

Guide for

Trees in relation to construction

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee (BDB/-) to Technical Committee BDB/5, upon which the following bodies were represented:

- Arboricultural Association
- Association of County Councils
- Association of District Councils
- Association of Metropolitan Authorities
- Building Employers Confederation
- Construction Health and Safety Group
- Department of the Environment (Property Services Agency)
- Federation of Civil Engineering Contractors
- Federation of Piling Specialists
- Health and Safety Executive
- Incorporated Association of Architects and Surveyors
- Institute of Building Control
- Institute of Clerks of Works of Great Britain Inc
- Institution of Civil Engineers
- Institution of Environmental Health Officers
- Institution of Structural Engineers
- Landscape Institute
- National Council of Building Material Producers
- Royal Institute of British Architects
- Royal Institution of Chartered Surveyors
- Scottish Office (Building Directorate)
- Society of Chief Architects of Local Authorities
- Trades Union Congress

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Department of the Environment
- Department of the Environment (Construction Directorate)
- Forestry Commission
- Horticultural Trades Association
- House Builders Federation
- Institute of Leisure and Amenity Management
- Loss Prevention Council
- Timber Trade Federation

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Contents

	Page
Committees responsible	Inside front cover
Foreword	iv
1 Scope	1
2 Definitions	1
3 Strategy	1
3.1 Introduction	1
3.2 Implementation	1
4 Trees and the law	2
4.1 Introduction	2
4.2 Legal protection for trees: general	2
4.3 Legal protection of trees on development sites	2
4.4 Enforcement of protection during development	4
4.5 Common law claims and litigation concerning trees	4
5 Pre-planning site assessment	4
5.1 Land survey	4
5.2 Tree survey	4
6 Planning	5
6.1 Introduction	5
6.2 Selection of trees for retention	5
6.3 Proximity of trees to structures	6
6.4 Access for services	7
6.5 Highway considerations	7
6.6 Change of conditions around trees	7
6.7 Access for building works	7
6.8 Future management	7
6.9 Implementation	7
7 Damage to trees by construction work	8
7.1 Introduction	8
7.2 Extent and form of the root system	8
7.3 Damage to roots by asphyxiation	8
7.4 Damage to roots by soil stripping or excavations	8
7.5 Prevention of damage to roots	9
7.6 Damage to trunk or branches	10
8 Protection of existing trees against damage on site	10
8.1 General	10
8.2 Protective fencing around trees	11
8.3 Precautions in respect to temporary work	12
8.4 Additional precautions outside fenced areas	13
9 Tree removal and surgery	14
9.1 Planning	14
9.2 Operations	14
10 Avoidance of damage to structures by trees	15
10.1 Introduction	15
10.2 Direct action of trees on structures	15
10.3 Indirect action of trees on structures	16
10.4 Precautions on clay soils	16
11 Hard surfaces around existing trees	18
11.1 Design considerations	18
11.2 Prevention of damage to roots	18

	Page
11.3 Provision for water and oxygen	19
11.4 Allowance for future growth	19
11.5 Edge supports	19
11.6 Types of hard surfaces	19
12 Soft surfaces around existing trees	20
12.1 General considerations	20
12.2 Prevention of damage	20
12.3 Herbicides	20
12.4 Surface treatment	20
13 Post construction remedial work to trees	20
13.1 General considerations	20
13.2 Direct damage	20
13.3 Indirect damage	21
14 New planting: detailed design considerations	21
14.1 Introduction	21
14.2 General considerations	22
14.3 Planting adjacent to buildings	22
14.4 Planting adjacent to highways	22
14.5 Planting in the vicinity of services	22
14.6 Planting adjacent to boundaries	22
15 Planting: ground preparation and planting works	22
15.1 Soil conditions	22
15.2 Selection of planting stock	23
15.3 Plant handling	23
15.4 Surfaces around newly planted trees	23
16 Post planting maintenance	23
16.1 Existing trees	23
16.2 New plantings	23
16.3 Management of trees	23
Appendix A A short guide to trees for new planting in relation to construction	24
Appendix B Organizations from whom additional advice can be obtained	31
Figure 1 — Flow diagram, summarizing planning for trees on development sites	3
Figure 2 — Alternative location for protective fencing	11
Figure 3 — Trenching along radii to minimize damage	11
Figure 4 — Protective fencing on scaffolding framework	12
Figure 5 — Protective fencing for special conditions	12
Figure 6 — Scaffolding within a protected area	14
Figure 7 — Edge supports for hard surfaces	21
Table 1 — Protection of trees: minimum distances for protective fencing around trees	10
Table 2 — Minimum distance (metres) between structure and centre of trunk of young trees or position of new planting to avoid <i>direct damage</i> to a structure (including foundations) from future growth of the base of the trunk and roots	17

