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2. Context

The green and leafy character of the City of Whitehorse is one of the most common reasons cited by the community for choosing to live in our Municipality.

The City of Whitehorse's vision is that:

We aspire to be a healthy, vibrant, prosperous and sustainable community supported by strong leadership and community partnerships.

And that the City of Whitehorse will be:

- *One of the most liveable and sustainable municipalities in Melbourne*
- *Recognised for the quality of its open space and natural environment*
- *A community rich in culture and diversity that is inclusive, healthy and vibrant*
- *A well governed city that has a healthy and strong relationship with the community*
- *A municipality with a prosperous and well supported local economy.*

Strategic goal 3.1 in the Council Plan is that the City will be "A place where passive and active open space is highly valued, shared and enhanced" and states that Council will:

Continue to sustainably manage, enhance and increase trees and vegetation in Council's streetscapes, parks and gardens, with species that enhance neighbourhood character, support biodiversity and are adaptable to a changing climate.

This Interim Urban Forest Strategy outlines the key targets, actions and principles that will assist in the realisation of those commitments to which Council has committed.

The Urban Forest Strategy is supported by an Urban Forest Policy (appendix 1) which guides how trees will be managed in the urban environment. The strategy will also serve as an educational tool to assist residents to understand the vision, policies and actions relating to Whitehorse's tree population.

Implementation of this strategy will support Council's Sustainability Strategy 2016 – 2022 and Council's Health and Wellbeing Strategy, 2017-2021 and will contribute to the fulfilment of several goals and targets within those strategies.

3. Benefits of the Urban Forest

Council's urban forest consists of all trees and vegetation located throughout the municipality; irrespective of the tree species origin (native, exotic), location (street, park, garden, school) or ownership (public, private, institutional).

This strategy is focused on trees within the municipality. Understorey vegetation and other green infrastructure is a key feature of Council's Biodiversity Strategy and not considered extensively in this Urban Forest Strategy.

A thriving urban forest will support Council's objectives in the following ways:

1.1 Environmental benefits

Climate adaptation:

Trees sequester carbon, reducing the overall concentration of greenhouse gases in the atmosphere.

Mitigating urban heat as shading from trees can reduce surface temperatures by 20 degrees Celsius, as well as reducing wind speeds and reducing glare.

Energy conservation:

Shading from trees means that air conditioner use can often be substantially reduced, decreasing energy costs for households and businesses.

Water filtration and retention:

Trees capture rainfall and intercept runoff, reducing flooding and stormwater management costs, and also decrease the flow of polluted water into our waterways by intercepting and using nutrients that would otherwise be discharged to waterways.

Wildlife habitat:

Trees provide important habitats for numerous bird, insect and animal species and create habitat connectivity or 'stepping stones' between key habitat areas for fauna to disperse, such as through avenues of trees along road corridors and open space.

1.2 Public health and social benefits

Trees produce oxygen, intercept airborne particulates, and reduce smog.

Access to trees, green spaces, and parks promotes physical activity, reduces stress, and can improve the overall quality of life in our cities and towns. These factors can contribute to the prevention of a range of chronic diseases which are related to sedentary lifestyles.

Studies show that urban vegetation slows heartbeats, lowers blood pressure, and relaxes brain wave patterns. Children with a view of nature and trees at home score higher on tests of self-discipline.

Trees significantly cool the city which helps manage heat stress.

A stronger feeling of connection to nature is associated with mental health benefits and more sustainable behaviours.

People walk and jog more on shaded streets, which encourages interaction with neighbours and improves the sense of community.

Urban landscaping, including trees, help lower crime rates.

The colour green is calming and relieves eye strain.

Trees increase the visual amenity of streets and open spaces.

1.3 Economic benefits

Neighbourhoods and shopping strips with healthy tree-cover attract new residents, industry and commercial activity.

Homes landscaped with trees sell more quickly and are worth 5 to 15 per cent more than homes without trees. Where the entire street is tree-lined, homes may be worth 25 per cent more.

Trees enhance economic stability by attracting businesses; people linger and shop longer when trees are present.

Where a canopy of trees exists, research indicates that apartments and offices rent more quickly and have a higher occupancy rate; workers report more productivity and less absenteeism.

There is potential for some negative impacts resulting from trees such as increased leaf drop and impact on other infrastructure such as footpaths and roads. Most often this occurs from legacy tree planting where inappropriately selected species have outgrown the space available to them. Future tree selection will mitigate these negative impacts and the overall benefit provided by the urban forest far outweighs these concerns.

1.4 Current Urban Forest Status

Current knowledge of our urban forest is limited and comprehensive data collection is required. Existing canopy cover has been estimated at between 22 and 26%. Between 30-40% canopy cover is needed in order to realise the above. Below 30% there is generally not enough canopy cover to achieve the full benefits of the urban forest.

Following the collection and analysis of data, Council will set a target for Canopy Cover of at least 30% by 2030.

Council's street tree population is aging and it is likely that there will be a reduction in canopy cover in coming years due to the loss of large trees. New trees established to mitigate the loss will take several years to fully mature and replace the canopy lost with the death of aging trees. There is likely to be a loss in canopy cover in the near future followed by a gain in the medium term as trees mature.

Phase one of this strategy will seek to collect and analyse comprehensive data on the urban forest in order to fully understand the implications, likely trends and risks to trees. We will then be able to plan more scientifically for the future. A comprehensive Urban Forest Strategy will then be presented to Council in 2021/22 which will be grounded in the data and scientific analysis.

The actions contained within this interim plan are proposed in order to enhance the delivery of a better urban forest and can be implemented within the next two years whilst data collection and analysis is underway.



10 REASONS TO PLANT MORE TREES

Trees provide several environmental, social and health benefits to the municipality. They absorb air pollutants and release oxygen, provide shade for humans and shelter for local wildlife; add value to surrounding properties; and make our streets more attractive, green and liveable.

For more information about Whitehorse City Council's Tree Education Program, visit www.whitehorse.vic.gov.au/Tree-Education-Program.html

1 Trees increase property value

Trees can soften the harsh lines of buildings and screen unsightly views. Research has shown that properties in leafy streets have been valued at 30 per cent higher than less leafy streets in other parts of the suburb. An attractive tree planted in the right spot can complement architecture and increase the appeal of homes.

2 Trees can reduce power bills and save energy

Trees near buildings can reduce the demand for heating and cooling, which results in lower power bills and less carbon emissions from Australia's largely coal-based electricity industry. Deciduous trees planted on the north side of homes can reduce air-conditioning running costs by as much as 12-15 per cent and will provide shade in summer and make way for sunlight in winter.

3 Trees strengthen our sense of place

The unique characteristics – size, shape and colour – of different tree species help visually define Australia's urban and bush landscapes. People appreciate the beauty of trees – whether in their back yards, the street, parks and reserves, or in the country.

4 Trees increase biodiversity

Indigenous trees (and many introduced species) provide food, shelter and protection from predators for many birds, animals and insects. As well as provide habitat for wildlife, diverse tree species in gardens, parks and streets can become corridors that create links from urban areas to bushland.

5 Trees lower air temperatures in summer

During hot weather large areas of asphalt and concrete can trap the heat of the sun and reflect it back into the environment, which raises the temperature in surrounding areas. Planting trees amongst our houses, buildings, parking lots and streets provides shading that helps reduce this heat-island effect.

6 Trees help to reduce flooding and improve Water quality

In urban areas, hard surfaces such as concrete prevent water from soaking into the ground – directing it towards drainage systems instead. This can be a problem during heavy rain with flooding and damage occurring because stormwater has inundated the drainage system. Trees can capture large amounts of rain through their root systems, canopies and leaves before removing pollutants and redirecting it into the ground water supply.

7 Trees reduce noise pollution

Trees help to reduce noise pollution by absorbing and blocking urban noise. This has been shown to reduce stress for people living and working in urban areas. Vegetation planted along freeways forms a sound barrier that reduces traffic noise to surrounding suburbs.

8 Trees improve air quality

Trees help to improve air quality by converting carbon gasses into oxygen, reducing smog and making it easier to breathe for people with respiratory problems.

9 Trees protect us from Climate Change

Through a process called photosynthesis, trees store carbon dioxide, nitrous oxides, sulphur dioxide, carbon monoxide and ozone in their leaves, branches and roots. Removing carbon from the atmosphere helps protect us from the effects of climate change.

10 Trees improve health and wellbeing

Being outdoors and amongst trees can have a restorative effect on people through helping to create a sense of wellbeing. Getting in touch with nature has been known to assist with people's ability to recover from stress, illness and injury.

