# CANOPY DELIVERY PLAN

October 2022

HOBSONS BAY CITY COUNCIL

# Table of Contents


Summary ..... 3

1. Introduction ..... 4

2. Tree canopy cover ..... 5

2.1 Tree Canopy Cover Change 2014-2018 ..... 7

2.2 Urban Heat Island Effect ..... 8

2.3 Heat Vulnerability ..... 9

2.4 Tree Canopy Cover Prioritisation ..... 10

3. Streetscape canopy enhancement opportunities ..... 11

3.1 Immediately available nature strip planting sites ..... 11

3.2 Street tree renewal program ..... 11

3.3 Green Streets program (complete street renewal) ..... 14

3.4 Lagunaria replacement program ..... 16

3.5 Creation of new planting sites in hardstand surfaces ..... 17

4. Additional canopy enhancement opportunities ..... 18

4.1 Opportunity mass planting sites ..... 18

4.2 Shared paths ..... 19

4.3 Carparks ..... 20

4.4 Road Rehabilitation Program ..... 23

4.5 Creation of a Green Industries Program ..... 24

4.6 Open space ..... 25

4.7 Private land ..... 26

5. Importance of appropriate tree selection ..... 27

5.1 Tree species diversity ..... 27

5.2 Future climate considerations ..... 27

5.3 Right tree for each location ..... 27

6. Importance of tree survivorship ..... 28

7. Supporting Work for Increasing Canopy Cover ..... 29

Appendix 1 – Implementation schedule ..... 34

Appendix 2 – WSUD standard drawings ..... 35

Appendix 3 – Baseline Data ..... 36

Appendix 4 – Community consultation ..... 39

# Summary

A key objective of the recently adopted Hobsons Bay City Council Urban Forest Strategy (2020) is the increase of tree canopy in Hobsons Bay to 30% by 2040. This canopy delivery plan sets out a framework for growing a healthy urban forest to help achieve this target.

To achieve 30% Tree Canopy by 2040, Council must work effectively with all internal and external stakeholders, ensuring all viable canopy enhancement opportunities are maximised. Where trees are replaced through reaching their Useful Life Expectancies (ULEs) or due to being inappropriate for the location (lagunaria replacement program), more than one replacement canopy tree should be planted. The most appropriate tree species must be planted at each location and each planting must be provided adequate care during its establishment period, to ensure each planting grows to their potential.

The following key canopy enhancement opportunities will be targeted through this plan.

- Residential nature strip planting sites.
- Street tree renewals.
- Retrofitting new planting sites in hard surfaced areas, utilising Water Sensitive Urban Design (WSUD).
- Opportunity mass planting sites.
- Trees led approach to all carpark redevelopments and road rehabilitation projects.
- Creation of a Green Streets program to help educate and foster care for urban trees.
- Creation of a Green Industries program to maximise planting opportunities within our industrial precincts.

A combination of individual advanced tree plantings, avenue advanced tree plantings and mass tube-stock plantings will be delivered through this plan.

An implementation schedule is provided at Appendix 1. Five standard WSUD tree planting drawings are included at Appendix 2. Council's current baseline tree data is included at Appendix 3.

Community consultation of the draft plan occurred between 14 October to the 24 November 2021 on Council's online engagement platform, Participate. The community consultation process generated 1,379 online contributions, 493 social media and 39 email submissions. An overview of the engagement outcomes is included at Appendix 4.

# 1. Introduction

Hobsons Bay City Council recently developed and adopted its first Urban Forest Strategy (2020), which outlines an ambitious target to achieve 30% tree canopy cover by 2040, focussing on three different land use types: parks, streets and roads and industrial areas.

The key objectives of the Urban Forest Strategy include:

1. Increase tree canopy in Hobsons Bay to 30% by 2040 (40% in parklands, 30% in streets and roads and 20% in industrial areas).
2. Develop a diverse and healthy urban forest.
3. Adopt a 'trees led' approach to city planning, design, and delivery.
4. Educate and foster care for urban trees.

This Canopy Delivery Plan has been developed in direct response to the above objectives and in accordance with Action 1.1 the Urban Forest Strategy.

In anticipation of this Plan, Council committed to plant 8,000 standard advanced trees per year to 2025, then reduce to 4,000 trees per year thereafter. Following an analysis of the various canopy enhancement areas, a revised delivery approach will take place that includes standard advanced tree plantings as well as a portion of mass tube stock plantings. The annual planting numbers will also include the creation of new plantings in hardstand surfaces, utilising WSUD design. This revised delivery will ensure the most appropriate plantings take place within each canopy enhancement area.

Data suggests that Hobsons Bay tree canopy cover is growing and not declining, as seen in other more established eastern suburbs within Melbourne. A thorough on-ground assessment has found 4,946 vacant street tree sites that are available and ready to be planted now. Given we have committed to planting 8,000 trees per year to 2025, these vacant sites are all planned to be planted in 2021/2022. This suggests that by the end of 2022, Council will achieve a full street tree stocking rate, which is a significant achievement. However, this also means that to meet our tree canopy cover targets, we need to explore other opportunities for increased tree planting and canopy provision.

This Canopy Delivery Plan looks at the key enhancement areas for Council to focus on over the five years. Priority areas are outlined where more tree cover is needed and opportunities are provided for increasing canopy cover within streetscapes, existing open space areas, including along shared paths and in carparks. Engineering drawings are included to maximise tree canopy through smarter planting solutions such as water sensitive urban design. A 'Green Streets' program is included to educate and foster care for urban trees.

Given that 54% of the municipality is private land, the community and private landholders have a significant role to play in contributing to the urban forest by planting trees and vegetation on their own properties. Council will continue to run tree giveaways to encourage planting on private property. A trial 'Green Industries' program is included to encourage canopy growth within private industrial land.

As part of the preparation of this document, Council held a 6-week consultation period where the community were asked to review and contribute to the draft plan. The consultation generated 1,379 online contributions, 493 social media and 39 email submissions.

## 2. Tree canopy cover

Tree canopy cover measures all vegetation over 3m in height across the municipality.

Image 1 shows the level of canopy cover when last measured in 2018 and where canopy is very low i.e. below 5% cover (shown in dark red and orange) and areas where canopy is much higher (areas in green and dark blue).

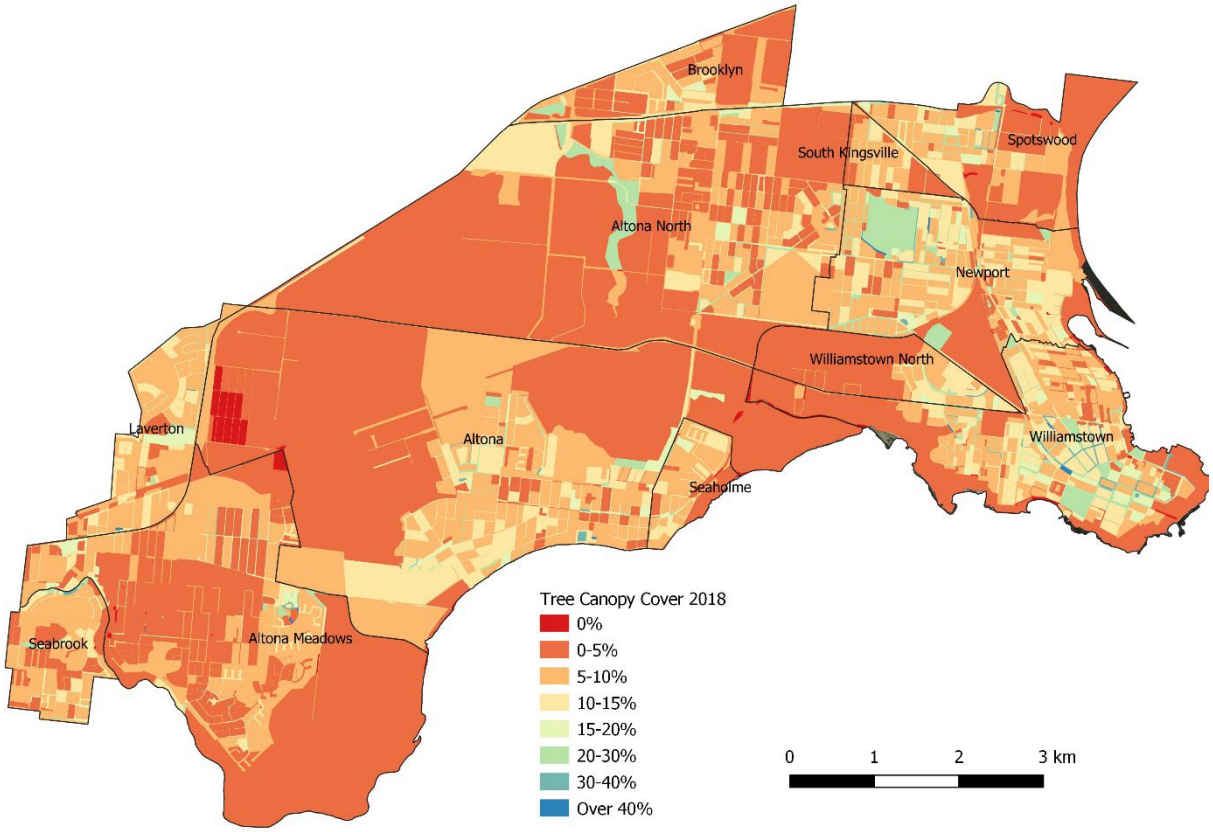



*Image 1: Tree canopy cover by mesh block for 2018. Source: DELWP, 2021, Spatial Data mart.*

The industrial areas around Altona as well as the wetlands and conservation reserves, which generally do not support vegetation higher than 3m, are all recognised as housing very low levels of tree cover. The residential areas of Altona Meadows and the middle of Seabrook are particularly low on tree canopy.

Williamstown on the other hand, shows much of its residential area housing good levels of canopy cover and some streets recording around 60% tree canopy cover.


*Image 2: Aerial view of 60% tree canopy cover in Williamstown*

An aerial view of the intersection of Electra and Pasco Streets in Williamstown is included in Image 2. Covered by approximately 60% canopy cover, this is one of the leafiest streets in Hobsons Bay.


*Image 3: Street view and shade cover provided by 60% tree canopy cover in Williamstown. Source: Google Maps, 2022.*

## 2.1 Tree Canopy Cover Change 2014-2018

When last measured in 2018, 6.2% of the Municipality was covered by trees. In 2014 it was only 5.5%. This shows that tree canopy cover grew over the four-year period from 2014 to 2018.

