City of Marion Asset Management Plan 2024-2034

Trees

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Executive summary

Purpose of the plan

The purpose of the Trees Asset Management Plan (AMP) is to improve council's long-term strategic management of the tree assets to ensure the current and future Levels of Service are sustained. The plan defines the state of the tree assets and considers future requirements and risks together to inform the optimum lifecycle management and costs for the next 10 years. The Trees AMP is aligned with the Council's Strategic Plan and Long-Term Financial Plan. Data used in this AMP is current as of October 2023 with the Plan monitored annually to make any necessary cost adjustments and is reproduced 4-yearly.

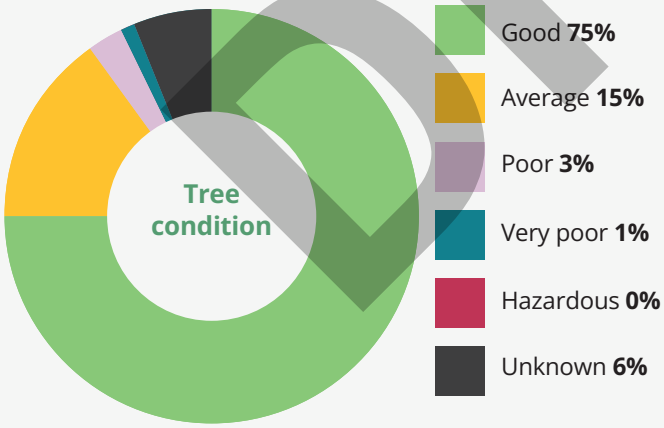
State of council tree assets

Tree assets exist either in streets or reserves. The characteristic diversity of trees for each area in the City of Marion is found in Appendix B. The table below shows the financial replacement value for each tree is $274. This contrasts with the inherent community value of trees which increases as they mature. A method of attributing this value is found in Appendix A.

Asset category	Quantity	Useful life	Replacement value
Street Trees	51,081	60 Years	$13,998,934
Reserve Trees	10,058	80 Years	$2,755,070
Total	**61,139**		**$16,754,004**

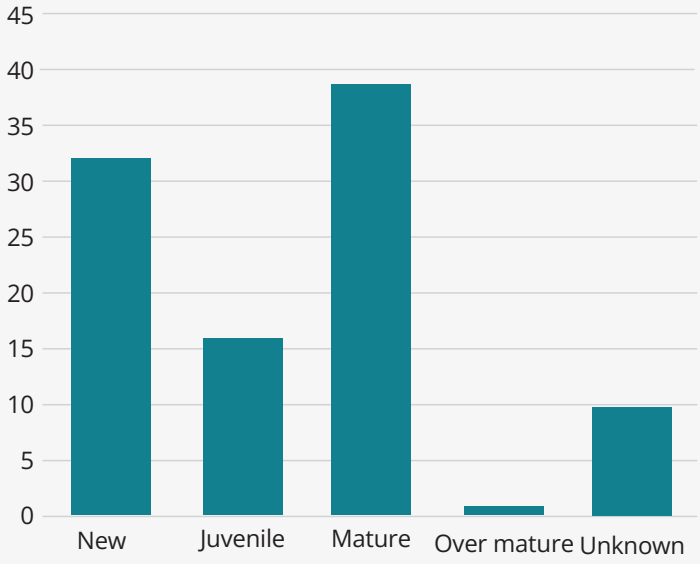
The condition of the tree assets is good overall with risks identified and managed effectively

Tree condition as a % of total trees

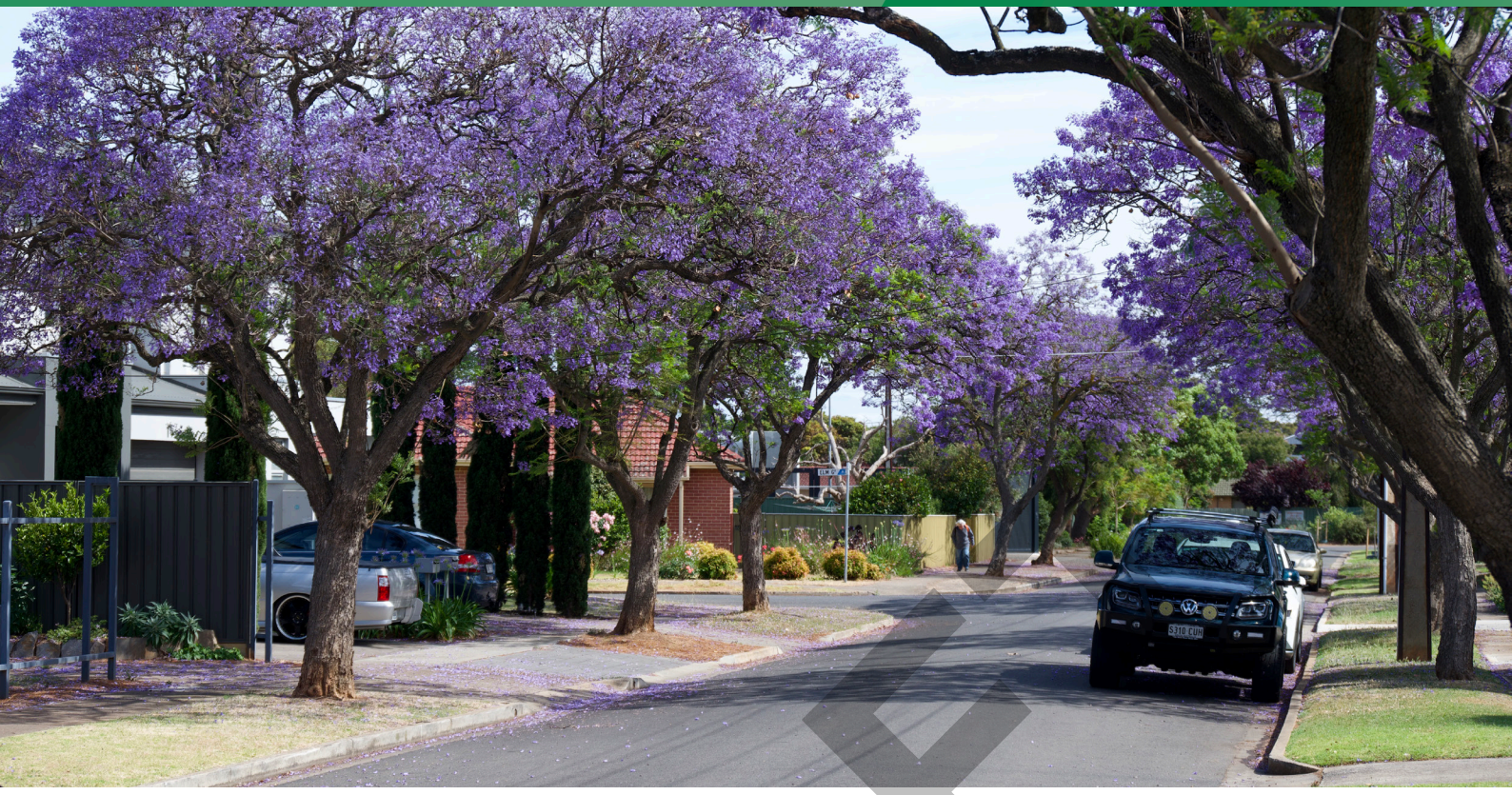


The tree planting campaign extends for another four years which will increase the mix of juvenile plants and greatly enhance the biodiversity within City of Marion providing cooling and shade to our environment.

Tree age profile as a % of total trees



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Performance of asset against condition, function, and capacity

Measure	Current performance	Expected trend based on the budget
Condition	Good - A high percentage of the trees are in good health and condition.	Trees can remain in overall good condition with improvements expected on survivability rates of new trees.
Function	Good - Diversity in flora and fauna is found, shade production is evident in reserves and streets.	Diversity in species selection will enable flora and fauna to thrive and more shade to be produced as numbers of trees planted increases.
Capacity	Poor - Available space for trees is underutilised.	Filling of available space will occur during the first half of this 10-year Plan.

For more detail on the performance measures refer to page 26.

Assets in poor condition are monitored to ensure they can continue to provide the required service. Renewal of the asset is planned and shown in the forecast budget.

Service levels

The community levels of service are considered in terms of the quality of the asset (condition); whether it is providing the intended service (function); and whether it is over/under utilised (capacity). See page 11 for details.

Service requirement	Activities funded to sustain the service requirement
• Shade provision. • Localised cooling effect. • Provide home to flora and fauna • Diversity in plantings. • Street character. • Resilience through climate adversity.	• Planting of 4300 trees per year for the next 4 years. • Fill available council-controlled land with trees. • Regular watering of newly planted trees for the first 3 years to ensure survivability. • Block pruning of all street trees every 3 years minimises risk and ensures good form and structure reducing future intervention (reactive) pruning. • Maintenance to ensure trees are safe for vehicle and pedestrians. • Responding to storm events and debris removal. Tending to ad hoc community requests.

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Responding to community requests

Council values community feedback on issues relating to street trees and manages these concerns in accordance with our service standards. Please see page 18 for more information.

Leaf litter and debris: Council's response to manage excessive amounts of tree mess is primarily via our street sweeping program, block pruning and green waste collection service. It is not possible to prune trees to reduce tree mess however our programmed pruning approach will ensure good form and structure to our trees which may reduce the issue for our community

Tree pruning: Ensuring access to a scenic view is not a sufficient reason to prune a tree, however when planting new trees in locations where none have previously existed we will be sensitive to the current situation and may adjust the location or species choice to protect the community amenity.

Future demand

Factors expected to influence future demand and the impact this will have on the delivery of Tree services are shown in more detail on page 20 and have been accounted for in this AMP.

Climate change adaptation is detailed on page 22 outlining council's climate resilience management.

Demand factors and impact management

Demand impact	Demand impact management
Population increases puts stress on available spaces for trees due to developments.	Trees are only removed if no design alternatives are available.
Social/community trends – increased need for shade, cooling effects that trees offer.	Ongoing successful roll out of the 7-year tree planting program and timely management of trees to ensure good health and condition.
Technology – systems which increase ability to collect and analyse data.	Use of Forestree Tree Management System and ongoing innovation in systems to collect and track tree data for analysis.
Legislative – updates to planning requirements.	Adherence to legislative requirements, Australian Standards, internal policies, procedures, and guidelines.

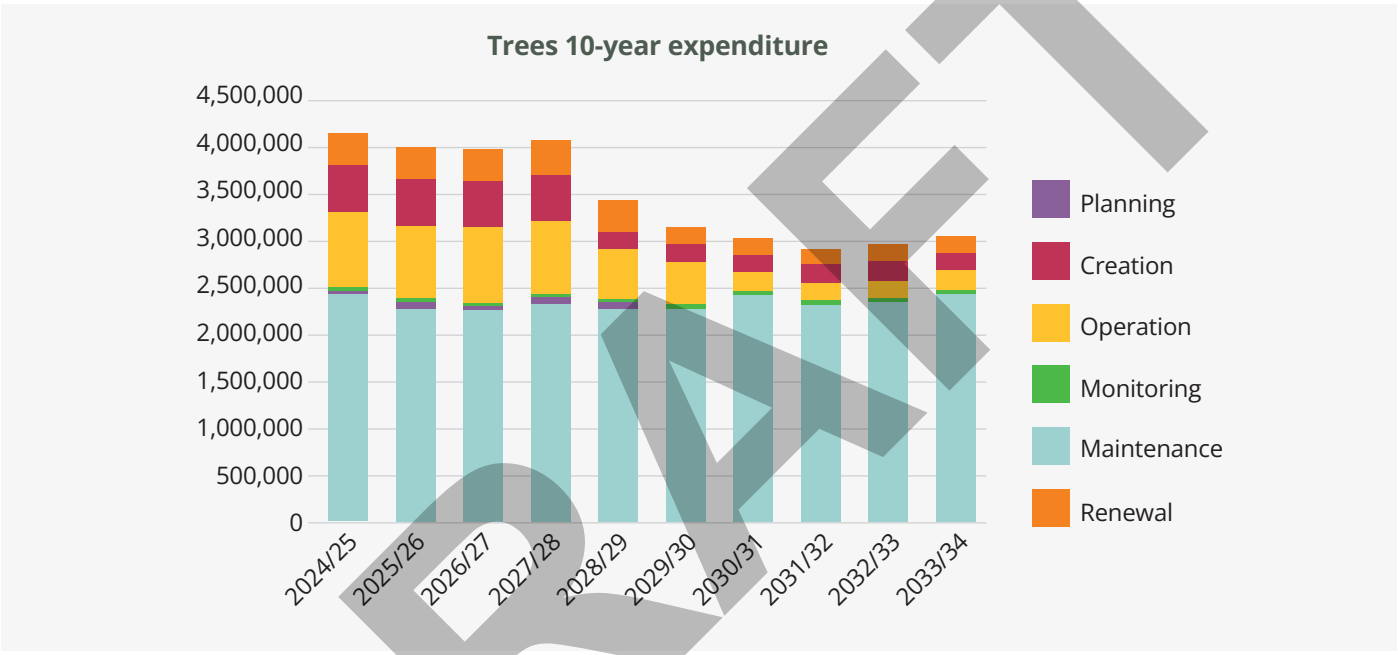
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Lifecycle management

What it will cost

The forecast lifecycle costs necessary to provide the services covered by this AMP include the activities of creation, monitoring, operation, maintenance, renewal, and disposal of assets.

