Part 7 Appendix G: Landscaping on new developments and in highway-improvement schemes

Section L1: Landscaping principles

1.1 Well-designed landscaping can have a very positive influence on the final appearance and attraction of a new development. Including planting and areas of open space in the development layout can significantly improve the environment for new residents, softening the appearance of new buildings and giving the development an established appearance.

1.2 Carefully designed tree planting, in particular, has a significant effect, providing areas of shade and screening at a number of levels. If we are to adopt areas of landscaping, it is essential that you follow high standards of practice so that landscaping becomes well established. The design of any landscaping should ensure that long-term maintenance requirements are kept to a minimum. You can achieve this by providing enough space for new planting to develop to maturity. Providing space between a landscape feature and a new building is also important to ensure that both can exist together.

1.3 It is essential that you ask a chartered landscape architect for professional advice on all landscaping matters relating to new development.

Section L2: Planning

1.4 When you have finalised the overall layout of the development and have established the areas for soft landscape works, you can decide on the planting proposals.

1.5 All planting needs to be carefully selected taking into consideration the size it will grow to. This applies particularly to trees and includes both the canopy spread of the tree and the root system. As well as providing adequate space for trees to grow, you need to consider the effect trees will have on the existing surroundings such as nearby buildings or walls. A tree's demand for water can have a direct impact on the existing soil conditions. You should not underestimate the effects of soil heave and shrinking - there are guidelines on tree planting in relation to buildings and foundation design in the NHBC Standards 4.2 Building near trees.

1.6 You should also avoid planting shallow-rooting trees close to footways, as there is likely to be a future problem with the roots disturbing tarmac and other hard surfaces.

1.7 With careful planning, you can easily include effective landscaping in the layout of a new development without significantly affecting the space available and the potential for developing the site. Areas of open space, grass verges, islands and gardens are all potential sites for appropriate planting. However, you should consider the following when planning suitable landscaping.

- **Classification of roads** - dual carriageway, main road, estate road, country lane and so on.
- **Visibility** - on the inside of bends, from junctions, from house driveways, to road signs and so on.
- **Existence of service runs** - overhead cables, streetlights, underground cables and pipes, drains etc.

- **Aerial space** - how close the tress and shrubs are, above ground, to roads, accesses, neighbouring houses and so on.
- **Subterranean space** - how much root-sustaining soil is available and how close hostile ground conditions (such as concrete and compacted aggregate) are.
- **How great is the risk of damage to footways, boundary walls, kerbs and so on?**
- **Soil quality** - fertility, pH, compaction, plasticity, drainage and possible waterlogging and so on.
- **Plant characteristics** - tall, bushy, compact, columnar, spreading, prostrate, evergreen or deciduous and so on.
- **Tree and shrub habit** - mature height and spread, growth characteristics of roots and crown, suckering and so on.
- **Seasonal features** - seed production, shade density, leaf fall, flowering and so on.
- **Aesthetic qualities** - leaf colour, flowering, bark, shape and so on.
- **Light levels -** daylight, aspect, obstruction of street lights and so on.

Section L3: Design

1.8 The type of planting you can use in landscape schemes will depend on the available space. Traffic islands and open spaces at the centre of a development are ideal locations for individual trees where the tree becomes a focal point (for example, village greens).

1.9 Large open spaces are ideal for planting groups of trees (either single species or mixed), whereas wide verges on either side of a road provide an opportunity for planting an avenue of trees. Shrub planting can provide low-level screening and you can incorporate this into highway-improvement schemes, particularly where you need to restrict visibility (for example, for traffic calming). If you are planting trees and shrubs in a new development, you should include design features which will allow for their establishment and potential growth.

1.10 Less formal areas of open space such as screening bunds provide an opportunity to establish closely spaced plantations which can develop into effective screens and, eventually, mature woodland. In more restricted spaces, you can consider planting small ornamental trees or shrubs. The design of this type of planting should ensure that long-term maintenance costs are kept to a minimum. As an alternative to mown grassland, you can use shrub beds containing species which provide dense ground cover, but their maintenance costs are usually high, and this type of planting often acts as a litter trap.

1.11 We will normally adopt well-designed and planted landscaping on verges and other highway-related land providing that you pay a commuted sum to cover its long-term maintenance. Please see Part 4, Section MC18 for further details on commuted sums.

1.12 We will not adopt new planting within a development if plants are either dead, stressed or failing to establish due to poor design and planting practices.