Tree Canopy cover has also been measured for different land types, some of which are managed by Council, such as roads and parkland and other land that is privately owned such as commercial, industrial, and residential land. All land types within Hobsons Bay saw an increase in tree canopy cover from 2014 to 2018. Roads saw some of the biggest increases in tree canopy cover, reflecting Council's robust program of tree planting.

| Land Type | Ownership | 2018 | 2014 | Net change |
|---|---|---|---|---|
| Commercial | Private | 3.1% | 2.8% | 0.3 |
| Education | Public and Private | 9.7% | 9.0% | 0.7% |
| Hospital/Medical | Public and private | 8.2% | 6.6% | 1.5% |
| Industrial | Private | 2.4% | 2.0% | 0.4% |
| Roads | Public | 10.0% | 8.5% | 1.4% |
| Parkland | Public | 4.9% | 4.3% | 0.6 |
| Residential | Private | 6.9% | 6.3% | 0.6% |
| **Whole Municipality** | | **6.2%** | **5.5%** | **0.7%** |

*Table 1: Tree canopy cover by land type across Hobsons Bay for 2018. Source: DELWP, 2021, Spatial Data mart.*

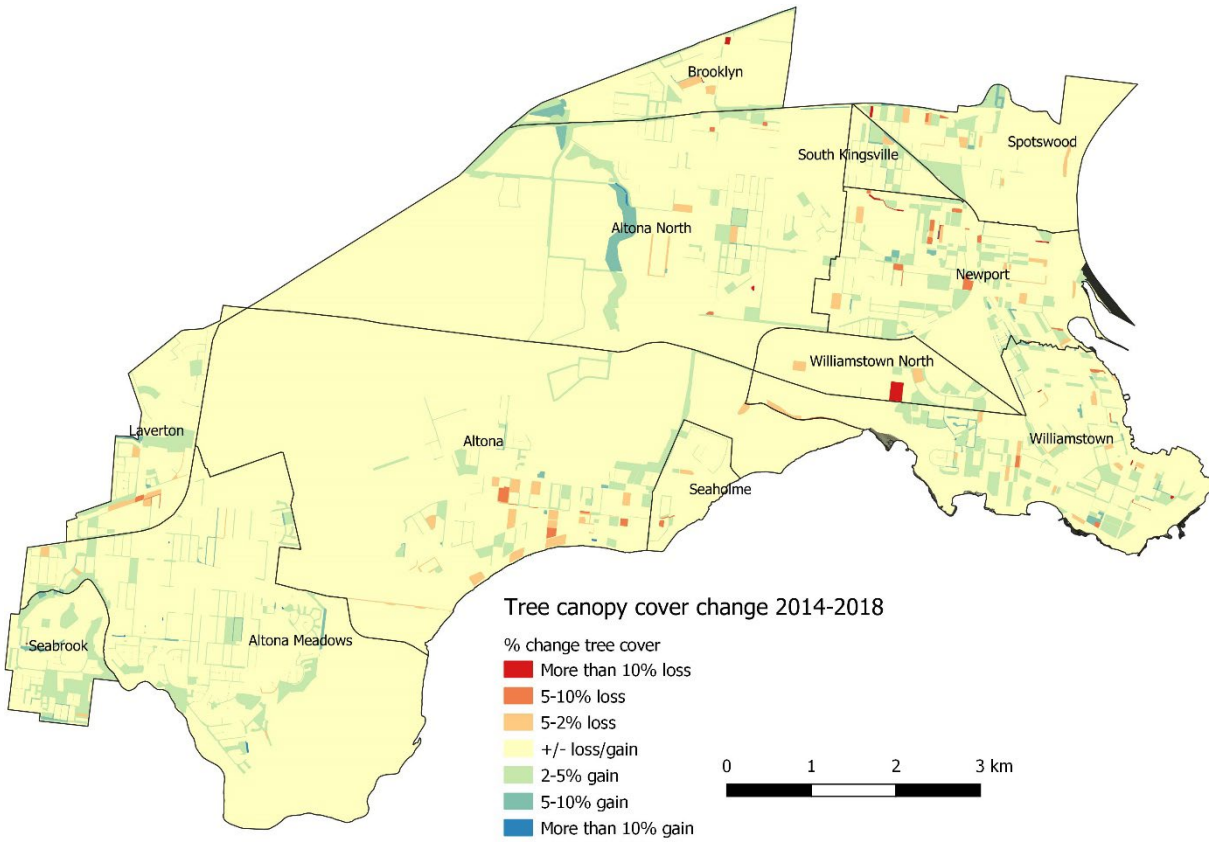



*Image 4: Tree canopy cover change by mesh block for 2018. Source: DELWP, 2021, Spatial Data mart*

Image 4 shows where this growth occurred. Tree canopy cover grew along the road network and within parks throughout Altona Meadows and Seabrook, along river corridors and within streets and parks in Williamstown and Newport.

Individual land parcel losses can be seen in Laverton, Altona and Newport as coloured in orange and red. There are many reasons behind these losses such as private development, streetscape or parkland upgrades, major projects undertaken by the State Government and even through residents' personal preferences for trees in backyards. There are protections in place for trees on private property over a certain size, though Council permission can be sought to remove them through a permit process.

The overall trend in canopy growth bodes well for places like Seabrook and Altona Meadows which currently have very low levels of tree cover. There has been very little tree removal and much tree canopy gain.

## 2.2 Urban Heat Island Effect

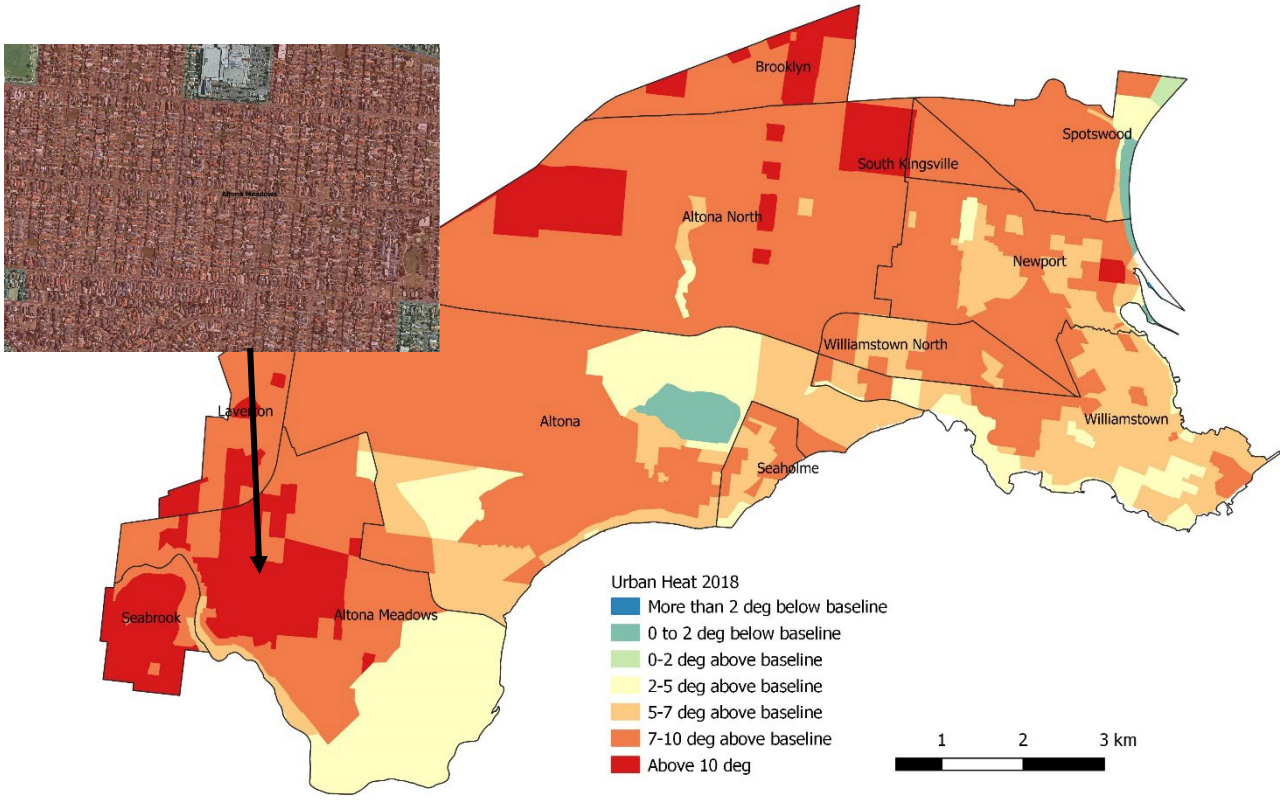



*Image 5: Urban heat by SA2 by for 2018. Source: DELWP, 2021, Spatial Data mart*

Urban heat is increasingly becoming an issue for the health and wellbeing of the community, particularly during extended hot periods. This is where the hard surfaces of an urban environment store the heat from the sun's rays, then re-radiate it out at night-time. When occurring at a scale large enough (i.e. suburb, municipal or city scale), the radiated heat keeps night-time temperatures higher for longer. This has detrimental impacts on human health and wellbeing and also on our urban environments.

The most effective way of mitigating this heat is to reduce the number of hard surfaces that receive direct sunlight through the natural shading of tree canopies. Increasing the amount of stormwater

infiltrated into urban soils also helps to cool the urban environment by providing soil moisture to vegetation to create evapotranspiration.

Therefore, understanding where these heat impacts are greatest, gives us the ability to target these areas for greater tree canopy cover.

In Hobsons Bay, these hotspots occur around Altona Meadows, Seabrook and in the industrial parts of the municipality. The Altona Meadows and Seabrook hotspots are the most concerning as they cover most of the residential areas in those suburbs.  These areas are consequently also the areas with lowest tree canopy cover.

## 2.3 Heat Vulnerability

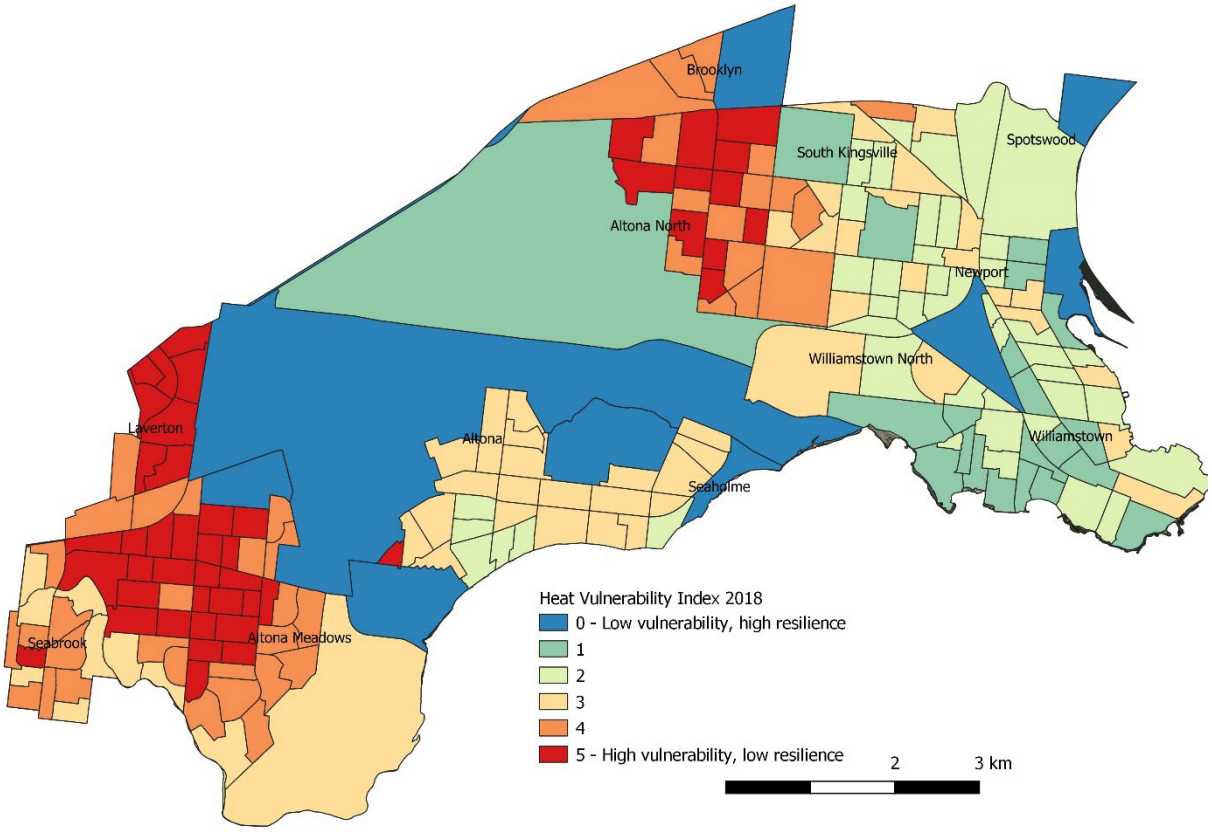



*Image 6: Urban heat vulnerability by SA1 by for 2018. Source: DELWP, 2021, Spatial Data mar*

Some members of our communities are more vulnerable to these heat impacts than others due to their age, health, quality of housing and ability to cool their homes.

