



A Guide to Tree Planting near Bristol Water Mains

1.0 INTRODUCTION

This information is produced for your guidance and is drawn up in light of research into the effects of planting of new trees, including conifers and shrubs, in close proximity to a water main.

New water mains located outside public highways are protected either by legal agreements or more usually by statute (such as section 159 Water Industry Act 1991) both referred to here as "easements" to prevent future access difficulties or buildings being constructed where they may cause damage to our water mains. The easement is protected by what is known as a sterilised area which typically extends a set distance either side of the centre line of the main. However, this may be greater in some circumstances, such as where pipes are laid at a lower than normal depth.

Please see the table below as guidance for the sterilised area dependant on the diameter of the pipe.

Pipe diameter	Up to	170mm to	300mm to	450mm to	650mm or
Sterilised Area	169mm	299mm	449mm	649mm	more
	<6 inches	6" to 12"	12" to 18"	18" to 26"	> 26"
Sterilised Area (width in metres)	5	5	8	10	12

This guidance note takes account of opinions expressed in the National House Building Council (NHBC) Standards Chapter 4.2 - Building Near Trees and the draft National Joint Utilities Group (NJUG) guidelines on Trees and Services.

1.1 WATER DEMAND AND SOIL CONDITIONS

The water demands of trees vary considerably. They generally reflect the size of the tree although species of tree differ in their water requirements. If the soil is a shrinkable clay* or a deep peat, the drying effect of tree roots may amplify any seasonal shrinkage, especially in drought years. A possible "heave" situation may occur following re-wetting of such soil, the sudden removal of the trees, or the severing of tree roots by trenching.

Although the majority of the root system of a tree is usually within 600mm of the surface, the roots may extend radially in any direction for distances frequently in excess of the tree's height. Underground services are often cooler than the surrounding soil, causing moisture within the soil to condense on the outer surface of the pipe, thereby encouraging roots to grow close to the service.

Damage to water mains can occur by the movement of the whole root bowl when the tree sways in high winds.

Such damage is not inevitable, much will depend on the species of tree planted, the depth of the water main and its method of construction and/or protection. Advice should be sought at an early stage on the positioning of trees near new water mains, and reference to the NHBC and NJUG publications is advised.

* Clay containing more than 35% fine particles (silt & clay) and having a plasticity index greater than 10%

2.0 PLANTING OF TREES AND SHRUBS

The following schedule has been prepared of commonly available trees which by reason of their large size in ultimate growth under certain soil conditions, combined with their potential for high water demand, should be excluded from the pipeline sterilised area (i.e. planted at a distance greater than the distance stated in the table above, measured from the centre line of the water main.

Trees and conifers not included in this exclusion list would usually be permissible, (see "Guidelines for Planting in Sterilised Areas" below) but it is recommended that approval is sought for any trees, shrubs or conifers, whose nature or water demand is unknown, particularly if on peat or clay soils.

Outside the sterilised area trees should not be planted so thickly as to form a dense copse-like situation, which could impede access to the water pipe in an emergency.

On clay or peat soils, certain trees or conifers that already exist within the sterilised area may require removal or frequent heavy pollarding to reduce their canopy, and subsequent water demanding potential. Liaison with the local Council's Planning Department is advised in this situation, particularly if the trees may be in a conservation area or affected by a Tree Preservation Order (TPO).

2.1 TREES AND CONIFERS NOT TO BE PLANTED WITHIN PIPELINE STERILISED AREAS

Schedule of commonly available trees and conifers, which should be excluded from planting within the sterilised area because of their large size, and/or heavy canopy in ultimate growth and moderate/high water demand. Refer to 4.1 "Hedges" below for use of trees as hedge plants.

Definitions:-
(H) - High Water Demand
(M) - Moderate Water Demand
CVS - Cultivars or garden varieties
* - No information currently available regarding water demand on these although they generally fall into the moderate water demand category.

ACERS ("Maples") - particularly:- (M)

negundo ("Box Elder") and cvs. *platanoides* ("Norway Maple") and cvs. *pseudoplatanus* ("Sycamore") and cvs. *rubrum* ("Red Maple") and cvs.

AESCULUS ("Horse Chestnut") - particularly:- (M)
carnea ("Red Horse Chestnut")

carnea "Briottii"
hippocastanum ("Common Horse Chestnut") and cvs.

