

# LONDON BOROUGH OF BRENT

**EXECUTIVE**  
**13th October 2003**

FROM THE DIRECTOR OF ENVIRONMENT

FOR ACTION

NAME OF WARD: ALL

**Report Title : STREET TREE MANAGEMENT POLICY**

## **1.0 SUMMARY**

- 1.1 This report outlines a proposed new Street Tree Management Policy for the Borough, which will direct the maintenance regime for highway trees in the borough.
- 1.2 The policy will aim to underpin the Arboricultural Services Contract, which is expected to be in place by April 2004.
- 1.3 The report provides information on the importance of new and replacement plantings in sustaining a healthy street tree population and the benefits of trees in the street and the need for regular planned tree maintenance; and the criteria for removal of and replacement of trees.
- 1.4 The Policy Document will be drawn from the appendices of this Report. These are respectively – Appendix 1 (History of street trees in Brent), Appendix 2 (The risk of subsidence), Appendix 3 (The proposed new Policy), Appendix 4 (Principal Issues – Ward by Ward), and Appendix 5 (Glossary).

## **2.0 RECOMMENDATIONS**

- 2.1 That the Executive approves the Street Tree Management Policy as detailed in the Report and attached at Appendices 1 to 5.
- 2.2 That the Executive approves the proposed phased tree removal programme for 2003/4, subject to consultation with residents in the roads affected. Results from the consultation will be reported back to the Executive if they reveal substantial objections or concerns.

- 2.3 That the Executive notes that further programmes for phased tree removal for 2004/5 and 2005/6 will be drawn up on completion of the 2003 Street Tree Survey. These proposed programmes will be subject to consultation with residents in the roads affected and the outcome of these consultations will be reported back to the Executive if they reveal substantial objections or concerns.

### **3.0 FINANCIAL IMPLICATIONS**

- 3.1 The proactive street tree maintenance programme has often helped in the past to reduce potential liability for tree root damage claims, but there is recent evidence that claims are rising and with them, the financial risk to the Council has also increased.
- 3.2 A major influence in revising the Street Tree Management Policy is the need to reduce the financial risk to the Council that subsidence claims present. In recent times, settlements of between 60% and 80% of the total cost have been the norm.
- 3.3 As a result of these cases the Council need to amend its Street Tree Management Policy to minimise the financial risk from subsidence claims. If the Council is notified of a potential risk it needs to investigate and if satisfied that the risk is real, remove the tree concerned.
- 3.4 In addition the Council needs to be proactive in identifying roads with a history of subsidence problems related to street trees and seek to replace these trees with smaller varieties. This process is referred to as phased removal and replacement. A schedule of trees that it is proposed to replace in 2003/4 can be found in section 15. The cost of these planned removals / replacements is £47,395 in 2003/4 and the costs will be contained within existing budgets.

### **4.0 STAFFING IMPLICATIONS**

- 4.1 There are no staffing implications as a result of this report.

### **5.0 ENVIRONMENTAL IMPLICATIONS**

- 5.1 The environmental implications of this service would be to enhance the borough's tree stock aesthetically and keep them in a safe manner.

### **6.0 LEGAL IMPLICATIONS**

- 6.1 The Council has power under Section 96 of the Highways Act 1980 to plant street trees. The same section entitles any person whose property is damaged by such a tree to claim compensation in respect of such damage.

- 6.2 The Act also deals with the removal of dangerous trees and trees causing obstructions.
- 6.3 The Council could also be sued in negligence and nuisance.
- 6.4 In the case of Paterson and Anor –v- Humberside County Council in 1995 claims in nuisance, negligence and statutory negligence under s.96 of the Highways Act 1980 were made where trees, for which the local authority was responsible, caused subsidence and cracking in the plaintiff's house. The plaintiff claimed damages against the council. It was held that the council was liable in negligence and nuisance as the damage was foreseeable in view of the soil conditions. The council was not liable under s.96 as it had not used that power to plant the trees.
- 6.5 In the case of Delaware Mansions (1) Flecksun Ltd (2) -v- Westminster City Council, a 2001 House of Lords case, it was held that the Plaintiff could recover damages for the cost of underpinning a block of flats notwithstanding the fact that it had become owner after the structural cracking had stopped. The courts found three root damage to be a continuing nuisance and the council was held liable.
- 6.6 Therefore if the Council does not have a policy in place that is effectively monitored it increases the likelihood of claims for compensation being successful.
- 6.7 Also the Council is going out to tender for its arboricultural services and this policy, if adopted, will be one of the key tender documents. It will be difficult to specify a service contract without a policy in place.
- 6.8 The Council has power under the Town and Country Planning Act 1980 s.198 to make Tree Preservation Orders, which should prevent the removal of protected trees. There are compensation provisions for damage caused by protected trees. However, as the Council can also revoke such orders use of power in respect of Highway and other council owned trees would seem impracticable.

## **7.0 BENEFITS AND PROBLEMS ASSOCIATED WITH STREET TREES**

- 7.1 It is often difficult to quantify the many benefits of trees in our streets. One of the major advantages is that by their very presence an otherwise harsh urban environment becomes more acceptable. Other qualities are more measurable, such as their ability to convert carbon dioxide to oxygen or the filtering of airborne pollution and particulates. These 'green corridors' can also provide screening between opposing lines of residential housing or between housing and industrial development.
- 7.2 Trees have always been valued for their shade during summer months, but more recently there is greater recognition for the combined way that the whole tree population of a city can limit the increase in ambient temperature that arises from the sun, thus warming hard surfacing such as asphalt and buildings. Higher temperatures result in greater use of air conditioning and ventilation systems that in turn contribute to the consumption of fossil fuels. Street trees play a major role in the shading of heat absorbing highway surfaces.

