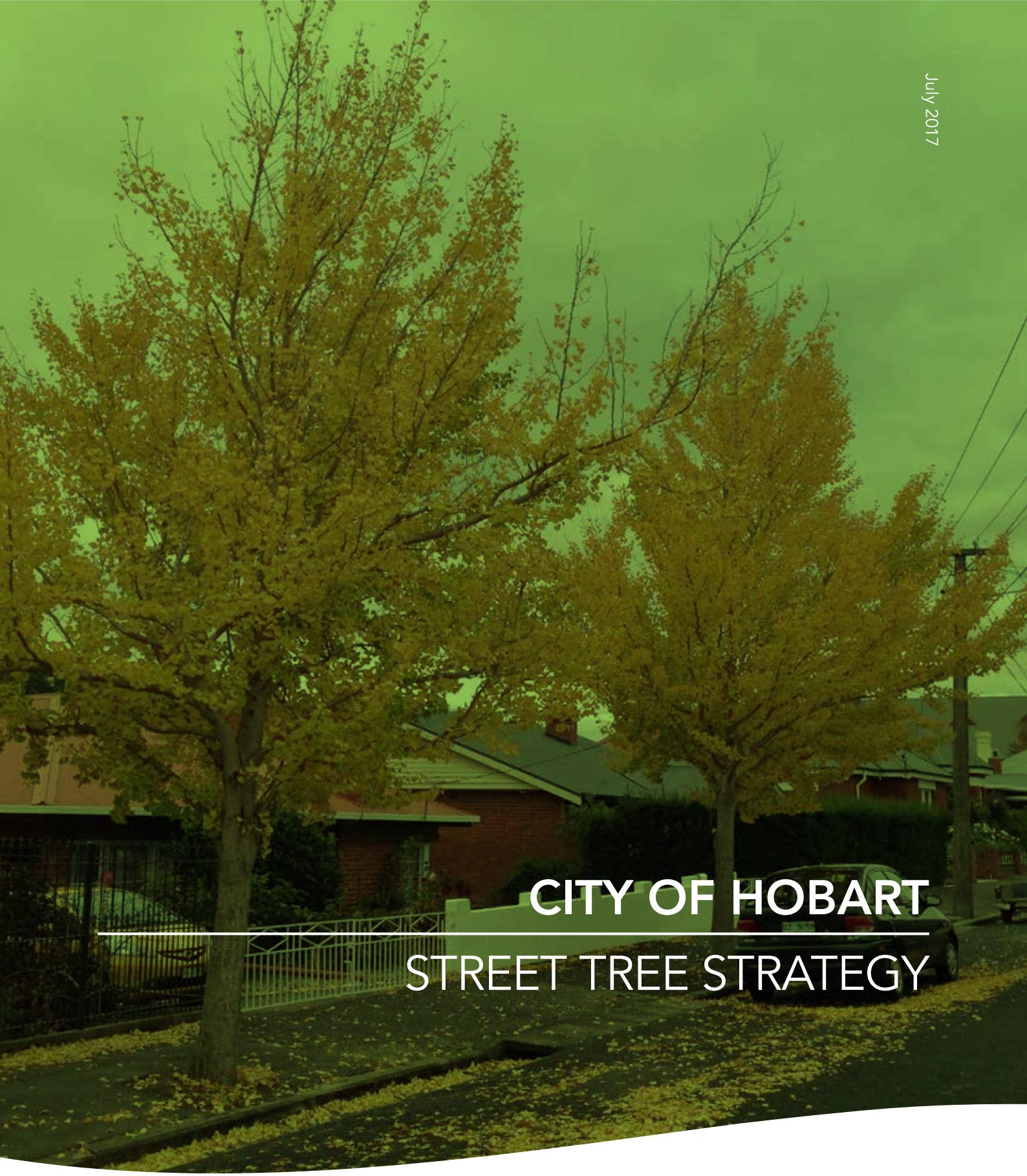

July 2017

CITY OF HOBART

STREET TREE STRATEGY

City *of* HOBART

‘Someone is sitting in the shade today because someone planted a tree a long time ago.’

This Strategy has been prepared by the City of Hobart, with the assistance of

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The City would like to thank all those members of the community, industry, government, peak bodies, and council staff who kindly gave their time to provide input into the development of this Strategy through the consultation process.

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BACK RIVER
STREET TREE PLANTING
EXISTING TILES 50 M.
POPLAR HEDGING
6.0
PARKING
ROAD

SUMMARY

The City of Hobart Street Tree Strategy endorsed by the Hobart City Council on 24 July 2017 was developed through community consultation, an audit of existing trees and practices, and contemporary research.

The Strategy recommends the adoption of policies that will guide the City's management of street trees and the adoption of a five-year implementation plan, which includes priority planting areas for new trees.

VISION

The vision arising for this street tree strategy, detailed in Section 5, is as follows:

Hobart is a City where tree-lined streets are a valued component of our quality of life – achieved through excellence in planning, design, installation and care by the City's workers and our community.

GOALS

Five goals arise in pursuit of this vision.

The City's street trees are:

- a valued contributor to the image and liveability of our City;
- managed as living infrastructure assets within a comprehensive framework of policies, procedures and funding;
- planned for, designed, installed and managed using the best contemporary practice;
- maintained and protected as healthy living organisms from establishment to maturity; and
- a shared responsibility involving the City of Hobart, other agencies and the community.

PRINCIPLES

Supporting the vision and goals for street trees are a suite of principles that should act as criteria for assessment of future proposals to advance this plan.

By applying these principles it will leave a legacy of health, beauty, comfort and wealth for future generations to enjoy.

The principles adopted herein are:

1. Street trees are part of a larger entity – the urban forest – the totality of which requires appropriate interacting policy, planning and regulation to be managed to best advantage.
2. The City's streets are public open spaces that are enhanced by an urban forest with an abundance of large trees appropriately selected for their species composition, size and form.
3. The image of the City is positively influenced by the extent and health of its urban forest and tree canopy cover.
4. Street trees are a crucial infrastructure asset and are valued accordingly.
5. Street tree managers utilise firm policy, considered planning, clear procedures and adequate funding to effectively deliver the outcomes of this strategy.
6. Street tree and urban forest management be a 'joined up activity' within the city's organisational structure with all departments communicating and acting together to advance excellence in the establishment and care of the City's street trees.
7. Daily management of street trees and the urban forest be based on an evidenced-based approach using modern tools and techniques to obtain comprehensive, accurate and up to date information and analysis.
8. Street tree establishment be guided by contemporary arboricultural practices to ensure the long-term viability of trees without impact on adjacent infrastructure.
9. Street tree management is a science with works carried out by professionally trained and appropriately skilled Arborists and Urban Foresters.
10. Inherent risks in the establishment of street trees need to be managed to ensure the safety of the community and the health of the asset.
11. Establishment and care of trees in the City's streets be a cooperative effort involving the community and stakeholders.

POLICIES

As a Vision tells us where we want to go, policies are the tool for helping us get there.

The following policy groups, as detailed in Section 6, are to be developed:

- Street tree framework policies
- Street tree establishment policies
- Street tree management policies
- Street tree protection policies
- Street tree removal and replacement policies
- Community engagement policies

RECOMMENDATIONS

Section 7 outlines various recommendations to achieve the requirements of the above suite of policies.

Five-year Implementation Agenda

The development of the Street Tree Strategy provides an opportunity for a comprehensive re-imagining of how street trees are delivered in the City.

A five-year implementation agenda is proposed to progress the ambitions of the Strategy.

Section 8 itemises actions for implementation in the initial five years.

As time proceeds and the most critical tasks are completed, particularly the creation and adoption of clear policies and procedures, the time will come to prepare master plans for on-going works to achieve the Strategy's vision

THE STRATEGY

The purpose of the Strategy is to:

- engender an understanding and appreciation of the value street trees can bring to the City (Section 2);
- evaluate the current condition of existing street tree stock (Section 3);
- champion a vision and principles for moving towards a greener city with an expansive tree canopy to take full advantage of potential benefits to the community (Section 4);
- institute policies to guide decision makers (Section 5);
- highlight the mechanisms to ensure these policies can be enacted to provide the best return on investment from their implementation (Section 6); and
- recommend a five year implementation program to begin making good on the vision for the City's street trees while the City develops the necessary internal governance mechanisms, master plans, procedures and guidelines to gain the best outcomes from its street tree assets (Sections 7 & 8).

The strategy was developed because trees in urban areas provide many important benefits. They can filter air pollution, produce oxygen, provide habitat for animals and improve the mental health of people. Importantly, trees can also help mitigate the effects of climate change by providing shade, storing carbon dioxide and soaking up stormwater runoff.

Because of the many benefits of street trees, this strategy recommends an aspirational target for canopy cover (the spread of trees over an area of land) for Hobart's urbanised areas of 40% by 2046, up from the existing coverage of 16.7%. It also recommends assigning an economic value to street trees similar to other infrastructure.

In the past, the wrong types of trees have been planted in some locations leading to road and path cracking and trees that did not thrive. New planting techniques in urban areas reduce path and road cracking and buckling through root containment systems. A greater canopy cover will actually reduce roadway cracking as it protects against sun damage.

Criteria that will be used to select future trees for particular locations include:

- bushfire safety
- pedestrian and driver safety
- size suitability considering nearby infrastructure
- neighbourhood character
- winter sun requirements
- water availability
- community feedback
- 50–150 year lifespan
- species not prone to disease
- species with a lower likelihood to cause allergies
- no potential to become a weed
- does not have excessive leaf, bark, branch and fruit fall
- does not require excessive pruning or maintenance

The City of Hobart actively manages 12,880 street trees and 5,560 trees in parks.

There are 471 species of trees.

Australian native trees make up 12% and the rest are non-native. It is important to have mix of species to guard against disease and the strategy recommends a 40-30-10 ratio, being no more than 40% from one family, no more than 30% from one genus and no more than 10% of one species.

The age of street trees is also important. There should be a spread of ages to stop too many trees reaching the end of their lives at the same time.

A high proportion of trees in Hobart are small (36 per cent) or narrow (5 per cent). There are opportunities in some places to replace these types of trees with larger trees that would increase canopy cover. There is also a need work with infrastructure providers to implement actions that would allow bigger trees, such as aerial bundled cabling of overhead electricity wires.

To achieve increased canopy cover the City will replace smaller trees with larger trees and plant more trees, with particular attention being given to possible plantings in the 52 per cent of Hobart streets which have no trees.


RED DECKER
The Official Sightseeing Tour of Hobart


BACTRIVER
STREET TREE PLANTING
EXISTING TILES 50 M.
POPLAR HEDGING
6.0
ROAD
PARKING

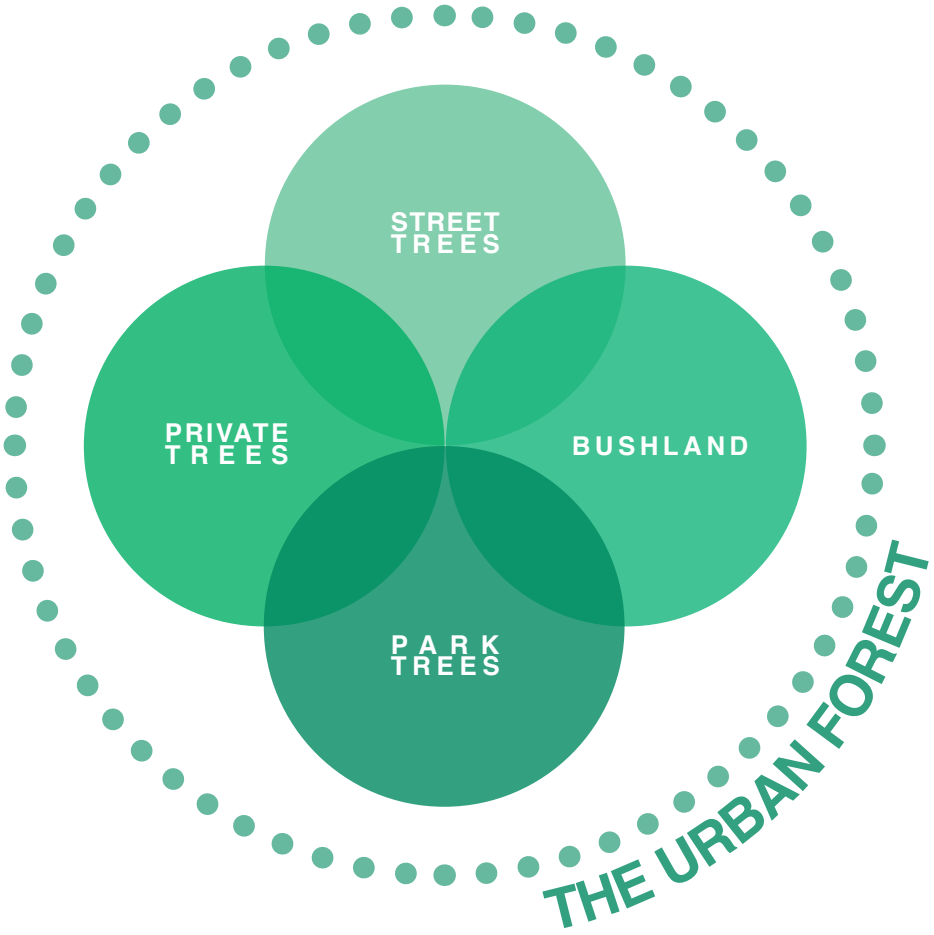
1. A VISION FOR HOBART – BEAUTIFUL, LIVABLE, SUSTAINABLE

Tasmania is a State that trades on its 'clean green' credentials and aspires to have the healthiest population in Australia. The City of Hobart (the City) proudly espouses its similar visions and credentials by proclaiming itself to be one of the most beautiful, livable and sustainable cities in the world.

Hobart 2025: A Strategic Framework (Hobart 2025) expresses this clearly in its vision for the city to be "recognised for its … quality of environment". Fleshing this out further, Hobart 2025 sets aims for the city to be "clean… green... healthy… attractive… energy efficient…sustainable… and… less polluted…"1.

To achieve its vision, the City has set ambitious targets for environmental improvements, launched programs that are enhancing the quality of the city centre and established master plans for some of the City's most prominent open spaces. The outcomes of these actions will enhance its claims to sustainability, beauty and livability.

A major contributor to the assertion of being a green city is its urban forest – the urban forest being all of the trees in the city: in its bushland, parks, private gardens and street reserves.



1 Hobart 2025: A Strategic Framework Adopted by the Hobart City Council October 2007

The urban forest is a living asset, a part of the 'green' infrastructure of the city – an asset, that if appropriately managed, grows in value over time, in contrast to the city's 'grey infrastructure' of roads and stormwater that wane in value.

A common measure of the state of a city's urban forest is its canopy cover: the measure of the physical spread of trees over the land.

The City of Hobart leads all capital cities in Australia boasting a canopy cover over 59% of the City's municipal area. By comparison, the next highest city, Brisbane, has 49% whereas in smaller urban CBD capitals such as Sydney and Melbourne canopy cover is measured at 15% and 13% respectively[2,3].

However, whilst 4,800 hectares of treed bushland provides a stunning backdrop, the City has been less successful in creating a green foreground for our daily lives. Leaving bushland tree canopy aside, immediate urban areas including parks and gardens, private trees and streets provide 16.7% canopy cover. This evidence shows that there is an opportunity to improve our immediate surrounds – our urbanised landscape – by making them greener and thereby more healthy and livable[4].

How can we increase tree canopy cover in the urban landscape and make the City of Hobart greener?

One important step is to establish trees in the streets where there is up to 15 times more area than in all of Hobart's urban parks and gardens[5]. While large parts of our road reserves are dedicated to vehicles, as well as pedestrians, cyclists and above and below ground utility services, there are substantive areas available for street tree plantings.

As a capital city, with a population of 48,000+ and a climate capable of supporting a diversity of native and exotic tree species, the City of Hobart has the potential to be a place of tree-lined streets. A city whose residents reap the benefits of living in a greener city – benefits that are not only good for the environment but also good for the economy, for our physical and mental health, our future and the day-to-day of our public lives. As a city with prominent street trees, Hobart will also leave a lasting impression on visitors, making evident our community's concern for the quality of its public domain.

To return to the aims of the *Hobart 2025 vision*, street trees will help make Hobart "clean… green... healthy… attractive… energy efficient… sustainable… and… less polluted…".

---

2 "Where are all the trees? An analysis of tree canopy cover in Australia" 202020 Vision. 2014.

3 Note, leaving aside its extensive bushland areas Brisbane's urban areas have only 16% canopy cover.

4 Canopy cover in the urban areas of Hobart has been approximated using i-Tree software. i-Tree is a public domain analysis tool designed to evaluate the structure of forests and the environmental services that trees provide.

5 There are 305 kilometres of road in Hobart. If the average width of the road right of way is 20 metres wide, then there are roughly 600 hectares of 'public space' in the road network compared to 40 hectares in our urban parks and gardens.

A snapshot view of Lenah Valley suggests the bulk of the canopy cover in these areas is over private properties, with little cover provided by the City's street tree stock.


BACTRIVER
STREET TREE PLANTING
EXISTING TILES 50 M.
POPLAR HEDGING
6.0
ROAD
PARKING

2. A STRATEGY FOR STREET TREES IN HOBART

Hobart 2025 A Strategic Framework recognised that to achieve a vision of "good quality … urban management" it's physical infrastructure needed to be "…enhanced… developed, managed and protected to the highest standard."[6]

'Good quality' and 'highest standards' are only achieved when there is a solid foundation of policies and procedures to guide action, spirited community support to advocate implementation and political will to act.

Without each of these factors actively working together there is a potential for failure. Further, street tree policies must integrate with those for infrastructure, economic and community engagement as the overlaps between these areas of governance are many and crucial to the success of a street tree program.

To these ends, the City has been emboldened to prepare the City of Hobart Street Tree Strategy (the Strategy) in consultation with the community, its staff and with the support of the elected Council.

The purposes of the Strategy that follows are to:

- engender an understanding and appreciation of the value street trees can bring to the City (Section 2);
- evaluate the current condition of existing street tree stock (Section 3);
- champion a vision and principles for moving towards a greener city with an expansive tree canopy to take full advantage of potential benefits to the community (Section 4);
- institute policies to guide decision makers (Section 5);
- highlight the mechanisms to ensure these policies can be enacted to provide the best return on investment from their implementation (Section 6); and
- recommend a five year implementation program to begin making good on the vision for the City's street trees while the City develops the necessary internal governance mechanisms, master plans, procedures and guidelines to gain the best outcomes from its street tree assets (Section 7 & 8).