The forecast expenditure of this plan is used to inform the Long-Term Financial Plan (LTFP). Page 35 contains the detail breakdown of costs for each year. The expenditure profile shows the cost levels higher in the first half of the plan due to the accelerated activity to plant and sustain new trees and to establish baseline tree data and condition for future success.



The financial funding for the life of this plan is summarised below:

- Available funding from the LTFP: unknown
- Forecast funding required: $34,802,555
- Average annual forecast funding required: $3,480,256
- Available funds to sustain services: 100%
- Asset renewal funding ratio: Not Applicable

Managing the risk

Risks are managed in accordance with Council's Risk Management Policy.

- No high-level risks have been identified for tree assets.
- Critical assets are those which have a higher consequence should they fail. Critical assets in the trees class include Regulated and Significant trees.
- The forecast budget allows us to achieve all our service delivery objectives.

Improvement

The Improvement Plan is found on page 36. These initiatives have been included in the forecast budget and include:

- Improving the depth and quality of tree data by undertaking more audits.
- Improving the real time data storage and analysis capability by expanding the use of software management tools.
- Educating internal and external stakeholders on the role and importance of tree assets.
- Innovative trialling of tree species with partners to ensure resilience and sustainability.
- Involving the community in tree watering initiatives.
- Actively participating in feedback for State initiatives relating to planning.

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Introduction

Background

The Trees Asset Management Plan (AMP) provides information on the state of the trees assets and their capability to meet the levels of service and demand requirements in a safe, cost effective and sustainable manner for the following 10 years. In delivering the service, risks are identified and managed so that a balance is achieved between achieving the desired performance of the asset, against the cost of providing the service.

This AMP complies with the requirements of Section 122 of the Local Government Act 1999; and is an input for the City of Marion (CoM) Long-Term Financial Plan (LTFP). Information contained in this plan is current as of October 2023.

The assets under management of the Trees AMP include Street Trees, Public Reserve Trees, and planted spaces within City of Marion. Decisions made regarding tree retention, removal, or species selection are based on strategic operational planning and performance. This AMP incorporates the tree planting and maintenance strategy of the CoM Tree Management Framework 2018, a key strategy being to increase the tree canopy within (CoM) to meet State Government targets.

Trees are unlike any other assets. They are unique as a living asset. Their value to the community accumulates over time, their condition changes based on variations in environmental conditions, public interactions, and maintenance practices.

The trees assets included in this plan have a total replacement value of $16.75M replacement value is based on the costs of replanting to attain establishment status.

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Planning documents

Documents from the CoM's Strategic Management Framework together with other asset specific strategic documents were used in the development of this AMP and are shown below.

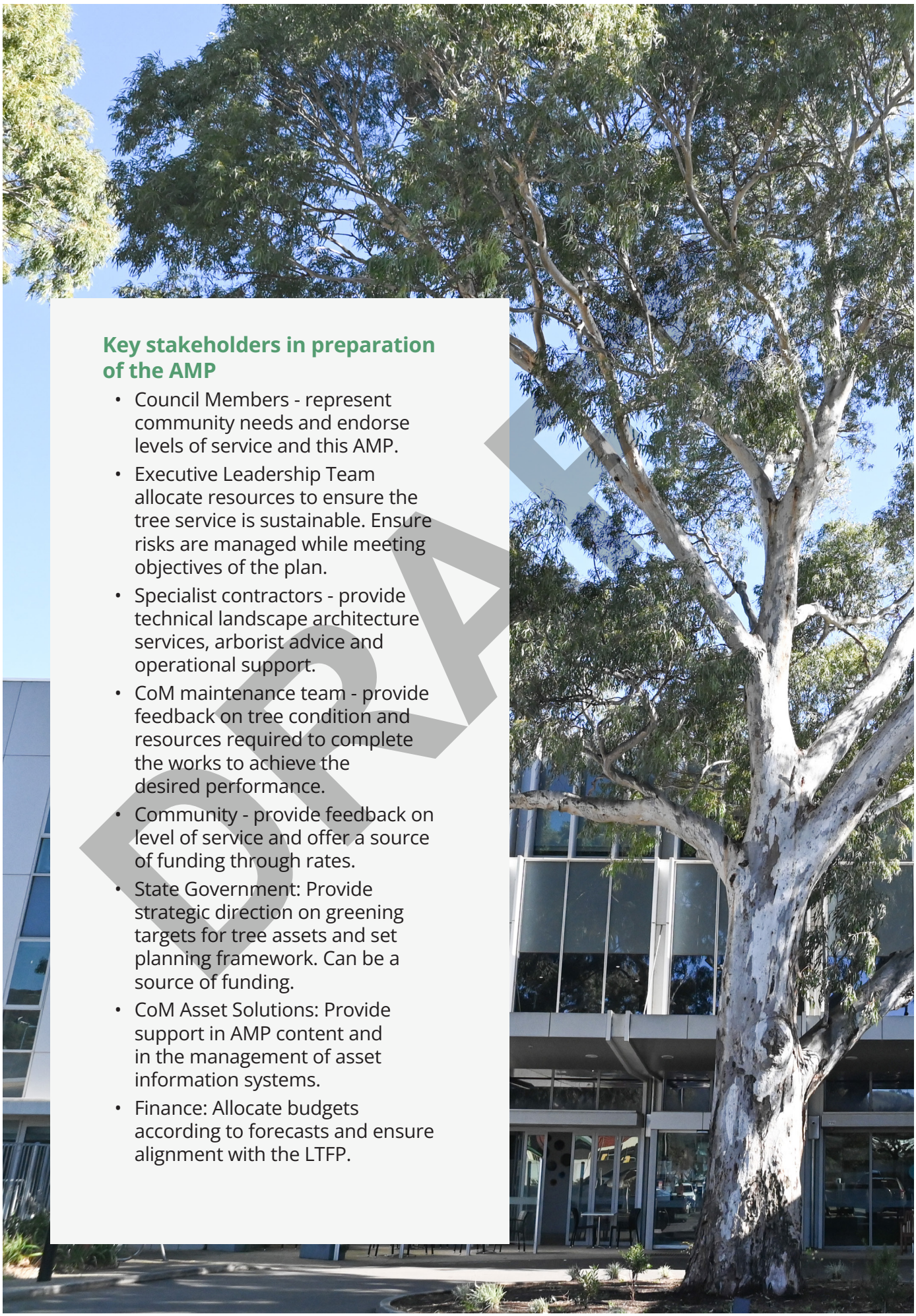
Strategic Management Framework

30 YEAR COMMUNITY VISION TOWARDS 2040 LIVEABLE VALUING NATURE INNOVATIVE PROSPEROUS CONNECTED ENGAGED	**A shared Community Vision** Innovating a future for the city and its residents
STRATEGIC PLANS STRATEGIC PLAN WORKFORCE PLAN ASSET MANAGEMENT PLAN LONG TERM FINANCIAL PLAN HEALTH, SAFETY AND ENVIRONMENT PLAN	A suite of plans that focus Council's contributions to the Community Vision
BUSINESS PLAN JULY 2019–JUNE 2023	Council's delivery program over its four year term
WORK AREA PLANS	Team level planning to ensure community and Council's priorities are delivered
ANNUAL BUSINESS PLAN	Identifies how Council's work is resourced and paid for each year
PERFORMANCE DEVELOPMENT PLANS	Individual delivery and development plans

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- The 30-Year Plan for Greater Adelaide (Plan SA)
- Local Government Association Mutual Liability Scheme
- Independent Inquiry into the Management of Trees on Public Land (2012)
- City of Marion Environment Policy
- City of Marion Open Space Framework/Plan
- City of Marion Streetscape Design Guidelines
- City of Marion Climate Change Policy
- City of Marion Open Space Policy
- City of Marion Tree Management Policy
- City of Marion Streetscape Policy
- IPWEA NAMS+ AMP template
- City of Marion Asset Management Strategy





Key stakeholders in preparation of the AMP

- Council Members - represent community needs and endorse levels of service and this AMP.
- Executive Leadership Team allocate resources to ensure the tree service is sustainable. Ensure risks are managed while meeting objectives of the plan.
- Specialist contractors - provide technical landscape architecture services, arborist advice and operational support.
- CoM maintenance team - provide feedback on tree condition and resources required to complete the works to achieve the desired performance.
- Community - provide feedback on level of service and offer a source of funding through rates.
- State Government: Provide strategic direction on greening targets for tree assets and set planning framework. Can be a source of funding.
- CoM Asset Solutions: Provide support in AMP content and in the management of asset information systems.
- Finance: Allocate budgets according to forecasts and ensure alignment with the LTFP.

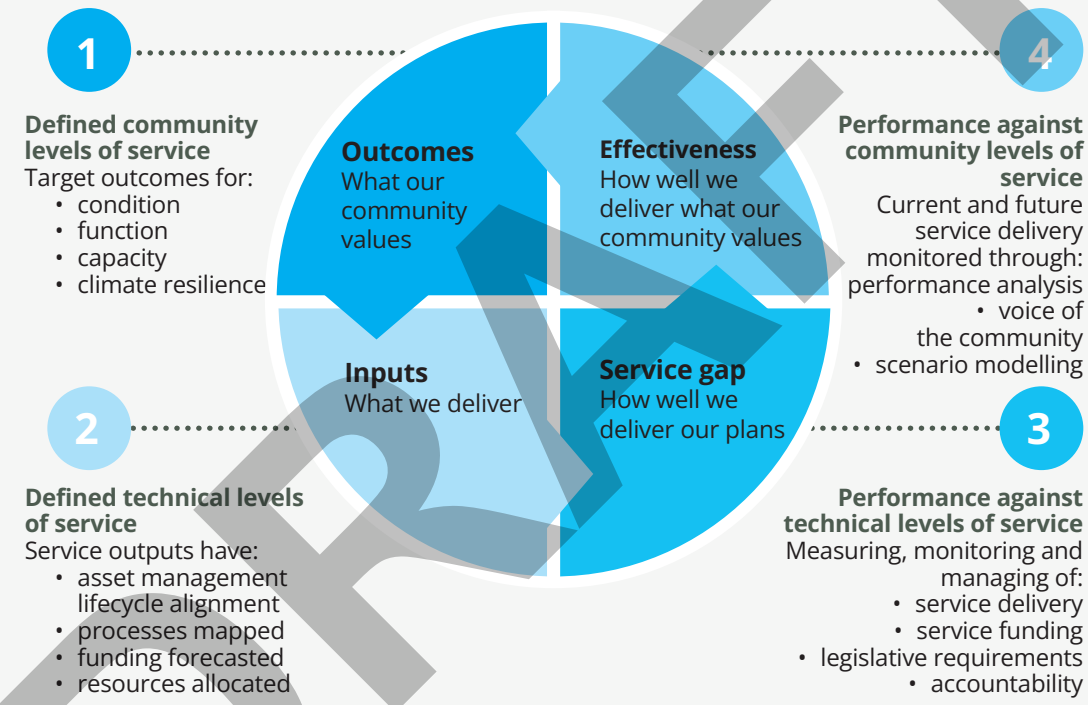
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Levels of service

Levels of service ensure we meet community expectations. The primary reason assets exist is to deliver services.

Levels of service underpin asset management decisions. Defining and measuring levels of service is a key activity in developing Asset Management Plans. When levels of service are considered collectively, they provide clarity and assist with meeting council's strategic objectives.

Using levels of service to measure service delivery performance



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When defining levels of service, council takes into consideration:

- the external context, including legislative requirements which may impose minimum standards.
- the internal context including strategic objectives, the availability of resources and financial constraints.
- community expectations of the quality of service, balanced against the price they are willing and able to pay for that service.

These drivers influence council's decisions about the range, quality and quantity of services provided.



Strategic and corporate goals

Our purpose: To improve our resident's quality of life; continuously, smartly, and efficiently.

Our community vision: A community that is (L) Liveable, (VN) Valuing Nature, (E) Engaged, (P) Prosperous, (I) Innovative, and (C) Connected

Tree assets aim: to have streets and reserves which are lined with mature, healthy trees that provide shade, cooling and habitat for birds and other wildlife.

Objective ID	Council strategic objective description	How the objectives are addressed in the plan
L1	We will make our services, facilities, and open spaces more accessible.	Planting new trees to manage urban heat and microclimates Increase Urban Tree Canopy by 20% from existing levels by 2045 by planting 4300 trees street and reserve trees annually. Risks to safety managed by inspections and planned maintenance. Risk assessment conducted to ensure the risk of branch/tree failure is minimised.
L4	We will celebrate our rich cultural diversity and heritage through artistic, cultural and community activities and vibrant destinations.	Active maintenance of iconic/heritage trees, with planting themes consistent with character zones.
VN1	We will plan for and respond to extreme weather events through our services and urban form.	Proactive maintenance approach reduces impact of storm events. Trees managed with Tree Risk Assessment Qualification (TRAQ) principles. Data Collection and monitoring identifies trees at risk of failure with intervention pruning undertaken to address risk.
VN2	We will build community resilience to the impacts of climate change.	Species selection and diversification to plant climate ready species reduces wholesale species loss and susceptibility to pest and disease.
I1	We will use the best technology possible to improve efficiency of our operations and delivery of our services.	Use of Forestree tree management software integrated with corporate software to improve analysis and service level efficiency.
I2	We will use data to provide evidence for resource allocation relating to our services.	Forestree connection provides reporting on resource allocation and future needs.
P4	We will seek to activate our city through quality streetscapes and place making initiatives to deliver prosperous business precincts.	Arborist input into streetscape design process to advise on green infrastructure installation and maintenance.
		Trees will only be removed if meeting our tree assessment criteria.