- 7.3 Street trees also form part of the urban habitat that helps to support a surprising range of birds, insects and other wildlife that are not always noticed or appreciated. The Brent biodiversity Action Plan 2.0 calls for the investigation of resources for a long term street tree replanting programme and investigation/adoption of a code of practice for use of de-icing salt in relation to trees.
- 7.4 Some nuisances associated with street trees are classified as “seasonal”, since they are more apparent during specified times of the year. This area includes leaf fall in autumn (between September and December). The increased influx of leaves often attracts many complaints, which can only be realistically addressed by increased sweeping frequencies across the Borough, during this period. Seasonal leaf fall is not a justifiable reason to remove a healthy tree.
- 7.5 Some street trees may disrupt pavements and even dislodge kerb stones. Where appropriate, the arboricultural division will work with the Transportation Unit in order to minimise any risks this may present.
- 7.6 There are often issues concerning street trees shading light to properties and depositing of sticky resins on parked vehicles, caused by aphids. These issues may be addressed during routine tree maintenance in accordance with the arboricultural contract.
- 7.7 Street lights are often obscured by the foliage of nearby trees. There must be a protocol for ensuring that the presence of existing trees are taken into account when installing new street lights. The arboricultural contract seeks to address this issue during planned tree maintenance, however, trees which normally would require no surgery could be harmed by excessive surgery due to their close proximity to street lights.
- 7.8 During spring/summer each year, the seasonal nuisance caused by falling fruits and blossom becomes apparent, as complaints increase during this period. Again, this often results in increased sweeping in the affected areas in order to reduce or minimise any risks to road users. Where possible, the Council will refrain from planting fruit bearing trees along the pavement, unless the trees are planted within a wide grass verge site, thus presenting less risk.
- 7.9 Street trees require planned, regular maintenance in order to minimize or reduce the risk of them becoming hazardous without being noticed before they present a real risk.
- 7.10 During gale-force winds, street trees may fall, however, the number of trees falling may be drastically reduced if the crowns of the larger specimens are kept small by a combination of pollarding and crown reduction. This action reduces the weight of the crowns, thus reducing the chances of these trees falling in heavy winds.
- 7.11 Regular inspection of our street trees helps the quickly detect dead, diseased, dying or otherwise dangerous trees, before they become a serious danger to road users and pedestrians alike. The implications of failing to detect dangerous trees very early could result in major accidents and an increase in insurance claims.

7.12 The Borough of Brent is mostly situated on highly shrinkable clay soils, and as a result, the risk of subsidence damage to buildings may be high. This is due to volumetric changes in the soil moisture contents as a result of drought, which can be exacerbated by tree root encroachment. Appendix 2 gives details concerning pruning techniques, which are intended to reduce or minimise the risk of subsidence in the Borough.

## **8.0 ABATEMENT OF NUISANCE**

8.1 Trees can be a source of nuisance claims such as tree root damage, or if they are in a dangerous condition and they fall on people or property. Loss of light due to a mature tree would probably not constitute a nuisance but may generate complaints from residents.

8.2 The Council has an obligation to ensure it does not create or cause nuisance and the policy is designed to ensure nuisance claims do not arise.

## **9.0 THE NEED FOR REGULAR PLANNED MAINTENANCE**

9.1 Although both the general public and professional tree managers often have a common desire to conserve the street tree scene, the need to regularly prune trees in order to safeguard their long-term survival is not always widely understood. Unsightly cut stubs can quickly rejuvenate and provide an opportunity to retain trees that would otherwise be lost due to storm damage or hazards associated with the proximity of housing or roads.

9.2 Where existing trees could present a subsidence risk if not carefully managed, proactive pruning will be carried out to substantially reduce the crown, followed by a pruning regime designed to reduce the risk of disturbance in the first place.

9.3 There are considerable cost and aesthetic benefits to be gained from regular planned maintenance that balance the desire to partially retain some of the crown whilst restricting the size to appropriate proportions.

9.4 Trees that are not pruned until crown sizes become excessive will frequently require more extensive treatment than would otherwise be necessary. Objections from residents or budgetary constraints have often meant it is not always possible or desirable to treat all trees in the same street in the same way, resulting in the uniformity of avenues being lost. Apart from spoiling the avenue effect, future management of the trees is likely to be more difficult and expensive to administer, unless this policy addresses this issue.

9.5 Once target crown sizes have been achieved regular planned pruning programmes should seek to prevent progressive increases in crown size by a combination of thinning and reduction. In this way the number of trees requiring severe remedial reduction pruning can be minimised and fewer non-programmed pruning operations will be necessary. The thinning and reduction pruning regime is more fully described in the report to the Council by P G Biddle dated 6 December 1999.

- 9.6 The above mentioned report also recognises the necessity for short rotation pollarding of trees where they are growing in very close proximity to buildings, typically where buildings front directly onto the street, or the trees are close to the side wall of a building. However, this may not now be sufficient.
- 9.7 It is anticipated that the recommended pruning regimes could minimize the risk of subsidence caused by street trees. However, in cases where sound professional documentary evidence is provided in support of a subsidence claim such tree/s will be completely removed.
- 9.8 Management regimes are also structured to reflect the individual requirements of different streets and areas, depending on types of tree, property and highway usage. The table in Appendix 4 outlines the tree maintenance considerations for each of the Wards within Brent. Since 1994 Brent have operated an annual tree pruning programme which included all the roads where regular maintenance was considered necessary for the reasons stated above.
- 9.9 Where extensive or frequent pruning of trees (such as pollarding) fail to reduce the financial risk to the council and documentary evidences is provided in support of a subsidence claim such tree/s will be removed (see Appendix 3, Policy 7)

## **10.0 PLANNED MAINTENANCE IN BRENT**

- 10.1 The StreetCare Arboricultural Team, in association with its street tree maintenance contractor, has established a planned maintenance programme that has evolved over the years in response to tree enquiries.
- 10.2 These enquiries, including subsidence damage claims, loss of light, hazardous trees, low crowns, and tall crowns have identified a number of streets where regular maintenance helps to resolve the majority of enquiries.
- 10.3 Planned maintenance can pre-empt customer enquiries and help to satisfy the majority of customer requirements for tree pruning. In the past nine years many streets have been placed on regular pruning rotation cycles. These cycles are initially estimated and adjusted shorter or longer based on tree growth, number and type of enquiries, and to give priority to streets where the most serious tree problems are being experienced.
- 10.4 The Council has avoided pruning London Plane trees when they are in leaf because the leaf hairs irritate the respiratory system of tree workers who have high levels of exposure. Therefore, despite the majority of enquiries occurring while the trees are leafy, work to these trees must often be scheduled for winter months.

## **11.0 CRITERIA FOR TREE REMOVAL AND/OR REPLACEMENT**

- 11.1 Establishing new street trees is a time consuming and expensive operation. There are many demands on space, both above and below ground, making it difficult to identify sites suitable for planting new trees.

- 11.2 Even when suitable sites are found, young trees can be particularly problematic and expensive to establish, needing to withstand both accidental and deliberate damage and the vagaries of the climate. Even with the best aftercare it will take many years for a tree to become robust enough to survive the street environment and to have developed a crown large enough to provide a significant environmental contribution.
- 11.3 Existing street trees are of particular importance, and the larger established trees, even when crowns are controlled by regular pruning, bring much greater benefits to the environment than recently planted trees. These benefits can be sustained for many decades with appropriate pruning.
- 11.4 The policy of the Council has been, and should continue to be, to retain established street trees unless there are good arboricultural, environmental or risk-related reasons to do so. This may include trees that are dead, diseased, dangerous, or if there are other compelling factors including financial risk to the authority, or health risks to passers by.