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6 Hobart 2025 ibid.

7 The inventory was undertaken by ENSPEC, Arboricultural and Environmental Consultants. Condition was assessed against the City Melbourne criteria for establishing amenity value. Risk was assessed against Quantified Tree Risk Assessment (QTRA) standards.

Preparation of the Strategy has involved a comprehensive review of previous studies, similar strategies from elsewhere, available information and engagement with City officers, individuals, community groups and private stakeholders.

An audit of Hobart's ~650 individually named streets (~305 kilometres of street) was also prepared with findings recorded in a database. Variables examined by the audit included the role of the street in the road network and form of the street, the constraints and opportunities for tree planting, whether or not there were street trees and if so their general age and conditions and whether or not there were opportunities for more street trees (large or small).

The City's inventory of its street and garden stock was updated during the course of the study[7]. The inventory identifies the total number of trees being managed and their genus and species, condition and risk of failure.

The Strategy takes a wholistic view of the City's street tree stock as opposed to a focus on an individual tree or the street it is in. It does not cover urban bushland, the trees in our parks or those in private gardens – all of which are important components of the urban forest.

The timing is right for the City of Hobart to have a new strategic direction for using street trees to help residents be more healthy, to add value to its infrastructure assets, to make the city more beautiful and to grow street tree stock to the best advantage of a livable city.

The Strategy is an opportunity to look at the street trees of the City and establish where it is and where it wishes to go as owners, managers and beneficiaries of trees in city streets.

In preparing the Strategy, Hobart joins cities around the world that are discovering the need to give greater attention to the establishment and care for urban forests, and in particular street trees. Like Hobart, these places recognise the value of thriving street trees and the need to link these benefits to their specific contexts and the types of challenges those local governments face. They recognise the need for a strategic and systematic approach to move them from traditional practice to an exemplary model of street management in the context of urban forestry.

While focusing on the next 5 years, the plan will have benefits that will mature for 50-100 years as the trees planted now come of age.

The Strategy sets out an ambitious direction for investment and improvement to deliver on the City's strategic directions to create a city that is "a dynamic, vibrant and attractive place" grounded in "good quality development and urban management".

TRADITIONAL STREET TREE MANAGEMENT VS EXEMPLARY MANAGEMENT.

The goal of the City of Hobart Street Tree Strategy is to achieve the outcomes in the right hand column.

TRADITIONAL STREET TREE MANAGEMENT	EXEMPLARY URBAN FOREST MANAGEMENT
Trees as ornament	Trees as critical infrastructure
Focus on individual tree	Focus on overall canopy cover and forest
Trees as a low priority	Trees have equal consideration and priority to other urban infrastructure such as roads and services
Trees have no monetary or economic value	Economic value of forest recognised and valued
Focus on small, ornamental species of trees	Focus on larger longer lived canopy of trees
Individual tree maintenance	Overall forest management
Aesthetic based design	Ecological based design
Legal boundaries determine tree management	Urban forest seen as a continuous resource across boundaries


BACTRIVER
STREET TREE PLANTING
EXISTING 1515 SQ.M.
POPLAR HEDGING
5.
1425 SQ.M.
6.0
ROAD
PARKING

3. THE VALUE OF STREET TREES – WHY STREET TREES MATTER

Evidence abounds for why we should plant trees in our streets. While it is easy to imagine that street trees bring environmental benefits to a city, the real value of street trees is much broader, offering social, community and economic advantages significantly in excess of the cost of their establishment and care.

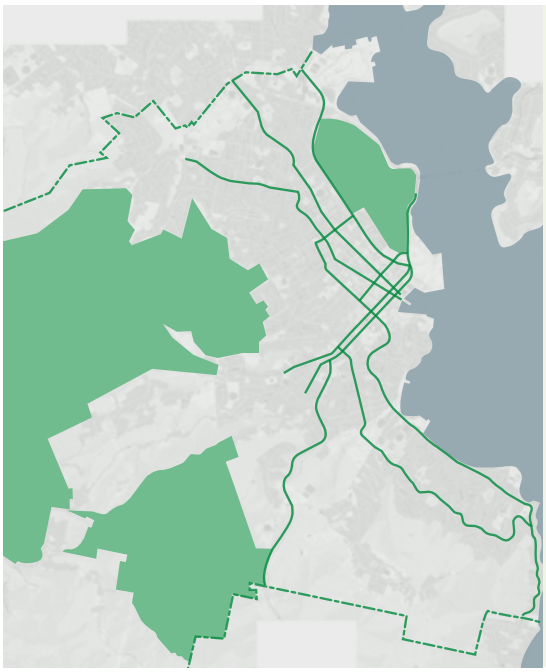
The following discussion briefly summarises some of the reasons why street trees matter and why we should value them more highly than we do. While the classification of the values in the discussion is helpful for descriptive purposes, it is important to note the complex intertwining of the positive influences described.

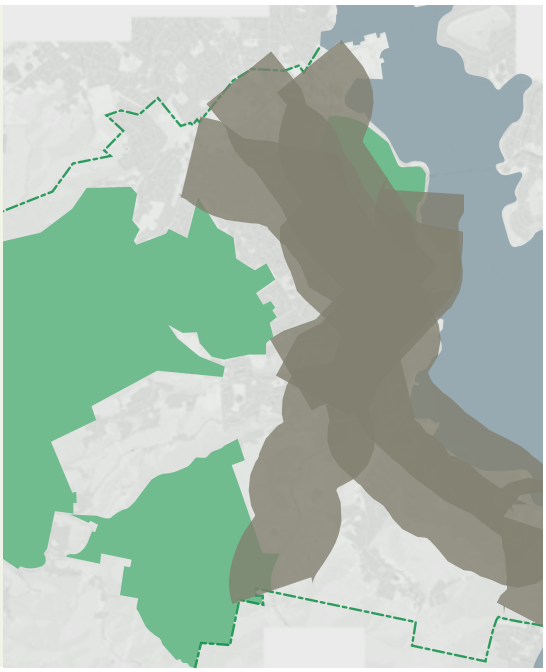
Traffic related air pollution has detrimental effects on health and the environment. One component of such pollution is particulate matter smaller than 10µm (the black dust on the window sill) that increase the risk of cardiopulmonary symptoms and diseasesA.

The map below left shows the major arterial roads in Hobart. Transport pollution near a road- way reaches up to 500 metres, i.e. the 1-km wide roadside is polluted

The map below right shows the potential spread of particulate matter from unspent vehicle fuel over that distance. The cumulative effect demonstrates that few residential areas of Hobart are immune from this type of environmental pollution.

Street trees absorb particulate matter and are a key mechanism in scrubbing a city's air – indeed, they are one of the only and best ' dust mops' available!





A www.vegagerdin.is/vefur2.nsf/FilesEffecVegetationParticulateMatter/$file/EffectVegetationParticulateMatter.pdf (Accessed 09.11.15)

3.1 STREET TREES DELIVER ECOSYSTEM SERVICES[8]

Ecosystem services are the benefits provided by the environment that contribute to making human life possible. Street trees clean our air, create oxygen, provide us with shade, regulate stormwater run-off, sequester CO_2, intercept dust, and provide habitat for birds and other animals.

Studies suggest, for instance, that:

- trees can intercept 7-22% of storm water runoff that would occur from impermeable surfaces[9] as they capture and store rainfall in their canopy and produce conditions that promote infiltration of rainwater into the soil;
- a medium to large deciduous tree sequesters in the order of 20 kg of CO_2 per annum[10]

  At this rate Hobart's street trees could be taking up to 185,000kg of CO_2/annum from city air each year; and
- a single mature tree is producing oxygen enough for two people[11].

By way of example, the Village of Hobart, Wisconsin in the United States (population 6,200) has estimated the value of the services provided by a street tree in their municipality at $149,000 per annum using i-Tree.

The tree canopy in the City of Hobart's urbanised areas is estimated to provide $194,000/annum in environmental services and to collectively store over $4.5M worth of CO_2 any one time[12].

Street trees can also provide food[13], raw materials and medicinal and craft materials.

3.2 STREET TREES ARE GOOD FOR OUR MENTAL HEALTH

People have an innate desire to connect with nature. We also have an inbuilt need to interact with one another. This led to the formation of cities and eventually to the hardening of streets and reduced contact with the environment. Trees in our streets returns the opportunity to engage with the natural world and alter our state of mind for the better.

For instance, studies suggest that exposure to trees reduce stress and improve mental health[14]. One study noted the particular benefits to drivers who were reported to have reduced stress levels when they viewed natural roadside views compared with those who were exposed to all-built settings[15].

8 www.brebookshop.com/samples/326911.pdf pg v

9 Georgia Urban Forestry Publication, Shade-Healthy Trees, Healthy Cities, Healthy People, 2004

10 www.fs.fed.us/psw/programs/uesd/uep/products/cufr_43.pdf

11 McAliney, M. 1993. "Arguments for Land Conservation: Documentation and Information Sources for Land Resources Protection" Trust for Public Land, Sacramento, California.

12. i-Tree estimate dated 16.06.16

13 Heart Foundation (Victoria), Victorian Eco Innovation Lab (VEIL) and VicHealth: Food Sensitive Planning and Urban Design: A conceptual framework for achieving a sustainable and just food system. Melbourne, NHFA, 2011.

14 Davis, J. 2004. Psychological Benefits of Nature Experiences: An Outline of Research and Theory Naropa University

15 Parsos, R, Tassinary, L, Ulrich, R. Hebl, M, and Grossman-Alexander, M. 1008. "The View from the Road: Implications for Stress Recovery and Immunization" Journal of Environmental Psychology 18:2:113-140.

3.3 STREET TREES BENEFIT OUR PHYSICAL HEALTH

The Tasmanian population is aging and unhealthy, leading authorities to promote better living through engagement in outdoor activities. Meanwhile, climate change predictions are for rising temperatures, leading to demands for summer shade in public spaces to help combat the incidence of skin cancers.

Street trees make the experience of being in the city pleasant and safe from the sun, encouraging people to participate in physical outdoor activities. For instance, research has shown that street trees have a significant positive influence on the level of physical activities undertaken, including walking and cycling[16].

We also know that if we are out in the sun we need shade. Estimates show that an individual tree can reduce exposure to ultraviolet radiation by 1/6th to 1/10th or the equivalent of applying sun cream in the SPF range of 6-10[17].

Other health investigations in areas that correlate with the establishment of street trees found that exposure to trees and/or 'green' settings is linked to:

- improved childhood development and wellbeing[18] in particular a reduction of ADD symptoms[19];
- the potential for faster recovery from surgery[20];
- fewer low weight births[21]; and
- less obesity[22] leading to longer life spans and improved public health.

16 Forsyth, A., Hearst, M., Oakes, J. M. And Schmitz, K. H.2008. "Design and Destinations: Factors Influencing Walking and Total Physical Activity" Urban Studies 45(9), 1973-1996

17 NUFU 1999. "Trees and Healthy Living" in Proceedings of National Conference Wolverhampton, UK 17.11.1999: National Urban Forestry Unit, Woverhampton.

18 Forsyth, A., Hearst, M., Oakes, J. M. And Schmitz, K. H.2008. "Design and Destinations: Factors Influencing Walking and Total Physical Activity" Urban Studies 45(9), 1973-1996

19 Taylor, A. and Kuo, F. 2009. Children with Attention Deficits Concentrate Better After Walk in the Park. Journal of Attention Disorders 12:5: 402-09

3.4 STREET TREES HAVE SOCIAL BENEFIT

The quality of life for a city's residents can be measured in terms of its 'livability'. In recent years, calls for enhanced 'livability' infrastructure in Hobart has focused on better public transport, enhanced support for walking and cycling and demands for expansive public realm improvements to create quality open spaces in which to conduct daily life.

Elsewhere in the world, cities that rank highly for their livability are known to be well treed. In these cities trees provide shade and comfort, clean the air and add beauty and delight, not just in parks and private gardens but along the streets and footpaths that connect residents to their destinations and in the spaces where they gather.

Studies confirm the social life of cities is enhanced by street trees. Research has found street trees contribute to:

- lower total crime rates generally as well as a lowering of specific property crimes such as vandalism and burglary[23] and with lower levels of fear, fewer incivilities, and less violent and aggressive behaviour[24];
- reduced perception of the length of waiting time for the bus (waiting time being a critical factor in the attractiveness of public transport)[25]; and
- traffic calming through reduced speed with its attendant effects on the numbers and severity of crashes[26] and greater pedestrian amenity.

20 mdc.mo.gov/sites/default/files/resources/2012/10/ulrich.pdf (Accessed 08.11.15)

21 www.fs.fed.us/pnw/sciencef/scifi137.pdf (Accessed 08.11.15).

22 Lovasi, G., Schwartz-Soicher, O, Quinn, J., Berger, D. Neckerman, K, Jaslow, R, Lee, K. and Rundle, A. 2013. Preventative Medicine 5:57(3):189-193

23 www.fs.fed.us/pnw/sciencef/scifi137.pdf (Accessed 08.11.15)..

24 Kuo, F 2001, "Environment and Crime in the Inner City: Does Vegetation Reduce Crime?" Environment and Behaviour, Volume 33, pp 343-367.---www.herluiuc.edu

25 nexus.umn.edu/papers/TRPerceptionsEnvironment.pdf (Accessed 21.09.15)

26 depts.washington.edu/hhwb/Thm_SafeStreets.html (Accessed 08.11.15)

3.5 STREET TREES ARE GOOD FOR THE ECONOMY

Street trees are typically viewed as a cost to a city, a cost to install and a cost to maintain. The fact is, such costs are well offset by considerable economic returns in addition to those benefits described above.

For instance, studies show residential values to be higher in tree-lined streets. In Perth, "broad leaved street trees" were shown to have a significant effect on the sale price of properties, increasing the median value by $16,88927. In Toronto, living in a street having 10 or more trees was found to equate to health benefits equivalent to being seven years younger or receiving a $10,000 salary rise28.

In Adelaide, a four-year old tree was estimated to generate a gross annual benefit of $171/tree, consisting of energy savings, air quality improvements, stormwater management, aesthetics and other benefits. It has been suggested this value is closer to $424/tree29.

The presence of street trees has also been shown to affect the perception and behaviour of shoppers. Street trees provide a significant atmospheric element in the business district. When shopping districts include large trees, studies show the city becomes a richer experience for residents and visitors leading to better economic performance in retail precincts through increased financial returns, the attraction of customers, the creation of an improved impression and a sense of security30.

Over 100 years, these 9 trees in Victoria Street will generate thousands of dollars in benefits to the City

27 sciencedirect.com/science/article/pii/S016920461200299X (Accessed 05.11.2015)

28 www.nature.com/articles/srep11610 (Accessed 09.11.15)

29 National Heart Foundation of Australia, Ely M. "Building the case for the role of landscaping in urban street design" (unpublished). 2012

30 United States Department of Agriculture Southern Region. Benefits of UrbanTrees. Urban and Community Forestry: Improving our quality of life.

Fitzroy Place. Far-sighted street tree planting makes this one of Hobart's most beautiful residential streets.

3.6 STREET TREES ARE PART OF HOBART'S HISTORY

As a colony, townspeople were busy carving out a life from the land, establishing basic infrastructure and overcoming the harshness of an unfamiliar landscape. Any emphasis on urban beauty and quality would have seemed luxurious to many of the City's denizens.

Nonetheless, even from these earliest times, City leaders identified the need to 'culture' the colony. In 1824 Governor Arthur proclaimed the need for a 'botanical garden'[31]. As for street trees, in 1834, the surveyor Frankland proposed a tree-lined edge to the roads fringing Sullivans Cove[32]. The planting of trees in civic spaces has continued since that time, with land developers taking up the idea of beautification through street tree plantings, such as the London plane trees (Platanus x hispanica) in Fitzroy Place and Lansdowne Crescent dating from the 1930s.

As early as the 1830s, enlightened citizens imagined a street tree-lined esplanade highlighting the City's road network.

[31] Godden Mackay Logan 2008. "Royal Tasmanian Botanical Gardens Conservation Management Plan" prepared for Inspiring Place as part of the "Royal Tasmanian Botanical Gardens Strategic Master Plan 2009".

[32] Freeman Collette and Partners. 1995. "Hobart Town Hall Precinct Conservation Management Plan" unpublished report to the Hobart City Council quoted in Gulson,L. 1997. Hobart Street Tree Master Plan 1997 unpublished report to the Hobart City Council pg 34.

3.7 STREET TREES ARE AN IMPORTANT RESPONSE TO 21ST CENTURY CONCERNS

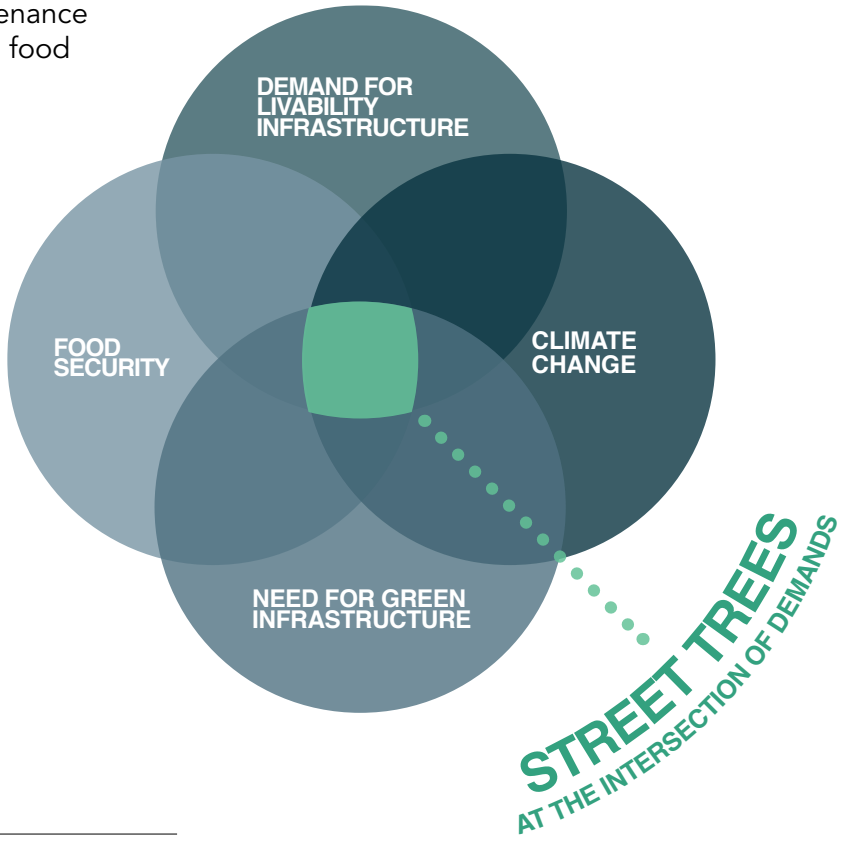
The world is evolving, our population is aging, natural resources will become scarcer, food security is increasingly on national agendas, population densities in our cities are growing.

