# Arboricultural Method Statement

## 4 St Augustine's Road, Camden, London

Prepared by:
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Date: 08 August 2014
Ref: **14280-AMS-MW**

## Summary

# Purpose of this document

This is an arboricultural method statement describing how trees will be protected and managed during the development of the site. 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 contents of this document

It includes:

- a **tree protection plan** showing the location of the trees, the location of the new development and the tree protection measures;
- an **explanations section** describing the tree protection and management measures, and how they will be implemented; and
- a series of **appendices** setting out illustrative specifications and general guidance to supplement the text explanations.

# Use of this document on site

A copy 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.

# Background administrative information

Background information on our specific instructions and how we carried them out is included as Appendix 1. A copy of the Appeal Decision with its attached Planning Conditions is included as Appendix 2. The relevant tree related condition (8) is highlighted with a blue rectangle surround for ease of reference.

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# Explanatory notes for the tree protection plan

The tree protection plan (our reference 14280-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;
- the location of the construction exclusion zone (CEZ) to be protected by barriers formed by fencing and/or ground protection; and
- the location of precautionary areas outside the fencing where special care will be taken.

Please note that the full extent of the RPAs for all the retained trees are shown as confined within the CEZ (black dashed line) and the yellow precautionary areas.

# 1 ARBORICULTURAL SUPERVISION

## 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 1.2 below).

## 1.2 Detailed proposals

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

- **Pre-commencement meeting:** A pre-commencement meeting will 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. If a LPA representative is not 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 combination of fencing and/or ground protection to be used as 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. This would normally be every two to four weeks for general supervision, but could be at a longer interval if agreed between the parties. 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 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 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. Installation of CEZ barriers (fencing and/or ground protection)
3. Careful removal of existing surfacing
4. Installation of new cycle store
5. Upgrading existing surfacing
6. Installation of new services or upgrading of existing services
7. Removal of protective measures
8. Tree planting and general landscaping

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<br>• Review working space requirements to consider CEZ fencing and ground protection adjustments to improve site functionality<br>• Review drainage proposals and identify potential conflicts with RPAs<br>• Review any post-consent layout changes that may affect trees<br>• Review all works within RPAs that may affect trees<br>• Identify any potential conflicts and work towards resolutions<br>• Preparation of working drawings, if necessary |
| Review consented tree protection proposals for discussion at pre-commencement meeting | If necessary:<br>• prepare revised plans and specifications<br>• liaise with LPA to discuss modifications |
| Briefing landscape architect on restrictions imposed on new landscape design by RPAs | • Advise landscape architect of the RPA locations, the restrictions to landscaping activity that applies and the details of agreed new tree planting<br>• Review the final landscaping proposals to identify any conflicts between tree protection and landscaping |
| Pre-commencement site meeting with supervising arboriculturist, site manager and the LPA representative (if appropriate) | • Meeting on site<br>• Agree detail of supervision requirements, i.e. frequency of visits and reporting<br>• Review tree protection, if already installed<br>• 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<br>• Photographs showing relevant aspect of installed tree protective measures<br>• Liaise with the contractor installing protection until satisfactorily completed |
| **Operations within precautionary areas that could affect trees during construction** | |
| **Action** | **Arboricultural input** |
| Removal or upgrading the existing surfacing and installing a new cycle store | • Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant<br>• **NOTE:** This should only be authorised once there is no risk of RPA damage from the construction activity |
| Installation of new services | • Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant |
| **Operations that could affect trees after construction is completed** | |
| **Action** | **Arboricultural input** |
| Removal of barriers and ground protection | • Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant<br>• **NOTE:** This should only be authorised once there is no risk of RPA damage from the construction activity |
| New tree planting | • Check tree size, species, quality, handling, site preparation and planting comply with the specification |
| Soft and hard landscaping | • Meeting with contractor for briefing before work starts, with further supervision visits as necessary at the discretion of the arboricultural consultant |
| Tree planting maintenance | • Liaise with landscape contractor to check maintenance complies with the specification |

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.

## 3 GENERAL TREE MANAGEMENT AND PROTECTION

### 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.

### 3.2 Tree works

There is only one tree likely to be affected by the proposal and no tree works are necessary for the purposes of this proposal. Any relevant details and explanatory notes have been included in Appendix 3.

### 3.3 Protection of the CEZ by the use of fencing and ground protection

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 be done by any combination of fencing and ground protection, to be finalised and agreed at the pre-commencement meeting.

- **Protective fencing:** On the tree protection plan, the approximate boundary of the CEZ is shown by the heavy black dashed line, with the diagonal black hatching indicating the enclosed CEZ. Further detail on fencing options is included in Appendix 4 (paragraphs 3–6). The precise form of the fencing can vary, provided it is fit for purpose in that it prevents damaging activities within the CEZ that it encloses.
- **Ground protection:** Where it is not practical to protect the CEZ by the use of fencing alone, BS 5837 (6.2.3.1) allows for the fencing to be set back and the soil protected by ground protection. This allows fencing to be set back to improve access, with the ground protection preventing damage to the CEZ outside the protection of the fencing. A range of methods can be used including retaining existing hard surfacing or structures that already protect the soil, installing new materials or a combination of both. Further detail on ground protection options is included in Appendix 4 (paragraph 6). Whatever the choice of method, the end result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.

Throughout this report, there is a presumption that all RPAs identified for protection on the plan outside the CEZ will be protected from soil degradation at all times during any construction. This applies to the shaded precautionary area shown on the plan at all times during the development while there is a risk of damage to the RPAs of retained trees. All work operations in RPAs will be strictly controlled to comply with BS 5837, as explained in Appendix 4. All barriers, whether fencing or ground protection, must remain intact and fit for purpose for the duration of any development activity that could cause damage. The barriers are intended to prevent any unsupervised activities within the protected CEZ. All construction activities with the potential to disturb RPAs must be subject to arboricultural supervision. Additionally, once the barriers are removed, any landscaping activity must be carefully controlled in RPAs.

### 3.4 Control of activities within precautionary areas

Precautionary areas are shown on the tree protection plan as coloured shading outside the main protective barriers of the CEZ. They indicate where agreed activities can be carried out within RPAs, provided sufficient care is taken to ensure that any impact on retained trees is minimised. This specifically applies to excavation, but also covers all other development operations with the potential to adversely affect trees. **All activities within precautionary areas must be carried out in accordance with the guidance principles set out in Appendix 4 and be supervised by an arboricultural consultant.**

### 3.5 Control of activities near RPAs

Any risk to trees from activities outside RPAs, 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 RPAs. Where the contours of the site create a risk of polluted water or toxic liquids running into RPAs, 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.

### 3.6 New tree planting

Sufficient space has been allowed in the new landscaping scheme that includes new tree planting. This tree planting should be installed in accordance with Appendix 4 (paragraphs 25 – 26).

Additionally, several new trees have hard surfacing close to them and so a minimum of nine cubic metres ($9m^2$ x 1m depth) per tree of below ground preparation using structured tree soil and a root guidance product will be installed according to the guidance in Appendix 4 (paragraphs 27 and 28).