## **12.0 VEHICLE CROSSOVERS**

- 12.1 As street trees play such a valuable role in offsetting the negative effects of motor vehicles, trees will not normally be removed to accommodate a new vehicular access unless the criteria in 11.4 also apply. Even where suitable sites for replacement plantings exist it is likely to be many years before the replacements provide any substantial benefits.

## **13.0 PHASED REMOVAL AND REPLACEMENT**

- 13.1 In some situations the maintenance of trees can be so costly and the problems associated with the trees so great that removal and replacement can not only contribute to improving the environment for residents, but avoid substantial financial liabilities for the Council.
- 13.2 The Policy will provide for the identification of streets for phased removal and replacement of trees, where this is thought to be in the Council's best interests environmentally and to avoid financial risk. It is important that this process is carried out logically, with due consideration of all the factors including proximity to buildings, species, type of work required and the amenity trees provide, evaluated objectively.
- 13.3 The 2003 Street Tree Survey will provide information that will help identify locations and situations where phased removal will be of short and long term benefit to local communities and the Council. For example, in some locations where there are mature, large trees, adjacent properties with small front gardens and the trees require exceptionally frequent maintenance, and could be implicated in tree root damage claims and the potential for significant costs to the Council.
- 13.4 In these circumstances, it will sometimes be appropriate if trees are removed and replaced with more appropriate species. This will produce long term improvements in the environment and reductions in maintenance budgets that could release resources and improve the street tree resource as a whole.

13.5 It is also important to understand that because of the history of tree planting in Brent (see Appendix 1, section 2), many trees are reaching the end of their life expectancy and some carefully planned removal and re-planting can help produce a 'normal' aged structure to produce tree population age structure that is more sustainable.

#### **14.0 NEW TREE PLANTING**

14.1 It is important to maintain an ongoing replacement/ re-planting programme and to identify new sites for street trees to counter the inevitable losses, due to old age or disease and to ensure that a stock of maturing trees is available to take the place of those trees that through necessity must be felled.

14.2 Records show that over the last five years an average of approximately 200 trees have been removed each year due to footway crossovers, trees being dangerous, dead, diseased or dying, approaching the end of their lives or due to subsidence claims. In each of these years new plantings have been static at around 100 trees per annum. These figures represent a shortfall of some 500 trees over the period, which have yet to be replaced. Brent Parks service have planted trees over the last few years on sites that they maintain, although exact numbers and survival rates are not known.

14.3 A much more ambitious planting target of 300 trees per annum needs to be maintained for at least the next five years, to recover this position. This would only replace the recent shortfall and would not take account of the shortfall from earlier years.

14.4 New plantings often have a better survival rate where local residents are encouraged to become involved in the planting and maintenance of the young trees. Various initiatives such as 'Adopt a Tree' schemes have proven to be an effective method of achieving public support and every opportunity will be sought to encourage such involvement.

#### **15.0 PHASED TREE REMOVAL PROGRAMME**

15.1 There are roads with a long history of subsidence related problems, which implicates certain street trees.

15.2 The table below identifies 11 roads that fall into this category, where over a prolonged period, various arboricultural techniques have failed to have any impact on the volume of subsidence claims. It is recommended that the only remaining solution is the complete removal of the trees concerned.



Road Name	Ward	Tree Type	Qty	No. of trees to be removed	No. of potential new trees
<b>Victor Road, NW10</b>	Kensal Green	Plane	10	22	29
		Acacia	2		
		Alder	1		
		Prunus	1		
		Sorbus	3		
		Alder	4		
		Ash	1		
<b>Napier Road, NW10</b>	Kensal Green	Ash	3	8	14
		Hawthorn	1		
		Hazel	1		
		Sorbus	1		
		Plane	1		
		Alder	1		
<b>Ravensworth Road, NW10</b>	Kensal Green	Prunus	3	4	9
		Hazel	1		
<b>Felixstowe Road, NW10</b>	Kensal Green	Prunus	6	9	16
		Sorbus	1		
		Lime	2		
<b>Greyhound Road, NW10</b>	Kensal Green	Ash	1	10	20
		Rowan	2		
		Prunus	4		
		Alder	2		
		Hornbeam	1		
<b>Earlsmead Road, NW10</b>	Kensal Green	Malus	3	7	17
		Prunus	1		
		Sorbus	1		
		Ash	1		
		Alder	1		
<b>St Margarets Road, NW10</b>	Kensal Green	Pissardii	4	6	16
		Alder	1		
		Lime	1		
<b>Hiley Road, NW10</b>	Kensal Green	Pissardii	7	14	20
		Sorbus	2		
		Birch	1		
		Prunus	4		
<b>Ashburnham Road, NW10</b>	Queens Park	Plane	1	7	29
		Lime	1		
		Alder	2		
		Prunus	2		
		Chestnut	1		
<b>Burrows Road, NW10</b>	Queens Park	Ash	1	13	14
		Plane	11		
		Lime	1		
<b>Kinlock Drive, NW19</b>	Welsh Harp	Chestnut	2	5	NIL-Pavement to narrow to facilitate tree planting
		Acer	3		

- 15.3 Most of the above roads are no longer lined with trees, due to systematic removal over the years, as a result of subsidence claims. The remaining trees will be completely removed, and where appropriate new, better species will be planted. The aim will be to restore the original number of trees in each of the roads; in some cases, this will mean planting twice as many trees as those removed in some streets.
- 15.4 This arboricultural operation is of a seasonal nature, and is best undertaken between October and March, which is the tree planting season.
- 15.5 It would clearly be desirable to plan the removal and replacement as one operation. This would help to soften the harsh effect of the removal, since new trees would be put in place almost immediately.

## **16.0 CONSULTATION PROCESS**

- 16.1 The Council's Corporate Strategy and Environmental Services Development Plan (SDP) place great importance on consultation and communication in order to achieve service excellence. Clearly the way in which consultation is undertaken will affect the perception of the service and impact on service delivery. In some instances the removal of trees from the highway could be very emotive for residents living on the area. It is therefore very important to ensure that public consultation is carried out to a very high standard before such work is carried out. The Council will consult local residents prior to commencing phased tree removal and re-planting operations.
- 16.2 The consultation process will take the form of "door to door" leaflet or letter drop in and, where appropriate, attendance by Officers at Resident Association Meetings.
- 16.3 The following procedure will be adopted:
- Advising residents and Ward Members of proposed phased tree removal in the roads concerned;
  - Using the Area Consultative Forums, where possible, to provide updates on tree policy and the outcomes of public consultation and to receive feedback;
  - Making greater use of the Council's website for details of consultation material and the results of consultation;
  - Ensuring that the distribution and circulation of all consultation material and communications with the public is undertaken in-house.

