Shire of Esperance

Street Tree Strategy

2023

we make it happen

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1. SETTING THE SCENE

1.1. Introduction

The Tree Strategy will help the Shire of Esperance to manage its collective tree and canopy asset. It provides a strategic and coordinated approach to managing the Shire's tree population and is supported by a short-term action plan.

1.2. Objectives

The objectives of the Tree Strategy are to:

- increase community knowledge and appreciation of trees
- maintain and protect existing trees
- align with regional strategies to strengthen green corridor connections and green space

This will be achieved through taking a holistic approach to managing tree assets to ensure that all aspects of tree management respond to our community and environmental needs.

1.3. Policy Context and Planning Framework

This Strategy provides a framework and direction for managing our tree asset. It supports delivery of Council's Strategic Community Plan, and supports plans and strategies to improve green corridor connections and address localised environmental issues.

1.3.1. Strategic Community Plan 2022-2032

The Strategic Community Plan is a 10-year plan that identifies our vision, aspirations and priorities for the future. It provides guidance on how we should allocate resources, balancing our aspirations against our capacity. Most importantly, our Strategic Community Plan should provide inspiration, reflecting our values, our goals and our community.

Specific outcome areas of the Strategic Community Plan linked to the Strategy include;

Outcome 4. The natural environment is valued, protected and enjoyed

- 4.1 Sustainably care for, preserve and enhance natural habitats.

Outcome 9. Attractive and welcoming places

- 9.2 Enhanced streetscapes 9.2.2 Facilitate more tree planting across the shire.

1.4. Street Tree Policy ASS 019

This policy is designed to protect and preserve trees in streets. It provides rules to determine what species can be planted, circumstances under which they can be removed or pruned, and their ongoing management.

The Shire recognises the significance of street trees within the urban setting in terms of creating functional and aesthetic streetscapes, and has the responsibility of planning, establishment, and maintenance of all street trees in the town site. The Shire recognises street trees as a Shire asset, and the retention of street trees will be considered as a priority. In general, the Shire will plan for the retention and protection of suitable trees

within verges and proposed road reservations, and for urban enhancement by the planting of selected trees.

1.5. Public Open Space Strategy

The purpose of the Public Open Space Strategy is to provide Council direction for open space, sport and recreation services and facilities. The Urban Tree Strategy supports the Public Open Space Strategy by directing tree plantings in public spaces to help link parks and natural areas. Increasing trees and tree canopy also encourages our community to participate in outdoor activities such as leisurely walks, exercise and picnics in our parks, reserves and foreshore.

1.6. Road Verge Development Policy

The Shire's Road Verge Development Policy acknowledges the important role the community plays in maintaining nature strips adjoining their property. Council maintains the street trees but relies on residents to maintain the grass. The Urban Tree Strategy works alongside the Road Verge Development Policy by encouraging residents to modify their section of nature strip by planting low growing native plants as a priority. Any resident wishing to carry out modifications to the nature strip need to apply in writing to council for approval prior to any works being carried out.

1.7. Norfolk Island Pine Tree Management Plan

In 2016 the Shire of Esperance commissioned a consultant to carry out site inspections of the Towns iconic Norfolk Island Pines in a number of locations to aid in the management and control of pests, fungal pathogens and a decline in health noticed in recent years. The objective of the assessments and inspections is to provide the Shire with practical cost-effective solutions to assist to improve the health of the trees now, and provide a program of managing the trees into the future as budget permits. The Shire of Esperance have approximately 300 - 400 significant specimens of Araucaria heterophylla (Norfolk Island Pine) and a few Araucaria columnaris (Cook Pine) located within the Town, foreshore and along Goldfields Road to Castletown Quays. Recommendations in the management plan guide the management and maintenance of the Norfolk Island Pine trees.

1.8. The Shire of Esperance Landscape

The Shire of Esperance is located on Western Australia's southeast coast approximately 714 kilometres from Perth by road. Covering over 53,000 square kilometres, the Shire of Esperance extends from Munglinup to Israelite Bay and north to the Daniell rail siding. With a population of 13,883 (2021), the Shire has one of the lowest population densities to be found anywhere.

The Esperance region comprises some of the most spectacular landscapes in Western Australia. It includes over 500km of coastline ranging from the gently undulating bays and picturesque islands of the Recherche Archipelago to the spectacular cliffs of the Great Australian Bight.

The environment and agricultural aspects of the Shire of Esperance are a significant part of its heritage, values and identity. The Coastal Reserves, National Parks, Ramsar wetlands and natural areas, and dramatic coastline provides a number of recreational and tourism opportunities. The network of small towns, such as Condingup, Salmon Gums, Grass Patch, Gibson and Cascade are the backbone of our agriculture industry.

Esperance enjoys a moderate Mediterranean-like climate all year round. It is a regional port and developing district.

The town of Esperance has long been a sustainable community. It has not suffered the devastating fluctuations in population other regional towns have experienced as a result of significant shifts in industry and agriculture, nor has it had the same degree of urban drift.

The natural beauty of Esperance, its climate, isolation and lifestyle continue to attract people to the town and encourage them to stay.

1.9. What is an Urban Tree Canopy

An urban tree canopy is the total tree canopy area found in our public spaces, road verges and on private property. It is a network of all our trees and forms a key component of our green infrastructure.

Our tree canopy includes all varieties of our tree stock, including native and exotic species, deciduous and evergreens. Our tree canopy spreads out from our busy town centres to our commercial and residential streets, along our railway corridors, wetlands and creeks to our green parks. Collectively, our network of trees play a critical role in our community and environment.

Trees help to create healthy cities by providing shade, habitat, cooling our surrounds, contributing to health and wellbeing, and creating a sense of place and local identity.

Trees contribute to a healthy understorey and help to support horticultural plantings. A healthy and well managed urban tree canopy and understorey forms an important part of our green infrastructure.

Our urban tree canopy plays an important role in our community and environment. This strategy provides a path to manage this important green infrastructure so that it continues to provide benefits for current and future generations.