	Page
Table 3 — Recommended minimum foundation depths on clay soil to allow for future tree growth	17
Table 4 — Broadleaf trees	25
Table 5 — Conifers	30
Publication(s) referred to	Inside back cover

Foreword

This British Standard, which has been prepared under the direction of the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee, is a revision of BS 5837:1980 which is withdrawn.

The revision has been found to be necessary to take account of current practice regarding planning for the protection and planting of trees in the vicinity of buildings, and for the protection of buildings near trees.

This standard provides guidance for architects, builders, engineers, land managers, landscape architects and contractors, planners, statutory undertakers, surveyors, those concerned with the care and protection of trees, and all others interested in harmony between trees and construction.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 32, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard gives guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs and hedges, and structures. It follows, in sequence, the stages of planning and implementing the provisions which are essential to allow development to be integrated with trees. The standard recognizes the problems of development close to existing trees which are to be retained, and of planting trees close to existing structures.

This standard sets out to assist those concerned with trees in relation to construction to form balanced judgements. It does not set out to put arguments for or against development, or for the removal or retention of trees. Where development is to occur, the standard provides guidance on how to decide which trees are appropriate for retention; on the means of protecting these trees during construction work; and on the means of incorporating trees into the developed landscape.

A short guide to trees for new planting in relation to construction is given in Appendix A. A list of organizations from whom additional advice can be obtained is given in Appendix B.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard, the term “tree” is taken to include shrubs and hedges, and the term “structure” to include all man-made objects such as buildings, carriageways, paths, walls and services.

3 Strategy

3.1 Introduction

3.1.1 Trees can occupy a substantial part of a site, and because of their potential size can have a major influence on the planning and use of a site.

3.1.2 Existing trees of good quality, well sited and appropriate to their surroundings will greatly enhance any new development by providing an immediate appearance of maturity. In these situations existing trees should be accepted and welcomed.

3.1.3 On the other hand, if new or existing trees are poorly sited or of an inappropriate size and species for their surrounding, they may be resented, and no amount of legal protection will ensure their retention and survival.

3.1.4 To avoid such problems, and to ensure a harmonious relationship between trees and buildings, careful planning is needed on their juxtaposition. Misplaced enthusiasm for the retention of inappropriate trees can create as many problems as their wanton destruction.

3.1.5 A tree may take a century to reach maturity, but it can be damaged or felled in only a few minutes. Such damage is frequently caused unwittingly, because of failure to appreciate the vulnerability of trees, particularly the root system, and how easily and often insidiously they can be damaged. Irreparable damage is frequently done to existing trees and other planting in the first few days of a contractor's occupation of a site.

3.1.6 Early and adequate identification and protection of important existing trees on development sites is essential from the outset. The only certain way to prevent damage to trees is to exclude all operations from their proximity.

3.2 Implementation

3.2.1 This guide provides guidance for a balanced approach on which trees are appropriate for retention, on the means of protecting these trees during development works; and on the means of incorporating them into the new landscape. Existing trees may need to be supplemented by new planting. This involves a logical sequence of events, summarized as a flow diagram (see Figure 1).

3.2.2 The layout of this standard follows a similar sequence; that is, the identification of trees suitable for retention (clause 5), planning how the new development should be integrated with the trees and the constraints the trees place on the building operations (clause 6). Trees should be protected by defining an appropriate area around them (clause 7) and by excluding all construction operations from this protected area (clause 8). Not only can trees be damaged by buildings, but buildings can be damaged by trees: this can be avoided by taking appropriate precautions (clause 10). The trees can then be incorporated into the new hard (clause 11) or soft (clause 12) landscape. Unwanted trees will need to be removed (clause 9), and, in the event of mistakes, damage will need rectifying (clause 13). In most cases any existing trees will be supplemented by additional planting: the design and implementation of this are considered in clauses 14 to 16.