## 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 4 to supplement the following explanations.

### 4.1 Installation of CEZ barriers (fencing and/or ground protection)

The CEZ boundary is shown on the tree protection plan as the heavy black dashed line. Its location is approximate because its precise position will need to be finalised on site, depending on the local site conditions. If necessary, BS 5837 allows the fencing location to be moved provided the exposed CEZ is protected by ground protection, but this would need to be formally agreed by all parties at the pre-commencement meeting. Once the tree works have been carried out, the appropriate fencing and ground protection will be installed before any construction work starts, following the guidance in Appendix 4 (paragraphs 3–6).

### 4.2 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 4 (paragraphs 7–17). These works will be subject to arboricultural supervision.

### 4.3 Installation of new cycle store

The new cycle store will be constructed on the existing hard surfacing or on top of a new specially engineered foundation to ensure no roots are adversely affected. The guidance in Appendix 4 (paragraphs 7–20) will be followed and these works will be subject to arboricultural supervision.

### 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 require upgrading or new services have to be installed in RPAs, great care must be taken to minimise 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 4 (paragraph 22). If unexpected services do need to be installed within RPAs, written approval must be obtained from the LPA before any works are carried out.

### 4.5 Removal of protective measures

All protective barriers must remain in place until the construction activity is finished and there is no realistic risk of damage to the protected soil surfaces.

### 4.6 Landscaping and reinstatement

The final tidying up and reinstatement can only be carried out when all the protective barriers have been removed, which means great care is needed by all the contractors to observe the tree protection requirements. No machines can be used within RPAs, which specifically includes rotovators, and all new planting and soil level variations must be agreed and supervised by the arboriculturist. All these works will be carried out strictly in accordance with the guidance in Appendix 4 (paragraph 25).

# Appendices

# Appendix 1: Administrative information, site visit and data collection

## Administrative information

### 1. Instruction

We are instructed by Augustines Road Ltd to inspect the significant trees that could be affected by the development proposal at 4 St Augustine's Road, Camden, London and to prepare the following information to accompany the planning submission:

- a schedule of the relevant trees to include basic data and a condition assessment
- an appraisal of the impact of the proposal on trees and any resulting impact that has on local amenity
- an arboricultural method statement dealing with the protection and management of the trees to be retained

### 2. Site visit

I visited the site on 31 July 2014. All my observations were from ground level without detailed investigations and I estimated all dimensions unless otherwise indicated. I did not have access to trees outside the boundaries and have confined observations of them to what was visible from within the property. The weather at the time of inspection was clear, still and dry, with good visibility.

### 3. Documents provided

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

- Land survey, drawing number 1913-00-DR-0099 Rev C01, received by email on August 1 2014.
- Layout, drawing number 1913-00-DR-0100 Rev C01, received by email on 1 August 2014

### 4. 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.

## 5. 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*

## 6. 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.

## Appendix 2: Appeal decision with relevant Planning Conditions

The Planning Inspectorate

# Appeal Decision

Inquiry held on 18, 19 and 30 December 2013
Site visits made on 20 and 30 December 2013

**by John Woolcock BNatRes(Hons) MURP DipLaw MPIA MRTPI**

**an Inspector appointed by the Secretary of State for Communities and Local Government**

**Decision date: 22 January 2014**

**Appeal Ref: APP/X5210/A/13/2204277**
**4 St Augustine's Road, London NW1 9RN**

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Mr Paul Godfrey against the decision of the Council of the London Borough of Camden.
- The application Ref:2013/1210/P, dated 1 March 2013, was refused by notice dated 22 August 2013.
- The development proposed is the erection of a five storey (Lower Ground Floor + 4) building containing nine apartments: 2 no. 2 bedrooms and 7 no. 3 bedrooms. [This was amended prior to the Council's determination of the application]

### Decision

1. I allow the appeal and grant planning permission for the erection of a five storey building comprising 9 residential units (4 x 2 bedroom and 5 x 3 bedroom flats) (Class C3) at 4 St Augustine's Road, London NW1 9RN in accordance with the terms of the application Ref:2013/1210/P, dated 1 March 2013, as amended, subject to the conditions set out in the Schedule of Conditions attached to this decision.

### Preliminary matters

2. The application form states that the applicant is Mr Paul Godfrey and that the Company name is Zen Developments. The Council considered an amended scheme for the erection of a five storey building comprising 9 residential units (4 x 2 bedroom and 5 x 3 bedroom flats) (Class C3).[1]

3. The appeal site lies within Camden Square Conservation Area. I am required by Section 72(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 (hereinafter the 1990 Act) to pay special attention to the desirability of preserving or enhancing the character or appearance of the conservation area.

4. An appeal against the refusal of an application for the erection of a basement and part 3, 4 and 5 storey building to create 9 residential units (in Use Class C) and associated disabled parking and landscaping on this site was dismissed in 2010.[2] The appellant considers that the current scheme (referred to as Scheme A at the Inquiry) overcomes the previous Inspector's objections.

[1] There are some discrepancies in the drawing numbers cited in the Council's decision notice and in the SoCG, but this matter was clarified at the Inquiry and in ID12.
[2] Appeal Ref:APP/X5210/A/09/2110690.

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However, the Council refused the application, against officer recommendation for approval, for nine reasons. The first of which provides that the proposed development, by reason of its scale, massing and detailed design, would appear as an unsympathetic addition to the street scene and would fail to achieve the necessary quality of architectural design befitting of this prominent site, and as such would neither preserve nor enhance the character and appearance of the conservation area. The Council advised that reasons for refusal two to nine concerned matters that could be overcome by means of a planning obligation.

5. If I was minded to find against the proposed development (Scheme A) I was invited by the appellant, by letter dated 10 December 2013, to consider an amended scheme (Scheme B).[3] I heard submissions about this and ruled that the Inquiry would proceed on the basis that it would hear evidence about both schemes, and that I would deal with this in my decision. I have, for the reasons set out below, found Scheme A to be acceptable, and so it is not necessary for me to deal further with Scheme B.

6. A unilateral undertaking, dated 19 December 2013, provides for a possible financial contribution towards affordable housing were the viability of the scheme to change, and for a contribution if additional units or floorspace were to be provided.[4] It also provides for car-free dwellings, and includes financial contributions towards environmental improvements, education, public open space and highways on commencement of the development that is the subject of this appeal. Provisions for a Construction Management Plan, Energy Efficiency and Renewable Energy Plan and Sustainability Plan are also included. However, a requirement for a contribution towards sustainable infrastructure for an electric car charging point was not pursued at the Inquiry because the Council no longer considers that this would be necessary.[5] The Council was satisfied at the Inquiry that the obligation would overcome reasons for refusal two to nine of its decision.

**Main issue**

7. The main issue in this appeal is whether the development would preserve or enhance the character or appearance of Camden Square Conservation Area.

**Reasons**

*Character and appearance*

8. The appeal site is a triangular area of land sited on a prominent corner location at the junction of Agar Grove, St Augustine's Road and Murray Street. It originally contained a pair of villas, but these were demolished in 1898 after the widening of the tunnel and railway, which runs beneath the western corner of the appeal site. It is currently vacant and enclosed by a 1.8 m high brick wall.

9. The Camden Square Conservation Area Appraisal and Management Strategy 2011 (CAAMS) states that the area is primarily a nineteenth century inner London suburb of planned development with a griddled street layout.

[3] Application No.2013/5863/P for Scheme B was determined by the Council after the date for exchange of proofs of evidence for the appeal. Scheme B is 1.2 m lower than Scheme A and has amended fenestration. [ID5.1-5.4]
[4] ID1.
[5] ID5.3 paragraph 6.3.

