DRAFT Sandringham Urban Forest Precinct Plan 2023

Bayside CITY COUNCIL

Cover page: George Street Reserve

Inside Cover Page: Bay Road Heathland Sanctuary

Acknowledge of Traditional Owners

Bayside City Council acknowledges the Bunurong people of the Kulin Nation as the traditional custodians of the lands and waterways in the area now known as Bayside, and pays respect to their elders past, present, and emerging, as well as to all First Nations' communities who significantly contribute to the life of the area.

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Introduction to the Precinct Plans

In December 2019, Bayside City Council declared a climate emergency and has since prepared a *Climate Emergency Action Plan 2020 – 2025*. Climate change is real and without respecting our environment or changing the way we behave as a society, there will be even greater impacts than those already experienced. Expanding Bayside's urban forest is one way that we can help cool the urban environment in which our residents live.

As an action listed in the *Climate Emergency Action Plan*, the development of the Bayside *Urban Forest Strategy* was undertaken and ultimately adopted at its February 2022 Council Meeting. In addition, Bayside City Council has endorsed *Living Melbourne: Our Metropolitan Urban Forest* in 2019, which sets out regional targets for tree and vegetation canopy cover to be reached by 2030, 2040 and 2050.

The Vision of the Bayside *Urban Forest Strategy* is:

"Bayside's urban forest will protect and restore ecological systems with special concern for biological diversity and natural processes which will create a cooler and greener Bayside with enhanced amenity and character where people are connected to nature."

The overarching goal of the Bayside Urban Forest Strategy is to increase the urban tree canopy cover from the current 16.01% to 30% by 2040, and to continue this increase into the future.

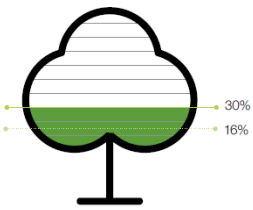
The Bayside *Urban Forest Strategy* identifies a range of actions to be undertaken over the next four years. A key focus is the preparation of Precinct Plans for each suburb in Bayside to guide tree planting and greening at a local level. Precinct Plans are subsidiary documents to the Bayside *Urban Forest Strategy* and form a key component of the strategy's implementation. Bayside is made up of 9 suburbs and the Urban Forest Precinct Plans will be prepared for each. They will provide tailored direction for increasing canopy cover and urban forest outcomes into the future

Tree and vegetation (understorey) cover data referenced in these Precinct Plans has been derived from the Victorian Government's aerial imagery and has been analysed by Council's GIS (Geographical Information System) to determine an approximate level of tree and vegetation cover per suburb.

What is an urban forest?

The urban forest encompasses all the trees, shrubs, grasslands, other vegetation and the soil and water that support them – within Bayside, on both public and private land. The urban forest incorporates vegetation in streets, parks, gardens, plazas, campuses, river and creek embankments, wetlands, railway corridors, community gardens, home gardens, green walls, balconies, and roofs.[1] Fauna is an important component too, with complex interrelations between animals and plants helping to maintain the urban forest.

Bayside's urban forest is made up of native, indigenous and exotic trees, shrubs, grasslands and other vegetation, growing on public and private land, and the soil and groundwater that support them. This includes vegetation in parks, reserves, private gardens, along railways, waterways, main roads, and local streets, and on other green infrastructure such as green walls and roofs. The urban forest provides habitat to a wide range of fauna.



The overarching goal of the Urban Forest Strategy in Bayside is to increase the urban tree canopy cover from the current 16.01% to 30% by 2040, and to continue this increase into the future.

[1] Resilient Melbourne, Living Melbourne Strategy, 2018, available at: https://resilientmelbourne.com.au/wp-content/uploads/2019/09/LivingMelbourne_Strategy_online3.pdf