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Legislation

The Legislation and industry Standards used in the preparation of this AMP are found in the table below.



Legislation	Relevance to tree assets
Aboriginal Heritage Act (1988)	Protection, preservation of Aboriginal heritage, including of sites, objects, remains of Aboriginal significance.
a. AS 4373 Pruning of Amenity Trees b. AS 4970 Protection of Trees on Development Sites c. AS 2303 Tree Stock for Landscape Use	a. Pruning and general maintenance of trees. b. Principles for protecting trees on land subject to development. c. Technical evaluation of nursery grown tree quality.
Commonwealth Environment Protection and Biodiversity Conservation Act (1999)	Provides a legal framework to protect and manage unique plants, animals, habitats, and places.
Local Government Act (1999)	Provision of LTFP and AMPs for sustainable service delivery. Describes considerations for tree selection on roads.
Electricity Act (1996)	Framework for electrical industry. Prescribes control of vegetation in vicinity of power lines.
Heritage Places Act (1993)	sustainable use and adaptation of heritage places in a manner consistent with high standards of conservation practice.
Highways Act 1926	Sets out the legislative framework for road authorities in SA.
Landscape South Australia Act 2019	A framework for promoting sustainable and integrated management of land, water, pest plants and animals and biodiversity across SA.
Native Vegetation Act	Informs requirements for the Metropolitan Open Space System (MOSS) within City of Marion.
Planning and Design Code	Informs on suburban infill development and subsequent street tree impact.
Planning, Development, and Infrastructure Act (2016)	Provides a framework for regulated and significant trees and development approval requirements.
Sewerage Act (1929)	Sets out requirements to identify tree species classification and relevant set back from sewer infrastructure.
Water Resources Act (1997)	Sets out requirements for any tree planting including relevant set back from any water supply infrastructure.
Work Health and Safety Act 2012	Informs of obligations on parties to provide and maintain safe workplaces.

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What our community values

Community feedback

A key objective of asset management planning is matching the levels of service council delivers with the levels of service expectations of our community. Council uses a range of activities to engage with the community and stakeholders such as social media and website, community workshops and meetings, education services and via Council Members. This ensures that levels of service, funding and management practices proposed for our assets are appropriate.

A community satisfaction survey was conducted by the City of Marion in 2022. A range of channels was used to reach out to all groups in the City of Marion community, including letterbox drop, social media, email, and face-to-face approaches to ensure a wide demographic spread of survey responses. Questions relating to age, gender, and relationship to the City of Marion and suburb were also included to confirm the views were representative of a more balanced demographic spread. The measure calculation methodology remains unchanged from previous years to ensure accurate trend measurement.

Community trees were included in the survey for the first time, and the results determined that the level of importance around trees was 94 per cent, with a satisfaction rate of 71 per cent.

The relative gap between the two measures of 'Importance' and 'Satisfaction' informs Council of the need to improve our management of tree assets. This AMP sets out a plan to ensure the community satisfaction of tree assets increases.

In addition, a targeted survey regarding urban tree management was conducted by the City of Marion in March 2023. The key findings of the survey are summarised below.

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87% of respondents agree

Planting climate resilient trees

With a changing climate some trees are not expected to survive future extreme heat and drought conditions. 87% of respondents agree we should gradually replace trees with a variety of climate resilient species on each street.

50% **of respondents say**

I am easily able to walk along shaded footpaths within the City of Marion.

79% **of respondents think**

Every property should have at least one street tree in front of it.

77% **of respondents agree with this statement:**

I like trees on my street.

59% **of respondents agree that:**

I can see areas where street or reserve trees need to be better maintained by the City of Marion.

94% **of respondents are willing to:**

Provide extra water when a new street tree is planted at the front of their house (- eg one bucket per week).

95% **agree** Trees are important in urban areas.

80% **agree** It is not reasonable to remove all trees on a property to allow development.

78% **agree** I can see areas where more trees need to be planted within the City of Marion

Tree canopy on private land is decreasing. What should we do?

75% of respondents agree

- ✓ Raise community awareness of the value of trees.
- ✓ Plant more trees on streets and reserves.
- ✓ Provide incentives for property owners to protect/retain trees on private land.
- ✓ We should be advocating that other parties be required to share the cost of establishing street trees in tricky areas.



Community levels of service

Community levels of service detail what is important to our community and how they receive and experience our services.

Building on National State of the Assets reporting and emerging industry good practice, council considers the following service parameters:

Condition: Does the asset provide a safe and quality service?

Function: Is the asset fit for purpose?

Capacity: Is the service over or under used?

Climate Resilience: Is the asset's design resilient against projected climate stressors.

By listening and understanding what is important to our community, we have developed Community Levels of Service. These factual measures provide a balance in comparison to the community perception (importance and satisfaction) that may be more subjective. Performance is monitored against targets, using 1-5 rating scales.

Using industry standard measures (where available) enables Council to compare our performance. This includes submitting data to the National State of the Assets (NSoA) benchmarking project commissioned by the Australian Local Government Association. A summary of these parameters is shown below.

Parameter	Community level of service	Achieved by	Predicted trend
Condition	Trees are in good health and condition.	Trees will be maintained to service level standards to provide safe pedestrian and vehicle access.	Maintain
Function	Tree canopy cover provides shade, cooling, and biodiversity.	Monitoring and analysis of tree canopy on council land coverage via LiDAR mapping and tree health / condition assessments.	Increase
Capacity	All streets, parks, and suburbs have an acceptable number of trees planted.	Plant all suitable planting spaces, trees only removed if meeting our tree assessment criteria.	Increase
Climate Resilience	Ensure trees are resilient to the effects of climate change.	Monitoring and analysis of urban tree species lists via Forestree and use of Shannon diversity index.	Increase

Progress reporting to Assets Steering Committee, Council and the community is a key focus of the City of Marion's asset management transformation. Measures and targets are determined by the Assets Steering Committee. The performance of the tree assets against these community parameters is shown in on page 24.

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Technical levels of service

Technical levels of service detail what we do to deliver our services. Council manages and operates assets at the agreed levels of service while managing whole-of-life costs to ensure the best value for resources used. It is important to monitor the levels of service regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as technology and community priorities will change over time.

Lifecycle phase



Planning

Effective planning enables the intensive tree planting program to continue for the next four years. This includes an assessment of the existing tree base to determine if a particular species continues to be able to meet its useful life expectations or whether a species tends to develop unacceptable risks. Forestree Geospatial Information System (GIS) will be used to coordinate long term maintenance and renewal programs.

Planning also involves the identification of under-used land and preparation for new trees to be planted. Prior to planting council will assess each location against the Tree Planting Assessment Guidelines (Appendix C) and taking into consideration:

- Soil types
- Diversity
- Street Amenity
- Maintenance
- Impacts on infrastructure
- views.

Each residence which is planned to be receiving a tree for the verge will have an information flyer delivered to their letterbox informing them of the upcoming planting and additional notification signage will be installed on streets throughout the suburb. In addition, signs will be placed in community neighbourhood centres, libraries and City Limits which provides information on tree planting schedules.

Creation

Trees are created new to increase the total number within council boundaries and to meet the targets of our accelerated tree planting program which runs for another four years. A created tree is one which is located on land that previously did not contain trees resulting in an overall increase to the urban forest. We also inherit new trees from upgraded streetscapes and as contributions from urban developments.

Trees are mapped in the software Forestree, where attribute data is recorded and maintained. This plan contains a sustainable level of resources to ensure the new trees reach their expected life.

Operation

Operation is defined as the day-to-day activities undertaken to provide service delivery to the community. For trees, this include responding to community feedback within defined response times; attending to the outcomes of storms; and making safe any tree hazards reported by staff or customer service. Operation activity also includes tree watering programs for the first three years of tree life including formative pruning.

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Monitoring

Trees are inspected to assess their condition by qualified officers and trained staff with a Level 1 or 2 Visual Tree Assessment (VTA) qualification with data recorded in Forestree. A TRAQ risk assessment is undertaken on Regulated and Significant trees together with other scheduled inspections on all trees at a frequency of five years typically.

The frequency of inspection is also modified by the risk the tree presents according to the following criteria: For low risk, 5-yearly; medium risk, 3-yearly; high risk, annually; and extreme risk, monthly. An asset inspection procedure outlines the requirements for inspection resource, level of detail to be collected and frequency.

Maintenance

Reactive maintenance is unscheduled pruning, debris removal, or make safe activities usually as a response to community notifications or following inspections after severe weather events.

Planned maintenance involves the regular scheduled activities including proactive repairs and improvements to the tree's structural integrity. This includes each tree being assessed and pruned on a three yearly cycle. All maintenance is carried out in accordance with AS 4373 Pruning of Amenity Trees.

Currently two street sweeping units clean the streets across the City of Marion on a six-weekly cycle. It is anticipated with the increased street tree planting there will likely be a small increase in leaf litter and debris as the trees mature and the urban canopy matures. To manage this, we are introducing asset management mobility technology to better understand, coordinate and optimise street sweeping activities. The use of data driven model from the Asset Management System and Community Request portal, will more readily identify hot spots and facilitate increased sweeping activities in these areas.

In addition, continuing use of the Green Bin waste disposal service should be utilised by residents to clean leaf litter and debris from private properties

Tree removal or tree size reduction (pruning) criteria

For existing trees, the impacts on views (including advertising signs) will not justify the removal or substantial pruning of a tree, however future impact on views will be assessed for new plantings. Other reasons that will not affect tree modifications include: leaf, flower, or fruit drop; bird and other animal waste or noise; off-street parking ability; room for waste collection bins; and the shading of solar panels. The provisions of Section 245 of the Local Government Act will however provide a mechanism to request any modifications to trees.

- All trees on Council land are considered council property and should not be removed without Council approval.
- A suitably qualified Officer/Council Arborist, or when deemed appropriate an independent Arborist will inspect the tree and make an assessment based on the removal criteria.
- All tree assessments will follow the Visual Tree Assessment (VTA) methodology.
- Planning Consent is required for the removal of Regulated and Significant trees.
- All reasonable alternatives to retain a tree shall be considered before it is removed.

Renewal

Tree renewal is defined as the removal of the existing tree, grinding of the stump, and the replacement with a new tree in the same location. Trees are assessed using an arboriculture risk-based methods found in TRAQ and are targeted for replacement should the structural integrity be poor, and risk of failure prove too high.

Disposal

Trees are disposed of if they are declared weeds, or diseased, dead, or dying. In some cases, a dead tree will be retained for habitat creation. Disposed trees are removed from the Forestree active tree database with history retained.

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Service standards

Response time to community requests

The City of Marion Arboriculture team is committed to providing the highest level of customer service possible and aims to be the benchmark in tree management operations in Local Government.

- Tree Emergency Works – Response times for emergencies will be 4 hours unless a storm event has occurred in which turn-around times may be longer due to the volume of calls received.
- Tree Pruning Request – All requests for tree pruning will be within 40 working days.
- Tree Assessment/Removal – All requests for removal will have an initial assessment made by a suitably qualified officer within 15 working days, further detailed assessment or development approval may require a longer timeframe. Once the tree has been approved for removal, works will be completed within 40 working days.
- Tree Stump Removal – All tree stumps will be removed within the following 20 working days after tree removal, stump removal is generally sent to contractors for completion via our Tree Management.
- Tree replacements – All trees removed will be replaced where warranted during the following planting season occurring from May-September.

Clearance pruning standards

Council's Arboriculture Unit will prune Council-owned vegetation that intrudes into and over all infrastructure within the road reserve, to the following minimum clearance specifications. The exact amount cleared will depend on traffic loads and sight-line issues. (Source: City of Marion Urban Forest Operations Manual)

Footpath clearance:

- edge of footpath - 2.4 metres
- centre of footpath - 2.7 metres

Road envelope:

- Kerb line - 2.7 – 3 metres
- Centre of road (Non-arterial) - 5 metres

Road infrastructure

- around streetlights, clear visibility must be cast 60 degrees to pole to achieve 1.0 m clearance from pole
- street signage, clear visibility.

Tree removal process

- A suitably qualified Officer/Council Arborist, or when deemed appropriate an independent Arborist will inspect the tree and make an assessment based on the removal criteria.
- All tree assessments will follow the Visual Tree Assessment (VTA) methodology.
- Planning consent is required for the removal of Regulated and Significant trees.
- All reasonable alternatives to retain a tree shall be considered before it is removed.

