Tree Protection on Development Sites

Adopted Supplementary Planning Guidance

Adopted Swindon Borough Local Plan, 1999
Swindon Borough Local Plan 2011 Revised Deposit Draft

December 2004

Swindon
BOROUGH COUNCIL

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Copies of the document (priced £1.00 excl p&p) can be obtained from:

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1. Introduction

1.1 Supplementary planning guidance (SPG) may be prepared by local planning authorities (LPA's) where it is appropriate to supplement policies and proposals contained within development plans. Such guidance can be helpful to those preparing planning applications. Although it does not have the same special status as planning policy, it is a 'material consideration' when determining planning applications. This SPG provides guidance in respect of the preservation of appropriate trees within development schemes, and supplements policy ENV18 of the Swindon Borough Local Plan, 2011.

1.2 Trees have a particularly important role to play within the landscape. Their retention within a development can enhance its appearance and give character. They can also provide screening and shelter. These existing landscape features will reinforce and supplement new planting which will have a specific design function within a development.

2. Summary of Legislative Background and Best Practice Guidance

2.1 Tree protection is currently provided through the framework of statutory guidance and British Standards, as summarised below. Whilst all applications must continue to have regard to this legislative framework, the Council has produced this guidance to supplement existing measures. In so doing, it seeks, as far as it is able, to provide for the best possible protection and long-term preservation of trees within the Borough.

Tree Preservation Orders

2.2 Tree preservation orders (TPO's) may be placed on trees or groups of trees which the LPA wish to preserve in the interests of amenity. The LPA has a specific duty laid down in law under section 197 of the Town and Country Planning Act 1990 to ensure that in granting planning permission, adequate provision is made for the preservation of trees, which may include preservation by means of a TPO, or the planting of new trees. Such an order may prohibit the cutting down, topping, lopping, uprooting, wilful damage or wilful destruction of trees without the LPA's consent. Orders also allow the LPA to give consent for such works subject to conditions. There is a duty to replace a removed tree with another tree of appropriate size and species unless the LPA dispense with the requirement. There is a right of appeal against refusal or against conditions.

Trees in Conservation Areas

2.3 The Act in section 211 specifies that notice must be served on the LPA of a period of not less than six weeks when it is intended to do works to a tree in a conservation area. This notification shall include sufficient particulars to identify the tree. As above there is a duty to replace any trees removed.

Other Statutory Provisions

2.4 Further guidance is contained within the Town and Country Planning (Tree Preservation Order) Regulations, 1969 (as amended in 1981) and in Circular 36/78.

The Retention of Trees by Condition

2.5 Planning conditions specifying the use of appropriate fencing can be used, by the LPA, to ensure that trees on a development site are properly protected whilst the development is being carried out. Circular 11/95 contains advice about the use of conditions regarding the protection of trees (paragraphs 51 and 52 refer). Developers are advised that conditions placed on a planning permission need to be addressed, as non-compliance can result in "breach of condition" action being taken by the LPA.

Non Statutory Best Practice Guidance - British Standard BS 5837 (1991)

2.6 This document comprises a comprehensive guide for trees in relation to construction. Much of its content is of great practical value. However the extent of its provisions, in relation to the proximity of buildings to trees, have been found by the Council to provide inadequate tree protection measures. This document seeks to build on the provisions of the British Standard.

Local Plan Policy

2.7 ENV18 "Habitat **and Species** Protection" of the Swindon Borough Local Plan 2011. Paragraph 3.21.2 of policy ENV18 states:

"These features are defined as those that, because of their linear and continuous structure or their function as stepping-stones, are essential for the migration, dispersal and generic exchange of wildlife. Examples include rivers and their banks, hedgerows, trees and ponds. (Supplementary Planning Guidance entitled, "Tree Protection on Development Sites" gives further guidance specifically relating to trees). This does not however include advice on the identification of trees worthy of protection but offers advice on how such trees can be protected. Due regard will also be had to the provision of the Hedgerow Regulations 1997"

2.8 Other local plan policies are of relevance to the consideration of trees, and regard should be had to these policies, in particular DS6.