1.10. What Is the Role of Local Government in Managing Urban Trees

Local government is the closest tier of government to the local community. It is responsible for good governance and care of local communities and their environment. Councils have a legal and moral obligation to manage its assets to a standard that will not cause injury to the public.

Local Councils, in consultation with their communities, prepare plans and policies to control the form and location of new development, along with protecting open space and environmentally sensitive areas through zoning and development controls.

Development Plans prepared by local councils can promote development that conserve and enhances bushland, waterways, biodiversity and tree canopy. As such, the protection of trees at a local level can be achieved through provisions in the development plans which identify when approvals are required to clear a tree or other vegetation.

The Shire has a Street Tree Policy that is designed to protect and preserve trees in streets. It provides rules to determine what species can be planted, circumstances under which they can be removed or pruned, and their ongoing management. The Shire also has a range of operational procedures for the management of trees on its assets, such as parks, public open space and local streets.

1.11. Benefits of Urban Trees

1.11.1. Amenity

Tree Amenity is described as a quality, feature, or attribute of the tree that makes it pleasant, attractive, and agreeable which is conducive to the comfort, convenience, and enjoyment of people. It is a physical feature which increases attractiveness and value of a site through contributions to the physical, psychological, or material comfort of people and which facilitates happiness, pleasure, enjoyment, and contentment.

This definition suggests that in considering amenity, local or endemic species can play an important role in increasing the attractiveness and value of a site because they help define the intrinsic and extrinsic value of place and thus sense of place. Sense of place describes the individuality of place, its distinct character, and it also suggests a particular feel that makes the place stand out among other places. Thus, this concept is strongly tied to the process of placemaking through which social, cultural or ethnic groups shape their environment and landscape.

1.11.2. Habitat for Wildlife

Trees provide habitat and food for our native wildlife. Birds, mammals, insects, bugs and bees rely on trees for shelter, food and safe passage to move across our landscape. Increasing the number and species of trees helps to make our biodiversity and environment resilient.

This effect is magnified on extreme heat days, where certain areas can experience hotter temperatures. Trees play a role in cooling our environment. Specifically, tall trees, above 15m with dense canopies, provide the most cooling benefits for the community.

1.11.3. Cleaner Air

Trees help to improve air quality by absorbing air pollutants through their pores and filtering these chemicals and releasing oxygen back out into the environment. Through this same process, trees help to address climate change by absorbing carbon dioxide and storing the carbon in the tree, leaves and soil.

1.11.4. Natural Air Conditioning

Planting the right tree in the right location around the home helps to naturally cool and shade the house. Selecting the right tree will provide shade during summer, whilst dropping leaves in winter to let in the warm sun. This can help reduce electricity bills and lower environmental emissions.

1.11.5. Reducing Urban Heat Island Effect

The Urban Heat Island Effect is a localised weather event where an area is warmer than its surrounds due to hard surfaces like roads, roofs, and pavements that absorb, hold and radiate heat for longer. This issue is made worse as our cities grow and replace natural green spaces with hard surfaces. As a result, more rain water is directed into the stormwater and away from green surfaces. This limits the role of water has on cooling our environment.

1.11.6. Stormwater Management

Trees help to manage stormwater flows during heavy rain. Trees help to keep soils healthy and reduce the rate and volume of surface water runoff, helping to delay peak flows into the stormwater channels. At the same time, tree roots, trunks, leaves, canopy and its soil absorb and filter pollutants and nutrients before flowing into the stormwater, creeks and rivers helping to keep our stormwater clean. Opportunities exist to incorporate water sensitive design with tree management, such as raingarden tree pits and tree inlet systems.

1.11.7. Streetscape Benefits

The value of trees in the urban environment are community assets that contribute to the well-being of the community and to the natural environment. Trees help to create a 'sense of place' and contributes to the identity and character of an area. Well-designed tree lined streets have the ability to define our precincts and to soften our built environment by adding colour and screening undesirable sights. Trees support positive mental health by reminding us of seasonal changes as the foliage changes throughout the year. A healthy tree population can help create a sense of pride in the community.

1.11.8. Community Benefits

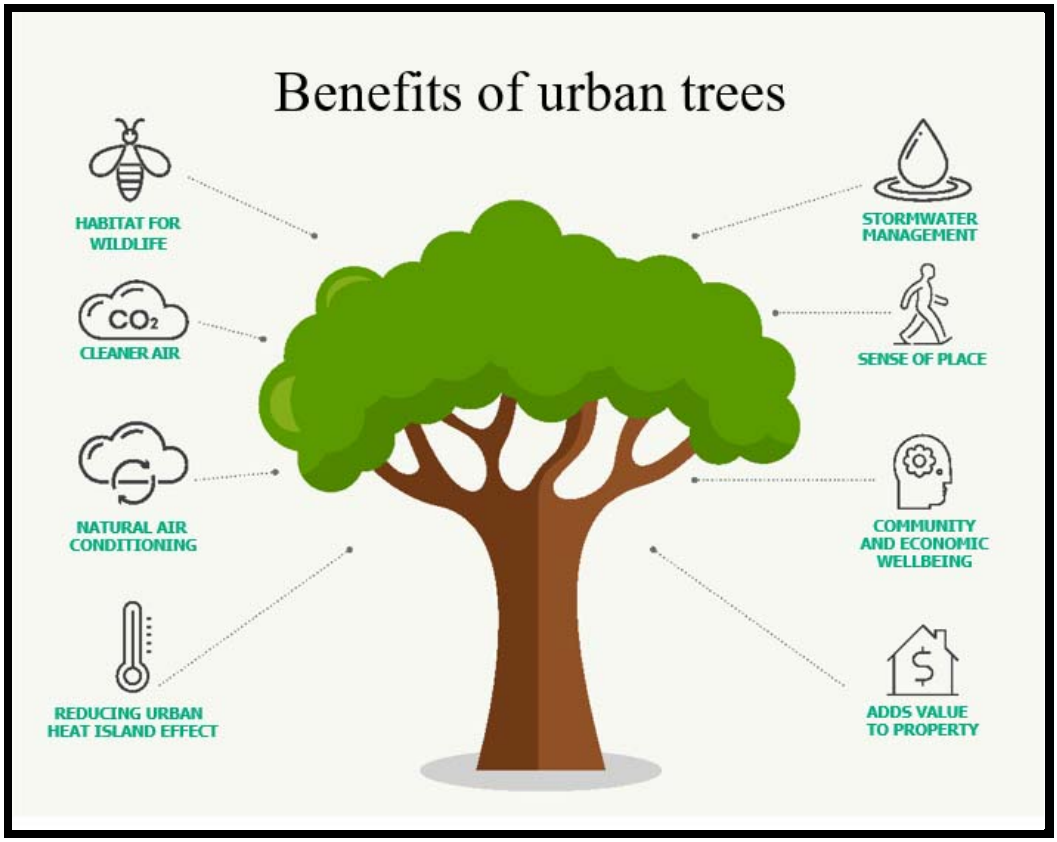
Trees play a pivotal role in improving community health and wellbeing. Trees encourage our community outdoors which helps to address obesity, mental wellbeing and create social cohesion. Well planned street trees play an important role in connecting our streets to our parks and green spaces. This encourages children and adults to reconnect with nature which has shown to positively influence our mental wellbeing, reduce stress and build social cohesion.