3.2.3 The success of the process outlined in **3.2.2** will depend on the cooperation of all involved in the design and development team. In particular, it is essential for those involved in site works to appreciate the need for maintaining the area of protection around the trees. Any incursion into this can quickly destroy all of the time, effort and expense which has gone into the retention of the trees.

3.2.4 Local authorities have an important role in encouraging and enforcing the processes outlined in **3.2.2**. The means for this are contained in existing regulations, which include provision for local authorities to enforce planning requirements (see **4.4**).

4 Trees and the law

4.1 Introduction

Trees, whether or not they are on a potential development site, may be protected by legislation. Where development is proposed, additional protection may be appropriate and can be enforced by the Local Authority. Legal controls and liabilities under common law need to be considered at the earliest stages of potential site development.

4.2 Legal protection for trees: general

4.2.1 The Town and Country Amenities Act 1974 requires that, except in certain circumstances, no work shall be carried out which will affect trees over a certain size which are situated in *Conservation Areas* without giving six weeks notice of intent to the Local Authority before the work is carried out. This provides an opportunity for the Local Authority to make a Tree Preservation Order to protect the trees.

4.2.2 The Town and Country Planning Act 1990 allows for trees, either as individuals, groups, or as woodlands, to be protected by *Tree Preservation Orders*. These have the effect of preventing the cutting down, topping, lopping uprooting, wilful damage or wilful destruction of trees, except in certain circumstances, other than with consent of the local planning authority.

4.2.3 Even when no specific legal protection exists, it may be necessary to obtain a *felling licence*. These apply if the volume of timber exceeds specified amounts; site clearance, even of small areas, before detailed planning permission has been granted could easily exceed the felling licence quota. Felling licences are administered by the Forestry Commission under the Forestry Act 1967.

4.2.4 Substantial penalties can be incurred for contravention of any of these forms of legal protection for trees.

4.3 Legal protection for trees on development sites

4.3.1 Section 197 of the Town and Country Planning Act 1990 states “it shall be the duty of the local planning authority to ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made by the imposition of conditions, for the preservation or planting of trees”. It also states that “it shall be the duty of the local planning authority to make such orders under Section 198 of the Act as appear to the Authority to be necessary in connection with the grant of such permission ...”.

4.3.2 It is usually appropriate for a Tree Preservation Order to be placed on any trees which are an amenity and which are structurally sound. The effect of proposed development on trees protected by a Tree Preservation Order ranks as a “material consideration”, which should be considered by the Local Authority when determining a planning application under section 70 of the Town and Country Planning Act 1990. See also **6.2**.