Figure L1 A mixed-tree group on an area of open space, well away from house frontages

Figure L2 Fastigiate cherries planted in a narrow verge do not spread into neighbouring property or over the highway

Figure L3 Trees planted in very limited subterranean space, affected by service trenching and outgrowing their site. This causes a maintenance problem for the highway authority

Section L4: Preparing the site

1.13 As well as considering the amount of space available for new planting above the ground, it is equally important to assess the condition and extent of the soil below ground. During construction activities, surrounding soils can become damaged by compaction and contamination. It is essential that you treat them so that they can support new planting and sustain normal plant development. Compacted soil becomes starved of oxygen, which is essential to the survival of plant roots. Compaction can be improved by deep ripping or cultivation (or both), which allows oxygen to penetrate the soil and improves drainage. You should remove soil that is badly contaminated from the site and replace it with fresh topsoil. It is also beneficial to apply an organic surface mulch such as pulverised bark to a planting area. This will help retain soil moisture, suppress weed growth and encourage the colonisation of soil organisms (mycorrhizae) which are beneficial to plant roots.

1.14 You should carry out a soil survey before planning or designing any new landscaping and remedial works to identify and treat poor ground conditions. It is a waste of time and money to plant trees and shrubs into damaged and poorly prepared soils.

1.15 You should design any hard surfaces close to the planting site to withstand plant roots developing and expanding. You can do this by using a sub-base which, although load bearing, contains a proportion of soil and air space. You can also use root deflectors in the planting site to minimise the risk of damage to hard surfaces. These consist of an artificial barrier placed round the tree, which then deflects root development downwards and away from vulnerable surfaces. Hard surfaces should be permeable to allow drainage and oxygen penetration to the soil below.

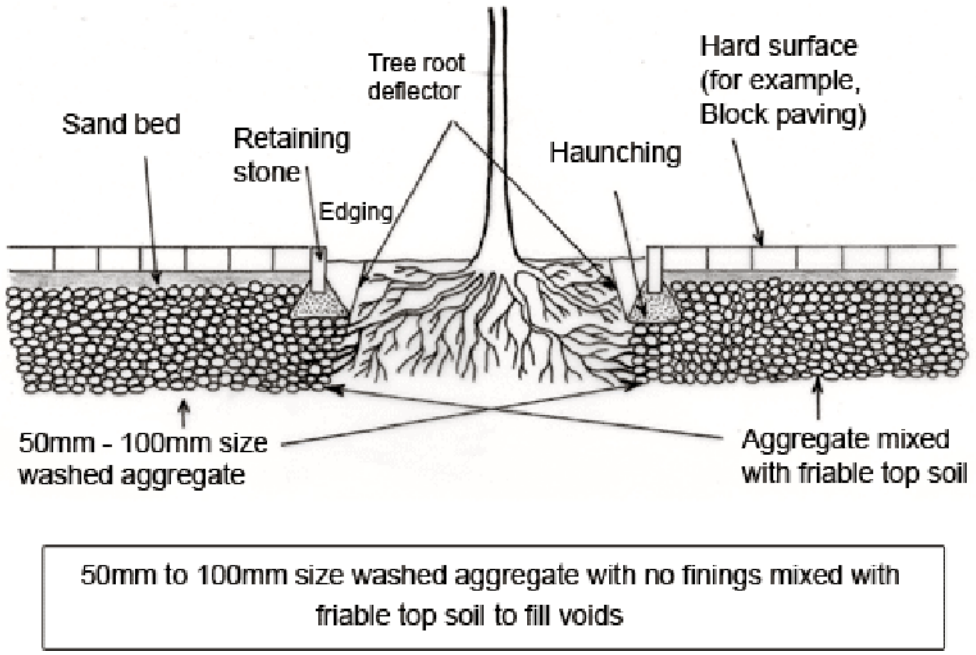

Figure L4 Planting in hard-surfaced areas

1.16 Tree grills are often fitted around the base of trees particularly when they are planted in paved areas. Although these provide a neat appearance to the tree station and prevent compaction to the surrounding soil, they are expensive and can severely obstruct the development of the tree if not regularly checked and eventually removed.

Section L5: Selecting species to plant

1.17 This is a complicated process with many aspects to consider. To ensure that new landscaping improves and co-exists with a new development through its normal life span, it is essential that you select the correct species for each site. It is important that you know the potential mature size of any planting to ensure there is enough space and the planting is not likely to spread onto other development features (for example, roads, accesses, houses and so on)

1.18 With tree planting, in particular, you must know the potential size, shape, growth habit and ornamental qualities of a tree species so you can select the most appropriate tree for a site.