3. Trees and Development

3.1 For the purposes of this SPG a tree is defined as:
'.... a woody plant which has a trunk diameter of not less than 75mm measured 1.5 metres above ground level'.

Source; 'Tree Preservation Orders - A Guide to the Law and Good Practice', published by the Department of the Environment, October 1994.

3.2 If a site proposed for development contains existing trees or there are trees on land that overhangs the site, then the applicant is strongly recommended to provide the LPA with a tree survey and assessment. If appropriate, this survey and assessment may be part of a landscaping appraisal of the whole site. This may help to avoid delays in processing the planning application. The LPA will not normally expect a tree survey and assessment to be submitted with a householder planning application but paragraphs 3.7 - 3.10 provide further guidance.

Undertaking a Tree Survey and Assessment

3.3 The information provided in a tree survey and assessment will assist council officers in identifying which trees should be retained in a development and which can be felled. The information provided by the survey should classify the trees into one of the following categories:

v trees that it is most desirable to retain - 'high' category,

v trees that it is desirable to retain - 'moderate' category,

v trees that could be retained - 'low' category,

v trees for removal - 'fell' category.

Furthermore, it should accurately plot the position, species and dimensions of each tree and provide an assessment of each tree's health. Any trees that are the subject of a Tree Preservation Order or that lie within a Conservation Area should also be clearly shown. British Standard 5837 contains more detailed advice about tree surveys in paragraphs 5.2.1 - 5.2.4. It is recommended, for consistency and speed, that this advice is followed by applicants. British Standard 5837 can be viewed at the Planning and Health Department, Premier House, during normal office hours. An example of the site survey sheet used by the Council's arboricultural officer is included at Appendix 1. This may be reproduced and used with any submitted application.

3.4 If a site tree survey and assessment is not provided with a planning application, when appropriate, it may cause delay in the processing of the application where there are a large number of trees on the site or where the trees are of local importance. The LPA reserves the right to request such information where it considers it to be of material significance to the determination of a planning application.

3.5 The LPA will evaluate the tree survey and assessment information submitted, and will, if appropriate, carry out its own tree survey of the site. Both surveys will inform which trees will be retained within the development and which can be felled.

3.6 As part of the landscaping scheme submitted with the application, the Council will normally seek the replacement, possibly by planning condition, of those trees authorised for removal, with new trees. Subject to the maturity of the original tree, replacements would normally be expected to be of like semi-mature species and of similar age and size to the tree to be removed. See Section 4, Location of Proposed Tree Planting Within Landscaping Schemes, and Section 5, Tree Care After Development is Complete.

Householder Applications

3.7 The LPA will only expect the applicant to provide it with a tree survey and assessment with a householder planning application where it is reasonable to expect that the development proposed will impact upon important trees.

3.8 The LPA reserves the right to request a tree survey and assessment where it considers, based on arboricultural advice, that trees of local importance on the site will be impacted upon by the proposed development. If the applicant considers that trees of local importance will be impacted upon by the development proposed, the submission of a tree survey andassessment with a planning application could significantly speed up the processing of the application.

3.9 Proposals for residential extensions should ensure that existing trees and other vegetation are retained wherever possible. In some cases conditions will be attached to planning permissions to ensure the retention of trees, shrubs and hedges, and their protection during construction works - or to provide new planting.

3.10 The Council may refuse planning permission for a householder application, such as an extension, that would necessitate the removal of trees that are valuable, either due to their own importance, because they make an important contribution to an area's character or appearance, or because they are crucial to residential amenity

Defining the Areas 'at risk' from Development

3.11 Areas at risk fall into three categories, the Canopy, Rooting and Nutrient Zones.

a) The Canopy Zone

3.12 Development that takes place too close to trees can result in a number of problems that may prejudice the preservation of trees in the longer term. Above ground, there may be concerns with regard to each or any of the following:

v a tree's sheer size, aspect and exposure to strong winds,
v the obstruction of light,
v falling leaves and other debris,
v damage to tree branches from repeated contact with structures (e.g. windows),
v accumulation of leaves and fruit on public rights of way,
v honeydew accretion causing damage to the paintwork of structures and vehicles.