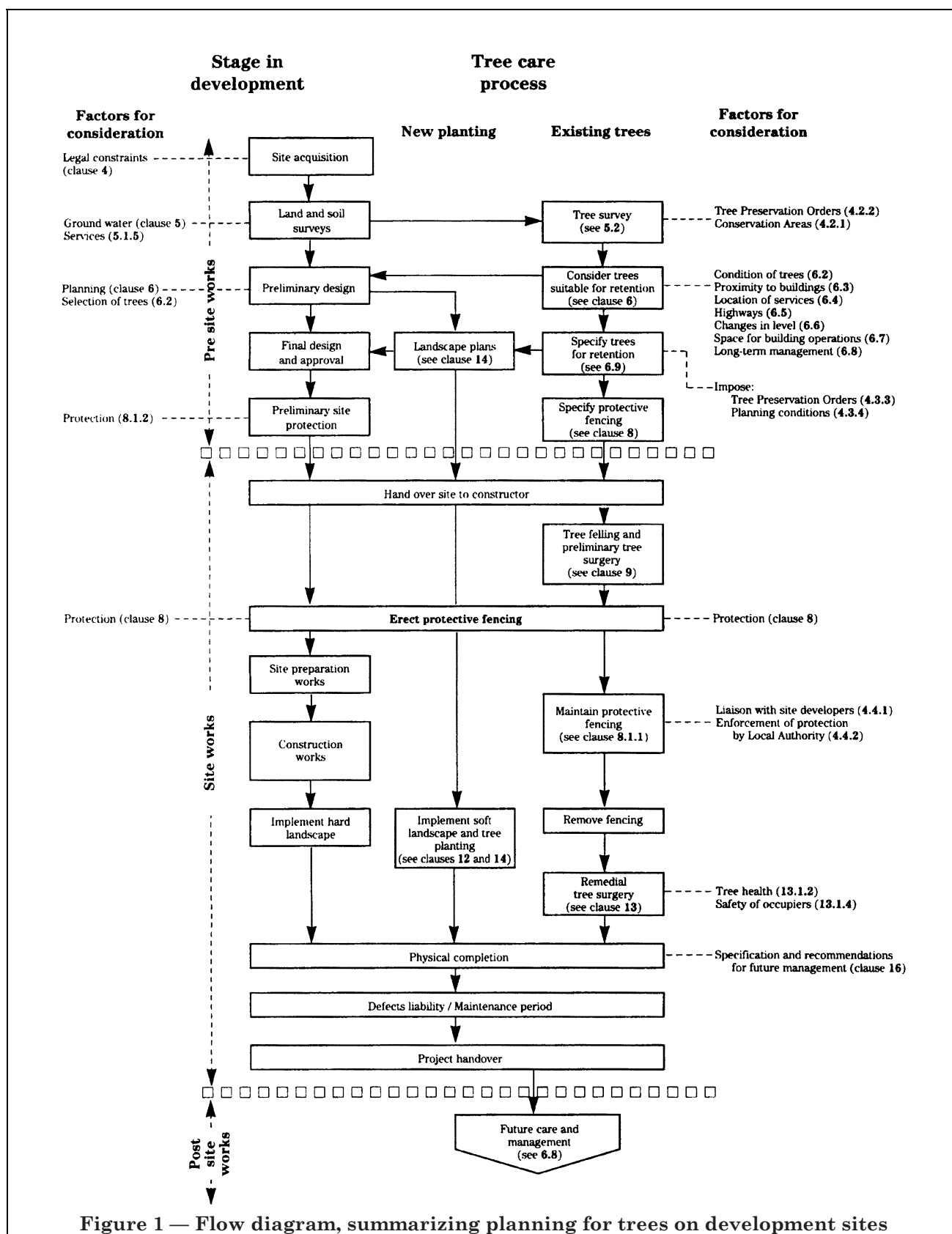
4.3.3 A Tree Preservation Order should not normally be a block to effective use of a site but is intended to prevent damage to or clearance of trees prior to planning permission being granted. It allows negotiation, whilst providing a means of controlling which trees can be removed, and a means of enforcing their protection during development work.

4.3.4 When planning permission is granted, planning conditions may be imposed to provide for the erection of protective fencing (see clauses **7** and **8**) and other measures for ensuring the well-being of trees during development.

NOTE It is considered inappropriate for planning conditions to be used to provide long-term protection to trees when Tree Preservation Orders are available as a specific provision for this purpose.

4.3.5 Planning conditions may be imposed requiring tree planting to be undertaken as part of a project, and a Tree Preservation Order can be made so as to apply to such trees once they have been planted so as to achieve their long term protection.

4.3.6 When detailed planning permission has been granted, the consent of the Local Authority is not needed to carry out work on trees where such work is immediately needed for the purpose of carrying out the development for which planning permission has been granted (para 3.(c) of Second Schedule of the Town and Country Planning (Tree Preservation Order) Regulations 1969; S.I. 1969 No. 17). Felling etc. cannot be said to be “immediately required” when planning permission has been given on an outline application only, nor when development is exempt from planning control.



4.4 Enforcement of protection during development

4.4.1 The effectiveness of measures to protect trees and ensure their healthy survival through development ultimately depends on cooperation between site owners, developers, contractors and local authorities.

4.4.2 If the Local Authority considers that there has been a breach of the planning conditions which provide for the protection of trees, it can serve an “enforcement notice” and if necessary this can be followed by a “stop notice” (Town and Country Planning Act 1971, sections 87 and 90). When considering the need for such enforcement, local authorities should note that trees can be damaged very easily (see clause 7) and that survival of trees is most likely to be achieved by maintenance of protection at all times.

4.5 Common law claims and litigation concerning trees

4.5.1 Problems caused by trees can result in disputes giving rise to common law claims and litigation. Such problems are particularly likely where trees grow across boundaries between properties and cause damage to the property of a third party. For instance, root activity can affect other buildings or structures (see clause 10). The crowns, stems and roots of trees may have structural weaknesses which in falling could cause damage to property or injury to people. Leaves and fruit falling from trees, obstruction of light and problems of poisonous plants have all been considered by the courts. Legal advice should be sought when trees may become a problem.

