



City of Westminster

PLEASE NOTE

The Unitary Development Plan (UDP) policies and planning, building control and other legislation and regulations referred to in the text of this guide were current at the time of publication. Because this guidance is an electronic version of the printed guidance as approved and adopted, these references have NOT been changed. For ease of contact; names, telephone numbers and locations have been regarded as non-material editorial changes and have been updated.

As UDP policies and government legislation may have changed over time, before carrying out any work, it is recommended that you consult the current UDP

<http://www.westminster.gov.uk/planningandlicensing/udp/index.cfm> for policy revisions and you may wish to check with planning and/or building control officers about your proposals.

TREES and Other Planting on Development Sites



Trees and other planting on development sites

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Trees and landscaping are a valuable environmental asset and one of the most important elements which determine the character of our historic townscape.

The City Council's relevant planning and environmental policies aim to protect trees and other planting and to enhance their contribution to the quality of Westminster's environment. Policies on existing and new trees apply not only in public open spaces but also on privately owned land. Special attention is given to the protection of existing trees on development sites, where they often come under immediate threat of serious damage or destruction, and to the planting of new greenery wherever the opportunity occurs.

This Guide aims to draw attention of property owners, architects and developers to the importance of incorporating planting and landscaping in the design of new buildings. It also explains how trees and other greenery can contribute to the successful integration of new developments with the historic character of the City and gives general advice on practical issues for the successful implementation and maintenance of relevant projects.

This Guide is based on current legislation, statutory and other advice, and specialist bibliography. The City Council reserves the right to use any future statutory provisions or advice, standards or information on good practice, as may be produced by central government, specialist bodies or other relevant sources.

1. Introduction

In urban areas, planting and landscaping is commonly associated only with parks, squares, avenues and other formally designated open spaces. Yet, even in the densely developed areas of central London, the traditional townscape contains also a wealth of other green spaces. These include small parts of communal private land separating residential terraces from the public highway, green crescents, long stretches of front gardens, ivy and other climbers on walls, window boxes, baskets and, not least, the cumulative effect of planting in residential rear gardens.

As part of its commitment to preserve the historic character of Westminster, the City Council is mindful of the need to retain this tradition. At the same time, the Council recognises that some flexibility may be necessary in specific cases, if it is evident that the City's overall historic character and general environment will benefit (for example, the removal of individual trees and their replacement with others in more suitable positions may be acceptable in appropriate cases).

The ***Westminster Unitary Development Plan*** contains special policies aiming to protect the City Council's historic urban landscape and to restore it to its original form, to the degree that this is necessary and practical. Equally, the Plan contains policies for the promotion of modern design and the harmonious coexistence of contemporary architecture, townscape and landscape with the City's historic environment.

For the successful implementation of these policies, the City Council encourages designers, land owners and developers to incorporate planting and landscaping in new developments in a way which complements and enhances the historic character of Westminster.

The Council takes the view that planting and landscaping is an intrinsic element of the City's high quality townscape. As in traditional architecture, the inclusion of planting in the design of modern buildings can introduce the softening visual effect of nature in the urban scene, it can improve the microclimate and it can help sustain or improve an area's wildlife value. In a symbolic/educational way, it can underline the importance of incorporating nature in the formation of the built environment and by doing so, it can promote the appreciation of wider issues of environmental conservation and sustainability. If done in sympathy with existing surroundings, the inclusion of planting in the design of modern buildings can also contribute to the successful coexistence of new developments with the existing historic environment.



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Examples of different types of greenery on private grounds in Westminster:

1. Large front garden in the suburban parts of the City;

2. Churchyards and old cemeteries;

3. Large communal spaces surrounded by residential terraces;

4. Informally landscaped spaces in modern residential estates;

5. Formal London squares

6. Tree covered rear gardens in most areas in Westminster.



The unique character of many areas in Westminster is closely related to the amount, type, distribution and layout of the greenery they contain.

In direct combination with the layout of streets, buildings and other features, trees and landscaping create the form and quality of the urban environment.

The 'suburban' character of the Conservation Areas in the north of Westminster, is derived largely from the very close and virtually continuous co-existence of buildings and trees (see examples above: Maida Vale/St. John's Wood area).



In contrast the 'urban' character of most Conservation Areas in the south and in central Westminster is largely defined by the separation of green spaces from buildings and streets. The separation of built-up areas from green spaces is usually clear and sharp (see example, Regent's Park, left). Their harmonious inter-relationship is often emphasised by 'open' or 'guided' views of one from the other (see example of 'open' views, below left- Manchester Square - and 'guided' views, below right, Buckingham Palace from St. James's Park).





Examples of how the distribution of trees and green spaces affect and can determine the character of different parts of Westminister.

Above: Aerial photograph showing the continuous overlapping of the green network and the built fabric, in Maida Vale area.

Below: Aerial photograph of parts of Covent Garden, Strand and Aldwych, showing the almost complete separation of green spaces from built up areas.





The character of some Conservation Areas in central Westminster is derived largely from their dense development and narrow streets, which made the inclusion of trees difficult or impossible. The almost total absence of planting underlines their 'dry' urban appearance and is one of the characteristics that the City Council is seeking to preserve in those areas. (Above left: Meard Street; Above right: Queen Anne's Gate).

The few trees and secluded 'pockets' of greenery in these Conservation Areas, pleasantly contrast with and emphasise the austere character of their surroundings and are greatly enjoyed by the public (see right: St. Paul's, Covent Garden).



2. Trees, Planning Legislation and Central Government Advice

Planning legislation generally regards trees as environmental assets which, apart from the care they deserve from all citizens on a basis of goodwill, must also be afforded explicit legal protection.

One of the older Acts of Parliament for the protection of private open spaces, **the London Squares Preservation Act 1931**, safeguards certain squares, gardens and other enclosures in London, against changes detrimental to their character or use as ornamental gardens or grounds for pleasure, play, rest or recreation.

The **Town and Country Planning Act 1990** (Part VIII, Chapter I) deals with general powers available to a Local Planning Authority to protect existing, and to require the planting of new trees in their area. The following is a simplified summary of this part of the Act and is intended to give a general outline of these powers. For specific applications, the reader should refer to the Act itself and seek specialist advice, in the first instance from the City Council's Conservation officers or the Tree Section Manager. (see *Contacts*).

Section 197 of the Act makes it a duty for Local Planning Authorities, when granting Planning Permissions, to attach special conditions and to make special orders for the preservation of existing trees and/or for the planting of new ones, wherever it is appropriate in their opinion.

Sections 198 - 210 give Local Planning Authorities powers to make Tree Preservation Orders in order to protect individual or groups of existing trees, in the interests of amenity in an area. Using these powers, a Local Planning Authority can also make orders to protect, in the future, trees which are to be planted as a result of a special condition attached to a Planning Permission granted in connection with section 197 (see above). Before making a Tree Preservation Order, the Local Planning Authority must notify the owners and occupiers of the affected land and must take into consideration their views before confirming the order.

However, in urgent cases, the Local Authority can make an order and put it immediately into effect. Anyone who wishes to carry out works on a tree protected by a Tree Preservation Order, must apply for the City Council's written consent. The City Council must decide within two months from the date of the application, whether to grant or refuse consent or to grant it under conditions. These sections deal with relevant matters arising from the making of Tree Preservation Orders, including possible issues of compensation, replacement of protected trees if they have been removed in contravention of the order, and penalties for the offence of non compliance.

Sections 211-213 of the Act, give Local Planning Authorities powers to treat any tree which is included in a designated Conservation Area, as a protected tree. Anyone who wants to cut down or prune a tree in a Conservation Area must give the City Council six weeks notice of this intention. After this period has expired and not later than two years from the date of the notice, the intended works can be carried out, unless the City Council has expressed any special requirements in connection with these works.

To cut down or prune a tree which is protected by a Tree Preservation Order or is in a Conservation Area, without following these procedures is an offence. The penalties in cases of contravention are set out in section 210 of the Act.

DoE Circular 36/78 sets out (amongst others) the grounds and criteria for making Tree Preservation Orders.

Planning and the Historic Environment (PPG15) was produced by the Department of National Heritage and the Department of the Environment in September 1994. Sections 4.38-4.39 of this document explain the legislation covering trees in Conservation Areas.

DoE Circular 11/95 explains the provisions of the 1990 Act (see above) in respect of (amongst others) trees and landscaping on development sites and gives detailed guidance to Local Planning Authorities on attaching conditions and informatives in order to safeguard existing trees and to secure the planting of new greenery.

The **British Standards Institution's** publication **Guide for Trees in Relation to Construction (BS 5837, 1991)** gives a comprehensive overview of existing legislation and associated regulations and advisory documents relating to trees on development sites. This includes the protection of trees during the carrying out of preparatory works, during building and associated operations, also, the protection of structures from trees, and the necessary maintenance after completion of works.

In a wider environmental context, the reader may be interested in additional statutory and other advisory documents dealing with trees and other planting. A number of such documents are referred to under *Bibliography* and *Further Reading* at the end of this Guide.

3. Westminster Polices on Trees and Other Planting

Planning legislation sets the general principles to enable Local Authorities to protect and enhance planting in their areas. Based on this legislation as well as on supplementary Planning guidance, Local Planning Authorities have the duty to develop detailed policies in order to apply the legislation to the specific requirements, constrains and opportunities of their areas. In doing so, Local Planning Authorities must also provide practical advice and guidance to property owners and their professional advisers, in order to achieve the aims of the legislation.

The Council regards trees and other planting as an essential element of the City's environment; they contribute to the preservation of the historic character of the City and to the successful formation of our modern surroundings. Trees, bushes and other planting can also help reduce air pollution, encourage wildlife and promote respect for nature. On this basis, the City Council is making full use of its statutory powers to encourage and protect planting in general, in a way which is appropriate in Westminster.

3.1 Main Policies

The following policies are contained in the **Westminster Unitary Development Plan** (1995 edition). They deal directly with trees, planting and landscaping in the City, and reflect the spirit of the relevant legislation as outline above.

Policy DES12:

"To continue to make tree preservation orders wherever necessary and protect all trees that are the subject of tree preservation orders.

To continue to replace and plant new trees and shrubs. Such planting may be required as a condition of a planning permission.

To resist the loss of trees unless dangerous to the public or, in rare circumstances, when felling is required as part of a replanting programme.

