



Caring for Our Trees and Bush



NORTH SHORE CITY

Cover

Harbour Bridge, Auckland
by Mary E Taylor 02

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Why We Need Trees

What would life be like without trees? Trees are an important part of our everyday lives. They add beauty and character to our city as well as providing the oxygen we breathe.

Tree Terms

Canopy – crown or foliage of a tree or top layer of a forest

Photosynthesis – process in which energy from the sun is transformed by plants and trees into energy in the form of food

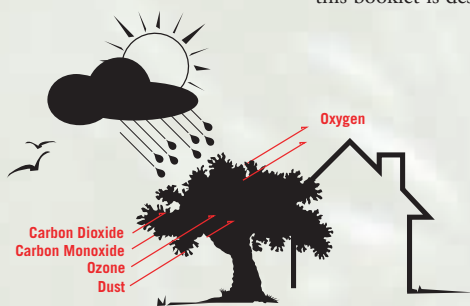
What Trees Do:

- Provide a home and food for birds, insects and other wildlife
- Add nutrients to soil and prevent erosion
- Reduce global warming by absorbing harmful greenhouse gases and releasing oxygen for us to breathe
- Offer shade and shelter from the sun, wind and rain
- Help reduce stormwater runoff
- Filter sunlight and rainfall to produce fresh, clean air
- Add character to our homes, cities and environment

Most of us plant trees and shrubs around our homes to make them look more attractive but also to create a pleasant place to live. Trees have many other useful functions and we should consider these when selecting which trees to plant on our properties and in our gardens.



Trees contribute to our quality of life and provide a variety of benefits to all living things. Whether you're thinking about planting a tree on your property or considering what to do about an existing tree, there are a few things you need to consider and this booklet is designed to help you make the right choice.



Characteristics of Trees

Leaves

Leaves which form the canopy of the tree, undertake photosynthesis to trap sunlight and produce food for the tree. Trees need energy which comes from food (carbohydrate) stored in its living tissue to grow, produce leaves, branches, roots, flowers and seeds. Oxygen is needed to release the energy from the food so the tree can breathe, grow, produce flowers and fruit, repair damage and prevent disease. When a tree respire it releases carbon dioxide into the air and uses oxygen from the air. This is a continuous process, whereas photosynthesis, which releases oxygen, only takes place during daylight hours. Overall trees release more oxygen than they use. Water is drawn up through the tree with any excess water evaporating into the atmosphere, a process known as transpiration.

Roots

The size of the tree's canopy is closely related to the extent of its underground roots. Every species of tree has an ideal canopy-to-root ratio. Tree roots need a good supply of oxygen, water, minerals and carbohydrates to grow. About 80% of tree roots are in the top 50cm of soil. In good conditions, tree roots will extend out up to three times the tree's height. The roots' growth occurs in their tiny tips which have fine hairs for absorbing water and dissolving nutrients to feed the tree.

Growth

North Shore City has a temperate climate with distinct seasons. This means a tree's growth is not consistent throughout the year. Looking at a freshly cut trunk, differences between rates of growth can be seen by looking at the distances between each ring; the greater the distance between rings, the better the growth rate that year. Trees can live to a ripe old age. The kauri is New Zealand's oldest living tree with some over 2000 years old. Different trees grow at different rates and are greatly influenced by the conditions in which they live. Sunlight access, nutrients, temperature, rainfall, and the porosity and type of soil all have an impact. Slower growing trees live longer than faster growing trees as they have more durable timber and stable roots, and are less susceptible to damage during storms.

Layers

Tree trunks are made up of a number of layers.

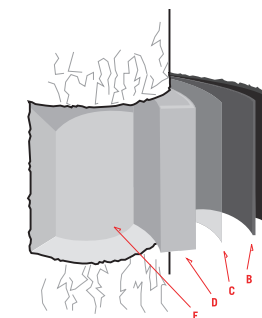
A – The outer layer of bark protects the more sensitive layers within the trunk. Bark peels and cracks to allow the trunk to continue growing.

B - The inner bark or phloem transports energy or food from the leaves to other parts of the tree.

C – The cambium produces the cells responsible for growth. The outer cells become phloem and the inner cells, called xylem, form sapwood.

D - Sapwood transports water from the roots up to the leaves.

E - The dense inner layer, known as heartwood, is non-living. It forms from dead sapwood and provides a structural support for the tree.



Choosing the Right Tree

Think about how the tree will react to local climate conditions, how much space there is for it to grow and what type of soil your garden has. Do you want the tree to provide shade, deflect wind from your home, block out noise or a bad view? Or is the tree to make your garden look pretty and attract birds?



Tree Terms

Topsoil – the topmost layer of earth that contains most of the nutrients for plants to grow

Compost – mixture of decomposed organic material such as leaves, grass clippings and bark

Mature tree – a fully-grown tree

Ecosystem – a community of organisms that interact with one another and the environment in which they live

Where will the tree go?

Site size and shape: Before planting, think about how the site may change over time, whether it might be subdivided or used more intensely. Make sure there is sufficient room for the tree and any future changes.

Soil conditions: Soil in urban areas of our city is often shallow, compacted and made of poorly draining clay with little topsoil. Compost can improve drainage and soil quality. Many local garden centres will test your soil for a small charge and recommend appropriate actions or suitable species for the type of soil.

Drainage: Poor drainage can prevent oxygen reaching the roots and possibly harm or kill the tree. Before planting dig some test holes 30cm wide by 30cm deep and fill them with water. If it takes a long time (more than six hours) to drain you should consider planting elsewhere in your garden or choose a species which thrives in damp conditions such as cabbage trees, manuka, lacebark and ponga. Your local garden centre or a professional arborist may be able to advise on a suitable species.

Exposure: How windy or sunny does your garden get? Certain species such as manuka, cabbage trees, pohutukawa and kowhai adapt to windy, exposed areas and can provide good wind breaks. But you will need to water young trees in exposed areas more often.

Space: Make sure there is enough room for the branches and roots to grow and spread. Are there any paved areas, buildings, overhead wires or underground pipes and cables nearby that may be affected by a fully-grown tree? Make sure there is plenty of room to contain the tree once it is fully-grown. Please contact Actionline on 486 8600 to find out if there are any drains near where you would like to plant.

Views: Will the mature tree block any good views for you or your neighbours in the future?

Location: Plant the tree in a suitable place. Do you want it to provide shade in summer and sun in winter, deflect prevailing winds or block out noise?

What type of tree?

Shape and size: Think about where you will plant the tree, how big it will get and whether it will block any sun, views or cause damage to property when it is fully-grown. Small-spreading trees may suit areas with overhead wires while tall narrow trees may provide a screen between two properties. Deciduous (leaf-shedding) trees may provide shade in summer and allow sunlight through in winter while evergreen (bearing green foliage throughout the year) trees can shelter against wind or block out bad views or noise.

Root type: Tree roots can grow outwards to as much as three times the tree's height. Most roots grow in the top 50cm of soil with the majority of fine, water absorbing roots growing in the top 10cm. Consider the type of tree and the spread of its roots in terms of where you are planting. Try not to plant too close to drains, house foundations or driveways.