## **17.0 BACKGROUND INFORMATION**

- Report: Arboricultural Management for street trees in the London Borough of Brent in respect of subsidence damages (Dr Giles Biddle)
- Contract details: Arboricultural Services Highways Trees and Shrubs Volumes 1,2,3,and4

Any person wishing to inspect the above papers should contact Keith Ellis,  
StreetCare Unit, Brent House, 349-357 High Road, Wembley, Middlesex HA9  
6BZ, Telephone: 020 8937 5603.

**Richard Saunders**  
Director of Environment

**Keith Balmer**  
Director of StreetCare

## HISTORY OF STREET TREES IN BRENT

### 1.0 SPECIES OF STREET TREES IN BRENT

- 1.1 The following indicates some of the species that can be found in the streets of Brent:

25% London Planes  
15% Limes  
15% Cherries  
15% Ornamental Apples  
10% Maples  
20% Others

*The above information was taken from previous tree data, which is currently being updated by 2003 survey.*

- 1.2 In 2003, a comprehensive street tree survey was conducted, that involved carrying out a survey of all street trees, producing more accurate statistics for Tree Species, Age and condition. The survey recorded species, size, distance to property, condition, and life expectancy. This data will be used to predict and prioritise management requirements in the future.
- 1.3 In 1993 the Government commissioned a London Tree Survey. The details of this survey were informative although not specific to highway trees and the statistics for species were different to 4.1 above.
- 1.4 London Planes form a quarter of the total street tree stock, and have proved to be robust and long-lived with a natural resistance to city life. Although potentially a very large tree they will also tolerate regular pruning enabling them to be maintained at a height and size appropriate to the setting.
- 1.5 Similarly Limes can also reach a considerable size and are also renowned for their ability to survive and flourish after even quite drastic pruning.
- 1.6 The smaller Cherries and Apples together form a third of the plantings. These require less severe and less frequent pruning and may appear more suitable for some street situations. However their many benefits may not always be advantageous; a lack of stature can make them more vulnerable to physical damage and out of scale in streets with tall buildings. Flowers and fruit that provide the benefit of colour at different times of the year can result in slippery pavements or nuisance to residents. Most of the smaller species of tree are less long lived, requiring more frequent felling and re-planting programmes than the larger species.
- 1.7 The remaining species include a variety of different tree species that require different management regimes. This will be reflected in our arboricultural contract specifications.

## 2.0 FACTORS AFFECTING STREET TREE MANAGEMENT REGIMES

- 2.1 There are probably three main phases of planting in Brent.
- 2.2 The early residential development of Brent along with many other suburbs mirrored the development of infrastructure links. British Rail and the Metropolitan Railway developed lines in Brent between 1863 and 1914, and again 1924-1934. The dates for the housing development of the following areas would have been closely followed by tree planting as it was fashionable to have tree lined boulevards.

Area	Year developed
Harlesden	1870
Kenton	1925-1938
Kilburn	1850-1909
Kilburn Park	1861-1873
Kingsbury	1925-1938
Mapesbury	1895-1905
Willesden	1890's
Wembley	1890's.

- 2.3 At around the turn of the century a large part of Brent was developed to the south. The streets were predominately planted with London Plane and some Limes many of which are now approximately 100 years old. When these trees were planted it was anticipated that they would be maintained by pollarding or regularly cutting back to the same point. The population of large London Planes is still concentrated in these areas
- 2.4 In the 1920's and 30's speculative housing development occurred along the new rail and tube links and the new streetscape was 'softened' in the traditional fashion with street tree planting. The planting in these places did include Lime and Plane but also Whitebeams (*Sorbus* sp.), the numerous Purple Plums (*Prunus Pissardii*), Horse Chestnut (*Aesculus* sp.) and others. The development at this time was more open (less dense) than the previous phase of development and in some cases trees have survived that existed when the areas were rural.
- 2.5 The next phase of housing development took place in the 1950's and 60's. A lot of this development was infill or redevelopment of existing or war damaged housing. The species of trees planted were more varied than earlier planting phases.

## 3.0 HISTORY OF TREE MAINTENANCE

- 3.1 In the late '60s and early '70s tree pruning policy changed from, the regular pollarding of the larger species of tree, in common with most London Boroughs. It is often stated that this was due to pressure from residents and tree professionals to encourage trees to develop larger, more natural looking crowns. However, this was also the period when Dutch Elm Disease took hold in the country.
- 3.2 During the late 1960's and early 1970's all tree management resources were directed at Elm disease control. This meant that the resources to carry out the regular maintenance of trees were not available and these trees grew larger crowns and the skill level required to manage larger crowned trees were scarce.

- 3.3 The period of Elm tree removal was closely followed in South East Britain by the 1976 drought, which in combination with the larger tree crowns, had vast implications for the way that trees are managed. These trees can now be maintained with a greater range of pruning techniques including crown thinning, crown lifting and crown reduction to restrict crown sizes but retain a branch structure more in sympathy with the characteristics of each species.
- 3.4 The various management methods each have advantages and disadvantages. Pollarding completely removes all shoots every few years leaving trunks with bare stumps until new growth emerges. Multiple new shoots then grow quickly requiring the process to be repeated as the branches cause obstruction to roads pavements or private properties. Successive pollarding limits the leaf area, water evaporation and restricts annual increases in trunk girth and the need for a large network of roots.
- 3.5 The pollard pruning cycle is quite short, branches removed are relatively small and public resistance to each pollarding operation is often lessened because recent history provides evidence that the trees will quickly re-grow.
- 3.6 The modern trend toward larger tree crowns avoids the complete removal of all branches using thinning and shortening of branches to restrict growth. Trees that have been allowed to develop larger crowns are likely to have a greater visual impact on the local environment.
- 3.7 The benefits of trees, which were outlined in section 3, mean that many residents will appreciate trees. Conversely strong negative feelings can also be generated, particularly where trees present particular problems. These can be many and varied, including restriction of light to windows, leaves blocking gutters, or sticky residues on car paintwork. Pollarded trees can cause similar difficulties but the smaller crowns and frequent pruning help to limit the effects.
- 3.8 Although subject to thinning and crown lifting, trees with larger crowns typically put on more growth than is removed and overall crown size increases year on year. More severe crown reduction or re-pollarding can become a necessity, as branches grow too close to buildings, obstruct the highway or are required for safety reasons.
- 3.9 Because a larger root system will have developed there will be more vigorous new growth as a result of the pruning, requiring the whole process to be repeated if the earlier problems recur.
- 3.10 In some species where the crown has developed from the re-growth of a previously pollarded tree the new branches can be more susceptible to breaking in high winds. The tree roots are also competing for space with the highway and building foundations and the many underground services that crowd modern streets, the risk of the tree being uprooted therefore increases the larger the crown becomes.
- 3.11 A further complication, which cannot be ignored, is that the vast majority of properties in Brent are built on sub soils with a high proportion of London Clay; one of the geological deposits vulnerable to shrinkage if dried. Tree roots extract

moisture from the soil and have the potential to cause drying of the clay and subsidence of buildings with shallow foundations. Trees with larger crowns have a greater water requirement and a larger root system more capable of exploiting a greater volume of soil. A pruning regime, which restricts the crown size and therefore the uptake of moisture, is generally believed to be an effective method of limiting moisture uptake and minimising the potential for damage to property. This is discussed further in Section 12.