It has been estimated that 15-20% of the world's food is grown in cities leading many observers to discuss the role of cities in addressing food security issues in lower income areas where the need for fresh food is high[33]. While food scarcity isn't necessarily an issue in Hobart, there is nonetheless a parallel interest in the consumption of locally grown food for its health benefits and its role in reducing 'carbon miles'. Street trees could play a role in this regard, where verges and available space permit and the community is willing to be engaged in the heightened maintenance requirements that go into keeping food producing trees healthy.

Our climate is also changing. Average temperatures are rising across Tasmania. With this will come warmer summers, more extended periods of hot and dry weather, more intense storms, more frequent bushfire. The rise in temperature will be particularly noticeable in urbanised areas, where the 'urban heat island' effect will be more pronounced.

Studies show the effects of shade on cooling and protection from UV rays and with the former, the positive impacts on the amelioration of the urban heat island effect through street tree planting[34].

The shade provided by street trees will help the City adapt to the climate changes ahead



[33] See www.greenbiz.com/article/urban-farms-now-produce-15-worlds- food (Accessed 28.04.2016).

[34] See www.canopy.org/wp-content/uploads/Public%20 Health%20 Benefits%20of%20Trees%20%202-15-11.pdf (Accessed 09.11.15).

3.8 STREET TREES MAKE OUR CITY BEAUTIFUL

When Hobart 2025 claims the city to be "one of the most beautiful and livable… in the world", a question arises in response, 'Is Hobart a beautiful city in a beautiful place or a city in a beautiful place'?

Early settlers and explorers certainly commented on the beauty they saw. Peron, during the French survey expedition of 1802, noted on arrival that "…every eye was now fixed on the land: we admired those lofty mountains… we observed with admiration… the interior of the island… covered with immense forests…"[35]. What he was looking at was a 'cultural' landscape shaped and valued by the island's first inhabitants and unencumbered by the buildings and urban infrastructure of today's denizens.

Since early exploration, the City has spread along the river's edge and across the foothills of kunanyi / Mt Wellington, removing forests and native woodlands. While doing so we've created beautiful parks and stunning gardens for many of our homes but we are still largely reliant on the treed topography of the Mountain and its fringing valley hills to make our city beautiful. Many of our streets are barren and paved from edge to edge.

Street trees can help rectify this by making our urban environment beautiful by adding human scale, seasonal colour, texture and movement to the cityscape and by adding elements of scale that match and soften the City's architecture, infrastructure and hard spaces.

Consultation with residents during many studies reveal a desire by the City's residents for more street trees in the Central Business District, in our suburban shopping strips and in our neighbourhoods. Why? Because they recognise the importance of street trees to the creation of a beautiful city commensurate with this beautiful place.

Elizabeth Street. Many streets are barren, paved from edge to edge without relief. Street trees can add human scale, seasonal colour, texture and movement to the cityscape.

[35] See gutenberg.net.au/ebooks12/1203691h.html (Accessed 27.04.2016).

3.9 HOWEVER STREET TREES ALSO COME WITH CHALLENGES

Not all street trees elicit a positive response. Some are seen as liabilities depending on the audience. Many of the problems raised have solutions, addressed by considered selection of species, proper installation and/or engagement with stakeholders to ensure suitable trees are well located.

Amongst the general public, some don't like the leaves that fall, they report allergic responses to some species of trees, they are concerned for loss of views to the distance and to historic buildings, some want more sunlight, others argue the benefits of exotic species versus native species, etc. All are valid concerns but most can be readily addressed through good practice and effective engagement with the community and stakeholders.

All trees lose their leaves. If we want a 'green', sustainable environment, then we have to accept that at some point we have to do some cleaning up. This can be mitigated, by selection of species, and regular maintenance.

Questions of exotic versus native trees come back to the adage that there are 'horses for courses'. Local native species provide habitat. Exotic trees facilitate effective solar access in winter and cope better with high pollution levels. Ultimately, selection of species has to do with numerous factors, amongst them safety (bushfire safety and the safety of pedestrians and parked cars), habit, size, neighbourhood character, requirements for winter sun, availability of water, adaptation to highly modified ground environments and distance to watercourse. Selection of species made against these criteria will give the best indication of the right species for a particular location.

Concerns that trees block views of retail signs and shopfronts can be readily addressed through species selection and location.

Infrastructure owners' concerns that trees get into powerlines or underground pipes, issues that may be solved by the selection of trees suited to the available root and canopy space, or the planting into suitable root containment devices. With powerlines, aerial bundled cabling can be used to reduce concerns for bushfire, visual clutter and breakage from tree damage.

Concerns of litigation where cars run into street trees is perhaps misplaced with statistics showing the low probability of this occurring[36]. Indeed, research suggests that trees may improve driving safety with one study finding a 46% decrease in crash rates where landscape improvements had been installed[37] and another showing a 5-20% reduction in mid-block crashes in streets with street trees[38].

[36] Studies have shown that far less than 1% of annual vehicle crashes in the US involve a tree on an urban street. (see Bratton, N.J., and K.L. Wolf. 2005. "Trees and Roadside Safety in U.S. Urban Settings, Paper 05-0946" Proceedings of the 84th Annual Meeting of the Transportation Research Board. Transportation Research Board of the National Academies of Science, Washington DC).

[37] Mok, J, Landphair, H and Naderi, J. 2006. "Landscape Improvement Impacts on Roadside Safety in Texas" Landscape and Urban Planning 78:263-274.

[38] Mok, J, Landphair, H and Naderi, J. 2003. "Comparison of Safety Performance of Urban Streets Before and After Landscape Improvements" Proceedings of the 2nd Urban Street Symposium (Anaheim, California). Transportation Research Board, Washington DC.


BACTRIVER
STREET TREE PLANTING
EXISTING 1515 SQ.M.
POPLAR HEDGING
5.
1425 SQ.M.
6.0
ROAD
PARKING

4. THE WAY THINGS ARE HOBART'S STREET TREE ASSETS TODAY

Stand anywhere in Hobart and you will see trees, either scattered through the immediate view or as a more contiguous backdrop to the scene. A percentage of these trees are growing in the road reservation – so called 'street' trees.

Section 1 noted the estimate that 16.7% of the urban area of the City has a tree canopy over it. Measures of ideal canopy cover vary with climate and land use. The US Department of Agriculture, for instance, recommends a 15% target in a CBD, 25% in urban residential and light commercial areas and 50% in suburban residential areas. These targets have been adopted by the City of Sydney. The City of Melbourne has proclaimed an overall target of 40% by 2040 up from 13% in 2012. In terms of percentage of canopy cover, Hobart has a challenge ahead.

Canopy cover is not the only measure of the health and value of the City's street trees. The purpose of this section is to describe the current situation and to develop a sense of the extent and state the City's street trees.

Watchorn Street. On almost any day, you will find people sheltering under these two lime trees, reading, eating, conversing, enjoying the life of the city.

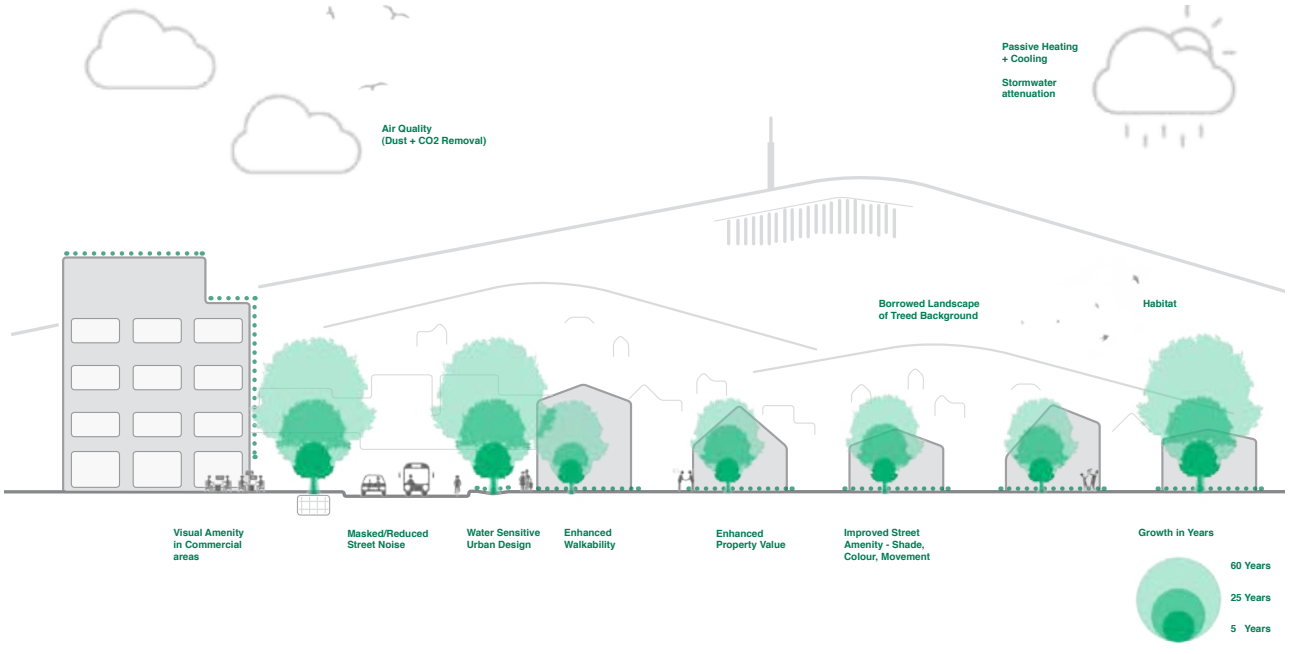


Diagram adapted from "Trees in the Townscape: a Guide for Decision Makers" Trees and Design Action Group, www.tdag.org.uk]

4.1 HOW MANY STREET TREES ARE THERE?

The City of Hobart currently manages ~ 18,440 trees within its developed parks and gardens (~40 hectares) and streets in addition to those trees found in the 4,600+ hectares of bushland under its aegis[41]. Of these 18,440+ trees, 12,880 are listed as street trees in a register developed by the City as part of its management programs.

Since the mid-1970s, the City has actively pursued a program of street tree planting. Today, of the trees listed in the City's register of street trees, at least 6,000 (roughly half) of the stock, or ~150 trees per year, have been planted since 1975. There are opportunities however for street trees to play a more significant role in defining the character of the City.

Field observation suggests there are further opportunities to increase the number of trees in our streets. Recent fieldwork found there were over 30 streets without trees. A 2006 study found there was capacity to double the number of trees in front of residences without social resistance based on observations of homes that had trees in their yard that did not have them in the street[42].

A man has made at least a start on discovering the meaning of human life when he plants shade trees under which he knows full well he will never sit.

D. Elton Trueblood (1900-1994)

[41] The "Hobart City Council Bushland Management Strategy 2007-2017" estimates there are ~4800 hectares of bushland within the city limits, making up ~62% of the total area of the City (7790 ha).

[42] J.B. Kirkpatrick et al. / Landscape and Urban Planning 101 (2011) 244–252 pg 251

4.2 WHAT KIND OF TREES ARE THEY?

Hobart's street tree stock is comprised of 126 genera made up of 471 species or forms of trees.

Eucalyptus is the most plentiful genera with 40 species or 8.5% of all species represented in the one genera.

The Myrtaceae family including eucalypts, tea tree (4 no. species), callistemons (7 no. species) and melaleucas (7 no. species) comprise 12% of the total species of the City's street and garden trees.

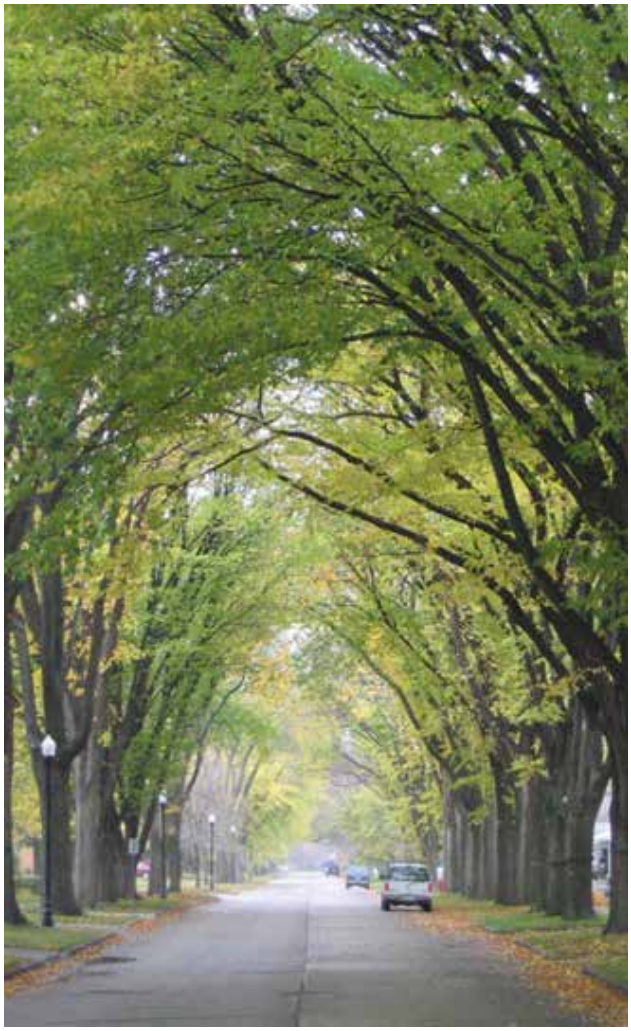
Of the other genera, plums (*Prunus spp.*) and maples (*Acer spp.*) represent 6% of all street tree species each and crabapples/apples comprise a further 5% of all species. .

Of all the City's street tree stock, 6% are known or potential weed species.

Diversity amongst species is critical to the health of the City's street tree stock. The City of Melbourne, for instance, targets that the total trees in the urban forest will be composed of no more than 5% of any one species, no more than

10% of any one genera and no more than 20% of one family. These targets are aimed at reducing the risk of loss from a devastating disease such as occurred in North America when Dutch elm disease struck and approximately 58 million trees were lost between 1930 and 1989 devastating the urban forests of Detroit, Chicago, Minneapolis and Toronto. Street tree population diversity will make Hobart's tree stock more robust and resilient, helping to protect it from pests, pathogens and environmental stresses such as climate change.

The City's data is being assessed against the targets set by the City of Melbourne (and recommended herein). It is not unrealistic however to expect the number of trees in the genus Eucalypt would exceed 10% of the total tree stock and the Myrtaceae family would likewise exceed the target of 20% of the total trees in any one family.



Detroit, the so called 'city of trees' lost over a half million elms between 1950 and 1980*. The image above was a once common sight in Detroit's neighbourhoods and in other large North American cities. Today, elms have been eliminated across whole swathes of the continent's urban landscapes.

* www.americanforests.org/our-programs/urbanforests/urban-forests-case- studies/Detroit-introduction/ (Accessed 09.11.15)

4.3 ARE THEY LARGE OR SMALL TREES?

In Hobart, 36% of our street tree species can be classed as small (e.g. plums, crabapples, small acacias, hawthorns, etc.) and a further 5% as fastigiated (narrow, upright with a height to width ratio of 5:1 or greater - e.g. European hornbeams, tulip trees Acacia boormannii) or columnar (with a height to width ratio of 5:1 or greater - e.g. arbor vitae or Oyster Bay pines)

In many cases fastigiated, columnar or narrow-crowned trees have been used in streets that would most benefit from larger trees (the audit identified that more than a third of all streets could support large trees). For instance in Macquarie Street above the Southern Outlet there is a preponderance of dawn redwood (*Metasequoia glyptostroboides*), a narrow crowned tree. A wider crowned species would have better reduced the scale of the road pavement and provided greater benefits for pedestrians[43].

STREET TREE SIZE MATTERS

BIG TREE	SMALL TREE
more shade	less shade
more CO_2 take up	less CO_2 take up
better pavement life	lesser pavement life
less vegetation at eye height	more vegetation at eye height
slower traffic	faster traffic
remove more pollution	remove less pollution

Large, mature street trees are the most important indicator of attractiveness in a community[44].

Size matters as the greater leaf area of large trees provides greater benefits than small ones in terms of shade due to spread and height, greater removal of pollutants and absorption of rainfall and more beneficial impact on traffic speeds. Larger trees are also less of a nuisance for pedestrians and vehicles and are often not as susceptible to vandalism

Figures also show that on average the annual net benefit of planting large species trees is 44% greater than for a medium species trees and 92 per cent greater than for a small species trees[45].

While there is a place for small trees and fastigiated form in Hobart, the preponderance of their use means that their fullest benefits as street trees are not being achieved across a third of our street tree stock.

4.4 WHERE ARE OUR STREET TREES?

With ~12,880 trees lining 305 kilometres of roadway in the City there should be an average of 1 tree every 24 metres.

However, many streets lack trees altogether, an assertion supported by aerial photo analysis of Hobart in a 2006 study which suggested that 18% of nature strips adjacent to residences had one or more street trees[46]. This figure is only 1/3rd that for the City of Melbourne and ~40% less than the next lowest municipality surveyed (Brisbane).

The result is that 52% of Hobart's streets lack street trees altogether. 23% of our streets are fully paved, boundary-to-boundary making planting trees difficult. Narrow footpaths abound and grassed verges, where they do occur, are often subsumed into the gardens of adjoining residences, adding to the complexity of establishing trees in many streets.

[43] Albeit, a large tree would likely have had to be planted in the street or the footpath widened to accommodate its ultimate girth.

[44] Georgia Urban Forestry Publication 2004 ibid.