Appearance: The size, colour, scent, profusion and season of flowers and fruit are quite different from one tree to the next. Compare the large-leafed tropical looking puka with the small prickly leaves of totara, the attractive bark patterns like the hammered look of matai with the grey flaky peels of pohutukawa.

Growth rate: Fast-growing species such as gum trees may improve the character of an area in the short term but can have an untidy appearance and short life-span. Slow growing trees may take better shape and live longer.

Suitability: Native trees make gardens look attractive, are well adjusted to our city's climate and attract native birds. Check the quality of your soil first, and ask your local garden centre for suggestions of what to plant and try to use local varieties.

Exotic Plants: Exotic plants and trees can enhance your garden but some species may compete with natives by strangling them and invading the nearby bush and forest. There are similar environmentally-friendly alternatives for many well-known plant pests. For more information, please contact Auckland Regional Council's Enviroline on 0800 806040 or visit www.arc.govt.nz for a copy of its *Friendly Alternatives* booklet.





Plants that attract birds and wildlife: Our city has many native birds such as tui, kereru (wood pigeon), silvereye, fantail and morepork. These birds need nectar, pollen, seeds, insects and fruit from native and exotic trees throughout the year and help to disperse seeds for future growth. We also have some species of lizard including the green tree gecko, forest gecko and ornate skink.

North Shore City was once covered with kauri and coastal pohutukawa forest of which there are now only remnants. Many of our reserves contain native plants which are distinctive to the local landscape. Large fruiting trees such as tawa, taraire, karaka, puriri and titoki are becoming rare. Competition for food with introduced pests such as possums means many native birds, lizards and other wildlife have become scarce. Planting native species supports the diversity of plants and animals in our forest ecosystems and protects our local natural heritage.

Selecting your tree

TREES ON COASTAL SITES

Coastal sites are often exposed to harsh conditions such as salt spray that can damage and dehydrate trees. The following trees have adapted to these conditions by developing tough skins and fleshy leaves. Another characteristic of coastal sites is steep eroding cliffs. Tree and plant roots can bind the soil on these sites helping to stabilise the cliffs and prevent erosion.

Common name	Botanical name	Salt wind tolerance	Cliff face growth	Foliage/flower colour
Cabbage tree	<i>Cordyline australis</i>	Yes	Yes	Green foliage
Coast banksia	<i>Banksia integrifolia</i>	Yes	No	Green foliage, yellow flowers
Fivefinger	<i>Pseudopanax arboreus</i>	No	No	Green foliage
Karaka	<i>Corynocarpus laevigatus</i>	Yes	Yes	Green foliage
Karo	<i>Pittosporum crassifolium</i>	Yes	Yes	Grey/green foliage
Kowhai	<i>Sophora microphylla</i> <i>Sophora tetraptera</i> <i>Sophora prostrata</i>	Partial	Yes	Yellow flowers
Mapau or matipo	<i>Myrsine australis</i>	Yes	Yes	Red/green foliage,
Norfolk Is. hibiscus	<i>Lagunaria patersonii</i>	Yes	No	Grey/green foliage, pink/purple flowers
Pohutukawa	<i>Metrosideros excelsa</i>	Yes	Yes	Red flowers
Puriri	<i>Vitex lucens</i>	No	No	Pink flowers
Manuka	<i>Leptospermum scoparium</i>	Yes	Yes	White flowers
Whiteywood	<i>Melicytus ramiflorus</i>	No	No	Green foliage

TREES ON GREENFIELD SITES AWAY FROM THE COAST

Subdividing on greenfield sites can present difficult growing conditions for trees. It can cause soil to become compacted, reducing the supply of oxygen to the tree roots. Also, removing topsoil lowers the soil fertility levels. Greater importance should be given to ground preparation for planting (see Planting Trees). The following trees and plants can adapt to these conditions.

Common Name	Botanical Name	Form	Native Birds Spread Seed	Growing conditions
Cabbage tree	<i>Cordyline australis</i>	Tree	Yes	Can handle harsh growing conditions
Flax, harakeke	<i>Phormium tenax</i>	Monocot	No	Can handle harsh growing conditions and extreme temperatures
Hangehange	<i>Geniostoma rupestre</i>	Shrub	Yes	Fast-growing, prefers growing beneath the forest canopy
Kanuka	<i>Leptospermum ericoides</i>	Tree	No	Major nursery tree for larger native forest species. Forms well developed root system that stabilises banks
Karamu	<i>Coprosma lucida</i>	Shrub	Yes	Fast-growing, grows well beneath forest canopy. Abundant autumn berries for birds
Kohuhu	<i>Pittosporum tenuifolium</i>	Small tree	Yes	Hardy tree which can handle harsh growing conditions. The reddish-purple flowers turn black as they age and are sweet scented at dusk
Koromiko	<i>Hebe stricta</i> <i>Hebe macrocarpa</i>	Shrub	Yes	Can handle harsh growing conditions
Kowhai	<i>Sophora microphylla</i> <i>Sophora tetraptera</i> <i>Sophora prostrata</i>	Tree	No	Grows in the open. Flowers August to October. Wind and drought resistant
Lancewood	<i>Pseudopanax crassifolius</i>	Tree	No	Prefers shelter from the wind and dry soil conditions
Mahoe	<i>Melicytus ramiflorus</i>	Tree	Yes	Very fast growing
Manuka	<i>Leptospermum scoparium</i>	Small tree	No	Major nursery tree for larger native forest species. Grows vigorously and is able to spread into areas with low soil fertility. Forms well developed root system that stabilises banks
Mapou	<i>Myrsine australis</i>	Tree	Yes	Small, fast-growing tree. Will thrive in most soils
Robinia	<i>Robinia pseudacacia</i>	Tree	No	Drought resistant, hardy tree with white flowers
Southern magnolia	<i>Magnolia grandiflora</i>	Tree	No	Can handle harsh growing conditions. Has white flowers and glossy leaves
Toetoe	<i>Cortaderia fulvida</i>	Grass	No	Able to grow on dry, disturbed, compacted soils

PLANTS BELOW TREE CANOPIES

Growing conditions below tree canopies are often shady and damp. The following trees can tolerate these conditions and grow through the existing canopies to become the tallest, dominant tree species.

Common name	Botanical Name	Native birds spread seed	Growing conditions
Japanese maple	<i>Acer palmatum</i>	No	Hardy growing species with bright green foliage
Karaka	<i>Corynocarpus laevigatus</i>	Yes	Coastal species
Kauri	<i>Agathis australis</i>	No	Survives in infertile soils
Kohekohe	<i>Dysoxylum spectabile</i>	Yes	Coastal and lowland forest
Matai	<i>Prumnopitys taxifolia</i>	Yes	Slow-growing, prefers fertile soil
Puriri	<i>Vitex lucens</i>	Yes	Prefers fertile soil. Bears flowers and berries all year round and is a valuable food source for birds
Rewarewa	<i>Knightia excelsa</i>	Yes	Survives well in dry, well-drained soil
Rhododendron	<i>Rhododendron</i>	No	Likes damp, acidic soil. Huge variety of species
Rimu	<i>Dacrydium cupressinum</i>	Yes	Mid-slope species
Totara	<i>Podocarpus totara</i>	Yes	Survives well on dry and exposed sites

GRASSES, SHRUBS AND GROUND COVERS

Ground covers and shrubs add colour and texture to your property, as well as reducing runoff and erosion on cliff faces and steep banks. The following species are suitable for our city's environment.