Image 6 illustrates where the more vulnerable communities exist. Again, they occur in Altona Meadows, Seabrook and around the industrial areas of Altona North and Kingsville.

These areas must be targeted for increased canopy cover to help support these vulnerable communities in managing the impacts of urban heat.

## 2.4 Tree Canopy Cover Prioritisation

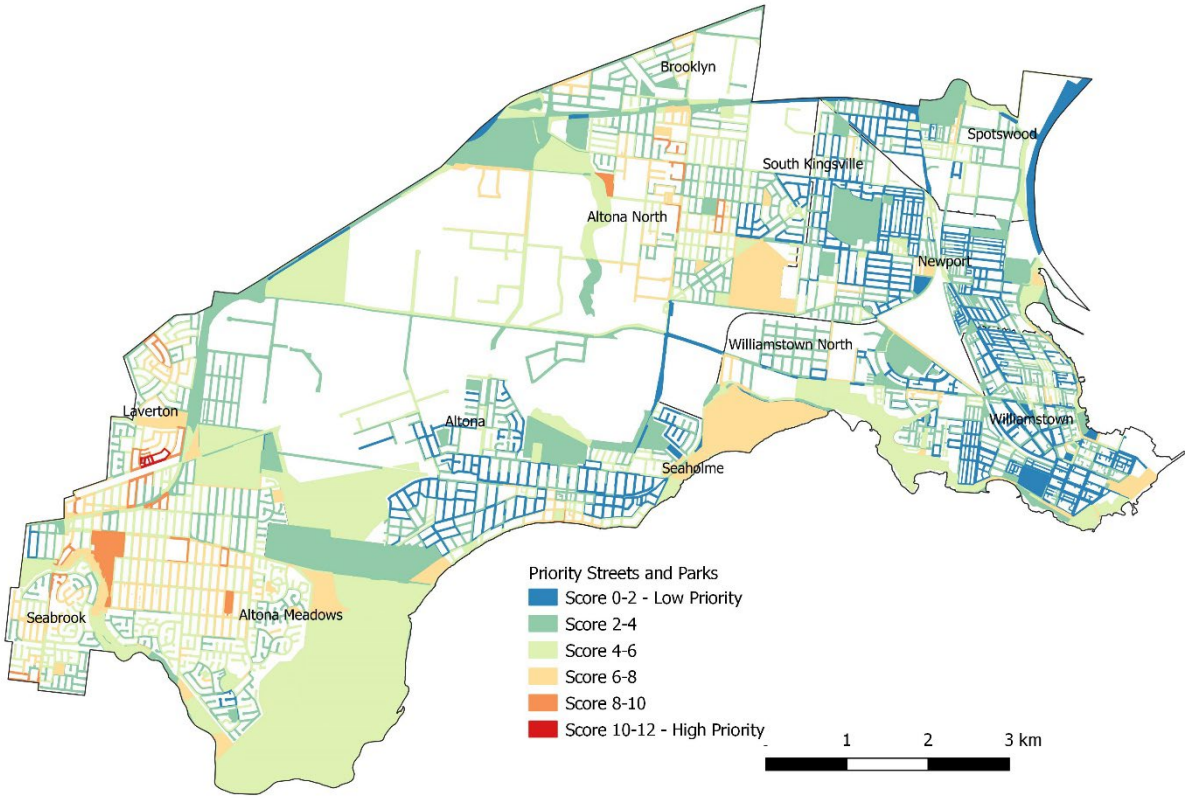



*Image 7: Priority areas for increased canopy cover. Source: Both Council held and DELWP dataset, 2021.*

Using the baseline data such as canopy cover, urban heat, heat vulnerability, and highlighting areas where the community are likely to be more exposed to heat due to pedestrian activity such as around schools, parks, playgrounds, kinders and libraries, we have developed a network of streets and open spaces that should be prioritised for increased tree canopy cover.

Areas in most need are coloured in red, orange, and yellow. This includes Altona Meadows, Laverton, Seabrook, and parts of Altona North. Whilst Williamstown scores low on priority, there are still ample opportunities to improve canopy cover within streets and parks there.

This prioritisation framework will be used to inform our tree planting program each year, ensuring that we continue to target the planting of shade in areas of need.

# 3. Streetscape canopy enhancement opportunities

## 3.1 Immediately available nature strip planting sites

As shown in Image 8, an on-ground validation of the streetscape network has found 4,946 vacant street tree sites that are ready to be planted. In filling these sites, Council will achieve a full stocking rate of its street tree assets.

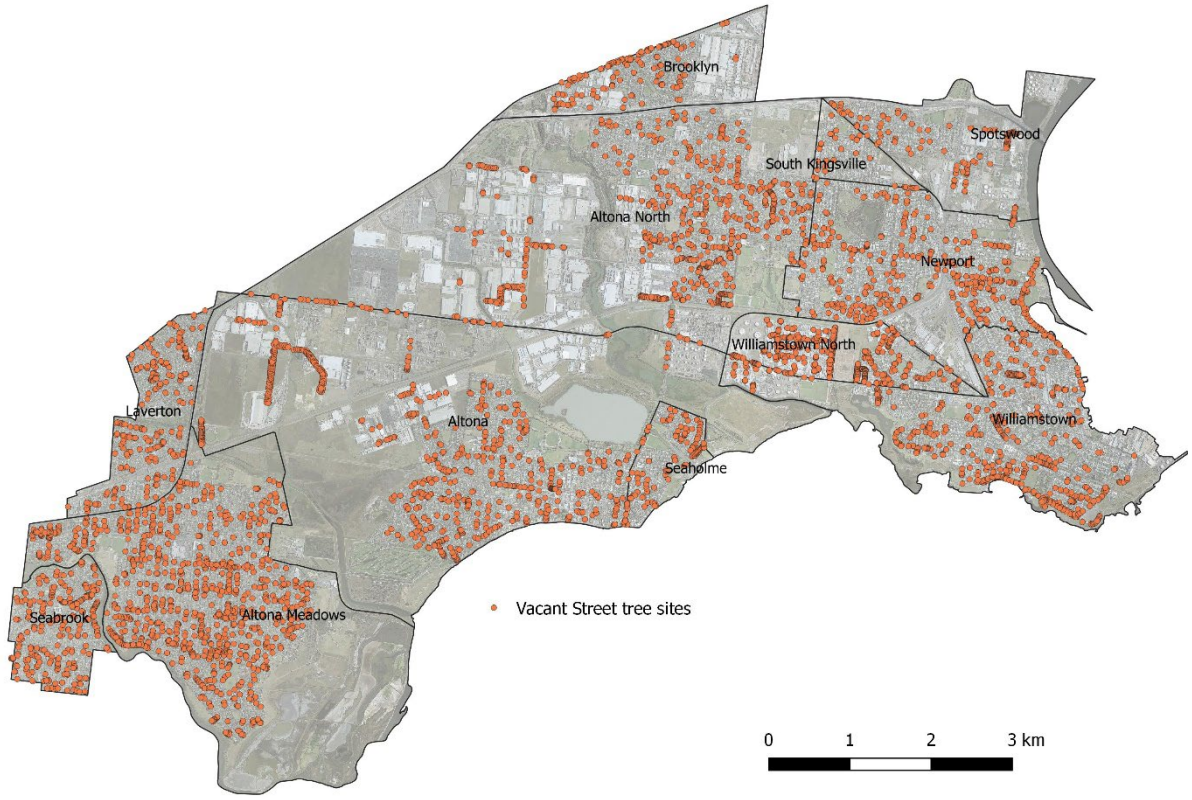



*Image 8: Location of vacant street tree planting sites. Source: Council data, 2021.*

## 3.2 Street tree renewal program

Street trees are living organisms and exist in environments that are continually changing. An emphasis will be placed on the retention of healthy established trees that have long useful life expectancies; however, an ongoing 'churn' is inevitable. Several renewal programs are outlined below that will increase the churn over the coming years.

The key intention of the programs is to replace any trees with low useful life expectancies to ensure a healthy, fully stocked street tree population. Where space allows, trees will be replaced on a minimum two for one basis with suitable canopy tree species.

Given the strategy's canopy cover target of 30% by 2040, the programs will ensure any trees that are unlikely to survive in the short-term (i.e. during the life of the strategy), will be replaced with suitable, canopy specimens, that will provide a healthy, expanding canopy, long after 2040.

To work towards Objective 2 of the UFS, all replacement plantings should comprise canopy tree species that are from underrepresented families.

Within the Brooklyn area, the programs will focus on planting trees that are known to reduce pollution. *Acer platanoides*, *Quercus cerris* and *Quercus ilex* have high pollution filtering abilities and would be suited for street tree planting within this area.

### Trees with low Useful Life Expectancies (ULEs)

This program will prioritise the replacements of trees that have low useful life expectancies. Council's current street tree data indicates that approximately 2% (877) have a useful life expectancy less than 5 years. An additional 46% (20,175) have an expected useful life of 5-20 years.

The entire HBCC street tree population is assessed at least once every two years as part of Council's Street tree maintenance program. The assessment process has significantly improved in the past 12-months with the appointment of an Inspection Arborist who is primarily responsible for undertaking these inspections. The entire approximate 44,000 street tree population is on target to be fully assessed within the next 18-months, which will identify all suitable replacement opportunities.

In the case of the tree shown in Image 9, the removal of this tree will allow the planting of two healthy canopy trees within this nature strip. The existing underperforming tree is from the myrtaceae family. The replacement plantings of two non-myrtaceae species will contribute towards improving our tree species diversity.


*Image 9: An example of a myrtaceae street tree on McIntyre Drive in Altona that has a ULE of less than 5 years. The removal of this tree will provide adequate space for the replanting of two-non-myrtaceae canopy species.*

An illustration of the significant canopy gains that can be achieved through this program is provided in Image 10. The image includes an aerial view of the tree that is photographed in Image 9, with the tree's current canopy provision shaded red. The green shading is a projection of the canopy provided by two, medium sized, 8-metre wide, canopy replacement specimens. The current tree provides an

approximate 8 $m^2$ canopy provision. The combined projected canopy provision of the two 8-metre wide, canopy replacement specimens is 102 $m^2$, which represents a 1175% canopy increase.

