


Urban Forest Strategy Summary 2018

A woman with long dark hair, wearing a black and white patterned jacket and dark pants, is sitting on a wooden park bench. She is looking towards the left. The bench is situated on a paved path that leads into a dense forest of tall trees with vibrant green foliage. The scene is bright and sunny, with sunlight filtering through the leaves. The top of the image features a decorative graphic with a green and purple diagonal band.

Moreland values the important contribution of trees and vegetation in making the municipality a vibrant place to live, work and visit; and is committed to protecting, enhancing and managing our urban forest into the future.



Moreland City Council

VISION STATEMENT

To promote and encourage the transformation of Moreland into a municipality where healthy trees and vegetation are a core part of the urban environment

Acknowledgments

Moreland's urban forest strategy acknowledges the Wurundjeri as the traditional owners of the land. We acknowledge their elders past, present and future. Council is committed to building a trusting, collaborative and supportive relationship with indigenous groups, and to respecting identified Aboriginal sacred sites and special places. We acknowledge that we have much to learn and plenty of work to do if we are to repair the poor state of land that was occupied by and forcibly taken away from the Wurundjeri who had cared for the land for over 40,000 years. For this acknowledgement to be meaningful, Moreland will need to not only improve its protection of important cultural and environment sites but improve our engagement with Wurundjeri through projects such as the Murnong Festival that acknowledge the strength and significance of ongoing access to, and celebration of, land and country.

Moreland's urban forest strategy was developed by Moreland City Council's Open Space Unit with technical contributions and analysis undertaken by: Enspec for the iTree Eco assessment, iTree Canopy analysis, street tree inventory, tree selection calculator and vacant site mapping; Greenspace Consultant for the landuse and canopy change analysis; and, Urban Forest Consulting who reviewed the draft strategy. Special thanks to Craig Hallam, Chris Spencer, Craig Hinton, Joe Kaspar and Meg Caffin as well as Brett Hudd, Alli Coster, Mark Corea, Nathan Milesi and Andrew Dodd for their contributions to the body of work behind this Strategy and Alex English, project officer.



MAYOR'S FOREWORD

Moreland's Urban Forest Strategy 2017 – 2027 will enable Council, for the first time, to provide a strategic approach to protecting and enhancing vegetation across the municipality while increasing tree canopy in our streets and parks.

The Urban Forest Strategy aims to realise this vision by nurturing a healthy, attractive and diverse urban forest to improve the health and wellbeing of current and future generations.

Improving tree canopy cover throughout the City of Moreland will increase community health and liveability in the area. Urban forest provides numerous physical and mental health benefits – reducing the impacts of heat and pollution, creating shaded streets and comfortable open spaces, and encouraging physical activity and a connection with nature.

While tree canopy cover in our streets and parks has increased over the past decade, private tree canopy has declined by a quarter.

Moreland's landscape is under pressure from a growing population, urban densification and climate change. This has resulted in a significant decline in vegetation and tree canopy on private land and therefore requires a strong response to protect existing trees and to enhance amenity and liveability through the planting of new canopy trees.

Council is well placed to respond to these challenges and has committed additional resources to improving tree protection across the municipality as well enhancing tree canopy cover.

Key actions in the Urban Forest Strategy 2017 – 2027 include:

- Doubling canopy cover across Moreland to 29 per cent by 2050 to mitigate the impacts of heatwaves

- Improving both the health and successful establishment of Council trees
- Protecting existing trees through improved planning and enforcement measures
- Working closely with community groups and residents to support greening initiatives while fostering positive community attitudes towards urban forest
- Continuing to plant canopy trees in Moreland's streets and parks to fill vacant sites and replace under-performing trees
- Improving tree health and cooling through the integration of water-sensitive urban design

Responsibility for implementing the Urban Forest Strategy goes beyond Moreland City Council's management of its parks, reserves and streetscapes but includes contributions from the whole community.

The development of this Strategy involved significant community engagement and received very strong community support.

I would like to thank those people involved in the development of the strategy: in particular representatives from the community, fellow councillors and council officers.

Cr John Kavanagh
Mayor (2017-2018)

INTRODUCTION

This Urban Forest Strategy aims to protect and enhance Moreland's natural assets on public and private land, including street trees, significant trees, areas of conservation value and habitat corridors. The strategy sets out what we want to achieve by 2050 with key targets for the next 10 years and an action plan to achieve our 10 year goals.