Tree renewal criteria

Street and reserve trees are only removed if one or more of the following criteria are met:

- The tree is dead (indigenous species appropriately located in reserves are to be left as habitat).
- The tree is diseased, and its life expectancy (ULE) is short.
- The tree species is inappropriate or poorly located for the site or location and has been determined to be creating management, security, or safety issues.
- The tree represents an unacceptable risk to public and private safety (Based on TRAQ or other internationally recognized tree risk rating or score).

Where statutory vegetation power line clearance (SA Power Network pruning) has resulted in unsatisfactory visual amenity or compromised the structural integrity of the tree.

Qualifications of arborist undertaking visual tree assessment (VTA)

The arborist undertaking a VTA will have a minimum Certificate 5 Diploma in Arboriculture qualification or similar ISA qualification, unless otherwise delegated by the Coordinator Arboriculture.

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Tree planting principles

A green city

The City of Marion recognises the economic, social, and environmental value of trees and is committed to maintaining and where appropriate increasing the number of trees across the City of Marion in parks, reserves, and streets to 'green' the city, contribute to healthy lifestyles and strengthen habitat and biodiversity.

Pre-European landscape

An emphasis will be placed on strengthening the city's pre-European landscape in parks and reserves where this is consistent with the character and function of the park or reserve.

Tree avenues

Aim to establish avenues of quality street trees in most streets across the city, to enhance the appeal and amenity of the streets and neighbourhoods.

Climate change adaptability

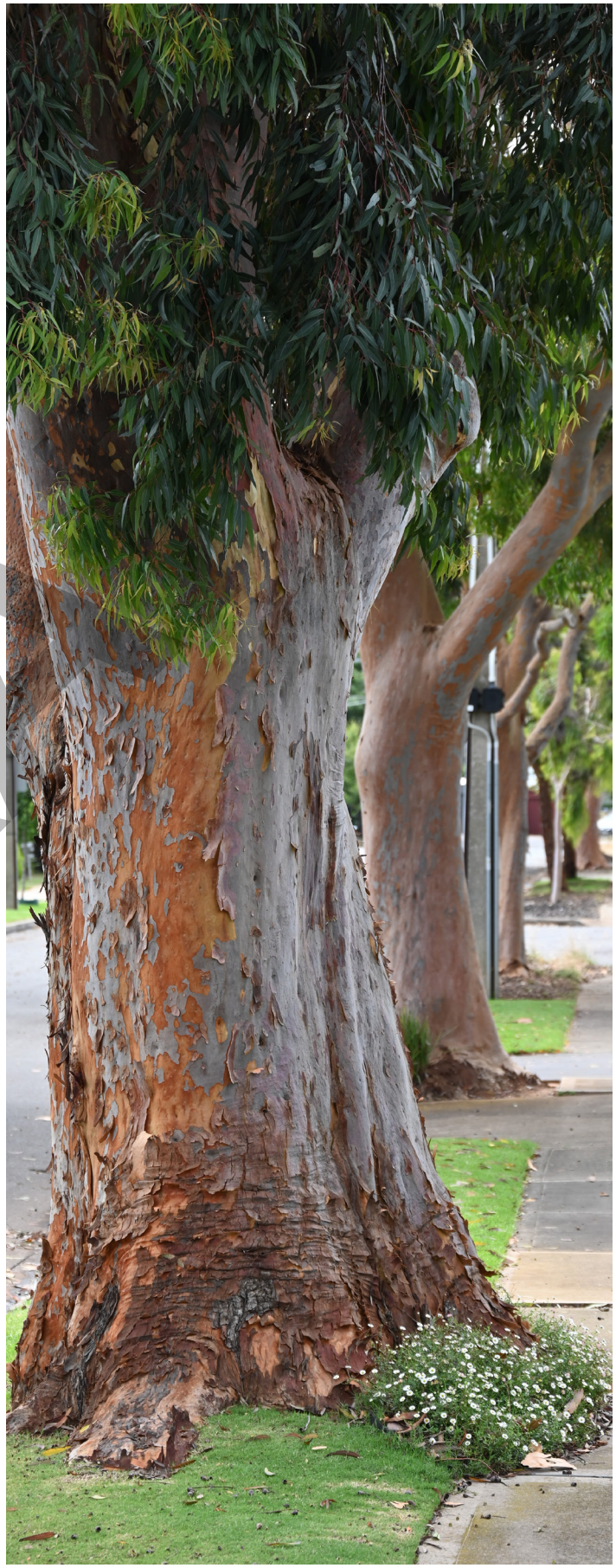
Commitment to climate change adaptation through the use of drought tolerant and sturdy tree species and by adopting industry best practices to enhance tree sustainability.

Species selection

An emphasis will be placed on tree species within streets, precincts and suburbs that are consistent and relevant to the character and climate of the area concerned.

Landscape connections and habitat

Trees will play a key role in achieving landscape connections and habitat provision across the city through corridor, boulevard and avenue tree planting, and the use of plant species that provide habitat for local wildlife.



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Future demand

Demand drivers are those factors which have the potential to impact Urban Tree services into the future.

Demand drivers on the trees service include population and demographic changes, planning and design code changes, political and community expectations, economic, and environmental factors.

Demand management plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in the table on the right.

As our current planting programs continue to increase our urban tree canopy. Community expectations about the levels of maintenance we provide to actively manage our urban trees will continue to rise, resulting in new service demands and resourcing. The ease at which the community can log a request for service via the customer service portal is impacting our ability to resource our existing planned service demands.

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Demand driver group	Driver and projection	Impact on services	Demand management plan
Land Use	Planning and design code changes resulting in reduced open space and reduced verge widths.	Reduced total area of Council land available to plant trees.	Ensure developments refer to Open Space AMP, set minimum standards for verge widths. Review and update streetscape design guidelines.
Land Use	Urban infill resulting in greater loss of Tree Canopy from private property.	Large canopy trees from private property removed with no viable reduced opens space to offset	Advocate state government to increase protections for large trees.
		Increased planting in road reserve restricts species choice, canopy size due to Electrical Act.	Advocate to State for underground power infrastructure. Increase species flexibility around powerline infrastructure.
		Offset loss of Canopy from private property not able to be made up.	Ongoing funding of Regulated Tree Maintenance Fund.
		numbers of cars permanently parked on streets preventing watering of trees.	None identified.
Economic	Greater emphasis on placing financial value on Urban Forest.	Improves our ability to provide justified service level decisions based on comparing the trees inherent value against disposal/ retention options.	Establish a tree valuation method and calculate the value of the tree population as a whole and by suburb.
Social	Increased population density.	Increased risk of exposure to trip hazards caused by tree base intrusion into footpaths.	Work with maintenance to identify and resolve risk locations. Apply barrier where needed. Use permeable materials. Future plantings based on the context of the streetscape.
		Increased amount of visit events to streetscape and open space trees increases the exposure risk to tree defects.	Monitor tree maintenance strategies focusing on high/medium risk trees. Increase mulching around large trees to set up exclusion zones.
	Customer service request increases.	Expectations to respond to reactive service delivery requests leads to inefficient resource planning and usage	Endorsed business case seeking additional resources and ongoing review of the Asset Management Plan.
Technological	Smart Cities, Sensors, GIS, remote sensing, Artificial Intelligence, LiDAR mapping.	Data collection and accuracy is improved assisting with decision making and reporting.	Effectively integrate Forestree with other corporate systems to aid with visualisation and reporting of tree specification and performance data.

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Climate change adaptation

Climate change is likely to affect tree asset life and tree functionality, and this is already being experienced through reduction of average rainfall. This has had the effect of shortening the tree planting season and extending the watering program to ensure tree survival.

The Department of Environment and Water produced Guide to Climate Projections for Risk Assessment and Planning in South Australia 2022. This document outlines the trends, and these along with how CoM will manage climate resilience is shown in the table below. The funding of the climate resilience management activities have been incorporated into the budgets of this AMP.

Parameter	Projected trend	Impact on asset and services	Resilience management
Temperature	• Maximum, minimum, and average temperatures will increase. • Warmer spring temperatures. • Hotter and more frequent hot days.	• Increased water stress to trees due to leaf embolism. • Stressed trees become more susceptible to pest and disease outbreaks. • Reduced survivability of new tree plantings. • community demand for a higher level of canopy amenity.	• Greater species diversity. • Ongoing watering for establishment. • Research, and street tree trials. • Embedding climate resilience and sustainability into asset decision-making. • Incorporating water sensitive urban design and environmentally sensitive design guidelines into climate-ready infrastructure and landscapes. • Incorporate trees into streetscape design process. • Monitoring and reviewing operations and management practises for seasonal variation. • Review species list and work with suppliers to further diversify tree species.
Rainfall	• Declining rainfall, • Lower spring rainfall • More drought.	• Increase likelihood of branch failures and whole tree failures. • Specific species death. • Decline in tree health.	• Increase frequency of scheduled inspection and maintenance programs. • Higher rate of intervention pruning. • WSUD technology incorporated into streetscapes.
Storms	• More intense heavy rainfall events and which carry intensified winds.	• Increase likelihood or branch failures and whole tree failures. • Reactive response increased frequency. • Budget impacts.	• Block pruning program undertaken on schedule. • Scheduled inspections undertaken on schedule.
Evaporation	• Evapotranspiration increases across all seasons.	• Greater loss of certain species through water stress. • Increase in sudden branch failure and whole tree failure.	• Increase funding for monitoring/ maintenance programs including watering. • Participate in research projects with partner groups such as TREENET. • WSUD technology incorporated into streetscapes.
Fire	• More dangerous fire weather, drier fuels.	• In the event of bushfire, reallocation of staff and contractors to assist with State response.	• Business continuity of tree services due to resource reallocation will be managed through contingency planning.

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Lifecycle management



Background information

Physical parameters

City of Marion occupies 56.17km^2 of which 13% is public open space, including a wide variety of functional reserves.

In line with community vision, we aim to develop and connect our green infrastructure and biodiversity to reduce the effects of urban heat and create a cool and livable city.

Asset Category	Quantity	Useful life	Replacement value
Street Trees	51,081	60 years (avg)	$13,998,934
Reserve Trees	10,058	80 years (avg)	$2,755,070
TOTAL	61.089		**$16,754,004**
Unplanted available spaces	12,700	-	

Note: Replacement Value assumes (cost of purchase= $80) + (cost of planting = $175) +(one round of formative pruning = $20) =$275 per unit. Excludes cost of removal of old tree if needed and formative watering.

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Age profile

Our urban forest is currently considered to be quite young, as can be seen in the Tree Age Profile chart, and this reflects the large asset creation program we have rolled out over the last 5 years and will do so for another 4 years to green our city. As our newly planted trees mature, we are well placed to have a healthy sustainable urban forest with a long asset life expectancy. The unknown data shown in this chart is expected to be eliminated through planned activities of this AMP.



Asset performance

Asset condition

Asset condition performance description

Community level of service	Achieved by	Target	Tolerance range
Trees are in good health and condition	Trees will be maintained to service level standards to provide safe pedestrian and vehicle access	75% of assessed tree assets in good condition	On track - 75% to 100% Monitor - 50% - 74.9% Off track - 0% to 49.9%

Asset condition performance outcome

Rating	Condition description	Tree total
1	Good: Tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Only planned maintenance required.	74.5%
2	Average – Intervention Point: The crown may be slightly out of balance, and some branch unions or branches may be exhibiting minor structural faults. If the tree is a single trunk, it may be on a slight lean. Minor maintenance required plus planned maintenance.	15.2%
3	Poor: Poorly structured or unbalanced crown or exhibiting large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. May be suffering from root damaged. Significant maintenance required/possible renewal.	3.4%
4	Very Poor: Tree has significant dieback, heavy presence of deadwood and a sparse canopy. Significant maintenance or renewal required. Species requires review to determine optimal performance in line with Climate Change.	1.0%
5	Hazardous: Physically unsound. Asset requires disposal/replacement.	0.0%

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Tree structures are susceptible to the environmental and physical conditions around them and can both improve and decline over time they are generally reliant on natural rainfall and the amount of permeable space to flourish. A healthy tree can continue to improve but require pruning to modify its canopy for appropriate vehicle/pedestrian access. When structural damage occurs, it is largely irreversible and therefore overall healthy trees can be found with poor structures or unbalanced canopies. When these conditions change or if the tree is impacted by some sort of development this can quickly lead to declining health or loss of the asset.

The intervention point at 'Average' reflects the importance of proactive maintenance (Block Pruning) to reduce faults forming in trees and potential for future failure.



Asset function

Asset function performance description

Community level of service	Achieved by	Target	Tolerance range
Tree canopy cover provides shade, cooling, and biodiversity	Monitoring and analysis of tree canopy on council land coverage via LiDAR mapping and tree health / condition assessments	Biodiversity health confirmed. Tree canopy performing in summer, New tree species prioritises shade/cooling	On track - 75% to 100% Monitor - 50% - 74.9% Off track - 0% to 49.9%

Eco Service Benefits are defined as the economic, ecological, social, and aesthetic use, function purpose, or services of a tree (or group of trees) in its situational context in the landscape

Tree canopy on council land is 11.6% (baseline). Tree canopy cover provides Eco Service Benefits such as shade, cooling, and biodiversity. The community values and appreciates the city's trees for their shade, appearance, and the contribution they make to the environment. By 2045 our tree canopy on council land is predicted to increase by 20% from 2023 levels (11.6% to 13.4%). The target is in line with the State Government target set under the Greater Adelaide 30-year plan and is measured every 3 years.