4. Action Plan

1.5 Improve urban forest data and analysis

Planning for a healthy and resilient urban forest needs accurate and complete data. At present Council has some data and is in the process of collection more. Council will complete an inventory of council owned trees in 2018/19 which will include a suite of data including: reduction in pollution; carbon sequestered; stormwater runoff avoided; sensitivity to drought; economic value; vulnerability to climate change etc.

Details on trees including species, location, dimensions, structural and conditional ratings, safe useful life expectancy (SULE) and recommended maintenance works are important for decision making and strategically managing the urban forest.

Reliable and current information can be used to budget and prioritise works proactively rather than reactively. Species diversity and age distribution of the population can be monitored and managed over time to ensure continual benefits relative to costs are provided to the community.

Additional data showing the spread of canopy cover across the various landholders within the municipality will also be collected in the summer of 2018/19 and will yield high resolution imagery of tree distribution and health.

This new data will be used to design a five year planting plan which will focus initially on areas of high urban heat and low tree canopy cover, followed by strategic locations such as entrance ways to the city. The survey will be repeated every five years in order to monitor changes in canopy cover, species diversity and health of the urban forest.

A tree management system will be established which will allow for live management and maintenance of the urban forest as well as providing a long term record of works undertaken to trees. This will result in significant gains in efficiency and community service.

1.5.1 Ageing Tree Population

A number of Council's trees, including those in significant streets, are estimated to be over 70 years old and approaching the end of their safe useful life. *Quercus palustris* (Pin Oak's) in particular planted by the City of Box Hill in the 1940's-1950's were planted to form a uniform, single species consistent avenue. These trees have grown extraordinarily well in a hostile growing environment but this is unlikely to continue with climate change.

Trees grown in the urban environment do not generally live as long as trees grown in their natural wooded environment. Many of the trees have received extensive pruning to adhere to statutory and legislative requirements over the years. These trees are now reaching the end of their safe useful life expectancy and will require removal and replacement within the next 10 years.

Data on useful life of the existing tree population would allow a program of replanting trees over the next 10 years to ensure a dense and consistent canopy cover.

An ageing urban forest renewal program will be implemented where mature senescent (dying) or dead trees in severe decline within significant avenues will be inspected, removed and replaced annually.

1.5.2 Prioritising planting based on need

Council will have collected and analysed a suite of data by the end of 2018-19 FY which will overlay factors such as:

- Localised canopy cover;
- Urban heat;
- Socio-Economic data;
- Key transit routes, etc.

This data will be used to determine priority areas for planting. Initially Council will target areas vulnerable to the impacts of urban heat due to absence of canopy cover.

1.5.3 Infrastructure Conflict

Infrastructure such as stormwater pipes, gas pipes and sewers in the City are aging. These often share nature strip space with trees and conflict can arise if not managed proactively.

Infrastructure age and replacement schedules will be taken into account in analysing the tree inventory and future planting opportunities. This will ensure that conflicts are minimised.

In addition, Council will review its 'Heavy Leaf Fall' streets over the course of this strategy with a view to optimising the supporting works such as street sweeping.

1.6 More trees

Currently there are approximately 75,000 street trees and unknown numbers of park trees that equates to around 22-26% canopy cover. We also know that there are significant planting opportunities around the municipality in vacant nature strips and park areas.

In order to fully realise the benefits of urban forest, a canopy cover of 30% is required.

1.6.1 Increase canopy cover on Council land

Approximately 10% of the land within the municipality is Council managed land. Council is committed to a significant increase in tree planting efforts on its own land in streets and parks.

Substantial effort can be made to increase canopy cover by planting street and park trees between 2018 and 2022 in areas where there is currently an absence of any canopy. Council will model the impact of planting and future scenarios in year one of this interim strategy.

Street trees are typically constrained by factors such as existing infrastructure, the need to weather harsh growing environments and exposure to anthropocentric pressures. The street tree palette will reflect these challenges and will therefore be somewhat limited. Opportunities for biodiversity outcomes, bigger and more diverse planting will more likely occur in parks.

1.6.2 Increase canopy cover on other public land

Melbourne Water, Parks Victoria and VicRoads currently manage significant portions of the land within the municipality. Much of this land is suitable for tree planting assuming that agreement can be brokered with those agencies.

Further opportunities for greening include long tracts of land managed by Melbourne Water and Parks Victoria along Councils waterways. There is precedent from these organisations in supporting tree establishment, for example through Melbourne Water's *Corridors of Green* program. Council will seek to work in partnership and negotiate agreements with those agencies in order to establish further canopy cover and prevent canopy removal along those areas.

1.6.3 Increasing canopy cover on private land

Planning controls

The introduction of the minimum garden area requirement and Clause 55.07-4 (Deep soil areas and canopy trees objective) means that new developments need to provide for garden space (25-35 per cent of land area depending on lot size). This provides an opportunity to encourage new developments to include canopy trees within private gardens. There may be an opportunity to adapt the planning scheme in order that clause can be leveraged to establish more trees.

1.7 Protection of existing trees

1.7.1 Amenity Value of Trees

Council trees which are removed in order to accommodate developments attract a payment to Council as a reimbursement of the lost amenity. At present these are capped at \$25,000 which is not a reflection of the actual value lost. A proposal will be developed for removing the cap, as well as returning at least a portion of this income to ParksWide in order to fund the actions contained within this and subsequent urban forest strategies.

1.7.2 Planning Controls

Council has implemented interim planning controls to address the incremental loss of trees on private land due to development. Further studies are taking place with a view to making those controls permanent. The findings of this study will be presented to Council in year one of this Urban Forest Strategy.

1.7.3 Local laws

In order for trees to reach their full potential, it is important to protect existing trees and new plantings. Council's General Purpose Local Law seeks to protect trees from vandalism by applying penalties for damage or removal of trees on Council land.

However, the penalties are not substantial and it is often challenging to enforce the local law. Council will develop further measures to deter vandalism, such as installing prominent warning signs and recouping the full financial value of the trees, not only reinstatement costs. In the event that malicious damage can be proven, Council will seek to prosecute offenders and recover the full value of the amenity and ecosystem services provided by the tree. For a large canopy tree, this can be over \$100,000.

1.8 Improve diversity, tree health and resilience of the urban forest

1.8.1 Changing climate

Plants have temperature tolerance limits that reflect adaptation to their native habitats, with temperature extremes defining the geographic limits for plant survival. Predicted increases in temperature from urban heat and climate change can shift the environment to the edge of, or even outside, some species' temperature envelopes.

The climate vulnerability of Whitehorses trees will be assessed by comparing the mean annual temperature of locations where species naturally occur, with several temperature projections under climate change. Many of the trees are expected to be at risk under climate change and future planting programs will account for the loss of those trees by succession planting and updating the tree palate in order that future plantings will be resilient to climate change.

1.8.2 Diversity

An urban forest with greater diversity of species and age is generally more resilient and stable because the potential for losses due to pests, diseases and climate impacts is reduced. It is generally accepted that the greater the diversity, the lower the risk of poor health and tree losses. Biological diversity can be achieved through species selection, stock provenance, maturity, and rates of growth.

The majority of Australian trees fall into the *Myrtaceae* family and those species tend to be best adapted to local conditions. Around 60 per cent of Council's tree species are from the *Myrtaceae* family, hence it is highly difficult for the city, and many other municipalities, to meet such a diversity target for plant family. Council will still aim to improve diversity overall, working towards greater diversity across family, genus and species.

Council will work to improve the diversity of the urban forest by choosing trees that are most likely to thrive in conditions expected in future. Future tree selection is to be based on factors such as:

- Resilience to future climate conditions (hotter climate, drier soils)
- Tolerance of pests and diseases
- Suitability to urban conditions (less invasive, tolerates compacted soils, constrained environments)
- Longevity
- Contribution to increasing canopy spread, as appropriate to the site.

When selecting tree species, Council will continue to ensure the right tree is selected for the location. Trees will be selected for increased diversity and resilience, consideration will be given to selecting species based on neighbourhood character and heritage values, suitability of growth and habit, other functional requirements such as sight lines, utility services, proportion, space and surrounding uses. Canopy provision will be a high priority for all new plantings.

1.8.3 Pests and diseases

Pests and diseases can be highly detrimental to urban forests. Dutch Elm disease, for example, made the Elm tree virtually extinct in the United Kingdom and Myrtle Rust is a local threat to many species which are common in the urban forest. Climate change is predicted to result in the spread and increased vigour of some pests and diseases which may threaten the urban forest. Emerging threats will be monitored and managed as necessary through appropriate treatments such as phosphite injections, anti-fungal treatments and preventative measures such as wash down procedures. Increased diversity in the urban forest will reduce the risk of such an event in Whitehorse.