AILANTHUS altissima (glandulosa) ("Tree of Heaven") (M)

ALNUS ("Alder") (M)
cordata ("Italian Alder")
glutinosa ("Common Alder")
incana ("Grey Alder")

CARPINUS betulus and cvs. ("Hornbeam") (M)

CATALPA bignonioides ("Indian Bean Tree") * CUPRESSOCYPARIS

leylandii ("Leyland Cypress") and cvs. (M) CUPRESSUS ("True Cypress") -

particularly:- (M)

macrocarpa ("Monterey Cypress") and cvs. glabra
("Pyramidaus") (C. arizona "Conica")

FRAXINUS ("Ash") - most species and cvs. particularly (M)
excelsior ("Common Ash")
oxycarpa "Raywood"

JUGLANS ("Walnut") - species and cvs. *
nigra ("Black Walnut") regia
("Common Walnut")

LIQUIDAMBAR styraciflua ("Sweet Gum") and cvs. *

LIRIODENDRON tulipifera ("Tulip Tree") and cvs. *

PAULOWNIA fargesii *
tomentosa

PICEA ("Spruce") - particularly:- *
abies ("Christmas Tree") (Norway Spruce) pungens
("Colorado Spruce")
sitchensis ("Sitka Spruce")

PINUS ("Pine") - particularly:- *
contorta "Latifolia" ("Lodgepole Pine")
nigra ("Austrian Pine")
nigra "Maritima" ("Corsican Pine")
pinaster ("The Maritime" or "Bournemouth Pine") ponderosa
("Western Yellow Pine")
radiata ("Monterey Pine") strobus
("Weymouth Pine") sylvestris
("Scots Pine") wallichiana
("Bhutan Pine")

PLANTANUS ("Plane") (M)
x hispanicus ("London Plane") and cvs. orientalis
("Oriental Plane") and cvs.

POPULUS ("Poplars") (H)
of which there are many.

PSEUDOTSUGA menziesii ("Douglas Fir") (M)

PTEROCARYA ("Wing Nut") *
fraxinifolia x
rehderana

QUERCUS ("Oak") - all species and cvs. of which there are many (H)

ROBINIA ("False Acacia") (M)
x ambigua "Decaisneana"
pseudoacacia and some cvs.

SALIX ("Willows") - most species and cvs. (H)

THUYA occidentalis ("American Arborvitae") *
plicata ("Western Red Cedar") and cvs. notably p.
"Fastigiata" and "Zebrina"

TILIA ("Lime" or "Linden") all species and cvs. (M) ULMUS ("Elm") -
most species and cvs. (M)

ZELKOVA ("Water Elm") (H)
carpinifolia
serrata

3.0 GUIDELINES FOR PLANTING IN STERILISED AREAS

3.1 Approval must be obtained from the Company before any planting is carried out within the sterilised area. The Company retains the right to remove any trees which might become a danger to the water main, providing this does not conflict with any Tree Preservation Orders present.

3.2 Blackthorn/Quickthorn, Elder, Hazel, Privet are the only hardwood plants that should be planted directly across the pipeline. These may only be planted where a hedge is necessary either for screening purposes or to indicate a field boundary. These should be planted out and maintained as detailed in 4.1 below. Elsewhere within the sterilised area hedges may be planted with species listed in 4.1 below.

3.3 Apple trees grafted onto dwarf root stocks may be planted to within 3.0 metres of the pipeline.

3.4 Christmas Trees may also be planted to within 3.0m of the pipeline provided they will be clear felled at intervals not exceeding seven years.

3.5 Ash, Beech, Elm, Horse Chestnut, Lime, Oak, Sycamore, Fruit Trees and most Conifers may only be planted as individual specimens, or a single row, in an area at least 6.0 metres clear of the pipe. Woodland planting may only be carried out at distances greater than 10.0 metres from the pipe.

3.6 Poplar and Willow may not be planted within 10.0 metres of the pipeline.

4.0 SUGGESTED TREES AND SHRUBS WITHIN THE STERILISED AREA

Cornus Alba - Red Barked Dogwood
Viburnum Opulus - Guelder Rose
Rosa Canina - Dog Rose
Corylus Avellana - Hazel
Crataegus Monogyna - Common Hawthorn
Amelanchier Canadensis - Shrub
Rosa Rugosa Bamanas Rose - Shrub
Ligustrum Vulgare - Privet
Prunus Spinosa - Quickthorn
Ulex Europaeus - Gorse
Sambucus Nigra - Elder

4.1 HEDGES

Trees, Shrubs and conifers used as hedge plants, close planted in a line up to 1 metre apart will, if left untrimmed as free-standing specimens, grow to large trees, and then exhibit all the disadvantages of water demand and large size. Such trees and conifers frequently used as hedge plants include:-

Cupressus macrocarpa ("Monterey Cypress")
Cupressocyparis leylandii ("Leyland Cypress")
Quercus ilex ("Holm" or "Holly Oak")
Chamaecyparis lawsoniana ("Lawsons Cypress") and cvs.
Thuja plicata ("Western Red Cedar") and cvs.
Ulmus species and cvs. ("Elm")

These species, as long as they are grown in hedge form, remaining clipped to a low height (no more than 2.0 metres) and closely planted (no more than 1.0 metre apart) are usually permissible within the sterilised area, but should be avoided directly over the actual pipe and particularly on deep clay or deep peat soils.