[45] http://www.brebookshop.com/samples/326911.pdf

[46] Kirkpatrick, JB 2011. Landscape and Urban Planning 101:244-252.

4.5 ARE OUR STREET TREES OLD OR YOUNG?

Nearly 50% of the trees in the City's streets and parks are over 40 years old. Of these at least ~1,200 are 50 years of age or older – their age giving an indication of their life expectancy.

While some species could survive for up to 300 years in nature (such as the eucalypts), stressful conditions in the road corridor may limit expected life span. Senescence comes earlier in the cycle and with it an increased need for maintenance and concerns for safety.

Large trees are 'keystone' structures in the ecosystem providing important habitat that contributes to the richness, abundance and breeding of birds and mammals. Loss of older trees can also have far reaching effects on the aesthetics of the City.

For these reasons, age diversity is important within the City's system of street trees.

4.6 WHAT CONDITION ARE OUR STREET TREES IN?

The recently completed survey of the City's street and garden trees suggest that slightly less than 1% need immediate replacement and a further 7% are in fair condition suggesting replacement may be necessary in the short-mid term. However, the bulk of the trees are in good to excellent condition.

4.7 WHAT IS THE $$ VALUE OF OUR STREET TREES?

Section 3 identified the many social, economic and environmental values of street trees. Those benefits are not without worth. It is possible to assign a monetary value to those benefits. Monetary valuing of street trees accounts for factors such as expenditure on establishment, replacement cost, health and condition, life expectancy, amenity, social value (aesthetics and relationship to setting), effects on property values and ecosystem services.

In Hobart, the amenity value of our City's street tree stock has been estimated at $209M ![47]

The City of Melbourne has adopted a valuation method that calculates the value of a singular tree to guide them in assessing costs of removal or replacement. Using their system, a mature and healthy plane tree in Fitzroy Place would be valued at $120,000, with the 50 or so total trees in that area at roughly $5M if it were deemed necessary for them to be removed[48]!

The City of Hobart currently has no official pricing policy for monetising the value of the individual trees when assessing the costs of removal or replacement.

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[47] Amenity value has been calculated using the City of Melbourne tree valuation guidelines. These guidelines ascribe a basic value to each tree (based on trunk diameter) adjusted to account for the species, aesthetics, location and condition,

[48] Note: The City of Melbourne assigns a base value relative to the width of the trunk at breast height (DBH) and applies a multiplier thereafter for species, aesthetics, locality and condition. In a widely publicised case, the City demanded an inner city developer pay $62,500 per tree to replace 4 trees removed during the remodelling of their premises. Application of the valuing system has seen a marked decrease in the number of trees being removed during the development process.

4.8 WHAT IS THE CITY'S STRATEGY FOR STREET TREES?

The *City of Hobart Strategic Plan 2015-2025* sits beneath the 2025 Framework and expands the Future Directions of the Framework to identify priority areas for activity (and strategic objectives for each activity. Street trees are not explicitly mentioned in the Strategic Plan).

The *City of Hobart Interim Planning Scheme 2015* provides some guidance on the protection of 140+ heritage trees through its Significant Tree Code. Bushland management is addressed by the *City of Hobart Bushland Management Strategy 2007-2014*.

Melbourne and other cities and towns have recognised the need for street tree care and establishment to be framed within a strategic overview, supporting policy, a master plan and procedures for implementation. Without each of these layers of activity working together there is a potential for failure.

Nearly 20 years has passed since the Hobart Street Tree Master Plan was prepared in 1997 (the 1997 Master Plan)[49]. The 1997 Master Plan examined street trees and their role in urban and streetscape design based on a wide ranging overview of the history, image, social and functional performance of trees across the City. While thoughtfully presented and advanced for its time, the 1997 Master Plan is no longer referenced in current practice by City staff.

The T*ree Management Strategy 2005* (the 2005 Strategy), which replaced the 1997 Master Plan focused on the sustainable management of the City's tree resource, with an emphasis on non-bushland trees. The recommendations in the 2005 Strategy were wide ranging, touching on the need for strategy (i.e. review and update the 1997 Master Plan), policies (i.e. service agreements, tree removal, risk management, data collection) and detailed action (i.e. development of a planting design manual, creation of a catalogue of images, the provision of root barriers, communication with property owners and residents, creation of an officer working group). That plan is now out of date and no longer accords with world's best urban forestry practice and is to be replaced by the current strategy.

[49] Gulson, L. 1997. Hobart Street Tree Master Plan 1997 unpublished report to the Hobart City Council.

4.9 HOW IS THE CITY ORGANISED TO DEAL WITH ITS STREET TREES?

Policy around street trees must also integrate with those for infrastructure, economic development and community engagement as the overlaps between these areas of governance are many and crucial to the success of a street tree program.

In Hobart, the City's organisation is divided into divisions.

The City Infrastructure Division is responsible for asset management and the care of the City's street network including traffic planning, road engineering and road maintenance – each of which can be influenced by street tree placement and selection.

The City's Parks and City Amenity Division is responsible for street tree establishment and care.

Levels of Service define the quality, quantity, reliability, responsiveness, environmental acceptability and cost of the outcomes required by asset managers.


BACK RIVER
STREET TREE PLANTING
EXISTING 1515 SQ.M.
POPLAR HEDGING
6.0
ROAD

5. VISION, GOALS AND PRINCIPLES

Hobart 2025 A Strategic Framework, developed in conjunction with residents, business, interest groups, city stakeholders, young people and students, expressed a clear desire for Hobart to be recognised for the quality of its environment. Discussions with the community while preparing this strategy confirm this view.

In particular, the people who have spoken about street trees recognise their value and acknowledge the need for more trees within streets and for those trees to be well managed. Consultation has also revealed people's interests in being involved in the process of making the city verdant and in changing the colour of its infrastructure from grey to green.

5.1 VISION

The vision arising for this street tree strategy is, therefore, as follows:

Hobart is a city where tree-lined streets are a valued component of our quality of life – achieved through excellence in planning, design, installation and care by the City's workers and our community.

5.2 GOALS

Five goals arise in pursuit of this vision.

The City's street trees are:

- a valued contributor to the image and liveability of our city;
- managed as living infrastructure assets within a comprehensive framework of policies, procedures and funding;
- planned for, designed, installed and managed using the best contemporary practice;
- maintained and protected as healthy living organisms from establishment to maturity; and
- a shared responsibility involving the City of Hobart, other agencies and the community.

5.3 PRINCIPLES

Supporting the vision and goals for street trees are a suite of principles that have acted as touchstones in the preparation of the Strategy and should act as criteria for assessment of future proposals to advance this plan.

By applying these principles, it will leave a legacy of health, beauty, comfort and wealth for future generations to enjoy.

The principles adopted herein are:

1. Street trees are part of a larger entity – the urban forest – the totality of which requires appropriate interacting policy, planning and regulation to be managed to best advantage.
2. The City's streets are public open spaces that are enhanced by an urban forest with an abundance of large trees appropriately selected for their species composition, size and form.
3. The image of the city is positively influenced by the extent and health of its urban forest and tree canopy cover.
4. Street trees are a crucial infrastructure asset and are valued accordingly.
5. Street tree managers utilise firm policy, considered planning, clear procedures and adequate funding to effectively deliver the outcomes of this strategy.
6. Street tree and urban forest management be a 'joined up activity' within the city's organisational structure with all departments communicating and acting together to advance excellence in the establishment and care of the City's street trees.
7. Daily management of street trees and the urban forest be based on an evidenced-based approach using modern tools and techniques to obtain comprehensive, accurate and up to date information and analysis.
8. Street tree establishment be guided by contemporary arboricultural practices to ensure the long-term viability of trees without impact on adjacent infrastructure.
9. Street tree management is a science with works carried out by professionally trained and appropriately skilled Arborists and Urban Foresters.
10. Inherent risks in the establishment of street trees need to be managed to ensure the safety of the community and the health of the asset.
11. Establishment and care of trees in the City's streets be a cooperative effort involving the community and stakeholders.


FIRST


BACK RIVER
STREET TREE PLANTING
EXISTING TREES
POPLAR HEDGING
6.0
ROAD

6. POLICIES

A vision tells us where we want to go. Policies are the tool for helping us get there. Good policies provide consistency by helping administrators to: direct staff towards shared goals through best practice, to respond to pressures from external stakeholders and to address requests for action from the community.

The following section sets out a suite of policies for the management of street trees in the City of Hobart. These policies arise in response to the analysis of the current situation in comparison to the vision and principles established in Section 5.

In the first instance (Section 6.1), a suite of high order policies are set out that establish the fundamental premises for an active program of street tree management. There follows specific policies to direct actions for:

- street tree protection (Section 6.2);
- street tree management (Section 6.3);
- street tree planting and species selection (Section 6.4);
- street tree removal and replacement (Section 6.5); and
- community engagement (Section 6.6).

The policies herein are high-level aspirations.

The success of many will rely on the development of detailed procedures for day-to-day operations. Some may need revision or expansion with time and experience. None are law, but their weight in influencing decision-making should not be discounted. By agreeing to these policies, the City of Hobart is setting a course to success.

Discussion follows in Section 7 that sets out background to these policies and identifies the mechanisms needed to guide their implementation.

6.1 STREET TREE FRAMEWORK POLICIES

The following overarching policies will apply:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
POLICY	The City will develop and implement the street tree policies required to: • achieve the City's vision for its street tree infrastructure to make a meaningful contribution to the image and liveability of the city; and • enable consistency in decision making and in its relations with the community.	Section 7.1.1
PROCEDURES	The City will develop and implement the necessary procedures to guide its operational activities in the establishment and care of its street tree infrastructure.	Section 7.1.1
ASSET MANAGEMENT	The City will recognise street trees as 'green' infrastructure assets and acknowledge their value accordingly within its asset management systems. The City will manage its street tree asset as a 'joined up' activity through a coordinated approach across the organisation involving all relevant operational areas including engagement with external asset managers (eg TasNetworks, TasWater).	Section 7.1.2
EVIDENCE BASE	The City will compile and maintain an up to date street tree asset database linked to GIS mapping as tools to assist implementation of the necessary policies and procedures to achieve excellence in its work. The City will develop methods for accurately assessing the monetary value of individual trees and the overall street tree asset.	Section 7.1.3
RESOURCES	The City will give consideration to direct adequate funding to the establishment and care of street trees to ensure their viability and longevity. The City will engage appropriately trained professionals for the conduct of all street tree management activities. The City will provide continuing professional training for employees to ensure best practice.	Section 7.1.4
URBAN FOREST	The City will acknowledge street trees as a component of the 'urban forest', integrating management of its parks and reserves, street trees and bushland while providing direction to the community regarding trees on private property.	Section 7.1.5
STREET TREE MASTER PLAN	The City will develop a master plan to guide the establishment of street trees in the neighbourhoods of the City.	Section 7.1.6

6.2 STREET TREE ESTABLISHMENT POLICIES

The following policy principles will apply to tree asset management:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
URBAN FOREST AND CANOPY COVER	The City will identify and evaluate Hobart's urban forest and canopy cover. The City will sustain, replenish and aim to increase urban forest canopy cover in the Hobart City Local Government Area through cyclic annual public tree removal and replacement programmes, and capital funding programs to increase public tree canopy coverage.	Section 7.2.1
SPECIES DIVERSITY	The City will achieve species diversity by ensuring the street and park tree population is not comprised of more than 40% of any particular family, 30% of any particular genus or 10% of any one species.	Section 7.2.2
TREE SELECTION CRITERIA	The City will plant the most appropriate tree species based on site suitability, aesthetic, functional and biological attributes, performance and the potential to contribute to the local landscape character.	Section 7.2.3
TREE LOCATIONS	The City will continue to seek new tree planting opportunities in appropriate locations to maximise canopy cover and deliver ongoing environmental, economic and social benefits. In so doing, the City will consider site requirements such as traffic and pedestrian safety, relevant Australian Standards, proximity to above and below ground services and other infrastructure assets.	Section 7.2.4
NURSERY TREE STOCK SPECIFICATION	The City will use quality nursery stock according with the latest best practice and standards. All trees grown and/or supplied will conform to *AS 2303-2015 Tree Stock for Landscape Use and Nursery* Industry Accreditation Scheme best practice guidelines.	Section 7.2.5
PLANTING / INSTALLATION DETAILS	Standard technical planting/installation specifications and techniques will be developed and used by City staff, external service providers and developers to ensure successful establishment of newly planted trees throughout the City LGA.	Section 7.2.6
NEW DEVELOPMENT	New development will be required to incorporate street trees, as far as practical. Assessment of Development Applications will ensure that proposed public realm tree plantings are compatible with City's desired landscape character for a given location.	Section 7.2.7
RESIDENTS' REQUEST TO ESTABLISH TREES	The City continue to work with those parties interested in exploring nature strip gardens.	Section 7.2.8

6.3 STREET TREE MANAGEMENT POLICIES

The following policy principles will apply to tree protection:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
TREE MAINTENANCE	The City will ensure best practice management of its urban forest assets by requiring its maintenance procedures to align with service level agreements	Section 7.3.1
RISK MANAGEMENT	The City will pro-actively manage tree risk management issues, including the application of Quantified Tree Risk Assessment (QTRA) safety management system integrated with its tree asset database and GIS mapping.	Section 7.3.2
PESTS AND DISEASES	The City will monitor and treat pest and disease issues, using best practice control techniques, as part of its tree maintenance program.	Section 7.3.3
PRUNING OF TREES	The City will conduct public tree pruning to improve tree health, structure and to provide nominal clearances for pathways, roads, buildings and other essential infrastructure. All pruning will be carried out to Australian Standard AS 4373 *Pruning of Amenity Trees* with work undertaken by a suitably qualified arborist working to the City's standard procedures. Exceptional circumstances notwithstanding, the City will not prune tree/s to facilitate views (including to advertising signs) or to reduce the extent of leaf/flower/fruit/sap drop, or to reduce the impact from bird/ other animal waste or noise.	Section 7.3.4
CONTEMPORARY TREE MANAGEMENT	The City will keep abreast of new technology in the field of arboriculture and urban forestry, and incorporate technical tools into its tree management and maintenance techniques where appropriate.	Section 7.3.5

6.4 STREET TREE PROTECTION POLICIES

The following policy principles will apply to tree protection:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
SIGNIFICANT TREE REGISTER	The City will recognise trees that contribute to the environmental, cultural and social character of the City through the Register of Significant Trees. The City will prioritise the retention and protection of these significant trees.	Section 7.4.1
DEVELOPMENT APPLICATIONS	The City will ensure that Development Applications include all requisite information to allow the comprehensive assessment of potential impacts on public trees to be retained and an appropriate standard for the planting of new trees.	Section 7.4.2
PROTECTION DURING DEVELOPMENT	Public trees will be protected from construction works and other activities/ events that threaten tree health and stability. The Australian Standard for the protection of trees on development sites (AS 4970) will be used to achieve consistency in tree protection requirements. The City will ensure the protection of public trees directly affected by a development or an event through the imposition of appropriate bonds. The City will not permit the removal of public trees to allow for the provision of construction hoardings.	Section 7.4.3
OVERHEAD POWERLINES & UNDERGROUND UTILITIES	The City will pursue measures in collaboration with service providers to relocate infrastructure away from trees where practicable, to reduce the need for excessive canopy pruning and reduce root damage associated with the installation and maintenance of underground utilities.	Section 7.4.4
UNAUTHORISED WORKS & POISONED TREES	The City will notify the community of illegal works and undertake site-specific responses following tree poisoning or illegal tree removal. The City will investigate unauthorised (tree pruning, poisoning/removal) works and pursue enforcement action through its by-laws, where appropriate.	Section 7.4.5

6.5 STREET TREE REMOVAL AND REPLACEMENT POLICIES

The following policy principles will apply to tree removal and replacement:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
TREE REMOVAL ASSESSMENT	The City will use its tree assessment procedures to ensure consistency in the approach to determining the need for tree removal, root pruning, and general pruning applications. The retention of significant trees is a priority. The City will remove and replace dead or dying trees or those that are poorly performing with suitable species to rejuvenate the urban forest. Tree removal will not be permitted to facilitate views (including advertising signs), off-street parking or installation of solar panels. Exceptional or safety circumstances not withstanding, tree removal will also not be permitted in order to reduce the extent of leaf/flower/fruit drop, or to reduce the impact from any bird/other animal waste or noise or where there is competition with lawns or gardens for water, nutrients or light.	Section 7.5.1
EMERGENCY TREE REMOVALS	Risk to public safety and property will take priority in tree removal decisions in emergency situations.	Section 7.5.2
WEED SPECIES	The City will undertake the staged removal and replacement of trees classified as noxious or environmental weed species. The impacts to canopy cover will be a key consideration in removing trees as part of this process.	Section 7.5.3
AGE DIVERSITY	The City will maintain a spread of tree age classes to minimise the impact of tree removals required in close timeframes and / or within specific areas.	Section 7.5.4
REPLACEMENT TREE STOCK	The City will ensure replacement tree stock conforms to AS *2303-2015 Tree Stock for Landscape Use* and Nursery Industry Accreditation Scheme best practice guidelines and that installation comply with procedures.	Section 7.5.5

6.6 COMMUNITY ENGAGEMENT POLICIES

The following policy principles will apply to community engagement:

ISSUE	POLICY STATEMENT	2017 STREET TREE STRATEGY REFERENCE
COMMUNITY ENGAGEMENT	The City will involve the community as a key partner in managing street trees in line with its Community Engagement Policy.	Section 7.6.1
COMMUNITY AND STAKEHOLDER NOTIFICATION OF PENDING ACTION	The City will inform and consult with the community and stakeholders in line with its procedures about street tree removal (except where emergency works are required), major tree planting projects and any other projects impacting on its street trees. The City will notify adjoining property owners of the removal of trees from private property that are listed on the City's Significant Trees Register.	Section 7.6.2
COMMUNITY INVOLVEMENT IN THE PROCESS	The City will work with community groups to consider and assess resident requests for tree planting in their streets. The City will develop programs to encourage community involvement in the ongoing care of its urban forest.	Section 7.6.3
COMMUNITY INFORMATION AND EDUCATION	The City will provide information, regarding new street trees to the residents located adjacent to the planting. The City will increase community and stakeholder knowledge about the benefits of trees and the urban forest through the City's web page, local and social media and tree information leaflets.	Section 7.6.4
INCENTIVES FOR PRIVATE PLANTING	The City will consider assistance with the planting of trees on private property where they will contribute to the streetscape.	Section 7.6.5


BACK RIVER
STREET TREE PLANTING
EXISTING 1515 SQ.M.
POPLAR HEDGING
6.0
ROAD

7. THE CHALLENGES AND THE STRATEGIES TO ADDRESS THEM

The development of a vision and policies for the City's street trees and urban forests has highlighted a number of challenges that need to be met in guiding the establishment and management of street trees in the City of Hobart.