1.8.4 Tree establishment

Council will enhance its establishment practices in order to achieve a better success rate. Measures will include actions such as:

- Including mulching where appropriate;
- Soil and canopy nutrient drenching;
- Including permeable paving and other passive irrigation;
- Removing hard surfaces where practicable;
- Understorey plants will be considered in appropriate circumstances to suit the location, thereby providing better biodiversity outcomes and soil health.
- Water sensitive urban design
- Water sensitive urban design uses better urban planning and design to reuse stormwater, stopping it from reaching our waterways by mimicking the natural water cycle as closely as practicable; and,
- Increasing soil moisture by passively irrigating trees will reduce the need for hand watering and result in healthier and more resilient trees.

At present the vast majority of rain that falls in our municipality flows to waterways through Council's stormwater system. Council will work to create new infrastructure and adapt existing infrastructure in order to passively irrigate the urban forest and treat stormwater. The types of WSUD treatments that may be employed include:

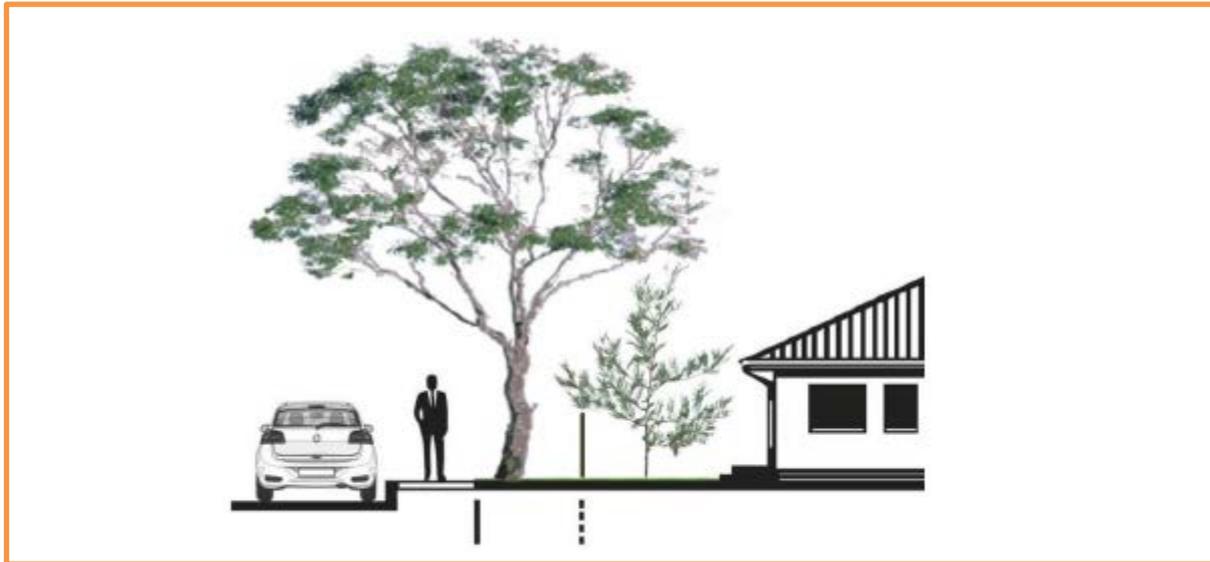
- Leaky wells;
- Exfiltration pipes;
- Buffer strips;
- Porous paving; and
- Tree pits.

New trees included in streetscape master planning will be planted with passive irrigation systems. Passive irrigation systems will be installed as an operational component of road and pavement resurfacing where practicable.

Conflict with infrastructure

Tree health, structure, stability and canopy extent can be affected by conflict, or perceived conflict with infrastructure. With appropriate site selection and root management, damage to other infrastructure such as footpaths can be minimised. The shading of roads, footpaths and other hard surfaces by tree canopy can increase the useful life of those assets, and there is a net community benefit of having trees in the landscape. There may be a small increase in leaf and limb drop which can be accommodated in Council's existing maintenance programs.

In some cases tree planting may be constrained by underground infrastructure or overhead powerlines. In some cases, Council may negotiate with the energy infrastructure owners to request cable bundling to reduce the need for tree pruning and enable trees to grow a larger canopy. In order to improve canopy cover and tree health while minimising conflict with powerlines, Council may plant canopy trees with a lesser height at maturity, asymmetric planting configurations and species that are more tolerant of pruning.



There are several large scale development sites in the municipality. Such developments may be required to underground powerlines in order that large canopy trees can be established without need for future line clearance pruning.

In some cases, tree roots can negatively impact on underground infrastructure such as drains and pipes. Council will seek to establish agreements with those agencies such as Melbourne Water in order that the interface between trees and infrastructure can be appropriately managed so that trees can thrive with minimal impact on infrastructure. Such measures are likely to include:

- root barriers
- above ground containers
- curb outstands
- planting in roads away from powerlines.

1.9 Improved community engagement

The community generally values trees although there are still a minority of residents who don't. Council has a successful community engagement program for sustainability. The existing program will be leveraged and further developed in order to elicit community support and encourage people to establish trees in their existing gardens. Council will seek to engage residents and educate them regarding the benefits of trees in the landscape.

Communications and educational material will be provided to the community outlining the benefits of trees as well as maintenance and care support materials.

Council will expand existing education and communication to inform the community of the benefits of the urban forest including initiatives such as:

- My Smart Garden workshops
- 'Adopt a Street Tree' program
- Extension of existing communications mediums
- Gardens for Wildlife
- Open source data for street trees so residents can get to know their trees.

Council will seek to engage with existing organisations such as sporting clubs, Parkland Advisory Committees and community groups to encourage further planting in appropriate locations.

In addition, Council will encourage residents to anonymously report any removal or damage to Council trees or trees on the Significant Tree Register.

Council will also proactively engage with the development community to encourage the construction of green walls, planting of trees and other green asset provision as a component of new developments.

Improving health, diversity and resilience

5. Key Actions - Summary

Action description	Timing	Responsibility
Conduct a tree inventory in order to better understand species diversity, contribution to increasing canopy, health and life expectancy.	2018/19	ParksWide
Purchase and maintain a tree management system in order to facilitate greater efficiency and more scientific management of the urban forest	2018/19	ParksWide
Prepare maps to present information on a range of parameters such as lacking tree cover, high urban heat and other priority factors, to prioritise areas to be planted in the 5 year planting plan.	2018/19	ParksWide
Model the likely canopy cover scenario over time to understand the implications of senescent tree loss and planting regime.	2019/20	Parkswide
Analyse the impacts of climate change on the urban forest and develop appropriate responses.	2019/20	Parkswide
Explore adaptations to planning and local law requirements which facilitate greater protection of trees.	2018-19	Strategic Planning
Improve pre-planting soil preparation to allow for oxygenation and water movement for the benefit of tree roots where possible and include mulching and drenching to prevent evaporation and increasing the infiltration of water in soil.	2018/19	ParksWide
Expand existing education and communications to inform the community of the benefits of the urban forest	2018/19	Parkswide
Explore adaptations to planning and local law requirements which facilitate greater protection of trees.	2018-19	Strategic Planning

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Municipal Association of Victoria (MAV) Risk Assessment Tool

Bushland Reserves Fire Management Strategy 2010

Preventing death and serious injury from falling trees and branches - Andrew Brookes
La Trobe University, Bendigo

Waverley Council Tree Management Policy - 55 Spring St, Bondi Junction. NSW 2022

3. Appendix 1 – Urban Forest Policy

3.1 Background

Council recognises the environmental, social, economic and aesthetic contribution that trees afford to our residents. There are also significant complexities in the effective and sustainable management of the Urban Forest. This policy has been developed in order to provide clarity and direction to the ongoing management of trees in the municipality.

This policy replaces the previous Streetscape Policy and Strategy, 2002.

3.2 Vision

Council has a resilient, healthy and diverse urban forest providing benefits for the entire community, in the present and for future generations. Councils landscape character is defined by attractive treed streetscapes and open spaces that are well planned and well maintained. The urban forest enhances the liveability of our city and fosters a strong community connection with nature.

3.3 Scope

This policy relates to trees on public land, owned and managed by Council including street trees and park trees. This policy does not incorporate trees on private land or trees managed by other agencies.

3.4 Responsibility

Responsibility for the delivery, maintenance and updating of this policy rests with Manager ParksWide supported by:

- Co-ordinator – Natural Environment; and,
- Council Arborists.

3.5 Legislation

This policy has been developed with consideration to the following legislation:

- Local Government Act 1989 (Vic)
- Energy Safe Victoria Act 2005.