## Appendix 2: Appeal decision with relevant Planning Conditions



However, construction of the railway, wartime damage and later infill development have all contributed to the evolution of the area. The CAAMS refers to the appeal site as a vacant area that fails to define the entrance, and mars the view from the south and east. It also states that it lies within an area that continues to change and needs particular care both to conserve it and to allow it to evolve. The CAAMS refers to variety in scale, with the overall impression of homogeneity created by the distinctive roofscape and the ordering of the elevations in coherent groups. It was apparent from my site visits that this applies to St Augustine's Road and Agar Grove, where there are some variations in scale and detailing, but also a degree of cohesiveness that results from the alignment, form and materials of the villas.

10. The Council and the appellant agree that the site is a gateway location marking the entrance to the conservation area, and that its derelict appearance makes a negative contribution to the character and appearance of the conservation area.[6] I note that it has been a problem site for the Council in the past because of unauthorised uses. The site is currently open and its boundary wall is a feature in the local streetscape. These are factors which, to some extent, limit its impact as a detractor to the character and appearance of the area. However, it appears as a gap site in the local townscape on an important corner, and so makes a negative contribution to the area. This does not mean that any building on the site would be an improvement that would enhance the area. Possible harm could arise from a lost opportunity to achieve a more appropriate building for this key site in the conservation area.

11. Camden Square Conservation Area Advisory Committee (CAAC) acknowledged by letter dated 16 June 2013 that this is a particularly challenging proposal, elements of which have attracted divergent views within the CAAC team of specialist advisors, especially with respect to style. CAAC then accepted that, although bulkier than its neighbours, the proposal suits the prominent position and is not too overwhelming, but had concerns about fenestration details, considered that the justification for the slight curve of the frontage on St Augustine's Road was weak, and that the street elevations would be bland. In its letter dated 24 September 2013 CAAC highlighted its critical concerns as the inappropriateness of the overall bulk of the development, and the failure to relate the scale, proportion and rhythm to neighbouring buildings. The Camden Square Neighbourhood Association supports this view. The residents of Belvard Point submit that the proposal would appear blocky, with a horizontal emphasis and curved frontage to St Augustine's Road that would not provide the visual cohesiveness necessary for appropriate development of the site.[7]

12. The proposed building would be larger than neighbouring buildings, but the Council does not dispute that its footprint would be valid. It seems to me that concerns about the height of the building should properly take into account that this is a prominent corner location, where a more substantial building than its neighbours might be appropriate. In this case there is a considerable expanse of open space to the west of the proposed building, comprising the area which cannot be developed because of the railway tunnel, along with a wide road junction. The height of the proposed building on the appeal site would be proportionate to the open space in front of it. I consider that its

[6] ID6 paragraph 1.4.
[7] ID7.

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height and bulk would reasonably complement its immediate setting (Views 2 and 3).[8] In views west down St Augustine's Road (View 4) the proposed building would rise above the shallow hipped roofs of Nos.6/8 and 10/12, but would appropriately mark the end of the road. In views west along Agar Grove (View 1) the proposed building would not appear as a disproportionate addition to the street scene by reason of its height or bulk. The off-centre recess or indent above lower ground level in the southern elevation would help to relate the building to the width of its neighbours in Agar Grove. Furthermore, a building of these proportions would not be out of keeping with other development within the conservation area, where it was apparent from my site visits that some buildings in corner locations are larger than the buildings contained within the adjoining streets. I find no reason to reject the scheme by reason of its scale and massing. I turn next to concerns about detailed design.

13. The Council is concerned about the elevations of the building, including details of fenestration. In particular, it considers that the door and windows above it, in the St Augustine's Road elevation, would be so close to the edge of the building that the design would appear 'lop sided', and that the depth of walling below the parapet on the Agar Grove frontage would be uncharacteristic, such that the scheme would bear no resemblance to the symmetrical and central brickwork on the pairs of villas. However, in my view the proposed fenestration would draw on the pattern within the area, but apply it appropriately to a modern building. I do not consider that the solid to void ratio in the elevations would appear out of place, or that asymmetry would be inappropriate for this corner building.

14. The Council is critical of the western elevation of the proposed building because of its balconies, and the large gable with oversized arched window, for which it considers there to be no precedents in the conservation area. However, other modern buildings in the area have balconies, for which there is some policy support. The proposed balconies would provide useful outdoor amenity space for the units. The stucco gable end would take its cue from the front elevations of the five villas on the opposite site of St Augustine's Road. I consider that an outward looking appearance would be an appropriate design solution for this elevation, and that the scheme would read as a legible continuation of the streetscape and a celebration of this corner. The gentle curve of the building would reflect the alignment of St Augustine's Road into the junction, and would add to the design of the building as a corner feature.

15. The building would have a large roof form with terrace windows set back from the parapet. But it would not unduly affect the local roofscape, and the faux chimney pots above the lift would not look out of place. Concerns about the lift overdrive could be addressed by a condition requiring implementation in accordance with the approved drawings. The Council considers that the boundary treatment should be low level, so as to provide views of front gardens and elevations. However, the existing wall is consistent with other walls in the area near to the railway line. It would also provide some privacy for residential amenity areas. I note that the CAAMS states that the loss of original boundary walls would be resisted. The solid form of the portico would not be inappropriate given the variation in porches and porticos along the road.

[8] Views 1-4 Appellant's Appendix 11.

## Appendix 2: Appeal decision with relevant Planning Conditions



16. The design detail for this modern building would draw upon features and patterns that are characteristic of the conservation area and evident within the local context. I do not consider that it would fail to relate to the scale, proportion and rhythm of neighbouring buildings. Taking into account all the evidence before the Inquiry, I find that the appeal scheme would be a thoughtful design that would be appropriate for this corner location and entrance to the conservation area.

17. On the main issue, I find that the proposed development would enhance both the character and the appearance of Camden Square Conservation Area. This enhancement would keep the conservation area safe from harm, and so would also preserve its character and appearance.

18. I am required to decide this appeal having regard to the development plan, and to make my determination in accordance with it, unless material considerations indicate otherwise. The development plan includes The London Plan, Camden Core Strategy 2010 (CS) and Camden Development Policies (DP). The proposal accords with The London Plan because it would optimise the housing output from this site, and would comply with relevant quality and design requirements.

19. I find that the proposed development would accord with the provisions of Policy CS14 concerning the Council's commitment to ensuring that Camden's places and buildings are attractive, safe and easy to use, and that the proposal would respect local context and character, and preserve and enhance the conservation area. The scheme has taken into consideration the matters set out in Policy DP24 and would be of the highest standard of design. Considerable time was taken at the Inquiry concerning the application of Policy DP25. This sets out requirements in order to maintain the character of Camden's conservation areas, including only permitting development that preserves and enhances the character and appearance of the area.[9] The Council argues that the appeal scheme would cause harm to the conservation area and so would not preserve it, but if it did so, it would still be contrary to the development plan because it would not enhance it. In the appellant's submission Policy DP25 can only sensibly be applied and interpreted in line with the requirements of the 1990 Act. However, if Policy DP25 does set a determinative higher bar than the statutory requirement, then it would be a bar that I have found that this scheme would surpass. Any tension between development plan policy and the statutory requirement would make no difference to the outcome in this case.