In some cases, such concerns can lead to pressure for the tree to have its overall branch structure reduced in size or, in extreme cases, felled. The worst of these problems could be avoided by ensuring that no development takes place within the crown spread or **'canopy zone'** of a tree. For the purposes of this guidance, the 'canopy zone' of a tree equates to a distance equal to the radius of the crown spread or half the height of the tree, whichever is the greater.

b) The Rooting Zone

bi) Damage to Tree Roots by Development

3.13 Below ground, development can impact on a tree's rooting system, which extends beyond the 'canopy zone', to the extent that it adversely affects the tree's health and consequently its long term preservation. Inappropriate development can result in roots being severed and/or compacted. Severing of roots can make a tree unstable and reduce its capability to take in moisture and nutrients to keep it healthy. A tree obtains most of its moisture and nutrients through small fibrous roots at the root tips. These roots are most likely to be severed or compacted because they are furthest from the tree, it is these roots which this supplementary planning guidance seeks to protect, and which the Council consider BS 5837 does not protect sufficiently.

bii) Damage to Development by Tree Roots.

3.14 The Council has interpreted scientific information[1] which indicates that trees can be divided into two broad rooting types - "aggressive" and "less aggressive".

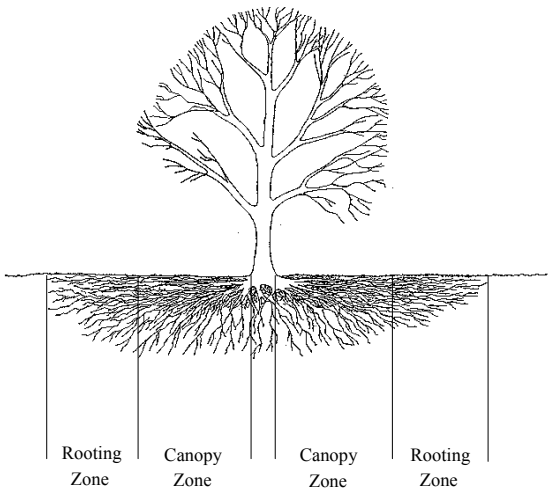
[1]*Source; 'Tree Roots and Buildings' D.F. Cutler and I.B.K. Richardson,* Published by Longman Scientific and Technical, Second Edition 1989.

3.15 Aggressive tree species are those which have been found to cause damage to structures at distances equal to or greater than 75% of the mature tree height. Less aggressive tree species are those which have been found to cause damage to structures at distances less than 75% of the mature tree height. The relevant distances that these percentage heights equate to, outside of the 'canopy zone', are referred to in this SPG as the **'rooting zone'**.

biii) The Extent of the Canopy and Rooting Zones.

3.16he extent of the canopy and rooting zone (see figure 1) for common tree species is set out in Tables 1 and 2. Table 1 contains examples of the most common aggressive tree species. Table 2 contains examples of the most common less-aggressive species. In both tables the distances given are based upon average soils and allow for future growth of the trees above and below ground. The precise distances will vary subject to the type of soil, nutrient content and drainage. In order to assist the LPA's consideration of a landscaping scheme, it is advised that details of soil type and condition should be submitted with each application.

Figure 1: The Extent of the Canopy



3.17 The soil type and age of the tree are both crucial factors in the development of the rooting system. Heavy soils, such as Clay with water levels close to the surface, tend to produce root systems close to the surface. The more freely draining soils such as Sandy Loams tend to produce roots through a wider soil profile. In both soil types lateral root spread may often be quite extensive. Young trees have been shown to have a root spread often considerably in excess of tree height.

Table One

Mature Height, Canopy, Rooting, and Nutrient Zones; Aggressive Tree Species.

