bunding or a supporting framework covered in heavy-duty plastic sheeting is essential where there is a risk of spillages contaminating RPAs. This specifically applies to cement mixing areas and vehicle washing facilities.

12. Cement mixing and vehicle washing points

All cement mixing and vehicle washing points must be located outside RPAs, with provision to contain any spillages. Where the contours of the site create a risk of polluted water or toxic liquids running into RPAs, a precautionary measure of bunding or a frame, sealed with heavy-duty plastic sheeting sufficient to prevent contamination (photo 10), must be used to contain accidental spillages.



Field House
Fordingbridge Business Park
Ashford Road
Fordingbridge
Hampshire
SP6 1BY

T: 01425 651470
E: info@barrelltreecare.co.uk
www.barrelltreecare.co.uk