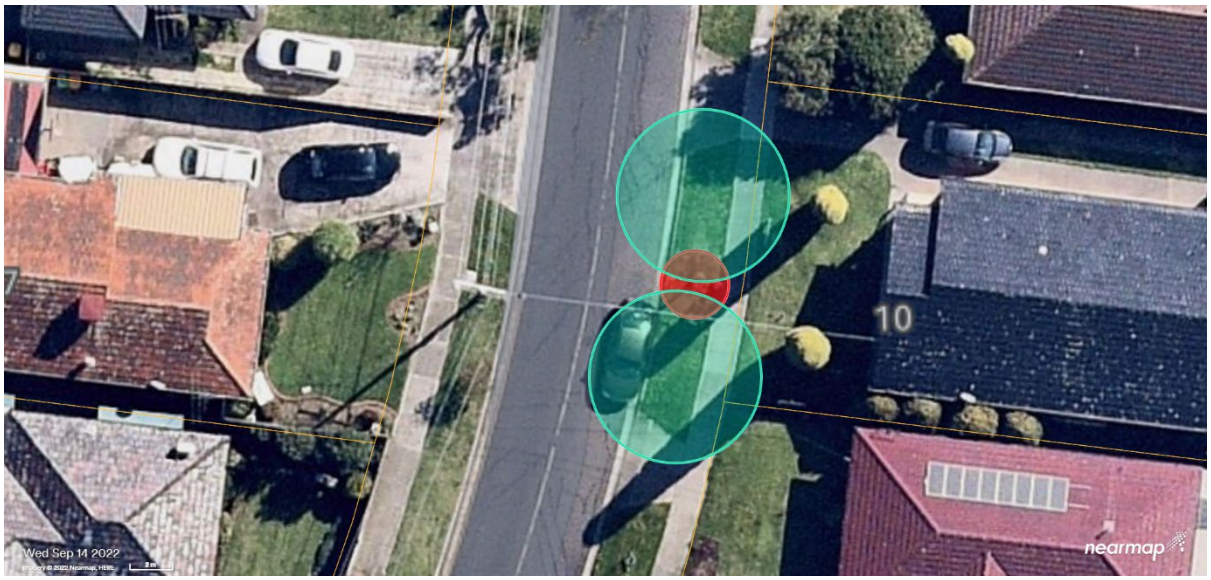



*Image 10: An aerial image of McIntyre Drive in Altona. The red shaded area indicates the approximate canopy provision provided by an existing tree that contains a ULE of less than 5-years. The green shaded areas indicate the expected canopy provision that will be provided by two medium sized replacements. Source, Nearmap, 2022.*

## Undersized species for the planting location

To achieve 30% tree canopy cover, the most appropriately sized tree species must be planted at each site. Council could target the replacement of small tree species (i.e. *Callistemon* spp., *Lagerstromia* spp., *Malus* spp. and *Prunus* spp.) that currently exist in large, unconstrained, planting sites.


*Image 11: An aerial image of a wide nature strip that currently accommodates a relatively small tree. This nature strip could accommodate a large tree species. Source, Nearmap, 2022.*

Trees like the callistemon pictured in Image 11 would be targeted through this program. The 4.8m wide nature strip has no overhead utility cables and can accommodate a larger tree species.

Important note: Implementing this program may prove contentions with the community, as affected residents may hold sentimental value to undersized trees that are adjacent to their property.

Council should engage with affected residents prior to scheduling the replacement of these trees. In the case a proposed replacement is not supported by an adjacent resident, the tree should not be replaced through the program.

## 3.3 Green Streets program (complete street renewal)

The Green Streets program is a collaboration between Council and the community to green residential streets through urban design solutions and education.

A 'Green Street', as defined for this program, is a street that incorporates well designed placement of trees and vegetation. Where the possibility of street redesign is possible, a 'green street' can also include:

- passive storm water filtration solutions.
- improved walking and cycling outcomes.
- planting of understory to improve biodiversity outcomes where feasible.

### Program Objectives

The program objectives are to:

1. To maximise urban greening benefits at the local scale and showcase integrated climate adapted design responses for whole streets.
2. To collaborate with and build local community knowledge of the role, function, and value of urban greening and increased canopy cover in Hobsons Bay.
3. To monitor and evaluate the green and blue infrastructure approaches for embedding as business as usual in Councils works programs.
4. To support Council's strategic commitments in particular the Urban Forest Strategy, Biodiversity Strategy, Integrated Water Management Plan, Better Places, Climate Change Adaptation, Living Melbourne, and Greening the West.

### Green streets community nominations

A total of 101 streets were nominated for inclusion in the program during the consultation period for this document. Street nominations were assessed against the program criteria, outlined below.

Grace Street, Laverton, Hancock Street, Altona and Bayview Street, Williamstown were selected and formed Council's first Green Streets in 2022. The program was well received by the residents in each street. Due to its success, it is likely to continue to be delivered an annual basis moving forward.

Following a detailed review of the nominations, the remaining did not satisfy the program's criteria due to the nominated streets currently containing suitable, healthy trees.

### Program criteria

Does the street:

- have space to support increased canopy?
- currently have low canopy and/or trees that have low useful life expectancies?
- Currently experience high heat?

Are there possible renewal opportunities (i.e. Lagunaria program, streets with short Useful Life Expectancy trees or trees that are underperforming)

- The street is within top priorities of the Canopy Delivery Plan
- There are other planned works due to occur in the street such as road or footpath upgrades

The program will continue to be implemented in streets where trees with low ULE form most of the population and in conjunction with Council's Road Rehabilitation Program, where tree removal is unavoidable but Water Sensitive Urban design can be factored into the civic design.


*Image 12: A photograph taken during a Green Streets consultation session in Hancock Street, Altona in 2022.*

## Program key stages

The program will involve the following steps:

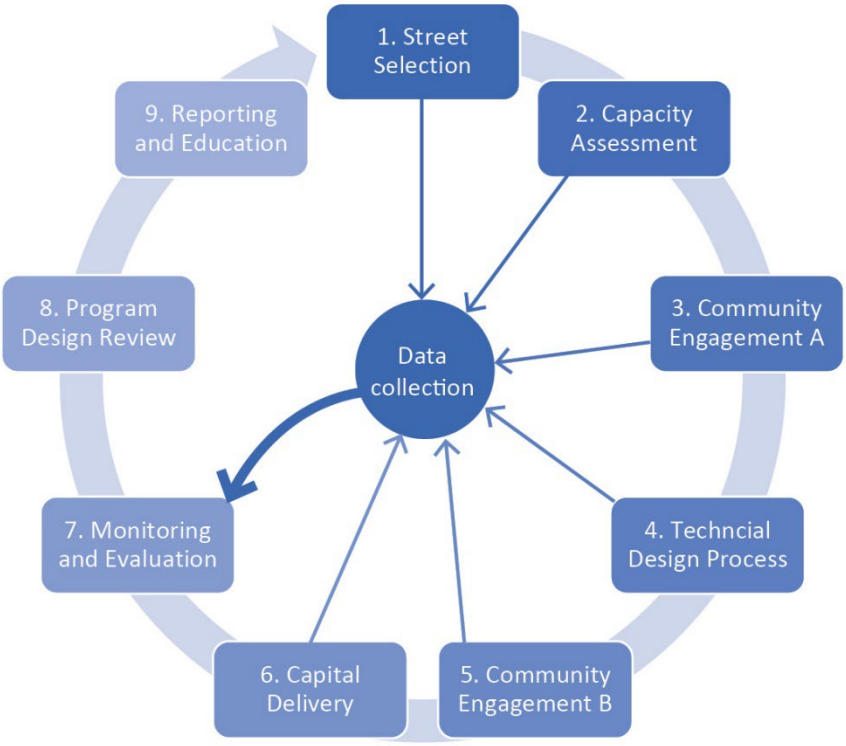



*Image 13: An illustration of the key steps of the Green Streets Program.*

## 3.4 Lagunaria replacement program

### Overview

The *Lagunaria patersonia* (Norfolk Island Hibiscus) is now regarded as an unsuitable street tree in many parts of Australia, including Hobsons Bay.

Despite the species having many beneficial attributes, the release of fine hairs from the tree's seed capsules can provide extensive discomfort to residents living near them. These hairs can cause respiratory and skin irritations. The species also provides significant management issues when located underneath powerlines, as it produces vigorous regrowth following pruning activities.

The lagunaria replacement program comprises Action 2.5 of the Hobsons Bay Urban Forest Strategy, 2020. This year (2022) marked the initial year of the program. The program has proved to be quite contentious, with a section of the community in opposition and with many directly affected residents in support.

In response submissions by the community, Council has amended the program to solely replace lagunaria where they are directly affecting properties. The program will not target replacements of lagunaria that are in remote settings. Outlying lagunaria specimens will likely be managed until they reach their useful life expectancy in these locations.

### Nomination process

Affected community members are able to notify Council about a lagunaria that is causing distress through Council's website or by contacting Customer Service on 1300 179 944.

Replacement requests can encompass lagunaria trees that are causing distress to a property but not necessarily immediately adjacent to the property (i.e. the tree may be located on the boundary between two properties or potentially in front of a neighbouring property). In any case, all properties in the immediate vicinity of the tree will be advised prior to the removal taking place, with the owner who lives directly adjacent to the tree given the opportunity to object to the removal.

The replacement canopy species will be carefully selected, planted, and maintained to ensure the restoration of canopy in a timely manner. Where space allows, Council will seek to plant more than one appropriate canopy tree, for each removed lagunaria.

### Long-term impact

An opportunity exists for the long-term increase of tree canopy through this program. Lagunarias tend to have a relatively narrow canopy at maturity, typically attaining not greater than 10-meters diameter when fully established. The planting of suitable replacement canopy tree species that attain canopy spreads of up to 15-meter diameter, on a 2 or 1 replacement basis where feasible, will increase the city's tree canopy over the longer term as the trees become established.

An illustration of the long-term canopy increase that can be achieved through this program is provided in Image 14. The aerial image shows the extent of current canopy provided by two lagunarias, shaded red. Both trees are scheduled to be replaced through the program with fraxinus species that attain a 15-meter diameter canopy spread when fully established.

A third fraxinus is scheduled to be planted, along with three additional melia specimens in the grassed space on the corner of the streets. The green shaded area indicates the expected canopy provision of the five replacement plantings when they reach maturity. The combined canopy provision of these five species at maturity is approximately 617m2, which represents an approximate 436% increase upon the current approximate 115m2 canopy provision of the two lagunaria specimens.


*Image 14: The red shaded area indicates the approximate canopy provision provided by two existing lagunaria trees. The green shaded areas indicate the anticipated replacement canopy provision. Source: Nearmap, 2022.*

## 3.5 Creation of new planting sites in hardstand surfaces

The standard drawings included at Appendix 2 will guide the creation of tree planting opportunities in current hard stand areas. The designs include the provision of passive irrigation solutions and cover a range of typical planting situations or typologies.

These solutions have higher upfront costs in comparison to standard nature strip plantings due to the civil component, however, they will provide much needed tree canopy to streets within the municipality that currently have none and will be extremely effective in reducing the urban heat island effect.

Image 15 provides an example of a network of streets in the Williamstown area that predominantly comprise hard surfaces and accordingly, contain minimal tree canopy cover.

The creation of these new planting sites will require increased community consultation and design as they will alter the streetscape and may have impacts on parking and other existing elements.