Common name	Botanical Name	Salt wind tolerance	Cliff face growth	Foliage/flower colour
Coastal tussock	<i>Chionochloa bromoides</i>	Yes	Yes	Brown foliage
Creeping fuchsia	<i>Fuchsia procumbens</i>	Yes	No	White flowers
Flax	<i>Phormium tenax</i>	Yes	Yes	Green foliage
Kohukohu	<i>Scleranthus biflorus</i>	Partial	No	Green foliage
Mountain flax	<i>Phormium cookianum</i>	Yes	Yes	Green foliage
New Zealand iris	<i>Libertia peregrinans</i>	Yes	No	Orange foliage, white flowers
Pukupuku	<i>Doodia media</i>	Yes	Yes	Red foliage
Shining spleenwort	<i>Asplenium oblongifolium</i>	Partial	No	Green foliage
Spinifex	<i>Spinifex sericeus</i>	Yes	No	Blue green foliage
Toetoe	<i>Cortaderia fulvida</i>	Yes	Yes	White flowers
Waiuatua	<i>Euphorbia glauca</i>	Yes	No	Grey foliage
Wharawhara	<i>Astelia banksii</i>	Yes	Yes	Grey foliage
Coastal maire	<i>Nestegis apetala</i>	Yes	Yes	Yellow/green foliage
Coastal ribbonwood	<i>Plangianthus divaricatus</i>	Yes	No	Grey/green foliage
Day lily	<i>Hemerocallis</i>	Yes	Yes	Green foliage/flowers in a variety of colours
Indian hawthorne	<i>Raphiolepis indica</i>	Yes	No	Green, glossy foliage, white flowers
Koromiko	<i>Hebe stricta</i> <i>Hebe macrocarpa</i>	No	Yes	Mauve flowers
Mingimingi	<i>Coprosma propinqua</i>	Yes	Yes	Brown/green foliage
Rangiora	<i>Brachyglottis repanda</i>	Yes	Yes	Grey/green foliage
Tree daisy	<i>Olearia avicenniaefolia</i>	Yes	Yes	Grey/green foliage

PLANTING ALONG WATERWAYS

The banks of streams, ponds and lakes are often flooded. Planting along these waterways helps to stabilise the banks among other things (see Planting Along Streams). Plants and trees must be able to tolerate floodwater washing over them at any time of the year. The following plants and trees are appropriate for planting alongside streams and further up stream banks.

Common name	Botanical Name	Flood tolerant	Characteristics
Cabbage tree	Cordyline australis	Yes	Fast-growing, hardy plant that tolerates wet and dry soils. Controls erosion. Attracts birds
Flax	Phormium tenax	Partially	Withstands 5cm of water flooding and dry soil. Unpalatable to possums. Attracts nectar-feeding birds. Grows from seed or cuttings
Gahnia	Gahnia setifolia	Yes	Slow growing tussock grass to 2m high
Kahikatea	Dacrycarpus dacrydioides	Yes	Moderate growing. Needs shelter to grow. Prefers sites that are periodically wet. Possum hardy.
Karamu	Coprosma robusta	Partially	Prefers land which is not frequently flooded. Good food source for birds
Putaputaweta	Carpodetus serratus	Yes	Wide spreading tree to 10m with attractive green marbled leaves
Ruatahi	Carex lessoniana	Yes	Fast-growing to 80cm. Stabilises the stream banks. Attracts birds.
Swamp kiokio fern	Blechnum novae-zelandiae	Yes	2m long glossy fronds. Pinkish colour in spring.



POHUTUKAWA by David Hardy

I think perhaps I'll never see
A more magnificent a tree
Than our pohutukawa on display
With gorgeous blooms each Christmas Day.

Those dangling roots in search will cling
To cliff or rocks or anything
And nature put this gem so long ago
Where other trees just couldn't grow.

Thus in pohutukawa's ancient past
A gene had formed to make it last
And claim today triumphantly
That it's New Zealand's Christmas-tree.

Planting With Stormwater In Mind

Stormwater is rain that runs over the ground on its way to the sea and other waterways.

Planting and using permeable surfaces, not only enhance the visual character of your property, but also help to soak stormwater into the ground to reduce flooding, prevent erosion and break down contaminants that pollute our beaches and streams. Try to plant in areas on your property that collect or have stormwater flowing over them. Native species should be used as they are best suited to our local climate and need less maintenance. Make sure planting is clear from any drains on your property as tree roots can lead to blockages. The following plants can help reduce stormwater flows.



Common name	Botanical Name	Characteristics
Cabbage tree	Cordyline australis	Grows to 12m. Palm like appearance. Prefers damp to moist soil
Flax	Phormium tenax	Clump-forming flax with large stiff leaves. Grows to 3m
Karamu	Coprosma robusta	Hardy plant that grows to 3m. Glossy green leaves. Orange fruit attracts birds
Manaia	Carex flagellifera	Grass that grows up to 70cm. Prefers damp soil and full sun. Tolerates exposure to flooding
Manuka	Leptospermum scoparium	Grows to 4m. Can handle hardy and difficult growing conditions
Pukupuku	Doodia media	Hardy fern that grows up to 25cm. Young fronds are bright red in full sun

For more information about planting with stormwater in mind and other environmentally-friendly options such as rain gardens and swales, please refer to Auckland Regional Council's Stormwater Treatment Devices: Design Guideline Manual (TP10) at www.arc.govt.nz/arc/environment/water/stormwater-tp10.cfm or contact Enviroline on 0800 806040. North Shore City also has brochures available to help you manage stormwater, please contact Actionline on 486 8600 for your copy of *Using rainwater, Environmentally friendly options* and *Stormwater and your property*.

Planting Along Streams

Riparian margins are the strips of land that border streams and ponds. Planting along the banks of these waterways helps to stabilise them and protect the water quality.

Riparian planting

- Protects the water quality
- Stabilises the stream banks and reduces erosion
- Provides shade, food and shelter for aquatic life and native birds
- Filters and absorbs stormwater runoff
- Acts as a barrier catching contaminants such as sediment
- Reduces damage caused by flooding.

Tree terms

Buffer – strip of vegetation along a stream or lake

Ecosourcing – using plants grown from local seeds to preserve the natural ecosystem

Riparian margin – the strip of land along the bank of a stream or waterway

Many of our city's riparian margins have deteriorated due to lack of vegetation, rubbish dumping, weed infestation or livestock grazing. A healthy buffer of native vegetation lining our streams can help prevent this.



We often hold community planting or stream clean up days with the Auckland Regional Council and local community groups. Contact details for local community groups can be found at the end of this booklet.