The challenges are outlined below along with the identification of strategies to address each of the identified issues.

7.1 STREET TREE POLICY FRAMEWORK

As discussed in Section 3, street tree management services need to be embedded within the City's administration, its strategic planning and its policies if this current strategy is to succeed. As a first step a framework for addressing a series of high order challenges needs to be developed. The framework should include;

- the creation and adoption of street tree specific urban forest and street tree policies and procedures (Section 7.1.1);
- the acknowledgement of street trees as a core infrastructure asset that requires • specialist management, cross-departmental coordination and adequate recurrent funding (Section 7.1.2);
- the recognition that an accurate evidence base, including a live street tree asset inventory, is an essential management requirement (Section 7.1.3);
- the allocation of sufficient financial and human resources required to successfully undertake the task of planning, establishing and managing street trees (Section 7.1.4);
- the requirement to address the urban forest as a whole inclusive of street trees (Section 7.1.5); and
- the need for a street tree master plan to facilitate efficacious streetscape planning beyond the 5-year implementation plan herein (Section 7.1.6).

7.1.1 POLICY AND PROCEDURES

Unambiguous, transparent and enforceable policies and procedures are required to ensure outcomes compatible with the City's duty of care for its assets and with its vision and goals for the urban forest and street trees. Policies create consistency in decision-making and in dealing with the community. Procedures are the mechanisms employed to address the policies and to guide action in day-to-day operations.

Prior discussion highlighted that the urban forest generally, and street trees specifically are not currently identified in the City's high-level strategies. There is also no up to date policy framework or agreed procedures for the establishment and management of the City's urban forest and street trees.

Street tree policies should establish an over-arching policy framework and more specifically address:

- street tree protection;
- street tree management;
- street tree planting and species selection;
- street tree removal and replacement; and
- community engagement.

Street tree procedures should cover:

- **tree selection** including identification of a suitable palette and direction on selection to achieve species diversity and appropriate age stratification across the City and in relation to particular conditions at proposed planting locations;
- **establishment** requirements including guidance on site selection, required site investigations (above and below ground) and planting techniques;
- **maintenance** including pruning and pest and disease management;

- **risk assessment** including timing and processes of inspections, the establishment of thresholds for tolerable and unacceptable ranges of risk of harm and for the prioritisation of identified maintenance and intervention;
- criteria for **removal** including the circumstances where trees may be removed; and
- **community engagement** including protocols for responding to requests for information and for initiation of local street tree planting initiatives.

While the City's team has a great deal of experience in these matters, there is little formal documentation. Such documented procedures help ensure employees understand roles, how to perform them and how their tasks are integrated with the City's urban forest and street tree policies.

Where procedures may be adapted from time- to-time in response to experience or new technologies, policies change less frequently, thus establishing the continuity required to achieve long-term visions and goals.

7.1.2 ASSET MANAGEMENT

The urban forest is a living asset. It is a 'green infrastructure' investment that requires management over its entire lifecycle. Street tree management is best where it is a 'joined up' activity across an organisation involving operational areas and engagement with external asset managers (eg TasNetworks, TasWater) to occur. A systematic and coordinated effort across the whole of a city's organisation results in the greatest return on investment in street trees.

Coordination of activities across the organisation will have a range of livability benefits as street trees will become an integral component of the City's street network planning (road, cycleway and footpath) and asset replacement activities, its sustainability programs, its water sensitive urban design strategies and its Inner City Action Plan to provide for enhanced pedestrian amenity.

1. Adopt the policies set out in Section 6 as the guide to reaching the long term vision and goals for excellence in contemporary urban forest and street tree management by City workers and the community.
2. Develop a suite of procedures to guide the City's urban forest and street tree management including street tree selection, procurement, planting and establishment, maintenance, risk assessment and removal and the processes and protocols for community engagement.

3. Initiate a Street Tree Establishment Working Group with the aim of creating internal practices and coordinating public realm activities, and particularly the establishment and care of street trees.

7.1.3 EVIDENCE BASE

Effective tree management is reliant on accurate information. You cannot manage an asset effectively if you do not have detailed information.

Access to a 'live' data inventory with mapping across the complete street tree asset base is an imperative. A comprehensive and up to date database and readily accessible mapping allows rapid assessment of the number of trees, their condition, management issues and risk concerns, expected life and monetary value – the minimal data required for contemporary urban municipal tree management. Once established, the database and mapping should be kept 'live' by constant up dating and monitoring. Such monitoring provides information for the evaluation of the success of programs and a basis for adaptation of management practices.

Of the several tree valuation systems available[50], the open sourced software i-Tree system, which the City currently uses, is the most demanding of data input but also yields the most detailed outputs in terms of monetary value and environmental benefits and management costs.

In Hobart, street trees are currently mapped using Geocortex, a GIS software. Data is collected for a variety of variables including, amongst other things, location, species, size, condition and QTRA risk assessment. A cloud based Collector App is used to record the data while in the field which can then be added to the City's asset management system. The City has recently agreed to implement a new asset management software system.

The City of Melbourne has adopted a method for calculating the value of its trees based on a number of variables. In Hobart, the data has been collected and used to substantiate the monetary value of the trees in the City's streets and parks. Being able to estimate this value gives great weight to the decision making processes around management of the street tree asset.

A computer system alone is not enough. Adequate resourcing is needed to collect information, to enter data and then to monitor the situation. Some cities have effectively used 'citizen science' techniques to collect and input data that may reduce the cost of completing and maintaining the data inventory[51].

4. Maintain the existing street tree inventory with direct linkage to GIS mapping with a view to transferring information onto an appropriate street tree inventory and management software platform.

[50] www.forestry.gov.uk/pdf/FCRN008.pdf/$FILE/FCRN008.pdf (accessed 28.02.16). This article compares three valuation techniques including the CAVAT, Helliwell and i-Tree system.

[51] See msucares.com/pubs/publications/p2811.pdf (accessed 28.02.16)

7.1.4 FINANCIAL AND HUMAN RESOURCES

The City does not currently account for the value of the City's street trees, and therefore it has been difficult to scale budgets accordingly.

An estimation of the dollar value of the City's trees will provide an impetus for greater commitment to establish, maintain and protect street trees. In particular, knowing the monetary value of individual trees will support demands to protect trees from unnecessary removal, strengthen the case for street trees generally and for their inclusion in capital works.

7.1.5 THE URBAN FOREST

Street trees were noted to be a core component of the City's urban forest that is part of a larger whole, including parks, private landscapes and bushland. The health of each element of the urban forest is conditional on the fitness of the other.

The City lacks an overall policy on its urban forest to effectively integrate strategic planning and to allocate resources across the whole of the City's treed landscape. The City's *Bushland Management Strategy 2007-2014* is a major part of the puzzle. The current strategy for street trees is another building block in an overarching urban forest management strategy.

The missing links are a lack of policy and regulatory controls regarding the management of trees on private property. Such controls are required to protect trees on private land and to ensure the overall canopy cover is considered amongst the values being managed for.

A study in Melbourne found that the greatest decrease in urban canopy cover from 1993 to 2000 occurred on private property[52]. Whilst that study was undertaken in Melbourne, the same issues and pressures have been faced in Hobart, that is, canopy cover on private property is being significantly reduced by infill development and other competing land use.

5. Annually Review budget allocations for street tree planning, establishment, care and maintenance with a view to adequately resource the recommendations arising from this strategy.

6. Investigate and consider the development of a policy and possible regulatory control for the protection of trees on private property with a view to it becoming part of overarching urban forests strategy for the City.

7.1.6 STREET TREE MASTER PLAN

Preliminary observation of the City's streets suggests there potential to increase the number of trees in the built up parts of Hobart. A 2006 study found there was capacity to double the number of trees in front of residences without social resistance based on observations of homes that had trees in the yards that did not have them in the street[53].

A street tree master plan is an aid to determining where and what street trees should be planted in any precinct or street and the maintenance/ management practices that should be employed in the future provision of street trees in a city. The aim of a master plan is to create a sense of place and coordinate the development of streetscapes related to the history, character and image of the place.

Key factors to be addressed by a street tree master plan include:

- the landscape character of the neighbourhood where planting is to occur including the potential for land use change;
- the presence and significance of existing trees or built features that might serve as a cue for new species selection;
- scale of the available space for planting including proximity to nearby structures and infrastructure;
- utility precautions affecting the scale and location of the tree;
- soil volume, soil type and available water; and
- impacts on solar access and visual amenity;

Engaging the community in the establishment of the street tree master plan is essential.

The street inventory provides useful information to guide the best opportunities for continued street tree establishment while street tree master plans are prepared. In the interim, the City will continue to assess street character on an individual basis and species selections will be made accordingly.

In areas with established trees that continue to provide useful amenity, the general rule will be to continue the existing street character and planting as far as practicable unless specific issues have arisen or opportunities have been identified that suggest a change of approach.

Longer term, the dictate of a street tree master plan for a particular type of tree in a specific street will not mean that the City will replace existing trees to implement new proposals.

Existing trees will be left to grow for their natural lifecycle and will only be removed where they present an unacceptable risk or no longer provide useful amenity. The exception could be where major works are proposed and even then tree removal should be avoided where possible.

7. Prepare a street tree master plan that identifies where street trees should be planted in any precinct or street and what species are to be established where there are no trees or what species to use to replace trees when they reach the end of their useful life.

[52] Mullalay. J. 2000. "Aerial Photographic Analysis of the Urban Forest" Honours Thesis, Burnley College, University of Melbourne, Australia.

[53] J.B. Kirkpatrick et al. / Landscape and Urban Planning 101 (2011) 244–252 pg 251

7.2 STREET TREE ESTABLISHMENT

How street trees are established is central to the vision of a city of tree-lined streets. To be most effective:

- there needs to be an expansive canopy cover of trees (Section 7.2.1);
- species selection needs to be diverse and tree age profiles stratified (Section 7.2.2);
- the right tree needs to be selected from a suite of species suited to its growing conditions and constraints (Section 7.2.3);
- locations for planting need to consider a wide range of factors (Section 7.2.4):
- healthy, suitably sized trees need to be planted to ensure they survive the rigours of the streetscape environment (Section 7.2.5); and
- the techniques used in planting the trees need to ensure each tree receives the air, water, soil and nutrients it requires to thrive throughout its life (Section 7.2.6).

Further, the City must promote establishment of street trees within all new development(s), as new development presents a good opportunity to establish large street trees (Section 7.2.7).

7.2.1 CANOPY COVER

Prior discussion indicated the value of trees of large size versus smaller trees.

To enable street trees to make a significant contribution the life of the City, there needs to be an expansive canopy cover of trees as well as a large number of trees. Urban forests that maximise the physical area covered by trees reap the greatest benefits.

Canopy cover is the common indicator of success of urban forestry and street tree planting and a variable that is readily measured over time to indicate performance.

There is a need to increase the area of canopy coverage in the City's urbanised areas. In doing so, there will be challenges.

These include the absence of street trees in over half the City's road network and the high proportions of small and fastigiated trees amongst the current stock of street trees.

Nonetheless, a long-term program to establish an abundance of large street trees is critical to achieving the most benefit from our street tree stock.

8. Adopt an aspirational target of 40% canopy cover by 2046 for the City's urbanised areas.

7.2.2 SPECIES DIVERSITY

The importance of diversity within the City's street tree stock has also been discussed, principally in terms of species but also in terms of age and condition.

It was noted *Eucalyptus* spp. are dominant in the foothills. Should pests or disease (such as myrtle rust[54]) take hold within the species or its family, the impacts could be devastating for the image of the City as one surrounded by native bushland.

Attention should be given to ensuring the diversity of species used to replace senescing trees in these areas.

Apart from the prevalence of *Eucalyptus* spp. in the foothills of the City, the diversity of species amongst the street trees of the urbanised areas appears to be reasonably well spread. Planting programs and species selection needs to continue to ensure this diversity is maintained.

As a measure of diversity, rules of thumb have been applied by cities elsewhere in Australia and overseas. Typical figures suggest a city should not plant more than:

- 30% – 40% of any one particular family;
- 20% – 30% any one particular genus; or
- 5% – 10% of any one particular species.

While these numeric rules have no scientific basis there is an undeniable logic that the best protection for the stock of a city's trees lies in ensuring they do not all age, decline or die at the same time.

Note that while diversity of species is an important measure, it should not replace selection of plants that are proven to be adapted to the conditions of the City. Loss of older age classes of well adapted species is considered by some to be more destabilising in urban forests than is low species diversity amongst older trees[55] (see also Section 6.5.5).

9. Adopt a 40-30-10 (family, genus, species) target for species diversity within the City's street tree stock.

[54] Myrtle rust is a fungal disease that infects plants of the Myrtaceae family including eucalypts, paperbark and tea tree. The identification of myrtle rust in the northwest of Tasmania brings the potential for this disease to spread through the State. The short-term impact of myrtle rust on mature trees is minimal. Heavy infection can result in death of soft plant material and ultimately to the whole of a plant in susceptible species. Continued infection of new seedlings and young trees over time may hinder regeneration. This may alter species balance in wooded areas with currently stable environments. See http://www.dpi.nsw.gov.au/biosecurity/plant/ myrtle-rust (Accessed 28.02.16).

[55] Richards, N.A., (1983). Diversity and stability in a street tree population. Urban Ecology. 7: 159. 171. See also http://treelogic.com.au/facts/species-diversity/ (Accessed 08.03.2016).

7.2.3 SPECIES PALETTE

Achievement of increased canopy cover and species diversity is dependent on the selection of the species and the form (spreading or fastigiated) of the species to be used.

The perfect tree species is not susceptible to wind damage or branch drop, does not require frequent pruning, produces negligible litter, is deep rooted, has few serious pest and disease problems, tolerates a range of soil conditions and air pollutants and is not vulnerable to climate change. There is no perfect tree species.

The essential concern is to plant 'the right tree in the right place' to gain the most benefit from the investment made. Criteria to be addressed when making selections for street tree plantings include:

- **proven performance record** – the City has significant experience in species selection that should be drawn upon;
- **longevity** – aim for trees that have a 50-150 year life span;
- **mature size** – large trees are preferred over small trees except where conditions dictate the use of smaller stature species;
- **growth habit** – spreading trees are preferred over fastigiated forms except where the latter form is necessitated by available space;
- **adaptability** – tolerance of urban conditions, including drought, air pollution, suitability for pruning and structural integrity in high wind;
- **human health** – avoid trees that produce known allergenic[56] and/or irritating or poisonous materials;
- **weed potential** – avoid known or potential environmental weed species;
- **tree health** – avoid species known to be prone to pests and disease;
- **root growth characteristics** – preference should be for deeper rooting species to avoid infrastructure damage (except where verge width permits more shallow rooting species);
- **organic debris** – avoid species with excessive leaf, bark or branch fall and those with moist fruits and/or round fruits (particularly on steep gradients) to mitigate public risk;
- **maintenance** – avoid species that require significant pruning to maintain structural integrity, form and/or health;
- **aesthetics** – form, colour, texture should all be considered;
- **resilience to climate change**; and
- **availability** – preferred species should be readily available as transplantable, advanced trees.

Consideration must also be given to the history of Hobart as being a European-like settlement set in a pre-existing Aboriginal cultural landscape.

The City of Melbourne has created a matrix for assessing a wide range of species against many of these criteria as an aid to selecting trees[57].

Variables include 13 different street location types as well as park types against minimum criteria for success in each.

A similar matrix could be developed for Hobart.

In the interim, the City of Melbourne matrix is a useful starting point for selection of species where conditions match those in our streets.

10. Examine the value and costs of developing a City of Hobart specific species selection matrix similar to that developed for the City of Melbourne.
11. Progressively replace inappropriate species, forms or sizes of trees with a view to establishing a more comprehensive canopy cover within the City.

[56] The Ogren Plant Allergy Scale (OPALS) is a frequently cited, quantified estimate of the potential of a plant to cause allergic reactions in humans.

[57] Aspect Studios and Tree Logic 2011. "Urban Forest Diversity Guidelines – 2011 Tree Species Selection Strategy for the City of Melbourne" City of Melbourne, Victoria. See https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest- diversity-guidelines.pdf (Access 29.02.16).

IT'S NOT 'EITHER OR', IT'S 'BOTH AND'

It is understood that locally native trees add to biodiversity and have adapted to local growing conditions over millennia. This rationale is often touted when discussing tree species selections.

Issues arise in the urban environment where conditions are substantively different to the ones local native trees have responded to in nature.

In city environments, soil profiles have been disturbed or destroyed by compaction, the mixing of sub-soil and topsoil and the loss of organic material and living organisms.

Water infiltration is also radically altered creating drought conditions or occasionally water logging. Air pollution contains contaminants that don't occur in nature.

Some local native trees are intolerant of these changes. The result of this intolerance can be poor growth and irregular forms that create a weak structure contributing to limb drop without considered maintenance.

Where nutrients are increased via stormwater run-off or other sources, some local native trees tend to spurt in size adding to these issues.

Many exotics are pollution resilient and more tolerant of root area compaction. The canopy shape and branch architecture of many exotics also facilitates the pruning and shaping necessary in an urban setting laced with passing traffic and overhead infrastructure. Exotics are also transplantable at large sizes, tolerant of root pruning and more readily available in the nursery industry as advanced trees (although the industry is changing in response to demand for advanced native trees). Importantly, in our local climate deciduous exotics provide solar access in winter months.

This strategy proposes continued reliance on native species (local and otherwise) in the foothills, along habitat corridors and in wide road verges but emphasises the on-going use of deciduous exotic species in urbanised areas. The former proposal protects the image of the city as one surrounded by remnant bushland, the latter responds to the need for winter light in the urban setting and the requirement across the City's street tree stock to increase species diversity for the reasons set out in Section 6.2.2.

It's a 'both and' solution rather than an 'either or' one.