1.11.9. Economic Benefits

Trees work 24 hours a day throughout the year to our benefit. Trees are natural air filters that constantly work to clean our air, filter our storm water, produce oxygen for us to breathe, and provide shade and cooling effects in our community. An abundant urban canopy allows for homeowners, businesses and commercial to save on energy cost by lowering air conditioning use. Tree lined streets improve the local economy by making our town centre, foreshore and public open space areas attractive for people to visit and stay longer.

1.11.10. Add Value to Property

Leafy suburbs and streets have the potential to add value to property prices. Research shows that planting the right tree in the right location beautifies the property, cools the home, adds privacy and creates a sense of place. Planting two trees, or providing 20% of space for trees, has also been identified to increase property value.



1.12. Current State of Urban Trees

Canopy cover varies across the Shire of Esperance landscape. This is because of influencing factors such as the natural Esperance landscape and natural tree canopy cover, historical evolution of town, planning and development decisions, land use priorities, soil types and tree management budgets.

Tree cover percentage is relatively consistent across older development areas in the Shire of Esperance. The more recent development areas to the east of Castletown and around West Beach show a lower level of tree cover compared to the older development areas in the Esperance town site.

1.13. Current Tree Management Practices

1.13.1. Tree Planting

The Shire of Esperance has an active tree planting program involving staff and community. Shire staff investigate feasible planting locations throughout the area for suitable planting locations, such as on nature strips and verges, reserves, riparian corridors, in parks and public open space.

This strategy provides guiding principles for the Shire to focus the Shire street tree planting program and plantings in public open space and streetscapes.

When Council determines a tree removal is appropriate, the Shire works with residents to select and replant the tree with a suitable species appropriate for the site. Currently, Shire staff select species from the Shire of Esperance Street Tree Manual or a species that minimise conflict with overhead powerlines, utilities or nearby infrastructure.

Future tree plantings are intended to be guided by this strategy. The Shire's main planting period occurs mainly in late winter and early spring period. This is in line with industry best practice guidelines to minimise the stress on new plants, allowing them to establish successfully before the hotter summer months.

1.13.2. Tree Maintenance

The Shire's highly qualified team of Parks and Reserves staff with training in tree management and horticulture maintains and manages the Shire's tree stock in line with operational procedures. Trees in parks are maintained through an annual inspection program and maintained with regular pruning. Trees are assessed based on health, form, structure and vigour through a ground based Visual Tree Assessment (VTA) and Quantified Tree Risk Assessment (QTRA) before a decision to prune, manage, monitor and inspect or ultimately retain or remove is made. Newly planted trees are monitored and cared for during establishment.

Currently, the tree maintenance regime is predominately reactive but is guided by an annual inspection, ground based Visual Tree Assessment (VTA) and Quantified Tree Risk Assessment (QTRA) or when a customer request is made relating to a Shire tree asset. The Shire is in the process of developing a more proactive approach to tree maintenance that will be guided by this strategy.

1.14. Challenges

Managing and maintaining a healthy tree stock and canopy cover involves addressing complex and dynamic challenges. These challenges, if left unaddressed, will negatively impact our tree population and exacerbate environmental issues like urban heat and loss of biodiversity. By addressing these challenges, we will identify opportunities to minimise and avoid harm to our environment, maintain and improve our tree canopy.

1.14.1. Urban Heat and Climate Change

Climate change is a change in the weather patterns of an area over a longer period of time and on a wider scale. Climate change effects are already evident in Cumberland. Western Sydney experiences hotter and drier conditions with longer extreme heatwaves. This impacts human health affecting our seniors, the very young and those with respiratory problems.

Climate change can increase the severity of storms, influence rainfall patterns and the bushfire season. This can increase property damage costs from storms and puts stress on our flora and fauna populations. As weather events intensify, rain, hail and flooding may potentially harm trees by uprooting trees, breaking branches and washing away soil. Less rainfall and longer drought periods will also increase cost of maintaining new trees and potentially increase frequency of tree death. Certain species of trees may be at the upper limit of their comfort zone and may struggle as temperatures continue to rise. Other species may thrive and establish quicker, frost sensitive species may grow more easily.

Increasing tree plantings and species diversity are ways we can address climate change and urban heat effects. Trees provide shade from the sun and release water vapour through transpiration to cool their local surroundings, whilst diversity spreads the risk of tree loss from climate change.

1.14.2. Infrastructure Damage

Trees provide a range of positive benefits to our community. However, because of our built environment, some trees may create issues to our infrastructure and lifestyle, therefore it is important to select the right tree for the right location.