20. The scheme would accord with the provisions of the *National Planning Policy Framework* concerning heritage assets. The development proposal should be approved in accordance with the first bullet point concerning decision-taking in paragraph 14 of the *Framework*. I find that the scheme would benefit from the presumption in favour of sustainable development that is at the heart of the *Framework*.

*Other matters*

21. I have no reason to doubt that the provisions of the obligation overcome the Council's other objections to the proposal, and accord with relevant

[9] The supporting text at paragraph 25.2 refers to development that preserves and enhances the special character or appearance of the area.

## Appendix 2: Appeal decision with relevant Planning Conditions



requirements and policy. I have taken into account all the other matters raised in the evidence, including the likely effects on the living conditions of neighbours.[10] Subject to the imposition of appropriate planning conditions the scheme would not have an unacceptable adverse effect on the residential amenity of those living nearby. There is local concern about nine flats adding to parking pressure on local roads, but the obligation provides that the development would be car-free housing. Neither these, nor any of the other matters raised, are sufficient to outweigh my conclusions on the main issue, which have led to my decision on this appeal.

**Conditions**

22. The Council and the appellant agreed conditions that should be imposed if the appeal were to be allowed.[11] I have considered the need for these and their wording in the light of the advice contained in Circular 11/95 *The Use of Conditions in Planning Permissions*.

23. In addition to the standard commencement period condition (Condition 1), it would be necessary for external materials and detailing to be approved in the interests of the appearance of the area (Condition 2). For similar reasons, a landscaping scheme would be required (Conditions 3 and 4). Details would also need to be approved for waste and recycling storage areas and for storing cycles (Conditions 5 and 6). Control of any piling would be necessary to safeguard the amenity of the area (Condition 7) and measures taken to protect a roadside tree (Condition 8). Details of photovoltaic cells, acoustic glazing and ventilation would need to be submitted for approval as insufficient detail is provided in the application (Conditions 9 and 10). For safety reasons measures would be necessary to control excavations near to the railway tunnel (Condition 11). Windows in the rear staircase would need to be obscured glazed and fixed shut so as to prevent overlooking and loss of privacy for neighbouring occupiers (Condition 12). Lifetime homes features and facilities would need to be secured to provide for the needs of future occupiers and to accord with relevant policy (Condition 13). Otherwise than as set out in this decision and conditions, it is necessary that the development shall be carried out in accordance with the approved plans for Scheme A, for the avoidance of doubt and in the interests of proper planning (Condition 14).

**Conclusions**

24. The proposal would comply with the development plan, and there are no material considerations here which would justify a determination other than in accordance with it. With regard to my statutory duty under the 1990 Act, I have found that the proposed development would enhance both the character and the appearance of Camden Square Conservation Area. For the reasons given above and having regard to all other matters raised, I conclude that the appeal should be allowed.

*John Woolcock*
Inspector

[10] Including the permitted scheme for a dwelling at 27A Agar Grove at ID13.
[11] ID16.

# Appendix 2: Appeal decision with relevant Planning Conditions



SCHEDULE OF CONDITIONS

1) The development hereby permitted shall begin not later than three years from the date of this decision.

2) Detailed drawings, or samples of external materials, in respect of the following, shall be submitted to and approved in writing by the local planning authority before the relevant part of the work is begun:

(a) Typical details of new fencing at a scale of 1:10, including materials and finish.

(b) Plan, elevation and section drawings, including jambs, head and cill, of all windows, and window, door openings and lift overrun at a scale of 1:10 with typical moulding, architrave and glazing details at a scale of 1:1.

(c) A sample panel of all facing materials should be erected on-site and approved in writing by the local planning authority before the relevant parts of the work are commenced and the development shall be carried out in accordance with the approval given.

(d) A sample panel of the proposed facing brick and brick boundary walls shall be erected on-site and approved in writing by the local planning authority before the relevant parts of the work are commenced and the development shall be carried out in accordance with the approval given. The panel must include facing brickwork demonstrating the proposed colour, texture, face-bond and pointing.

The relevant part of the works shall then be carried in accordance with the approved details.

3) No development shall take place until full details of hard and soft landscaping and means of enclosure of all un-built, open areas have been submitted to and approved in writing by the local planning authority. Such details shall include details of any proposed earthworks including grading, mounding and other changes in ground levels. The relevant part of the works shall not be carried out otherwise than in accordance with the approved details.

4) All hard and soft landscaping works shall be carried out in accordance with the approved landscape details, prior to the occupation for the permitted use of the development or any phase of the development, whichever is the sooner. Any trees or areas of planting which, within a period of 5 years from the completion of the development, die, are removed or become seriously damaged or diseased, shall be replaced as soon as possible and, in any case, by not later than the end of the following planting season, with others of similar size and species, unless the local planning authority gives written consent to any variation.

5) Before the development commences details of the location, design and method of waste storage and removal including recycled materials, shall be submitted to and approved in writing by the local planning authority. The facility as approved shall be provided prior to the first occupation of any of the units hereby permitted and thereafter permanently retained.

6) Before the development commences, details of a secure and covered cycle storage area for 18 cycles shall be submitted to and approved in writing by the local planning authority. The approved facility shall thereafter be provided in its entirety prior to the first occupation of any of the units hereby permitted and thereafter permanently retained.

## Appendix 2: Appeal decision with relevant Planning Conditions



7) Piling or any other foundation designs using penetrative methods shall not be permitted unless a piling method statement detailing the type of piling to be undertaken and the methodology by which such piling will be carried out including measures to prevent and minimise the potential for damage to subsurface water or sewerage infrastructure, and the programme for the works, has been submitted to and approved in writing by the local planning authority. The piling shall be undertaken in accordance with the approved method statement.

8) Prior to the commencement of any works on site, details demonstrating how trees to be retained shall be protected during construction work shall be submitted to and approved in writing by the local planning authority. Such details shall follow guidelines and standards set out in BS5837:2012 *Trees in Relation to Construction*. All trees on the site, or parts of trees growing from adjoining sites, unless shown on the permitted drawings as being removed, shall be retained and protected from damage in accordance with the approved protection details.

9) Prior to first occupation of the units hereby permitted, detailed plans showing the location, extent and design of photovoltaic cells to be installed on the building shall have been submitted to and approved in writing by the local planning authority. The cells shall be installed in full accordance with the approved details and thereafter permanently retained and maintained in accordance with the manufacturer's instructions.

10) Before the development commences details of a scheme for an appropriate acoustic glazing system and acoustically rated passive air intake system for the building shall be submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details and the use shall thereafter not be carried out other than in complete compliance with the approved scheme.

11) Prior to the commencement of works, full details of all excavations and earthworks to be carried out within 10 metres of the railway undertaker's boundary fence shall be submitted to and approved in writing by the local planning authority and all such works shall only be carried out in accordance with the approved details.

12) Prior to occupation of any of the units hereby permitted, windows to the rear staircase shall be obscure glazed and fixed shut, and thereafter permanently retained.

13) The lifetime homes features and facilities, as indicated on the drawings for Scheme A in the Schedule of Plans and in the Schedule of Other Application Documents attached to this decision shall be provided in their entirety prior to the first occupation of any of the units hereby permitted and shall thereafter be retained.