Species	*Mature Height - Urban (metres)*	*The Canopy and Rooting Zones, Extent from the Tree Trunk Centre (metres)*	*The Nutrient Zone (additional metres)*
Ash	23	21	3.15
Cuppressus	25	20	3
Elm	25	25	3.75
Oak	23	30	4.5
Poplar	28	30	4.5
Willow	20	40	6

Source; D.F. Cutler and I.B.K. Richardson

This list of tree species is not exhaustive, other species will be considered on their merits.

Table Two

Mature Height, Canopy, Rooting, and Nutrient Zones; Less Aggressive Tree Species.

Species	*Mature Height - Urban (metres)*	*The Canopy and Rooting Zones, Extent from the Tree Trunk Centre (metres)*	*The Nutrient Zone, (additional metres)*
Birch	14	10	1.5
False Acacia	20	12	1.8
Hazel	10	3	0.45
Pine	29	8	1.2
Plane	30	15	2.25
Walnut	15	8	1.2

Source; D.F. Cutler and I.B.K. Richardson

This list of tree species is not exhaustive, other species will be considered on their merits.

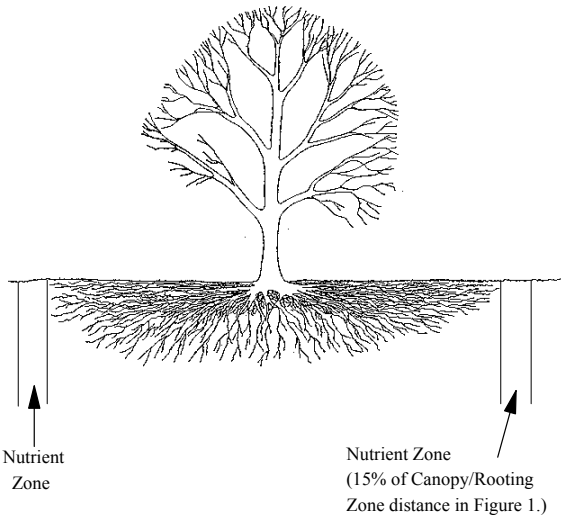
3.18 It is important to note that the distances set out in Tables 1 and 2 only apply where the existing trees are of mature height. Where the trees are not yet mature the distances may, by agreement, be reduced. In this instance, and in accordance with NHBC guidelines, such reduction will necessitate the developer considering the use of special foundations. The LPA would not, however, agree to situations where the reduced distances would ultimately lead to pressure for the tree to be felled. Conditions may be imposed by the LPA on a planning permission to safeguard against this.

c) The Nutrient Zone

3.19 A third zone, termed the 'nutrient zone', lies beyond the rooting zone. Arboriculturalists believe that trees will call upon this zone to draw in moisture and possibly nutrients and it may extend for a distance equal to 15% of the radius of the canopy and rooting zones combined (see figure 2). These distances are also set out in Tables 1 and 2.

3.20 Photograph 1 below shows an Oak in a hedgerow, an example of an aggressive tree species.

Figure 2: The Extent of the Nutrient Zone



Photograph 1

3.21 Photograph 2 below shows an example of a less aggressive tree species, (False Acacia).

Photograph 2

Guidance on Development within each Zone

3.22 The supplementary planning guidance published by the former Thamesdown Borough Council in March 1994, entitled, 'A Guide to Good Residential Development' gave guidance at paragraph 8.3.3 regarding built development; it stated that built development should be a minimum of 5 metres from the edge of the tree canopy. It also gave advice on the need for deeper foundations and root barriers, which increases the closer the built development is to a tree; and the need to safeguard the natural water table in the vicinity of large existing trees. That guidance is superseded by the guidance contained in this supplementary planning guidance document.