Even with proper planning and care, trees are living organisms and will grow in a variety of shapes and forms. As a result, some trees may cause damage because of their size and root system which uplift footpaths, crack pipes and interfere with powerlines. Often tree root damage is a result of limited available space for root growth. These issues are manageable by selecting the right tree for the right location, and through applying tree maintenance techniques such as installing root barriers and pruning or modifications to infrastructure to accommodate tree growth if the tree is a highly valued tree and considered an asset by the community and Shire.

1.14.3. Population Growth and Competition for Space

Trees can only be planted where there is available space, and the willingness of people to plant and maintain a tree. Land use decisions and available resource further impact canopy cover as local and state government, town planners, engineers and community groups grapple with balancing the needs of the environment with the infrastructure required to support our growing area.

Like many shires, the Shire of Esperance is going through transformation and there is increasing pressure on available public space. Our population is expected to increase and, as the Shire of Esperance continues to develop with new housing and commercial areas being built, demand for quality green space increases. Available space on private property, in parks and along streets is shrinking, as a result, finding space to plant trees becomes increasing challenging. Trees need space above and below to fully mature to enjoy the benefits they provide. However, the Shire of Esperance has to balance competing land use priorities of the community, environment, residents and business, industry and public infrastructure. The Shire recognises these challenges and accepts that in some areas, achieving the maximum canopy possible may not be achievable. In areas like this, the Shire will prioritise planting trees when the opportunity arise.

1.14.4. Pest and Disease

A naturally low species diversity mix in the Esperance area increases the vulnerability of our tree population to pest and disease attacks. As our climate changes, average temperatures increase and seasonal rainfall varies, and the warmer environment favours the spread of pest and diseases.

There's also the potential of new pests and diseases traditionally outside of our bioregion attacking our tree stock as the warming climate increases their range. Outbreaks have the potential to destroy tree populations and reduce canopy cover, weakening structural integrity of trees and loss of habitat.

Restoring the tree stock back to a healthy state takes years and costs the Shire time and resources. Diseases that have the potential to harm the Shire of Esperance's tree stock include Phytophthora Dieback and Armillaria.

1.14.5. Phytophthora dieback

Phytophthora dieback (dieback) is a plant disease of native ecosystems. Phytophthora Dieback refers to a plant disease caused by the introduced pathogen Phytophthora cinnamomi. It is a type of water mould that lives in soil and plant tissue that attacks the roots of plants, causing them to rot. As a result, the plants can die very quickly as they

are unable to take up water and nutrients. Phytophthora Dieback is found in many areas of the Shire including road verges, bush reserves and your own gardens.

In the past, Phytophthora Dieback has been known as 'dieback' and 'jarrah dieback'. Unfortunately, these names have contributed to confusion about the pathogen. Phytophthora Dieback is spread via water, soil, and root-to-root contact between plants. Dieback infected soil is easily spread by human activity via muddy shoes, vehicles, earthworks, and equipment. Once plants and soil are infected, the disease can be treated but not cured.

In WA's south-west bioregion, more than 40% of native plant species are considered susceptible to the disease including many from the Proteaceae (banksia's and hakeas), Ericaceae (snottygobble), Myrtaceae (eucalypts) and Xanthorrhoeaceae (grass-trees) families. Outside of our native flora, many of our garden, ornamental and horticultural species are also susceptible to Phytophthora cinnamomi.

1.14.6. Armillaria

Armillaria luteobubalina, the Australian honey fungus, is a native plant pathogen, widespread throughout south-eastern and south-western Australia where it is the cause of Armillaria Root Disease (ARD). Unlike most other Armillaria species, which are secondary plant pathogens, A. luteobubalina is both a primary and secondary plant pathogen, with a host range of more than 200 native plant species. In healthy, undisturbed native ecosystems, it contributes to the death of weakened and stressed trees and shrubs. In disturbed ecosystems, such as impacted native forests, plantations, road verges, parks and gardens, it can become a particularly aggressive pathogen, leaving a large impact on both native and exotic species.

1.14.7. Norfolk Island Pine Tree Pest and Disease

In the past 4 years some of the trees have been displaying symptoms of a decline in health which range from foliage becoming sparse, chlorotic foliage (Yellow foliage), an increase in pest issues and the recent findings of a fungal pathogen.

Inspections of the trees in August 2016 found that select Norfolk Island Pines throughout the Town were displaying dead apical leaders which appeared to progress from the top of the tree down. Samples of the necrotic cambium tissues were tested and confirmed the presence of Neofusicoccum parvum in March 2017. Neofusicoccum parvum is a fungal disease that is spread by contact with spores which appears to be distributed by birds. The fungal pathogen is known to kill the tree from the top and spread down the tree to the base in a relatively short timeframe of 2 years for a mature specimen.

Trees which display the fungal pathogen require the diseased parts removed to 1m below the infection in order to retain the tree. If the diseased part encompasses most of the tree the whole tree requires removal to reduce the spread of infection. The Shire has since removed 5 infected trees and reduced the tops of 9 trees since August 2017.

The Shire has previously tested the trees for leaf tissue analysis and soil tests in February 2017 to measure the trees nutrient levels and soil composition. These results found that the trees are deficient in a range of nutrient elements within the leaf tissue and soil samples provided. The Shire has since introduced a nutrient treatment program to help improve tree health within the Norfolk Pine Trees.

1.14.8. Planting and Managing Trees Under Powerlines

Selecting the right tree for the right location is important because it allows the tree to fully mature in a healthy state as well as minimising costs of management.

The Shire of Esperance has overhead power lines on one side of the road and this has a major impact on the performance of the trees. Some trees are physically constrained by overhead wiring and, as a result, need pruning to avoid damage to powerlines and to maintain safe clearances between trees and powerlines.