To refuse planning permission for developments likely to result in the damage to or loss of a tree which makes a significant contribution to the character or appearance of the area."

In addition, the following policies deal with various aspects of Conservation, Listed Buildings and Amenity, and may have a direct or indirect effect on trees, shrubs and other planting:

Policy SOC12(B):

"To encourage, in new development schemes, the inclusion of small landscape features, including public art, visible from the street."

Policy STRA25:

"...; to preserve and enhance the character or appearance of Conservation Areas;..."

Policy STRA26:

"To protect important views across and within Westminster..."

Policy STRA28:

"To improve the environmental quality, public access to and environment of the River Thames and the Regent's and Grand Union Canals corridors and to complete the Thames Path National Trail and the Grand Union Canal Trail."

Policy STRA29:

"To seek the enhancement of Metropolitan Open Land ... and to protect sites or features of nature conservation importance. The impact of all proposals on ecological habitats will be of particular concern and the introduction of wildlife ... will be encouraged."

Policy DES1:

"Extensive development ... should:

- Relate satisfactorily to any features of open spaces ... on or adjoining the site.
- Show careful attention to the scale, use and landscaping of spaces between buildings ... with crime prevention measures taken into account.
- Take account of existing and likely future ... pedestrian movement."

Policy DES5:

"...The ... form of (an extension to an existing building) should be in keeping with the building and its setting..."

Policy DES6(B)(4):

"Roof terraces will not be acceptable where they would have an adverse effect upon the architectural integrity of the building and its setting, the character or appearance of the area or the amenity of neighbouring occupiers."

Policy DES6(D)(2):

"Roof level conservatories and gardens will not normally be acceptable where they will have a detrimental effect upon the character of a building or an area. The City Council will seek to resist roof level clutter where it would be seen from the street or adversely affect the visual amenity of adjoining properties."

Policy DES8(I):

"Developments which adversely affect the setting of a listed building or important views of a listed building, will not normally be permitted."

Policy DES9(D):

"Applications for development along the river front will be expected to include provision for public access to the River Thames and, where appropriate, lay out a public riverside walk to the satisfaction of the City Council, which will contribute to the completion of the Countryside Commission's Thames Path national trail."

Policy DES10(C):

"Buildings adjacent to the (Regent's Canal and Grand Union) canal should be designed to respect and enhance the character and natural environment of the canal..."

Policy DES11(B):

"The City Council will normally refuse applications for development on public or private gardens which form an important element in the townscape, part of planned estate or street layout, contribute to the character of conservation areas or enhance the setting of a listed building."

Finally, the Westminster Unitary Development Plan contains many other policies which, in aiming to protect or enhance the City's general amenity may, in specific cases, indirectly affect trees, planting and landscaping. To find out if such indirect requirements or considerations apply in specific cases, the reader is recommended to seek advice initially from the City Council's Development Planning Service Conservation officers (see *Contacts*).

In line with its emerging Nature Conservation Strategy, wherever possible, the City Council will seek to promote the enhancement or creation of wildlife habitats. The use of trees, shrubs and other greenery in new developments can provide valuable habitat feeding grounds and 'stepping stones' in areas which might otherwise be ecologically deficient.



Trees and landscaping are closely associated with the formal character of some of the best known historic buildings of international importance as well as with the casual setting of 'ordinary' groups of architectural or historic interest. They form an important and powerful element of the townscape, which helps bind together the City's fabric, irrespective of character, age or style (Above: The Albert Hall; Below: Hallfield Estate).



3.2 Implementation of Policy: Care for Trees and Other Greenery in Westminster

3.2.1 Tree Preservation Orders

The City Council usually makes Tree Preservation Orders on trees which make a significant contribution to the environment and its enjoyment by the public. This means that most orders are made on trees visible from the street or other public places such as footpaths, a towpath, canalside or riverbank. However, trees with special beauty or rarity in more secluded space are also protected by an order.

Currently, there are approximately five hundred Tree Preservation Orders in the City, protecting important trees mainly on privately owned land; a single order often covers many (sometimes more than a hundred) individual trees. New orders are made as often as it is necessary and expedient, often in conjunction with the granting of consent for a specific new development and only on trees that are in good condition, have an essential amenity value and do not appear to be causing any structural damage to adjacent buildings or other structures. The Council gives every assistance to landowners affected by such orders, by offering prompt specialist advice concerning all aspects of their maintenance, including the protection of the structural condition, views, sunlight and other amenity issues of adjacent buildings.

When an order is made, individual specimens or groups of trees are clearly identified on a location plan. The City Council serves copies of the order on all the owners of the land on which the protected trees are growing and on the owners and occupiers of any affected adjoining properties. The order is registered as a Land Charge; a copy is kept at City Hall and is available for public inspection at any of the Planning desks at One-Stop Services (see *Contacts*). A register of all orders in Westminster is also available for public inspection.

Once an order is made, the written consent of the City Council is required before a tree is cut down or pruned. The Council's Tree Officers will be pleased to discuss measures to ensure the continued health and well being of any protected tree. If works are required, an application should be made in writing to the Council, at least two months before the carrying out of the works. An application should clearly identify the tree(s) concerned and the precise works proposed. An inspection will be made before the Council gives a decision. Sometimes the Council may suggest alterations to the proposed works or an alternative treatment. If permission is granted or felling, the Council usually requires that a replacement tree of the same species is planted in the same place; the new tree will be protected by the existing Tree Preservation Order. The City Council can provide a list of approved tree surgeons.

Not complying with the requirements of a Tree Preservation Order is an offence; in cases of contravention, the City Council will seek the maximum fines allowed by legislation.

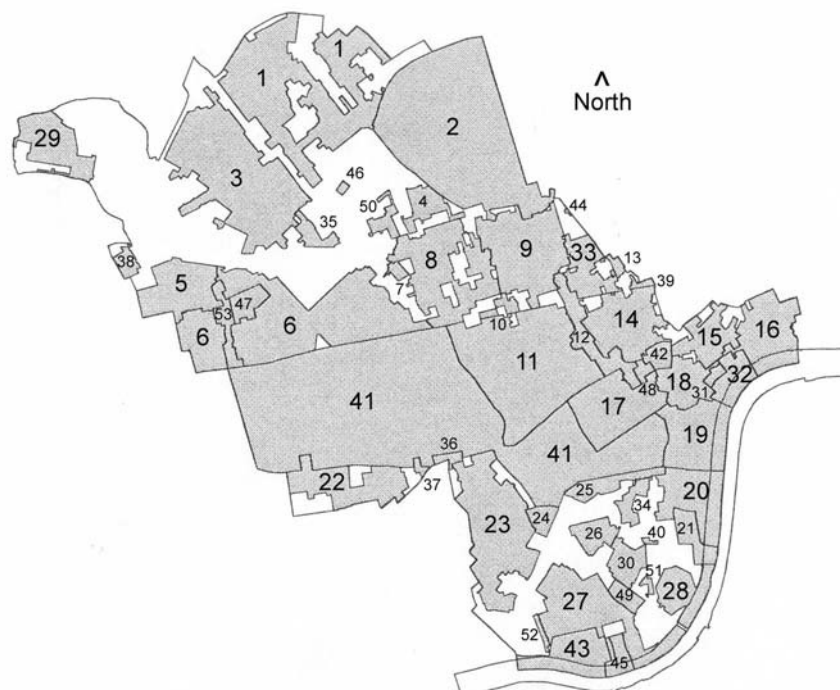
3.2.2 Trees and Landscaping Affecting Conservation Areas, Listed Buildings or Historic Parks and Gardens

The City Council designates Conservation Areas in order to preserve or enhance the character and/or appearance of those parts of Westminster which are of special architectural or historic interest. Approximately three quarters of Westminster is currently covered by the City's 53 Conservation Areas and 11,000 of its buildings are listed. New Conservation Areas may be designated in the future and the existing ones may be extended or otherwise revised, as necessary, in consultation with local residents. The map below shows the City's designated Conservation Areas as of May 2002. For information on any subsequent designations or other variations, please contact the Council's Conservation officers.

The Council takes the view that trees, shrubs and other greenery are often essential features of Westminster's historic environment. The majority of them were originally planted either as parts of major landscape compositions in historic parks or gardens, or in order to complement specific buildings, extensive developments or the general street scene. For this reason, the Council regards existing trees and general landscaping as indispensable parts of the special architectural and historic character of the City and is committed to their preservation, protection, enhancement and renewal. In addition to the care afforded directly by the Council or by other relevant organisations (such as The Royal Parks) to trees and landscaping in public spaces, Westminster Council is using all its powers to safeguard trees and other important greenery on private land, for the benefit of the general public and for future generations.

When appropriate, in granting Planning Permission for development anywhere in the City, but especially in Conservation Areas and where the development affects a Listed Building or a Historic Park or Garden, the Council will attach special conditions seeking to protect or replace existing trees or shrubs or to secure the planting of new ones, taking into account their visual, historic or amenity contribution to a specific development or an area. When necessary, conditions will specify the species of new trees, so that the new landscape is consistent with the historic character and the ecological nature of the area. The Council considers important that, when replacement trees are planted, they should be of sufficient size and maturity to provide an effective substitution in the immediate future.

Map of designated Conservation Areas in Westminster (May 2002)



Key to Conservation Areas

1	St John's Wood	19	Whitehall	37	Knightsbridge Green
2	Regents Park	20	Westminster Abbey & Parliament Square	38	Aldridge Road Villas & Leamington Road Villas
3	Maida Vale				

4	Dorset Square	21	Smith Square	39	Hanway Street
5	Westbourne	22	Knightsbridge	40	Medway Street
6	Bayswater	23	Belgravia	41	Royal Parks
7	Molyneux Street	24	Grosvenor Gardens	42	Leicester Square
8	Portman Estate	25	Birdcage Walk	43	Churchill Gardens
9	Harley Street	26	Westminster Cathedral Area	44	Cleveland Street
10	Stratford Place	27	Pimlico	45	Dolphin Square
11	Mayfair	28	Millbank	46	Fisherton Estate
12	Regent Street	29	Queen's Park Estate	47	Hallfield Estate
13	Charlotte Street	30	Vincent Square	48	Haymarket
West		31	Adelphi	49	Lillington Gardens
14	Soho	32	Savoy	50	Lisson Grove
15	Covent Garden	33	East Marylebone	51	Regency Street
16	Strand	34	Broadway & Christchurch	52	Peabody
17	St James's	Gardens		53	Queensway
18	Trafalgar	35	Paddington		
Square		36	Albert Gate		

Anyone who wishes to carry out works on trees in Conservation Areas must give notice to the Council in writing, at least six weeks before the works are undertaken.