4.5.2 Careful planning and design should minimize the possibility of litigation after completion of the development.

5 Pre-planning site assessment

5.1 Land survey

5.1.1 A land survey should be made showing all relevant existing site features. This survey should be made available both to developers and to the Local Authority before any application for planning permission is submitted.

5.1.2 Before commencing this land survey, expert advice should be sought from a person experienced in arboriculture to identify all trees which are relevant for inclusion in the survey. In most circumstances, this will include all trees over 75 mm stem diameter, measured at 1.5 m above ground level. In addition, smaller specimens should be noted wherever these are of particular interest or potential value. In some circumstances, it may be appropriate to exclude larger trees where these are clearly of no potential amenity value (for instance, in woodlands, trees which are likely to be thinned during routine management).

5.1.3 Trees should be numbered for identification on site with small durable metal or plastic tags. Tags should be placed as high as conveniently possible, and should be attached in such a manner that allows for the growth of the tree. Provided vandalism is not a risk, a band of fluorescent tape can be tied around the tree to aid identification for the land surveyor.

5.1.4 Other arboricultural features such as large masses of shrubs or hedges should also be identified. The position of stumps should be noted, so that provision can be made for their removal, if appropriate, and so that areas of possible future soil heave may be identified.

5.1.5 The land survey should include:

- a) location and identification number of all trees, shrub masses, etc., as identified in **5.1.2**, **5.1.3** and **5.1.4**;
- b) other relevant features, such as streams, old buildings and active services;
- c) spot heights of ground level throughout the development site, as a basis for avoiding changes in soil level around retained trees;
- d) approximate location of trees on land adjacent to the development site, that might be of relevance to the development or might be useful as part of the overall landscape effect of the area.

5.2 Tree survey

5.2.1 The species and condition of all trees included in the land survey (see **5.1.2**, **5.1.3** and **5.1.4**) should be assessed by a person experienced in arboriculture. In making this assessment, particular consideration should be given to:

- a) the health, vigour, and condition of each tree;
- b) any structural defects in each tree, and its life expectancy;
- c) the size and form each tree, and its suitability within the context of the proposed site development;

d) the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

5.2.2 On the basis of this assessment, trees should be divided into one of the following categories, differentiated on plans by cross hatching or by colour (*suggested colours are indicated*):

a) trees whose retention is most desirable: high category (*green*)

- 1) vigorous healthy trees, of good form, and in harmony with proposed space and structures;
- 2) healthy young trees of good form, potentially in harmony with proposed development;
- 3) trees for screening or softening the effect of existing structures in the near vicinity, or of particular visual importance to the locality;
- 4) trees of particular historical, commemorative or other value, or good specimens of rare or unusual species;

b) trees where retention is desirable: moderate category (*blue*)

- 1) trees that might be included in the high category, but because of their numbers or slightly impaired condition, are downgraded in favour of the best individuals;
- 2) immature trees, with potential to develop into the high category;

c) trees which could be retained: low category (*brown*)

- 1) trees in adequate condition, or which can be retained with minimal tree surgery, but are not worthy for inclusion in the high or moderate categories;
- 2) immature trees, or trees of no particular merit;

d) trees for removal: fell category (*red*);

- 1) dead or structurally dangerous trees;
- 2) trees with insecure roothold;
- 3) trees with significant fungal decay at base or on main bole;
- 4) trees with a cavity or cavities of significance to safety;
- 5) trees that will become dangerous after removal of other trees for the reasons given in items 1 to 4.

5.2.3 A schedule to the survey should list all the trees, providing details of species, height and trunk diameter at 1.5 m above ground level, the category, age and vigour of the trees, as a basis for the use of Table 1. Branch spread should be assessed; this is often most readily shown on the tree survey plan by defining the actual branch spread rather than illustrative circles. The schedule should also include other relevant details such as trunk lean, significant defects and appropriate remedial work, and whether a tree is included in a Tree Preservation Order. See also BS 1192-4.

5.2.4 Attention should be drawn to groups of trees which are well suited for retention, particularly if these contain a variety of species and age classes which could aid long-term management. It may be appropriate to assess the category of such trees as an overall group, rather than as individuals.