The local service provider undertakes an inspection program and, where required, issues the Shire notices to maintain clearances. The Shire of Esperance is proactive in this area and undertakes an annual tree inspection program to schedule maintenance programs in advance. Legislation stipulates that it is a requirement to maintain set clearances for vegetation around the services. New trees under power lines need to be selected so that their mature height is less than the height of the powerlines, and that the form of the tree is suitable for pruning if it does encroach into the clearance zone.

1.15. Opportunities

1.15.1. Planting Green Corridors and Landscapes

Green corridors and landscapes are an important green infrastructure asset. Green corridors and landscapes are areas of connected habitat that provide important linkages throughout our developed and natural environment. These corridors provide important ecosystem services as they provide habitat for native flora and fauna, food, water and shelter and enable safe movement across the landscape. Maintaining and increasing street tree plantings along our streets helps to create planted tree corridors to connect our green spaces and improves amenity in our streetscape and landscape.

1.15.2. Community Involvement

Our local community is highly diverse and each individual's behaviour, value and attitudes towards trees vary. Encouraging community participation in tree planting events and through community communication and education will help to strengthen the view that trees are an important asset for the community. From our current tree management and community engagement interactions with members of the public indicate that generally there is a lack of knowledge regarding the benefit of trees, and that more information and activities to raise awareness of the benefits and value of trees can encourage plantings of trees on private property.

The lack of understanding of trees in urban settings has created a perceived fear of trees from a tree damage to property and personnel injury perspective. This Strategy recognises that in order to increase green canopy, the Shire requires the support of residents and businesses to plant and maintain trees in private spaces.

Opportunities to increase community involvement include community planting days to foster a sense of ownership, supporting local Landcare groups, asking the community to nominate areas where planting can take place and what to plant, seeking support from community to look after newly planted trees and private residents requesting street trees to be planted on residential road verges.

1.15.3. Streets, Parks and Public Land

The Shire of Esperance area has approximately 67.4 ha of public open space, these spaces include parks and playgrounds. There are additional reserves, green corridors

and coastal and riparian zones where opportunities to plant trees exist. In addition, planting along streets create planted tree corridors which increases walkability and street amenity, reduces urban heat and strengthen links to parks, reserves and green corridors.

Opportunities also exist by planting trees on non-council managed land. The Shire will advocate and support other land managers to increase tree plantings when the opportunity arises and where it is appropriate to increase tree plantings.

1.15.4. Strategic Land Use Planning and Development Decisions

Esperance's future tree canopy is influenced by the strategic land use planning and development decisions made today. The Shire has instruments, policies, controls and strategies that work together to form a foundation to maintain and increase the tree canopy cover. This Strategy complements the Shire's strategic documents. Furthermore, this Strategy aims to support regional and state efforts to increase tree canopy. The Shire will leverage its unique role in the community to manage and plan for optimal canopy cover regardless of whether the land is private or on public space.

2. STRATEGIC FRAMEWORK FOR TREES

In order to increase tree planting and green canopy cover in Esperance, the Shire will follow and apply a range of principles to help our decision-making process.

2.1. Trees as a Community Asset

The Shire recognises the significance of street trees within the urban setting in terms of creating functional and aesthetic streetscapes, and has the responsibility of planning, establishment and maintenance of all street trees in the town site. The Shire recognises street trees as a Shire asset and the retention of street trees will be considered as a priority. The Shire of Esperance Street Tree Policy is designed to protect and preserve trees in streets. It provides rules to determine circumstances under which they can be removed or pruned, and their ongoing management.

In general, the Shire will plan for the retention and protection of suitable trees within verges and proposed road reservations, and for urban enhancement by the planting of selected trees. Specifically:

- The Shire shall consider the use or retention of street trees as part of any streetscape in its planning process.
- Naturally occurring trees, where appropriate, shall be retained within the streetscape.
- Selection of new varieties shall be in accordance with landscape requirements, considering local conditions.
- Public utility providers and land owners shall consult with the Shire prior to undertaking any work on verges and road reservations within the tree protection zone.

This strategy is intended to provide guidance to determine what species can be planted and the appropriate locations and landscapes for certain tree species around town.

2.2. Right Tree in the Right Location

Selecting the right tree in the right location is an important step in helping to increase our tree canopy cover. This means selecting the right tree that will reach maturity without negatively impacting its surrounding.

Tree selection will consider the historical performance of the species in the area and consideration should be given to:

- Potential to damage property and infrastructure
- Cracking pavement such as footpaths, kerbs and driveways
- Overhead space and infrastructure, such as powerlines
- Below ground infrastructure, such as sewer, water and communication infrastructure
- Impact on traffic, signage and road safety

Species that have a proven history of performing well in the area should be chosen over those that are known to be problematic. Problematic trees will be phased out and ultimately removed and replaced in the landscape. In the long term, this will ensure trees reach full maturity whilst minimising maintenance time, cost, and risk to property and people.

The Shire has developed a tree species list as part of the Urban Tree Strategy that are suitable to be planted in our local area.

2.3. Apply the Biodiversity Mitigation Hierarchy

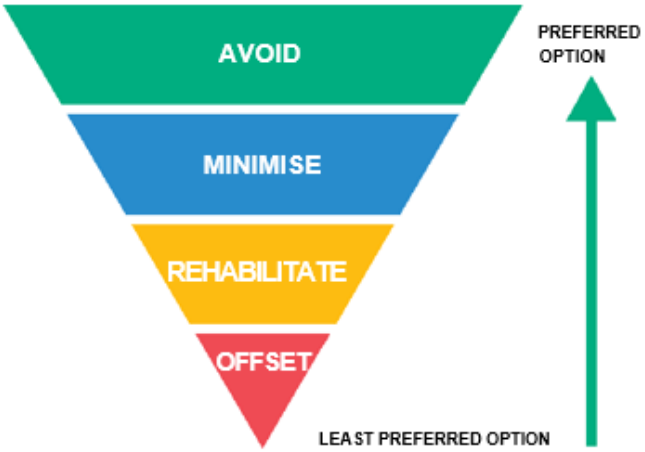
Trees are living organisms which grow, age, get damaged and eventually die. To maintain our tree stock and canopy, the Shire will apply the biodiversity mitigation hierarchy to firstly avoid, minimise, rehabilitate and, as a last resort, offset tree loss to protect our tree canopy cover. Whilst tree removal is a last resort, the Shire on occasions will have to remove trees for public safety reasons. In these situations, the Shire will replace the tree with a suitable species to maintain our tree stock. The Shire will review and assess all tree removal applications and will enforce replacement tree plantings.