To promote and encourage the transformation of Moreland into a municipality where healthy trees and vegetation are a core part of the urban environment. Council will achieve this vision for greening Moreland by nurturing a healthy, attractive and diverse urban forest that uses traditional and innovative greening solutions to double public realm canopy by 2030 to improve the health and wellbeing of current and future generations.

This strategy aims to turn around the decline in overall vegetation across the municipality by encouraging the planting of more vegetation in public places but more importantly protecting existing vegetation, particularly on private land. This will be no easy aim given the pressures of rapid urban consolidation, a hot dry climate and numerous competing services and community expectations.

The specific objectives of our strategy are to:

1. Protect and enhance the urban forest on both public and private land
2. Value the urban forest as a core element of our urban space
3. Create a diverse urban forest of trees and other vegetation that will enhance urban ecology
4. Maintain the health of the urban forest
5. Manage and mitigate urban forest risks
6. Monitor and review progress to measure success and best practice

7. Strengthen community custodianship and engagement in understanding, planting and valuing the urban forest

This is Moreland's first urban forest strategy and is a collaborative product of two years consultation with the community and a wide range of stakeholders. This Strategy also builds upon earlier work from Council's 2012 Street Landscape and Open Space strategies, WaterMap 2020 and the 2016 Urban Heat Island Effect Action Plan. These documents together with the 2017 Council Plan identified the need to green the municipality by increasing tree canopy cover in our streets and parks and protecting existing vegetation across the municipality in order to protect the health and liveability of the Moreland community.

WHAT IS AN URBAN FOREST?

The term urban forest refers to all the trees and other vegetation in public and private spaces. It includes, for example, street and park trees, front and backyard vegetation, grasslands, shrubs, wetlands, nature strips, balcony plants, and green roofs and walls. There is strong evidence that improving this urban forest through quality urban greening activities such as the planting of trees and vegetation contributes to liveability, community health and wellbeing, cooler neighbourhoods, higher property values, asset protection, and amenity values as well as reduce the cost of grey infrastructure renewal and upgrades. Urban greening also provides opportunities for connecting with nature,

something that is often perceived to be missing in urban areas. This vegetation also provides critical ecosystem services such as air and water filtration, shelter, shade, habitat, oxygen, carbon sequestration, stormwater abatement and nutrient cycling.

Over the past two decades Moreland's urban forest has been affected by extended dry periods, urban consolidation driving steady canopy loss, inadequate protection during construction, and constrained levels of maintenance. In the next twenty years, Moreland will need to better respond to the challenges of population growth, climate change, sedentary lifestyles and the urban heat island effect. At the same time, the community are increasingly calling for more action to improve the amenity of streetscapes, increase vegetation cover, reduce the impact of the urban heat island effect, protect biodiversity and improve the protection, management and support for existing vegetation and community plantings.

An urban forest strategy for Moreland will need to address not only these challenges but additional considerations including: species selection and placement; better engagement of private households; the relationship between vegetation and air quality; soil health; water demand and supply options; partnerships with road and footpath works; working with utilities; risk management; asset renewal and management; growing maintenance requirements and resourcing implications; public-private tensions; managing community expectations and engagement; and skills development.

Local and international research clearly shows that increasing tree canopy cover and vegetation protection is an effective, and efficient, way of responding to these challenges to improve the health of the community and the liveability of Moreland.

THE STATE OF MORELAND'S URBAN FOREST

Background work undertaken in preparation of this Strategy has improved our understanding of the current urban forest, its challenges and identified opportunities for greening across the municipality. Key findings include:

- Moreland has a relatively young urban forest providing 14% tree canopy cover comprised of 9% private trees and 5% public trees (park trees, 2.6%; street trees, 2.4%). This compares with 17.3% tree canopy cover in neighbouring Darebin and 18.5% in Yarra.
- Between 2005 and 2016, overall canopy cover has declined from 15.6% to 14.2%. Urban consolidation is the main cause of the decline in tree canopy on private land from 12% to 9%.
- During the same period, canopy cover from street trees and park trees has grown by 26% and 63% respectively, albeit from a low base.
- The process of urban consolidation has failed to deliver improved landscaping outcomes and vegetation cover through the planning scheme.
- Over the past three decades, community groups and Council have revegetated large areas of our waterways, such as the Merri Creek.
- Over a dozen community groups continue to invest significant volunteer resources in to regularly planting, weeding and maintaining vegetation in Moreland streets, parks and along our waterways.
- It is estimated that Moreland has over 130,000 trees in the public realm and a further 250,000 trees in the private realm.