Within this period, the City Council may decide to make a Tree Preservation Order in respect of the tree(s) involved. Subject to any action initiated by the Council, the works can be carried out after these six weeks but not later than two years from the date of the initial notification. The Council's Tree Section Manager provides specialist advice to owners of trees in Conservation Areas, with a view to safeguarding the structural integrity and general amenity of adjacent properties without sacrificing or endangering the health of important trees and their contribution to the historic character or general amenity of the Conservation Area.

An official Register of Parks and Gardens of Special Historic Interest has been compiled and is maintained and updated by English Heritage. Twenty two of the Historic Parks and Gardens currently included in the register, are situated in Westminster. Although there are no specific statutory powers applying to parks and gardens included in the register, the City Council is committed strongly to using all its general powers (as outlined above) in order to protect trees and landscaping on these sites.

Eighty two Squares (including other open spaces) in Westminster are listed in the London Squares Preservation Act 1931, which safeguards their use as ornamental pleasure grounds or grounds for play, rest and recreation.

3.2.3 Westminster's Nature Conservation Strategy

The City Council has recently undertaken a Nature Conservation Survey of the City which has resulted in an inventory of the habitats and wildlife found in Westminster. The survey looked at all open spaces in the City, greater than 0.1 hectare in size. Those interested in 'greening' new developments may find it useful to consult this information to ascertain what species of birds, insects, etc. are present in the wider area, and their presence should be encouraged through the preservation and enhancement of existing greenery. The Council is currently developing a Nature Conservation Strategy (see *Bibliography*) which is expected to be published at the end of 1996. The strategy encourages the preservation and enhancement of existing habitats and the development of new ones; private gardens, courtyards etc. are seen as a useful opportunity for this. Advice on opportunities to encourage habitats on buildings and development sites is contained in section 4.3 of this Guide, and additional information can be obtained from the Council's Tree Section (see *Contacts*).

4. Trees and Other Planting on New Development Sites

4.1 The Special Importance of New Development

Developments involving alterations to existing buildings, usually do not include planting and therefore, the Council's policies in these cases focus mainly on the protection of any existing trees or other greenery that may be threatened by the proposals.

In contrast, developments involving new buildings, especially proposals for extensive new developments, usually provide considerable opportunities for new planting and landscaping. If appropriately designed and implemented, planting schemes in developments of this type can enhance the general amenity of their areas and can complement the historic character of surrounding Conservation Areas. In addition, existing trees and shrubs on sites of new development often come under serious threat of damage or destruction from building and associated works.

For this reason, although this Guide relates to trees and other planting on all types of development sites, it focuses particularly on sites of **new** development.

Note: In the context of this Guide, New Development means development which does not constitute rebuilding, maintenance or repair works, or a relatively small alteration or addition to an existing building (see also definition of New Development, T&C Planning Act 1990, sec.55[6]).

4.2 The Importance of Incorporating in Early Stages of Design

The Council encourages landowners and developers to involve all the relevant specialist professionals in the proposals for all types of development, at the early stages of design. For extensive new developments or for schemes or sites with special requirements, this is a practical necessity and therefore the Council expects that it should be followed.

The involvement of specialists at an early stage will enable the architects to take into account constraints and to use opportunities which the structural, traffic, utilities or other engineer, the legal adviser, crime prevention design adviser, landscape architect or other specialist can bring to their attention, in formulating the first ideas for the design.

It is particularly important that planting and landscaping are dealt with by appropriately qualified experts (e.g. Members of the Landscape Institute or the Arboricultural Association) and that they are included in the initial brief to the architect and also in any subsequent briefs to other specialists.

Including trees and general landscaping in the early stages of design, will enable the following important benefits to be achieved:

1. Incorporation of greenery (either retention of existing or new) as an integral part of the composition of the building(s) rather than as a cosmetic afterthought.
2. Integration of the new landscaping with the existing ecological character of the area, to increase or enhance existing wildlife opportunities.
3. Proper co-ordination of the various stages of the design and implementation processes, thus avoiding costly abortive work by the designers or the contractors.
4. 'Designing-out' or minimising any conflicts between planting areas and built-up areas, underground and other services, etc.
5. Careful consideration of the effect of landscaping (i.e. location and types of selected species) upon crime prevention. Designers should aim to minimise opportunities for concealment and should use landscaping positively to deter graffiti and prevent scaling on boundary walls.
6. Effective and timely evaluation of the total cost of including greenery in the project, against the long term economic benefits which greenery can generate, thus enabling optimisation of space and other resources for landscaping.

The first results of the teamwork will be a strategic plan for the development, which will incorporate the first broad requirements set by the various specialists, including the provision of environmentally effective, functionally useful, aesthetically appropriate, and economically feasible planting and landscaping. These broad requirements will be followed up by further co-ordinated work and with more detailed proposals, right through to the submission of the applications for the necessary consents and to the last stages of the implementation of the project, and they will possibly form the basis of a schedule of regular maintenance to be followed throughout the life of the development.

4.3 Opportunities for Inclusion of Greenery in New Development

In principle, the City Council encourages developers and designers to include in all new developments as much greenery as it is possible and feasible. However, indiscriminate or uncoordinated application of this principle can result in planting which does not complement the appearance and disrupts the character of the buildings or areas which they affect. For this reason, the Council's planting and landscaping policies are applied in the light of the specific characteristics of individual proposals and in the context of the areas concerned.

In general, opportunities for planting in new development schemes are closely linked with the density of development and the use of an area. Planting and landscaping on private land are generally more extensive in the residential areas of the north and west parts of Westminster, whereas the predominantly commercial and entertainment parts of the West End and the relatively dense areas in the south rely mainly on public and communal open spaces. This has made a very significant contribution to the definition of the historic character of these parts of the City which, in as much as designated Conservation Areas are concerned, the Council has the duty to preserve or enhance.

The opportunities discussed in the following sections of this booklet are not intended as recommendations to be followed indiscriminately; they are meant to bring to the attention of developers and designers a number of possibilities for the inclusion of greenery in development schemes, if this is appropriate and feasible. Also, the technical information and advice in this Guide must, in individual cases, be adapted taking into account specific requirements and local considerations, in the light of specialist advice. The City Council will not accept responsibility for any structural or other damage to buildings or other structures, from trees or plants included in a development, which may be thought as attributable to the information and guidance included in this booklet.

Planning permission, consent under the Building Regulations, Environmental Health approval or other consents from the Council may be required for certain structural or other works that may be necessary for the inclusion of planting in development schemes. For details on such requirements, contact the relevant Council officers (see *Contacts*).

4.3.1 The Protection of Existing Trees and Other Greenery on Development Sites

Retaining existing trees together with other features of nature conservation interest (e.g. shrubberies, ponds, etc.) is one of the biggest and most important opportunities for the greening of new buildings and building complexes. With good planning at the early stages of design, it should be possible to retain most or all of the existing trees and shrubs. When it is evident that important specimens cannot be retained, the Council may require their replacement with the same or other appropriate species on a nearby location. Sometimes it may be possible, under specialist advice, to relocate established shrubs or small trees. Before granting Planning Permission for the development, the City Council will require a detailed tree survey, showing the location, ground levels, species, canopy size, condition/life expectancy and root system of existing trees (advice on the details of the survey can be obtained from the Council's Tree Section; information on features of ecological importance can be given by the Council's Environmental Policy Team, see *Contacts*).

4.3.1a The Effect of New Buildings and Services on Existing Trees and Shrubs

As mentioned earlier, any such detrimental effects should be 'designed out' through the effective involvement of all specialist professional, including the landscape architect, at an early stage of the design of the project, bearing in mind the following main factors which can affect the future of trees:

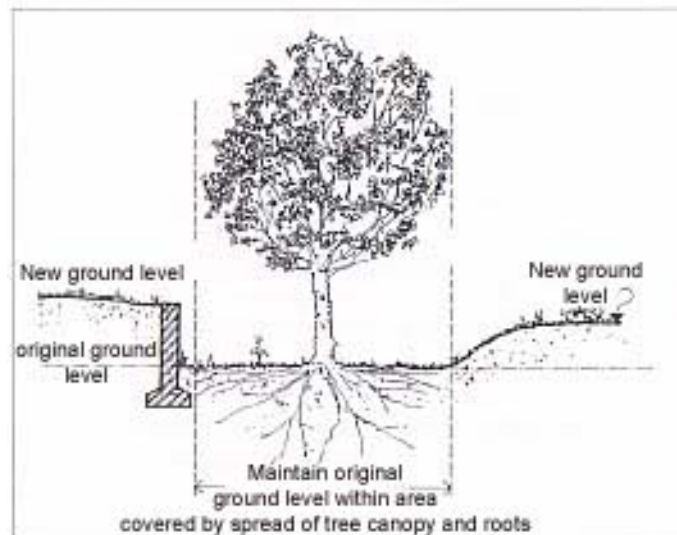
Direct overlapping between proposed buildings and locations of existing trees and shrubs: The first concern in the concept-design stage of any new development should be to minimise such overlappings and, ideally, to avoid them altogether. To the degree that is practically possible, the design team should acknowledge that the retention of existing mature trees can add to the value of the development. In many cases the layout, positioning, precise dimensions and overall plan of buildings can be adapted to allow for the retention of existing trees or other features of ecological importance, without adding any considerable costs.

The City Council takes the view that applications for new developments should never include proposals to fell or endanger important trees or damage other features of nature conservation value, unless convincing evidence can be presented that all reasonable possibilities for their retention have been explored.