7.2.4 STREET TREE LOCATION

Design considerations are critical to the identification of streets needing trees, to the selection of appropriate species for a site and to the number of trees to plant. Factors to consider in determining planting locations and suitable species for sites include:

- use of an inventory to identify precincts/ streets where additional trees may be supported or where programmed replacement works should occur;
- determination of constraints at the prospective planting site that may influence tree size or form including precinct character, road typology, traffic sight lines together with pedestrian and cycling requirements to ensure compliance with Australian Standards, existing trees, infrastructure (above and below ground), views and solar access requirements; and
- engagement with affected residents to gain an understanding of their reasonable preferences that might garner support for street trees.

Location within the City and the character and aesthetics to be achieved also affect proposed plantings. An emphasis on the continuity of species in any one block or street, for instance will create a unified aesthetic in a neighbourhood and enhance its 'sense of place'. Mixed plantings have a different affect.

The character of the City suggests that reliance on the practice of planting mostly native species in the bushland precincts of the City should continue. This is particularly so for plantings of larger trees which contribute most to the view of the hillsides as having a contiguous forest cover. While the protection of the image of the City is a central tenant of this strategy, an emphasis on native vegetation across its hillsides is not without concerns for bushfire. Where possible, less flammable vegetation can be used to reduce this threat, potentially through the use of lower growing species in nature strips under and amongst native trees overhead.

12. Develop procedures for the necessary site investigations to understand the nature of proposed planting locations, infrastructure constraints and their effect on species selection.

7.2.5 NURSERY STOCK SPECIFICATION

Good nursery practice is essential to the success of the City's street tree program. Nursery grown trees need to be healthy and of a standard that promotes rapid establishment and growth to maturity, with clear, straight stems, balanced crowns, well developed branching and root structure all important.

In Australia, NATSPEC (a national specification for the building industry) *Specifying Trees – A Guide to Assessment of Tree Quality* has been used as a guide for specifying trees. More recently AS 2303-2015 Tree Stock for Landscape Use has come into effect and is being adopted by the nursery industry. NIASA also sets standards for the management of production nurseries and the supply of growing media.

Current practice in the City of Hobart is for the purchase of bare rootstock and growing-on in containers at the City's nursery. The practicalities of growing trees in containers and the likely impact of root restriction means that trees often leave the nursery and are planted out when they still have a low clear stem height. This can leave trees open to vandalism (low branches are easily reached) or to early pruning in the field to remove low branches that interfere with footpaths or roadways.

In Europe, the specifications are more onerous but better adapted to street conditions. There, nursery-grown trees have clear stems to 4 metres achieved using pruning techniques that accelerate growth to such a height while maintaining straight trunks and good branching structure. Trees of this scale enable immediate planting into carriageways without fear of breakage. Vandalism is also reduced as sturdier trees are provided at a height that is less within reach.

13. Adopt AS 2303-2015 Tree Stock for Landscape Use as the standard for the purchase of trees and for their growing on in the City's nursery.
14. Continuously review world's best practice for the growing of street tree stock and implement nursery practice procedures accordingly.

7.2.6 PLANTING INSTALLATION DETAILS

The correct installation of street trees at the time of planting is critical to their success and to the mitigation of impacts on adjacent infrastructure. Fieldwork revealed that a large percentage of the City's streets have fully paved verges and/or very narrow footpaths. At present, the impact of street trees on adjacent infrastructure is relatively low across the City. However, given the location of many trees in narrow footpaths and fully paved verges, the potential for impacts is increasing.

Experience has shown that where adequate surrounds[58], water, air and an appropriate substrate are provided, trees can be planted in such areas with minimal or no damage to infrastructure. Technical guidance is required for the installation of street trees addressing issues such as:

- transport to the planting site;
- excavation for planting and requirements for structural cells or soils;
- planting techniques for specific situations (i.e. narrow footpaths, in road, etc.);
- installation of quality substrate in appropriate volumes (to ensure water, air and proper drainage)[59];
- protection;
- watering during establishment (quantity and timing);
- formative pruning (including rates and techniques);
- maintenance pruning (standards to be achieved);and
- on-going care during establishment including pest control and inspection.

While these techniques are more expensive than the traditional methods of planting, the longer term benefits in terms of health and survival will more than make up for increased establishment costs. In the absence of increased funding to offset greater establishment costs, the answer may need to be to plant fewer trees and plant them better.

Many local government authorities produce standard planting details that tackle these issues. For instance the Inner West Council (including the former Marrickville Council) in New South Wales, in an appendix to its street tree master plan, provides best practice details for planting in a number of street situations.

By adopting modern techniques of planting, that may include a mix of organic and inorganic materials to create a structural matrix, much of the damage associated with past planting techniques will be avoided. While these techniques are more expensive than traditional methods of planting, the longer term benefits to health and survival more than make up for the increased costs. In the absence of funding to offset greater establishment costs, the answer may be to 'do less, but do it better' with the money available.

15. Develop a suite of standard planting installation details and procedures that address the various planting conditions within the City. In the interim, review and consider best practice examples from elsewhere.

[58] Studies show that pavement damage is minimised where trees are planted where they will be 1m from a kerb when they are mature and where planted into an otherwise sealed surface a 2 x 2 metre unsealed area around the base will reduce the severity of damage.

[59] See Appendix 6 above for guidance on appropriate volumes of soil relative to expected tree size. (Accessed 14.03.2016)

7.2.7 ESTABLISHING STREET TREES IN NEW DEVELOPMENTS

New developments (particularly large commercial developments or sub-divisions) provide excellent opportunities to establish new, large street trees. In new works, street dimensions and treatments can be designed to accommodate street trees, services can be placed underground or overhead wires can be bundled to minimise the need for pruning. Contemporary planting techniques can also be employed to ensure longevity and health.

New policies, regulations and enforcement protocols need to ensure current and future developments expand and diversify the City's tree canopy. All new development sites should be conditional on the incorporation of street trees within frontages and open spaces adjoining the street. Street tree planting techniques should accord with the City's standards and procedures. Beyond establishment, provisions should be implemented to require a two-year minimum maintenance period at the developer's expense.

It is worth noting that local government authorities in Tasmania abide by the *Tasmanian Councils Standards for Subdivisions* (TCSS)[60]. This is a standardised specification for new infrastructure works prepared by the Institute of Public Works Engineering Australia (Tasmania Division) (IPWEA). The specification includes requirements for the separation of underground services in footpaths adjacent to kerbs and to boundaries.

It makes no reference to the planting of trees or their relationship to these services. The minimum dimensions for separation of underground services of 3350mm and 3075mm are additional to the minimum requirements for sealed pavement widths of 6-12m depending on the number of residences in the street.

The absence of street trees from the specification is a significant oversight. Together, requirements for infrastructure and road widths will likely limit the planting of street trees where space is constrained.

Elsewhere, contemporary streetscape design standards have developed specifications that allow for street trees in their road network.

For instance, Landcom, the New South Wales government's property developer has developed street tree design guidelines that provide specialist information about best industry. The Landcom document[61] could provide useful guidance to amend the IPWEA standards.

Street tree planting should be required for all new subdivisions including the requirement for a minimum verge width to enable the planting of street trees, preferably on both sides of the street. Tree species should be of a sufficient size and canopy and spaced as required to provide generous shading, to the City's satisfaction. New trees should be cared for by the developer until the development is handed over to the City.

16. Explore options to apply conditions to planning applications for new subdivision for establishment of and handover of street trees, to the City's satisfaction.
17. Gain support for amendment of the IPWEA specifications to adopt the Landcom (or similar) specifications for street tree planting.

[60] See www.ipwea.org/tasmania/aboutus/corporate_information#sthash. Lg61mcBJ.dpuf (Accessed 07.03.2106)

[61] See http://www.landcom.com.au/publication/street-tree-design-guidelines-3/ (Accessed 22.03.2016).

7.2.8 RESIDENTS ESTABLISHING TREES

There is an increasing interest in the Australian municipal areas for community initiated nature strip gardens coinciding with concerns in the community for sustainability and food security. A similar increase in interest has occurred in the City of Hobart.

The City will continue to work with those interested in such gardens.

Fruit trees are not encouraged but trees suited to compact sites and with canopies that do not extend beyond the width of the garden bed at maturity may be considered. As for trees generally, no mention is made of the process of approval.

18. Consider options to explore the possible establishment nature strip gardens together with interested parties.

7.3 STREET TREE MANAGEMENT

Street tree management is a science requiring attention to tree maintenance (Section 7.3.1), risk management (Section 7.3.2), pest and disease control (Section 7.3.3) and pruning (Section 7.3.4) using contemporary practices employed by skilled professionals (Section 7.3.5).

7.3.1 TREE MAINTENANCE

Trees have a finite life in part limited by their growing conditions. Trees growing in the harsh environment of the street require specialised care and management after planting to maintain their health, to maximise their lifespan and to address community concerns for amenity and aesthetics.

In early establishment, regular and prolonged watering and formative pruning are required. Later, the focus of activity transitions to the structural development, appearance, good health and longevity of a tree. As a tree matures, attention moves to maintaining health, extending longevity, pest management, safety and removal.

The work of maintenance is a specialist activity to be performed by skilled technicians working to agreed standards and procedures.

Maintenance should be systematically planned and responsive to regular monitoring of the City's tree stock. Risk inspections, formative pruning, removal of suckers, weed control at the base of trees, topping up of mulches, watering, monitoring of pests and diseases, removal of dead and dying limbs are all part of a proactive system of on- going care.

Proactive management of a city's street tree stock results in better tree health, lower complaints and insurance claims and better return on initial investment through longer life of the trees. Street tree maintenance should not, therefore, be viewed as a liability, but rather as the profitable management of a valuable asset.

At present, service level agreements define parameters for maintenance. These agreements should be reviewed periodically to ensure the prescribed outcomes conform to best practice.

19. Service level agreements be regularly evaluated to ensure they reflect current best arboricultural and horticultural practice.

7.3.2 RISK MANAGEMENT

At the same time that street trees are established for their benefits, there is also the need to limit the risk of harm from tree failure.

In Hobart, the Quantified Tree Risk Assessment (QTRA) method has been adopted as a tool for the assessment of tree related risk[62]. The QTRA method applies accepted risk management principles to tree safety management. The system works by quantifying the risk of significant harm from tree failure balanced against the location of the tree, the benefit provided by the tree and the cost of risk management.

The first step in the process is to determine the use of the land where the threat occurs (the 'land use target'). By evaluating the target first, the risk assessor can determine what degree of further investigation may be required. Where necessary additional evaluation of consequence and probability of failure is undertaken. These values (target, consequence, probability) are entered into a 'calculator' which generates a traffic light coded 'risk of harm' indicating 'risk tolerance thresholds' that determines what action (if any) should be taken in relation to the urgency and need for action to control risks.

QTRA has been shown to require substantially less resources while maximising benefits thus providing agencies with a method that addresses their duty of care. Implementation of QTRA is based on the City's previously adopted routine inspection regime that responds to perceived target severity. Inspections will occur on a 6-60 month cycle dependent on risk severity and minimally in all cases on a 5-year (60 month) cycle.

20. Implement the QTRA system as the mechanism to identify the level of intervention appropriate to each tree and for prioritising maintenance works programs.
21. Review current inspection procedures to ensure integration with the requirements of the QTRA evaluation system.

[62] See www.qtra.co.uk/docs/QTRA.pdf (Accessed 14.03.2016)

7.3.3 PESTS AND DISEASES

All trees are subject to pest or disease outbreak, some with life-threatening consequences for the tree, others with concerns for vigour or aesthetics. Control of outbreaks is an important task of street tree managers. The level of intervention however must be balanced against the likely outcome from non-intervention, the potential impacts of proposed treatments and the cost of control methods.

So far, Hobart has avoided the catastrophic loss of trees experienced in parts of North America and Europe. Vigilance is required to ensure this remains the case as there are multiple potential threats including, as previously discussed, the spread of myrtle rust.

To date, the City has undertaken species-specific inspections to assess the presence or absence of particular diseases. For instance, in 2004-2005, the City assessed its stock of elms for signs of attack by the elm leaf beetle, capable of causing extensive damage to foliage, premature leaf drop and a decline in tree condition, possibly leading to death following successive years of attack.

The City now carries out routine monitoring and chemical control of the beetles on elm trees.

Constant monitoring of the City's street tree stock is required to identify emerging issues in the field and to enable early intervention. Where pest or disease outbreaks are noted, the City should examine the:

- risk arising from the infestation (i.e. potential loss of trees, influence on health and vigour, aesthetic impacts, etc.);
- extent and severity of the outbreak; and
- efficacy of available treatments and costs.

If a determination is made to treat pest or disease infestations, the City will need to notify residents in the neighbourhoods involved about the proposed treatments and their timing. The City will also need to engage with residents where similarly infected trees are found on private land so that a comprehensive approach to the problem can be developed.

22. Monitor the health of the City's street tree stock and respond accordingly to emerging issues.
23. Continue to review the literature about emerging pest and disease threats to species used in street tree plantings.

7.3.4 PRUNING

Appropriate and timely pruning can alleviate many concerns such as obstruction, risk and amenity.

Works may include formative pruning to enhance the structural stability, health and appearance of trees, the removal of suckers, removal of dead and dying branches, removal of epicormic growth, uplift of vegetation overhanging footpaths or infrastructure and/or the maintenance of sightlines.

With regards to the latter, the *Local Government (Highways) Act 1982* (no. 57 of 1982) defines requirements for the clear line of sight and height clearances under tree canopies in streets. The City's current service level agreement requires development of a 5-year pruning program relative to traffic volume and risk.

Current practice in the City of Hobart is to not prune or remove street trees:

- to facilitate views or for solar gain, particularly where pruning would be detrimental to the shape, health or safety of the tree; or
- because of the fall of fruit or leaf litter[63], sap drop, bird droppings or the like or to increase street lighting onto private property (see also Section 7.5.1).

If pruning for the benefit of adjacent landowners were to occur it should be on a user pays basis rather than the expense of the City.

In all cases, pruning should be carried out to Australian Standard AS 4373 *Pruning of Amenity Trees* with work undertaken by a suitably qualified arborist working to the City's standard procedures.

Where street trees overhang private property, the City has no right to prevent the affected neighbour from cutting away the roots or branches of a tree that projects over or on to their land, although this action should not unduly impact the tree's health or stability. Whilst it is not necessary to give notice to the City, it is preferable for landowners to consult with the City as practical advice or assistance may be provided that could preclude the loss or disfigurement of the affected tree. The cost of removing any encroaching tree branches or roots is usually borne by the party wishing to remove them.

Adjoining landowners are not entitled to prune a street tree as a precautionary measure to the creation of an anticipated nuisance before it overgrows their land.

It may be possible for the City to seek damages if a street tree is deliberately, recklessly or unnecessarily damaged whilst being pruned.

24. Continue programmed inspections of trees (every 5-years) and practices in line with the City's standards.
25. Integrate required pruning inspections with QTRA activities.
26. Adopt Australian Standard AS 4373 Pruning of Amenity Trees as the specification for the conduct of pruning of street trees including for canopy and root pruning.

[63] Note, in some Northern Hemisphere locations, municipalities do assist residents with the removal of leaves from their properties. Residents rake their leaves into the gutter in front of their house in autumn and on a designated day or days the Council will remove them. This benefits the residents who don't have to dispose of the green waste generated by the street tree and helps Council who do not have to remove the leaves from their stormwater systems and gross pollutant traps.

7.3.5 CONTEMPORARY TREE MANAGEMENT

Arboriculture or the management of trees is a constantly evolving science that responds to:

- the need to integrate street trees into a comprehensive system of managing street infrastructure (such as the use of trees in Water Sensitive Urban Design treatments);
- new techniques of practice i.e. the introduction of new tools or techniques for tree establishment, care, assessment and valuation of trees;
- changes in environmental conditions brought on by climate change; and
- growing community expectations and demands for the proper management of street trees for their multiple benefits.

The recent introduction of the QTRA risk assessment system is a good example of how the City is adopting contemporary tree management approaches.

Continued professional development of staff is required to ensure that an adequate knowledge of the state of the science is maintained.

27. Ensure adequate opportunities and funding for staff training in current practice.

7.4 TREE PROTECTION

In the United Kingdom, the Town and Country Planning Act 1990 identifies that trees have value with the consequence that local planning authorities are given a duty to protect trees in the public interest. Likewise, the protection of the best of the City's street trees is part of the City's duty of care to its citizens.

With this duty comes the requirement for policies and procedures to define how the City's trees of heritage significance should be addressed (Section 7.4.1), to prescribe when trees may be removed and how they should be cared for during development (Sections 7.4.2 and 7.4.3), to address the City's responsibilities in relation to stakeholder infrastructure (Section 7.4.4) and to define how the City will respond to un-authorised works and wilful damage (Section 7.4.5).

7.4.1 SIGNIFICANT TREE REGISTER

The *City of Hobart Interim Planning Scheme 2015* incorporates a Significant Tree Code. The purpose of the code is to recognise and protect trees that are significant for their aesthetics, size, species, cultural values and/or contribution to the streetscape, townscape or public amenity. The Code identifies 143 locations where trees warrant protection under the Scheme. Trees may be singularly listed or included as part of a larger group (for instance the 45 London plane trees in Fitzroy Place are identified as one listing). The total number of Significant Trees is approximately ~420 (Table E24.1)[64].

The Code applies to the lopping, pruning, removal, injury or destruction of the listed trees. Conduct of these tasks is exempt where required for emergency access or work or where there is an immediate threat to persons or property. Works to improve health or appearance are also allowed provided normal growth is not retarded.

[64] Hedges have been counted as a singular tree for the purpose of this exercise.

The list was transposed from a previous listing under the *City of Hobart Planning Scheme 1982*. It is assumed that it comprehensively covers and protects the City's significant street trees but not necessarily all those significant trees on private land that contribute to the streetscape[65].

Performance criteria in the Interim Scheme mean that the lopping, pruning, removal or destruction of a listed tree may be approved having regard to "any proposed replacement plantings" (E24.6).

Where a significant tree is to be removed or is destroyed, the value of the tree should be assessed and appropriate remuneration required for the loss and replacement costs (see Section 6.1.3 and Section 6.4.4). Replacement should be to the satisfaction of the City.

In making a consideration of replacement of significant trees, thought should be given to the maintenance of coherent plantings by replacement of 'likes with likes' except in instances where the existing planting has caused significant problems that might warrant changing species.

[65] The prior list excluded some trees on private land where the landowner objected to listing.

28. Ensure the Significant Tree Code is a comprehensive listing of individual trees or groups of trees of significance giving consideration to a comprehensive suite of criteria for listing to include trees that contribute to an understanding of the evolution of the City or to particular building, person or event of note.