1.19 In rural areas, you should use native plant species to help blend the new development into the surrounding landscape and reflect the local character of the area.

1.20 You can find a list of some tree and shrub species in Table L1. This indicates the space required for each species and suggests a range of appropriate uses. Table L2 lists tree species you should avoid.

1.21 You should ask a professional landscape architect for advice when you are selecting species. This will make sure that new planting is suitable for the existing site and soil conditions and is appropriate to the location.

Figure L5 Correct tree selection. Silver birch on a reasonable verge area allows sunlight through to the house frontage.

Figure L6 Poor tree selection. Three Norway maples, at approximately one-third of their potential size in small gardens, completely dominating the house frontages.

Section L6: Planting

1.22 To make sure plants are properly established, the planting site should be suitable and well prepared, and the plants should be carefully handled so they arrive at the site in prime condition. It is also important that plants are well planted and all roots are covered with friable (crumbly) soil which should be firmed so the plants stand upright. Although all roots should be covered, it is equally important that plants are not planted too deeply. The plants should be planted at the same level on the stem as they were when they were in the nursery. Large stock, such as standard trees, should initially be supported with stakes and ties and you should protect all plants against browsing animals such as rabbits.

Section L7: Maintenance and aftercare

1.23 Soft landscape works must be effectively established before they are adopted by the local authority and you should design schemes that keep long-term maintenance to a minimum. Where appropriate, you may have to pay a commuted sum as a contribution towards the future maintenance costs. Please see Part 4, Section MC18 for further details on commuted sums.

1.24 In the years after planting, you should remove weeds, adjust ties and guards, prune and, when necessary, water the plants to help them get established. You should do this for at least four years until the plant stands independently, is dominating surrounding vegetation and producing reasonable growth every year. The cost of maintenance operations compared to that of the initial planting is minimal. It is worth investing in a thorough maintenance programme to ensure that new landscaping reaches its potential and fully complements the new development.

1.25 Maintenance works should meet the relevant British Standards and should always relate to a specific scheme. For example, establishing an avenue of heavy standard trees planted in a grass verge is very different to establishing a forestry plantation.

Section L8: Nursery stock – standards and quality

1.26 All nursery stock used in the landscaping of new developments should be supplied from appropriate suppliers and should meet the requirements of the National Plant Specification and the following British Standard (BS) specifications.

- BS 3936 : Part 1 1992 Nursery stock (Specification for trees and shrubs)
- BS 3936 : Part 4 1984 Nursery stock (Specification for forest trees)
- BS 3936 : Part 9 1987 Nursery stock (Specification for bulbs, corms and tubers)
- BS 3936 : Part 10 1990 Nursery stock (Specification for ground cover plants)

1.27 All stock should be suitably protected when being handled at the supplying nursery, during transport and while being stored on the site. As well as protecting the stock against any physical damage while being handled, it is essential that the roots of all bare-rooted stock are covered, kept moist and not allowed to dry out. If roots desiccate (dry out), fine root hairs, which absorb moisture from the soil, are destroyed and this can quickly lead to the decline and death of the plant.

Section L9: Materials for landscaping

1.28 All materials used in landscaping new developments and all associated practices and workmanship should meet with the appropriate BS specification or Code of Practice issued by the British Standards Institution

1.29 Other British Standards relevant to landscaping works include:

- BS 3882: 1994 Topsoil
- BS 4043: 1989 Transplanting root based trees
- BS 4428: 1989 Code of practice for general landscape operations (excluding hard surfaces)
- BS 5236: 1975 Cultivation and planting advance nursery stock
- BS 7370:part1: 1991 Grounds maintenance (part 1. Recommendations for establishing and managing grounds maintenance organisations and design considerations
- BS 7370:part2: 1994 Grounds maintenance part 2. Recommendations for the maintenance of hard areas (excluding sports surfaces)
- BS 7370:part3: 1991 Grounds maintenance part 3. Recommendations for maintenance of amenity and functional turf (other than sports turf)
- BS 7370:part4: 1993 Grounds maintenance part 4. Recommendations for maintenance of soft landscape (other than amenity turf)