3.6 Policy

3.6.1. Street Tree Removal Policy

Council will retain all street trees where possible and appropriate. Street trees may only be removed if the following conditions are met:

- a) The tree is hazardous, structurally unsound, damaged, diseased, dead or in decline and no further remedial techniques are appropriate.
- b) The tree is causing damage to property, public utilities and the cost of ongoing remedial works becomes uneconomic, i.e. the cost of the perceived ongoing repairs outweighs the value of the tree and there is no reasonable alternative to solve the problem.
- c) The tree is causing an immediate safety hazard to the public or poses a serious health risk.
- d) The tree has been indicated to be removed on a streetscape upgrade plan or works program approved by Council.
- e) Where powerlines have been removed and a tree is of a species or has been pruned in such a manner that the development of an adequate canopy is unlikely.
- f) Where a tree to be removed has been indicated in a property development plan approved by Council, provided that the developer meets the cost of the existing trees' amenity valuation (Version 2, 2015) and the cost of removal and a replacement tree. The replacement tree will be of an appropriate size and species within the development area.

The General Manager – Infrastructure may approve the removal of a tree that does not fit these circumstances under exceptional circumstance. Residents may make an application in writing to the GM – Infrastructure to have a decision reviewed.

A tree is considered **dead** or **dying** if more than 50% of the tree is dead and the tree is no longer capable of sustaining a full healthy canopy regardless of all possible remedial actions that could be undertaken to regenerate the tree.

A tree is considered **hazardous** (or **structurally unsound**) if it has a defect that may cause injury or property damage if not removed. Where remedial measures can be implemented to remove (or reduce) that hazard, consideration should be given to these measures prior to tree removal.

Whether a tree is dead, dying or hazardous can only be determined by Council's appointed qualified Arborists which may include consultant Arborists appointed by Council.

In some situations, such as Bushland Reserves, Council may elect to retain a dead or dying tree if it is considered a Habitat Tree of significant value or if it were to fail would fall in to an area not accessible to the public.

3.6.2. Street Tree Planting and Establishment Policy

The purpose of the tree planting policy is to set guidelines for the planting of street trees at:

- Individual sites,
- Multiple sites in a street or a whole street.

The aim is to improve the physical environment of the City through the planned planting of appropriate tree species while providing opportunities for the community to have input to the process and to have a tree planted in all available sites within the municipality.

3.6.3. Targets

Council commits through this policy to

- a) A target of a minimum of one (1) tree adjacent to each residential property, including both nature strips in the case of a corner block; and,
- b) Replacement of any tree removed.

In some cases, a nature strip may not be an appropriate site for planting due to other constraints. These sites may be excluded from the planting program.

An annual tree planting program will be developed taking into account resident requests. The Urban Forest Strategy will guide the prioritisation of planting locations.

3.6.4. Species Selection

Appropriate tree species will be chosen by Council staff. Tree selection shall take into account:

- a) Council Streetscape Policy and Strategy
- b) Its potential size at maturity
- c) Its resistance to pests and diseases
- d) Its suitability and adaptability to drought and climate change
- e) Historical character of the street and the use of existing species wherever possible
- f) Existing street trees
- g) Available growing area
- h) New species previously trialled in other locations
- i) Its contribution to urban biodiversity
- j) Linkages to natural indigenous corridors and reserves
- k) Growing conditions and
- l) Availability of species

Council may provide opportunity for residents to input into the specific species selection where more than one species is determined to be suitable.

Planting constraints

Minimum distances of trees from objects should be:

- a) 2.0m from driveways;
- b) 3.0 metres from power poles;
- c) 8 metres from corner of property boundary at intersections (15 metres on main roads);
- d) 2.0 metres from fire hydrants;
- e) 2.0 metres from service pits; and,
- f) 3.0 metres from service wires.

Trees should not be planted over incoming gas and water services.

All trees planted must ensure compliance with the *Disability Act, 2006* (Vic)

3.6.5. Tree stock

Council will only use quality nursery stock from its approved suppliers according to latest best practice and Australian Standards (AS 2303:2015 - Tree stock for landscape use). All trees supplied will conform to the NATSPEC guide "*Specifying Trees – a guide to assessment of tree quality*", and be grown by accredited nurseries that carry the appropriate Nursery & Garden Industry Victoria accreditation.

3.6.6. Tree Establishment

Tree planting will occur on an annual basis with an establishment period of three years.

In order to improve tree establishment and longevity, the following program will be undertaken:

- Year 1, tree is planted, pruned, mulched twice, watered, fertilised and maintained weed free;
- Year 2, tree is mulched, watered, fertilised and maintained weed free, stakes are removed; and,
- Year 3, tree is formatively pruned, mulched, watered if required.

This program will operate for all newly planted trees. By the end of Year 3, the tree should be well established and able to become part of the standard city wide pruning program. Residents will be encouraged to assist in the establishment of street trees, by additional watering.

1.1 Pruning Policy

1.1.1 Principles

All trees will be inspected by Councils Arborists prior to any pruning being undertaken. Any pruning deemed to be required will be undertaken in accordance with relevant Australian Standards and the principles of modern arboriculture:

- a) Do no harm. Any arboricultural intervention should not do harm to the tree. No intervention should contribute to making the condition of the tree worse in the medium to long term.
- b) Trees are living organisms and all arboricultural management practices should accord with basic biological principles. Any pruning activity should minimize the area of an open wound and capitalize upon the tree's natural mechanisms of growing over and sealing off.
- c) Trees are sophisticated organisms. Their large structures and longevity demonstrate a complex biology and effective biological defence mechanisms. These defence mechanisms against pests and diseases are the strongest and most effective available. Arboricultural practices must not undermine, but rather complement them.
- d) Stressed and aged trees have a reduced capacity for defence and so are prone to attack by pests and diseases. Their management requires greater care than for young healthy vigorous trees.
- e) 'Prevention is better than cure', which suggests that preventing structural deformity, disease or decay is a superior management approach than trying to remedy problems once they arise.
- f) A non-or minimal-interventionist approach will be followed. Intervention in the natural growth of the tree should only occur through necessity, and under conditions where the biology and the physiology of the trees are understood such that intervention will have clear and predictably beneficial outcomes.
- g) All interventions must be done in such a way as to minimize the spread of pests and disease. This necessitates the adoption of basic hygiene when dealing with trees that have been attacked by pests or diseases.

Incorporating the above principles, all pruning undertaken on trees within the municipality will comply with AS 4373-2007 - Pruning of Amenity Trees. All work shall be performed so as to maintain a well balanced, healthy and safe tree, pruned in a manner that is as aesthetically pleasing as practicable, to maintain the shape and character of the tree and the streetscape in general.

1.1.2 Formative Pruning

Young trees in an urban environment will at some point compete for above and below-ground space with infrastructure such as buildings, footpaths, roads and power-lines. Trees require formative pruning to achieve and maintain clearance from this infrastructure and for the development of a strong scaffold branch structure.

To protect and enhance its tree population, Council sets and maintains very high standards for pruning of its trees. All tree pruning shall be carried out using industry best practice standards, and shall be to the satisfaction of the Designated Officer.

All work shall be performed so as to maintain a well balanced, healthy and structurally sound tree, pruned in a manner that is as aesthetically pleasing as practicable, to maintain the shape and character of the tree and the streetscape in which it is situated.

Trees must be pruned to train young trees for the development of a strong scaffold branch structure in accordance with the following requirements:

- dead, diseased, damaged, poorly structured and crossing branches must be removed to improve structure, this includes undesirable root stock growth and water shoots;
- do not remove more than 30% of an individual trees canopy;
- Trees with natural strong single leader growth shall be pruned to encourage lateral and main leader growth;
- Trees which are naturally multi-trunked shall be pruned to enable balanced lateral and main leader growth;

- under prune laterals for no more than 30% of the height of the tree from ground level; and
- treat co-dominant stems (V-Crotches) during formative pruning thus allowing growth to continue as a single leader or multiple leaders rather than twin bifurcated leaders.

1.1.3 Shaping

The shaping of trees will occur;

- to encourage good healthy branch structure within the tree canopy, as per criteria defined for formative pruning in this Council's Specification;
- for clearances around power lines in accordance with the Electrical Safety (Electric Line Clearance) Regulations 2005; and
- for height clearances over roads, paths and driveways etc.;

For those young trees beneath electricity supply lines, pruning shall be undertaken to lateral branches using directional pruning techniques, at a point/s 2 metres beneath main electricity lines, to allow for the tree to grow around the supply at the specific distances required by the Electrical Safety (Electric Line Clearance) Regulations 2015.