- 3.12 When pruning of larger crowned trees becomes necessary due to potential subsidence, it often has to be severe if any real benefit is to be gained. Larger diameter branches have to be removed and the visual impact on the street scene becomes more noticeable. Public resistance to these more drastic pruning operations is often generated, despite obvious problems the trees might be causing.

## THE RISK OF SUBSIDENCE

- 4.1 The concept of tree management of subsidence risk was extensively dealt with in Dr Giles Biddle's report dated 6<sup>th</sup> December 1999 entitled "Arboricultural Management for Street Trees in London Borough of Brent in respect of problems of subsidence". More recent advice has updated some of the report's views.
- 4.2 The principal conclusions of Dr Biddle's Report were that London Planes should continue to be regularly pruned and the desire to allow the crowns to re-grow is resisted.
- 4.3 The aim of pruning cycles should be to maintain trees at a constant size, and that the beginning of each cycle reduces the trees to the same size as the previous cycle.
- 4.4 Where pollarded trees have re-grown it was recommended that this be achieved by thinning and reduction of the pollard-head. Then at the next cycle the reduced branches are removed and the newer growth is thinned and reduced as in the previous cycle.
- 4.5 The severity of pruning where the pollard has been allowed to re-grow should leave the tree crowns substantially smaller than at present. The exact size and frequency can be adjusted to suit the proximity to buildings, and the 2003 Street Tree Survey will provide some important base data in this respect.
- 4.6 The Claims record should be monitored in drought years to ensure that the method is effective and the frequency and severity of pruning is adjusted accordingly to maximise amenity and minimise subsidence.
- 4.7 Where severe pruning regimes (such as pollarding) fail to reduce the financial risk to the Council and documentary evidence is provided either through the Council's inspection regime or by householders or others, trees will be completely removed.  
  
This is vital if all other arboricultural approaches have failed- the implication of not moving trees in such circumstances could result in huge claims, underpinning of the affected property and even litigation against the Council.
- 4.8 The phrase "implicated in a subsidence claim" warrants definition, as it is not merely a matter of a resident claiming that a tree is causing subsidence or could cause subsidence. Some evidence to this effect must be required to ensure that all claims are legitimate and thereby help to ensure that resources are not wasted on unsubstantiated claims.
- 4.9 Dr Biddle stated that because of the combination of the age and foundation design of properties and the large tracts of London clay in Brent, it creates an exceptionally high risk of subsidence damage and says "The London Borough of Brent probably has the worst potential problems out of all the London boroughs"



- 4.10 Dr Biddle accepted that at least 80% of subsidence cases are caused by trees but it is important to ensure that claims are valid and exclude cases where a tree is not involved.
- 4.11 It is essential that full site investigations are provided, in addition to level monitoring. Full soil characteristics, their moisture content, the foundation depths, and tree root identification is essential to determine liability. In addition, cracks should be monitored to show cyclical movements. If level monitoring is undertaken and significant distortions to the property are evident close to the street tree, the tree is likely to need to be removed.
- 4.12 In more recent times, soil analysis (root sample) has gained greater recognition and the Council will encourage claimants to provide this information as it will help deal with claims promptly and ensure that remedial (or if necessary, removal) work is sufficient.

## THE BRENT STREET TREES POLICY

POLICY No.	DETAILS
POLICY 1	<p>The Council's overarching policy is to retain established trees unless there are good arboricultural, environmental, or risk-related reasons not to do so.</p> <p>Reasons for removal may include trees that are dead, diseased, dying or otherwise dangerous, or if there are other compelling factors including financial risk.</p>
POLICY 2	<p>The data from the 2003 Street Tree survey will be used to produce management strategies and priorities for work, and inform the Street Tree Maintenance Contract from 2004/05.</p> <p>The tree survey is crucial to the management of the Boroughs street trees, since it will contain information concerning species, age, size, and distance of tree to boundary wall/house and pavement type. This data will enable the Council to pre-arrange maintenance cycles and allow resources to be directed where they are most needed.</p>
POLICY 3	<p>The diversity of tree and associated species will be considered in maintenance and management programmes.</p> <p>This is important, as different species require different management approach. This information is vital in allowing the Council to set up planned tree planting programmes and monitor the age diversity of our trees.</p>
POLICY 4	<p>The maintenance of highway trees will take on board the potential for subsidence.</p> <p>The proactive management of our trees will be based upon maintenance cycles, ranging from 2, 3, 4, or 5 yearly. The larger specimens, particularly those classified as being high risk as far as subsidence is concerned; will receive more frequent attention, which will include a combination of pollarding and heavy crown reductions. In some cases, the complete removal of the offending tree may be necessary.</p>
POLICY 5	<p>Where existing trees are shown to be contributing to subsidence, the tree will be removed.</p> <p>A continuous pruning cycle is crucial in reducing any future subsidence risk; failure to continue the cycle could result in trees being allowed to regain their former crown sizes, thus presenting risks, as a result of their moisture requirement.</p>