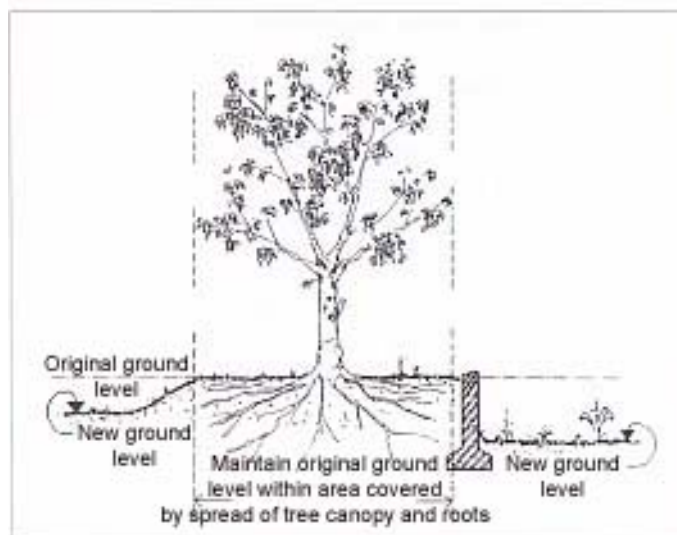
Alterations to ground levels: Where possible, ground levels should remain unchanged, to prevent damage to feeder roots. Generally feeder roots occur in the top 600mm (and often in the top 300mm) of

the soil and cover an area of at least the spread of the canopy of the tree. Raising the ground level can reduce the amount of air reaching these roots; lowering the ground level can cause severe loss of feeder roots and damage or destroy the tree's 'anchor' roots which affect its stability.

If the ground level has to be raised, this should be done gradually over a number of years and the added soil should be light and porous; an even better solution is shown in fig 30. IF the level of the ground has to be lowered significantly, a retaining wall should be constructed around the tree covering roughly an area of the size of its canopy, and all excavations should be kept outside this wall leaving the ground level around the tree unchanged.



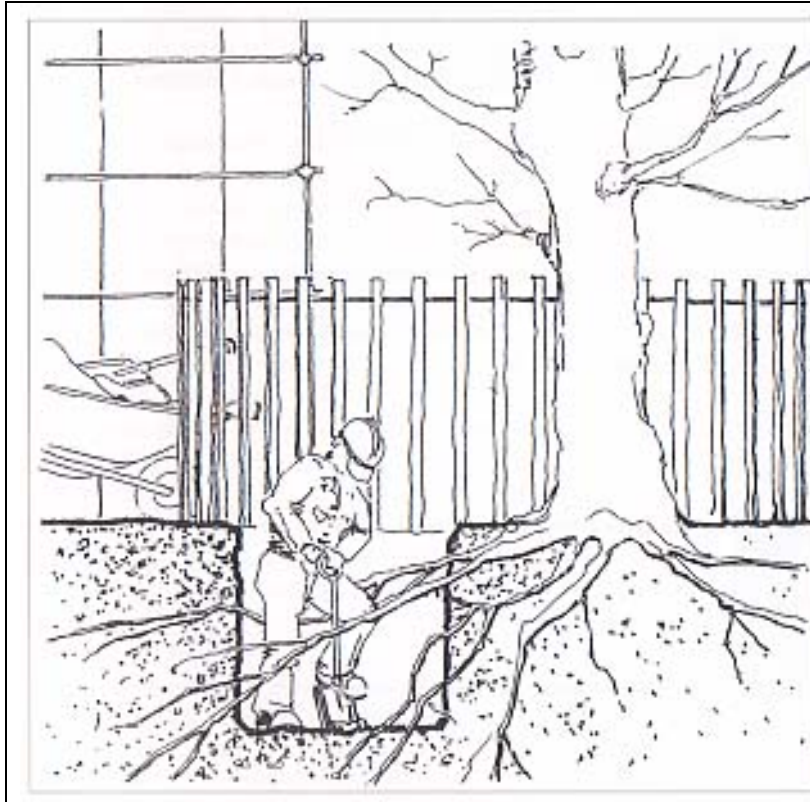
Raising ground level around established trees.



Lowering ground level around established trees.

Alterations to the water table: Excavations and substantial building works below ground level often change the water table in the surrounding area. Where the water table is lowered, existing trees in the vicinity can be deprived of water. Young trees may be able to adapt to such changes but matured specimens may be unable to respond to the change quickly and may eventually die; skilful reduction in the canopy of the tree can sometimes alleviate this problem. Where the water table is raised, the roots of surrounding trees may be deprived of air and the trees may die of asphyxiation; special drains laid close to the trees' roots can help to alleviate the problem in these cases.

Construction of underground services: All developments involve underground services such as electricity and gas supply, for which trenches have to be excavated, usually in the early stages of the implementation of a project. Such excavations often appear to be relatively small and harmless but, if done without proper planning, they can easily damage or kill existing trees and shrubs by severing their roots.



If excavations close to trees cannot be avoided, they should be carried out by hand; any major exposed roots should be protected and retained.

On development sites where trees or shrubs are to be retained, all underground services should ideally be diverted away from the roots. If this is not possible and services have to interfere with roots, then all digging in root areas should be carried out by hand, avoiding use of mechanical diggers, and all services should be threaded between the roots. If, despite these efforts roots have to be cut, then cutting should be done as sparing as possible and restricted to roots no bigger than 25mm in diameter. All such cutting should be done carefully and cleanly with a hand saw, to a natural growth point and the area surrounding the cut should be filled with proper backfill material to allow aeration and healing. Also, cuts can be treated with a fungicidal dressing to avoid infection.

- **Paving:** New impervious paving near trees or other plantings can deprive their roots of oxygen and endanger their health. Designers should aim to avoid paving under a tree's canopy, where feeder roots run at a very small depth beneath the ground surface. If paving is necessary, this should be done with loose-laid cobbles or gravel, or paving slabs laid at a distance from each other, or special perforated paving units which will allow penetration of water and air to the roots.

4.3.1b The Effect of Associated Building Activities on Existing Trees and Shrubs

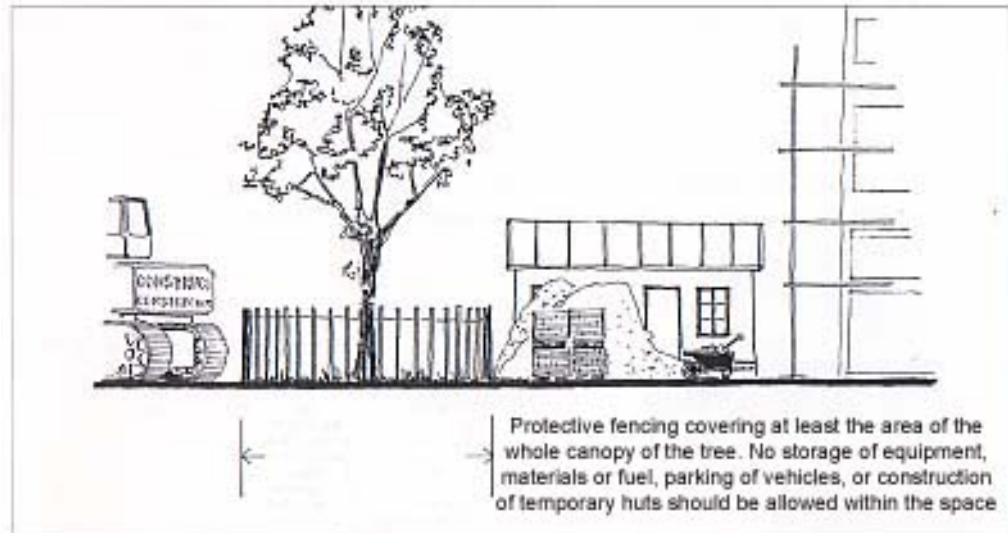
Careless incidental practices by contractors, suppliers, and other parties involved in the implementation of a project, can often result in the loss of existing trees or other greenery on development sites, despite careful planning in the design stage of the project. Before works start, the areas around trees should be enclosed with temporary protective fences. The British Standards Institution publication **BS 5837** (see *Bibliography*) gives detailed guidance of the radius of the area from the centre of the tree trunk that should be enclosed by the fence.

The following are typically recurring examples of bad practice which should always be avoided:

Storage of heavy building materials under trees: Subject to type of soil, weather conditions, species of tree and bulk of the material stored, this can cause compaction of the soil in the root-spread area. This would deprive the roots of air and asphyxiate the tree as a result.

Parking or driving heavy vehicles under trees: Such practice would have the same effect on the soil and on the tree as that described in the previous paragraph.

Lighting fires under or near trees: Lighting fires on building sites is generally prohibited and, if it is appropriate, the Council will take action if such cases occur. Apart from their other undesirable effects on the environment, fires can easily destroy trees, as a direct effect of the heat or smoke on the surface roots, the branches and foliage, and/or by causing dehydration to the soil.



Protective fencing covering at least the area of the whole canopy of the tree.

Careless unplanned pruning of trees, as an easy way to facilitate unexpected/unplanned building activities or even as a way to 'simplify' proper instructions by 'cutting corners' in order to achieve false economies: Tree branches are often sacrificed on development sites in order to provide 'easier' vehicular access to a location, 'cheaper' installation of temporary electricity cables or for other similar purposes which can be served without the un-necessary mutilation of trees. The City Council would expect that any pruning or other interference with trees on development sites should be provided for in the site plan instructions; if it becomes necessary unexpectedly, it should be done only with the approval and under the supervision of a responsible specialist. Penalty clauses should be included in contracts to prevent un-necessary and careless pruning or accidental damage to trees due to careless practices.

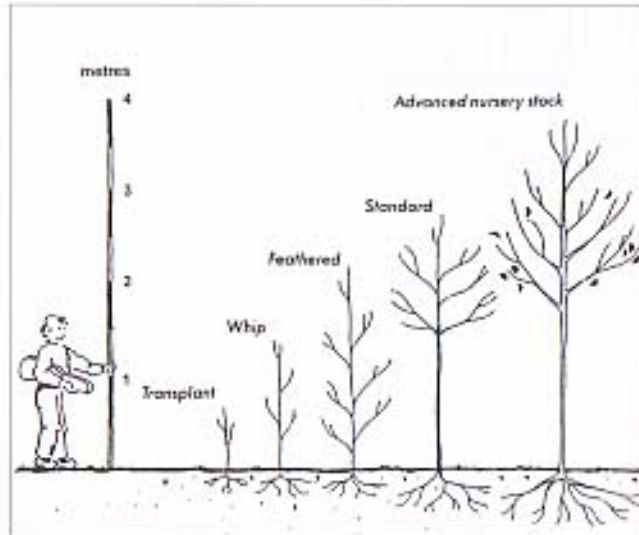


Mature cherry tree, sadly mutilated to 'facilitate' building works.