CANOPY ANALYSIS

2016 canopy by land area



Canopy 15%
No canopy 85%

Private land 31.4km²



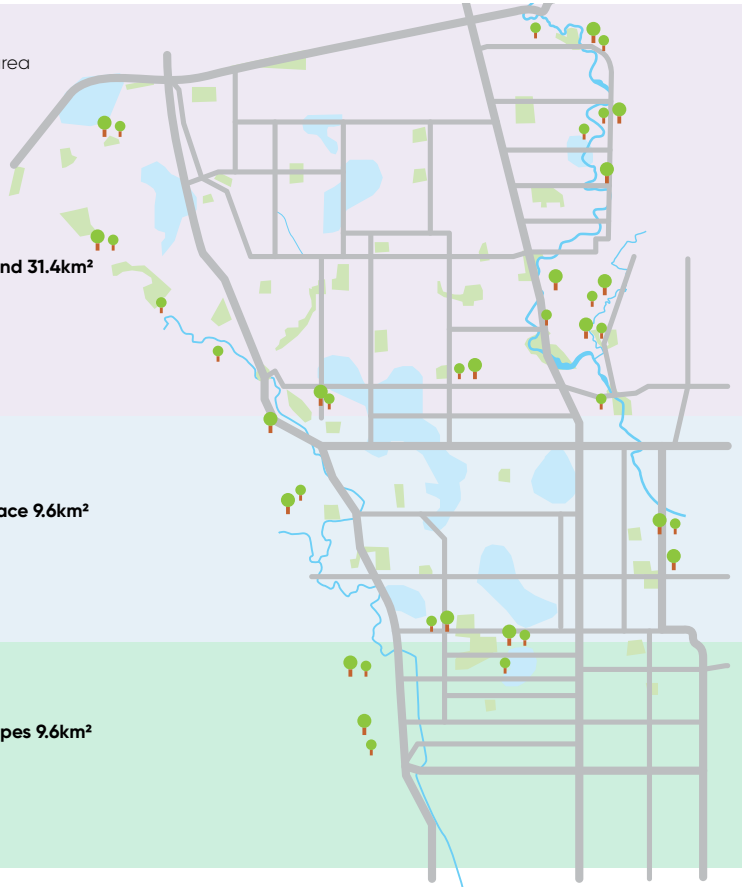
Canopy 14%
No canopy 86%

Public space 9.6km²



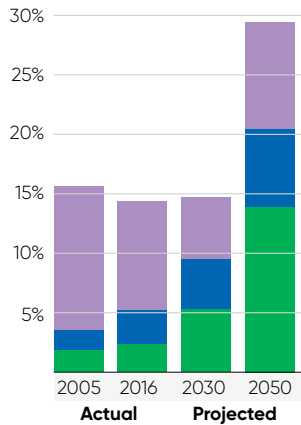
Canopy 15%
No canopy 85%

Streetscapes 9.6km²



Moreland tree canopy

- Private trees
- Public realm trees
- Street trees



Moreland tree canopy by land area, 2005-2050

STREET TREES

- Despite the strong medical and scientific evidence base about the benefits of trees, approximately 85% of Moreland's streetscapes are without any natural shade.
- 95% of the current street tree population assessed to have good health.
- Between 2006 and 2017, Council planted over 40,000 street trees.
- In 2016, Moreland's 60,000 street trees are worth an estimated \$271 million in amenity value and provide the community with \$361,073 worth of environmental benefits annually.
- Climate change is likely to have a significant effect on many trees in Moreland. A climate analysis of Moreland's street trees found 15% are vulnerable to current climate conditions while this will increase to 53% under moderate climate scenarios by 2050 and 84% under an extreme climate scenario by 2090.
- Moreland's street trees store over 11,329 tonnes of carbon dioxide (CO₂) and remove a further 912 tonnes annually.
- An over reliance on small, short-lived trees limits the potential canopy and benefits of the urban forest.
- The optimised planting of larger canopy trees would increase the amenity values of street trees to over \$1.2 billion by 2050 and deliver over \$4.6 million in direct environmental benefits annually. In addition, these street trees could potentially store 40,000 tonnes of carbon dioxide and sequester a further 1,416 tonnes of CO₂ annually.
- There are 394 different species of street trees with a mix of exotics (26%), natives (69%) and indigenous (5%) vegetation.
- 66% of tree species are from Myrtaceae Family; 26% of the forest is dominated by the genus, Callistemon, and 21% by Eucalypts