1.1.4 Road and Footpath Clearance

Trees will receive crown/canopy lifting to achieve the following clearances in line with relevant standards and legislation:

Over Footpaths:	3.0 metres
Over Front Gardens:	3.0 metres
Over Driveways:	3.0 metres
Over Roadway:	4.3 metres
Over Roadways which are arterial roads (Road Management Act 2004)	4.5 metres
Over Nature Strips:	3.0 metres
Traffic Lights and Signage:	Clear visibility

1.1.5 Private Property Clearance

All branches overhanging private property boundaries shall be pruned to a height of three (3) metres above private boundaries. Branches/foliage in contact with buildings shall where possible, be pruned to achieve a three (3) metre clearance unless pruning would affect a major structural limb and or major canopy reduction (over 30%).

Remedial pruning

Trees will be pruned if deemed appropriate by Councils Arborists to remove the following:

- a) deadwood and/or dying branches 25 mm diameter or larger;
- b) all suckering growth back to the main trunk. Remove epicormic (weakened) growth.
- c) branch stubs from previous pruning, where 25 mm diameter or larger;
- d) crossing and/or cracked limbs;
- e) branches less than 75 mm diameter cleared up to 600 mm around service wires;
- f) any mistletoe in trees;
- g) clearance of branches from single trunk to a height of 1500 mm above ground level where possible; and,

h) any structurally weak branches or poorly formed co-dominant stems.

1.1.6 Street Lights

Foliage trees around street lights must be cleared to enable reasonable lighting levels at night.

1.1.7 Topiary pruning

These trees (mostly Ficus species) existing within shopping precincts shall be pruned to maintain their round ball shape twice a year. No more than one third of canopy shall be pruned at any one time.

1.2 Objections

Trees can be an emotive issue amongst a small portion of the community.

The benefits of trees in the landscape far outweigh the common objections raised by the community. Council will not remove or delay planting of trees based on any of the following or similar objections.

Tree litter/debris, Leaf, Berry and Fruit fall

- a) Resident requesting an inappropriate species
- b) A perceived danger that a tree might fall in a storm
- c) A desire to re-landscape
- d) Previous failures of limbs
- e) Aesthetics/size of a particular species
- f) Access for solar panels or to increase the capacity of solar panels
- g) House re locations
- h) House alterations requiring the relocation of the crossover
- i) Swimming pool installation and perceived problems with roots and/or falling leaves
- j) Shading of lawns, pools and gardens
- k) Improvement of views (including advertising and signage)
- l) The reduction or the impact from any bird, bat other animal waste or noise
- m) To reduce minor allergenic or irritant responses
- n) Re location of utility services ie: power/service lines
- o) Unjustified/unproven property damage claims
- p) Root intrusion in to gardens
- q) Reduce the overhang of foliage over properties beyond the levels stated in 1.1.5
- r) The perceived height of newly planted trees
- s) The damage a newly planted tree may cause in the future
- t) An aversion to the species of a newly planted tree

4. Appendix 2 – Tree Management Plan

4.1 Risk Management

To date, risk management has been based on a reactive service of responding to customer requests and the cyclic pruning program to identify faults in trees. The cyclic pruning program will allow for recording of defects or development of databases to identify trends with species or specimens over time.

Risk management will be substantially enhanced with the introduction of a city wide tree inventory/data collection and regular auditing. Risk can be mapped, hot spots identified and proactive measures taken across the city to reduce the risk posed by defective/problem trees. It is envisaged that this would have a corresponding effect on reducing insurance claims against council and reducing exposure to liability.

A comprehensive risk analysis and evaluation will be undertaken during any inspection. The objectives of risk analysis is to separate the minor acceptable risks from the major risks and to provide data to assist in the evaluation and treatment of risks. Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that these consequences may occur. Factors which affect consequences and likelihood may be identified. Risk is analysed by combining estimates of consequences and likelihood in the context of existing control measures. The majority of inspections will be undertaken from the ground. Aerial inspections may be undertaken when more than one of the following criteria is met:

- The upper canopy is full, dense and obscured from the ground
- The tree is not accessible from the ground
- An excessive amount of deadwood is present
- There is a suspicion of a major pest or disease outbreak
- The tree is amongst a group of close plantings
- Access for a ground inspection is restricted
- Weather conditions restricts visibility
- Current risk registers for all tree related works will be reviewed/updated annually.
- In determining the risks and risk control methods associated with trees and tree roots, Council will inspect the tree to ascertain:
 - The tree's Structural Root Zone (SRZ)
 - The proximity of the tree to the damaged asset
 - Obvious visual signs of tree root related damage at the site
 - The maturity of the tree
 - If the tree is classified as an approved species for the location/size of planting site within the current tree planting policy
 - Soil Profile / Reactivity
 - Previously removed trees
 - Drainage
 - Proper construction methods of the damaged asset have been adopted
 - Environmental factors
 - Age of asset

Appropriate remedial works, if deemed necessary, are likely to include:

- Tree pruning
- Root pruning, root barriers;
- Installation of passive irrigation; and,
- Cabling.

Council will undertake two levels of inspections when assessing trees.

4.1.1 Level One inspection

A Visual Tree Assessment (VTA) is a world-wide arboricultural industry standard of assessing trees from ground level looking for any external signs of decay, physical damage or growth related structural defects. The majority of all inspections undertaken are from ground level (level one inspection).

4.1.2 Level Two inspection

This type of inspection is undertaken by physically climbing the tree or other aerial means such as use of an elevated work platform. The need for a level 2 inspection will be determined by the attending arborist based on the following criteria:

- the ground surrounding the tree inhibits the arborist from standing near the tree;
- the upper canopy is full and obscured from the ground making it difficult to fully observe the internal canopy;
- the suspicion of decay or structural faults;
- a branch failure in the extremities of the canopy where the detachment point is not visible from the ground; or,
- failed limbs still present within the canopy.

4.2 Infrastructure conflict

It is recognised that the interface between trees and other assets can result in damage to one or other of the assets. Council's maintenance regime will address the majority of this issue in new plantings, but there are legacy planting issues which will require management in the future.

Council has an inspection regime for publicly owned assets which identifies remedial measures to be taken. This occurs on a biennial basis.

In addition Council responds to service requests for damaged infrastructure such as footpaths that represent trip or other hazards. Neighbouring trees and root networks will be inspected when damage is apparent. These are inspected and rectified by council on an as needs basis.

It is recognised that there is potential for damage to private assets from Council's street and park trees. Where this occurs, Council will investigate solutions for reasonable repairs.

In many cases the cause is not the tree. Infrastructure damage can occur due to other factors. For example:

4.2.1 Brick fences

- a) The plantings within the property, against a fence, have the potential to cause and may have caused damage to fences. Removal of significant vegetation that may have caused damage to the fence in the past can not be discounted.
- b) Soil build against a fence. This would certainly cause or have the potential to cause pressure against a fence, particularly if insufficient drainage was lacking. Weep holes to enable sufficient drainage is essential in keeping the integrity of any wall.
- c) The tree on the naturestrip could be semi mature and roots found within the property and the crack and damage to a fence are inconsistent in their extent and magnitude.
- d) No plans for the construction of a fence have been provided, (footings and pillars may not be adequate). Poor construction may be attributed to the condition of the fence in its present form.
- e) The fence has an outwardly lean, leaning from the property towards the footpath, suggesting the failure in the fence lies from within the property. Either in the initial construction of the fence or having used the fence for the wrong purpose i.e.: a retaining wall.
- f) The fence is of some age and is in disrepair due to its age.
- g) Roots from private vegetation found near the fence and piers. These roots could be in direct contact with the fence.

4.2.2 Tree roots and pipes

- h) Any roots that have entered any pipe do so due to the fact that a point of entry has been created (ie: damaged or improperly sealed pipe) roots do not actively seek out water by cracking pipes and then entering them, it is fair to say roots do not enter properly maintained pipes.
- i) Root pruning works can be undertaken as a preventative measure. This in no part suggests or guarantees that roots will be found within the excavation. All root pruning works will be undertaken in accordance with the AS 4970-2009, Protection of Trees on Development Sites.
- j) A homeowner remains responsible for the care and upkeep of their underground services. Terra cotta plumbing may for various reasons permit cracks to form allowing moisture to escape into the soil thereby quite naturally attracting tree roots to the source of the leak.
- k) Tree roots are not known to enter a functional service but rather will exploit points of leakage.
- l) Tree roots rarely grow to the depth of underground services, their lateral root structure being incapable of exerting pressure on a sealed service. Soil softened however by escaping moisture will in contrast attract roots toward the source. Plumbers recommend the installation of PVC fittings to more adequately prevent these difficulties arising.
- m) Councils are required to maintain uniform streetscapes and are not considered liable for naturally occurring actions such as tree roots entering a leaky pipe system.