4.3.2 Planting New Trees and Other Greenery on New Development Sites

In considering Planning applications for development, the City Council will require evidence that the team engaged in designing the proposals has given careful consideration to the effect of new trees and shrubs, not only on the new development but also on surrounding buildings and the whole area which they affect. The benefit from new planting can be drastically reduced if, either from the beginning or when they reach maturity, the new plantings create structural or amenity problems to adjacent properties, if they obstruct important views or if they have a detrimental effect on the safety of pedestrians or vehicles.

If the proposals affect any historic buildings or any part of a Conservation Area, the City Council will require that the character and appearance of such buildings or areas is taken into account and the new trees complement them both in the short and the longer term.



Categories of young trees, according to size.

The following information is intended for general guidance and is based largely on general advice given in Section 14 of the British Standards Institution's **Guide for Trees in Relation to Construction (BS 5837)**. Valuable technical information on aspects of lifting, handling, planting etc. for nursery stock can be found in the same Institution's **BS 3936**, **BS 4043** and **BS 4428** (see *Bibliography*). For tree planting on specific sites, the City Council's Tree Section Officers of the Environment and Leisure Department should be contacted for advice in the first instance (see *Contacts*). In many cases, the professional advice of a landscape architect will not only be beneficial but essential.

4.3.2a Choice of Species and Location of proposed trees and shrubs should take into account the following three factors:

The physical characteristics of the space where the tree or group of trees or shrubs are to be planted. The size, shape, use, orientation, lighting conditions, etc. are decisive, and consideration should be given to the relevant needs and characteristics of the different species, both in the first years after planting and when the tree(s) reach maturity. It is also important to consider the impact of any trees and shrubs that may become overgrown in future years, upon feelings of safety for users of the space.



If planted in a restricted space, large trees may adapt their form during their growth, in order to improve lighting and other conditions. In extreme cases, this adaptation may result in distorted or even dangerously unbalanced forms.

The biological and ecological characteristics and needs of the available species and whether these can be satisfied in the context of the proposed development. These will include the soil composition, the air quality, moisture, the existing and potential wildlife, both in the short and in the longer term. Consideration should be given in this context to the broader built and natural surroundings with which the new trees and shrubs will be expected to integrate. As far as possible, all plantings should link with the existing ecological characteristics of the area and reflect any existing features of nature conservation importance. Most of the City of Westminster overlies London clay or gravel; the soil tends to be chemically

fairly neutral, and most popular species will normally grow in the City. The Council's Tree Section officers should be contacted for advice on possible exceptions and on the requirements and suitability of other, more 'temperamental' species.

The intended design characteristics of the proposed development and of any existing surrounding buildings or spaces which the new development will affect. Trees and landscaping are as decisive factors as any other element of design in defining the aesthetic composition, style and overall character of a proposed development and the way it relates to its surroundings. They contribute not only by means of their form, colour and texture in the same way as all 'built' architectural features, but also through their scent, sound and movement. They are flexible and adaptable and can be skilfully pruned or trained to complement their surroundings. Furthermore, their appearance does not change by the variation of lighting during the day but also by their own transformation through the year and throughout their life.



Tree species appropriately selected for a space can form central focal points of interest and important landmarks.

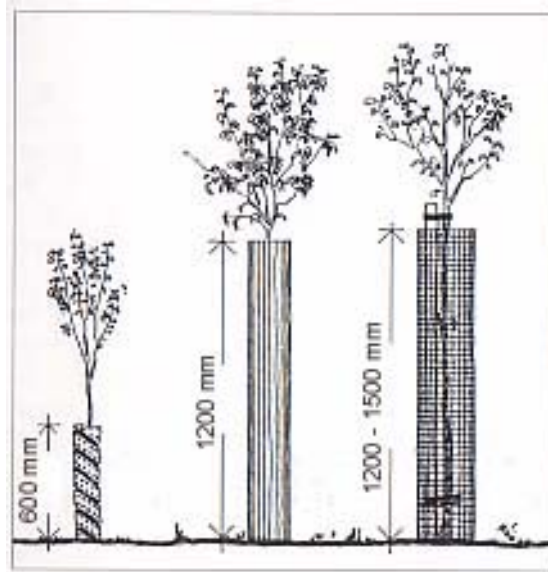
With regard to choice of species for proposed developments in Conservation Areas or affecting historic buildings, parks and gardens, the City Council will require that proposed trees or other planting and landscaping complement the character and appearance of their historic surroundings as well as link with the ecological content of the area.

4.3.2b Planting and Initial Protection

Deciduous trees are planted during the dormant season of the year, i.e. between November and March. Evergreens and conifers may be planted in late September or October or between March and early May. Planting must be avoided if the soil is wet, waterlogged or frozen or if there are cold drying winds. The method of transporting, storing and planting is determined by the type and size of the tree and by conditions of the site. Ordinary young trees can be brought in different sizes, usually up to four metres in height. The diagram above shows approximate size-categories and the name by which each category is usually referred to by nursery experts.

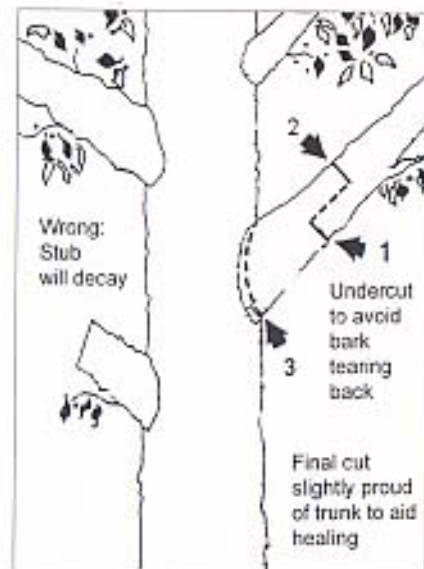
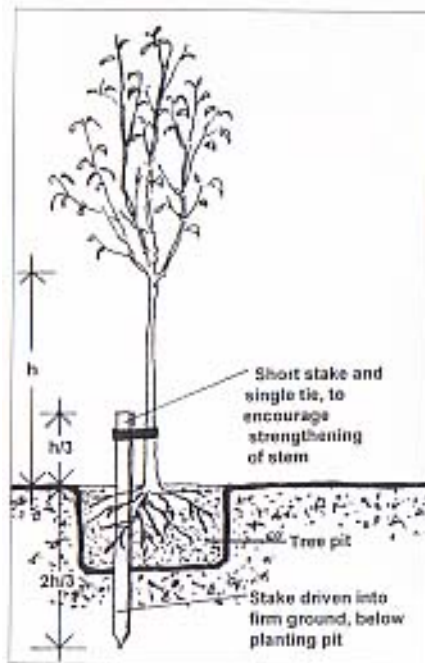
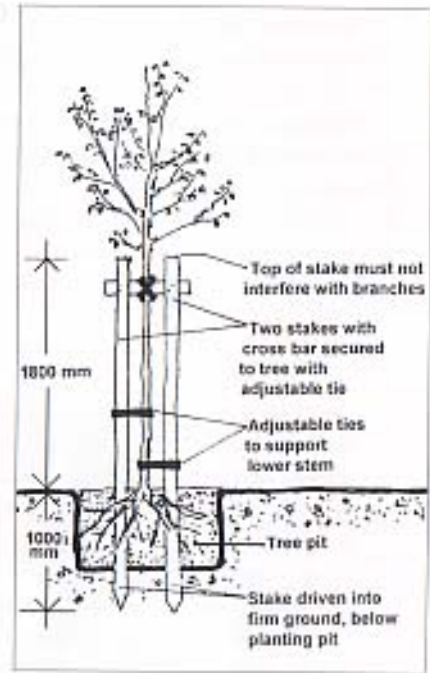
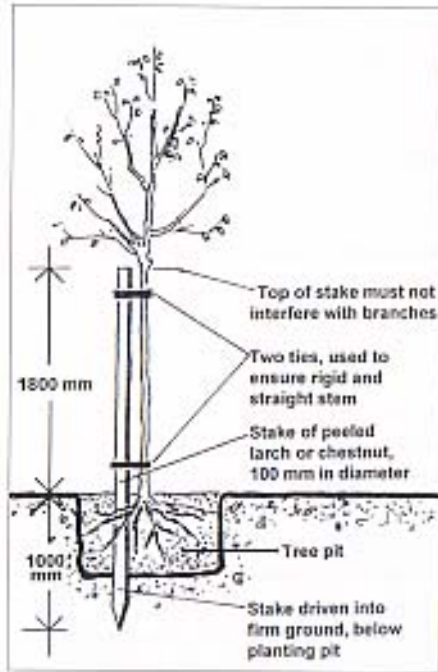
Before planting, a hole should be prepared in the ground, larger than the root-ball of the tree. If the soil is of poor quality, the hole should be made bigger and partly filled with good quality loam. To assist drainage and aeration, the base and sides of the pit should be forked over. Any damaged or dry roots should be pruned back to growing points. A slow acting fertiliser, such as bone-meal, mixed with peat will give additional help to the young tree to root.

The use of tree stakes will provide physical support to young trees, especially those exposed to potential vandalism or accidental damage. All but the smallest young specimens of, say 0.7m of height should be given support by being secured with a tie to a tree-stake; this will prevent excessive movement which can damage new roots. Stakes and ties should be removed after two years. The smallest specimens and, if necessary larger trees, should be protected with iron, PVC or wire guards surrounding the tree up to an adequate height (normally up to 1.5 metres). Special cast iron grills at the base of young trees can protect their roots and, if installed slightly above ground level, they can secure good water and air permeability of the soil by preventing compaction. Young trees should be watered during dry periods and the area immediately around their base should be kept free of grass or weeds.



Left: Spiral 'rabbit-guards'
Middle: Translucent tubular PVC guards
Right: Wire mesh guards

***Different
types of
guards to
protect
young trees***



Top left and right & above:
Different ways of supporting young trees

Above:
Removing branches

4.3.2c Pruning and Maintenance

Newly planted trees should not need pruning, except to remove damaged or crossing branches and to make sure that the tree has a balanced shape and a leading shoot. Pruning older or mature trees is a skilled job which should be done by qualified tree surgeons (specialist organisations such as The Arboricultural Association can provide a list of appropriate contractors and relevant advice - see *Contacts*).