- Council's tree maintenance and resourcing have struggled to keep up with the compounding effect of the 5,0000 annual planting targets resulting in 20% average annual fatality rates

Environmental and amenity values of current street trees prior to 2016 planting season

Estimated 2016 Street Tree Population	54,313
Total Canopy Cover (m ²)	813,843
Carbon Storage (kg)	11,328,569
Annual Carbon Seq. (kg/yr)	912,080
Amenity Value	\$271,179,839
Annual Heating (kWh)	187,193
Annual Heating (A\$)	\$65,646
Annual Cooling (kWh)	784,378
Annual Cooling (A\$)	\$273,800
Annual Heating & Cooling (kWh)	971,571
Annual Heating & Cooling (A\$)	\$339,446
Annual Pollution (kg)	5,839.7
Annual Pollution (A\$)	\$2,504
Annual Avoided Runoff (m ² /yr)	8,412
Annual Avoided Runoff Value (A\$)	\$19,124

Most Common Tree	Callistemon (22%)
Average Trunk Diameter (cm)	21.2
Average Height (m)	4.7
Average Canopy Width (m)	3.0

THE IMPORTANCE OF MORELAND'S URBAN FOREST

Moreland's urban forest provides critical ecosystem services such as air and water filtration, shade, habitat, oxygen, carbon sequestration and nutrient cycling. The urban forest also provides a connection to nature that is often perceived to be missing in urban areas. As housing lots, private open space and greening continue to decline across Moreland, the urban forest will provide essential 'breathing spaces' in our urban environment.

THE BENEFITS OF TREES

TREES:

- Improve local economies
- Improve mental health
- Improve physical activity
- Increase property value
- Prolong the lifespan of roads
- Provide habitat
- Reduce medical care

LEAVES:

- Reduce sound
- Cool the air
- Provide shade
- Reduce electricity consumption
- Reduce wind speed
- Remove air pollution
- Slow rainfall

TRUNKS:

- Store carbon

ROOTS:

- Filter pollution from rainfall
- Improves soil health
- Prevent erosion
- Stabilise soil



All vegetation, especially trees, play a crucial role in mitigating climate change and improving air quality. One mature tree can absorb 27 kilograms of carbon dioxide from the air and save energy through reduced use of cooling devices. Leaves of a tree can also absorb pollutants such as carbon monoxide, sulphur dioxide, dust and other particles. Trees and vegetation also absorb and therefore reduce the impacts of noise, which is an important part of liveability for Moreland residents.

Population growth and urban consolidation across Moreland is a major driver of a declining canopy and so it is critical that trees on private land not only soften the built form, reduce energy demand for households but achieve a more balanced outcome with improved buildings for residents, visitors and workers.

Perhaps the most important role trees play in the Urban Forest is providing canopy cover. The canopy of a tree will provide shade to the surface below. The shade provided by the tree will prevent footpaths, roads and buildings from absorbing and releasing heat, contributing to the urban heat island effect. A one degree reduction in temperatures can significantly reduce mortality and morbidity rates amongst our community's most vulnerable. Therefore, cooling our streets, parks and neighbourhoods through shade and thermal comfort for pedestrians and residents is a high priority.

Integrating increased vegetation coverage with water sensitive urban design (WSUD) can not only increase cooling, soil moisture and vegetation health but if effectively maintained can also mitigate flooding.

Further health benefits arise from improving the amenity of our streetscapes and parks which will encourage increasing levels of walking and cycling and improve community health. Moreover, these quality landscapes of trees, shrubs, waterways and open space provide habitat for a variety of species, which provides nesting, foraging, food and protection for animals to thrive.

The urban forest also enhances the character and uniqueness of an area. In aesthetic terms, a strong urban forest encourages people and business to relocate to an area, increases property values and reinforces a sense of place, which contributes to economic activity. Overall, a strong, healthy and vibrant urban forest will improve the liveability of Moreland.