4.2.3 Determining liability

As part of the process for determining damage to private assets, the landholder must submit some or all of the following:

- An arborist report detailing the species of the tree/s implicated in the damage and any other trees that could also be contributing to the damage. The report may also contain:
 - Results from recent excavation detailing the presence of tree roots in the vicinity of the damages structure
 - Mitigation measures that may be implemented to stop or reduce the potential for tree damage.
 - Measures required to make good.
 - Photographic evidence.

In the case of damage to built infrastructure:

- A report from a suitably qualified engineer that may detail:
 - Adequacy of the strength of the structure in accordance with current legislation, regulations, guidelines or Australian Standards
 - Suitability of the footings of the structure in accordance with current legislation, regulations, guidelines or Australian Standards and in context with soil type
 - The type of soil, its reactivity and any implications
 - The results of a long-term level survey detailing how the structure has moved over time.
- The plans for the construction of the fence/dwelling etc.
- The permit issued by Council
- The year the fence/dwelling etc. was built
- Depth of footings
- Any works undertaken to the fence/dwelling etc. since construction
- Soil profile
- Any vegetation removed since the construction of the fence

In the case of perceived damage to pipes:

- A report from a plumber or other professional detailing the results of excavation or CCTV footage in relation to damage to underground utilities or assets.
 - The location of the pipe
 - Soil profile
 - The location of the damage/leak
 - The type of pipe ie: plastic, etc
 - The year of installation

Sufficient evidence must be supplied to Council in order that a decision can be made based on fact and not on supposition and assumptions.

4.2.4 Trees and Power Lines

The *Electricity Safety (Electric Line Clearance) Regulations 2015* became law and operational on Sunday, 28 June 2015. The new regulations incorporate a number of significant changes from the 2010 Regulations that will help achieve a better balance between safety, amenity and environmental considerations when managing vegetation around power lines.

Council will prune trees beneath overhead electrical supply lines working towards compliance with Energy Safe Victoria, the current Electric Line Clearing Regulations and Councils current Electric Line Clearance Management Plan (ELCMP).

Council will undertake its duties as the responsible person as set out in the Electricity Safety Regulations (2015). The following are the key objectives of Council fulfilling its stated duties:

- Safety to public and property.
- Maintain a safe work environment for staff and contractors.
- Management of trees for aesthetic, cultural, ecological or environmental significance.
- Maintain continuity of power supply.
- Customer satisfaction.
- Minimise the fire risk from electrical conductors.

Management procedures adopted by Council to ensure compliance with the Code of Practice is:

- Biennial assessment of all tree's under powerlines
- Biennial pruning of all tree's under powerlines, in some circumstances annual pruning will be undertaken
- Through the development of the specification for the maintenance and management of street and reserve trees has identified pruning outcomes that will over a number of years work towards compliance of the code
- Work in conjunction with the power supply authority to achieve better outcomes
- Applying for exemptions under the 2015 Regulations (Part 2—Prescribed Code of Practice and related provisions).

The development of Council's internal database and its biennial audit will allow the efficient search of trees that require pruning for powerline clearance outside the current program.

Following identification of trees that are potentially in conflict with powerlines, Council will program the associated works with its current contractors. In the event that there are no works required this will be noted and the tree reinspected in two years.

Council will continue to review its Electric Line Clearance Management Plan annually and have it available to residents and Energy Safe Victoria.

4.3 Tree planting and establishment

Council is known for its formal tree-lined boulevards and avenues and informal natural corridors of indigenous tree species, which link its high quality open space and native bushland reserves.

Council has an estimated 75,000 street trees, located within road reserves, generally in naturestrips, medians and park frontages. Tree replacement will be considered at the end of a trees safe useful life expectancy. The average expected life of a street tree in Whitehorse is approximately 50 years with a range of 10 to 70 years, species dependent.

Council intends to increase its population through strategic street tree planting by way of whole street upgrades, an aging urban forest renewal program as well as selective infill tree planting. Planting occurs between April and September every year with watering and maintenance on newly planted trees commencing in November, earlier if warranted.

When determining the designated species for streets, Council will endeavour to select the most appropriate species for the location and will consider factors including but not limited to;

- naturestrip widths;
- surrounding and underground infrastructure;
- Resilience to climate change;
- Overall contribution to the urban forest resilience;
- over head powerlines; and,
- Existing street character.

Council will maintain the tree and undertake all pruning requirements to adhere to all clearance, statutory and legislative obligations. The tree will be maintained by Council, both during the establishment phase and in to its maturity.

Semi-advanced and advanced tree stock, (nominally trees from 1.5 metres to 5metres in height), shall be planted at various locations in the municipality. Typical sites shall be:

- a) Naturestrips in residential streets
- b) Strip shopping centres
- c) Median strips in main roads

4.3.1 Aging Urban Forest Renewal Program

Council has a number of significant avenues of the same species that are ageing and will need replacement. The significant street tree avenues in Whitehorse have been identified and trees will be inspected and assessed, for their useful life expectancy, health and structural integrity. Once trees have been identified as being a high priority for removal, they will be removed and replaced with established trees in the following planting season to ensure that there are no large gaps in our avenues. The intent of this planting program is to systematically remove trees that have reached their Safe Useful Life (SULE) and replace them with advanced stock. It is envisaged that approximately 30 trees per year be removed and replaced. Streets with an established theme species, ie: *Quercus palustris* (Pin Oak) will be replaced with the same or similar species, resulting in the continuation of the existing avenue and theme. Trees considered to be a lower priority for removal will be monitored and programmed for removal in following years once all the high priority trees have been removed. This is a long term program aimed at ensuring that we can maintain our significant avenues for generations to come.

4.3.2 In Fill Program

Throughout the year, Council will remove nature strip trees that are dead, dying or hazardous. The residents of the adjoining property are advised of the removal. Site inspections to identify vacant sites where trees have previously been removed will be undertaken annually. All vacant sites will be listed on Councils database once

established with the location (address), species of tree to be planted and the number of trees required for the site.

4.3.3 Tree Establishment

Tree planting will occur on an annual basis with an establishment period of three years.

In order to improve tree establishment and longevity, the following program will be undertaken:

- Year 1, tree is planted, pruned, mulched twice, watered, fertilised and maintained weed free;
- Year 2, tree is mulched, watered, fertilised and maintained weed free, stakes are removed; and,
- Year 3, tree is formatively pruned, mulched, watered if required.

This program will operate for all newly planted trees. By the end of Year 3, the tree should be well established and able to become part of the standard city wide pruning program. Residents will be encouraged to assist in the establishment of street trees, by additional watering.

4.3.4 Planting Procedure

For all semi-advanced and advanced trees, excavate and remove soil to create a hole 300mm larger than the rootball. Backfill hole with excavated clean soil with approved soil conditioner, or imported topsoil if specified. Ensure all excavated material is broken down to 50mm diameter clods maximum.

Where planting is shown in straight or curved rows ensure that trees are placed straight and true to line – use a string line where required.

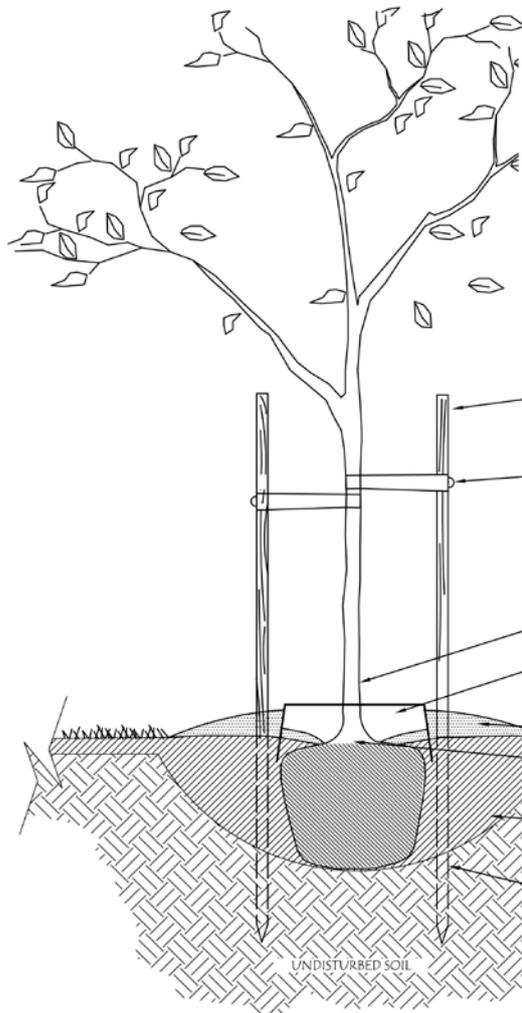
A raised ring of soil capable of holding at least 10 litres of water, shall be constructed at the base of each tree, as detailed, to provide a basin for watering. Mulch is to be placed around the basin and shall not be placed around the base of the trunk.