3.23 Four of the most common hazards encountered when development occurs near to trees are:

v ***bark and root damage via machinery impact*** - which can lead to openings or wounds in the tree tissue through which organisms can enter and infect the wound, possibly leading to the death of the tree.

v ***direct fire damage*** - which may lead to leaf or bud, trunk and branch scorch at distances of up to fifty metres or more, depending on wind direction and fire intensity. Extent of the damage will appear gradually after the fire with, in the worst cases, up to 50% or more of the tree being affected. In the case of mature trees death will be almost certain, younger trees may survive but their health will be severely jeopardised.

v ***soil compaction*** - which may lead to serious damage to the trees rooting system. BS 5837, (1991) paragraph 7.3.2.(a) states that one passage over a tree's rooting area by a heavy vehicle may be sufficient to create significant damage. Compaction of the soil results in the soil being crushed making it difficult, if not impossible, for the fine roots to function properly.

v ***chemical/oil spillage*** - which may lead to severe harm being caused to the tree. Products such as petrol, oil, diesel oil and tar may be found in common use on a building site. These together with chemicals designed to control weed growth may seep through the soil and reach the roots. They may then be

absorbed by the tree with potentially serious consequences for its health. Petroleum products, for instance, have the ability to damage the bark on quite substantial roots.

3.24 The extent of the development prohibition area that is offered to trees by the British Standard BS 5837 equates to a distance equal to the crown spread or half the tree's height, whichever is the greater. The Council, following research findings, using documents listed within the references section of this document, (see section 6), regard this as an unrealistic method of interpreting root spread, and therefore an insufficient means of ensuring that a tree is adequately preserved. More precise guidance as to what is permissible within each of the three zones is therefore set out below.

3.25 **For the purposes of this guidance the term 'development' includes:**

- **buildings and structures,**
- **roads and pavements,**
- **play areas, (when permeable surfacing may be specified by condition on a planning application),**
- **cable and pipework provision,**
- **garden walling, and fencing.**

3.26 The LPA will consider imposing conditions restricting the future development of the site, if it could be threatened by further works.

3.27 **a) The Canopy Zone**

If construction occurs within this zone, in average soil conditions, it will be likely to cause damage to such a degree that a tree dies, or at least has its health severely compromised. Other potential problems may also arise, such as safety and amenity disbenefits. No works above or below ground will therefore be permitted within this zone.

3.28 **b)The Rooting Zone**

Development within this zone may also cause sufficient damage to affect a tree's health, safety and amenity value. Development will, therefore, only be permitted exceptionally within small areas within this zone if it is vital to the successful implementation of an otherwise acceptable scheme. It should be noted that such exceptional devlopment, particularly for aggressive tree species, may include complete dwellings. Where development is permitted within this zone, special conditions may be applied regarding the design of the foundations, or the method of construction. Such conditions should ensure that the tree continues to have a quality of life comparable to that experienced prior to the development.

3.29 **c) The Nutrient Zone**

Where development is permitted within this zone, this will only be where it results in a minimum area of soil compaction and damage to the natural soil drainage. Whether or not development is permitted within this zone every effort should be made to ensure that no oil or chemicals are spilt. Such safeguards should ensure that the tree is not poisoned. The LPA will seek to avoid development within this zone wherever possible.

Care of Trees During Construction

3.30 There are numerous hazards to trees presented by construction and development works. The most common hazards are illustrated in figure 3. Consequently, all trees to be retained within a development site must be robustly fenced off. The appropriate method of tree fencing is illustrated in photograph 3 below.