How to plant

The width and quality of planting along streams or waterways will have an impact on their water quality. The wider the buffer the greater its ability to protect this water quality, and to provide shade, food and shelter for bird and pond life. Buffers over 10m wide are better but try to plant at least a 5m buffer along small streams or where it's impractical to plant a wider strip. Buffers that are less than 10m wide will need on-going maintenance to keep them weed free.

Assess whether the stream banks are ready to be planted by looking for and removing any weeds. Make sure any rubbish found in the stream is also removed. Plants need to be planted in the right place to ensure they thrive. Some plants grow better along damp stream edges while others prefer the drier slopes back from the stream. See the *Planting Along Waterways* table in the *Choosing the Right Tree* section.

Where to plant

Plant along the edge of the stream before proceeding further up the bank to reduce erosion and protect stream water quality. Use plants that grow flat or are less than 1m high along the stream edge so that floodwater can wash over them.

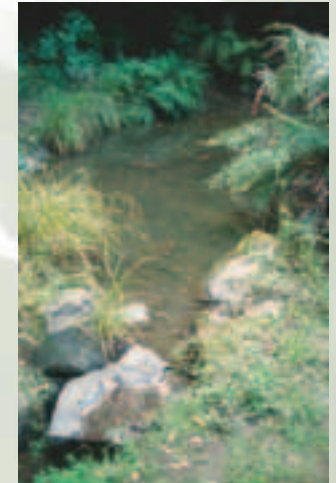
What to plant

Native grass such as gahnia and ruatahi are good choices to plant along the edge of streams. Canopy trees such as kahikatea and cabbage can also be planted as they can withstand frequent flooding. See the *Planting Along Waterways* table in the *Choosing the Right Tree* section for more options.

Most of our city is in the Tamaki Ecological District. Where possible, please try to use plants grown from local seeds, this is known as ecosourcing and helps to preserve the city's natural ecosystem. Your local nursery or garden centre can advise. Finding out where the seeds were gathered is important because local plants have often adapted to local soil and climate conditions.

Helpful tips for planting along streams

- Stream edge first
- Wide buffers
- Flat growing plants
- Local seeds
- Follow up care



Planting Trees

Planting should be done at the coolest time of day, either first thing in the morning, later in the evening or on a grey overcast day.

Helpful Planting Tips

- Room to grow
- Wide shallow holes
- Compost
- Soil
- Mulch
- Follow up care

Young trees should be planted between April and August to enable them to establish roots before the spring rains and summer heat stimulate new top growth. You can plant at other times of the year but consider the weather, hardiness of the species and amount of care needed after planting. Larger trees may take longer to establish than smaller trees but they are immediately visible and can be planted all year round, as long as they are healthy, handled with care and well watered.

How to plant

Ground preparation is important, particularly with the clays found in our city's soil. Preparing the area well before, during and after planting enables the tree to quickly establish in its new setting. Allow enough space between trees for them to grow and their roots to spread.

Dig the hole wider than the root bundle but not much deeper. Planting trees higher than ground level allows the young roots to breathe and the soil to settle. The wider the hole, the more loose soil there will be for the emerging roots. Adding a few handfuls of stones such as scoria can help drainage around the roots.

Remove the tree from the planter bag by cutting down the outside of the planter bag and stripping the plastic away from the root bundle. Check the now exposed roots for any signs of them curling back into the root bundle. If this has occurred loosen the roots by roughing up the surface of the root bundle. This will help the tree's roots to spread outwards rather than develop into a ball which can lead to instability.

Provide nutrients, moderate the soil temperature and allow the emerging roots to spread into firmer soil by mixing compost with mounds of topsoil around the roots of young trees, especially in clay soils which act as a sink in winter and bake dry in summer.

Place the root bundle of the tree in the hole and fill the hole gently but firmly with soil, a little bit at a time. Take care not to leave air pockets that may dry the roots out. Once the hole is filled, add water to settle the soil. The point at which the roots join the base of the tree should be left exposed just above the soil.

Place organic materials or mulch such as composted fallen leaves, grass clippings, shredded bark or peat moss at the base of the tree, about 50 - 100mm deep, taking care not to touch the trunk. Mulch holds in moisture and protects against extreme soil temperatures as well as enriching the soil and inhibiting weed growth. Avoid using green mulch as this can damage the tree.

Keep the soil moist by watering it at least once a week and more frequently in hot weather. Be careful not to over water.

Dr Martin Luther King, Jr

“Even if I knew that tomorrow the world would go to pieces, I would still plant my apple tree.”

Tree Terms

Root bundle – the roots of a tree contained within a planter bag



Pruning Young Trees

Pruning your tree when it is young will help it develop a strong structure and good shape. If you get it right now, you shouldn't have to do too much when the tree matures.

Principles of pruning

- Think before you cut, every cut you make can change the tree's growth
- Use the proper technique, poor pruning can cause lasting damage
- Trees don't heal like people do, they retain their wound forever
- Small cuts are better than bigger cuts
- Trees should be pruned when they are young.

Tree Terms

Pruning – cutting or altering the tree's branches or roots

Branch collar – raised part or swollen trunk tissue where smaller branches join larger branches or the main tree trunk, the collar helps the tree form a callus around the cut after pruning

Leaves and shoot tips provide food and other substances that stimulate new root growth. The belief that trees should be pruned when planted to compensate for root loss is misguided. Only torn or broken branches should be pruned on newly planted trees. This section provides some helpful pruning tips but for more information please contact a professional arborist.

Formative pruning

Pruning in a tree's second or third year of growth will help it take a form and shape that suits its habitat. Removing overcrowded branches creates more space, and encourages more light and air to reach the tree. But take care not to thin the tree too much. Leaves are needed on all branches to make enough food for them to grow and continue to feed the trunk and roots. Removing too many leaves will reduce the tree's growth making it unhealthy and starved of food. Mature trees should only be pruned to correct growth or to remove hazards.

When to prune

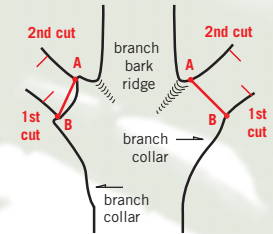
It's better to prune a tree, especially if removing weak or diseased branches, before its spring growth. Pruning after this time can stress the tree, as it will have used all its energy reserves in producing shoot growth and foliage.

Removing a branch

Branches need to be cut in stages to avoid tearing the wood where the final cut will be made and damaging the tree. Remove the main section of the branch without tearing the bark and leave a small portion of branch just above the branch collar. Cut as close as possible to the branch collar, taking care not to damage or remove it. Avoid leaving a stump. If cut correctly, a complete circle of callus will form around the cut in the next growing season. Do not use wound dressings such as paint or material on trees.

Helpful Pruning Tips

- Always use clean, sharp tools. Use secateurs for small branches. Do not use hedge shears to prune a tree
- Avoid cuts that remove the branch collar which is the fold of wood where the branch joins the trunk
- Never cut across the top of trees (topping) as it will weaken the tree and cause re-growth, which breaks easily and can be a safety hazard
- Only remove larger branches if it is unavoidable
- Prune when a tree is young. Younger trees recover better from pruning than mature trees.