14) The development hereby permitted shall be carried out in accordance with the approved plans for Scheme A listed in the Schedule of Plans included in this decision.

## Appendix 3: Tree schedule and explanatory notes

| Tree No | Species | Tree works |
|---|---|---|
| T1 | Single leaved ash | No work required |

### Explanatory Notes

- **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.
- **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.
- **Tree works:** The inspection of the tree was of a preliminary nature and only defects visible from the ground would have been identified. The following points should also be noted before carrying out any works:
  1. **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.
  2. **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 4: Protecting retained trees

## Introduction

### 1. Purpose and use of this guidance

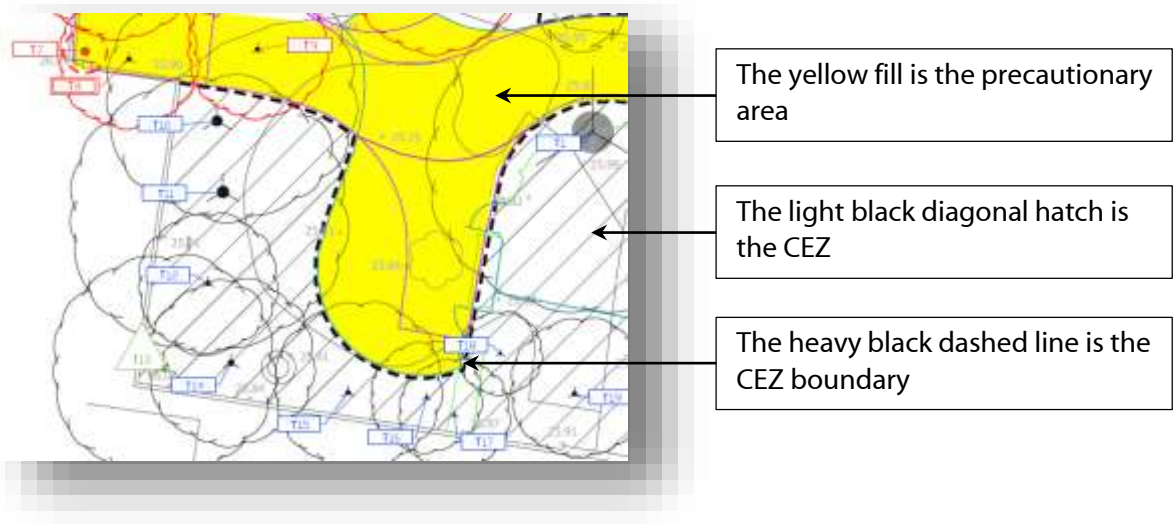
This general guidance is for construction site management to help protect trees that have been agreed for retention. It must be read in conjunction with the site-specific proposals shown on the tree protection plan and explained in the body text of this report. It supplements and expands upon the principles 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 by either installing fencing to restrict access or installing ground protection that allows limited access above the ground, 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 plans and annotated as follows:




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 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, regular inspection visits 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 practice, this can be done by any combination of fencing and ground protection, to be finalised and agreed at the pre-commencement meeting. Whether the CEZ is protected by fencing or ground protection, all the protective measures must be installed before the start of any site works that could affect trees. No protective measures should be removed or temporarily dismantled without consulting the supervising arboriculturist. Furthermore, the condition of all the protective measures should be regularly monitored to ensure they remain fit for purpose. The main means of preventing damage to trees and their RPAs in the CEZ are fencing, barriers and ground protection.

### 4. Protective fencing

Various fencing options are illustrated in figure 1 and photos 2–4 below. The minimum specification for the fencing must be as described in figure 2 of BS 5837 (figure 1 below) or an equivalent design that effectively restricts access to the RPA it protects.

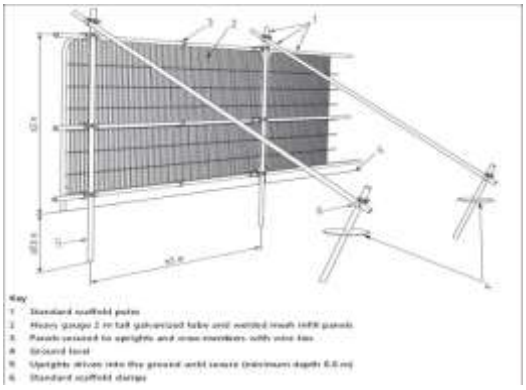


**Figure 1:** Recommendations taken from figure 2 of BS 5837.

**Photo 2:** Heras fencing wired to scaffold braced posts is a robust and effective interpretation of the BS specification.

## Appendix 4: Protecting retained trees

**Photo 3:** Close up of bracing detail, essential for increasing the stability of the vertical framework.

**Photo 4:** Board specification on secure wooden posts is a suitable alternative to the standard braced scaffold design.

The precise form of the fencing can vary, provided it is fit for purpose in that it effectively restricts access and damaging activities within the RPA that it encloses. More specifically, behind the fencing, there must be no vehicular access; no fires; no storage of excavated debris, building materials or fuels; no mixing of cement; no service installation or excavation; no raising or lowering of soil levels; and no excessive cultivation for landscape planting. Any variations to these restrictions must be agreed by the supervising arboriculturist.

### 5. Trunk protection

Where individual trunks or branches are vulnerable to impact damage, a framework of scaffold or wood can be constructed to provide protection (photos 5 and 6).

**Photo 5:** A scaffold braced framework surrounding the trunk reduces the risk of accidental impact.

**Photo 6:** Board secured to scaffold framework adds another layer of protection for vulnerable trunks and branches.

### 6. Ground protection

Where it is not practical to protect the CEZ by the use of fencing alone, BS 5837 (6.2.3) allows for the fencing to be set back and the soil protected by ground protection. This allows improved access during construction, with the ground protection preventing damage to the CEZ outside the protection of the fencing. A range of methods can be used, including retaining existing hard surfacing or structures that already protect the soil, installing new materials, or a combination of both. Whatever the choice of method, the end result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.

# Appendix 4: Protecting retained trees

Photos 7–14 illustrate a range of practical solutions that can effectively protect CEZs of retained trees.

**Photo 7:** Heavy-duty plywood set onto a compressible woodchip layer and pinned into position is suitable to spread the loading from pedestrian access.

**Photo 8:** Spreading soil excavated from footings is an effective way of buffering the plywood surface from the wear of light vehicles.

**Photo 9:** Plywood fixed to a wood frame is another effective method of protecting soil from pedestrian compaction.

**Photo 10:** A scaffold framework attached to the main scaffold fencing can be used to support either scaffold planks or plywood to create an elevated platform with a gap beneath.

**Photo 11:** Cellular products are a very effective means of providing ground protection where heavy vehicle use is expected. Here, it is being used to temporarily widen an existing road, to be removed once the construction is finished.

**Photo 12:** Custom designed sectional tracks can be joined to support very heavy traffic use through sensitive areas.

# Appendix 4: Protecting retained trees

**Photo 13:** A combination of retaining existing surfacing and using temporary construction cabin accommodation can be a very effective means of preventing damage to sensitive areas.

**Photo 14:** Steel plates can be an effective way of temporarily reinforcing weak surfacing over a construction access during the development activity.