Photograph 3

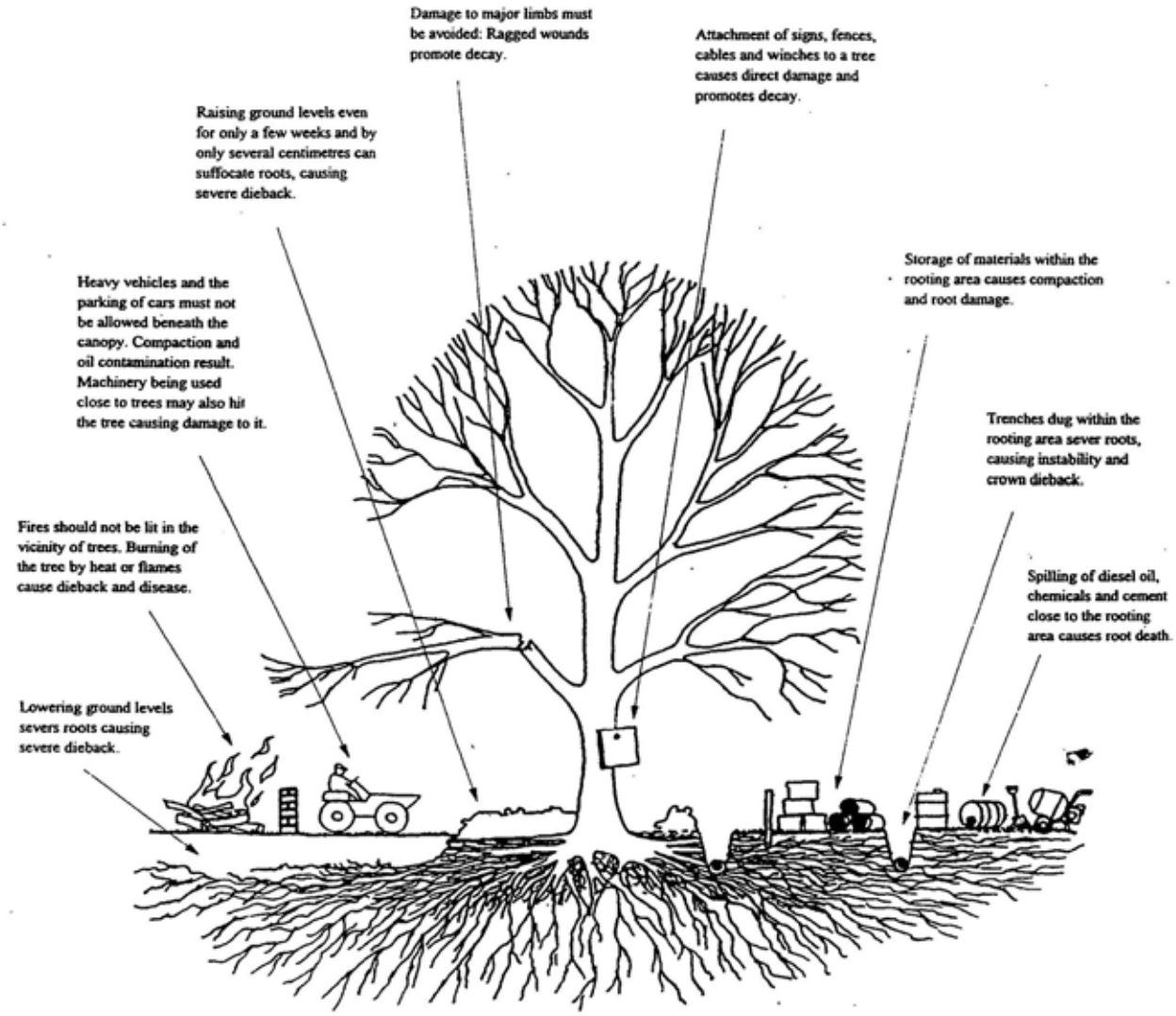
3.31 Normally, the protective fencing around each tree should be erected at the edge of the rooting or nutrient zone (see figure 4). However, in cases where this would compromise the effective development of a site to a point where it becomes impractical, the protective fencing may be erected around the tree at a distance of no less than 5 metres from the edge of the canopy zone. Whilst recognising that this solution is far from ideal, the LPA do recognise that in appropriate cases such a compromise will be appropriate to facilitate the effective development of a site, whilst protecting a good proportion of the rooting and nutrient zones. The proposed precise location of the fencing must be shown on a plan and submitted to the LPA, prior to the commencement of any development on the site. Plans should be at a scale of at least 1:500.

3.32 Where development is permitted within parts of the rooting zone or nutrient zone the 'no dig' method of construction should be used (also shown in figure 4), together with specially designed foundations. Details of the foundation design proposed in such circumstances should be submitted to the LPA with the planning application. In the cases where development has been permitted within these zones, the remainder of these areas should, where practicable, be fenced- off at the edge of the Nutrient Zone.

Figure 3.

Common Hazards Which Occur Near to Trees Brought About by Construction and Development Works.