1. Locate the branch bark ridge
2. Find A - outside of branch bark ridge
3. Find B - swelling where branch meets branch collar
4. Make final cut at line AB to prune dead branch

TREE by Heather Falconer

A moonlight night, a swaying tree
A sleepless night, just tree and me
I watch the pattern cross my bed
Lacy pattern by moon glow spread.

So much pleasure from that tree
Who danced in moonlight just for me.
On still black nights it stood so tall
Like trusted guard on city wall.

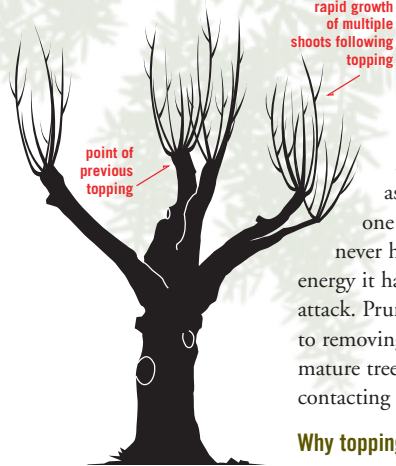
Then one day, the chainsaw scream
I looked to where my tree had been
When I can't sleep, I miss my tree
My leafy night time company.

Pruning Mature Trees

Forest trees grow well with only nature's pruning, such as broken branches from the wind, disease and neighbouring trees falling. Landscape trees, however, need a bit more care and attention.

Reasons for Pruning

- Removal of dead branches
- Removal of crowded or rubbing limbs
- Elimination of hazards
- As a corrective or preventative measure.



Tree Terms

Foliage – the leaves of a tree

Topping – removing the top of the tree or many of its main branches (this is not recommended)

Crown reduction – selective removal of peripheral branches to reduce the canopy size

Just as a human cut hurts so does a cut to a tree. Trees respond differently to humans though. Rather than replacing damaged tissue with new cells, the tree closes off the damaged area from the rest of the tree but the wound always remains. Bad or heavy pruning can damage the tree and shorten its life.

Every cut can change the tree's growth and no branch should be removed without a reason. Removing foliage can reduce the tree's growth, stored energy reserves and reproductive capacity.

The pruning principles in the previous section also apply to mature trees. If a tree is pruned properly when it's young, it shouldn't need too much pruning when it matures. A widely accepted rule of thumb is never to remove more than a quarter of a tree's canopy, as even this amount can prove harmful. Removing even one large branch or limb can create a wound that will never heal. The older and larger a tree becomes, the less energy it has to close wounds and defend against decay or insect attack. Pruning large mature trees should generally be limited to removing dead or potentially hazardous limbs. Before pruning mature trees please check to see if you need a resource consent by contacting our Environmental Services helpdesk on 486 8600.

Why topping is a no-no

Topping which involves cutting the top of the tree's canopy off is one of the most harmful practices possible. It is usually carried out to reduce the tree's size but causes more harm than good, and is not supported by arborists. Topping causes the rapid growth of multiple shoots and leaves at the point where the branches were topped to recover the lost canopy. If a tree does not have the stored energy reserves to do this, it will weaken and may die. The new shoots grow quickly but are prone to breaking, especially during windy conditions, and can be a safety hazard. Alternatives for reducing a tree's height such as crown reduction should be discussed with a professional arborist.

Checking a Tree's Health

Trees should be checked at least once a year to ensure they are healthy.

Look out for new leaves or buds, leaf size, twig growth or any signs of gradual death of the upper part of the tree. Any reduction in the growth of new shoots, such as buds or new leaves, is a sign that the tree's health has deteriorated.

Compare the growth of shoots over the past three years, a spurt of new shoots after damage or excessive pruning indicates stress within the tree. The spurt of new shoots (epicormic growth) comes from the tree's reserves to increase the canopy and compensate for any loss caused by excessive pruning or damage.

Look for signs of decay of the trunk and dieback of the crown which often indicate that the problem began several years before.

Look out for loose bark or mushrooms growing on branches which are signs that the stem is decaying. Fungal decay on the trunk or mushrooms growing around the base of the tree are signs that the tree is unhealthy.

Keep an eye on anything unusual such as deformed, spotted, discoloured or dead leaves and twigs. Mulching helps maintain moisture levels in the soil as well as keeping it cool, helping trees grow by enriching the soil and supplying them with essential nutrients. They can also help sick or damaged trees if used in the right way. If in doubt, please contact a professional arborist to check if your tree has a disease.



Tree Terms

Crown dieback – gradual death of the leaves and the crown

Byron

Here in the sultriest season, let us rest

Fresh is the green beneath those aged trees;

Here air of gentlest wing will fan our breast-

From heaven itself may we inhale the breeze.

Building Near Trees

Building near trees can damage them, affecting their ability to produce and store food. If wounded a tree uses its stored energy to respond. The more damage, the more harmful it is, as the tree will lack energy to sustain a healthy growth and will be prone to infection from insects and disease.



Fewer branches and leaves reduces the tree's ability to carry out photosynthesis to produce food and help the tree breathe. Damage to the roots is harder to detect and can prove fatal.

Avoiding damage to trees

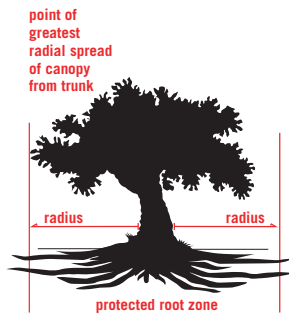
Trees are vulnerable to changes both above and below ground. Building near trees can be devastating if protection measures are not taken. There are a few easy, low cost ways to avoid significant damage. You should contact a professional arborist for advice about how to protect trees during construction but here are a few ideas:

Root zone: Roots are found near the surface and can extend laterally for up to two or three times the tree's height. The majority of a tree's roots are found within its root zone. Care should be taken not to damage the roots within this area during construction.

Protective fencing: Putting up fencing can protect the root zone. Before any materials are brought on site, a fence of 1.8 - 2 metres high should be placed around the root zone of the tree and remain there until the work is finished. The fence should be strong and restrict all access to protect the root zone as well as the rest of the tree. Make sure you put a sign on the fence explaining that the area is protected, and that no work should be carried out and no materials stored inside the fence. Care should also be taken of tree roots from neighbouring properties.

Ground level excavation and alteration: Most tree roots are in the top 50cm of soil and most feeder roots are in the top 10cm of soil over the root zone. Adding soil suffocates the tree base causing the trunk to rot and depriving the roots of air and water. Removing soil exposes the roots causing them to dry out and prevent water from reaching the tree.

Excavating within or near the root zone can damage essential feeder roots, remove nutrient rich topsoil that the tree needs to grow and affect water drainage. Excavating machines can tear



Tree Terms

Root zone – area of ground around a tree trunk created by taking a radius equal to the greatest radial spread of the canopy/ foliage of the tree, measured from the trunk and rotating that radius in a full circle around the trunk

roots causing irreparable damage leading to decay. If this happens, ensure that clean cuts are made to the torn roots to reduce the likelihood of future decay. Make sure any excavated areas near trees are drained properly and refilled with good quality topsoil to encourage root retention, and add water if the ground becomes noticeably dry.