*Image 15: An example of a network of streets in the Williamstown area that predominantly comprise hard surfaces. Tree planting opportunities could be created within locations like these utilising the standard drawings. Source: Nearmap, 2022.*

# 4. Additional canopy enhancement opportunities

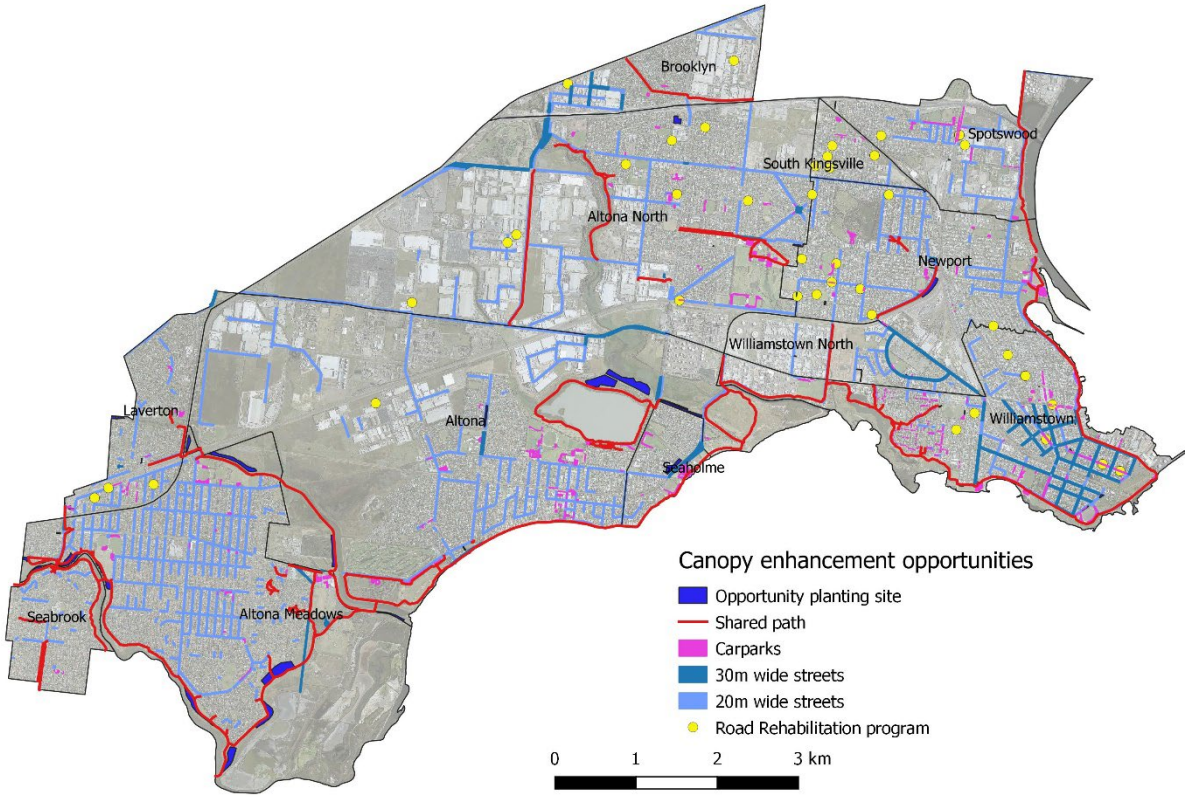



*Image 16: Canopy enhancement opportunities across Hobsons Bay. Source: Council, DELWP and consultant data, 2021.*

Several important opportunities exist in addition to streetscape planting sites that are key opportunities for Council to target to increase the municipality's tree cover. Many already have some tree cover within them, however there is clear opportunity to improve it.

These sites have been identified using on-ground assessments coupled with spatial mapping of key data such as car parks and shared paths.

## 4.1 Opportunity mass planting sites

Hobsons Bay currently has multiple open space areas that are very low on canopy and primarily comprise low quality vegetation and weeds. These parcels of land have capacity to be mass planted out with trees.

Many exist along waterways and adjacent to areas containing high quality ecological vegetation and therefore must be planted out with species from the relevant local Ecological Vegetation Classes (EVCs).

The plantings in these areas should predominantly comprise tube stock species, planted into mulched garden beds. The garden beds will require adequate weed control prior to being mulched and for some time after being planted out. Where feasible, the beds should be excluded with rabbit proof fencing to remove the requirement for stakes and guards. The plantings must be adequately spaced to allow for the species to reach their potential, without the requirement for intensive management or 'thinning out', as the trees become established.

Some of these sites are managed by other land care agencies, including DELWP, Melbourne Water and Parks Victoria, and will require consultation with the relevant agencies prior to undertaking plantings.

*Image 17: Photo of the Pines Scout Camp Road that is currently void of trees or canopy and could accommodate extensive plantings.*


*Image 18: Aerial image of a parcel of Melbourne Water managed land on the northern side of Cherry Lake that is relatively void of canopy and could accommodate extensive plantings. Source: Nearmap, 2022.*

## 4.2 Shared paths

Council have mapped 61kms of shared paths. Many of these have ample opportunity to improve shade cover, improve landscape amenity and enhance biodiversity as many run alongside waterways. Covering half of these paths with canopy cover could add an additional 150,000m2 of canopy cover. The plantings will provide among the greatest benefits to the local community of all parkland plantings as they will provide shade to the most frequently used assets within the areas.

Some shared paths, including the Bay Trail that runs through the Rifle Range (refer to Image 19) and through to the foreshore in Williamstown (refer to Image 20) must be considered a priority for tree planting, as the pathway is highly utilised, however currently contains minimal natural shading. Some of these locations have previously proved contentions for Council to plant due to local concerns regarding impacts to ocean views.

These locations will require consultation to ensure a design that balances the needs of the community, prior to being carried out.


*Image 19: A section of the Bay Trail running through the Rifle Range in Williamstown. Source: Nearmap, 2022.*


*Image 20: A section of the Bay Trail running along the Williamstown Foreshore area. Source: Nearmap, 2022.*

## 4.3 Carparks

Council has mapped 359,360m2 of at grade carparking across the municipality. There is ample opportunity to improve tree cover in many existing carpark areas. The provision of adequate tree cover within carpark settings is critical as it will help reduce the Urban Heat Island effect within these areas.

Traditional carpark design tends to focus on maximising the number of parking locations, with little emphasis placed on tree planting and/or successful tree establishment. This typically results in suboptimal tree growth and minimal canopy cover provision due to the trees being planted into hostile environments, with inadequate soil volume provided to support successful tree establishment.

Harrington Square Carpark in Altona, as shown in Image 21 is an example of this. The London Plane (*Platanus* × *acerifolia*) were planted into very narrow median strips pre-2009. Over 12 years later, the trees exist at approximately 2-3 meters tall, exhibit stunted growth and provide minimal benefits to their surroundings.

*Image 21: An image showing the stunted growth of the London Plane (Platanus × acerifolia) trees in Harrington Square Carpark. Source: Google Maps, 2022.*

Water sensitive urban design (WSUD) tree planting solutions have been created to resolve this issue.

As illustrated in Image 22, the WSUD planting solution provides a favourable growing environment for the trees' root systems, while at the same time allowing for the space around the trees to be fully utilised.

Retrofitting new WSUD tree plantings into existing carpark settings is a challenging and costly exercise. Instead, a focus should be placed on ensuring all new carpark designs seek to maximise tree growth by utilising WSUD planting techniques.

A comparison is provided in Image 23 that demonstrates the effectiveness of WSUD tree planting technologies in supporting rapid tree establishment. The example compares the establishment of a 4-year-old specimen planted into a Soil Vault System, compared to a 15-year-old specimen planted conventionally.

*Image 22: An illustration of a Soil Vault System, showing the underground components. Source: Citygreen Pty Ltd, 2022.*


*Image 23: An image comparing the growth rate of two trees planted in carpark settings. A 4-year-old specimen planted into a Soil Vault System compared to a 15-year-old specimen planted conventionally. Source: Citygreen Pty Ltd, 2022.*

Council's Parks Department must work closely with Council's Capital Works Department to ensure a 'trees led' approach is adopted to each car park upgrade moving forward. A representative from both teams should meet on a regular basis to identify opportunities for incorporating WSUD tree plantings in upcoming projects.

There is a relatively high upfront cost associated with using this technology, which must be accounted for within Council's annual Capital Works budget.

### Harrington Square Carpark upgrade

The current Harrington Square Carpark upgrade in Altona is an example of the positive outcome that can be achieved by Council's teams working together.

The carpark is currently being redesigned, which includes the planting of nine *Platanus* x *acerifolia* trees into a soil vault system. The carpark has a total area of approximately 4,415 $m^2$. The existing trees currently provide 203$m^2$ (5%) canopy cover, with the rest of the area comprising unshaded hard surfaces.

As shown in Image 24, the canopy coverage within the carpark is expected to increase to 1,593 $m^2$ (36%) as the trees become established. This represents an approximate 685% canopy increase and will include the complete shading of the majority (59) of the parking spaces. As the replacement tree species are deciduous, they will allow sunlight to filter through during the cooler winter months.

There will also minimal potential for damage to the surrounding infrastructure as the trees grow, due to the provision of ample underground space to support root growth.


*Image 24: An aerial image of the Harrington Square Carpark, Altona, with the anticipated future canopy coverage indicated by the green shading. Source: Nearmap, 2022.*

## 4.4 Road Rehabilitation Program

Like carpark redevelopments, improved street tree solutions must be included at every opportunity in Council's annual road rehabilitation program.

Council's Parks Department must work closely with Council's Capital Works Department to ensure a 'trees led' approach is adopted to each road rehabilitation project.

The standard drawings included at Appendix 2 are intended to guide Council's Civil Design teams in the creation of planting locations.

### Rennie Street upgrade

Rennie Street, Williamstown is an example of where tree plantings were incorporated into the road rehabilitation project.

The installation of the trees into the roadway has provided greater space on the footpath to ensure Disability Discrimination Act (DDA) compliance.

The plantings were carefully spaced in consultation with the community, to minimise impacts to parking.

Refer to Image 25 for a cross section of the Rennie Street road rehabilitation.

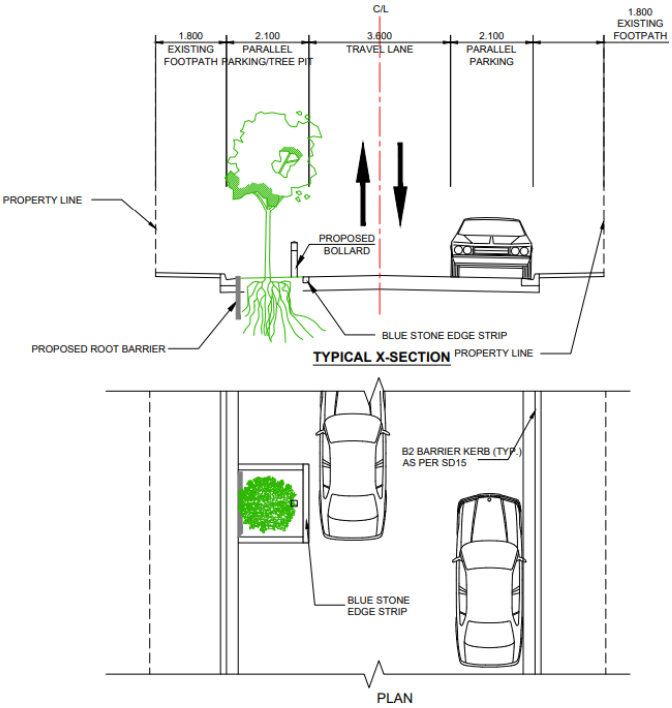



*Image 25: Rennie Street cross section, including tree planting within the road surface.*

## 4.5 Creation of a Green Industries Program

Hobsons Bay has more than 1,600 hectares of industrial land. Much of this space comprises hard surfaces and is not suitable to accommodate much tree canopy. A portion of this land comprises grassed area that is encumbered and therefore cannot be used for industrial purposes. Council must engage with industry and encourage plantings in this space.