29. Require appropriate financial recognition to be paid to the City for the removal of significant trees including for the costs of trees that may be required to be replaced as a requirement for removal.

7.4.2 PROTECTION OF TREES AND DEVELOPMENT APPROVALS

Most local government authorities in Australia have controls requiring protection of trees on public and private land. Indeed, in the overwhelming majority of urban/metropolitan councils, owners of trees on private property are required to submit an application to Council if they wish to prune or remove a tree for reasons other than specifically outlined in a Development Application.

The ACT government, for instance, requires protection of "registered" or "regulated trees"[66]. Registered trees are those identified as significant (as, for instance is provided by Hobart's Significant Tree Register). 'Regulated' applies to trees to be protected that have defined characteristics including their height (>12m), girth (>1.5m at 1m above the ground) and/or crown cover (>12m of crown width). Any activity likely to cause damage to a registered or regulated tree is prohibited. Groundwork within the 'tree protection zone' (as defined by AS 4970) requires approval. Minor pruning must accord with AS 4373 Pruning Amenity Trees but may be undertaken without approval. Major pruning of a regulated tree requires approval.

In other municipalities in Australia, the parameters defining a regulated or 'prescribed' tree are described as being in the order of greater than 4-5 metres in height, 3 metres in spread and/or 150-300mm diameter at breast height (DBH).

The pruning or removal of trees for the purposes of protecting public and private electrical infrastructure is generally exempt. 'Fast Track' permits are used in places to exempt trees that do not meet prescribed sizes. Other exemptions might include removal for bushfire protection, for health and safety (does not apply where the owner has caused the death or dangerous condition of the tree) or for trees that are designated environmental weeds.

[66] Adelaide uses similar terminology but differing dimensions to those used in the ACT.

In Tasmania, the Land Use Planning and Approvals Act 1993 allows for the creation of Planning Schemes and of provisions that enable a Council to condition development approvals in certain circumstances. The Act also allows for recovery of damages or the restoration of damages to the condition prior to damage.

Under the Local Government Act 1993, local government authorities have the requirement to assess development applications and may in some instances, apply conditions to an approval.

The Act enables local governments to establish controls on the removal of trees by virtue of the definition of the word 'works' which is defined as the removal, destruction or lopping of trees (except as part of a forest practice which is governed by the Forest Protection Act 1985).

The Interim Planning Scheme, however, provides for general exemptions allowing for the removal of vegetation within a garden with provisos for threatened vegetation, other matters and for heritage places. Current interpretation of the Interim Scheme suggests that unless a tree is mentioned in the heritage listing statement, its removal is exempt from the conditioning process. Elsewhere, the general exemption would appear to allow the removal of an individual tree on private land, except where the tree removal is part of a larger development application for other works to which conditions for the protection of the tree might apply.

Elsewhere in the Scheme vegetation is addressed in the Significant Tree Code and in the desired future character statements for Environmental Living and Low Density Residential Zones. These statements suggest loss of native vegetation should be "minimised". Acceptable solutions and performance criteria are then advised in response to the desired future character statements.

The absence of any kind of protection by the Interim Scheme for trees in the urban forest, beyond those in bushland or those listed is disconcerting.

30. Liaise with the City's statutory planners to apply development conditions that protect and/or enhance the condition of the urban forest by minimising impacts on existing trees on public and private land and/or that require replacement with trees of commensurate value to those being removed (see Development Activities below).

31. Require development applications to include a comprehensive assessment of potential impacts on public trees (above and below ground) and place appropriate conditions on approval to ensure their survival.

7.4.3 PROTECTION DURING CONSTRUCTION

Trees and their root zones may occupy a substantial part of a development site and can, therefore, have a major influence on use and development of a site. Despite the value large trees may bring to a development, they are seen as a nuisance by some developers or their contractors. At worst, this leads to wilful removal or damage or, less maliciously, to a lack of protection of trees from damage during construction.

Developers should be compelled to give sufficient curtilage around existing trees (above and below ground) to eliminate impacts and allow the ongoing health of a tree because trees find it difficult or impossible to recover from damage to tree root zones. Early identification of protection measures to eliminate or mitigate against damage is, therefore, essential and should be required throughout the development process.

In particular, the City should require application of the principles and techniques of AS 4970 Protection of Trees on Development Sites for protection of all trees greater than 5m tall or 150mm DBH in proximity to a development site.

Application of AS 4970 will likely increase the cost to the developer but the benefits that will accrue for the 'greater good' of the community are worth the investment. Acceptance and acknowledgement of the constraints, costs and ensuing benefits is required for successful application of the AS 4970.

To regulate application of the AS 4970, the City should impose, as a condition of approval, a bond for the protection of all public trees that may be impacted by a proposed development. The condition should note that failure to conduct works in accordance with AS 4970 will result in the loss of all or a portion of the bond. The size of the bond should be based on:

- the estimated value of the tree (see Section 7.1.3); and
- the cost of a replacement tree:
- of an advanced size (say a 200L bagged tree or equivalent);
- of a species that will attain the mature height expected from the tree to be removed; and
- installed in line with the City's planting procedures.

In determining any discretion to allow removal of an established tree, the City should require replacement, as above, in a suitable location and/or remuneration for the value of the tree. In no case should the City allow removal of trees for the construction of site hoardings.

32. Regulate compliance with AS 4970 Protection of Trees on Development Sites to protect all trees greater than 5m tall or 150mm DBH in proximity to a development site.

33. Require a bond to be placed on public trees with full return contingent on survival of the tree or partial return where death occurs within a period of 12 months but contingent on proof of the stringent application of the requirements AS 4970.

7.4.4 OVERHEAD POWERLINES AND UNDERGROUND UTILITIES

Beyond the City's governance structure, street trees interact with the purview of multiple authorities including TasWater, TasGas, TasNetworks, Telstra and the NBN. Their requirements are often onerous and do not reflect best practice.

Authority for management of vegetation around powerlines is guided by the Distribution Powerline Vegetation Management Code of Practice established by the Office of the Tasmanian Energy Regulator[67]. The Code recognises that clearing or removal works should be carried out by trained professionals to the AS 4373-2007 Pruning of Amenity Trees and that consultation with landowners is essential.

Energy and communications providers generally require clearing of trees or branches 3m either side of or 3m below an uninsulated (bare) low voltage powerline. Safe clearance may be reduced to 1m where a powerline is insulated (such as with aerial bundled cables). Low shrubs or trees (<3.5m) may be planted within the 6m easement provided they don't inhibit access to the infrastructure. Energy providers suggest trees likely to be >8m in height should be planted at least 12m from its infrastructure. Use of aerial bundled cables can reduce these dimensions. These standards may be altered in high to very high fire risk areas.

Energy providers generally have an easement over land on which their infrastructure is established. The easement gives them the right to access City property to clear vegetation. Pruning of trees adjacent to powerlines in the City of Hobart is undertaken by suitably qualified contractors employed or approved by the energy provider.

Underground utilities also require significant set backs on the assumption they need protection from damage from tree roots. Section 7.2.7 outlined the standard requirements established by the IPWEA for Tasmanian Councils and the degree to which they may inhibit the establishment of street trees.

Tree roots and modern underground services can co-exist but damage may occur where pipes have aged or made of older, fragile or porous material and/or where trees or roots are dug up or lines need repair and excavation needs to occur. Selection of appropriately sized species and avoidance of those with known propensity to damage services should be considered.

Installation techniques, including the use of root barriers can forestall or greatly reduce the potential for damage. In some situations, the planting of trees with smaller rootballs and or limitations on the size of planting holes may enable establishment of trees in close proximity to services. Hand digging is also prudent.

The greatest danger to underground lines occurs during planting. All planting proposals should be preceded by a 'dial-before-you-dig' investigation undertaken by qualified services locators.

The introduction of natural gas services in Hobart has further increased the difficulty of finding suitable locations for tree planting. The easement for Transmission Gas Pipelines is 20m within which only hand excavation is allowed. It has also been noted that introduction of pole mounted National Broadband Network cables will add a new dimension to clearing requirements.

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[67] www.energyregulator.tas.gov.au/domino/otter.nsf/LookupFiles/Code_of_Practice_DistributionPowerlineVegetationMgmt.pdf/$file/Code_of_Practice_DistributionPowerlineVegetationMgmt.pdf (Accessed 08.03.16).

7.4.5 UN-AUTHORISED WORKS AND WILFUL DAMAGE

Some individuals are so opposed to the planting of street trees that they occasionally choose to wilfully damage or remove trees that they take offence to.

The City has powers to make by-laws under the Local Government Act 1993. Clause 4 of the Parks, Recreation and Natural Areas By-Law 2008, protects trees on public property from cutting, plucking, destruction or injury without a permit. The Highways By-Law 2008 specifically refers to trees or other vegetation growing on a highway. Penalties can apply. Notably, the penalty for damage to trees on a highway is considerably less (5 penalty points) than for those in parks (20 penalty points).

34. Examine opportunities for the relocation of overhead services or installation of aerial bundled cabling (for electrical services) as a mechanism for creating more opportunities for the planting of large trees and to reduce the need for costly maintenance.
35. Maintain frequent contact with energy and communications providers to be advised of future works, to minimise redundant works and to ensure necessary training so that over zealous pruning is avoided.
36. Review Council's by-laws to ensure their adequacy in protecting street trees from wilful damage or removal.
37. Review the penalty points assigned to un- authorised works to street trees and consider increasing the penalty to an equal level to that for park trees.
38. Investigate and pursue enforcement action where appropriate through application of the City's by-laws.

7.5 TREE REMOVAL AND REPLACEMENT

The best approach to tree removal and replacement is to reduce the requirement for unexpected removals to occur through a planned approach to street tree replacement. Where this is not the case, consideration must be given to: the process of assessing trees for removal (Section 7.5.1); the need to remove trees in emergency situations (Section 7.5.2) or for the purpose of reducing environmental threats (Section 7.5.3); and then to the processes for determining replacement plantings including the necessity for an age diverse stock of street trees (Sections 7.5.4 and 7.5.5).

7.5.1 TREE REMOVAL ASSESSMENT

Most cities, including Hobart, prefer to retain established street trees where possible. Removal of street trees is required, however, when trees die, where they pose unmanageable safety hazards, are severely damaged or are in irreversible decline or are causing significant damage to public or private infrastructure.

In Hobart, street tree removal is not deemed appropriate:

- to address the preference of householders for alternative species;
- to establish or clear view lines;
- where there are concerns about leaf litter, twigs or fruit or where roots protrude;
- to increase on street car parking numbers; and/or
- where there is competition with lawns/ gardens for water, nutrients or light.

Taking account of the above, the City typically pursues a good neighbour policy approach to the management of trees adjacent property boundaries and has been open to the conduct of maintenance works that address genuine and substantial nuisance.

In Hobart, street tree removal has been guided by clauses in the *2005 Strategy* (Clause 4.1.2 through 4.1.7). A review of the procedures has been undertaken and a new procedure developed to guide removal in the future.

Where trees greater than 5 metres in height, greater than 3 metres in spread and/or 150mm diameter at breast height (DBH) are to be removed, the requirement should be to advise nearby residents at least 2 weeks in advance. Longer notice is often given relative to the size and importance of the tree involved.

The City's Parks and Amenity Division will retain authority to approve all tree removal.

With regards to unauthorised removal by the public or other agencies, if a person(s) or authority removes a tree without permission, they may be subjected to an 'enforcement action' by the City of Hobart (under the *Parks, Recreation and Natural Areas By-Law No. 4, 2008* or the *State Highway By-Law, No 34 of 2008*.)

Removal of a Significant Tree is allowed under the Interim Planning Scheme provided performance criteria are met. The planning application process applies to all development including works to remove a significant tree for which approval must be gained and notices posted in the local press and online.

39. Progressively remove and replace declining and/or poor performing trees (see also Recommendation 43) to an agreed plan of action, approved at the managerial level.
40. Adopt a tree removal approval procedure to conform with City of Hobart organisational structure and asset management systems.

7.5.2 EMERGENCY TREE REMOVALS

Emergencies and unforeseen critical events arise that can have the potential to threaten life or cause property damage. These situations require immediate action that outweighs any requirements for lengthy approvals processes.

The City employs a team of qualified and experienced arborists to deal with these situations.

Trees in good condition should not be removed except in emergency situations. In these cases, the approval of the City arborist is valuable, particularly if large or Significant Trees are involved. Alternatives to removal are always explored before action is taken.

7.5.3 WEED SPECIES

The City invests in the protection of its bushland. One of the critical tasks involved is the removal of woody environmental weed species as they suppress native biodiversity or cause other environmental damage.

Known or potential weed species are represented in the City's street tree stock. Amongst known weed species in our streets are tree lucerne (*Cytissus palmensis*) and crack willow (*Salix fragilis*) both of which are declared noxious weeds under the Weed Management Act 1999. Other weed species in our streets include privet (*Ligustrum spp.*), non-indigenous pittosporums (*cheesewood*), hawthorn (*Crataegus monogyna*), holly (*Ilex spp.*) and albizia (*Paraserianthes lophantha*).

Removal and replacement with appropriate species is a priority.

41. Establish procedures for the approval of tree removal or related works in emergency situations.

42. Progressively remove known environmental weeds and replace with appropriate street tree selections.

7.5.4 AGE DIVERSITY

Previous discussion noted the need to maintain a diversity of genera and species within the mix of street trees. Likewise, there is a need to consider diversity of age.

Given the large proportion of street trees in the City over 40 years, it is timely to consider the progressive replacement of over mature trees and the monitoring of older trees generally to ensure safety (as per Section 6.3.2).

Note that an over emphasis on species diversity amongst replacement plants (see Section 6.2.3) should not be at the expense of the selection of well adapted species known for their longevity.

7.5.5 REPLACEMENT

Where a street tree is to be removed, it should be replaced with at least one new tree to the City's satisfaction. Tree removal may also give rise for opportunities to increase number of trees in a location and should be explored in the interests of increasing canopy cover.

It is noted however that in some circumstances, street trees may not be replaced if the location cannot meet contemporary site specification requirements and relevant Australian Standards.

Where trees are to be replaced, consideration should be given to the selection of species that will most benefit the community i.e. in terms of canopy cover or by increasing species and/or age diversity.

In the case of a Significant Tree (Section 6.4.1) or a tree that is part of a larger suite of trees of a similar species, consideration should be given to replacing 'like with like' to maintain the established theme. Exceptions may be

made where the health of the overall planting is questionable or the species to be replaced is short lived, requires excessive maintenance or is a nuisance.

43. Progressively replace over-mature, sick or dying trees with appropriate street tree selections targeting a diversity in species and age.

44. Removal and replacement procedures should incorporate guidelines for appropriate replacement plantings.

7.6 COMMUNITY AND STAKEHOLDER ENGAGEMENT

Community engagement in the process of planning, establishing and managing street trees pays substantial dividends to local government (Section 6.6.1). Community involvement can take the form of notification of works (Section 6.6.2), participation in planning through workshops or individual requests (Section 6.6.3), the supply of information and/or education programs for residents (Section 6.6.4) and/or by providing incentives for the establishment of trees on private property that will influence the streetscape.

The earlier engagement occurs the better. The process should be transparent and engaging, with the aim of empowering participation and informing all parties. Where conducted successfully, engagement leads to fewer conflicts and complaints and creates a range of partners that bring increased capacity for delivery.

7.6.1 COMMUNITY ENGAGEMENT

The City of Hobart has a policy on community engagement. The policy recognises the right of the community to be informed and have input into decisions affecting their lives. This should be the first point of reference for any consultation program[68].

It is then important to choose the appropriate mechanism for engagement. The City of Hobart currently uses the 'Your Say' on-line platform as a hub where people can contribute ideas and feedback on projects such as street tree plantings. 'Your Say' can be augmented by traditional methods of consultation including workshops, information sessions and forums.

45. Consider the approach to be taken to community engagement and the methods to be employed based on the significance of each project using professional support and resources as necessary.

[68] See www.hobartcity.com.au/Council/Community_Engagement (Accessed 09.03.2106)

7.6.2 COMMUNITY NOTIFICATION OF PENDING ACTION

Residents and stakeholders expect to be informed about activities in their streets. Situations where the City will continue to consult /inform residents and stakeholders, include where:

- master plans are being prepared for a precinct or street;
- new tree plantings are being investigated;
- new infrastructure or asset replacement including street trees is proposed;
- trees are to be removed (except where removal is required on safety or emergency grounds);
- extensive or lengthy pruning is to occur to a significant tree or suite of trees;
- pests or diseases in street trees are to be treated including where similarly infected trees are found on private land; and
- traffic management controls will be required for a length of time (overnight or longer) to support any of the above.

The breadth of engagement, the techniques and the timelines for consultation will vary depending on the intended scale of the works, the length of time that the works will take and the heritage, age or other significance of the tree(s) involved.