## Guidance for working in precautionary areas

### 7. 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 15, 16 and 17).

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 18). 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 4: Protecting retained trees

**Photo 15:** Careful hand-digging using conventional tools is acceptable for exposing roots in RPAs.

**Photo 16:** Air spades are very effective at exposing roots and services with minimal damage.

**Photo 17:** Air spades are particularly useful where roots are very dense.

**Photo 18:** 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.

### 8. 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.

### 9. 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.

In summary, there should be no vehicular or repeated pedestrian access unless existing ground protection is retained or new protective measures are installed (photo 19). All exposed RPAs must be protected until there is no risk of damage from the development activity.

**Photo 19:** 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 20:** 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.

## 10. 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 21 and 22). 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 20), 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 20).
4. Great care must be taken throughout these operations not to damage roots as set out in paragraph 7 above.
5. If appropriate, leaving below ground structures in place should be considered if their removal may cause excessive root disturbance.

## Appendix 4: Protecting retained trees

**Photo 21:** 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 22:** These trees had impermeable surfacing right up to their trunks, which had to be removed by hand before installing new structures.

### 11. Installation of new surfacing in precautionary areas

BS 5837 (7.4) confirms that new surfacing can be installed within RPAs, but it has to be carried out with care. These operations are potentially damaging to trees because they may require changes to existing ground levels, resulting in localised soil structure degradation and/or disrupt the efficient exchange of water and gases in and out of the soil. Older trees are much more prone to suffer from such changes than young and maturing trees. Adverse impact on trees can be reduced by minimising 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 localised compaction and require little or no excavation to limit direct damage. The actual specification of the design 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 engineering issues and must be provided by appropriate specialists.

### 12. Cellular confinement systems

BS 5837 (7.4.2.) sets out that no-dig, three dimensional cellular confinement systems can be used as the basis for extending hard surfacing into RPAs. It is our experience (www.barrelltreecare.co.uk/case-studies/SurfacingNearTrees.pdf) that this type of surfacing can be installed in the majority of situations without any significant adverse impact on adjacent trees, provided that proper consideration is given to all the circumstances. Most of our experience is with the CellWeb system supplied by Geosynthetics Ltd (www.geosyn.co.uk) and because of its sustained good performance over time, this is our preferred choice of product. The product is made from heavy-duty plastic that can be pulled apart to open into cells. These are then filled with washed stone, after the product is spread over the ground and pinned in place. This forms a base layer that acts as a floating raft, spreading the load across the whole construction width. The base layer can be topped with a variety of finishes as illustrated in figure 23. Photos 24 and 25 show the product spread over the ground and then filled with stone to produce the base layer.

## Appendix 4: Protecting retained trees

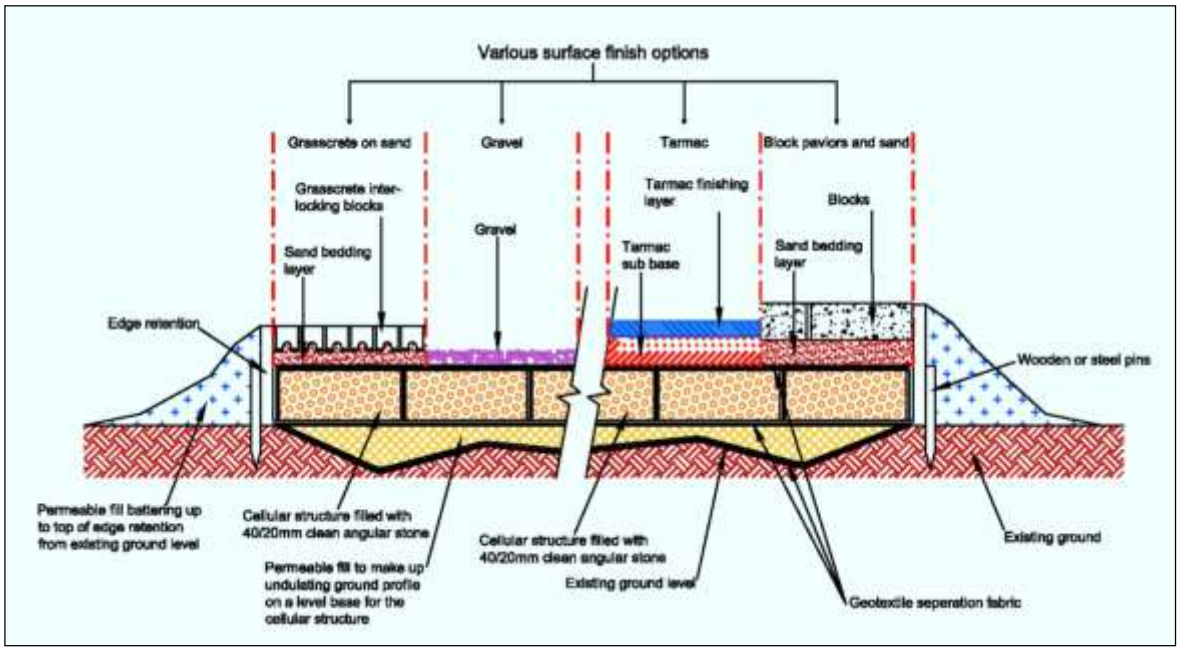



**Figure 23:** This conceptual cross-section illustrates the structural elements of the system and the multiple surfacing options that can be used with it.

**Photo 24:** The three-dimensional cells are opened up, spread across the area to be surfaced and pinned in place ready for the stone filling.

**Photo 25:** The stone-filled cells spreads the load of traffic and the geotextile membrane on the ground prevents migration of the stone into the soil profile.

### 13. Dealing with undulating surfaces and establishing a tolerable level of excavation

The precise location and depth of roots within the soil is unpredictable and will often 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 an established turf layer up to 5cm is unlikely to be damaging to trees. However, this may not be possible where there is no grass because tree roots may grow

right up to the soil surface. In some situations, 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 deeper than 5cm is anticipated.

On undulating surfaces, finished gradients and 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 arboriculturist before a final decision is made.

## 14. Sub-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 (figure 23). 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.

## 15. Edge retention

Conventional kerb edge retention set in concrete-filled excavated trenches is likely to result in damage to roots and should be avoided. Edge retention in RPAs must be designed to avoid any significant excavation into existing soil levels (BS 5837, 7.4.3) and there are a number of approaches that are fit for this purpose. For block paviours, the use of pre-formed edging secured by metal pins is effective and can be reinforced by concrete supports as long as there is no excavation into the soil (photo 26). Railway sleepers (photo 27) pinned in place or wooden boards (photo 28) are two options, depending on the expected loading of the surfacing. A permeable soil fill can then be used to batter the grade back down to the existing soil level.

**Photo 26:** A conventional concrete haunching can be used to retain new surfacing as long as it is not dug into a trench - here is it placed on top of the CellWeb layer.

**Photo 27:** Although this is only a temporary surface, railway sleepers pinned into the ground can be used to retain the edges of new surfacing.

**Photo 28:** Wooden board pinned in place or held in position with backfilled topsoil can provide more informal and rustic surface edging.

**Photo 29:** In some situations, it may be appropriate to cast a free floating concrete surface directly onto the soil surface provided provision is made to prevent soil contamination while the concrete is being poured, i.e. an impermeable membrane separating the concrete from the soil.