6 Planning

6.1 Introduction

6.1.1 With careful planning, trees can enhance a development. However, they can occupy a substantial part of a site, and when mature, the height or branch spread of many tree species can be in excess of 20 m, so that they dominate low-rise buildings.

6.1.2 Planning is needed from the initial stages of development until all work is completed. Thereafter, continued attention will be needed as part of the long-term management of the tree resource.

6.1.3 Trees can impinge on many aspects of site development, and can involve all members of a multi-disciplinary development team. Adequate consideration should be given to the requirements of trees by all members of the team throughout, the development process.

6.1.4 Trees on adjacent properties will need consideration.

6.1.5 Even if there are no trees on the site, planning for future planting may still be needed.

6.2 Selection of trees for retention

6.2.1 A tree survey (see 5.2) provides the basis for deciding which trees might be suitable for retention. Within the limitations imposed by the many other constraints described in 6.2.2 to 6.2.6, preference should be given to retaining the high and moderate category trees. Low category trees will usually only be retained where they are not a significant constraint on development.

6.2.2 The retention of trees is only one facet of planning a new development. The type of development may be determined by land use specified in local plans; the number and size of trees which can reasonably be retained within a development may be influenced by land use or planning policies.

6.2.3 It is essential, when selecting trees, to ensure that it is practical to make provision to protect the trees physically during development so as to avoid damage to the trees by construction work. This will involve identifying an area around the tree which should remain undisturbed (see 7.5), and ensuring that it is feasible to maintain fencing undisturbed around all such areas throughout the construction period (see clause 8).

6.2.4 Care should be exercised over misplaced tree preservation. Attempts to retain too many or unsuitable trees on a site are liable to result in excessive pressure on the trees during development work and subsequent demands for their removal. The end result is usually fewer and less suitable trees than would be the case if proper planning, selection and conservation had been applied from the outset.

6.2.5 Particular caution is needed over retention of large old trees which become enclosed in the new development. Such trees may be less resilient and more likely to die as a result of the development, and even if they survive in the short term, they may die long before the new buildings are obsolete and in this situation, the felling and disposal of trees can be very difficult and extremely costly.

6.2.6 Although existing trees should be retained wherever reasonable, unless such trees are well suited for incorporating within the new development, it may be preferable to favour new planting. New plantings can then be selected which are ideal for the situation and landscape (see clause 14).

6.3 Proximity of trees to structures

6.3.1 The physical size of a tree can dominate a building. This can give rise to concern about, the tree's safety, can cause unreasonable obstruction of light and views, and provoke objections about leaves or other falling debris. These factors are often the most significant when considering the juxtaposition of trees and buildings, and can only be satisfactorily resolved by ensuring that the trees have adequate space including allowance for future growth. It is necessary to consider the requirements of future tree planting, as well as existing trees.

6.3.2 The sheer size of the tree, particularly when it is moving in strong winds, can cause apprehension to occupants of buildings. For this reason, when locating buildings, the ultimate height, weight and branch spread of a tree, the aspect relative to strong winds, and the changes in exposure, all need consideration. The mature size of any individual tree species will be influenced by its growing conditions and expert assessment may be needed.

6.3.3 Excessive shading by trees should be avoided. This will depend on the aspect, of the tree from the building, the proximity of windows, particularly of living rooms, and on the foliage size and density which can vary enormously with species.

6.3.4 If siting a structure near to a tree, the existing spread of branches and future growth of the tree should be taken into account. Tree branches can otherwise be damaged by continuously whipping against the structure, and branch ends may have to be cut back repeatedly, possibly spoiling the shape of the tree.

6.3.5 Leaves of some species may cause problems, particularly in autumn, by blocking gullies and gutters which are not regularly maintained. Squashed berries may cause slippery patches especially on pavings, while accumulation of honeydew may be damaging, particularly if allowed to remain on paintwork of buildings or vehicles (see Appendix A).

6.3.6 Caution should be exercised when considering thorny trees close to pathways, and such trees should be avoided where young children play, although they can provide a physical barrier (see Appendix A).

6.3.7 Brittle branches are characteristic of certain species (see Appendix A) and their removal may be necessary where they could present a danger.

6.3.8 Trees can cause damage to buildings that are too close to them unless precautions are taken in the design of foundations and/or superstructure. A choice should be made of either maintaining a suitable separation between tree and building, or taking the necessary structural precautions (see clause 10).