The following principles as per the Shire of Esperance Street Tree Policy are not considered sufficient reasons to remove a tree:

- Leaf, twig, flower & fruit drop or deadwood drop
- Bird dropping/ insects/ animal nuisance
- To increase sunlight or views or reduce shade
- Tree doesn't suit the landscape
- Unsubstantiated fear of tree failure
- The height/ size of the tree(s)
- Minor damage to paths or paving
- To increase sunlight to solar panels

The biodiversity mitigation hierarchy prioritises planning activity in the following order of importance:

a. Avoid activities that lead to loss and damage of trees
b. Minimise actions and risks that harm trees to the lowest possible level
c. Rehabilitate and take restorative actions to bring the ecosystem back to its original state
d. Offset to compensate for tree loss either by planting more trees in the same location or within the same area to ensure no net loss of trees.



Biodiversity mitigation hierarchy

2.4. Support Green Infrastructure

Green infrastructure is a network of green spaces, wildlife corridors, water sensitive urban design, stormwater harvesting systems, parks, and rivers, both planned and natural, in our environment that provide a range of ecosystem services. Our tree canopy forms part of our green infrastructure network and is an important asset in our built environment. Council decisions should involve Strategic Planners, Tree Management Officers, Landscape Architects, Environmental Management and Operations Officers to integrate trees into our green infrastructure network. Trees are an important green asset that deliver cumulative benefits alongside other natural infrastructure to:

- Reduce the urban heat island effect
- Improve air, water and soil quality
- Enhance biodiversity and resilience
- Improve liveability and outdoor activity

Tree research has found that large trees provide the most environmental benefits. The studies have found that large trees provide the most shade, deliver the most evaporative cooling effect and biodiversity gains. Not only does a larger tree provide a larger canopy, they also contribute to the aesthetics of the street, clean more air and stormwater and provide more habitat for wildlife.

Subject to verge width and constraints such as overhead powerlines and building setbacks, larger growing trees should be selected wherever possible and large trees in the landscape where appropriate should be prioritised for retention. Too often small trees are planted on both sides of a street, when a larger growing tree could have been planted on the non-infrastructure side of the street.

When planting in large open spaces such as in parks, reserves and riparian corridors, preference should be given to endemic native Esperance species followed by native WA species. This will allow these species to freely mature as they thrive best in large open areas. It has also been shown that larger trees provide exponential benefits associated with environmental and amenity value as they grow.

2.5. Consider Character of the Street

The visual character of each street is important to creating identity and a sense of place. When selecting what to plant, the Shire will consider the existing visual character of the place to determine whether the new tree should maintain uniformity and consistency or select new species to add character to the place. An advantage of maintaining uniform plantings is that maintenance is more efficient when managing single species, however, planting different native and exotic species may be more appropriate for the location and increase species diversity. Additionally, having a variety of trees enhances local biodiversity and strengthens ecosystem resilience.

2.6. Tree Establishment

Correctly planting a tree is a very simple process but an important one. Correctly handling the tree when planting, preparing the planting hole, and caring for a tree after it has been planted will ensure the survival and optimal growth of the tree. Trees take up water through their roots. In general, trees require more water when they actively start to grow in spring and during hot summer months. Planting in winter and autumn gives the tree more time to grow new roots, and for roots to start growing into the surrounding soil before the increased demand for water starts. However, container grown trees can be planted at any time of the year if they are properly cared for after planting. Care during this period will lead to healthy and vigorously growing trees. The

following maintenance practices should be regularly carried out during the establishment period:

The Shire is responsible for the post planting care and maintenance of all street trees. However, residents/occupants are encouraged to assist with street tree watering. Specifically:

- Council shall undertake the watering of all new street trees, as and when required, until the trees are established.
- Street tree watering shall include all Council's programmed plantings.
- Residents/occupants shall be encouraged to water their street tree during the establishment period.
- Council shall adopt appropriate practices of post planting care to ensure the survival of all trees planted.

2.7. Tree Maintenance

Maintaining trees ensure they continue to provide environmental, economic and social benefits. This section discusses the ways in which the Shire maintains its tree assets.

2.7.1. Pruning

Council will undertake tree pruning to improve tree health, structure and ensure safe clearances for walkways, buildings, powerlines and roads. Council maintains trees on its managed land in order to fulfil its legislative and management obligations to the community and the environment.

Where pruning is required under powerlines, Council will work with energy suppliers to ensure pruning work is completed to provide necessary clearance as well as protecting the health of the tree. Tree pruning will not be done to improve views, reduce leaf drop or reduce the impact from animals such as birds and bats. All pruning work should be in accordance with the Australian Standard for Pruning of Amenity Trees AS4373.

2.7.2. Pruning of Street Trees under Powerlines

The Shire is responsible for the pruning of all street trees under powerlines.

The Shire shall undertake the pruning of all street trees under powerlines on a programmed basis. Work practices must comply with the Code of Practice for Vegetation Worker Electrical Safety. The code of practice details the requirements for vegetation control work carried out near the live conductors of overhead power lines, and is used in conjunction with Electricity Regulations 1947 Regulation 316A. The code has been developed to ensure the safety of the general public and workers cutting trees near power lines.

Programmed street tree pruning shall include trees on the side of the street affected by overhead powerlines as well as trees affected by electrical feeder lines to individual properties on the opposite side of the street.

Programmed pruning shall not normally include trees on the opposite side of the street to powerlines.