## 16. Footpaths and surfacing without a load-spreading base layer

In some situations, limited-width floating concrete rafts constructed directly onto the soil surface may be acceptable for both pedestrian (photo 29) and vehicular access (photo 30), but the design must not include any strip-dug supports. If concrete is poured directly, precautions must be taken to ensure that no toxic fluids can contaminate the adjacent soil. Alternatively, elevated paths supported on low impact frames or post supports allow a decking surface to cross sensitive areas (photos 31 and 32). Where paths are installed very close to trunks, provision must be made for distortion from future root growth by selecting flexible components for the supporting frame and surfacing (photo 33).

**Photo 30:** This temporary access for heavy construction traffic on the outer edge of a RPA is a concrete slab cast above ground level and will be removed when the project is completed.

**Photo 31:** Board walks supported on posts or a light frame are another way of providing pedestrian access across sensitive RPAs.

## Appendix 4: Protecting retained trees

**Photo 32:** New surfacing can be supported above the ground on posts leaving the soil surface beneath undisturbed.

**Photo 33:** Where surfacing is needed close to rapidly growing buttress roots, a light metal frame with rubberised surfacing will allow the path to distort without cracking as the roots grow.

### 17. 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.

### 18. 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. 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.

### 19. Small sheds, carports and bin stores

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 levelling 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 arboriculturist before a final decision is made. Light covering structures can be 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 (photo 34). 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 (photo 35).

# Appendix 4: Protecting retained trees

**Photo 34:** These carports are formed by wooden posts above a three dimensional cellular no-dig and load-spreading surface of permeable crushed stone.

**Photo 35:** This deck supported above the ground on small posts provides a low-impact alternative to conventional stone patio surfacing in RPAs.

## 20. New foundations for free-standing walls, gate piers, buildings and bridges

Conventional strip foundations in RPAs for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, BS 5837 (7.5) confirms special engineered foundations can be used in RPAs. Damaging 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 (photos 36 and 37). The design should be sufficiently flexible to allow the piles to be relocated if significant roots are encountered in the preferred locations (photos 38 and 39). Before the actual installation of the new structure starts, any vulnerable RPA should be protected by temporary ground protection as set out in paragraph 6 above (one option shown in photo 39). At expected pile or gate pier locations, gaps in the ground protection should be left to allow access to the soil beneath. The preferred pile locations should be carefully excavated to a depth of 60cm to establish if there are any significant roots over 2.5cm in diameter that could be damaged. If significant roots are found, they should be dealt with as set out in paragraph 7 above or the pile location may have to be moved slightly (photo 38).

Once the piles have been installed, the ground protection is usually removed ready for the installation of the slab supporting the structure (photos 40 and 41). It is important to note that the lowest points of the new structure, i.e. the underside of the main slab and any pile-capping beam must be above the ground level between the piles and there should not be any further excavation. The supported structure base 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 (photo 42). BS 5837 (7.5.4) recommends that where impermeable structures cover significant proportions of RPAs, it may be necessary to provide water input through redirecting roof drainage beneath the supporting slab (photo 43).

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**Photo 36:** Small diameter piles (less than 150mm) are an effective means of supporting structures in RPAs with minimal disturbance.

**Photo 37:** It is possible to support very large structures on piles within sensitive RPAs without any significant adverse impact on tree roots.

**Photo 38:** Where piles are proposed close to trunks, it is essential to excavate 50–75cm deep to see if there are any significant roots in the way, with provision to move the pile location if roots are found (note the pile was finally installed to avoid this root).

**Photo 39:** Ground protection must be used to spread the load of the piling rig once excavation has confirmed that no substantial roots are in the preferred pile location.

**Photo 40:** Once the piles have been installed (yellow tops), the ground protection to support the piling rig is removed ready to fix the void-former onto the bare soil, in advance of pouring the building slab.

**Photo 41:** Piles can also be used to support bridges across sensitive RPAs, but the temporary ground protection has to be removed before the main structure is either imported in or cast on site.

**Photo 42:** Where a slab is cast on site, a biodegradable void-former (red arrow) temporarily supports the weight of the liquid concrete until it sets. The void-former can then be wetted and washed away to leave a void or left to degrade naturally, both of which allow movement of air beneath the slab.

**Photo 43:** This reinforced base slab for a double garage has drainage provision (red arrow) beneath the structure to redirect roof runoff to supply roots with water.

Gate piers generally require larger holes and have less flexibility for relocation if large roots are found. Localised loss of roots may be unavoidable, so each situation should be assessed on its own merits by the supervising arboriculturist once the careful excavations have been completed. 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.

## 21. Walls on existing foundations and retaining walls

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 ground protection is in place while the new wall is being built. However, replacing existing walls or constructing new 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 paragraph 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 are found during the course of the construction should be referred to the supervising arboriculturist.

## 22. 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 (photo 44). Where a hand-digging option is agreed (photo 45), 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.

**Photo 44:** If possible, thrust boring is the preferred option for installing service routes through the RPAs of important trees, but there has to be space at the start and finish to dig substantial working pits.

**Photo 45:** Continuous trenches dug by hand so that important roots can be retained (with the service ducting threaded beneath) is an effective means of minimising damage (note the ground protection boards with soil piled on top on the left).

## 23. 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 46).

**Photo 46:** 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 47:** 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.

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### 24. 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 47), must be used to contain accidental spillages.

## Soft landscaping and new tree planting

### 25. Upgrading existing soft landscaping or replacing existing surfacing or 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 new structures or compacted surfacing, which are considered as substantial works and covered in the preceding sections of this document.

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 within 1m of 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 (photos 48 and 49).

**Photo 48:** The RPA of this tree was not effectively protected during construction and excessive compaction of the soil meant it died soon after this turf covered up the damage.

**Photo 49:** This tree had tarmac parking within its RPA that was removed and replaced with an organic mulch near the trunk and limited no-dig surfacing on the outer edges of its RPA.

### 26. New tree planting

Where new trees are proposed, the species, location and size will be explained within the text of the report and illustrated on the accompanying plan. Essential considerations on a tree-by-tree basis for the successful establishment and sustainability of new trees include:

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1 **Planting locations:** Illustrative locations are shown on the appropriate plans. The final location for each tree must be agreed with the supervising officer after consideration of the prevailing site conditions in the immediate vicinity.

2 **Site preparation:** All competing weed vegetation within 1m of the stem must be mechanically removed or chemically killed to leave a weed-free planting area.

3 **Tree quality:** New trees must be specifically checked before planting to confirm that they are healthy and free of structural defects.

4 **Planting pits:** All planting must be into good topsoil and the pits excavated to a size of at least 10cm beyond the maximum dimensions of the loose roots or root-ball. The bottoms and sides of pits should be forked and broken up for a distance of at least 10cm beyond the pit boundaries before planting. The larger the tree, the greater this broken-up area needs to be, which can be up to 50cm and more for the larger semi-mature trees.

5 **Drainage:** Planting pits must be free-draining to avoid prolonged waterlogging. This specifically applies to poorly draining soils such as clay, where breaking up the pit bottom and sides is essential for the new tree to survive.

6 **Planting depth:** Planting the roots too deeply can seriously damage and kill trees. They should be planted no deeper than the depth that they were growing in the nursery, i.e. the base of the stem where it meets the roots at the root collar, should be no deeper than the final ground level around the planting pit.