Asset capacity performance outcome

Capacity and utilisation are monitored by regularly reviewing the number of vacant planting spaces available and tree canopy cover as a % council wide. Canopy cover data is provided via LiDAR mapping undertaken by State Government every 3 years.

An increase in Capacity score is anticipated as the final four-years of the planting program are rolled out. 3,900 street trees and 400 reserve trees will be planted each year until most of the available land has reached capacity.

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Asset capacity

Capacity refers to the amount of available land filled with trees and whether this land is underutilised for that purpose. This is expressed in terms of community service levels in the table below.

For City of Marion, it is estimated that only 63% of the available land is at full capacity for trees. We measure this by referring to LiDAR surveys of canopy cover. This AMP is targeting the planting of 3900 street trees and 400 reserve trees per year to use up most of that available space in the next four years.

Asset capacity performance description

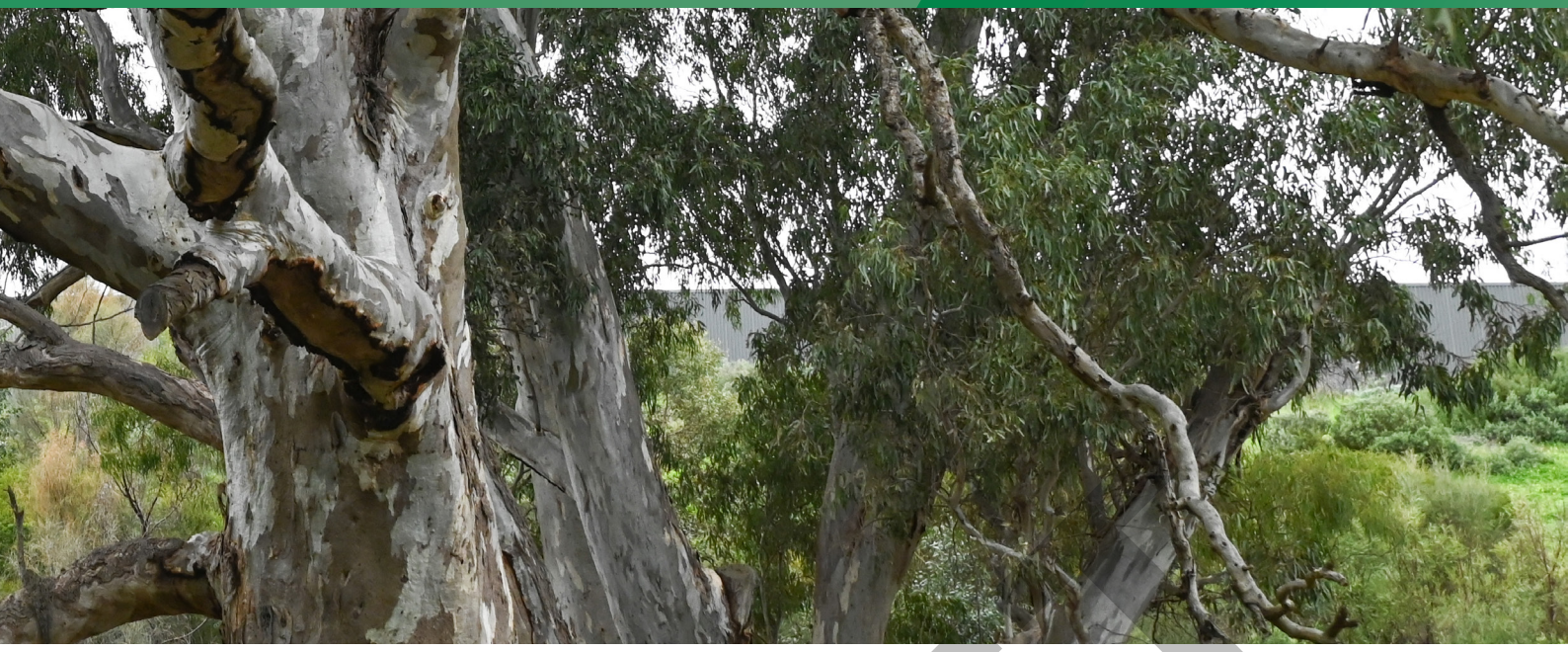
Community level of service	Achieved by	Target	Tolerance range
All streets, parks, and suburbs have an acceptable number of trees planted	Plant all suitable planting spaces, trees only removed if meeting our tree assessment criteria.	Increase urban tree canopy by 20% by 2045	On track - 75% to 100% Monitor - 50% - 74.9% Off track - 0% to 49.9%

Climate resilience

Climate resilience performance description

Community level of service	Achieved by	Target	Tolerance range
Ensure trees are resilient to the effects of climate change	Monitoring and analysis of urban tree species lists via Forestree (Shannon diversity index).	Not established	Not established

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Tree valuation

Trees are not classified as an asset under CoM Asset Accounting Policy, and for the purposes of this AMP, the replacement value of a tree is typically that of the planting of a new tree. It is recognised that a tree increases in community value as it enlarges, but that the replacement cost remains the same.

The total replacement cost of trees is $16,754,004

Because of limitations in current methods of applying financial worth, Council is seeking approval by stakeholders to develop new methods of applying a monetary value to tree assets. This will involve the incorporation of community benefits and values into a monetary value and will assist Council to apply appropriate budgets for their management.



Whilst no Australian Standard for Amenity Tree Valuation exists, Arboriculture Australia has released a Minimum Industry Standard (MIS 506) Tree Valuation as a base line for industry to achieve. The City of Melbourne Amenity Tree Valuation (ATV) Method is a nationally recognised method which uses tree species, aesthetics, location, and condition as a basis for providing a financial worth to the tree. An example on the use of this method is provided in Appendix A and it is this method which City of Marion proposes to develop for use. ATV has been built into Forestree and can be used in the field to calculate each trees value, with collective values calculated by Suburb and Council wide.

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Operations and maintenance

All O&M costs are expensed for trees assets. There are three main challenges when managing the City's trees:

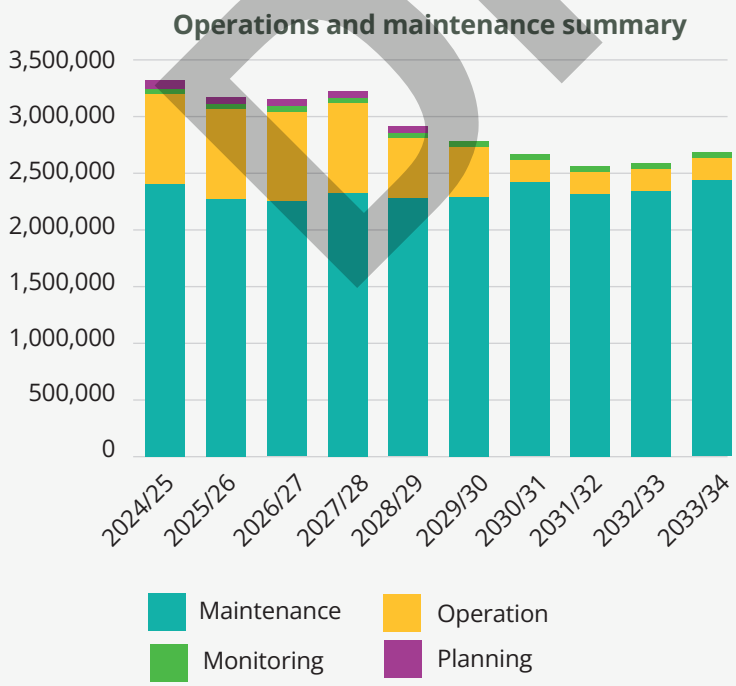
- Increasing tree canopy coverage while competing with growing urbanisation
- Managing urban forest resilience to emerging climate change influences
- Managing risk.

Professional tree management is essential to the sustainability of the urban forest. We will use internationally recognised best arboriculture practices in all tree operations and maintenance functions focusing on risk management, sustainable tree management, and customer service and satisfaction principles.

Cost elements: The operations and maintenance costs comprise the direct costs of providing the service including council labour, contractor services, plant and equipment hire and specialist contractors for monitoring and planning activities. The chart below shows the cost per year for each category of operations and maintenance expenditure.



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The O&M budget levels of this plan are sufficient to meet the service levels.

The operating costs show the intensive effort needed during tree establishment phase as the first four years involve increased tree planting activity. Tree survival rate increase is a key goal for those early years. After an initial job backlog reduction, maintenance resource will be aimed at reducing risks, and sustaining the tree population to the required service level. Planning for tree data collection has been budgeted for in the first half of the Plan to provide accurate tree valuations.

Renewal and creation

All renewal and creation work is expensed for tree assets. Renewal is work which does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces, or renews an existing asset to its original service potential. For Trees, we distinguish between renewal, where a tree is replacing a tree that has been removed; from creation, when a tree is planted for the first time at a particular location The selection of new trees is based upon existing tree character across the City, guided by the 'tree character plan' diagrams of Appendix E. These tables contain tree species which have been selected to complement and strengthen local character. The suggested street tree species list aligns with tree species recommendations within the City of Marion Streetscape Design Guidelines 2016.

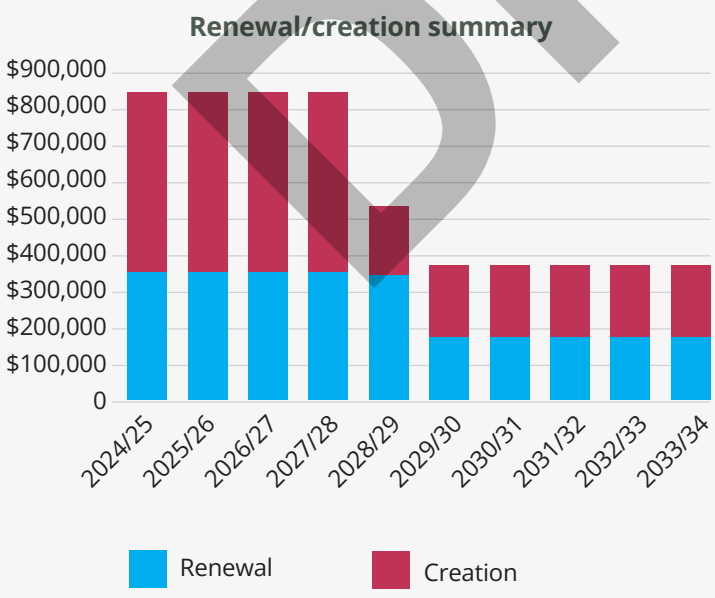
Cost elements: The renewal and creation comprise the direct costs of Council labour, Plant and Equipment Hire and Contractor services. The chart below shows the cost per year for Renewal and Creation categories of expenditure

The renewal and creation budgets levels of this plan are sufficient to meet the service levels.

The trend in the first few years is indicative of the increased activity with tree planting.



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Renewal ranking criteria

Considerations for tree replacement could include the following criteria. Each case is assessed individually, and the criteria used according to the situation.

- The risk consequence of structural faults due to age or disease
- Whether a tree is capable of regeneration and vigour through arboriculture techniques
- Whether a tree which has declined still provides habitat for wildlife and or can be used for habitat creation
- Whether a tree has low aesthetic appeal.
- The need to continue to preserve due to cultural, historical, and social significance
- Alternative land use eg development or infrastructure repair/replacement and there are no alternatives in design



Risk management

Council's Risk Management Policy sets the overall framework for addressing risk within the framework of ISO31000.

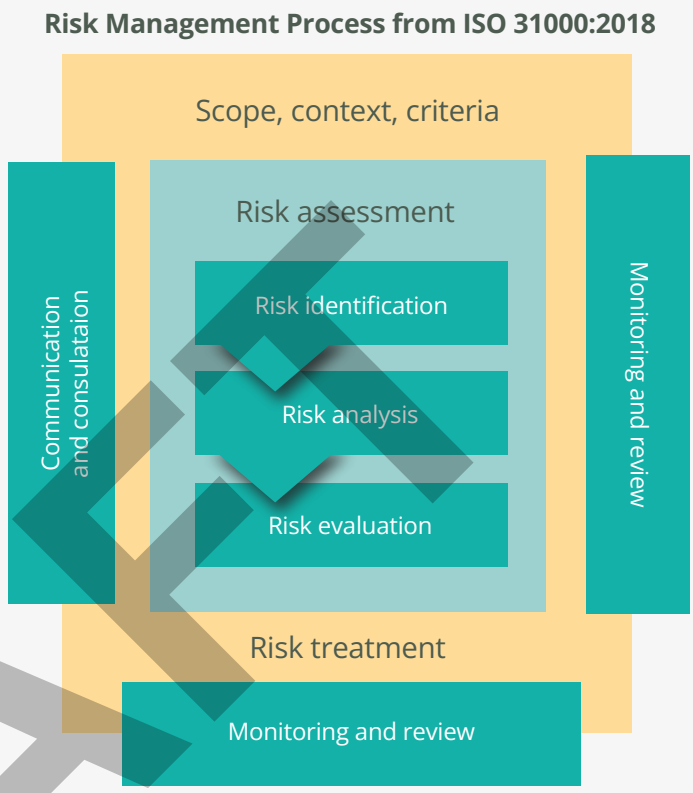
The elements of this framework are:

- Risk Management Context: Establishes the objectives, stakeholders, key issues, and criteria against which risks will be evaluated.
- Identify the Risk: Identifies what risk events are likely to impact on assets and services.
- Analyse the risk: Reviews the existing controls and then analyses the likelihood of an event occurring and the consequence of the event to determine the level of risk.
- Evaluate the Risk: Assesses and ranks the identified risks in a Risk Register.
- Treat the Risks: Identifies actions to reduce/ control the risk.