Trees shall be watered immediately on backfilling to ensure the rootball is fully moistened and the surrounding area is soaked to 200mm from the rootball all around the plant.

Install stakes and ties as per detail in planting detail. Stakes shall be structurally and visually free from defects.

4.3.5 Tree Stock

All tree stock will be sourced from Councils approved list of contracted suppliers. Trees purchased for planting will be in accordance with guidelines of NATSPEC -*Specifying Trees - a guide to assessment of tree quality* – Ross Clark, in accordance with Draft Australian Standard DR 101589 CP Tree Stock for Landscape Use and sourced from nurseries with Nursery & Garden Industry Victoria accreditation. Tree stock will also be sourced from Councils nursery.



- TREE PLANTING NOTES**
1. THE LOCATION OF THE PLANTS SHALL BE ESTABLISHED PRIOR TO PREPARATION WORKS.
 2. ALL WEEDS SHALL BE REMOVED FROM THE PLANTING AREA PRIOR TO PLANTING.
 3. ROCKS GREATER THAN 50MM SHALL BE BROKEN DOWN AND REMOVED.
 4. TOPSOIL SHALL NOT BE CULTIVATED INTO UNDERLYING SOIL LAYERS.
 5. THOROUGHLY WATER PLANTS PRIOR TO PLANTING.
 6. ALL PLANTS TO BE THOROUGHLY WATERED IMMEDIATELY AFTER PLANTING.
 7. SERVICES SHALL BE LOCATED WITH SERVICE AUTHORITIES PRIOR TO SETTING OUT AND EXCAVATION.

2 x hardwood stakes of an appropriate size for the planting stock pointed at one end and free from knots, splinters and cracks.

15mm galvanised staple or approved fixing for flexible ties to allow movement of trunk.

Set tree plumb and level.

Plastic waterwell inserted 100mm deep into the soil surface. Add 20mm depth of composted, organic mulch within the waterwell. Keep clear of the tree trunk.

75mm high mulch up to the waterwell.

Top of rootball flush with finished level of the planting hole.

Dig a sloping shallow hole, 2 to 3 times the width of the root ball and no deeper. Roughen the sides. Backfill with site topsoil firming progressively.

A third of the stake shall be driven into the ground clear of the root ball.

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LO1

TREE PLANTING DETAIL

N.T.S.

4.4 Tree Protection

All possible opportunities will be explored to accommodate Council managed trees as part of any future or current development. Developments will not encroach above 10% of the Tree Protection Zones (TPZ) of any Council managed tree in line with the permitted *AS 4970 (2009) Protection of Trees on Development Sites*. When designing any development the construction of any crossover shall have minimal impact on any trees health. Clearance distances should be adequate to sustain the future of the trees health, root network, vigour and structure to senescence (old age). Any excavation within the Tree Protection Zone (TPZ) should be undertaken by hand, hydro excavation or air spading to ensure adequate protection of the trees root network. Any tree recommended to be retained as part of any development should be protected during the construction phase with temporary fencing.

The following conditions apply within TPZ's

1. No building material shall be permitted to be stored or stockpiled within the Tree Protection Zone.
2. No soil or building debris shall be permitted or stored or stockpiled within the Tree Protection Zone.
3. No alteration to soil levels will be permitted within the Tree Protection Zone.
4. No compaction of the ground within the Tree Protection Zone will be permitted.
5. No vehicles shall be permitted within the Tree Protection Zone.
6. No fuel, oils or chemicals shall be permitted, used or stored within the allocated Tree Protection Zone. Any spills shall be cleaned up immediately.
7. Any pruning required shall be undertaken in accordance with Australian Standard AS AS 4373-2007 - Pruning of Amenity Trees.
8. No fixtures, wiring or building materials shall be attached to the tree during, before or after the construction phase.
9. Additional watering shall be provided throughout any dry periods during and after the construction phase.

Council will provide feedback to developers and residents on how a tree can be retained as part of any development. Recommendations may include;

- minimum clearance distances to trees
- alternative construction methods
- re-designing of the development
- trenching options ie: boring, hand excavation, hydro excavation etc.

Where a Council managed tree is required to be removed (after being approved by Council's arborist) in relation to a development, the associated amenity valuation (cost) of the tree, its removal, replacement and maintenance for a period of 3 years shall be paid by the property owner or representative prior to the removal.

No council tree may be pruned unless authorised by Council. The pruning of roots and branches will be in accordance with AS 4373-2007, Pruning of Amenity Trees.

The following formula has been prepared to assist with calculating the monetary amenity value of a tree in the City of Whitehorse. This value will be charged to the developer by the City of Whitehorse when a tree is removed. The Amenity Value Formula used by the City of Whitehorse was developed from the formula used by the City of Melbourne. This formula was prepared by Dr. Peter Yau (1990) from the Maurer-Hoffman

Formula. The basic monetary value of a tree is determined by matching the trunk diameter at breast height (DBH) with its corresponding value. This Amenity Valuation will cease to be valid after a period of 12 months from the date of the valuation after which time a new valuation must be obtained by the developer.

Council will update the basic value of trees annually in line with the Consumer Price Index (CPI).

4.4.1 Tree Amenity Value Formula

Value (V) = Basic Value (\$) x Species (S) x Aesthetics (A) x Locality (L) x Condition (C)

- **Species Factor (S)** - A tree is assessed according to its known natural life span and its rate of growth in a particular environment. For example, a long-lived tree will be scored higher than a short-lived tree. Significant features to the tree will also modify how the tree is scored. Judgement regarding species factor must be made by a qualified Arborist.
- **Aesthetics (A)**- The aesthetic value of a tree is determined by the impact on the landscape if the tree were removed. This category is closely tied to the locality factor.
- **Locality (L)** - The locality factor is determined by the tree's geographical situation. Trees in a bushland area or important tree lined avenue score highest because of the importance of the tree to the growing environment in which the tree is located.
- **Tree Condition (C)** - The tree condition value is determined by the trees: trunk, growth rate, pests and diseases, structure, canopy development and life expectancy.

When young trees with a 5cm trunk diameter or less will be replaced by another tree, there will be no amenity value charge. The removal of trees with a trunk diameter greater than 5cm however, if replaced with another tree, will be calculated and charged, the average amenity value of a young replacement tree.

4.4.2 Management of trees on reserved roads

Within the municipality, there are a number of reserved roads. Historically these roads, not being on Council's Road Register have not been pruned. In 2014 Council made a commitment to prune trees within reserved roads. The pruning undertaken within these streets will be undertaken annually and be pruned keeping in mind the species (native and indigenous) and the specific requirements when pruning trees of this age and species. Council from time to time will be required to perform additional pruning of these trees outside of its annual program.

Streets include:

- Linum Street, Blackburn
- Laurel Grove, Blackburn
- Boongarry Avenue, Blackburn
- Laurel Grove, Blackburn
- Furness Street, Blackburn
- Jeffery Street, Blackburn
- Sanders Road, Box Hill
- Hovea Street, Mitcham
- Irvine Street, Mitcham
- The Glade, Mitcham
- Grove Street, Vermont
- Moore Road, Vermont
- Canowindra Close, Vermont South



Council is responsible for maintaining trees on nature strips and within the road reservation whether it is clearly defined as a naturestrip or not.

Furthermore, Council is required to prepare and present for approval to Energy Safe Victoria (ESV) an annual Power Line Vegetation Management Plan. The Plan describes how Council will manage vegetation in the vicinity of power lines to ensure compliance with the Electricity Safety Act 1998 and the current Electricity Safety (Electric Line Clearance) Regulations 2015. Under Section 84C of the Electricity Safety Act 1998 it is Council's responsibility to prune the vegetation clear of the power lines on a bi annual cycle.

Under the *Electricity Safety Act 1998*, Council is responsible for the clearance of vegetation from powerlines (under a statutory duty and a common law duty) growing within roads in the municipal district *so long as* –

- (a) The roads are vested in Council;
- (b) The trees are situated on the land that is vested in Council;
- (c) The electric lines are not privately owned; and,
- (d) It is reasonably required to clear the trees from the electric lines because the trees *are* affecting the safe supply of electricity or the reliable and secure supply of electricity.

The electrical distribution businesses and Energy Safe Victoria conduct inspections and audits of power lines and foliage in the municipality to ensure the Council tree maintenance regime is compliant with the Power Line Vegetation Management Plan.