Mature trees should normally be pruned regularly to remove dead, diseased or broken branches, or heavy limbs which may cause danger to people or property. This is done in three stages to avoid damaging the bark of the remaining tree. The final cut should be slightly proud of the trunk or branch, to facilitate healing (see fig 42).

Pruning may also be necessary in order to thin the branches, thus allowing light to reach most parts of the tree, to allow air to circulate freely or to reduce the air resistance of the tree; also, in order to reduce the height or spread of the tree as it may be necessary due, for example, to nearby buildings or services, or to improve surveillance and reduce opportunities for criminals to hide.

Pruning should normally be done during the dormant period of the year, i.e. between November and March. However, many species form exceptions to this rule, and special advice should be taken for e.g. walnuts, magnolias, birch, sycamore, maple, and cherry and plum trees. For specialist technical information on tree-work, the British Standards Institution's publication **BS 3998** should be consulted (see *Bibliography*).

Detailed information and advice on the selection of trees and other plants as well as on planting method and techniques, can be found in a wide range of general and specialist literature, a small part of which has been consulted in the preparation of this Guide and is set out under *Bibliography*. The City Council's publication **Brighter, Greener Westminster** also contains useful information and advice on these topics. A comprehensive list of tree species, giving details on the features and performance as well as the soil and other environmental requirements of the different species is included in Appendix A of the BSI **Guide for Trees in Relation to Construction (BS 5837)**, and is recommended for further technical advice. Specialist information and advice can also be obtained from **BS 3936**, **BS 4043**, **BS 4428** and **BS 3998** referred to in sections 4.3.2 and 4.3.2c above (see also *Bibliography*). The London Ecology Unit's publication **Building Green** (see *Bibliography*) gives advice on the selection of species so as to encourage the development or enhancement of habitats.

4.3.3 Trees and Other Planting in Courtyards

Courtyards are spaces totally or virtually surrounded by buildings. They may be included as internal open spaces in the original design of a development or they may be the result of the way various developments relate to each other. In either case, courtyards provide opportunities for green open spaces which can enhance and add value to property and can be enjoyed by the users of the building and often also by the general public. Where possible, the Council encourages designers and developers to include courtyards in their developments. The Council also urges property owners, managers and users to see that such valuable spaces are planted, landscaped and used as amenity spaces, instead of turning into mere light wells and even traps for rubbish and stale air. In modern times when the fronts of buildings are often exposed to the visual, atmospheric and noise effects of traffic, the City Council is seeking to promote all possible opportunities of developments embracing such 'internal' gardens which can improve not only the amenity and market value of new developments but also the amenity of whole areas.



Trees and landscaping can transform a simple courtyard into a delightful amenity space. Example: Middlesex Hospital, Mortimer Street.

Apart from the aesthetic and recreational benefits, planted and well maintained courtyards can improve the microclimate of a site and can attract and sustain wildlife, with all the resulting ecological and educational benefits to the surrounding environment and its users.

The microclimate of a courtyard is dependent on the height of its enclosure, in conjunction with the size and shape of its space. These characteristics determine the amount of light and moisture, the air circulation and the temperature of an enclosed open space, in the context of the climate of the broader area. Some experts suggest that an appropriately sized enclosed space is one which is wide enough to allow enough sunlight to reach the floor and adequate air circulation, but not too wide, in order to ensure that warm air masses are not lost.

Courtyards and other spaces between buildings, if designed without adequate consideration of microclimate conditions, can easily become 'nightmare' spaces. They can be badly affected by distorted wind blow deflected down by high buildings, causing strong cold turbulence and concentration of rubbish at ground level, which can make conditions very difficult for plants to grow. Air-turbulence studies are recommended to be carried out by specialist engineers at the design stage of all extensive new developments.

Small courtyards enclosed by tall buildings are likely to be bright at top level and very dark on the ground; they may be useful and popular in hot arid climates because they tend to maintain a 'basement climate' i.e. to keep moist and cool. In London's climate, narrow and deep courtyards should, if possible, be avoided. If they are the only form of courtyard that can be incorporated in a new development, they should be planted with species such as ivy, holly, mosses, ferns and special types of grass which can thrive in little light and require ample moisture. These will become breeding places for certain invertebrates and will attract small birds.

Larger, sunnier courtyards are normally desirable 'sun-traps'; they will warm-up earlier in the spring, cool-down later in the autumn and will be generally warmer and, perhaps drier than equivalent unsheltered open spaces nearby. A much wider range of plants, including trees, bushes and smaller colourful flowering species can be used for their greening, especially in the parts which receive direct sunlight. The selection of nectar-rich species such as lavender, will attract butterflies and other insects. In 'butterfly gardens', care must also be taken to include food plants for the caterpillar stage of their life cycle; birds may be attracted by plants which produce visible seeds, such as michaelmas and daisy (the Council's Environmental Policy Team - see *Contacts* - can give advice on ecological aspects). These will attract bees and butterflies from spring to autumn. New trees in such spaces should normally be small species. If it is desirable, deciduous trees can be chosen which allow sunlight to reach the ground in the winter. Shrubs such as buddleia, broom, lavender and gorse, and herbs such as willowherb, michaelmas daisy, soapwort and thyme in sunny places will provide food for invertebrates and will attract birds. Although in winter the low sun may not reach the floor of the courtyard, it is likely to reach the upper parts of south facing walls which will attract both as heat reflectors and storage heaters, thus improving the winter microclimate. Plants can be grown on the ground or in pots and trained up such walls providing maximum greening and further improving wildlife conditions.

Finally, upgrading the microclimate of a courtyard will affect and help improve living conditions inside the buildings which enclose it, by retaining atmospheric dust and pollutants, improving the oxygen content in the air, by reducing dampness and by keeping the temperature higher than in nearby unsheltered spaces, thus contributing to the conservation of heat and energy inside the buildings.

4.3.4 Planting on Roofs

Roofs often offer one of the most significant opportunities for greening urban areas. They represent a massive potential space resource which is typically unused and 'wasted'. In appropriate cases they can be transformed into green spaces, adding very significantly to the general amenity of areas and offering opportunities for wildlife to thrive and for energy conservation.

Roof planting is generally not appropriate on existing historic buildings in Westminster, and normally it is not practically feasible on such buildings; in Conservation Areas it may be acceptable only where it can preserve, enhance or otherwise complement their character and appearance. Opportunities may still exist on roofs of minor extensions or garden structures, where roof planting can enhance amenity without harming the architectural or historic character of areas or buildings. In cases where the Council's consent is required for roof gardens or other forms of greening of roofs on Listed Buildings or on historic buildings in Conservation Areas, this will normally be refused.

The main opportunities for roof planting in Westminster can occur on new developments of modern character. Roof planting on new office blocks, new residential complexes, car parks and other new developments can improve their quality and value, help improve the quality of the microclimate, and can be a delight to the general public, if they are appropriately designed and properly maintained in order to blend with the character and appearance of the area. Planting on roofs can also offer pleasant views from above, from surrounding taller buildings which otherwise would be looking over large expanses of flat roofs covered in asphalt, paving tiles and plant. Space for informal recreation is at a premium in Westminster, and green roofs can provide private gardens or communal lunch time gathering spaces for people who work in the buildings below; if they can be designed as weather protected spaces, such gardens can be in use virtually throughout the year.

Planting on roofs can also introduce or enhance the following benefits:

It can provide habitats and feeding space for insects and birds.

Soil and plants can absorb storm-water and release any excess quantities gradually, thus facilitating the function of gutters and rainwater disposal systems; in areas with extensive planted roofs, this can alleviate considerably the burden imposed on sewers during heavy winter storms.

It can add to the thermal insulation value of a roof, by as much as 10% (Johnston and Newton, p.50, see *Bibliography*) and can improve the acoustic insulation of buildings.

It can provide considerable protection to the roofing materials. It has been found in notable examples (Johnston and Newton, p.49) that the effective function of planted roofs has been extended to 50 years, compared to the average life expectancy of a flat roof which is 10 to 15 years.

From the developer's point of view, green roofs are an attractive marketing feature and provide added incentive to those looking to purchase or lease property.

The choice of plants for roof gardens will depend on the conditions provided in individual developments, i.e. the depth and quality of soil, the wind, moisture and the local temperature and the structure and detailing of the roof.

Generally, it should be remembered that plants on roofs will have to cope with harsher conditions than those encountered on the ground. On the other hand, plants on roofs are generally exposed to lower concentrations of pollutants and reduced disturbance from people. Living conditions for plants can be improved by the design of a development, by selecting the orientation of roof gardens, providing protection by means of parapets and landscaping structures and by the overall configuration of buildings. Resilient shrubs can be planted in such a way as to provide shelter for less robust species. Moisture is a particularly crucial factor in determining living conditions for roof plants, especially between May and September when some form of artificial irrigation may be required; incorporation of rainwater storage in the design of a roof garden (in the form of a tank or an open pool) may be highly appropriate for this purpose.

Roof gardens are generally divided in two categories:

'Intensive' roof gardens conventionally include planting areas with deep soil (from approximately 30cm upwards, subject to structural requirements), they usually require an irrigation system, provide more favourable planting conditions and a wider choice of plants, aesthetic landscaping and wildlife; they have considerable insulation and energy conservation properties but tend to be expensive to build and require a high level of specialist advice to design and maintain.

'Extensive' roof gardens are relatively easy and less costly to build. They can be planted in a thin layer of soil (down to a minimum of 2cm depth). They can accommodate 'hardy' species of small plants including certain types of grass, they need little or no irrigation, little technical expertise, low maintenance and have almost negligible 'running' costs. They can be incorporated in any new development but they are normally less appropriate for existing roofs, where reinforcement of the structure to take considerable additional loads is relatively difficult. Although their value is predominantly ecological, their visual and amenity contribution to an area can also be considerable.

Incorporating roof gardens is a specialist part of the design process for a new development and requires the timely involvement of specialised professionals. The main technical considerations to be taken into account and resolved at the early stages include:

Load bearing implications on the structure, originating from the addition of soil, insulation, drainage and irrigation systems, landscaping structures and the plants which may include heavy bushes and small trees.