Council manages its trees in line with the Local Government Act, specifically Section 244 Liability for injury, damage or loss on community land, and Section 245 - Liability for injury or loss caused by certain trees.

The Tree Risk Assessment Qualification (TRAQ) promotes the safety of people and property by providing a standardized and systematic process for assessing tree risk. The qualification has been developed by the International Society of Arboriculture (ISA) and will be the standard our trees are assessed in line with.

There are currently no high-level risks identified for Trees Assets.



Critical assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. For trees, critical assets include those identified by the Heritage Act and the Planning Development and Infrastructure Act as being Regulated or Significant.

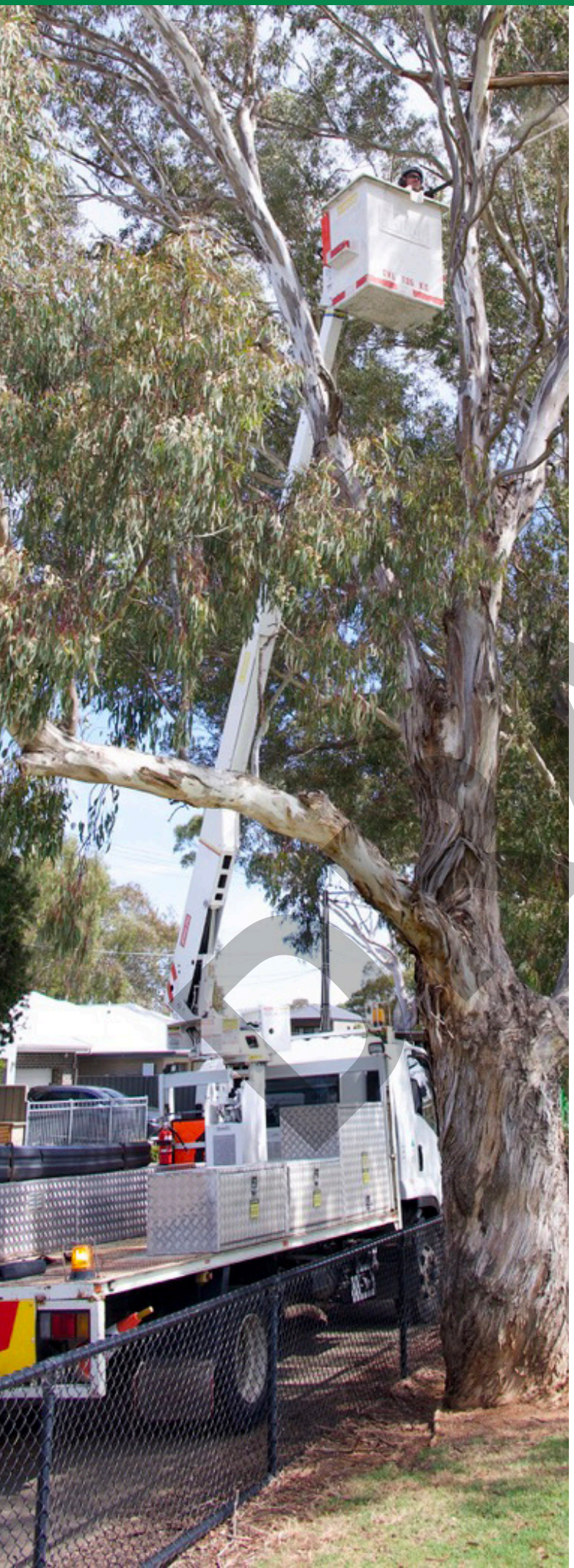
City of Marion has 1425 critical trees of this description.

What we cannot do

The forecast budget is matched to the planned budget which enables the outcomes of this AMP to be achieved.



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Financial summary

Financial sustainability

Sustainability of service delivery

Two key indicators of sustainable service delivery are considered in the Trees AMP:

1. asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years). (Note this does not apply for Trees as natural assets are not considered financial assets)

2. medium term forecast costs/proposed budget (over 10 years of the planning period).

Asset Renewal Funding Ratio (does not apply for Trees)

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have of the funds required for the optimal renewal of assets.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix D.

10-year financial planning period

This AMP identifies the forecast operations, maintenance and renewal costs required to provide an agreed level of service to the community over a 10-year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

Forecast outlays for the LTFP

O&M cost: $29,072,871 ($2,907,287 on average per year as opex expenditure)

Renewal and creation cost: $5,729,684 ($572,968 on average per year as opex expenditure)

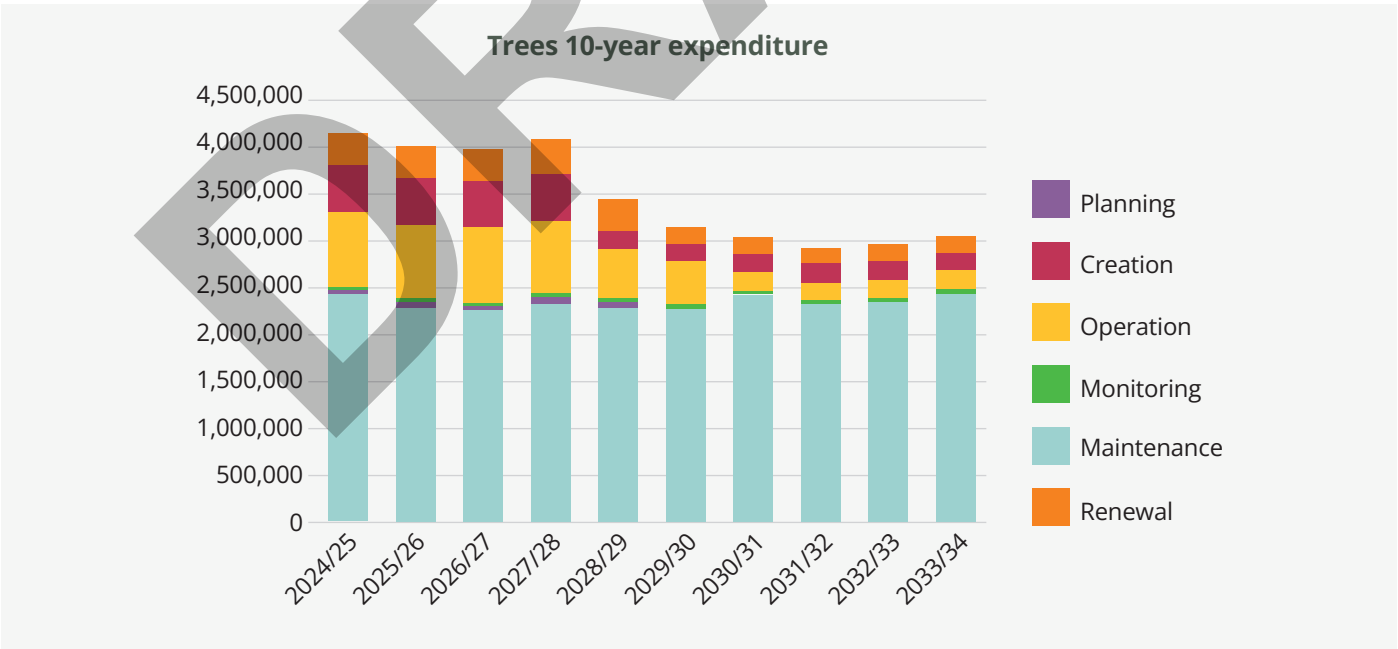
Total cost of the plan: $34,802,555

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Trees assets forecast 10-year expenditure for each asset lifecycle phase

Financial year	Planning	Creation	Operation	Monitoring	Maintenance	Renewal	Disposal	Forecast Total
2024/25	60,000	491,023	785,805	45,000	2,415,846	350,545	0	$4,148,219
2025/26	60,000	491,023	785,805	45,000	2,285,846	350,545	0	$4,148,219
2026/27	60,000	491,023	785,805	45,000	2,285,846	350,545	0	$3,988,219
2027/28	60,000	491,023	785,805	45,000	2,285,846	350,545	0	$4,068,219
2028/29	60,000	193,523	519,805	45,000	2,293,793	342,045	0	$3,454,166
2029/30	0	193,523	445,479	45,000	2,293,793	172,045	0	$3,149,840
2030/31	0	193,523	198,652	45,000	2,421,063	172,045	0	$3,030,283
2031/32	0	193,523	198,652	45,000	2,321,063	172,045	0	$2,930,283
2032/33	0	193,523	198,652	45,000	2,348,332	172,045	0	$2,957,553
2033/34	0	193,523	198,652	45,000	2,448,332	172,045	0	$3,057,553
Total	$300,00	$3,125,234	$4,903,111	$450,000	$23,419,759	$2,604,450	$0	**$34,802,555**

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Valuation forecasts

The best available estimate of the value of assets included in this AMP are shown below. The assets are valued at a fair value at cost to replace service capacity and comprise cost of planting a new tree at $275 each.

Replacement Cost (Current/Gross): $16,754,004

Depreciable Amount: Not applicable to Trees assets.

Depreciated Replacement Cost: Not applicable to Trees assets.

Depreciation: Not applicable to Trees assets.

Key assumptions in financial forecasts

- All data used in this AMP is current as of October 2023
- The forecast 10-year expenditure profile is provided in 2024 dollars
- Long-Term Financial Plan will be adjusted annually to account for cost index increases and utility cost anomalies.
- Historical trends in storm events are reliable forecast for future budget planning
- Climate Risk Assessments are used as a guide to inform budget planning
- Community levels of service expectations remain consistent
- Changes in legislation do not impact the service levels
- Trees subjected to vandalism may delay or suspend planting in that location pending further assessment.
- Resources availability is not impacted because of pandemic, or other State Emergencies.
- Trees provided by developers have been grown in accordance with best practice methods.

Forecast reliability and data confidence

The forecast costs, proposed budgets, and valuation projections in this AMP are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified in accordance with the table on the following page.

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Forecast reliability and data confidence

The forecast costs, proposed budgets, and valuation projections in this AMP are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified in accordance with the table below.

Confidence grade	Description
A. Very high	Data based on sound records, procedures, investigations, and analysis, documented properly, and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%.
B. High	Data based on sound records, procedures, investigations, and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%.
C. Medium	Data based on sound records, procedures, investigations, and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%.
D. Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%.
E. Very low	None or very little data held.



Data	Confidence Assessment
Asset Condition	
Street Trees (ST)	B
Reserve (RT)	C
Asset Function	B
Asset Capacity	B
Asset Age Profile	C
Replacement Value	B
Service Levels	B
Demand drivers	C
Asset Creation and Renewal Forecasts	B
Operating and Maintenance Forecast	B

Monitoring and review

This AMP will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

Cost changes will be reviewed annually, and any changes needed to the table on page 35 will be published separately to this plan.

The AMP will be reviewed and updated every four years to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, creation and asset disposal costs and planned budgets. These forecast costs and proposed budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

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Improvement plan

Alignment	Task	Resource	Completion
VN2	Review plans to ensure a balanced species profile which is resilient to the effects of climate change.	Coordinator Arboriculture Arborist specialist	2024
VN2	Explore incentives initiatives to assist residents to maintain trees on their properties.	Sustainability, Coordinator Arboriculture	2027
VN2	Investigate business continuity for bushfire events.	Coordinator Arboriculture Risk team	2025
VN5	Review and expand the adopt a tree program.	Coordinator Arboriculture, Sustainability	2027
E1	Implement a plan to improve data accuracy by 10% through audits/inspections/data collection projects. Adapt practices to international benchmarks.	Coordinator Arboriculture Maintenance	2025
E4	Lead a working group to promote tree value and awareness for internal and external stakeholders.	Coordinator Arboriculture Communications	2024
I1	Map all trees in Reserves located within 25m of a risk target.	Coordinator Arboriculture	2026
I2	Collect tree attribute data to populate a system of calculating a financial value of tree assets based on overall community worth. This can be used to promote the justification of tree expenses.	Coordinator Arboriculture Finance team	2028
I2	Improve alignment between finance cost centres and tree activities	Finance, Area Mgr	2024
P1	Engage with SA power networks to advocate for infrastructure modification alternatives to reduce the need for powerline clearance pruning and allow for large trees to exist near powerlines.	Coordinator Arboriculture Sustainability	2028
P1	Provide feedback to State, on the update to planning and design Codes to advocate for greater protection of trees	Coordinator Arboriculture	2024
P2	Undertake tree species trials with industry stakeholders (TreeNet, Future Trees, SAPN).	Coordinator Arboriculture	2024-2032

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Appendix A – Tree valuation example

The City of Melbourne Amenity Tree Valuation (ATV) Method is proposed to be adopted by City of Marion. This method is simple and allows for asset management decisions to be fully costed for value-based scenarios.