Soil compaction: Roots need loose soil with plenty of water and oxygen for healthy growth. Storing materials or vehicles over the root zone causes soil to compact, crushing the vital feeding roots near the surface and preventing essential water and oxygen from reaching the tree. Carbon dioxide and other toxic gases can accumulate in the soil, causing it to dry out or become water-logged. This can kill or stunt the roots. The damage is not always immediately apparent and the tree may die several years later. For development on large sites, ensure there is only one access route and that cars are parked well away from trees.

Storage of materials: Leaning or storing materials against or under a tree can damage its trunk and roots. Rubbish, debris, building materials or construction equipment should not be stacked around the tree trunk. Chemicals, fuels, oils, weed-killer, paint, acid and other toxic substances should not be kept, spilt or sprayed (especially when windy) near trees, and fires should not be lit near them.

Building over tree roots: New surfacing such as concrete, paving, asphalt and other structures like decks, patios and courtyards restrict water and oxygen from reaching the roots and can cause the tree to die, especially if it is a mature tree. If you need to build near trees, you should allow rain to filter through to the roots by using permeable surfaces such as wood chip or scoria. Allow sufficient space for trees to expand and do not lay foundations within one metre of the root zone. Decks can be raised with carefully placed footings to enable rain to seep through the gaps while driveways that cross over tree roots can be bridged to aerate the roots. Please contact a professional arborist for advice on the best method for carrying out the work. Before carrying out work around the root zone, please check to see if you need a resource consent by contacting our Environmental Services helpdesk on 486 8600.

Helpful Tips for Building Near Trees

- Do not operate machinery or drive vehicles over the root zone
- Do not store soil, debris or any construction materials against tree trunks
- Do not excavate within the root zone or, if unavoidable, contact a professional arborist
- Do not leave or dispose of toxic substances within the root zone
- Do not light fires near trees or expose them to noxious fumes
- Keep all construction equipment away from the branches.



Tree Terms

Feeder roots – smaller, secondary roots which absorb nutrients and water into the main roots to feed the rest of the tree branch spread (distance that branches spread horizontally)



Treating trees damaged by construction

A tree may take several years to recover from injury caused by construction. Identifying and treating problems early will give it a better chance of survival but if there's structural damage, you may need to remove the tree for safety reasons. Please contact a professional arborist for advice on the best treatment.

Monitoring for decline: Watch for signs such as smaller and fewer leaves, crown dieback, cracks in the trunk, split or broken branches and dead limbs. Cavities, softwood and mushroom growths on the trunk or roots are signs of internal decay.

Pruning: Minimise all pruning in the first few years after construction. Remove any dead or diseased wood to prevent hazards, and do not thin tree canopies to compensate for root loss.

Repairing damaged bark: Remove any loose bark and cut off jagged edges. Take care not to cut into the phloem or cambium layers beneath the bark. Wound dressings, such as tying cloth around the wound, should not be used. For species that have peeling bark, loose bark should not be removed.

Irrigation: Ensure the tree is watered properly but not over watered, and that the roots have plenty of moisture. Watering a tree properly can help it recover better than any other method.

Soil Compaction: Make sure the soil is aerated as soon as possible if it becomes compacted. Please contact a professional arborist for advice on the best techniques for aerating soil.

Mulch: Add a layer of organic matter, between 50 - 100mm, such as leaf litter, peat moss, composted grass clippings and untreated wood chips over the tree's roots to help maintain moisture levels and moderate the soil temperature.

Fertilising: Do not fertilise after construction damage as it can stimulate top growth at the expense of root growth. Damaged roots are less able to absorb water and minerals. If a soil analysis shows the soil to be deficient then a small amount of fertiliser may be required. A professional arborist can advise on the best treatment.

Hiring an Arborist

Professional arborists are trained in a wide range of tree care services and can advise what type of pruning is necessary to improve the health, safety and appearance of your trees. Always ask for a written quote before employing an arborist and make sure you know what service your trees will get.

Arborists can:

- Carry out formative pruning of young trees to establish good structure and form
- Remove dead limbs
- Move trees to a new location or remove them completely
- Advise on how to select a suitable tree for your property
- Advise on tree pests or diseases and recommend treatments
- Provide emergency tree care.



How to select an arborist

When choosing an arborist you are wise to check for:

- Relevant qualifications and experience
- Quality work and up-to-date technical knowledge
- Familiarity with the council's tree rules
- Appropriate levels of public liability insurance
- References.

Try to avoid any company that:

- Offers tree topping as a service. Topping is harmful to trees and is not an accepted practice
- Uses climbing spikes while pruning trees. Using spikes damages trees and should only be used when removing them.
- Uses 'chainsaw cowboys' that work for cash only.



How are trees protected?

We have policies and rules in our District Plan to protect significant trees and bush in our city from damage and needless removal. Our general tree protection is for trees over a certain height or girth or in environmentally important areas of the city. More specific rules protect coastal pohutukawa trees, rural bush areas and many areas of native bush in residential areas. We also protect individual 'notable trees' which are particularly worthy of recognition and protection. For example, coastal pohutukawa trees over 3m high and native trees over 8m high or 80cm in girth are protected by our general tree protection rules whereas specific 'notable tree' protection applies to the merton bay fig tree next to the Devonport Library.

Which trees and bush are protected?

We protect all native and exotic trees over a certain height and girth. Native trees and bush have a higher level of protection than exotics because of their greater ecological significance and contribution to the natural landscape. Natives often grow more slowly and need specific conditions whereas exotics grow faster and adapt well in urban areas. Coastal pohutukawa trees have a high level of protection because of their special significance, seasonal beauty and stabilising effect on coastal cliffs.

How do I find out whether my tree is protected?

Whether or not your tree or bush is protected depends upon the zone of your property or any special provisions or rules in our District Plan for your property. Our *Tree and Bush Protection in North Shore City* leaflet is available from area offices, by contacting North Shore City's Actionline on 486 8600 or visiting our website www.northshorecity.govt.nz. The leaflet outlines our policies for caring for our city's trees and bush and your responsibilities. Our District Plan is available at council offices, libraries and on our website www.northshorecity.govt.nz or you can contact our Environmental Services helpdesk on 486 8600 for more information.

What if I want to do works to a protected tree?

If your tree is protected you will probably need resource consent approval for works to the tree. If you want to build, alter the ground or carry out other works within the root zone of a protected tree, you will also have to apply for resource consent. Resource consent application forms are available from council offices or by contacting our Environmental Services helpdesk on 486 8600.

Who should I contact about trees on roads and reserves?

If you want to have new trees planted on your street or reserve, or if you want any trees to be removed or trimmed, please contact Actionline on 486 8600. We will inspect the tree and determine whether the work should be carried out.



Tipene O'Regan, National Report to UNCED 1992

When we look at water, when we look at the landscape, it is not just a tree but the atua standing in front of us. We are looking at Tangaroa and Tane, we are looking at the atua from whom we descend, at our tupuna: we are looking at ourselves.

What is resource consent?