- Programmed pruning is to be planned each year, on a needs basis.
- Pruning will be undertaken in accordance with Australian Standard 4373 – Pruning Amenity Trees

Programmed street tree pruning shall be to normally fulfil any of the following requirements:

- To clear the canopy from interference with overhead powerlines and other essential services
- To remove overhanging branches considered hazardous to traffic, buildings or structures
- To under-prune low growing branches considered hazardous to traffic or pedestrians
- To form the shape of developing trees
- To re-define the framework of mature trees
- To rejuvenate vigour into unthrifty growth
- To reduce crown density or to redistribute growth to lateral branches
- To remove dead, dying, diseased or pest infested limbs and branches

2.7.3. Pruning of Street Trees

The Shire is responsible for the pruning of all street trees not affected by powerlines. The Shire will investigate requests for pruning street trees not under power lines, and respond in accordance with adopted procedures.

Specifically:

Under its programmed pruning schedule, the Shire shall crown thin, under prune, property line prune and remedial prune selected street trees unaffected by power lines. This pruning will be undertaken in the interests of:

- Public safety
- Reducing structural risk to the tree
- Removing growth abnormality or disease from the tree.

Ownership and maintenance of all street trees is the responsibility of the Shire; residents are not permitted to prune any street tree without prior approval.

Where residents/occupants contact the Shire with a request to prune a tree unaffected by power lines, the following procedure is to be followed:

- The tree is physically inspected. An inspection report is to be completed, containing relevant statistical details.
- All results and recommendations from these inspections and reports are to be considered prior to any discussion and a final decision on action to be taken with the tree.
- In the event of a specific issue relating to pruning of significant trees, unaffected by power lines not being adequately covered by this policy/procedure, the matter is to be referred to Council for consideration and determination.

The following are not considered sufficient reasons for pruning trees:

- The tree obscures or may potentially obscure views (other than traffic / pedestrian sight lines).
- The tree variety is a nuisance by way of leaf, fruit and bark shedding or the like.
- The tree shades private gardens, solar hot water systems or the like.

2.7.4. Street Tree Removal

The Shire recognises the significant contribution made by street trees to both the aesthetic and environment aspects of existing streetscapes within the Shire. The Shire recognises street trees as a Shire asset and the retention of street trees will be considered as a priority.

It also recognises that in some cases, tree retention may not be desirable, feasible or reasonable, owing to condition, location or species of the tree, its implications for development on an abutting site and/or the achievement of other Council objectives. The Shire will not remove street trees except where retention is considered undesirable, such as where: exceptional circumstances exist relating to public risk and safety; the tree species is not an approved variety and is not acceptable to the Shire; or the tree precludes redevelopment of an adjoining site, with no other reasonable alternative to removal.

The Shire is responsible for the removal of street trees. Unauthorised removal of any street tree is not permitted. Owing to the hazardous nature of the task, residents/occupants will not be permitted to remove any street trees themselves. All approved removals shall be undertaken by the Shire or its nominated contractor.

2.7.5. Replanting Opportunities

Council aims to continue existing street characters and tree planting wherever possible. Council will investigate opportunities to increase the urban canopy, which may include:

- Town centre renewals
- Parks and reserve developments
- Grant funded initiatives
- New developments
- Community tree planting events
- National Tree Day and Schools Tree Day

2.8. Tree species selection

Trees are an important long-term green infrastructure asset that may live for 50 years and beyond. It is therefore important that the right species is selected for the right location. When selecting the tree to be planted, consideration should be given to the criteria outlined in this section no matter the trees origin or type. The species with a strong proven performance in Esperance, with respect to environmental and functional requirements, will be the main primary selection criteria.

2.9. Tree species list

The following list recommends species to be planted and maintained in the Shire of Esperance. These categories are further broken down into small, medium and large trees and suggested species suitable for each suburb. It is important to note that some species may have very wide applications, while others will only be used in very limited or specific locations. Tree sizes listed below are guidelines only and are dependent on local conditions. Recommendations and guidance will be provided from the Shire of Esperance Parks and Reserves team in Asset Management. Planning controls or development approvals may provide specific guidance on tree species or planting arrangements that need to be considered in these circumstances.

2.9.1.Recommended Species

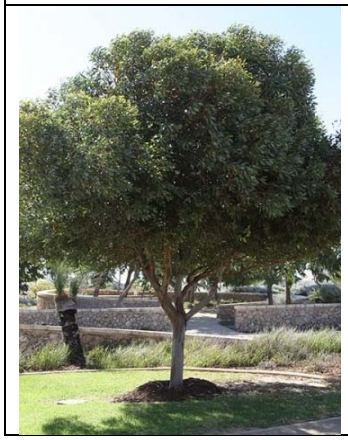
LARGE TREE SPECIES			
WA Peppermint Agonis flexuosa	**Broadleaf Paperbark** Melaleuca quinquenervia	**Powderbark Coolabah** Eucalyptus Victrix	**Iron Bark** Eucalyptus sideroxylon
			

MEDIUM TREE SPECIES			SMALL TREE SPECIES		
Coral Gum Eucalyptus torquata	**Lemon Scented Gum** Corymbia citriodora dwarf	**Fuchsia Gum / Mallee** Eucalyptus forrestiana	**'Kings Park Special' Bottlebrush** Callistemon	**Pincushion Hakea** Hakea laurina	**Banksia Species**
					