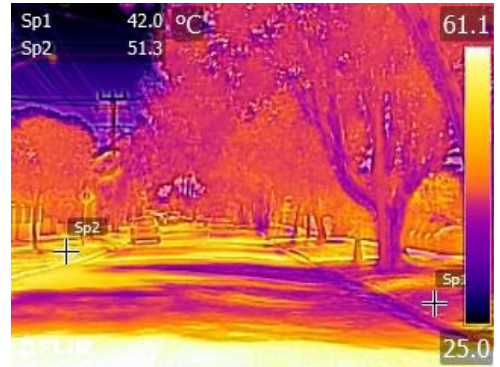
In response, Council has developed this Urban Forest Strategy to deliver practical measures that guide the sustainable planning, planting, management, resourcing and protection of vegetation across Moreland.



Weston Street Brunswick



Anderson Road Fawkner

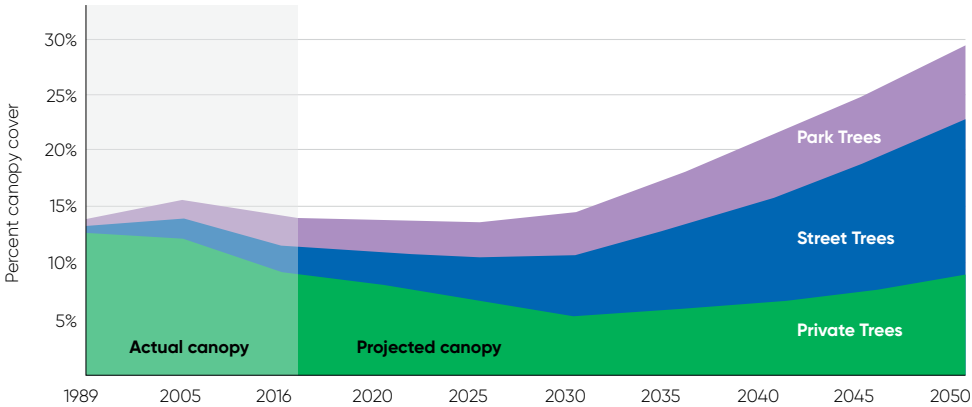


Trees, shade and heat in Moreland: The following images clearly illustrate the critical role of vegetation in moderating the extreme temperatures observed in Moreland streets using ground based thermal imaging. The images clearly highlight the benefits of shade provided by tree canopy on cars, road surfaces and buildings. The thermal images were shot on a 41°C day and show that vegetation can moderate temperatures by up to 35°C.



MORELAND URBAN FOREST STRATEGY

This Strategy recommends a significant shift in approach to managing and resourcing the urban forest to realise a vision to promote and encourage the transformation of Moreland into a municipality where healthy trees and vegetation are a core part of the urban environment. It aims to realise this vision by nurturing a healthy, attractive and diverse urban forest that uses traditional and innovative greening solutions to improve the health and wellbeing of current and future generations through the doubling of vegetation canopy by 2050.



	1989	2005	2016	2020	2030	2040	2050
Street trees	0.7%	1.9%	2.4%	3.0%	5.5%	9.3%	14.7%
Park trees	0.6%	1.6%	2.6%	2.8%	3.8%	5.6%	6.6%
Private trees	12.7%	12.1%	9.2%	8.0%	5.2%	6.5%	9.0%
Moreland canopy cover	14.0%	15.6%	14.2%	13.8%	14.5%	21.4%	30.3%

Actual and Projected Tree Canopy Cover under the implementation of the Urban Forest Strategy

In practice, this requires the planting and resourcing of larger canopy trees (including deciduous species) to improve shade, cooling, biodiversity, energy savings, air quality, health benefits and amenity.

This Strategy has identified a further 30% of Moreland's land area where vegetation canopy could potentially be planted, including 14% of private land and 15.6% of public land (see canopy cover figure). As such, the practical saturation planting of our streets and parks could achieve 14% and 6.6% respective tree canopy cover. Successfully achieving this vision should provide a balance to the highly urbanised environment of the municipality and will directly impact the daily lives of residents and visitors as well as improve the liveability of Moreland in the long term.

Responsibility for implementing this strategy goes beyond Moreland City Council's management of its parks, reserves and streetscapes but includes contributions from the whole community. Without community support, the growing tree canopy in our streets and parks will still struggle to keep up with the steady loss of canopy on private land.