TABLE L1: TREE & SHRUB SPECIES				
SPECIES	**COMMON NAME**	**CROWN SHAPE**	**MATURE CROWN SPREAD (i.e. Space Required) metres**	**CHARACTERISTICS AND USES**
Acer campestre	Field Maple	Spreading	10	Medium Tree - suitable for open spaces and verges wider than 4 metres - good autumn colour - **recommended cultivars** - Acer campestre 'Elsrijk' - Acer campestre 'Queen Elizabeth'
Acer platanoides	Norway Maple	Spreading	18	Large Tree - suitable for open spaces - prone to shedding branches - good autumn colour - **recommended cultivar** - Acer platanoides 'Cleveland'
Acer pseudoplatanus	Sycamore	Spreading	18	Large Tree - suitable for open spaces - not suitable close to parking areas - **recommended cultivar** - Acer pseudoplatanus 'Worleei'
Acer rubrum 'Scanlon'	Red Maple	Fastigiate	6	Medium Tree - erect cultivar suitable for verges wider than 2 metres - excellent autumn colour
Aesculus hippocastanum	Horse Chestnut	Spreading	20	Large Tree - suitable for open spaces - attracts children in autumn (conkers) - **recommended cultivar** - Aesculus hippocastanum 'Baumanii' - does not produce conkers
Alnus cordata	Italian Alder	Conical	14	Medium Tree - suitable for open spaces and verges wider than 3 metres - long period in leaf
Alnus glutinosa	Common Alder	Conical	14	Medium Tree - suitable for open spaces and poor soils - **recommended cultivar** - Alnus glutinosa 'Imperialis'
Alnus incana	Grey Alder	Conical	14	Medium Tree - suitable for open spaces and poor soils - **recommended cultivar** - Alnus incana 'Aurea'
Amelanchier laevis	Snowy Mespilus	Spreading	8	Small Tree - suitable for gardens and open spaces. - spring flowering and excellent autumn colour
Betula pendula	Silver Birch	Conical	14	Medium Tree - suitable for gardens, open spaces and verges wider than 3 metres - **recommended cultivars** - Betula pendula 'Dalecarlica' - Betula pendula 'Tristis' - Betula pendula 'Fastigiata' for verges wider than 2 metres
Betula utilis/jaquemontii	Himalayan Birch	Conical	14	Medium Tree - suitable for gardens, open spaces and verges wider than 3 metres
Carpinus betulus	Hornbeam	Spreading	16	Large Tree - suitable for open spaces - **recommended cultivar** Carpinus betulus 'Fastigiata Frans Fontaine' - suitable for verges wider than 3 metres
Castanea sativa	Sweet Chestnut	Spreading	20	Large Tree - suitable for open spaces
Corylus colurna	Turkish Hazel	Columnar	12	Large Tree - suitable for open spaces and verges wider than 5 metres
Cotoneaster cornubia	Tree Cotoneaster	Spreading	8	Small Tree - semi evergreen - suitable for verges wider than 4 metres
Crataegus crus-galli	Cockspur Thorn	Spreading	8	Small Tree - suitable for gardens, open spaces and verges wider than 4 metres - good autumn colour

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Crataegus monogyna	Hawthorn	Spreading	8	Small Tree - suitable for open spaces and verges wider than 4 metres
Crataegus prunifolia	Broad Leafed Cockspur Thorn	Spreading	8	Small Tree - suitable for gardens, open spaces and verges wider than 4 metres - good autumn colour - produces large thorns
Fagus sylvatica	Beech	Spreading	20	Large Tree - suitable for open spaces - casts heavy shade - **recommended cultivar** - Fagus sylvatica Dawyck' suitable for verges wider than 5 metres
Fraxinus excelsior	Common Ash	Spreading	18	Large Tree - suitable for open spaces - **recommended cultivars** - Fraxinus excelsior 'Westhofs Glory' - Fraxinus excelsior 'Altena'
Fraxinus ornus	Manna Ash	Spreading	14	Medium tree - suitable for open spaces and verges wider than 5 metres - **recommended cultivar** - Fraxinus ornus 'Obelisk'
Ginkgo biloba	Maidenhair Tree	Conical	14	Medium tree - suitable for open spaces and verges wider than 3 metres
Juglans regia	Walnut	Spreading	18	Medium to Large Tree - suitable for open spaces
Larix decidua	European Larch	Conical	8	Large Deciduous Conifer - suitable for open spaces
Malus species	Crab Apple	Spreading	8	Small tree - suitable for open spaces and verges wider than 3 metres - several good varieties - **recommend** Malus 'Golden Hornet', Malus Floribunda, Malus ' John Downie'
Malus trilobata	Erect Crab	Columnar	6	Medium Tree - suitable for open spaces, gardens and verges wider than 2 metres
Pinus sylvestris	Scots Pine	Conical	10	Large Tree - suitable for open spaces - **recommended cultivar** - Pinus sylvestris 'Argentea'
Pinus nigra 'Austriaca'	Austrian Pine	Conical	12	Large Tree - suitable for open spaces
Platanus x hispanica	London Plane	Spreading	20	Large Tree - suitable for open spaces
Prunus avium	Wild Cherry	Spreading	16	Medium Tree - suitable for open spaces - suckering habit - not suitable close to gardens and hard surfaces - **recommended cultivar** - Prunus avium 'Plena'
Prunus x hillieri 'Spire'	Erect Cherry	Columnar	8	Medium Tree - suitable for verges wider than 2 metres - ensure it is produced on a non-suckering rootstock
Prunus padus	Bird Cherry	Spreading	14	Medium tree - suitable for open spaces and verges wider than 3 metres - **recommended cultivar** - Prunus padus 'Albertii'