POLICY 6	<p>Short rotation pollarding of trees will be carried out where they are growing in very close proximity to buildings, typically where buildings front directly onto the street, or the trees are close to the side wall of a building. A cycle of proactive street tree inspections will be carried out to identify potential problems and risks through risk assessments and ensure speedy resolution, possibly through phased removal and replanting with smaller, decorative, varieties.</p> <p>This approach is drastic, but must be continued in such circumstances in order to drastically reduce the moisture requirement of the trees. The only other solution in such cases is the complete removal of the trees.</p>
POLICY 7	<p>Where severe pruning regimes (such as pollarding) fail to reduce the financial risk to the Council and documentary evidence (see Glossary to this Policy) is provided either through the Council's inspection regime or by householders or others, trees will be completely removed.</p> <p>This is vital if all other arboricultural approaches have failed- the implication of not moving trees in such circumstances could result in huge claims, underpinning of the affected property and even litigation against the Council. (Refer to high profile cases, such as Delaware Mansions v Westminster Council).</p>
POLICY 8	<p>The removal of healthy street trees to facilitate off street parking will not be considered, except in exceptional circumstances where a tree is dead, diseased or dangerous.</p> <p>The removal of healthy tree to facilitate off street parking can spoil the avenue affect of our street trees, as trees are systematically removed and replaced with concrete. It is vital that the street tree stock is preserved and not depleted. Unless trees meet the set criteria.</p>
POLICY 9	<p>A protocol of dealing with trees in relation to footpath damage and examining the maintenance implications of street lighting and CCTV installations will be developed.</p> <p>This is crucial, as both factors may have serious aesthetic and financial implications to the Council. When dealing with tree root damage to the pavement, there must be proper consultation with the Council's transportation unit, due to the financial implications of the repairs.</p> <p>It is not uncommon for trees to be subject to pruning for no good arboricultural reason, other than their effect upon CCTV cameras and street light. The location of new and existing streetlights and CCTV cameras must take due to account of the maintenance and management implications where trees are located in the vicinity.</p>

POLICY 10	<p>The policy provides for the identification of streets for phased removal and replacement of avenues of trees, where this is thought to be in the Council's best interests environmentally and to avoid financial risk. These trees will be removed and replaced with more appropriate species.</p> <p>It is considered arboriculturally acceptable that in certain cases phased removal and replacement of some trees may become necessary. In cases where avenues have become systematically void of trees over a number of years, due to ongoing removal of individual trees, due to subsidence, it is much more acceptable to remove the remaining trees and replanting the avenue with more suitable species.</p> <p>It is important that this process is carried out logically, with due consideration of all the factors, including proximity to buildings, species, type of work required and the amenity tree provide evaluated objectively.</p>
POLICY 11	<p>An ongoing replacement/re-planting programme will be maintained, to identify new sites for street trees and counter the inevitable losses.</p> <p>This will be necessary in order to replenish the street tree stock and maintain planting at a constant level. It is vital that more trees are planted per autumn than those lost for various reasons.</p>
POLICY 12	<p>Every effort will be made to encourage initiatives such as 'Adopt a Tree' schemes.</p> <p>New planting often have a better survival rate where local residents are encouraged to become involved in the planting and maintenance of the young trees.</p>
POLICY 13	<p>Subsidence claimants will be encouraged to include soil analysis (root sample) as part of the documentary evidence submitted with their claim. A full site investigation and crack monitoring will also be required.</p> <p>This piece of evidence will assist the Council in establishing to what extent the tree may or may not be contributing to the alleged damage by seeking to pinpoint the source of the problem.</p>

## PRINCIPAL ISSUES – WARD BY WARD

Ward	Principal Tree Management Concerns/Description of tree population
<b>Alperton</b>	<p>This area is sparsely populated with trees so new planting should be encouraged. The principal tree maintenance priorities are the Lime trees of Woodstock Road, Stanley Avenue and Lyon Park Avenue that have been maintained on a Crown reduction and thinning cycle.</p> <p>Bridgewater Road has a mature avenue of Red Horse Chestnuts and Ash trees (mostly Manna Ash). The road is an important “transport corridor” through the borough and where practical any gaps will be planted with new trees and maintenance restricted to the minimum to maintain safety and enhance amenity because this avenue is mature and needs sympathetic maintenance to maintain the trees in a healthy condition.</p> <p>Other streets containing highway trees are commonly planted with small to medium ornamental species.</p>
<b>Barn Hill</b>	<p>There is no particular tree management priority for this ward, although the tree population is mature and new planting should be encouraged where practical. The main tree species are Hornbeam, Lime and other large trees in The Avenue with Lime and mature Oaks in the Uxendon Hill vicinity.</p> <p>The main transport corridor is Forty Avenue and Forty Lane that could benefit from more tree planting. Birchen Grove, Old Church Lane, Queens Walk and Deanscroft Gardens have small to medium sized ornamental species.</p>
<b>Brondesbury Park</b>	<p>Mature London Plane trees dominate tree maintenance in this ward. The maintenance of these Planes can be summarised as follows. Combined thinning and reduction where there is space for larger crowns e.g. Christchurch Avenue, Cavendish Road, Chatsworth Rd, and Mapesbury Road.</p> <p>Other roads with trees that do not fit into this generalised description: Willesden Lane, Staverton Road and Aylestone Ave. Willesden Lane has substantial distances between trees and properties and the trees are pruned to maintain safety and amenity.</p> <p>Staverton Road and Aylestone Avenue have mature Plane</p>

	<p>trees on a crown reduction and thinning regime. Alverstone Road has an avenue of mature Lime trees on a crown reduction/thinning cycle. The Maple dominated Avenue of Hanover Road is also important in the treescape. Chambers Lane has London Planes and Ornamental trees, the former have been maintained by pollarding on a 2-year rotation.</p>
<b>Dollis Hill</b>	<p>The area is characterised by residential properties and an area of light industry. The principal tree management priorities are the London Plane trees in Dollis Hill Lane, Dollis Hill Avenue, Gladstone Park Gardens and Oxgate Gardens and the Lombardy Poplars in Oxgate Lane.</p> <p>There are a number of mature ornamental trees, some of which will require major pruning works but the majority are small to medium species requiring a low level of maintenance. Mount Road having a mixture of pollarding and crown reduction depending on the proximity to houses.</p>
<b>Dudden Hill</b>	<p>The tree population is primarily of small to medium ornamental species with the occasional large mature ornamental tree that may require more intensive maintenance.</p> <p>An avenue of mature Lime trees in Sherrick Green Road is maintained on a thinning and crown reduction cycle. London Planes dominate the following streets: Hamilton Road, Ilex Road, and Cobbold Road which are two year pollards and Prout Grove and Burnley Road. The latter two streets have re-grown pollards that are maintained by combined thinning and reduction.</p>
<b>Fryent</b>	<p>The ward is dominated by the open space of Fryent Country Park to the west. The majority of streets are planted with characteristic small to medium ornamentals but many are very mature and may require removal to maintain safety. New planting should be encouraged in order to maintain the environment.</p> <p>The other principal maintenance streets are Lewgars Avenue, which has London Plane trees on a two yearly pollard cycle, and the mature Lime trees in Slough Lane. There are mature trees of mixed species including Oak, Beech and Maple in Church Road, Princes Avenue and Salmon Street.</p>
<b>Harlesden</b>	<p>Those streets with trees are mainly planted with London Plane, maintained on a two yearly pollarding cycle and include, Caple Road, Manor Park Road, Essex Road, St Mary's Road and St Johns Avenue.</p> <p>A few streets have small to medium sized ornamentals,</p>