2.9.2.Recommended Species for Areas

AREA	RECOMMENDED SPECIES									
	Large Tree Species				Medium Trees Species			Small Tree Species		
	WA Peppermint Agonis flexuosa	**Broadleaf Paperbark** Melaleuca quinquenervia	**Powderbark Coolabah** Eucalyptus Victrix	**Iron Bark** Eucalyptus sideroxylon	**Coral Gum** Eucalyptus torquata	**Lemon Scented Gum** Corymbia citriodora dwarf	**Fuchsia Gum / Mallee** Eucalyptus forrestiana	**'Kings Park Special' Bottlebrush** Callistemon	**Pincushion Hakea** Hakea laurina	**Banksia Species and small natives**
Bandy Creek				✓	✓	✓	✓	✓	✓	✓
Castletown				✓	✓	✓	✓	✓	✓	✓
Chadwick						✓	✓	✓	✓	✓
Esperance	✓	✓				✓	✓	✓	✓	✓
Nulsen	✓							✓	✓	✓
Pink Lake								✓	✓	✓
Sinclair	✓							✓	✓	✓
West Beach	✓			✓	✓	✓	✓	✓	✓	✓
Satellite Towns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Public Open Space / Large Verges	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

2.9.3. Alternative Species for Consideration in the Appropriate Landscape

Coastal Sheoak Casuarina equisetifolia	**Red Flowering Yellow Gum** Eucalyptus leucoxlyon rosea	**Yate** Eucalyptus cornuta	**Tall Sand Mallee** Eucalyptus eremophila	**Moort** Eucalyptus platypus
				
Coastal Moort Eucalyptus utilis	**Swamp Mallet** Eucalyptus spathulata	**Silver Princess** Eucalyptus caesia	**Spotted Gum** Corymbia maculate	**Red Flowering Gum** Corymbia ficifolia
				

Narrow Leaved Paperbark Melaleuca linarifolia	**Candlestick Banksia** Banksia attenuate	**Firewood Banksia** Banksia menziesii	**Bald Island Marlock** Eucalyptus conferruminate	**Rottnest Island Pine** Callitris preissii
			Photo to be inserted	Photo to be inserted
Silver Mallee/Tallerack Eucalyptus pleurocarpa	**Lobe fruited Mallee** Eucalyptus lobata subsp. preissiana	**Salmon Gum** Eucalyptus salmonophloia	**Tea Tree** Melaleuca lanceolata	**Showy Banksia** Banksia speciosa
Photo to be inserted	Photo to be inserted	Photo to be inserted	Photo to be inserted	Photo to be inserted

Sandplain Banksia Banksia media	**Scarlet Banksia** Banksia coccinea	**Fine-leaved Mallee** Eucalyptus perangusta	**Hook-leaved Mallee** Eucalyptus uncinata	**Jam Tree** Acacia acuminata
Photo to be inserted	Photo to be inserted	Photo to be inserted	Photo to be inserted	Photo to be inserted

2.9.4. Tuart Trees

Tuart Eucalyptus gomphocephala: Recommended for phased removal in verges and public open space, and replacement with appropriate species in the landscape based on selected species table.

2.9.5. Norfolk Island Pine Trees

Norfolk Island Pine Araucaria heterophylla: Managed, maintained and replaced based on recommendations in the Shire of Esperance Norfolk Island Pine Management Plan.

Other species and planting based on landscape and species assessment by the Shire of Esperance – Parks and Reserves.

3. IMPLEMENTATION

3.1. Implementation approach

The Tree Strategy demonstrates the Shire of Esperance's commitment to maintain and enhance the Shire's tree assets, and increase tree planting and canopy cover in Esperance. This Strategy recognises that support and involvement from our community is vital to ensure that the Strategy is successful. In addition, this Strategy highlights the important role the Shire has in both the short- and long-term management of trees in the broader Esperance landscape.

3.2. Vision and Key Focus Areas

The Tree Strategy 2023 provides a strategic and coordinated approach to managing the Shire's tree population into the future. As part of this Strategy, a Vision and Key Focus Areas have been developed.

Vision

'A **CLEAN** and **GREEN** environment for current and future generations to enjoy by **PROTECTING** and **ENHANCING the Shire of Esperance's Tree Assets and Green Landscapes.**'

Key Focus Area 1:	**Key Focus Area 2:**	**Key Focus Area 3:**
Community Education and Engagement	**Maintain, Protect and Increase Existing Tree Canopy and Tree Assets**	**Strategic Planning, Tree Management and Innovation**
KFA 1.1 Raise awareness and educate the community, private landowners and businesses on the benefits of trees, street trees and tree planting and management best practices	KFA 2.1 Identify and progress planting opportunities to increase tree canopy	KFA 3.1 Embed tree management protection into strategic plans and development controls
KFA 1.2 Develop initiatives to encourage tree plantings in the shire	KFA 2.2 Continue to maintain, monitor and protect publicly owned trees	KFA 3.2 Continue to review the Street Tree Policy and operational procedures for tree management
	KFA 2.3 Increase species diversity to ensure urban canopy and tree assets are resilient	KFA 3.3 Investigate opportunities to develop tree canopy cover baseline and tree asset database
	KFA 2.4 Collaborate with external agencies to protect and enhance tree canopy and tree assets	
	KFA 2.5 Continue to remove historic trees that are not compatible with infrastructure and are not suitable for the Esperance landscape	

3.3. Funding

Funding for the delivery of the Tree Strategy will be covered by a range of sources. This includes recurrent maintenance budgets within the Shire, capital works, developer funded and grant opportunities. The Shire will continue to explore future funding opportunities to deliver on the Tree Strategy.

3.4. Monitoring

Focus areas and implementation actions will be monitored to determine if they are meeting the objectives of the key focus areas. A review and re-prioritisation of remaining implementation actions will be undertaken at each review to account for relevant funding opportunities, changing legislation or a change in regional strategic direction. The implementation action will remain flexible to meet the changing needs of the Shire over the life of the Strategy. The Strategy will be subject to a full review after a five year period.

3.5. Tree Planting Program for Council

As part of the Tree Strategy, the Shire has identified a strategic program to focus efforts on tree planting for Shire assets and public areas.

The program will focus on the following areas:

- Tree planting in town centre and future development areas
- Tree planting along road verges, nature strips and open spaces and per species planting strategy
- Tree planting to support biodiversity corridors in the Shire of Esperance

Further detailed work will be undertaken by Council to progress the development and implementation of this strategic program, aligned with available resource.