Council is in the process of creating a Green Industries Program, which is anticipated to be trialled in the 2023 planting season. The Green Industries program will work in partnership with Hobsons Bay's businesses to increase canopy cover where there is capacity to plant trees and understory plants on their property.

Council will actively promote the Green Industries Program trial with local industry in late 2022. Sites will be selected in early 2023 to be planted between May-July 2023. Depending on the success of the trial, further promotion may take place and the program may run on an annual basis.

The Green Industries Program will not be intended to support the development or redevelopment of sites where landscaping works are required as part of planning permit conditions.


*Image 27: An aerial image showing a parcel of Industrial area on the north-eastern side of Kororoit Creek Road in Altona North that is zoned Public Park and Recreation Zone (PPRZ) and could accommodate additional plantings. Source: Nearmap, 2022.*

## 4.6 Open space

Prioritisation work has identified parcels of open space that are higher priority for tree cover than others using the same prioritisation criteria that was used for streets. There is a concentration of higher priority open space parcels in Altona Meadows and within Altona North and Brooklyn.

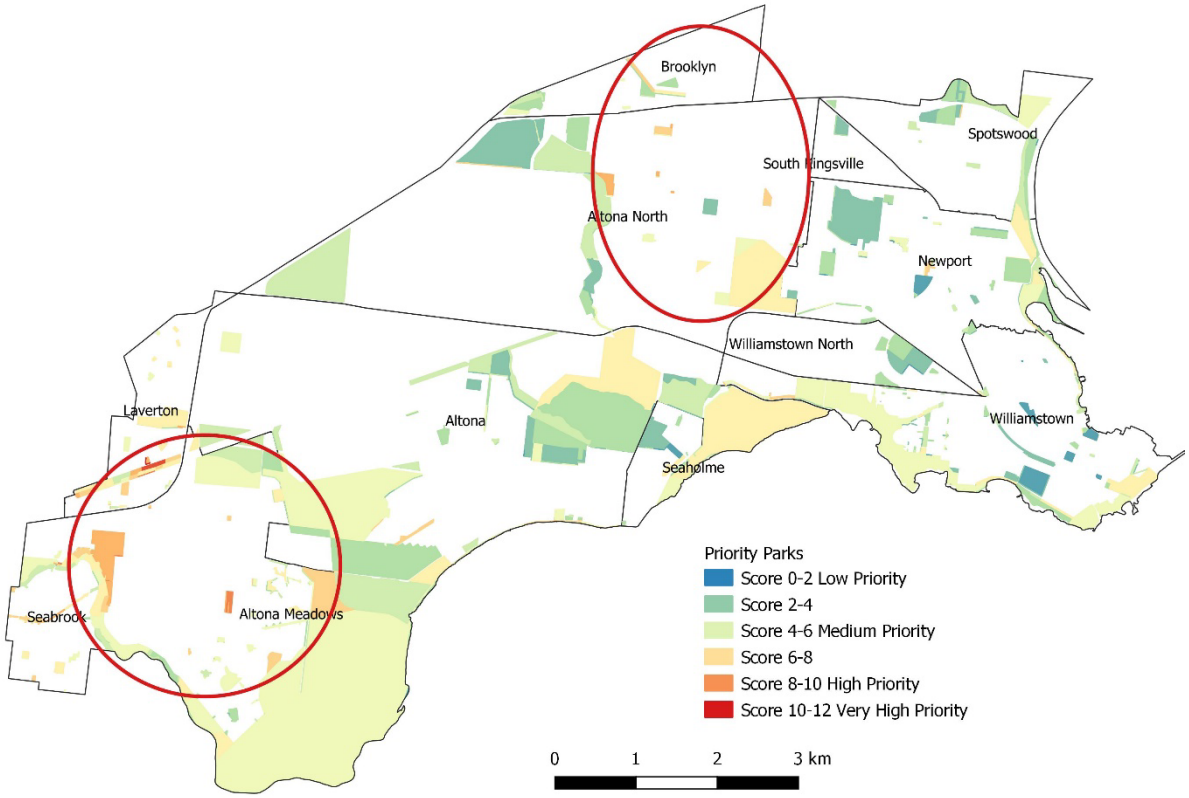



*Image 28: Priority parcels of open space for increased canopy cover. Source: Both Council and DELWP data, 2021*

High Priority Open Space areas that demonstrate tree planting opportunities include:

- Alma Avenue Reserve, Altona Meadows
- Altona Meadows BMX Track
- Altona Meadows Community Park.
- Bond AW Reserve (especially along southern path), Altona North.
- Bruce Comben Reserve, Altona Meadows.
- Cooper RJ Reserve, Altona North.
- Den Dulk G Reserve, Altona.
- Duane Reserve (Pipeline Reserve), Brooklyn.
- Dunnings Road Drainage Reserve, Seabrook
- Laverton Railway Reserve.
- H.D. Graham Reserve, Altona Meadows.
- Seabrook Pipeline Reserve.
- Skeleton Creek Linear Parkland, Altona Meadows.
- St Anthony Court Reserve, Seabrook.

## 4.7 Private land

Given that 54% of the municipality comprises private land, the community and private landholders have a significant role to play in contributing to the urban forest by planting trees and vegetation on their own properties.

To assist and encourage this activity, Council has held multiple tree giveaway events since the adoption of the Urban Forest Strategy, giving approximately 4,500 trees to the local community. Members of Council's arboriculture team have provided advice to the community at each event.

*Image 29: A tree giveaway that took place at Council's Better Places Brooklyn event in March 2022.*

These events have been extremely well received by the local community and have provided a cost-effective method of encouraging an increase in tree canopy (Objective 1 of the Urban Forest Strategy) and help to educate and foster care for urban trees (Objective 4). Many more tree giveaways will be held throughout the life of the strategy.

Further targeted tree giveaway programs will be developed to help improve tree canopy coverage in the private realm. To track the success of the plantings, Council should develop an ability to map private tree plantings and observe establishment rates, to help understand survival rates and canopy cover contribution in this space.

Further development is required to target planting in the private realm. Council will investigate options including developing a volunteer base to assist with promoting private tree planting and will work with organisations like Resilient Melbourne and the Nature Conservancy, to scale up greening in the private realm.

# 5. Importance of appropriate tree selection

Appropriate tree selection is a key aspect in creating a healthy, resilient urban forest. Tree species diversity, future climate considerations and the selection of the most appropriately sized species for each planting location are among the key considerations Council's tree planning teams in the preparation for each planting season.

## 5.1 Tree species diversity

Objective 2 of the Urban Forest Strategy contains a key action to adopt a target of no more than 5 per cent of one tree species, no more than 10 per cent of one genus and no more than 20 per cent of one family.

In Hobsons Bay, over 50 per cent of the LGA's street and park trees are currently from the Myrtaceae family. Accordingly, future tree plantings should avoid the use of trees from the Myrtaceae family where possible. The tree replacement programs listed within this document provide a good opportunity to diversify our urban forest, particularly where trees from the Myrtaceae family require replacement.

## 5.2 Future climate considerations

According to research by Kendall et al.[1] (2017) 35% of public trees in Australian cities are at a high risk from increased temperatures by 2070, in a 'business-as-usual' emissions scenario. To maintain and enhance tree cover for urban cooling in regional centres, the current tree stock in parks and streetscapes must be shifted towards a wider diversity of climate resilient species. Sound species selection requires optimising both the benefits from urban trees and their survival under future climate scenarios.

Research has shown that mean annual temperature, annual precipitation, and maximum temperature of the warmest month are key factors in determining the viability of tree species. Council's current tree planting program has increased the plantings of species that can tolerate warmer, drier periods, including, *Allocasuarina verticillata*, *Banskia integrifolia*, *Brachychiton populneus*, *Gleditsia triacanthos* and *Pyrus calleryana.* Modelling of the city's projected climate is required to help further inform the selection of the most suitable species to plant to create a resilient urban forest moving forward.

Considerations must be paid to the characteristics of various 'climate ready' species. While many of these species are equipped to grow in hot, drier environments, some tend to be slow growing, have smaller leaves and thinner canopies. As these species are water-efficient, many do not provide lush, humidifying canopies. The plantings of these slower to establish specimens should be combined with faster growing species to help create shade in the short-term.

## 5.3 Right tree for each location

In addition to the above species diversity and future climate considerations, Council's planting program must seek to plant the most appropriately sized tree for each location, in appropriate spacings. A pragmatic approach must be taken when determining appropriate species size. Larger tree species must be planted into wide nature strips that are free from constraints (i.e. *Banksia* spp., *Ficus* spp., *Fraxinus* spp., Gleditsia spp. Etc.). Conversely, to avoid an increased potential for infrastructure damage and excessive maintenance requirements, smaller tree species (i.e. *Arbutus* spp., *Lagerstromia* spp., Pyrus spp. etc.), should be planted into constrained sites.

[1] Kendal, D., Farrar, A., Plant, L., Threlfall, C. G., Bush, J., & Baumann, J. (2017). Risks to Australia's urban forest from climate change and urban heat. Clean Air and Urban Landscapes Hub

# 6. Importance of tree survivorship

A key aspect of attaining the Urban Forest Strategy's ambitions canopy cover targets will be the successful establishment of all new plantings. The use of quality stock, undertaking appropriate planting techniques and providing the new plantings with adequate care during their establishment period are critical factors to achieve this.

Each recently planted tree in Hobsons Bay is provided a minimum 2-year establishment period, where it receives supplementary watering, weed control, mulching and formative pruning. Any street trees that fail to establish during this time are replaced by the planting contractor at no additional cost to Council. Any reserve plantings that fail to establish during this time are replaced by Council's internal team in the subsequent planting season.

Uncontrollable environmental events and human interference in the form of vandalism, accounts for a significant portion of the failure rate in recently planted trees

The *Allocasuarina verticillata* shown in Image 30 is an example of a well-maintained recent planting. The specimen was planted during the 2021 planting season. Photographed approximately halfway through its establishment period, the tree presents in good health with a full canopy, is well mulched, self-supporting, and free from weeds.

At the time of preparing this document, Council currently has an approximate 97% success rate within reserve plantings. Increased resources have been allocated to overseeing the street tree planting contract, which has resulted in increased audits of the street tree plantings improvements in the quality of the contractor's performance in this area.

*Image 30: An image of a well maintained Allocasuarina verticillata that was planted in Sadler Reserve, Williamstown during the 2021 planting season.*

# 7. Supporting Work for Increasing Canopy Cover

## Integrated blue green design and passive irrigation

Provision of water and maintenance of a soil moisture plays a key role in tree health and in canopy growth. Providing trees with greater access to water through either active or passive irrigation is an important strategy for the creation of healthy canopies, particularly in urban and street planting settings where access to natural soil moisture is often constrained and in a changing climate where hotter, drier conditions will place further stress urban trees. Passively irrigated trees can grow at the double the rate[2], and create tree canopies that are 20% larger[3].