The Strategy recommends Moreland City Council and the community commit to the following objectives:

- Introduce strategies to protect and enhance the urban forest on both public and private land through the development of a Tree Protection Policy following a review of the Planning Scheme, Structure Plans and Local Law to ensure vegetation is accepted as a core element of the desired neighbourhood character;
- Implement 5 year planting and maintenance plans to deliver a consistent approach to improving amenity, liveability, biodiversity and sustainability;

- Sustainably resource Council's tree planting, establishment and maintenance programs to ensure quality outcomes that minimise and mitigate risks to the community and ensure a healthy urban forest;
- Adopt a more sustainable annual tree planting figure of 3,500 street trees and 750 park trees.
- Plant larger, longer lived canopy trees where appropriate;
- Adjust species selection and maintenance practices to ensure future climate resilience of the urban forest;
- Integrate greening opportunities with all relevant Council capital works projects and initiatives to ensure the strategy complements other aligned organisational plans and strategies supporting community, environmental and economic wellbeing;
- Better support community planting and greening activities;
- Increase awareness and engagement opportunities with the community, developers and Council staff around the benefits and value of Moreland's urban forest, including supporting community greening initiatives in the public and private realm; and,
- Complement other aligned organisational plans and strategies that support community, environment and economic wellbeing.

This Urban Forest Strategy is supported by several detailed reference documents that provide Council staff and the community with a range of practical documents to understand and ensure a clear and consistent approach to managing the urban forest, including:

- A Street Tree Planting Plan
- A Technical Tree Planting Manual
- A Tree Protection Guide
- A Nature Strip Guide

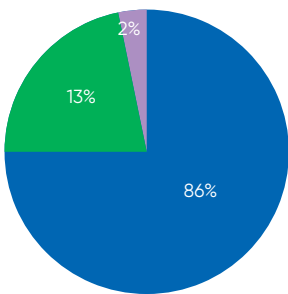


If Moreland adheres to these reference documents and implements the actions in the Implementation Plan then we should witness the doubling of Moreland's urban forest canopy from 14% in 2016 to 29% by 2050. This is equivalent to a quadrupling of public realm canopy from 5% to 20% respectively.

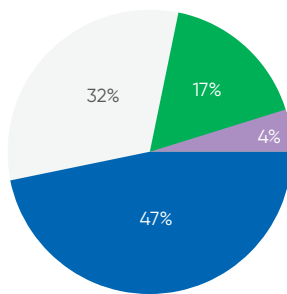
Moreland has shown that it has the capacity and resources to intervene and implement appropriate and positive measures to cool its streets and

neighbourhoods through the provision of shade from healthy street trees. This Urban Forest Strategy requires Council and the community take the next important step of ensuring vegetation is no longer a peripheral concern but a core part of daily life in Moreland. Short-term action on the recommendations and actions in this Urban Forest Strategy will be critical because the benefits of planting this vegetation will take over a decade to realise.

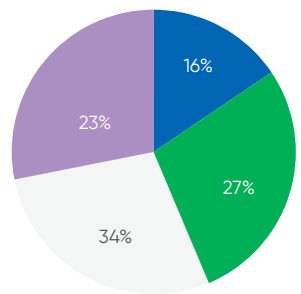
Current Climate



Moderate Climate Scenario



Extreme Climate Scenario



● Not vulnerable ● Slightly vulnerable ● Moderately vulnerable ● Very vulnerable

Moreland street tree species vulnerability to current (moderate and extreme climate scenarios) and future temperature projections of mean annual temperature in degrees Celsius, Clean Air and Urban Landscapes 2017

IMPLEMENTATION PLAN & FUNDING

Council will regularly monitor and report on progress towards the successful implementation of the Urban Forest vision through three key performance indicators (KPIs).

Figure 39 provides further actions that will be adopted to ensure the successful implementation of each of the objectives for a green Moreland. These actions, with timeframes and costings, relate to a range of Council units and are detailed in the Implementation Plan (Figure 39).

Figure 38 maps out the priority actions in a matrix which shows *Quick Win* actions