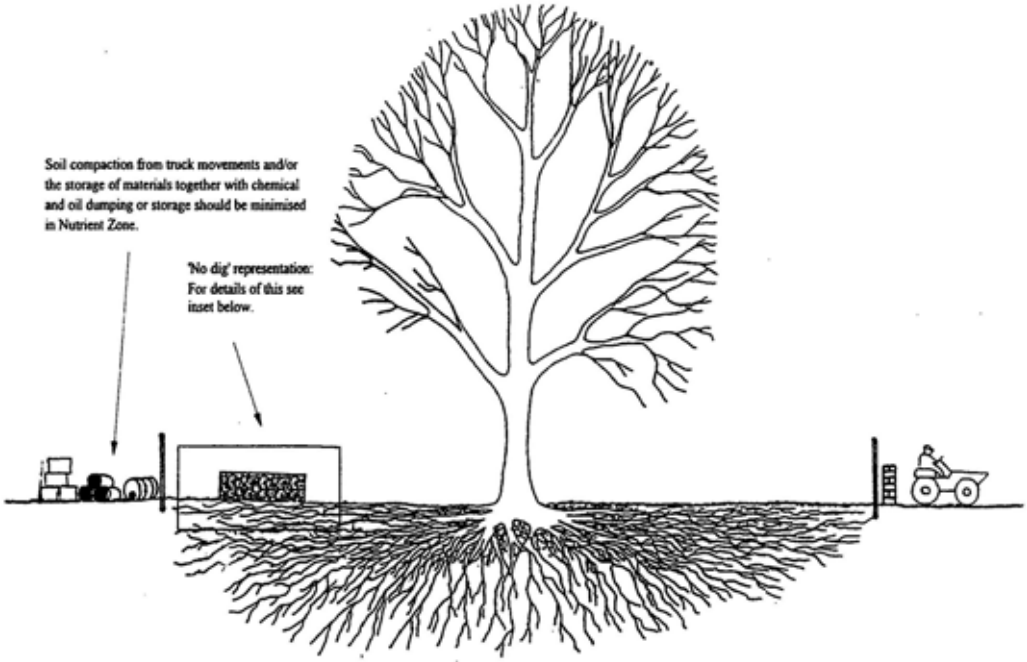
Hazards such as these frequently cause harm to the tree directly and/or result in the future health of the tree being compromised. On some occaisons the future life of the tree may be in jeopardy after the occurance of such hazards.



Swindon Borough Council are grateful to *Basingstoke and Deane Borough Council* for allowing the use of the above diagram.

Figure 4.

A Tree Appropriately Protected by Fencing Thus Ensuring a Significant Reduction in the Threat to the Tree Wrought by the Hazards Shown in Figure 3.



Swindon Borough Council are grateful to *Basingstoke and Deane Borough Council* for allowing the use of the above diagram.

The figure above shows a tree appropriately protected from development works thereby significantly reducing the potential impact of development works on the health of the tree. The figure also shows the appropriate location in relation to the tree for the use of the 'No Dig' method of construction.

The 'No Dig' Method of Construction Shown in Close-up

Swindon Borough Council are grateful to *The Arboricultural Advisory and Information Service* for allowing the use of the diagram below.