A tree resource consent is written approval from council allowing you to carry out work on trees that are protected under our District Plan. The District Plan is a legal document that we are required to prepare under the Resource Management Act (RMA) 1991. It has information about how we manage our natural and built or physical resources, and how we enable or restrict the way land is used or developed in our city. You can visit our website at www.northshorecity.govt.nz, your local area office or Environmental Services at 521 Lake Road, Takapuna to view a copy of our District Plan or contact our Environmental Services helpdesk on 486 8600 to find out whether you need resource consent.

Why do I need resource consent?

The RMA promotes the sustainable management of natural and physical resources. Generally if you require resource consent it's because your proposal has the potential to have an adverse effect on the environment (which can include people, vegetation, buildings and structures).

How do I apply for resource consent?

Applying for a tree resource consent is often a relatively simple process. However in some cases there may be many different factors to consider. For more information, advice and an application form, please contact our Environmental Services helpdesk on 486 8600 or visit www.northshorecity.govt.nz. Alternatively, drop into your local area office or Environmental Services at 521 Lake Road, Takapuna. We can help you ensure you provide correct and complete information for us to process your application. Unfortunately, if you don't provide the right information or the level of detail required your application will not be accepted.

How long does it take?

We consult the RMA to see whether to notify the public about proposals that require resource consent. The length of time tree resource consents take to process depends on what level of impact the works will have on the environment and whether you have provided us with sufficient information.

Non-notified applications

If we don't need to inform people about your application and you provide complete and correct information, it will take about one month to process. Minor tree consents often take less time to process.

Notified applications

We need to inform people about your application if the work to the tree(s) is likely to have an adverse effect on the environment that is more than minor and/or there are parties who will be adversely affected. This involves placing a public notice in newspapers and sending letters to people deemed to be affected. Notification enables people to support or oppose resource consent applications if they feel strongly about them. These applications take about three months to process.

How much will it cost for resource consent?

All resource consent applications relating solely to trees are free to the applicant. We will cover the costs of processing the application because of the value that trees provide for the wider community.

What if I have more questions?

For further information on preparing a tree resource consent application please visit our website at www.northshorecity.govt.nz or contact our Environmental Services helpdesk on 486 8600.



Native Bush Care

Many introduced plants invade our native bush with devastating effects. Plant pests such as wild ginger, wandering jew, lantana and woolly nightshade can spread from your garden to areas of native bush, climbing and smothering existing native plants and trees.



Tree Terms

Buffer – edge of an area of bush which protects trees within from wind, light and temperature

Nursery species – trees that provide a sheltered environment for other trees to grow

There are different ways of controlling these plant pests. Please contact Auckland Regional Council's Enviroline on 0800 806040 for free advice and copies of its Pestfacts brochures. Or if the plant pests are in one of our many parks, contact a North Shore City parks and environment officer on 486 8600.

Pest and weed damage

Animal pests such as possums, rats, ferrets, stoats and cats can harm the natural ecosystem within areas of native bush by competing with native birds and insects for food from fruit, flowers, leaves and nectar. These animals, especially possums, destroy new growth preventing the forest from developing. There is a variety of ways to control animal pests. Traps or poison can reduce possum, rat, ferret and stoat numbers, and work more effectively in winter when these pests are most likely to take the poison as leaves, flowers and fruit are not as abundant. Cats should have a bell fixed to their collar and be neutered. Unwanted kittens or strays can wreak havoc. Livestock should be kept out of native bush by standard or electric fences. Keep an eye open for signs of animal pests such as eaten leaves, scratch marks on tree trunks and possum droppings and look out for plant pests by the thickness, age and coverage of colonising weed over time.

Protecting native bush from plant and animal pests helps maintain it and enables it to regenerate over time. The edges of native bush can be particularly vulnerable as they are more exposed to wind, changes in temperature, high levels of sunlight and pests. Planting extra native species around the edges can create a buffer and increase the area's chance of survival. Kanuka and manuka, for example, act as nursery species for other natives to grow and provide a habitat for birds and insects.

Notable Trees and Covenants

There are several ways you can protect trees on private land and important areas of bush.

Notable trees

Our District Plan has a schedule of notable trees whose scientific, landscape, landmark, visual or historic interest merits special identification and protection. Almost 1000 trees in our city are listed, and the schedule is reviewed periodically to add new trees and remove those which have died or been removed. If you have a tree on your property which you would like to protect, please contact an environmental policy advisor on 486 8600. We will survey the tree, taking into account its:

- Size – the height and canopy spread of the tree
- Visibility – character and accessibility to the public
- Location – whether it's alone, in a group or bush setting
- Species – how common or rare
- Setting – the significance of a tree within its location
- Expected life-span – how long the tree is likely to live and whether there are any threats to its health
- Form and condition – whether the tree is well shaped and in good health
- Special features – historic, ecological, scientific, social or cultural significance or other special factors
- Indigenous status – native trees that are recognised for their special characteristics or location.

Covenants

A covenant is a legal contract that protects trees and bush from future activities that may destroy their special qualities and value.

Private covenants on individual trees

A private covenant is registered on the Certificate of Title and can last for a set period of time or indefinitely. You can specify whether the tree can be pruned by yourself and future owners or you can appoint a third party such as the Tree Council or your legal advisor to decide what can be done to the tree by tenants or future owners. To register a covenant on the Certificate of Title, you'll need to lodge a 'deed of covenant' with Land Information New Zealand. You may need to get the tree surveyed and employ a solicitor to help draft the deed. While our District





Plan may protect your tree, over time these rules can change. A private covenant can offer your tree a greater level of protection.

Partnership covenants for areas of bush

Partnership covenants are legally binding agreements between two or more parties to protect an area of bush. They can be used to protect healthy areas of bush and to restore or enhance those that have deteriorated. Small patches of protected bush on rural and urban private land can form green corridors which connect reserves and provide habitats and paths for plants and wildlife.

New Zealand has different types of partnership covenants for conservation purposes including Reserves Act conservation covenants, Department of Conservation covenants and QEII Trust covenants. These are generally applied to large areas of native bush. If you would like more information about these covenants and how to go about getting one for bush on your land, please contact an environmental policy advisor on 486 8600.

William Blake, 1799, The Letters

**The tree which moves some to tears of joy
is in the eyes of others only a green thing
that stands in the way. Some see Nature
all ridicule and deformity, and some scarce
see Nature at all. But to the eyes of the man
of imagination, Nature is Imagination itself.**

Trees on your property boundary or your neighbour's property can become a nuisance by reducing your outlook and sunlight or damaging foundations.

The Property Law Amendment Act 1975 says property owners are responsible for any nuisance or damage their trees cause to neighbours. You'll need to decide whether the nuisance is worth the risk of souring relationships with your neighbour and whether the problem outweighs the benefits the trees give you both such as beauty, privacy, shelter and shade.

If you believe a tree has become a nuisance please speak to your neighbour and try to work out a solution. Give them time to think about what you are suggesting. They may be quite happy to help you with any work if it means saving the tree. It's better to talk over a fence than in a court.