	<p>some of which already require more intensive maintenance than would be expected because of their proximity to houses (the Alder trees in Wendover Road and the cherries in Harlesden Gardens are examples).</p> <p>Some streets with small to medium sized ornamental trees but larger trees requiring more intensive management include London Planes in Norfolk Road, Inman Road, Tunley Road, Glynfield Road, Essex Road and Roundwood Road. All of which are maintained on a 2-3 yearly pollarding cycle.</p>
<b>Kensal Green</b>	<p>An area of residential streets characterised by traditional tree plantings of small to medium sized ornamental species and London Plane.</p> <p>The principal tree maintenance priorities are the Plane trees in Buchanan Gardens, Bathurst Gardens, Lushington Road, Victor Road, Pember Road, Sellons Avenue, Harlesden Gardens, and Springwell Avenue that are maintained as two yearly pollards. Many of the medium ornamentals require more intensive maintenance because of the proximity of the trees to houses.</p>
<b>Kenton</b>	<p>A low-density residential ward with a varied mix of species and sizes of tree. The large mature trees requiring more maintenance, notable examples are the mature tree in Shaftesbury Avenue (maintained on a four/five yearly cycle), the Silver Maples at the north end of Fryent Way that have not been included on the regular tree maintenance programme to date.</p>
<b>Kilburn</b>	<p>Some streets populated with small to medium sized trees, some requiring more intensive maintenance because of the proximity of trees to the houses. A number of streets are planted with London Plane on a two yearly pollarding cycle and include Dyne Road, Calcott Road, Streatley Road, Buckley Road, Burton Road, Victoria Road and Hazlemere Road.</p> <p>The previously pollarded Plane trees in Brondesbury Road and Brondesbury Villas are to be maintained by combined thinning and reduction. Brondesbury Road also contains an avenue of young mature Hornbeam, which is maintained when the Planes are pruned, but the work is less extensive and usually consists of safety and amenity work only.</p> <p>The Lime trees in Plympton Avenue and Clarence Road are maintained intensively on a three yearly rotation.</p> <p>The southern part of the ward is dominated by the London Plane trees of Princess Road and Cambridge Avenue, which</p>

	<p>are on a two yearly pollarding cycle and Chichester Road where some trees are treated as described above and others are crown reduced.</p> <p>Carlton Vale is populated by some fine mature London Plane that have not been subjected to any intensive maintenance as they are not close to buildings. These trees will continue to be pruned only as necessary to maintain safety and amenity.</p> <p>The Planes of Malvern Road are mostly, but not all, pollarded on a two yearly cycle. This road also has other species, semi-mature Alder trees, that have now reached a size where more intensive maintenance may be required.</p>
<b>Mapesbury</b>	<p>Mature London Plane trees dominate the tree maintenance in this ward. The maintenance of the Planes can be summarised in three general categories.</p> <p>A two yearly pollarding cycle in Station Parade, Cranhurst Road, Keyes Road, Hoveden Road, Larch Road, Cedar Road, Cricklewood Broadway, Dollis Hill Avenue, Gladstone Park Gardens, Dollis Hill Lane and Melrose Ave.</p> <p>Secondly by combined thinning and reduction pruning in: Anson Road, Dartmouth Road, Teignmouth Road, Dawlish Road, Mapesbury Road, and Blenheim Gardens.</p> <p>Thirdly, roads where the trees do not fit into these generalised maintenance regimes and customised programmes are employed. The distance between properties on Chichele Road varies and reflects the specification for pruning; from pollarding to crown reduction/thinning cycles depending on location.</p> <p>On Walm Lane many of the trees are substantial distances from the properties and a crown reduction thinning cycle is practised. A substantial population of mature Lime trees in Grosvenor Gardens, Stanley Gardens and Blenheim Gardens are maintained by thinning and crown reduction as appropriate.</p> <p>A mainly residential area bounded on one side by Cricklewood Broadway, an important shopping area and transport corridor have London Planes maintained on a two or three yearly pollarding cycle. Previously pollarded trees in Anson Road are to be maintained by combined thinning and reduction techniques.</p>
<b>Northwick Park</b>	<p>A low density residential ward with a varied mix of species and sizes of tree. The streets included in a three yearly</p>



	<p>maintenance cycle include Norval Road, Carlton Avenue West, The Fairway, Nathans Road, Sudbury Avenue, Abbots Drive, Langham Gardens and the Lime trees in Northwick Avenue.</p>
<b>Preston</b>	<p>A low-density residential ward with a varied mixture of species and sizes of tree. The large mature trees requiring more maintenance, notable examples being the Lime trees in Preston Road, St Augustines Avenue, Carlton Avenue East, Manor Drive and Oakington Avenue.</p> <p>There are other roads with mixed species of tree, including some large mature specimens that require more intensive maintenance. These include Grasmere Ave, Windermere Avenue, Beechcroft Gardens, East Lane and Logan Road, maintained on a three to five yearly cycle.</p>
<b>Queensbury</b>	<p>A low-density residential ward with a varied mixture of species and sizes of tree. The large mature trees requiring more maintenance, notably those in: Beverley Drive, Holyrood Gardens, Stag Lane, Holmstall Ave, North Way, Brinkburn Gardens, Sandhurst Road, and Highfield Avenue that are maintained on a three or five yearly cycle. Honey Pot Lane is a major transport corridor and work has consisted of crown thinning and lifting in the past.</p>
<b>Queens Park</b>	<p>Small to medium sized specimens can be found in some streets, particularly the Kingswood Avenue area. More intensive maintenance is required where trees are in close proximity to the houses.</p> <p>A number of streets are planted with London Plane subject to a two yearly pollarding cycle and include Honiton, Langler Road Lynton Roads, Wakeman Ave, Pember Road and parts of Kempe Road, Keslake Road and Brondesbury Villas.</p> <p>The Plane trees in Brondesbury Road and part of Brondesbury Villas are maintained by combined thinning and reduction, as are the planes in Chevening Road.</p> <p>The Plane trees in Kempe Road outside the school are not close to buildings and so receive minimal pruning to maintain safety and amenity.</p> <p>Salisbury Road contains mature Horse Chestnuts and London Planes that are intensively managed by reduction/thinning and pollarding as appropriate on a three yearly rotation.</p> <p>The Plane trees in Crediton Road, Dundonald Road Okehampton Road, and Wrentham Ave. The previously</p>