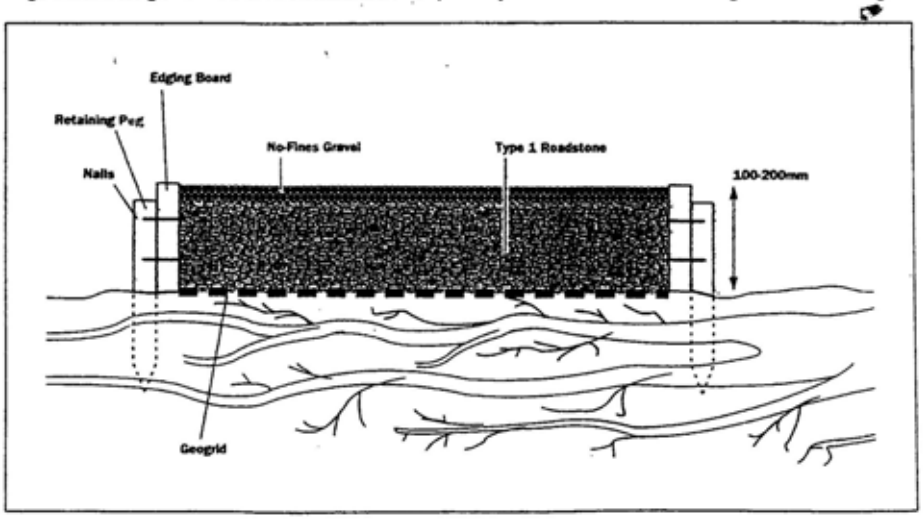


Diagram of the 'no-dig' method for constructing access drives, car parking and pathways near to trees in order to minimise damage to tree roots. (Not to scale)

4. Location of Proposed new Tree Planting Within Landscaping Schemes

4.1 Any landscaping scheme accompanying planning applications must include details of the locations of trees which are to be felled, to allow development to take place. The scheme should also take account of trees which are subject to TPO's. New trees should normally, be located within the application site to replace those felled. It should be ensured that the new trees are given sufficient protection to allow for their preservation in the longer term. It would be helpful for the location of new trees to be included with the planning application together with their species and size of specimen. This will allow the new tree to grow healthily and safely and to contribute fully to the environment of the new development. Guidelines on the design of foundations of new housing development in relation to trees are set out in the National House Building Council document entitled 'NHBC Standards, Chapter 4.2, Building near Trees'. This is accepted as the current national standard for all development. Details of the foundations in such circumstances, for each plot so affected, should be submitted to the LPA with the submission of a planning application.

4.2 Unlike existing trees, as new trees mature, they will adapt to their growing environment in terms of the spread of their roots and canopy. However, in the longer term, unless sufficient distance has been provided and special foundations have been used, tree roots can cause significant damage to buildings. This is both potentially costly to the owner of any such building and may result in the lopping, thinning, or even felling of the tree responsible.

4.3 Accordingly, any landscape scheme that shows new trees at distances from buildings less than the minimum distances specified within the NHBC guidelines, will not be approved by the local planning authority unless the corresponding special foundations have been specified. Ideally, the proposed development should be no closer to the proposed trees than the outer edge of the nutrient zone as specified in tables 1 and 2 of this guidance. This would allow new trees to mature naturally and to contribute to the local environment in the long term. The LPA may place conditions on planning consents to ensure trees are protected and new ones planted and to ensure that this guidance is followed (see paragraph 3.6).

5. Tree Care After Development is Complete

5.1 Both newly planted trees and existing ones retained within a development should be cared for after the development is complete. Conditions will normally be placed on planning consents to ensure that if any new tree included in a landscaping scheme of a development becomes unhealthy, or dies within 5 years of the completion of the development, it will be replaced by a new tree of like species, similar in age and size to the tree to be removed and at the same location (see paragraph 3.6). After 5 years have elapsed following the completion of the development the LPA may consider making TPOs on the trees protected under the planning permission.

6. References

6.1 The following documents have been consulted in the preparation of this SPG.

1) British Standard 5837: Guide for Trees in Relation to Construction, British Standards Institution, 1991.
2) Gasson & Cutler: Tree Root Plate Morphology, AB Academic Publishers, 1990.
3) Kolesnikov: The Root System of Fruit Trees, MIR Publishers, Moscow.
4) National House Building Council: NHBC Standards Chapter 4.2, Building Near Trees, 1992.
5) Nichol & Armstrong: Development of Prunus Root Systems in a City Street, AB Academic Publishers, 1998.
6) Rogers & Booth: Roots of Fruit Trees, East Malling Research Station, 1958.

7. Contacts

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TREE INSPECTION REPORT. SITE :

Tree No.	Species	BS5837 classification	TPO Y/N	Comments

BS5837 classification

A. **Trees to be retained at all costs**
B. **Trees whose retention is very desirable**
C. **Trees whose retention is desirable but not essential**
D. **Trees for removal**