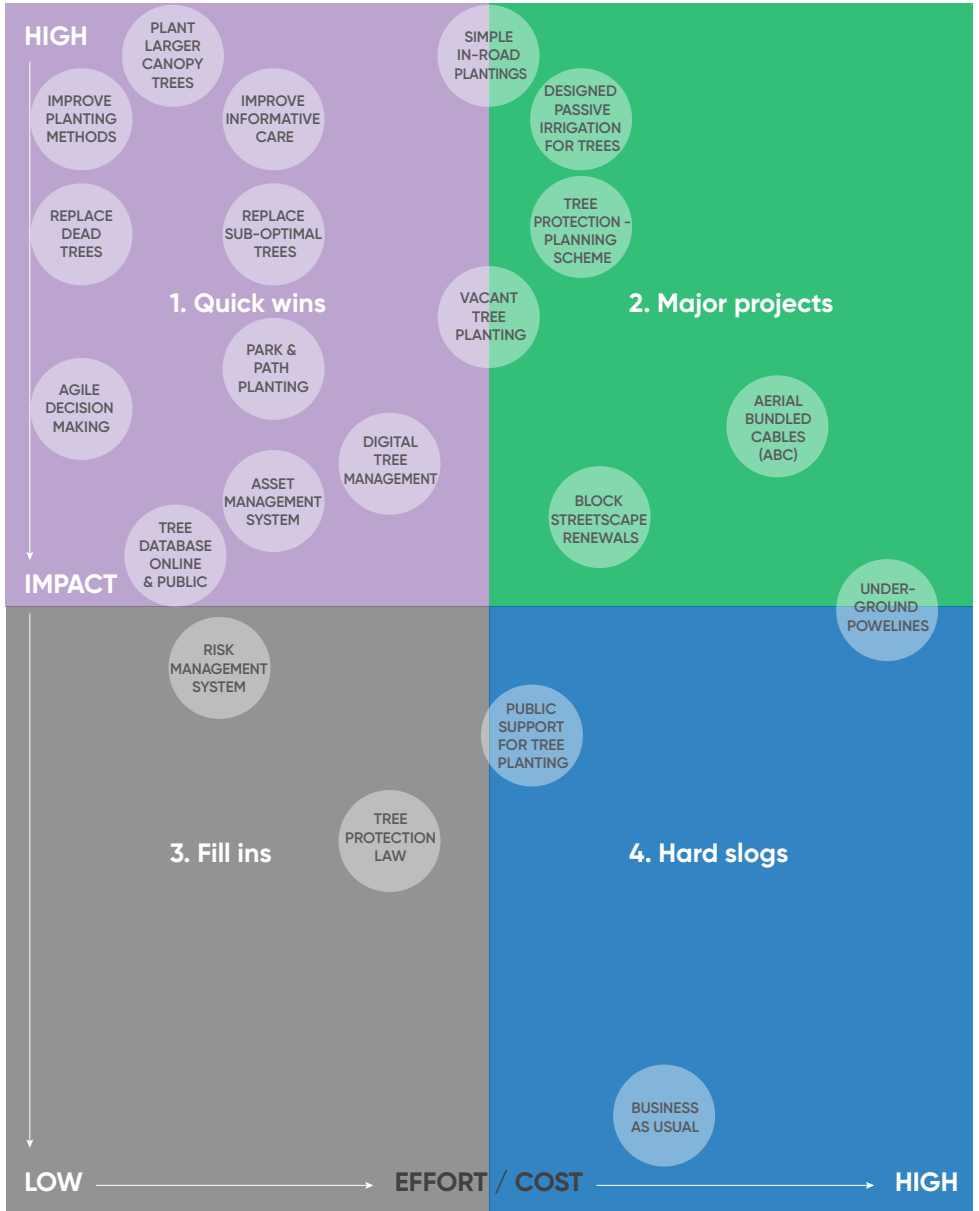
that require the least effort and/or cost but deliver the greatest benefits, such as planting larger trees and a park tree program. It also shows actions requiring higher effort/cost that provide both high benefits (planning scheme amendments to protect private realm trees) and lower benefits (business as usual and undergrounding powerlines). This matrix should assist decision makers in understanding priority actions outlined in the Implementation Plan.

Understanding the implementation priorities for the urban forest strategies

Urban Forest Strategy key performance indicators (KPI)

Indicator	Desired outcome	Reportable measure (every four years)
Canopy cover	Double public realm canopy cover across Moreland between 2017 and 2030 by increasing public and private canopy cover	Total urban forest canopy cover in the public and private realm (by suburb, vegetation type and land use)
Health of the urban forest	A healthy and diverse urban forest	At least 85% survival of new tree plantings survive at least 3 years 90% of trees in good health Well distributed age and species diversity Number of integrated water and vegetation projects
Community satisfaction	The Moreland community are satisfied with actions taken to maintain the urban forest	Level of satisfaction with Council actions

Priority implementation action matrix





Moreland City Council

For further information, contact Moreland City Council by:

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