Waterproofing insulation. This is a highly specialised item which involves layers of plastic and bitumen membranes and adhesives as well as hard protection finishes to withstand the action the roots or physical friction. For specific developments, insulating systems will depend on the type of the roof garden, the size and other characteristics of the roof and on a variety of local conditions, and therefore they must be specifically designed and constructed by specialist professionals.

Irrigation and drainage. Rainwater or artificial irrigation will provide the soil with moisture which is required to sustain the plants, and any excess water must be easily drained away by an effective drainage system. Any insulation system is likely to fail if a reliable drainage system has not been carefully designed, detailed and constructed. As with all of these technical considerations, the irrigation and drainage systems must be designed specifically for the individual roof concerned and should be constructed by specialists as part of the construction of the building.

Maintenance. Early incorporation of the roof garden in the design of the development will give the opportunity to provide for the easiest, cheapest and most effective system of building maintenance for the planted roof in the future.

A schedule of checks and maintenance works should be produced by the specialist engineers and included in the maintenance schedule which is to be applied regularly in respect of the whole of the development. A separate schedule should be provided by the landscape designer, describing the checks and works which will have to be undertaken regularly in respect of the actual soil, plants and wildlife habitat in the roof garden.

4.3.5 Planting on Balconies

Planting on balconies usually involves growing plants in containers. On new developments such containers should, if possible, be included in the initial design brief. They can form part of a development's structure, thus offering opportunities for better planning and greater visual co-ordination in the overall composition.

The advantage from planting on balconies are generally the same as those discussed under 'Planting on Roofs'. Subject to other design considerations in individual proposals, planting on balconies may be even more effective in terms of general amenity, as it can be introduced on all floor levels and can establish an interesting rhythmical visual pattern throughout the development. Also, balcony plants are generally closer to the pedestrians' eye level and can be enjoyed readily by the general public.

Life conditions for plants on balconies are similar to those for plants on roofs, with the possible difference that balconies often provide more shelter and therefore can sustain a wider variety of species. Subject to the size of planting areas, orientation and other local conditions on individual balconies, the range of appropriate species can include small herbs such as lavender, thyme, camomile and chives; small alpines and rockery plants such as heather and rock-roses; cornfield annuals and meadow flowers such as buttercups, marigold, daisies and harebells; also, large climbers such as jasmine or climbing roses. For shady areas of balconies, spreading plants such as periwinkle, creeping ivies and evergreen/flowering hedgerows can be used.



Structurally built containers on balconies will vary according to the design and type of construction of individual developments. Insulation is important and consists normally of ordinary 'tanking' combining use of plastic membranes and coats of adhesive bitumens. Special attention is drawn to the provision of an effective drainage system to avoid over-saturation of the soil resulting in asphyxiation of the plant roots and possibly in unsightly staining of the outside of containers and walls, or even in wall infestation and structural damage.

***Planting on balconies in new developments:
Example, Lillington Gardens***

4.3.6 Green Walls

Many species of climbing plants can be encouraged to grow on supporting frames alongside walls, potentially covering entire buildings; even some varieties of trees, can be trained to cover walls; creeper plant species are self-clinging climbers and do not require supports but can attach themselves on walls or other surfaces, using rootlets, tendrils or sucker pads.



Examples of green walls:

Left: Gate Mews;

Right: St. John's Wood

Note: Attention is drawn to the potential damage some creeper plants can cause to the wall. To avoid this, property owners should take specialist advice, based on the type of the wall and the specific species of creeper plants.

Honeysuckle and wisteria are two well know examples of climbing plants which use their own techniques - such as twisting and coiling their stems around supports. Rambling roses, pyracanthus and some varieties of trained fruit and other trees and 'wall shrubs' are in the category of partially self-supporting climbers whose growth will benefit from some support and training. Virginia creeper, most types of ivy and climbing hydrangea use their own devices to attach themselves to surfaces, and so they have a remarkable ability to chase and direct themselves to preferred substrates, orientations, heights, etc. where they thrive and proliferate.

The potential benefits of 'green walls' include, if it is appropriate in an individual case, the obvious improvements to the visual amenity, the variety of pleasant natural scents and the creation of small-scale natural habitats as a contribution to the improvement of the urban ecology. Berry bearing species such as ivy, pyracanthus and honeysuckle will attract birds and butterflies. Subject to local conditions, other benefits can include energy conservation and improvements to microclimate conditions.

Vegetation on walls can assist in cooling the building in the summer by shading the wall surface and by encouraging cool air to be drawn inwards and upwards between the leaves and the wall, with warm air being vented at the top. Green walls can also help improve local humidity levels in the summer. In winter, evergreen species can offer a degree of insulation by trapping a layer of air against the facade and reducing convectional heat loss; also, they provide a degree of 'cushioning' to the facade thus protecting it from the impact of the wind and its cooling effect. In addition the leaves of climbing plants provide a large surface area which is capable of filtering out dust and other pollutants. The result is a more healthy and pleasant microclimate. Supporting frames and trellises for climbing plants should be kept away from the wall. For soft twister plants they should leave a distance of approximately 20 to 25cm to allow for the plant's spiralling climbing action to take place. For wall shrubs and small trained trees, this should be at least 40cm, to allow proper growth. Frames, trellises and other supports can be constructed with gardening wire held by bracket-spacers screwed into raw plus in the wall, steel frames, wooden poles or wooden slats or lattices to a module of between 10 x 10 to 50 x 50cm, depending on the plant species.

However, green walls are not free of disadvantages and disbenefits. Creeper plants in particular, which root into the wall itself, can cause or speed up deterioration of building materials, either by growing roots into the mortar or even into certain types of brick or concrete, or by the clinging and/or adhering action of tendrils and sucker pads. They can cause serious wall staining (further information on these disadvantages is considered in the Westminster publication **Facade Cleaning**, (see *Bibliography*). These dangers are much more significant on old properties than on new developments where precautionary measures can be taken. With regard to historic buildings in Conservation Areas, the Council strongly recommends that specialist advice is obtained before planting, concerning the resilience of the specific building materials and the choice of the plant species in this context. On listed buildings, planting of this type may require Listed Building Consent. Interested owners should contact the Council's Conservation officers and the Tree Section officers for advice (see *Contacts*). On new developments, more resilient materials can be used, but some long term deterioration is likely to take place. One interesting proposal to

minimise or avoid these disadvantages (Johnston and Newton, p.37, see *Bibliography*) is the use of polypropylene cladding tiles which incorporate waterproof membranes and their own irrigation system; plants can be established on these and then hung on the outside of a building. However the Council is drawing attention to the potential detrimental effect of such protective systems on the appearance and maintenance of the building.

4.3.7 Planting in Front Garden Parking Spaces

New developments in Conservation Areas are normally required to respect and follow the established building line and, if it is necessary, to provide for front gardens of a size and character sympathetic to those of traditional properties. In some instances it may be necessary and acceptable for parking facilities to be provided in front gardens. Planting in such gardens is a very important element of design as it can soften and improve the appearance of the parking space, it can contribute considerably to the blending of the new development with its historic surroundings and it can be a significant addition to the general amenity of the area. More information on the possible layout, landscaping and species of plants for this type of greening is contained in the Westminster publication *Front Garden Parking* (see *Bibliography*).



Example of landscaping and enclosure that may be appropriate for gardens which can be altered to provide space for parking.

(Note: In areas affected by a special Article 4 Direction or for properties which are not single family houses or are listed, most of the alterations which are necessary for the use of the garden as a parking space, require the City Council's consent).

5. Avoiding Undesirable Interference of Trees with New Development

The following problems due to physical proximity of existing or new trees to buildings or other structures, are amongst the most commonly occurring, especially in urban areas:

5.1 Obstruction of Daylight and Sunlight

This can be minimised if careful consideration is given to the ultimate height, spread of canopy and density of foliage of the trees concerned. If these are new trees proposed on the site, then lighting problems should be resolved at the early stages of design, by conciliating the form of the proposed building, the use of the potentially affected spaces, the choice of the tree species and the exact proposed location of the tree(s). Deciduous trees and/or trees with light-leaf canopy are generally more appropriate in this context. If the trees are existing and are to be retained, the designer should consider carefully and adjust the overall layout of the proposals in conjunction with the use of the affected spaces in respect of sunlight and daylight. Specialist advice is also needed on the degree to which the spread of the canopy of the trees involved can be kept under control through regular pruning or thinning.

5.2 Physical Interference of Tree Branches with Buildings

The danger of this problem occurring is self evident and the possible precautions and measures are virtually the same as those explained in the previous paragraph.



With effective planning and regular maintenance, physical interference of tree branches with buildings can be avoided and loss of light can be minimised. (Example, Mozart Estate)

5.3 Growth of Roots at the base of the Tree Trunk, and Resulting Ground Distortion

Paving slabs, boundary walls and other small structures can be lifted or distorted easily as the tree trunk itself and the roots of the tree around it grow bigger; subject to the species and age of an individual tree the greatest risk of such direct damage occurs within a radius of a few metres from the trunk. Heavier or stronger structures are likely to withstand the forces occurring from this aspect of the growth of a tree; more commonly, these forces will be absorbed by the soil which will suffer localised compactions, and the roots will direct their growth around the obstruction. New planting should be kept away from structures or distances recommended in the British Standards BS 5837 (1991) ***Guide For Trees in Relation to Construction***, which should also be consulted for more detailed advice on most of the issues examined in this section. If it is necessary to take additional precautions, these may include reinforcement of foundations, structural bridging over roots of existing trees to allow for future growth or movement, structural root barriers, etc.; if paving is to be laid near the trunk, a sand base should be provided to allow movement and to facilitate correction or relaying if necessary.

5.4 Damage to Foundations and Underground Services

This can be caused either indirectly, due to the possible effect of tree roots on the volume of the soil during the dry and wet periods of the year, or through direct physical interference of tree roots with underground structures. The latter danger applies mainly to underground services and to very shallow foundations of boundary walls or other light structures, whereas relatively deep foundations of buildings are normally unlikely to be damaged directly by roots (***specialist advice is essential in individual cases***).

Changes in the moisture content generally cause the soil to swell or shrink. Such changes in volume are considerable in clay soils and the resulting movement can cause cracks or dislocations in foundations and damage to structures. Trees exacerbate this problem considerably by absorbing any remaining moisture from the soil in the dry periods of the year, thus worsening the shrinkage (in conjunction with the fact that during the wet wintry periods, they usually absorb a minimal amount of water from the ground).