The essential elements of the of this ATV method are:

- Base tree value.
- Tree species attributes.
- Tree aesthetics.
- Tree location and tree condition.

The formula assigns a numerical value to each criterion that a tree has or makes to the environment and ultimately determines a monetary value to that tree. It is intended that the ATV can bring a tangible value to a tree should situations arise through development activity or where Council may propose activity that will influence the health of a tree.

It is usually undertaken on trees of cultural value however an example of where it may be applied includes the death of a public tree through negligence or illegal activity associated with adjacent development activity.

The formula relies on Council determining the "value" it assigns to individual criteria of the formula, and specific to the character of the locality.

For the purposes of the Tree AMP the following application shall be used by Council to determine the Amenity Tree Valuation of publicly owned trees.

The 2023 basic value was obtained from Arboriculture Australia and is $13.26 per square centimetre trunk basal area before the application of amenity parameters

Value ($) = Basic Value of a standard tree purchased ($) x Species (S) x Aesthetics (A) x Locality (L) x Condition (C)

Example of the urban tree valuation (below table)

A tree identified as a mature Araucaria heterophylla (Norfolk Island Pine) of 20m in height and with a Diameter at Breast Height (DBH) of 66 cm growing in a council reserve near a resident's rear fence line and one of a few examples of the species within the locality. The tree portrays good health, with a structure and form that is typical of the species and considered to be good. The tree has been damaged by unknown persons with the potential cause thought to be herbicide poisoning.

Tree amenity value formula: Value (AV) = Basic Value (BV) x Species (S) x Aesthetics (A) x Locality (L) x Condition (C)

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Parameter	Characteristic	Value
Basic Value (BV)	DBH= 66 cm, BV=(π(DBH)^2/4) x $13.26	$43,365
Species (S)	trees of long-life span (more than 150 years) slow growth rate	1
Aesthetics (A)	Solitary feature specimen tree	1
Locality (L)	In City Park or Reserve, significant street near City Centre	2
Total Tree Condition (C)	Good health Score - 24	1
Amenity Tree Value (AV)	Basic Value (BV) x Species (S) x Aesthetics (A) x Locality (L) x Condition (C)	$90,370

Appendix B – Tree species selection

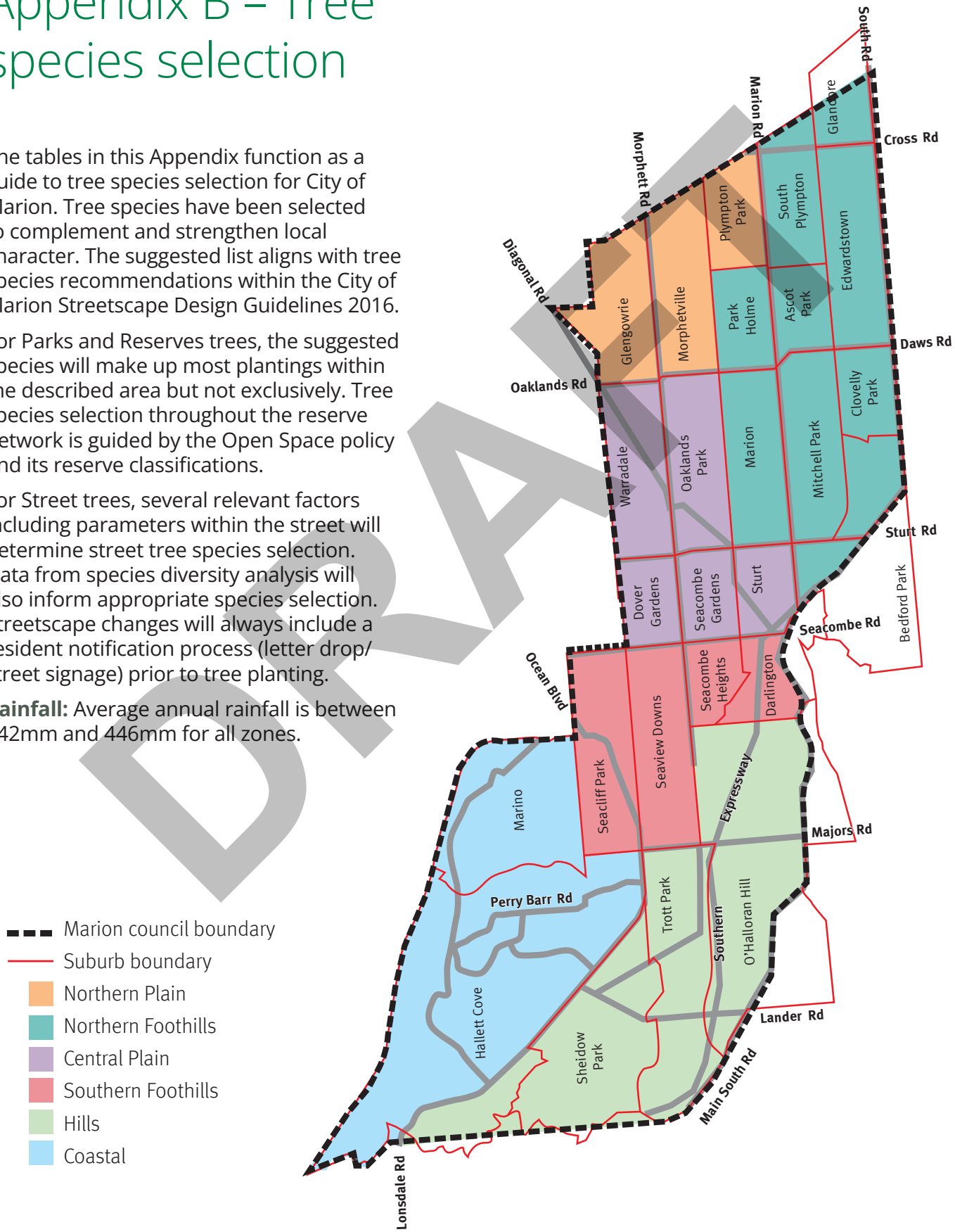
The tables in this Appendix function as a guide to tree species selection for City of Marion. Tree species have been selected to complement and strengthen local character. The suggested list aligns with tree species recommendations within the City of Marion Streetscape Design Guidelines 2016.

For Parks and Reserves trees, the suggested species will make up most plantings within the described area but not exclusively. Tree species selection throughout the reserve network is guided by the Open Space policy and its reserve classifications.

For Street trees, several relevant factors including parameters within the street will determine street tree species selection. Data from species diversity analysis will also inform appropriate species selection. Streetscape changes will always include a resident notification process (letter drop/ street signage) prior to tree planting.

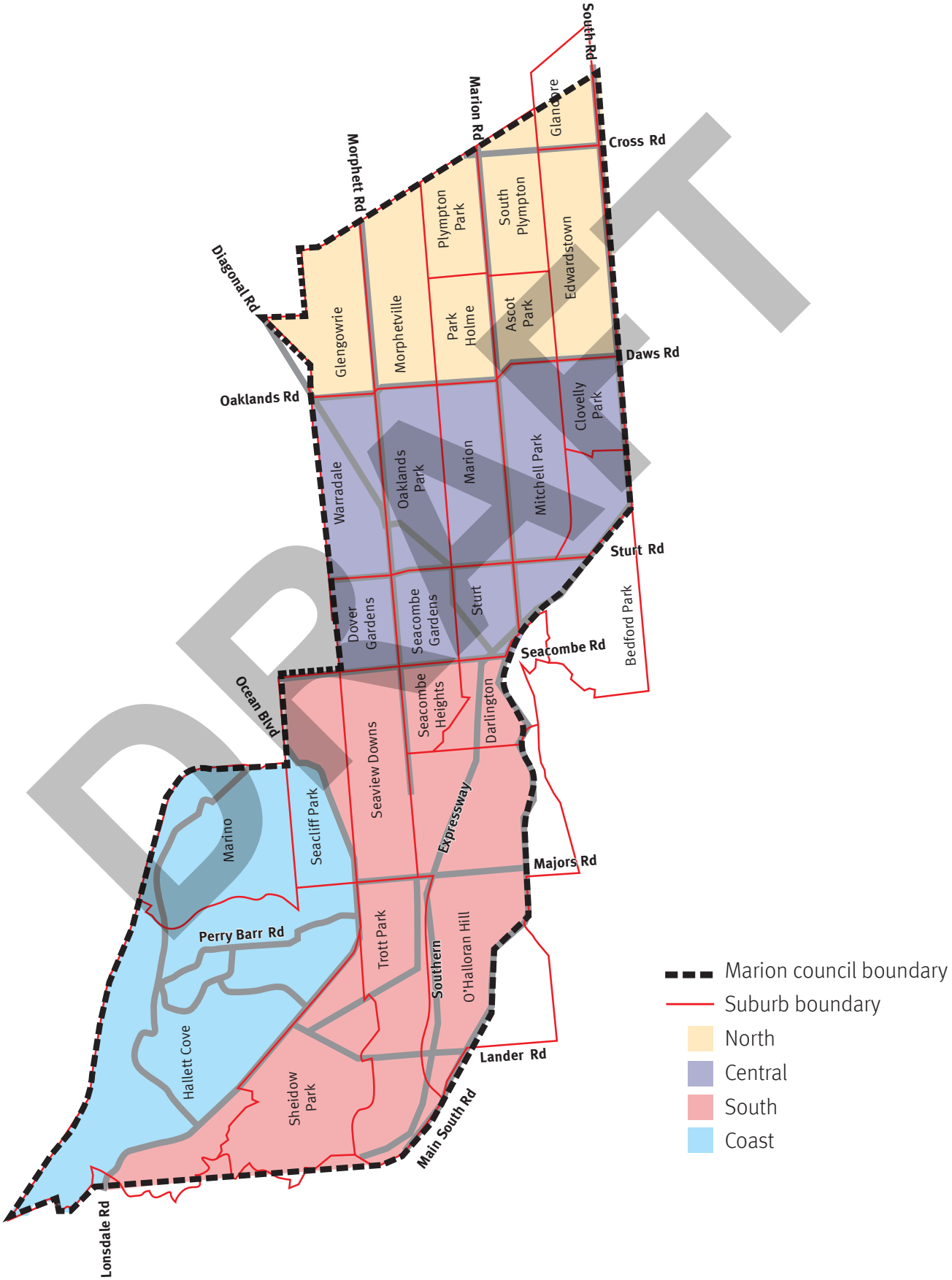
Rainfall: Average annual rainfall is between 442mm and 446mm for all zones.

Park and reserve tree character zones



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Street character zones



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Park and reserve tree character zones

	Suburb	Soil description	Landscape description	Pre-European vegetation potential directions	Specimen tree potential directions
Northern Plains	Glengowrie	Red brown earths (red brown clay to red brown sandy clay)	Plains Grasslands	• Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Callitris gracilis (Southern Cypress Pine) • Eucalyptus porosa (Mallee Box) • Eucalyptus leucoxylon ssp. leucoxylon (SA Blue Gum) • Eucalyptus camaldulensis (River Red Gum)	• Pinus canariensis (Canary Island Pine) • Fraxinus angustifolia 'Raywood' (Claret Ash) • Quercus sp. (Oaks) • Ficus sp. (Figs) • Acer sp. (Maples) • Corymbia sp. (Bloodwoods) • Cedrus sp. (Cedars) • Araucaria sp. (Southern conifers)
	Morphettville	Red brown earths, Alluvial soils (through Sturt River)	Plains Watercourse		
	Plympton Park	Red brown earths, (red brown clay to red brown sandy clay)	Footslopes Plains Grasslands		
Northern Foothills	Ascot Park	Red brown earths	Footslopes	• Acacia melanoxylon (Blackwood) • Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Callitris gracilis (Southern Cypress Pine) • Eucalyptus camaldulensis (River Red Gum) • Eucalyptus leucoxylon ssp. leucoxylon (SA Blue Gum) • Eucalyptus microcarpa (Grey Box) Eucalyptus porosa (Mallee Box) • Pittosporum angustifolium (Native Apricot)	• Acer sp. (Maples) • Angophora sp. (Angophora) • Araucaria sp. (Southern conifers) • Cedrus sp. (Cedars) • Corymbia sp. (Bloodwoods) • Ficus sp. (Figs) • Fraxinus angustifolia 'Raywood' (Claret Ash) • Pinus canariensis (Canary Island Pine) • Quercus sp. (Oaks)
	Bedford Park	Heavy red brown clay to red brown clay	Footslopes		
	Clovelly Park	Red brown earths	Footslopes		
	Edwardstown	Red brown earths	Footslopes		
	Glandore	Red brown earths, (red brown clay to red brown sandy clay)	Footslopes, Plains Grasslands		
	Marion	Red brown earths, Alluvial soils (through Sturt River)	Footslopes, Watercourse		
	Mitchell Park	Red brown earths	Footslopes		
	Parkholme	Red brown earths	Footslopes		
	South Plympton	Red brown earths	Footslopes		
Central Plain	Dover Gardens	Terra rossa	Plains	• Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Callitris gracilis (Southern Cypress Pine) • Eucalyptus camaldulensis (River Red Gum) • Eucalyptus microcarpa (Grey Box) • Eucalyptus porosa (Mallee Box) • Pittosporum angustifolium (Native Apricot)	• Pinus canariensis (Canary Island Pine) • Quercus sp. (Oaks) • Ficus sp. (Figs) • Acer sp. (Maples) • Corymbia sp. (Bloodwoods) • Cedrus sp. (Cedars) • Araucaria sp. (Southern conifers) • Brachychiton sp. (Kurrajongs)
	Oaklands Park	Red brown earths (red brown clay to red brown sandy clay)	Plains Grasslands		
	Seacombe Gardens	Terra rossa	Plains		
	Sturt	Terra rossa	Plains		
	Warradale	Red brown earths (red brown clay to red brown sandy clay)	Plains Grasslands		