46. Establish clear procedures for when and who to consult with when street tree projects are to be undertaken.

7.6.3 COMMUNITY INVOLVEMENT IN THE PROCESS

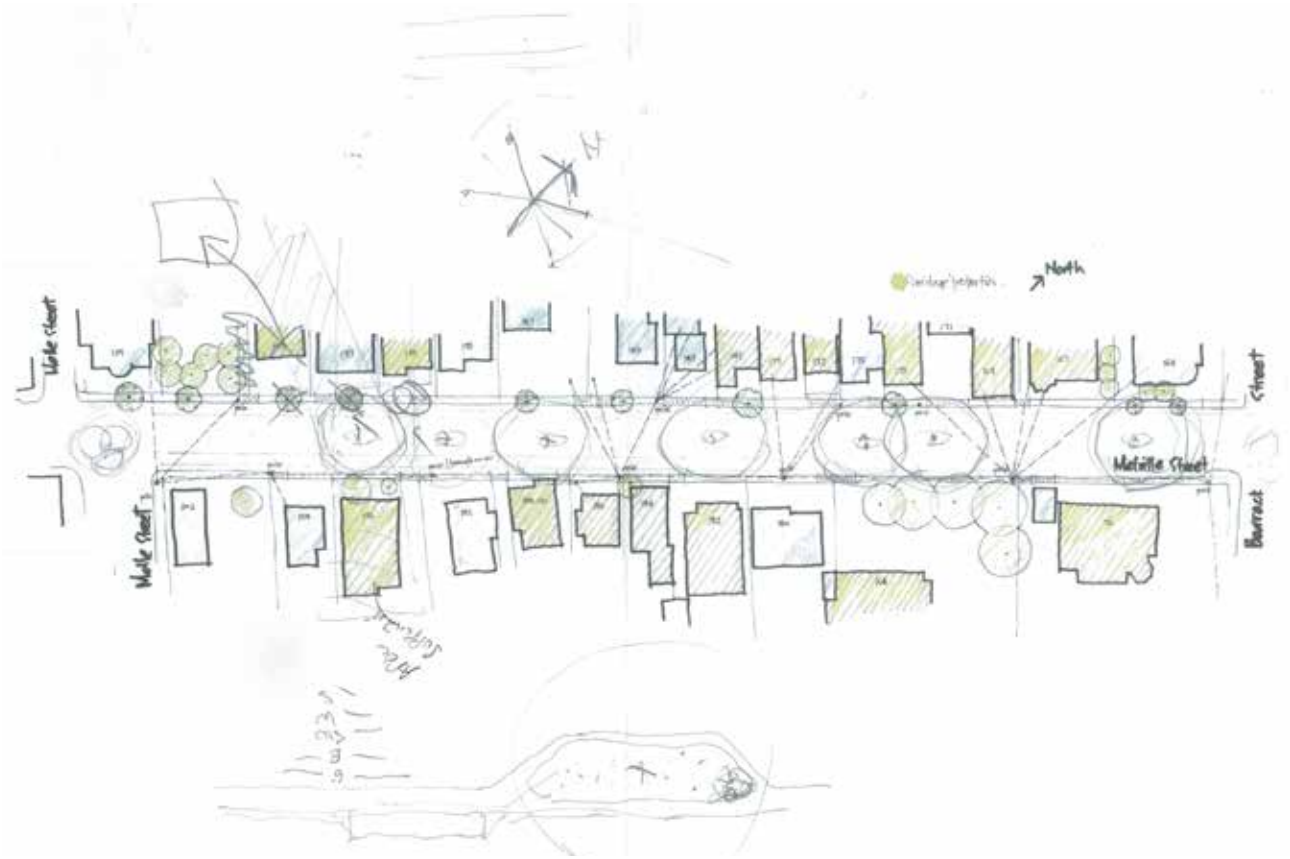
Residents should be empowered to help plan, establish and care for the trees in their streets. In many communities, residents band together with local businesses and others to workshop where they would like trees in their streets. These groups often get preferential attention from their local council.

Many councils have a pro forma document online to request the planting of street trees. Information is provided at the web address outlining the value of trees and the roles and responsibilities the municipality will play in acting on the request. Residents are asked for contact details and the location(s) and number of trees they would like for their verge.

Another effective way to pursue community engagement is through assistance to local groups with master planning for trees in their streets. This moves beyond an individual tree approach to become a comprehensive and cooperative technique resulting in more trees in any one street and a reduction in conflict as neighbours work to address one another's concerns.

A practical means of achieving this is to assist communities in the establishment of street tree planning groups and then to develop workshops to assist. Workshop assistance may take the form of facilitation and/or provision of base maps or aerial photography with services and kerb cut locations marked, shadow diagrams for trees of different sizes and imagery of potential species selections.

Street tree groups could be identified by an expression of interest program using the City's 'Your Say' platform. Depending on the number of groups, some kind of triage might be required. Prioritisation could be made against a 'best prospects list' or against a lists of those trees that 'need replacement' or are in 'poor condition'.



Hand drawing produced during community workshop showing notional locations for tree plantings in Melville Street (see text next page).

Once tree locations are agreed, there may be other opportunities for resident involvement.

Community groups often volunteer labour to plant or prune trees. Whilst this is laudable, the planting of advanced or semi-advanced trees requires specialist skills and is not suited to community participation. However, the community may be helpful where large numbers of small plants are to be installed (such as tubestock for trees or shrubs). Likewise, pruning is a specialist task with risk management issues and resident involvement should not be encouraged.

Where street tree related community associations are already formed, cooperative maintenance agreements can be developed to encourage participation in on-going tasks such as watering, weeding, topping up mulch and replacement of topsoil. In some municipalities this has taken the form of an 'Adopt a Tree' program or similar.

Where residents are involve, there is a much higher success rate in the establishment of street trees.

47. Explore a range of opportunities for residents to participate in the planning, establishment and care of the City's street trees.

A COMMUNITY ORGANISED MEETING TO PLAN FOR STREET TREES

How was it organised and who came? A workshop was held with residents in Melville Street (between Barrack and Molle) at the impetus of an enthusiastic local. A flyer inviting residents to a meeting was prepared (Photo) and used as part of a door-knock to all residences fronting the street (29 in total). Members of 11 households attended, represented by approximately 20 people. Three households apologised (two favoured trees, one didn't).

What was the agenda? The meeting was introduced by the event's organiser. The project consultant spoke to the benefits of large street trees, the need for communities to be involved and the ways that trees could be introduced into the street (i.e. in the footpath, within parking bays or centrally). A section drawing through the street was used as part of the latter discussion.

A wide ranging conversation ensued during which strong support for large trees in the street was elicited as well as several negative responses to additional trees of any size (there are already trees on one side of the street).

A plan, produced by a resident, was tabled showing the location all of the houses in the street, the location of overhead wires, existing street trees and driveways. This plan was used as a tool for further discussion. Some of the issues raised included: the blocking of views (houses with these concerns were noted), the shade cast and its impacts on available light in homes or on gardens (a shade diagram was drawn to illustrate which areas might be affected), traffic concerns and the possibilities for trees and landscaping to occur in proposed roundabouts (the possibility of trees in a roundabout at the intersection of Molle and Melville Streets was opposed by one resident).

What resulted from the meeting? The plan was used to identify 6 locations, along the centreline of the street where large trees could be established that would not affect the views from the residents opposed to street trees in front of their view (Plan). The 6 trees were marked on the plan as were the proposed roundabouts, one showing small trees.

How was the meeting concluded? The meeting concluded with a discussion of the way forward. Of particular concern was the length of time that it might take for something to happen. Attendees were informed that the City would need to do further consultation and formal investigations, including liaison with various internal departments and with utility providers, and if the process were to proceed, appropriate tree stock would need to be secured. The latter was noted as needing to have a 4m clear stem so that branches would not interfere with passing traffic and that such trees were not always readily available.

Residents were provided with a list of tree species from the City of Melbourne tree selection guidelines that were indicative of the types of trees that might be used in a central median planting. They were advised that not all species were suited to Hobart and not all would be available. The list could, however, be used to get a sense of scale and general type of tree that could be used.

Residents were encouraged to contact the City with their support or opposition so that Alderman were made aware of the residents' views on the matter.

What did we learn? Door knocking and a flyer were successful in getting a good attendance. Having a facilitator is important, albeit they should stand apart from the process to avoid bias (although all views were canvassed at the meeting, the consultant did have a strong opinion in favour of street trees and put those views in opposition to some of the negative comments that were made).

It is important to have a plan of the street at the meeting including locations of driveways, power poles, overhead and underground services and existing trees (public and private). It should be to scale and have a north point on it. Examples from elsewhere are helpful. A cross-section of the street marked with the widths of footpaths, parking and vehicle lanes is essential.

No recording of the event took place, something that should be done in the future so that an accurate account of what was said could be made available at a later date.

Is this the way to go in the future? Yes it is.

7.6.4 COMMUNITY INFORMATION AND EDUCATION

An important element of good urban tree management is for residents to become knowledgeable about the benefits of street trees in the City – to convince more people about the 'pros versus the cons' of trees in their streets.

Public education programs have been developed in other municipal areas to achieve this aim. Such programs raise the understanding of the value of street trees and educate residents about their care and encourage involvement with maintenance.

The tools used vary, from events, to workshops, to the use of printed and on-line media. For instance, the New York Tree Trust offers 2-hour seminars to help residents learn how to care for street trees.

In Hobart, a starting point could be to establish a page on the 'Your Say' website where residents or groups can:

- request City assistance with the establishment of trees in their street;
- link to the tree inventory so they can identify the trees in their street and understand their condition;
- download materials about best practice care of existing and new trees and how residents might be involved;
- report sick or dying trees; and
- make philanthropic donations to assist planting projects.

The City of Melbourne has an immensely popular program where residents send emails to the city about concerns for a particular tree. It started as a way to get residents to report problems but became a mechanism for people to express their fondness for a particular tree. In 2015, some 3,000 residents composed 'love letters' to trees on their database[69].

As the Hobart's inventory is upgraded, and linked to readily available mapping of all of the trees in the city streets, such a system could be useful in raising awareness here.

48. Establish a permanent 'street tree' presence on the City's 'Your Say' website where residents can become involved in the processes of street tree planning, report issues and link to educational information about the value of street

[69] See www.news.com.au/technology/environment/conservation/people- around-the-world-have-been-emailing-trees-in-melbourne-to-confess-their-love/news- story/e271b76b4524a998fee3b27d6d4b9bb3 (Accessed 11.03.2016).

7.6.5 INCENTIVES FOR PRIVATE PLANTINGS

As noted, trees on private property contribute greatly to the character of the City's streets. Given the difficulties of establishing trees in the road reservation, residents should be encouraged to plant trees that will contribute to the streetscape.

In Hobart, trees on private property take on great importance being the only trees in some instances that contribute to the streetscape.

In some Australian municipalities such plantings are supported by financial, physical and/or technical assistance. Financial assistance may be in the form of the supply of an advanced tree. Physical assistance may be via the conduct of planting. Technical assistance may be in the shape of installation drawings and advice.

More could be undertaken to encourage private plantings of large trees in proximity to roadways as a means of increasing tree canopy.

49. Develop criteria to enable assessment of requests for assistance with the planting of trees on private property that will contribute to the streetscape.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8. IMPLEMENTATION AGENDA

The development of this strategy provides an opportunity for a comprehensive re-imagining of how street trees are delivered in the City. Amongst the strategies arising in Section 7, a number have been identified here in the form of a 5-year implementation agenda.

As time proceeds and the most critical tasks are completed, particularly the creation and adoption of clear policies and procedures, the time will come to prepare master plans for on-going works to achieve the vision herein.

Items for implementation are grouped by responsibility for action.

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
COUNCIL		
Implementation Item 1	Adopt the Street Tree Management Policies set out in Section 6 as interim statements of intent until such time as fully developed policies may be created.	Section 3.1, Section 7.1.1, Section 7.1.5 and Section 7
Implementation Item 2	Examine further options available for the City to further advance the vision to be "recognised for its natural beauty and quality of environment" and for urban management to foster the City's uniqueness by way of establishment of green infrastructure including street trees.	Section 3.1
Implementation Item 3	Foster a corporate culture wherein trees are managed as infrastructure assets using consistent concepts of "green infrastructure" and related terminology.	Section 3.2 and Section 7.1.2

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
WHOLE OF CITY 'JOINED UP ACTION'		
Implementation Item 4	Establish a cross divisional group within the organisation to support establishment of street trees as part of an integrated infrastructure program. Priority actions include to: • commencement of discussions with urban designers regarding the establishment of substantive tree plantings in the Lenah Valley shopping strip; • determine the best approach to asset renewal of pavements in Carlton Street, New Town; • review asset renewal plans for the next two years of works to determine possibilities to enable the establishment of additional street trees; • identification of areas with the potential for Water Sensitive Urban Design integration (for instance in Hamilton Street between Lochner Street and Browne Street (and in Browne Street adjacent to John Doggett Park) (apply lessons learned in Aberdeen Street); and • on-going discussions about the priority for inclusion of street trees in all roadworks projects.	Section 7.1.2
Implementation Item 5	Members of the cross-divisional group should be provided specific training to understand the requirements of trees and to promote trees and tree-friendly design concepts, solve street tree related issues and the use new technology and techniques.	Section 7.1.2

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
WHOLE OF CITY 'JOINED UP ACTION'		
Implementation Item 6	Commence preparatory investigations for street tree planting in: • streets within high profile/high use areas including: Augusta Road (portion identified as preferred location for upgrading as part of the Retail Precincts Strategy); • New Town Road (included in the Retail Precincts Strategy); • areas with evident community support (as expressed during preliminary community engagement) including: Melville Street between Barrack and Molle Streets; Hill Street; and Lochner Street between Pine Street and Minallo Ave; • newly developed streets/subdivisions including: 'Brickworks' subdivision Giblin Street, New Town (nominated by residents during community engagement); Virginia Court; and Aotea Road.	Section 7.1.2 and Section 7.2.4
Implementation Item 7	Work with the City's Cultural Heritage team to review the listing statements for heritage listed places to determine where there may be trees worth preserving that are not listed in the Significant Tree Code and to nominate those trees for listing. Where the trees are not worthy of listing in their own right it is important to consider whether or not they contribute to the listing for the place more generally. If so they should ensure that the tree(s) in question be included in the statement of significance of the place so that they can be considered for protection from development by the Interim Planning Scheme.	Section 7.4.1
Implementation Item 8	Identify opportunities for community engagement in the planning for and establishment of street trees by calling for expressions of interest from resident community groups to form and commence the tasks of developing plans for their street.	Section 7.6

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
PARKS AND CITY AMENITY DIVISION		
Implementation Item 9	Maintain an up-to-date, comprehensive and live inventory of all street trees within the City linked to GIS mapping of locations. Ensure that terminology is adequately defined to enable consistent assessment for each criteria (notably for 'condition' as this may affect the conduct of Agenda Item 17).	Section 7.1.3
Implementation Item 10	Develop and adopt procedures for: • the necessary site investigations to understand each planting location and its effect on species selection • tree installation in response to the various planting conditions encountered in the City; • tree inspections in line with adoption of QTRA risk management procedures; and • tree removal and replacement plantings. • the determination of constraints at prospective planting sites that may influence tree size or form including precinct character, road typology, driver and pedestrian safety requirements to ensure compliance with Australian Standards, existing trees, infrastructure (above and below ground), views and solar access requirements	Section 7.2.4 Section 7.2.6 Section 7.3.2 Section 7.5.1
Implementation Item 11	Develop the following additional procedures with the view to achieving best practice guidance for street tree management by the end of the 5-year lifespan of this plan. Additional procedures should include: • nursery practice; • tree maintenance in line with service level agreements; • pruning and pest and disease management; • community engagement including notification of works and involvement in the processes of planning, establishment and care of trees.	Section 7.2.5 Section 7.3.1 Section 7.3.4 and Section 7.3.3 Section 7.6
Implementation Item 12	As the tasks of this implementation agenda are nearing completion move forward with planning for the creation of street tree master plans for the various precincts of the City.	Section 7.1.6
Implementation Item 13	Liaise with the local energy provider to create a priority list of streets for the establishment of aerial bundled cabling (ABC) (22 streets were identified in the inventory 'as priority' for ABC introduction).	Section 7.4.4
Implementation Item 14	Undertake the necessary steps to establish the extent of canopy cover within the non-bushland areas of the City.	Section 7.2.1

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
PARKS AND CITY AMENITY DIVISION		
Implementation Item 15	Prepare a revised situation analysis at 2020 and report to the Council on performance against established targets.	n/a

ITEM NO.	TASKS	2017 STREET TREE STRATEGY REFERENCE(S)
ARBORICULTURE & NURSERY PROGRAM		
Implementation Item 16	Commence preparatory investigations for street tree planting in streets determined to be "best prospects" for planting including inter-divisional consultation, engagement with residents, dial-before-you dig investigations and proceed with works in a timely manner.	Section 7.2.4
Implementation Item 17	Remove street trees known to be environmental weed species listed on the street tree inventory and replace with appropriate plantings, noted in Section 6.5.3.	Section 7.5.3
Implementation Item 18	Prepare and commence a 10 year plan to remove and replace all trees listed as "poor and very poor" condition or those trees known to be causing significant infrastructure issues. Commence with trees of small-stature and replace with large specimens (i.e. Raymont Terrace (*Prunus spp.*), Pine Street (*Eucalyptus ficifolia* and *Buddleia davidii*), Congress Street (*Prunus spp., Photinia*), Pedder Street (*Acacia, Crataegus* and *Prunus*). Consider including those trees that have been found to be pruning dependant and/or to have high failure rates.	Section 7.5.1


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STREET TREE PLANTING
EXISTING TREES
POPLAR HEDGING
6.0
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ATTACHMENT A
TREE REMOVAL ASSESSMENT PROCEDURE

In accordance with the Tree Removal and Replacement Policy Statement (Section 6.5), the City will remove street trees under the following circumstances:

- the tree is dead or dying;
- the tree is assessed as being hazardous due to recognizable structural or health defects and where remedial or selective pruning cannot eliminate the risk, or where such pruning will leave the tree unacceptably disfigured or poorly formed;
- the tree is causing public infrastructure damage which is considered significant and cannot be overcome by other reasonable and practicable measures;
- the tree is causing significant damage to significant private structures.

  It will typically be a requirement to positively establish that the tree is actually causing the damage, that the damage is significant and that continued future damage cannot be overcome by other reasonable and practicable measures; and
- any other reason, at the discretion of the City that can be justified on either technical or legal grounds according to particular circumstances.

Significant damage is a relative term, and will usually be assessed with respect to the likelihood of repetitive repairs and the relative costs compared to the amenity value of the individual tree. It is also necessary to consider the severity, age and nature of any private property damage and how quantifiable the damage is being caused solely by the tree. If the structure is a relatively minor outbuilding, or landscape wall or the suitability or quality of construction is questionable, it may be of greater benefit to retain the tree as the more significant item.

Obviously, if the damage is clearly related to the City's tree and is affecting the structural integrity of a dwelling or other important structure, then clearly tree removal must be considered. As a rule this will generally be determined on a case- by-case basis. The removal of a tree is generally not considered justified when damage is restricted to minor works such as paving, fencing or footpaths and driveways or to deteriorating sewer or drainage lines where reasonable and practical repairs can be undertaken.

In making a determination for a tree to be removed, the following procedure will generally be followed. The process indicates that once a notification or request is received an immediate determination needs to be made as to whether or not removal is required. If the answer is yes, a *Street Tree Removal Consent and Notification Checklist* is to be completed so that managerial approval can be obtained and residents notified. Note that where there is an immediate risk to the public that the procedure allows for a shortened period of notification so that emergency works can be conducted.

In the case of an out of hours emergency, the *Emergency Assessment and Response Procedure* is to be followed and a Report of an After-Hours Incident Involving a Tree will need to be completed.

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