4.5 Pest and disease control

Managing pests and disease is vital in maintaining the canopy coverage of the existing Urban Forest. This will involve monitoring, containment, treatment and in some instances eradication. Council will establish and maintain a diverse tree population so that the Urban Forest is less prone to pest and disease attacks. Continual monitoring of the tree population through its data collection will enable Council to contain and where necessary treat any significant pest and disease outbreaks. Biological control will be the preferred option. Major pests and diseases threats to the Whitehorse tree population include:

DISEASE	CONTROL/ERADICATION MEASURES
Elm Leaf Beetle	Current measures will continue. Soil injection periodically from late autumn to spring. This treatment is the preferred method being the safest option and effective for 2-3 years. Biological control options are also available.
Myrtle Rust	Detected in Victoria in 2011 no cases observed within Whitehorse. Implement a fungicide spray program.
Cypress Canker	The most significant of the pathogens currently affecting exotic conifers in Victoria. The canker has been found to have spread rapidly in both urban and rural areas alike. There is no proven cure for this disease. Council has removed effected trees to control the spread of the pathogen.
Giant Pine Scale	Detected in Victoria in 2014 no cases observed within Whitehorse. Monitoring of the Pine population will continue.
Borer/termites	There are very few proven treatments for the treatment of borer. Council will consider removal of effected trees to control the spread of borer. Requests received about termites in trees in Council managed trees will be inspected by Councils arborist. However, as termites are a natural part of the environment, Council may not take any action to treat termites. It is the responsibility of the property owner to protect their own assets from termite infestation.
Bracket Fungi	There is no treatment for the removal of bracket fungus. The removal of infected branches to prevent further spread will be undertaken. Further monitoring of the tree to ascertain deterioration and declining health.

4.5.1 Action Plan for Plan for Pest and Disease Control:

- Council will implement a register of locations where significant out breaks of pests and diseases exist through its tree inventory.
- Bi-monthly inspections will be undertaken on the condition of the trees.
- Any works required particularly removal should be undertaken immediately to stem the spread of the pest or disease.
- All pruning implements that are used to remove or prune trees should be sterilised to inhibit the spread of any pest or disease.
- Alternative species other than the affected species should be planted to replace the trees that are removed.

4.6 Trees in Parks and Reserves

Council has more than 690 hectares of open space including bushland reserves, parks, gardens, recreation reserve, trails and streetscapes that create a pleasant urban environment. These open space sites equates to 10.7% of the area of the municipality.

4.6.1 Bushland

Council manages a number of bushland parks throughout the municipality. Many of these areas are natural remnants of the original vegetation that existed on the site before developments occurred. Some areas are recreated or revegetated through the introduction of native plants. Sizes of bushland areas vary from small clumps that may only be few square metres through to vegetation that occupies a number of hectares.

Bushland parks provide a home for local native wildlife and also ensure that native and other indigenous, or local vegetation, is preserved. There is a significant commitment by the local community to help practically in the management of bushland sites.

Council is responsible for ensuring public safety in open space areas. The pruning and /or removal of trees is a sensitive issue. Dead trees and branches, especially over pathways, playgrounds and high activity areas can pose a threat to public safety. Council has seen a significant increase in requests for dead branch removal, especially in bushland areas.

A Bushland tree hazard/habitat pruning program is currently in place. Trees are pro-actively inspected and audited for their health, hazardous rating and pruning/removal requirements. Inspections are undertaken on a three year cycle.

Council has developed a formalized “walk through” process which informs the Community / Advisory Committees of the decision-making process relating to the safety of individual trees. The process balances Council’s responsibility to ensure safety of park users, and the environmental / ecological benefits of vegetation including dead branches / trees in open space areas.

Individual reports / requests regarding dangerous trees will continue to be investigated on a case by case basis with Parkland Advisory Committees and related community groups being notified prior to impending works. In emergency situations Advisory Committees and related groups will be advised as soon as practicable.

4.6.2 Habitat

Trees in bushland sites are managed differently to those situated in amenity parks and streetscapes. Trees are valued for their habitat value in bushland sites and are often pruned rather than removed. Logs are often left remaining on site to mimic natural environments. Habitat Trees are those that have significant habitat value – i.e. specific features or attributes, such as nesting hollows or perches, which provide habitat for fauna.

Council may elect to retain a tree – usually a dead or dying tree – if it is considered to have the above attributes suitable for habitat purposes and the tree may require pruning to reduce the risk that a dead or dying tree might otherwise present to “targets” within its vicinity.

“Habitat Pruning” is carried out to remove any hazardous limbs, such as dead or structurally defective limbs, and retain habitat features such as hollows, which are usually found in the main trunk or secondary leaders. The formation of decay within the limbs is necessary in order for hollows to form, thus increasing the habitat value.

Habitat Trees are usually confined to Bushland sites however Council may nominate any tree as a suitable Habitat tree.

4.6.3 Woody Weeds

A natural bushland setting relies on the plants within the landscape being of local indigenous origin. When settlement occurred many exotic species of trees were introduced that have thrived in our local environment. Seed can often be spread by wind, birds, water courses and other means resulting in unwanted trees, plants and grasses. These unwanted trees are referred to as ‘Exotic Woody Weeds’. A three year woody weed program currently exists to eradicate species like Pittosporum, Cotoneaster etc. from the natural environment.

Under the Vegetation Management in Parks Policy (2009), removal of these trees will reduce the amount of introduced exotic species and lower the amount of seed generated in the natural environment.

4.6.4 Fuel Reduction

An annual site inspection of all reserves will be conducted to identify fuel reduction work needed for the upcoming fire season. This inspection is to be based on bushfire risk management criteria, in addition to meeting the statutory requirements of the Metropolitan Fire Brigade.

The works program shall be signed off to ensure completion at a satisfactory standard before the fire danger period commences.

4.6.5 Power Lines

An annual inspection shall be made of power lines that abut or pass through any reserve any pruning work needed is undertaken to comply with Electricity Safety Regulations (2015).

4.7 Management of significant Streetscapes

A significant streetscape within the City of Whitehorse is defined as a street that is planted with trees generally of the same species or cultivar, so as to give a uniform appearance along the full length of the street. They can be of historical, social, visual, geographical, species and or size significance.

Replacement plantings within these streets will be of the same existing species within the street to keep the integrity and consistency of the avenue intact. Established trees within these avenues will be inspected annually to assess their health and any change to their safe useful life (SULE). Trees that require removal will be removed and replaced under Councils Aging Urban Forest Renewal Program. All residents within the street will be notified of any removal.

The following provides a list of the currently identified significant street scapes within the municipality:

STREET	SUBURB	SPECIES
Pakenham Street	Blackburn	Eucalyptus cinerea
Maple Street	Blackburn	Quercus <i>plaustris</i>
Laburnum Street	Blackburn	Quercus <i>plaustris</i>
Goodwin Street	Blackburn	Quercus <i>plaustris</i>
Cottage Street	Blackburn	Quercus <i>plaustris</i>
Surrey Road – between Springfield Rd and Whitehorse Rd	Blackburn	Quercus <i>plaustris</i>
Maple Street	Blackburn	Quercus <i>plaustris</i>
Pope Road	Blackburn	Quercus <i>plaustris</i>
Vine Street	Blackburn	Phoenix canariensis
Kintore Crescent	Box Hill	Quercus <i>plaustris</i>
Margaret Street	Box Hill North	Quercus <i>plaustris</i>
Frank Street	Box Hill South	Quercus <i>plaustris</i>
Haig Street	Box Hill South	Quercus <i>plaustris</i>
Burnett Street	Mitcham	Quercus <i>plaustris</i> / <i>melaleuca styphelioides</i>
Doncaster East Road	Mitcham	Quercus <i>plaustris</i>

Vernal Avenue	Mitcham	<i>Quercus plaustris</i>
Mont Albert Road	Mont Albert	<i>Quercus plaustris</i>
Windsor Crescent	Mont Albert	<i>Quercus plaustris</i>
Balmoral Grove	Mont Albert	<i>Quercus plaustris</i>
Tunstall Avenue	Nunawading	<i>Quercus plaustris</i> / <i>Lophostemon confertus</i>
Laughlin Avenue	Nunawading	<i>Melaleuca styphelioides</i>
Nicholson Street	Nunawading	<i>Quercus plaustris</i> / <i>Lophostemon confertus</i>
Park Road	Surrey Hills	<i>Quercus plaustris</i>
Shepherd Street	Surrey Hills	<i>Platanus acerifolia</i>
Broughton Road	Surrey Hills	<i>Quercus rubra</i>

This list will be updated following the completion of Council's street tree inventory.