7 **Stabilising by staking and guying:** Most trees taller than 1.5m at planting are likely to need stabilising until new supporting roots have grown. For all trees up to semi-mature size, this should be in the form of short staking so that the tree is held 0.5–0.75m above ground level and no higher. For the larger semi-mature trees, either above ground guying of the stem with cables or securing the root-ball below ground is essential to allow new anchoring roots to develop.

8 **Protection:** Where there is a risk of browsing damage from animals, stems must be protected with individual guards or more substantial fenced protection, if appropriate.

9 **Mulching:** The area surrounding each new tree up to at least 1m from the stem must be covered with a 50mm depth of composted woodchip mulch. Cut grass must not be allowed to grow right up to the stem as it competes for water and nutrients, and predisposes the stem to mowing damage during maintenance.

10 **Watering:** All new trees must be watered in periods of dry and hot weather until they are established to be independent in the landscape. This must be for at least one year for smaller trees and could extend for up to four years for larger trees. All standard and larger trees must have a suitable means of ensuring that water reaches the deeper roots, usually in the form of a perforated pipe installed around the rootball at the time of planting.

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11 **Annual maintenance:** All newly planted trees must be inspected on an annual basis until they are successfully established. All failures must be replaced. Annual maintenance must include keeping the planting area weed-free and topping up the woodchip mulch.

12 **Tree size:** Nurseries can supply most species of tree at a variety of sizes, ranging from small whips less than a metre in height up to large semi-mature specimens up to 12m height and more from some specialist growers. Figure 50 provides a simple guide on the commonest forms and sizes, and photos 51 and 52 indicate the variety of trees available.

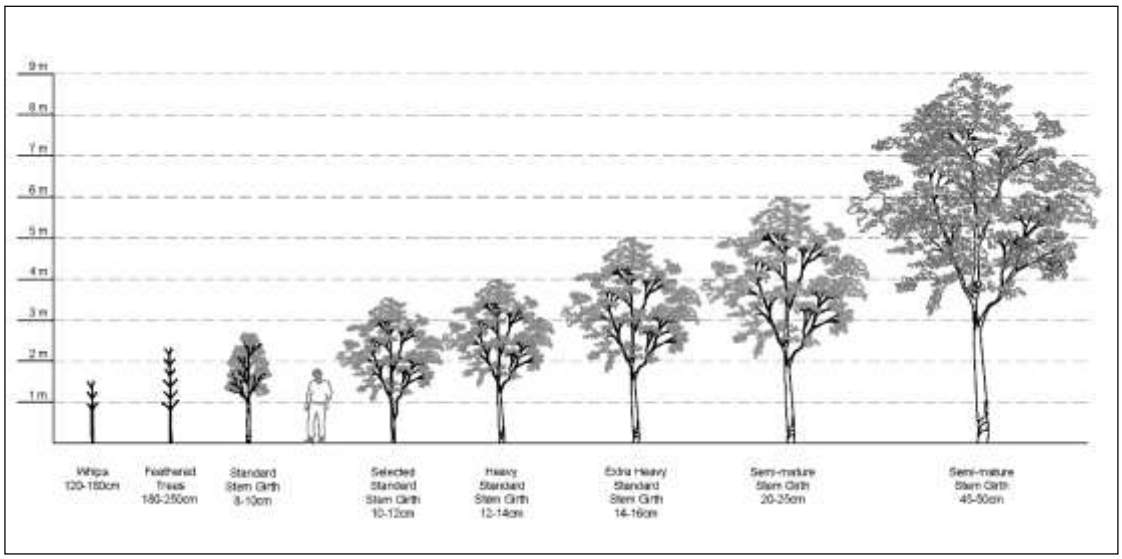


**Figure 50:** Summary of common conventions used by nurseries to describe tree types and sizes.

13 **Tree form:** Selecting the most appropriate tree for the location so that it does not out-grow the space available is important to avoid future inconvenience to occupiers. Specialist nurseries are able to supply a wide range of different forms (shape, size and proportion) and varieties with different aesthetic characteristics such as leaf shape, branching habit and foliage colour.

**Photo 51:** Hillier nurseries in Hampshire have a wide range of tree forms and species to provide instant effect in formal landscapes.


**Photo 52:** Barcham nurseries in Cambridgeshire specialise in supplying large trees for urban planting.

The larger semi-mature trees over 4–5m in height and the more unusual forms and varieties can be supplied by specialist nurseries (try www.barcham.co.uk, www.hilliertrees.co.uk and www.civictrees.co.uk). Such trees must be planted by experienced landscape contractors for the best results.

## 27. Structural tree soil

Structural tree soil is a man-made growing medium for trees with a high proportion of angular stone, which provides support for surfacing above while still maintaining voids that roots can grow in. It allows surfacing to be installed close to trees and for roots to establish beneath, making it suitable for growing trees in parking areas (photos 53 and 54). It is generally installed to a depth of about 1m, and filled in layers of about 300mm that can be progressively compacted to provide sufficient bearing for the new surfacing, without compromising future root growth. It is sometimes call tree sand or Amsterdam tree soil, and an internet search on either of these names will identify local suppliers. Three commercial suppliers can be found at www.landtechsoils.co.uk, www.treesand.co.uk and www.woodlandhp.co.uk.

**Photo 53:** Structural tree soil retains sufficient structure for tree roots to grow, even when compacted.

**Photo 54:** It allows trees to be successfully established in areas of extensive hard surfacing, with very little, if any, loss of parking space

## 28. Silva Cells and root deflectors

It is possible to establish trees in fully paved areas using structural supports that protect the soil beneath the surface from being compacted. These are effectively large containers made of concrete or combinations of metal and plastic, which support the surface above and any loads it has to carry. They are filled with soil to provide a viable rooting environment for trees, allowing large trees to provide sustainable amenity in highly urbanised settings. Such systems also have the added advantage that they allow storage of rainwater, significantly reducing the rate of flow of water from paved areas during peak periods. One of the most widely used systems is the DeepRoot Silva Cell (www.deeproot.com) (photos 55–57), but other products are available.

## Appendix 4: Protecting retained trees

**Photo 55:** The individual Silva Cells can be assembled in layers and service ducting threaded through before filling with soil and fitting the reinforced tops.

**Photo 56:** Drainage from adjacent buildings can be directed into Silva Cells, significantly buffering rainwater runoff from urbanised areas.

New trees planted near surfacing can cause distortion damage from root growth if the appropriate precautions are not taken. Problems of this nature can be significantly reduced by installing root deflectors around the rootballs of new trees at the time of planting (photo 58). New roots growing out from the rootball meet the plastic profiled surface, deflecting them downwards, where they grow outwards at a lower level. Although they do eventually grow back near the surface, the onset of any damage is significantly delayed and it is usually far enough away from the trunk for remedial works to be carried out without seriously affecting the stability of the tree. However, these products are not suitable for all situations, especially on shallow soils, and so their use should always be considered very carefully in the context of individual site conditions. Try www.deeproot.com and www.greenleaftrees.co.uk, or internet search on 'root deflectors' for more information on products.

**Photo 57:** The finished surfacing is profiled to leave the tree pit open, ready to be filled with good quality topsoil and the new tree.

**Photo 58:** This excavated tree shows the root deflectors that were installed when it was planted seven years previously. The product has deflected roots downwards and prevented damage to the adjacent surfacing. Note that this is a permeable sandy soil and the roots were able to grow beneath the bottom of the deflectors.

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