While provision of water is a key part of a canopy strategy, it can also deliver a range of other benefits if alternative water resources such as stormwater runoff can be harnessed for tree irrigation. As part of this canopy plan, a series of standard designs have been developed for the Hobson's Bay context, which integrate passive irrigation of trees using runoff from adjacent roads and paved surfaces. By utilising stormwater to passively irrigate trees, we can also:

- Treat stormwater before it enters local waterways and Port Phillip Bay, removing sediment and nutrients as runoff filters through the soil profile and is taken up by the tree. This helps to protect and improve water quality in receiving waters;
- Slow or remove the amount of stormwater runoff entering waterways, by holding water in the soil profile and aiding evapotranspiration. This helps to mimic natural flow patterns in waterways and can reduce downstream flood risk and erosion;
- Enhance localised cooling and mitigation of the urban heat island effect by enhancing evapotranspiration while also increasing shade through additional canopy growth; and
- Reduce or avoid the need to use potable water resources for irrigation during establishment and during dry periods.

There is also a need to increase irrigation of street trees to support tree species that are likely to be vulnerable to future climates. A recent examination of the resilience of trees to climate change identified that a substantial proportion of the existing trees in Hobson's Bay would not be able to survive future climates.[4] Tree populations were examined across 10 local government areas in Melbourne, including Hobson's Bay, and 58% of existing trees in the municipality were found to be at risk under a business-as-usual scenario.[5] To manage this risk, provision of irrigation is flagged as a key strategy to improve survival rates.

## Targets for tree irrigation using alternative water sources

The Werribee Catchment IWM Plan sets outs out targets for the proportion of street trees that should be supported by irrigation from an alternative water source (e.g. passive irrigation from stormwater runoff or a recycled water supply). The targets for this measure (Measure 5.1) are expressed at a local government area level, and are as follows for Hobsons Bay:

[2] Grey, V., Livesley, S.J., Fletcher, T.D. and Szota, C. (2018a) Establishing street trees in stormwater control measures can double tree growth when extended waterlogging is avoided. Landscape and Urban Planning, 178, 122-129.
[3] Based on observed canopy data for semi-mature trees with and without passive irrigation in City of Melbourne, City of Yarra and City of Port Phillip (Urban Forest Consulting).
[4] Clean Air and Urban Landscapes Hub (2017). Risks to Australia's urban forest from climate change and urban heat. Available at: https://nespurban.edu.au/wp-content/uploads/2018/11/CAULRR07_RisksAustralianUrbanForest_Oct2017.pdf
[5] Number of trees classified as 'yellow', 'orange' or 'red' level risk, reflecting that the temperature is warmer than 80%, 90% or 97.5% of the locations where this species is found under a future climate (RCP8.5) scenario.

| Timeframe | % of street trees supported by an alternative water source |
|---|---|
| Current Performance | 0% |
| 2030 Target | 9% |
| 2050 Target | 23% |

*Table 2: Hobsons Bay's current timeframe targets for the percentage of street trees supported by an alternative water source.*

It is important to note that the IWM targets relate to number of trees rather than canopy area, and it is only targeted at street trees.

There may be opportunities to source recycled water supply for irrigation of trees in the Altona area from the Altona Treatment Plant, and this could be discussed further with Greater Western Water. However, the primary method of sourcing an alternative water supply for irrigation of trees in the municipality is likely to be using passive irrigation, which can be designed into many tree planting situations (see standard drawings provided) but does require forethought and additional budget.

### Types of passive irrigation opportunities in Hobson's Bay

Passive irrigation of trees using stormwater runoff from roads and adjacent surfaces is an emerging area of focus in the Melbourne Region. Various system installations have been delivered in urban streets in the last 10-20 years, trailing a variety of design approaches and helping councils to learn techniques and refine designs and maintenance protocols. However, installations are largely considered pilot projects or targeted at high profile areas, and the practice is not widely mainstreamed due to the additional design and construction investment required. City of Melton is currently delivering the largest scale installation of passive irrigation systems for street trees in partnership with developers across their growth areas.

Passive irrigation can be installed in most street tree planting sites, but the cost and difficulty will depend on site conditions. There are several guidance documents available that can be used to select and trouble-shoot site challenges to find passive irrigation solutions:

- CRCWSC (2020) Designing for a cool city: Guidelines for passively irrigated trees. Available: https://watersensitivecities.org.au/content/designing-for-a-cool-city-guidelines-for-passively-irrigated-landscapes/
- Victoria State Government (2019) Trees for Cooler and Greener Streetscapes – Guidelines for Streetscape Planning and Design. Available: https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne/cooling-greening-melbourne/trees-for-cooler-and-greener-streetscapes

Five standard drawings have been developed for the Hobson's Bay municipality, which provide passive irrigation solutions for some typical planting situations or 'typologies'. These have been prioritised through discussions with council. It should be noted that these solutions don't necessarily represent the least-cost opportunities, but rather focus on areas where more design insight was needed to provide solutions. There are other simple and low-cost solutions for passive irrigation of individual trees in soft nature strips available[6].

[6] Example: https://www.spacedownunder.com.au/

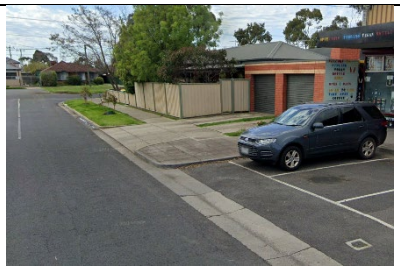
| Typical planting situation | Example suitable street[7] | Standard drawing |
|---|---|---|
| 1. **Infiltration trench in nature strip:** Where multiple trees are being planted in tandem with a road reconstruction, where an irrigation trench can be created along a nature strip. |  Ajax St | Passive irrigation trench |
| 2. **Kerb outstand**: Tree is positioned in the roadway within an outstand which may also be used for traffic calming purposes. |  Tait St | Terraced tree pit |
| 3. **In-road flush surface:** In areas where footpaths are too narrow for planting, but trees could be accommodated within parking areas at the edges of the roadway, with flush edges to the road. Suitable for low traffic environments. Can use bollards on edge to delineate. |  Franklin St | Flush kerb tree pit |
| 4. **In-footpath with grill**: For planting behind kerb in a paved footpath area where a tree grill is required for pedestrian safety. |  Ford St | Grated tree pit |
| 5. **Expanded tree pit under paving**: In carparks, squares or plazas where an expanded underground soil area is desired to support a large tree. |  Harrington St Carpark | Structural tree pit |

*Table 3: Applications for each WSUD standard drawing.*

[7] Image credits: Google Maps Streetview

## Cost of passive irrigation solutions

The cost of creating a passive irrigation system will always depend on a range of site factors, including integration of services, connection to drainage and whether the retrofit can be integrated with other works, but cost can be minimised through site investigations and responsive design. Costs will also reduce where works can be coupled with other planned works such as road or footpath reconstructions.

The estimated typical costs of the typologies and simple passive irrigation applications are summarised in the table below. It should be noted that market costs for these works could vary substantially. Like most new practices or technology, market costs are likely to be higher initially as contractors are unfamiliar with the design and some upskilling will need to occur. It is also likely that costs will reduce if installations are done in bulk.

| Passive irrigation system | Capital cost range | Annual maintenance cost |
|---|---|---|
| Simple kerb cut-out to sunken surface or inlet to below-ground infiltration system | $750 - $1500 | $150/year<br><br>Typical maintenance costs for a passively irrigated tree |
| 1. **Infiltration trench in nature strip:** Where multiple trees are being planted in tandem with a road reconstruction, where an irrigation trench can be created along a nature strip. | $1000 - $2000 | |
| 2. **Kerb outstand**: Tree is positioned in the roadway within an outstand which may also be used for traffic calming purposes. | $3000 -$5000 | |
| 3. **In-road flush surface:** In areas where footpaths are too narrow for planting, but trees could be accommodated within parking areas at the edges of the roadway, with flush edges to the road. Suitable for low traffic environments. Can use bollards on edge to delineate. | $2000 - $4000 | |
| 4. **In-footpath with grill**: For planting behind kerb in a paved footpath area where a tree grill is required for pedestrian safety. | $3000 - $8000 | |
| 5. **Expanded tree pit under paving**: In carparks, squares or plazas where an expanded underground soil area is desired to support a large tree. | $6000 -$10000 | |

*Table 4: Cost estimates for each WSUD design.*

While the capital cost of passive irrigation is wide-ranging and site dependant, there are also very significant economic benefits that can be demonstrated for passively irrigated trees, including:

- **Increased property prices for larger canopy trees**: A study of property prices in Perth showed that a 10% increase in canopy cover in a tree lined street correlated with a 1.8% increase in property prices.[8]
- **Removal of stormwater pollutants from Port Phillip Bay**: A passively irrigated tree can be designed to have a similar performance to a street raingarden, if the catchment area draining to it is sufficient. Twenty passively irrigated trees along a 1km stretch of street could expect

[8] Pandit, R., Polyakov, M. and R. Sadler (2014) Valuing public and private urban tree canopy cover. Australian Journal of Agricultural and Resource Economics 58(3):453–470

to remove 6.5 kg of Total Nitrogen (TN) per year[9]. In Melbourne, the offset value of nitrogen is $7,246 kgTN/year (capitalised), representing the mean cost of delivering the equivalent stormwater treatment.

- Avoided costs of premature tree death: In addition to the cost of replacing trees that die earlier or in drought conditions because of lack of access to water, there is also a loss in benefits delivered by the tree when a large canopy tree is replaced by a juvenile tree that takes many years to mature. City of Melbourne lost hundreds of trees prematurely during the Millennium Drought, and analysis shown that depending on the size of the original tree, this resulted in a loss of community benefits ranging from $900 - $26,000 per tree[10].

### Possible pilot sites for exploration

As the introduction of passive irrigation techniques will involve some capacity building and familiarisation for Hobson's Bay staff and contractors, it is recommended that a series of pilot sites are delivered in the first 1-2 years of the Plan. Pilot sites should implement a range of techniques to refine the approach and provide staff with a range of solutions to apply as part of a mainstreaming of the inclusion of passive irrigation.

[9] City of Yarra (2018) Embedding Green Infrastructure Economic Framework.

[10] E2Designlab (2019) Cost Benefit Assessment of Stormwater Harvesting for Princes Park. City of Melbourne

# Appendix 1 – Implementation schedule

# Appendix 2 – WSUD standard drawings

# Appendix 3 – Baseline Data

To understand how we will achieve our targets and understand where we should be planting, we have analysed the diversity of the existing street and park tree populations, existing tree canopy cover and change over time, urban heat and heat vulnerability.

The analysed data provides a starting point; however, it has limitations. Some of it is dated and there are gaps. The recent appointment of Council's first Inspection Arborist will significantly improve the quality of this data. A key responsibility of inspecting arborist's position includes carrying out an inspection of every street tree and updating the data, over the course of a two-year cycle. This will result in fully updated street tree inventory every two years.

## Street tree inventory data

According to the available data, there are 43,858 street trees planted within Council's street and road network. Each has been assessed to determine their species and useful life expectancy i.e. the amount of time that are tree is likely to remain in the landscape before it needs to be removed due to age, health and/or structure.