Prediction of the amount of shrinkage is complicated, and general advice may not apply in individual cases as changes in the soil-volume depend on a large number of variables such as the constitution of the clay, the surface and subsurface drainage patterns, the weather conditions and the characteristics of the trees and their density and relative locations. Detailed information on experimental assessment of soil shrinkability and additional technical information can be found in ***BS 1377, BSRE Digest 240, BRE Digest 298*** and ***NHBC Standards*** (see *Bibliography*). In designing a project, the design team should take into account the soil conditions in a locality in respect of the potential interaction of trees and clay soils. Guidance on this matter is given in ***BS 5930*** (see *Bibliography*).

Trees differ considerably in the depth and spread of their root system and therefore in the extent of the area they can affect. The species that are liable to cause the deepest and most extensive effects have been found to be poplar, elm, oak and willow. Again, because of the complexity of the problem and the numerous local factors involved, conclusive advice in individual cases can only be given by a specialist who has studied the specific circumstances of a case. The City Council will not accept responsibility for any damage that may be thought to be the result of the general advice of this Guide. For detailed technical information, the reader should consult ***BS 1377*** (see *Bibliography*) and also the other sources referred to in the previous paragraphs. For an indication of distances over which particular species of

trees may cause damage to buildings, consult D.F.Cutler and I.B.K.Richardson's publication (see *Bibliography*). For general information, in order to avoid damage to buildings due to dehydration of clay soil, the design team should provide either for structures which can tolerate the soil movement, or for foundations which go below the depth of anticipated shrinkage or swelling of the soil. Foundation design should also allow for future felling or death of existing trees (this can affect drastically the moisture content of the soil) and for their replacement with new ones which will take years to reach the level of moisture absorption of the lost mature specimens. On existing developments, property owners or contractors should take advice from a specialist engineer before undertaking works of this type.

Direct physical damage to underground structures, commonly occurs when roots clash with shallow foundations of light structures or with underground drains or other services. Roots are more likely to affect damaged drains, where water leaking from pipes attracts roots and encourages localised root growth and proliferation. In such cases small roots can penetrate through the crack or damaged joint and grow inside the pipes, eventually causing blockages and further damage. Generally, damage to underground services can be avoided by careful planning of their network in relation to trees, by re-routeing services if damage occurs unpredictably, by ensuring that drain or other pipes are kept in good condition and do not leak, and by always laying underground pipes on a flexible basis which can accommodate movement.

5.5 Falling Branches

These occurrences are generally unpredictable and can cause damage to people, vehicles or structures underneath a tree. However, most healthy and reasonably young trees are unlikely to cause this problem. Potential risks can be minimised by annual health-checks and regular inspection and monitoring by specialists. The City Council's Tree Section will be pleased to give advice and, if necessary, to recommend remedial measures appropriate for specific trees (see Contacts below).

5.6 Leaves Blocking Gutters and Other Minor Problems

Leaves blocking gutters, obstruction of overhead cables or equipment, slippery conditions underfoot due to decaying leaves, are some of many relatively minor problems. Their solution lies principally in the good co-ordination between the various specialists at the design stage and effective management after implementation. Provided they do not occur in extreme forms and do not cause danger or health hazards, the Council consider that these relatively small problems can be considered acceptable and the small inconvenience they generate should be minimised with measures of regular maintenance and care. The cost of such measures is normally negligible, compared to the amenity value added to the development from the retention or addition of trees.

6. Contacts

For information on Planning Permission, Listed Building or Conservation Area Consent, and on matters concerning Historic Parks and Gardens, please contact **Development Planning Services**. Click below for details.

CLICK HERE FOR LINK TO
WESTMINSTER CITY COUNCIL
CONTACTS LIST

For information and advice on appointment of professional consultants, specialist contractors and certified tree surgeons, please contact the Council's Arboricultural officer (click above for details) and/or the following organisations:

The Landscape Institute,
33 Great Portland Street,
London W1W 8QG
Tel: **(020) 7299 4500** or Fax: **(020) 7299 4501**
inquiries@l-i.org.uk

The Arboricultural Association,
Ampfield House,

Ampfield, Nr.Romsey,
Hampshire, SO51 9PA
Tel: **(01794) 368717** or Fax: **(01794) 368978**
admin@trees.org.uk

British Association of Landscape Industries (BALI)

Landscape House,
Stonleigh Park, National Agricultural Centre,
Warwickshire, CV8 2LG
Tel: 02476 690333 or Fax: 02476 690077
contact@bali.org.uk

7. Bibliography and Further Reading

7.1 Statutory, Statutory Advice, Regulations and Standards

British Standards Institution: **Guide for Trees in Relation to Construction. BS 5837.**
British Standards Institution: **Methods of Test for Soils for Civil Engineering Purposes. BS 1377.**
British Standards Institution: **Specifications for Trees and Shrubs. BS 3936.**
British Standards Institution: **Code of Practice for Site Investigations. BS 5930.**
British Standards Institution: **Recommendations for Transplanting Root-balled Trees. BS 4043.**
British Standards Institution: **Code of Practice for General Landscape Operations. BS 4428.**
British Standards Institution: **Tree Work. BS 3998 (under revision).**
Building Research Establishment: **Low-rise Buildings on Shrinkable Clay Soils. BRE Digest 240, 1985.**
Building Research Establishment: **The Influence of Trees on House Foundations in Clay Soils. BRE 298, 1985.**
DoE: **Guide to the Law and Good Practice, Oct. 1994**
DoE: **Conservation Unit: Historic Buildings Conservation Guide for Government Departments, 1992.**
Forestry Commission: **The Recognition of Hazardous Trees. Information leaflet, 1992.**
HMSO: **Town and Country Planning Act 1990.**
HMSO: **Planning (Listed Buildings and Conservation Areas) Act 1990.**
HMSO: **London Squares Preservation Act, 1931.**
HMSO: **DoE Circular 36/78: Trees and Forestry.**
HMSO: **DoE Planning Policy Guidance (PPG 9): Nature Conservation, Oct. 1994.**
HMSO: **DoE/DNH Planning Policy Guidance (PPG 15): Planning and the Historic Environment, Sept. 1994.**
HMSO: **DoE Circular 5/94: Planning Out Crime.**
National Joint Utilities Group: **NJUG 10 (Non-statutory guidelines for planning, installation and maintenance of utility services in proximity to trees).**
National House Building Control: **Building Near Trees. NHBC Standards (Periodically updated).**

7.2 Specialist Literature

Aldous, T. (editor): **Trees and Buildings: Complement or Conflict? RIBA, London 1979.**
Arboricultural Association: **A set of subject specific Advisory Leaflets on planting, care and maintenance of trees.**
Bradshaw, Hunt and Walmsley: **Trees in the Urban Landscape, 1995.**
Cutler, D F & Richardson, IBK: **Tree Roots and Buildings, Longman Scientific and Technical, Harlow 1989.**
Dodd, Jeremy (editor): **Landscape Design Guide, Vol. 1, 'Soft Landscaping' Gower Publishing Company Limited, Aldershot, 1990.**
Jack, Janet: **Roof Garden Review. Journal of The Landscape Institute (Edited) Periodical, Sept. 1992.**
Johnston, J & Newton, J: **Building Green. London Ecology Unit (undated).**
Local Government: Management Board: **Local Agenda 21 - Principles and Process, 1994.**
Pinder, Angi and Alan: **Beazley's Design and Detail of the Space Between Buildings. E & FN Span Limited, London, 1990.**
Robinson, N: **The Planting Design Handbook, Gower, 1992.**

7.3 Relevant Westminster Publications:

Westminster City Council: City of Westminster Pre-Inquiry Unitary Development Plan as agreed by Cabinet on 29 August 2002 with modifications May 2004. (current)
Dept. of Planning and City Development: Westminster Initiatives: A Green Guide to Living in Westminster (undated).
Dept. of Planning and City Development: Westminster Initiatives: Brighter, Greener Westminster 1992.
Dept. of Planning and City Development: Front Garden Parking, 1992.
Dept. of Planning and City Development: Conservatories, 1994.
Dept. of Planning and City Development: Facade Cleaning, 1995.
Dept. of Planning and City Development: Development Division: Map of Designated Conservation Areas, 1994.
London Ecology Unit: City of Westminster - Nature Conservation Survey 1995.
London Ecology Unit: Nature Conservation Strategy for Westminster (forthcoming).

Planning and Design Guides published by the City Council's Department of Planning and City Development, Development Planning Services

I. Conservation and Historic Buildings: General Design Guides

Map of Designated Conservation Areas
Conservation Areas: A Guide to Property Owners
The Listing of Historic Buildings
Shopfronts, Blinds and Signs: A Guide to their Design
Advertisement Design Guidelines
Shopfront Security
Security Cameras and Other Security Equipment
Mews: A Guide to Alterations
Roofs: A Guide to Alterations and Extensions on Domestic Buildings
Front Garden Parking: A Guide to Legislation and Design
Stucco: A Guide to Care and Maintenance
Facade Cleaning
Conservatories: A Guide to Design and Planning Procedures
Repairs and Alterations to Listed Buildings
The Protection of Historic Buildings in Westminster
Lighting-up the City: The Illumination of Buildings and Monuments
Public Art in Westminster
Strategic Views in Westminster
Architectural Theft (Westminster's Architectural Heritage at Risk)
Building Conservation Grants
Development and Demolition in Conservation Areas

II. Area-specific Design Guides

The Pimlico Design Guide
Regent Street: A Guide to Shopfronts and Advertisements
Bond Street: A Guide to Shopfronts and Advertisements
The Queen's Park Estate Design Guide
Relton Mews: Guidelines for Alterations
Ennismore Gardens Mews: A Guide to Alterations
Molyneux Street Conservation Area: A Guide to Roof Extensions
Wilton Row and Old Barrack Yard: Design Guidelines for Alterations

III. General Design, Technical and Other Information

Access for All
The Planning Enforcement System in Westminster
Satellite Dishes and Other Telecommunications Equipment
Archaeology and Planning in Westminster
Plant and Air Conditioning Equipment
Tables and Chairs on the Highway
Boardwatch: A Guide to the Design and Display of Estate Agents Boards

IV. Conservation Areas - General Information Leaflets

One leaflet for each of the 53 designated Conservation Areas

Department of Planning and City Development, Development Planning Services, August 1996