	<p>pollarded plane trees will be maintained by combined thinning and reduction techniques.</p>
<b>Stonebridge</b>	<p>There are two large housing estates that do not contain any highway trees and few other street tree plantings. Those requiring regular maintenance include, Bruce Road, Selwyn Road, Casseldean Road and Hazeldean Road which all have London Planes maintained as two yearly pollards.</p> <p>In the southern part of the ward there is some industrial development and few of the streets have trees: Barretts Green Road, Steele Road, Disraeli Road and Waxlow Road. Not all of these streets have been included in the regular maintenance programme, however these are attended as deemed necessary.</p>
<b>Sudbury</b>	<p>A low density residential ward with a varied mix of species and sizes of tree. The large mature trees requiring more maintenance being the Lime trees in Maybank, Fernbank and Rosebank Avenue.</p> <p>Mature trees of various species in Sudbury Hill Close, Pebworth Road and Littleton Road. Also the trees in the streets bounded by Sudbury Avenue, Charterhouse Avenue, Sylvester Road and Eton Avenue all of which have a three yearly pruning cycle.</p> <p>The London Plane and Lime trees in Harrowdene Road are maintained by crown reduction and thinning as appropriate on a three yearly rotation. . The mature Ash trees in Bridgewater Road (Harrow Road to Whiton Avenue. East) are in decline and will be removed and replaced as it becomes impractical to retain them safely.</p>
<b>Tokington</b>	<p>This ward has Wembley stadium at its centre and light industrial works surround the immediate area, which has few highway trees. Any trees being concentrated in the area either side of the Harrow Road between Brent House and the North Circular Road.</p> <p>The tree populations are mostly of Lime with a significant number of Horse Chestnut, Maple, London Plane and Elm. The “Wembley Elm” at the Junction of Oakington Manor Drive and Harrow Road has qualified as one of the “Great Trees of London”. Nearly all of the trees in this area are included in the street tree maintenance programme on a three yearly rotation. Work varies from amenity and safety pruning, to crown thinning and crown reduction where appropriate.</p>

<b>Welsh Harp</b>	A ward characterised by a mixture of small, medium and large ornamental species, the larger trees requiring more intensive maintenance. Verney Street is populated with London plane trees pruned on a two-yearly pollarding cycle.
<b>Wembley Central</b>	<p>The tree populations are mainly Lime with significant numbers of London Plane. Nearly all trees are included in a three yearly rotation of works varying from amenity and safety pruning, to crown thinning and crown reduction where appropriate.</p> <p>Roads included are Ealing Road, Chaplin Road, Ranelagh Road, Station Grove, Union Road, Chaplin Road, Copland Ave, Napier Road, Talbot Road, Bowrons Ave, Braemar Ave, Eagle Road, Copland Road, Cecil Avenue, Lonsdale Avenue and Beatrice Avenue.</p> <p>London Road also has a three yearly rotation with trees, in close proximity to a building, pruned more frequently.</p>
<b>Willesden Green</b>	<p>Mainly small to medium sized trees with some requiring more intensive maintenance because of the proximity to houses e.g. the Alders in Chapter Road. A number of streets are planted with London Plane on a two season pollarding cycle these include Deacon Road, Churchmead Road, Lechmere Road, Linacre Road, Belton Road, Rutland Park, Kings Road, Balmoral Road and Churchill Road.</p> <p>There are a few London Planes in Chaplin Road, Villiers Road and a number in Pound Lane that are maintained on a three yearly rotation by crown reduction and thinning or pollarding as appropriate.</p> <p>There is also a substantial population of mature Lime trees in the following roads that are maintained by thinning and crown reduction: St Pauls Ave, Park Road and Dean Road.</p>

## GLOSSARY

### **Crown Lifting**

Crown lifting is the removal of lower branches from larger branches or the main stem to increase the distance between the lower foliage and the ground.

### **Crown reduction**

Crown reduction is the reduction in lengths of branches in the crown to an approximate size. This is achieved by pruning at the size stipulated at a suitable node or growth point.

The size can be stipulated in terms of a percentage reduction in length of branches or an actual reduction in length. For example, a 15m tall tree with a spherical crown of 10m diameter (5m radius) and a stem of 5m could be crown reduced by 30%. This could result in an overall height and crown diameter of 7m if the branches all originate at a single point at the top of the crown (as they do in previously pollarded trees).

The overall height of the tree would be 12m. Often tree crown architectures do not fit this idealised architecture and different sizes may result. According to British Standard 3998: Recommendations for tree work. crown reductions should not normally exceed 30%.

### **Crown thinning**

Crown thinning is the selective removal of branches without altering the shape of the crown. The density and distribution of branches is altered.

### **Documentary evidence**

Documentary evidence is the evidence submitted in subsidence claims.

It includes a full site investigation to include:

- Recording of cracks and severity
- Level monitoring/level distortion survey (where necessary/appropriate)
- Soil analysis
- Foundation load
- Drain surveys
- Root identification and analysis

### **Level Monitoring**

This term originates from a description of a level distortion survey. The level distortion from a fixed datum or a part of the building that moves least relative to the rest provides information on which parts of buildings are being affected by subsidence more simply than crack monitoring.

The advantages of the method are that it can identify more precisely which tree(s) are adjacent the most movement and if monitoring is continued after remedial tree work the effectiveness of this action can be assessed and further action considered.

## **Management strategy**

A management strategy is a stratagem to implement a management objective. The management objectives are normally based on an interpretation of policy in the prevailing socio-political environment and will be influenced by public enquiries, wider council or government strategies, legislation etc.

## **Normal age structure**

A normal age structure is often represented as the bell shaped curve produced when the age of individuals in a population are plotted against numbers of individuals in the age group.

In 'normal' populations most individuals are middle aged, there being fewer young or old individuals alike. The age structure of most UK urban tree populations consist of mostly late middle age trees with very few ancient trees – if any- and few young trees. The semi-mature and young middle aged trees are absent.

## **Phased Removal**

Phased removal is a term describing a planned programme of selective felling and replacement of trees. This is usually spread over a long period to reduce the environmental impact. Felling can be phased within a street or phased within an area.

The period can vary from 3-5 years or can be stipulated for the complete life span of particular trees in a management strategy.

## **Pollard**

Pollarding historically was a method of removing large limbs from trees for animal fodder at a height where the new shoots would not be browsed by animals so a sustainable food source is maintained.

The term is now used to describe trees that are regularly pruned back to the same point to produce a characteristic appearance of stout stem, small crown and swellings at the base of the twiggy shoots where repeat pruning occurs.

## **Pruning cycle**

A pruning cycle is the regular return period that certain trees are pruned usually over several years.