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	Suburb	Soil description	Landscape description	Pre-European vegetation potential directions	Specimen tree potential directions
Southern Foothills	Darlington	Shallow red-brown to grey-brown soils with shale and limestone deposits	Footslopes	• Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Callitris gracilis (Southern Cypress Pine) • Eucalyptus camaldulensis (River Red Gum) • Eucalyptus microcarpa (Grey Box) • Eucalyptus porosa (Mallee Box) • Melaleuca lanceolate (Dryland Tea-tree) • Pittosporum angustifolium (Native Apricot)	• Pinus canariensis (Canary Island Pine) • Ficus sp. (Figs) • Cedrus sp. (Cedars) • Araucaria sp. (Southern conifers)
	Seacombe Heights	Shallow red-brown loams over limestone	Plains		
	Seaview Downs	Shallow red-brown loams over limestone	Plains		
	Seacliff Park	Shallow red-brown loams over limestone	Plains		
Hills	O'Halloran Hill	Shallow red-brown to grey-brown soils with shale and limestone deposits	Footslopes	• Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Eucalyptus porosa (Mallee Box) • Eucalyptus camaldulensis (River Red) • Callitris gracilis (Southern Cypress Pine) • Melaleuca lanceolate (Dryland Tea-tree) • Pittosporum angustifolium (Native Apricot)	• Pinus canariensis (Canary Island Pine) • Ficus sp. (Figs) • Araucaria sp. (Southern conifers)
	Sheidow Park	Shallow red-brown loams over limestone	Plains		
	Trott Park	Shallow red-brown loams over limestone	Plains		
Coast	Hallett Cove	Shallow red-brown loams over limestone	Plains Footslopes and Swamp flats	• Eucalyptus porosa (Mallee Box) • Eucalyptus camaldulensis (River Red Gum) • Acacia pycnantha (Golden Wattle) • Allocasuarina verticillata (Drooping Sheoak) • Pittosporum angustifolium (Native Apricot) • Melaleuca lanceolate (Dryland Tea-tree) • Callitris gracilis (Southern Cypress Pine)	• Pinus canariensis (Canary Island Pine) • Ficus sp. (Figs) • Cedrus sp. (Cedars) • Araucaria sp. (Southern conifers)
	Marino	Brown sandy to clayey soils often calcareous	Coastal Cliffs		

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Park and reserve tree character zones

	Suburb	Existing dominant species	Landscape description	Soil description	Visual character considerations	Potential species directions
North	Ascot Park	Agonis flexuosa	Footslopes	Red brown earths	• Tree species have been selected in response to the built and historical form of the Northern suburbs. • Scaled deciduous plantings will provide sustainable solar gains through Winter and the provision of shade through the summer months.	• Agonis flexuosa (Willow Myrtle) • Angophora costata (Smooth barked apple) • Celtis sp. (Hackberry) • Corymbia maculata (Spotted Gum) • Eucalyptus lecoxylon megalocarpa (Large fruited SA Blue Gum) • Fraxinus angustifolia 'Raywood' (Claret Ash) • Jacaranda mimosifolia (Jacaranda) • Koelreuteria sp. (Rain tree) • Lagerstromia sp. (Crepe Myrtle) • Lophostemon confertus (Brushbox) • Platanus x acerifolia (London Plane Tree) • Pyrus chantcleer (Flowering Pear)
	Edwardstown	Callistemon 'Kings Park Special'	Footslopes	Red brown earths		
	Glandore	Callistemon 'Kings Park Special'	Footslopes, Plains Grasslands	Red brown earths, (red brown clay to red brown sandy clay)		
	Glengowrie	Lophostemon confertus	Plains Grasslands	Red brown earths (red brown clay to red brown sandy clay)		
	Morphettville	Callistemon 'Kings Park Special'	Plains, Watercourse	Red brown earths, Alluvial soils (through Sturt River)		
	Parkholme	Eucalyptus leucoxylon Lophostemon confertus	Footslopes	Red brown earths		
	Plympton Park	Callistemon 'Kings Park	Footslopes, Plains Grasslands	Red brown earths, (red brown clay to brown sandy clay)		
	South Plympton	Callistemon 'Kings Park Special'	Footslopes	Red brown earths		

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	Suburb	Existing dominant species	Landscape description	Soil description	Visual character considerations	Potential species directions
Central	Bedford Park		Footslopes	Heavy red brown clay to red brown clay	• Central Tree Character theme will provide links through to its cultural heritage with connections through to the Northern precincts. • A variety of evergreen and deciduous species will allow planting allocations to be sensitive to its surrounds. • Scale plantings will offset the densification of the surrounding urban form and provide colourful corridors.	• Agonis flexuosa (Willow Myrtle) • Angophora costata (Smooth barked apple) • Celtis sp. (Hackberry) • Corymbia maculata (Spotted Gum) • Corymbia eximia 'nana' (Dwarf Yellow Bloodwood) • Eucalyptus lecoxylon megalocarpa (Large fruited SA Blue Gum) • Eucalyptus sideroxylon (Ironbark) • Eucalyptus mellidora (Yellowbox) • Eucalyptus torquata (Coral Gum) • Geijera parvifolia (Wilga) • Lagerstromia sp. (Crepe Myrtle) • Lophostemon confertus (Brushbox) • Pistachia chinensis (Chinese pistachio) • Platanus x acerifolia (London Plane Tree) • Pyrus chanticleer (Flowering Pear) • Tilia rubra (Red Cottonwood) • Triadica sebiferum (Chinese Tallowtree)
	Clovelly Park	Callistemon 'Kings Park Special'	Footslopes	Red brown earths		
	Dover Gardens	Eucalyptus sp.	Plains	Terra rossa		
	Marion	Eucalyptus leucoxylon	Footslopes, Watercourse	Red brown earths, Alluvial soils (through Sturt River)		
	Mitchell Park	Eucalyptus leucoxylon	Footslopes	Red brown earths		
	Oaklands Park	Eucalyptus leucoxylon	Plains Grasslands	Red brown earths (red brown clay to red brown sandy clay)		
	Seacombe Gardens	Eucalyptus sp.	Plains	Terra rossa		
	Sturt	Eucalyptus sp	Plains	Terra rossa		
	Warradale	Callistemon 'Kings Park Special'	Plains Grasslands	Red brown earths (red brown clay to red brown sandy clay)		

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	Suburb	Existing dominant species	Landscape description	Soil description	Visual character considerations	Potential species directions
South	Darlington	Koelreutera paniculata	Footslopes	Shallow red-brown to grey-brown soils with shale and limestone deposits	• The Southern Tree Character theme will promote its open spaces and newly development form. • Evergreen species will enhance the integration of its built form and its surrounds. • Green leafy corridors will support the existing infrastructure and provide sustainable links through to open areas.	• Agonis flexuosa (Willow Myrtle) • Celtis sp. (Hackberry) • Cupaniopsis anacardioides (Tuckeroo) • Eucalyptus lecoxylon megalocarpa (Large fruited SA Blue Gum) • Eucalyptus sp. (Gum) • Eucalyptus torquata (Coral Gum) • Fraxinus angustifolia 'Raywood' (Claret Ash) • Geijera parvifolia (Wilga) • Koelreuteria sp. (Rain tree) • Platanus x acerifolia (London Plane Tree) • Sophora japonica (Japanese Pagoda) • Ulmus parvifolia (Chinese Elm)
	Seacombe Heights	Eucalyptus sp. Agonis flexuosa	Plains	Shallow red-brown loams over limestone		
	Seaview Downs	Eucalyptus sp.	Plains	Shallow red-brown loams over limestone		
	Seacliff Park	Eucalyptus sp.	Plains	Shallow red-brown loams over limestone		
	O'Halloran Hill	Celtis australis Ulmus parvifolia	Footslopes	Shallow red brown to grey-brown soils with shale and limestone deposits		
	Trott Park	Acer negundo Cupaniopsis sp. Koelreuteria sp. Pyrus sp.	Plains	Shallow red-brown loams over limestone		
	Sheidow Park	Koelreuteria sp. Pyrus sp. Ulmus sp.	Plains	Shallow red-brown loams over limestone		

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	Suburb	Existing dominant species	Landscape description	Soil description	Visual character considerations	Potential species directions
Coastal	Hallet Cove Park	Callistemon sp. Eucalyptus sp. Ulmus parvifolia	Plains, Footslopes and Swap flats	Shallow red-brown loam over limestone	• The characteristics of species suited to the Coastal theme, include trees that are sustainable and enhance the natural surrounding ecosystem. • Species have been selected that will establish and thrive within surrounding conditions. • Scaled plantings will complement but be sensitive to panoramic views.	• Agonis flexuosa (Willow Myrtle) • Allocasuarina verticillata (Drooping Sheoak) • Araucaria sp. (Southern conifers) • Celtis sp. (Hackberry) • Cupaniopsis anacardioides (Tuckeroo) • Eucalyptus lecoxylon megalocarpa (Large fruited SA Blue Gum) • Eucalyptus porosa (Mallee Box) • Eucalyptus sp. (Gum) • Eucalyptus torquata (Coral Gum) • Fraxinus angustifolia 'Raywood' (Claret Ash) • Geijera parvifolia (Wilga) • Koelreuteria sp. (Rain tree) • Platanus x acerifolia (London Plane Tree) • Sophora japonica (Japanese Pagoda) • Ulmus parvifolia (Chinese Elm)
	Marino	Callistemon sp. Eucalyptus sp	Coastal Cliffs	Brown sandy to clayey soils often calcareous		

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Appendix C - Tree planting assessment guidelines

Local Government Association Mutual Liability Scheme has developed the following planting assessment table to help identify factors that must be considered when determining future street tree planting. Trees are scoped (digitally) using Forestree.

What is the purpose of the tree?

- ☐ Aesthetic
- ☐ Screen/Windbreak
- ☐ Shade
- ☐ Replacement
- ☐ Environmental
- ☐ To provide food/ shelter for animals
- ☐ Other

Size and location:

The site is suitable for a:

- ☐ Small tree
- ☐ Medium tree
- ☐ Tall tree

The site is suitable for a:

- ☐ Small spreading canopy
- ☐ Medium spreading canopy
- ☐ Wide tree spreading canopy

Are overhead or underground utilities in the vicinity? (SAPN/SA WATER, NBN)

- ☐ Yes
- ☐ No

Is there suitable clearance available to footpaths, roads, driveways, fences, and other structures for the life of the tree?

- ☐ Yes
- ☐ No

Has impacts of views been considered?

- ☐ Yes
- ☐ No

Is the tree able to live with and complement existing trees?

- ☐ Yes
- ☐ No

Are existing trees healthy?

- ☐ Yes
- ☐ No

Are there any significant liability implications?

- ☐ Yes
- ☐ No

What type of soil conditions exist?

- ☐ Deep
- ☐ Shallow
- ☐ Fertile
- ☐ Infertile
- ☐ Compacted
- ☐ Well drained

Is the site highly likely to be negatively impacted upon by human activity (– eg vandalism)?

- ☐ Yes
- ☐ No

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Are there other activities which may conflict with the health of the tree and are likely to significantly increase the level of risk associated with the tree? (– eg construction)

☐ Yes

☐ No

Would the tree have a high potential to negatively affect the visibility of road users (including on footpaths)?

☐ Yes

☐ No

Do children frequent the area?

☐ Yes

☐ No

Are there any other site restrictions that may affect the suitability of the tree (– eg climate, land use history)?

☐ Yes

☐ No

Are there any changes required of the site to assist in the health of the tree and alleviate any actual or potential risks? if yes, tick all that apply:

☐ No

☐ Yes: Root barriers/root director

☐ Yes: Soil decompaction/mulch

☐ Yes: Removal of pavement

☐ Yes: Other

☐ Pests:

Is this tree species a climate ready species for the council area?

☐ Yes

☐ No

What maintenance does/will the tree require?

☐ Low maintenance

☐ Medium maintenance

☐ High maintenance

Is council able to deliver appropriate maintenance to ensure the tree remains healthy and does not post unacceptable risk to injury or property damage?

☐ Yes

☐ No

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