If you cannot reach an agreement you may need to take legal action. For minor damage to property the Disputes Tribunal can hear claims. Other claims such as compensation for loss of sunshine or views, or requests for pruning or removing a tree are heard by the District Court. To pursue a claim through the District Court ask your lawyer to organise a Court Order. The District Court will send a notice to your neighbour ordering action to be taken within a set time or to appear in court to contest the matter.

A Court Order to prune or remove a tree does not prevail over any tree protection rules within our District Plan. If the works to the tree need resource consent under our District Plan, this approval must be obtained regardless of whether a District Court Order has been issued.

An alternative solution to seeking a Court Order is to use a mediator or arbitrator to help resolve disputes. Mediation is less formal than arbitration, is often cheaper but cannot be enforced by the Courts whereas an arbitrated settlement is backed by the Courts. Both processes are voluntary and involve a fee which should be split equally by the parties involved. For more information, please contact Arbitrators' and Mediators' Institute of New Zealand Inc. on 0800 426 469.



Community Groups and Contacts

Community groups that look after trees and native bush in North Shore City:

The Tree Council (Auckland) Inc

c/o Three Streams Arboretum
RD3 Albany
North Shore City
Christine Rose Tel (09) 412 5668
Hueline Massey Tel (09) 425 9246

Royal Forest and Bird Protection Society of New Zealand Inc

PO Box 631
Wellington
www.forest-bird.org.nz

Forest and Bird North Shore Committee

PO Box 33873
Takapuna 1309
North Shore City
Pamela Roberts Tel 480 0631 Fax 480 9367
intipim@xtra.co.nz

Kaipatiki Ecological Restoration Project

17 Lauderdale Road
Birkdale
North Shore City
Tel 480 1172
www.kaipatiki.org.nz

Awaruku Bush Society

Hugh Willis Tel 473 8213

Centennial Park Bush Society

Pat Morton Tel 410 6848

Department of Conservation

Private Bag 68908
Newton
Auckland
Tel 307 9279 Fax 377 2919
www.doc.govt.nz

Fernglen Native Plant Gardens

Dennis Worley Tel 482 0779

Friends of Barrys Point

Margaret Wills Tel 489 5034

Friends of Le Roys Bush and Little Shoal Bay

Peter Nagels Tel 480 8338

Friends of Sherwood

Green-Bee Hive
85 Glencoe Rd
Browns Bay
North Shore City
Tel 479 8801

Friends of Three Streams

John Hogan Tel 415 9336

George Pannill Reserve

D J Goris Tel 414 1949

Kauri Point Centennial Park and Chatswood Reserve Management Committee

Brian Norton Tel 418 2934

New Zealand Arboricultural Association Inc

PO Box 5596
Wellesley Street
Auckland
www.nzarbor.co.nz

Ngataringa Bay Working Party

Lindsay Brock Tel 445 6404

Onepoto Basin

Eric Charteris Tel 418 0749

Pompallier Cemetery

Juann Ryan Tel 480 7874

Project Crimson Trust

PO Box 34214
Birkenhead
North Shore City
Debbie Teal Tel 480 8864 Fax 480 8865

Queen Elizabeth II National Trust

PO Box 3341
Wellington
Tel 0508 732 878
www.nationaltrust.org.nz

Shepherds Park Management Committee

Vic Bond Tel 483 6601

Smiths Bush: Community group

Dennis Worley Tel 482 0779

Acknowledgements

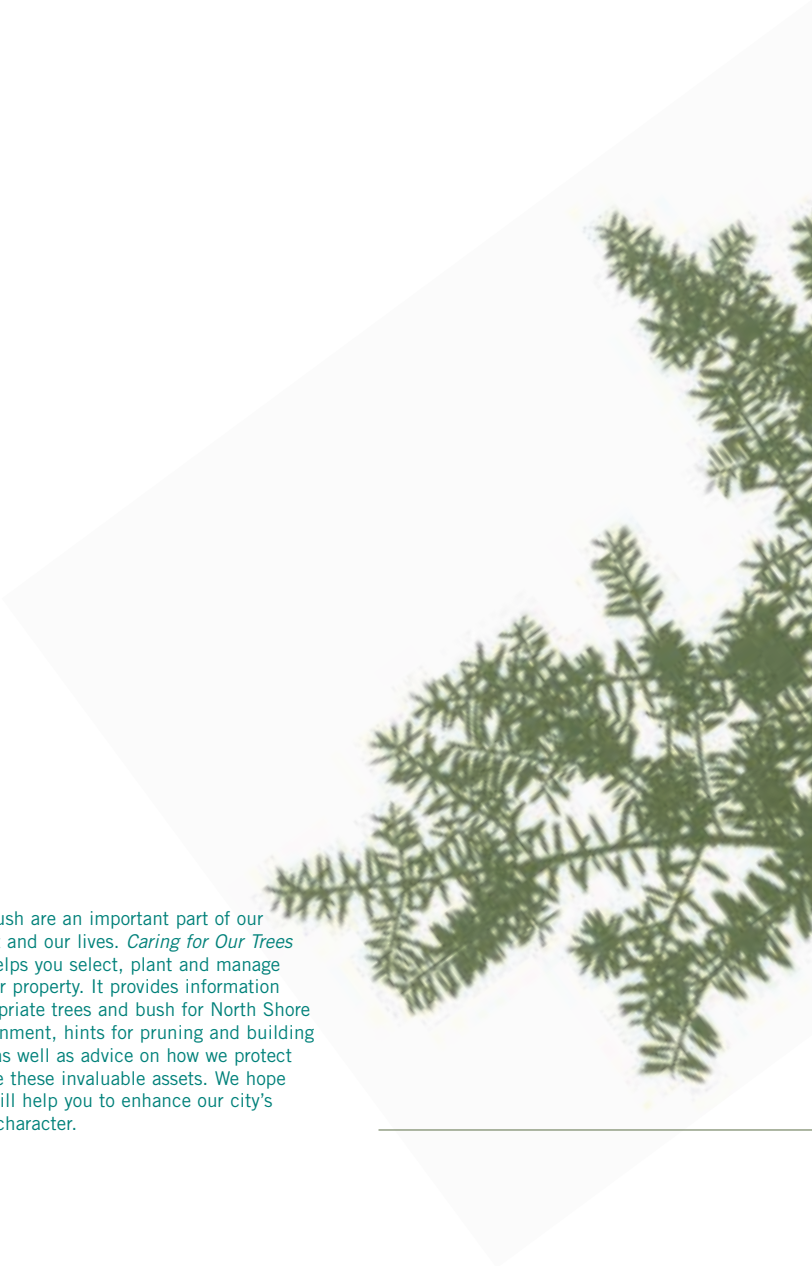
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Takapuna, North Shore City
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Fax: (09) 486 8500
Website: www.northshorecity.govt.nz



Trees and bush are an important part of our environment and our lives. *Caring for Our Trees and Bush* helps you select, plant and manage trees on your property. It provides information about appropriate trees and bush for North Shore City's environment, hints for pruning and building near trees, as well as advice on how we protect and preserve these invaluable assets. We hope this guide will help you to enhance our city's green leafy character.



NORTH SHORE CITY