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SPECIES	**COMMON NAME**	**CROWN SHAPE**	**MATURE CROWN SPREAD (i.e. Space Required) metres**	**CHARACTERISTICS AND USES**
Prunus subhirtella 'Autumnalis'	Autumn Cherry	Spreading	8	Small to Medium Tree - suitable for open spaces and large gardens
Prunus sargentii 'Rancho'	Sargents Cherry	Columnar	6	Small to Medium Tree - suitable for verges wider than 2 metres
Prunus 'Snowgoose	Flowering Cherry	Columnar	8	Medium Tree - suitable for verges wider than 2 metres - ensure it is produced on a non-suckering rootstock
Pyrus calleryana 'Chanticleer'	Callery Pear	Spreading	10	Large Tree - suitable for open spaces and verges wider than 3 metres
Pyrus communis 'Beech Hill'	Erect Common Pear	Columnar	6	Medium Tree - suitable for open spaces and verges wider than 2 metres
Pyrus salicifolia 'Pendula'	Willow Leafed Pear	Weeping	5	Small Tree - suitable for gardens
Quercus robur	English Oak	Spreading	20	Large Tree - suitable for open spaces - **recommended cultivar** - Quercus robur 'Fastigiata' - suitable for verges wider than 3 metres
Quercus rubra	Red Oak	Spreading	18	Large Tree - suitable for open spaces
Sorbus aria	Whitebeam	Spreading	10	Medium Tree - suitable for open spaces and large gardens - **recommended cultivar** - Sorbus aria 'Lutescens'
Sorbus aucuparia	Rowan	Spreading	8	Small to Medium Tree - suitable for open spaces, gardens and verges wider than 2 metres - **recommended cultivars** - Sorbus aucuparia 'Sheerwater seedling' - Sorbus aucuparia 'Cardinal Royal' - Sorbus aucuparia 'Asplenifolia'
Sorbus intermedia	Swedish Whitebeam	Spreading	10	Medium Tree - suitable for open spaces
Sorbus thurungiaca 'Fastigiata'	Rowan/Whitebeam Hybrid	Broad Columnar	8	Medium Tree - suitable for open spaces and verges wider than 3 metres
Tilia cordata	Small Leaved Lime	Spreading	16	Large Tree - suitable for open spaces - secretes honeydew - not suitable close to buildings or parking areas - **recommended cultivar** -Tilia cordata 'Green Spire'
Tilia platyphyllos	Broad Leaved Lime	Spreading	16	Large Tree - suitable for open spaces - secretes honeydew - not suitable close to buildings or parking areas - **recommended cultivar** -Tilia platyphyllos 'Rubra'
Tilia euchlora	Caucasian Lime	Spreading	18	Large Tree - suitable for open spaces - does not secrete honeydew
Thuja plicata	Western Red Cedar	Columnar	10	Large Evergreen Conifer - suitable for open spaces

TABLE L2 - TREES TO AVOID		
Common Name	**Species**	**Problems/Characteristics**
Silver Maple	Acer saccharinum	Weak branch unions - prone to wind damage
Raywoods Ash	Fraxinus angustifolia 'Raywood'	Weak branch unions - prone to wind damage
False Acacia	Robinia pseudoacacia	Weak branch unions - tends to sucker
Poplars	All species	Vigorous invasive root growth - brittle wood - tends to sucker
Willow	All species	Vigorous invasive root growth - brittle wood
Laburnum	Laburnum anagyroides	Produces poisonous seeds
Yew	Taxus baccata	Produces poisonous seeds
Sumach	Rhus typhina	Tends to sucker