The 20 most common street trees in Hobsons Bay are listed below.

| Species | Count | % |
|---|---|---|
| *Eucalyptus leucoxylon* | 3567 | 8.1% |
| *Lophostemon confertus* | 3012 | 6.9% |
| *Callistemon viminalis* | 2309 | 5.3% |
| *Pyrus calleryana* | 1754 | 4.0% |
| *Prunus cerasifera* | 1442 | 3.3% |
| *Olea europaea* | 1403 | 3.2% |
| *Corymbia maculata* | 1378 | 3.1% |
| *Melaleuca armillaris* | 1350 | 3.1% |
| *Melaleuca styphelioides* | 1305 | 3.0% |
| *Acacia implexa* | 1303 | 3.0% |
| *Lagunaria patersonia* | 1227 | 2.8% |
| *Callistemon salignus* | 1193 | 2.7% |
| *Melia azedarach* | 1134 | 2.6% |
| *Lagerstroemia indica* | 1080 | 2.5% |
| *Melaleuca linariifolia* | 932 | 2.1% |
| *Ulmus parvifolia* | 899 | 2.0% |
| *Tristaniopsis laurina* | 814 | 1.9% |
| *Corymbia ficifolia* | 735 | 1.7% |
| *Agonis flexuosa* | 633 | 1.4% |
| *Angophora hispida* | 621 | 1.4% |

*Table 1: Top 20 most common street tree species in Hobsons Bay*

Thirteen of the top 20 most common street trees are native to Australia.

## Genus/family/species diversity considerations

*Eucalyptus leucoxylon* (Yellow Gum) is the most common street tree in Hobsons Bay. Current industry best practice suggests individual species should account for no more than between 5-10% of a

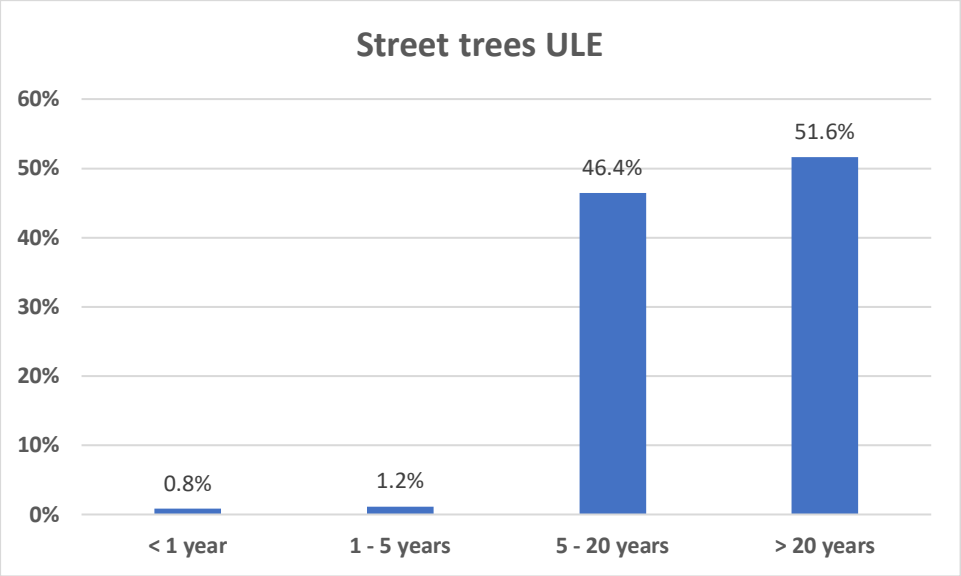
population depending on the region, climate and density. At 8.1%, the Yellow Gum it is starting to become over dominant. Ideally, this would reduce to approximately 5% of the whole population. This is best achieved by planting other species, rather than removing existing Yellow Gums.

The three most common Melaleucas make up 3,587, or 8.17% of the population. Whilst these are 3 different species, their dominance in the streetscape is evident. Again, Council should look to diversify away from these species in new plantings.

The top 10 species make up almost half of the street tree population (42%) which suggests the street tree population is possibly made up of too few species. The top 20 most common species represent 62%.

### Street tree ULE breakdown

The data shows that approximately half (52%) of Council's Street trees are likely to be longer lived, with little requirement for tree renewal due to age in the short to medium term. Forty-six percent of street trees have an expected useful life of 5-20 years and a further 2% have a useful life expectancy less than 5 years.




*Graph 1: Distribution of useful life expectancy across the street tree population.*

## Park tree inventory data

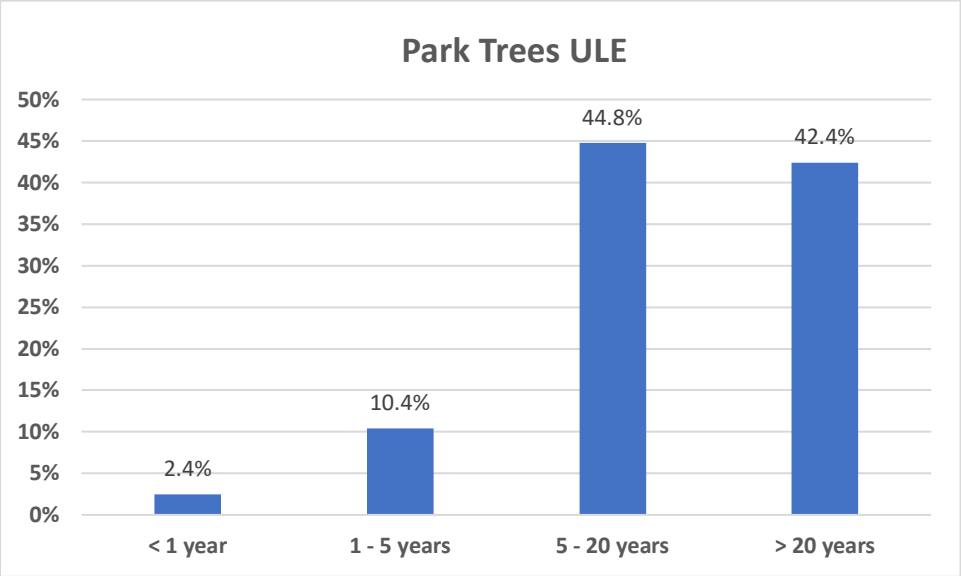
According to the available data, there are 35,389 trees recorded within Council's open space areas.

**20 most common park trees:**

| Species | Count | % |
|---|---|---|
| *Eucalyptus camaldulensis* | 3417 | 9.7% |
| *Eucalyptus leucoxylon* | 2131 | 6.0% |
| *Allocasuarina verticillata* | 2124 | 6.0% |
| *Corymbia maculata* | 1756 | 5.0% |
| *Eucalyptus cladocalyx* | 1579 | 4.5% |
| *Melaleuca armillaris* | 1522 | 4.3% |
| *Acacia implexa* | 1413 | 4.0% |
| *Eucalyptus melliodora* | 1226 | 3.5% |
| *Casuarina cunninghamiana* | 1183 | 3.3% |
| *Eucalyptus sideroxylon* | 1119 | 3.2% |
| *Casuarina glauca* | 954 | 2.7% |
| *Banksia integrifolia* | 809 | 2.3% |
| *Eucalyptus astringens* | 571 | 1.6% |
| *Melaleuca lanceolata* | 560 | 1.6% |
| *Callistemon viminalis* | 486 | 1.4% |
| *Eucalyptus polyanthemos* | 472 | 1.3% |
| *Melaleuca nesophila* | 469 | 1.3% |
| *Acacia melanoxylon* | 457 | 1.3% |
| *Allocasuarina littoralis* | 426 | 1.2% |
| *Angophora costata* | 425 | 1.2% |

*Table 2: Top 20 most common street tree species in Hobsons Bay*

## Park tree ULE breakdown




*Graph 2: The recorded Useful Life Expectancies of our park trees*

# Appendix 4 – Community consultation

## Consultation overview

Council received nearly 2,000 contributions from the community through social media channels, written submissions and on the Council's community engagement platform, Participate Hobsons Bay.

Council sought input on the draft canopy delivery plan by asking the community to identify locations for new tree plantings across the municipality; garnering community interest in how people would like to get involved and interact with the roll out of the Urban Forest Strategy in the future; by nominating streets for the green street program; and by providing nominations for the removal of the contentious *Lagunaria patersonia*.

Community consultation occurred between 14 October to the 24 November 2021 on Council's online engagement platform, Participate, throughout this period. Due to COVID-19 restrictions there was little opportunity to meet with community members face to face, however two webinars with presentations from industry leaders and Q&A sessions were held. The community consultation process was advertised extensively through Council's print and social media channels. This generated 1,379 online contributions, 493 social media and 39 email submissions.

## Engagement outcomes

The community have shown overwhelming support for the municipal areas identified or priority planting in the Canopy Delivery Plan.

Additional key areas identified for Council to focus on include industrial areas, open space along our foreshore (namely the coastal trail between Williamstown and Altona and the Esplanade and the Strand in Williamstown), carparks and the grass areas in Laverton. Kororoit Creek Road, all shopping strips and arterial roads within the municipality were also recognised as areas that could benefit from increased canopy cover.

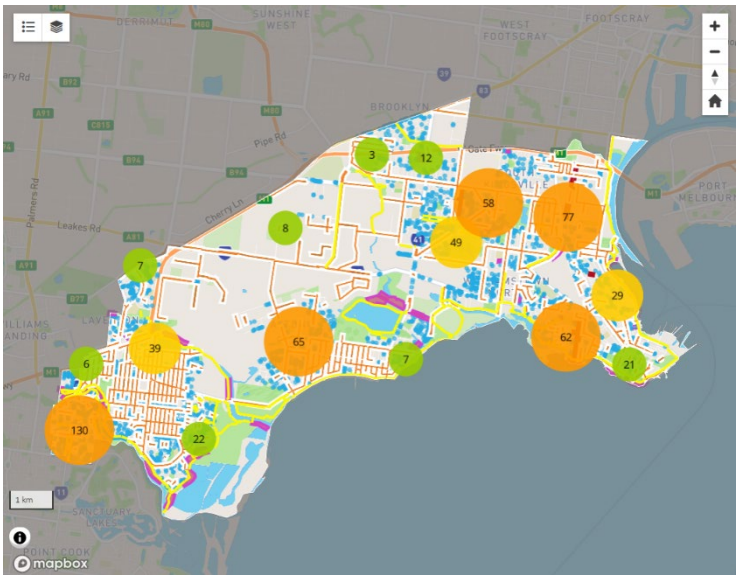



*Image 1: Locations where participants requested tree plantings.*

Participants identified 654 locations that require a tree with a significant request cluster, around Seabrook, Altona Meadows (North), Westona, Spotswood, the Rifle Range and the Strand. To a lesser extent, trees were also requested along the Esplanade (Williamstown), Brooklyn, Laverton and Seaholme.

Seeking representation in the Green Streets Program, 142 registers of interest were received with a fair representation across all suburbs in Hobsons Bay. As part of the consultation, Council received 391 nominations for the removal of lagunarias – the majority of which were from Altona (153 trees), Williamstown (113 trees) and Seaholme (48 trees). There is concern within some of the respondents that Council is conveying a mixed message in calling for locations of tree removal as well as planting additional trees. Additionally, some advocacy groups have made submissions calling for the preservation of Hobsons Bay's lagunaria population and sought further clarification on the replacement species to be used.