The Urban Forest Strategy

Principles:	Strategies:
1. Increase	1.1 Consider the individual needs of Bayside's suburbs and ensure that the approach to increasing canopy cover and urban forest outcomes is tailored to the conditions of each area. 1.2 Reframe Council's approach to major capital and infrastructure renewal projects as opportunities to increase urban forest outcomes. 1.3 Through the Bayside Planning Scheme, require development to provide increases to the number of canopy trees provided.
2. Healthier ecosystems	2.1 Increase the tree and vegetation canopy cover that is of a diverse range of species across Bayside. 2.2 Ensure humans and wildlife can simultaneously and safely access densely vegetated areas, streets and reserves.
3. Monitor	3.1 Improve, implement and facilitate Council processes and procedures to assist the monitoring of the urban forest
4. Maintain	4.1 Ensure the tree removal process is transparent and equitable 4.2 Reframe our planning and policy framework to give greater priority to existing trees and vegetation when siting new development and ensuring the longevity of any new trees or vegetation by ensuring it is appropriately sited nearby surrounding hard surfaces or infrastructure. 4.3 Enhance Council's ability to retain existing trees on private property through increased regulation of tree removal. 4.4 Support the maintenance and retention of trees on public land.
5. Learn and Celebrate	5.1 Increase Council's capacity to provide advice and build community sentiment to tree planting in Bayside. 5.2 Continue to build upon Council's green image and utilise this platform to advocate and partner with key stakeholders to provide greener outcomes across Bayside, metropolitan Melbourne and Victoria. 5.3 Leverage from the strengths of our network of volunteers, community groups, State Government departments, neighbouring local governments, academics and professionals to support the delivery of community education, information sharing and creating partnerships.

Key Issues

Environmental challenges

Impact of climate change: All trees, including trees on private property, are being affected by climate change. It is important that Council continues to encourage residents to plant climate-resilient trees and vegetation on their property and nature strips. To support this, the provision of readily accessible information and useful tips on how to best plant these types of trees and vegetation will be of great value. Council will also ensure its species palette for streets and parks include the use of more climate-resilient trees and vegetation.

Tree health, age, Useful Life Expectancy, and species diversity: *The Bayside Urban Forest Strategy* defines key issues across Bayside's urban forest, including climate change, insufficient growth space and natural characteristics (disease, insects, etc.) being significant contributing factors to the health and sustainability of tree coverage across Bayside. This Precinct Plan identifies locations of trees that are in poor health, are reaching senescence and has low useful life expectancy so that appropriate action can be taken in due time.

Tree survival rate: A high proportion of street and park trees that have been planted have struggled to survive either during or after their initial period of maintenance (first 2 years). Expanding the urban forest and increasing tree canopy coverage will be challenging, especially if high tree attrition continues to occur.

Developmental challenges

Trees on private property: Trees on private property make up a significant proportion of Bayside's urban forest. The removal of trees on private property is a significant and challenging issue to address as the management of private trees, to some extent, falls into the hands of individual property owners. Partnering with the private owners and undertaking a precinct-based approach to the protection, retention and enhancement of the urban forest will allow Council to consider the local opportunities for vegetation and tree plantings, process improvements and other locally specific issues.

Planning permits involving vegetation removal: There are several mechanisms currently in place within the Bayside Planning Scheme that seek to protect vegetation in certain areas of Bayside and require a planning permit to be granted for tree or vegetation removal. These mechanisms include but are not limited to the Vegetation Protection Overlay (VPO), Significant Landscape Overlay (SLO), Heritage Overlay (HO) and Erosion Management Overlay (EMO).

Surrounding infrastructure: Street trees are located alongside public and private assets that include footpaths, roads, fences, overhead powerlines and underground services. This pressure is similarly felt on private property for medium and high density developments where there are competing uses and infrastructure to be sited. While there are management and design techniques that can mitigate most of these issues, it is not always easy, particularly with established trees. Established trees have larger roots that can impact footpaths and roads, creating potential hazards that need to be fixed.

Social challenges

Older people, children, and people with disabilities:
More vulnerable members of the community include older people, young children and people with disabilities and their carers. While trees bring many benefits, they can also create challenges. Maintenance of trees can be challenging for older people or people living with disabilities. Particularly large trees that overhang private property or within the property that can become hazardous through debris that create trip and slip risks. Aging and/or disability can prevent some residents from being able to manage the debris from trees, requiring the use of private gardening services.

Bayside Council's *Disability Action Plan 2021-2025* states that over 14,000 people living in Bayside have a disability and over 4,000 people need assistance in their day-to-day lives. This assistance is required because of disability, long-term health conditions or old age.

There are also various benefits that leaf debris and plant litter provide to the natural environment. Plant litter provide shelter and food for many animals and assists in natural regeneration and the growth of new seedlings. Plant litter is also vital as it supplies nutrients to the soil and reduces soil erosion.

Safety: There are a number of elements that contribute to people feeling unsafe, including low visibility and lack of passive surveillance from nearby residents and/or other groups. Within streets, Council plants and maintains trees to ensure there is no foliage to block sight lines. Trees can contribute to this problem if not managed correctly as they have the potential to block visibility from the street if planted too closely together.

What will the Precinct Plans achieve?

A key action from the Bayside *Urban Forest Strategy* is the preparation of Precinct Plans. Each Precinct Plan will be informed by community consultation and will provide set targets to respond to the individual needs, challenges, and aspirations of the locality.

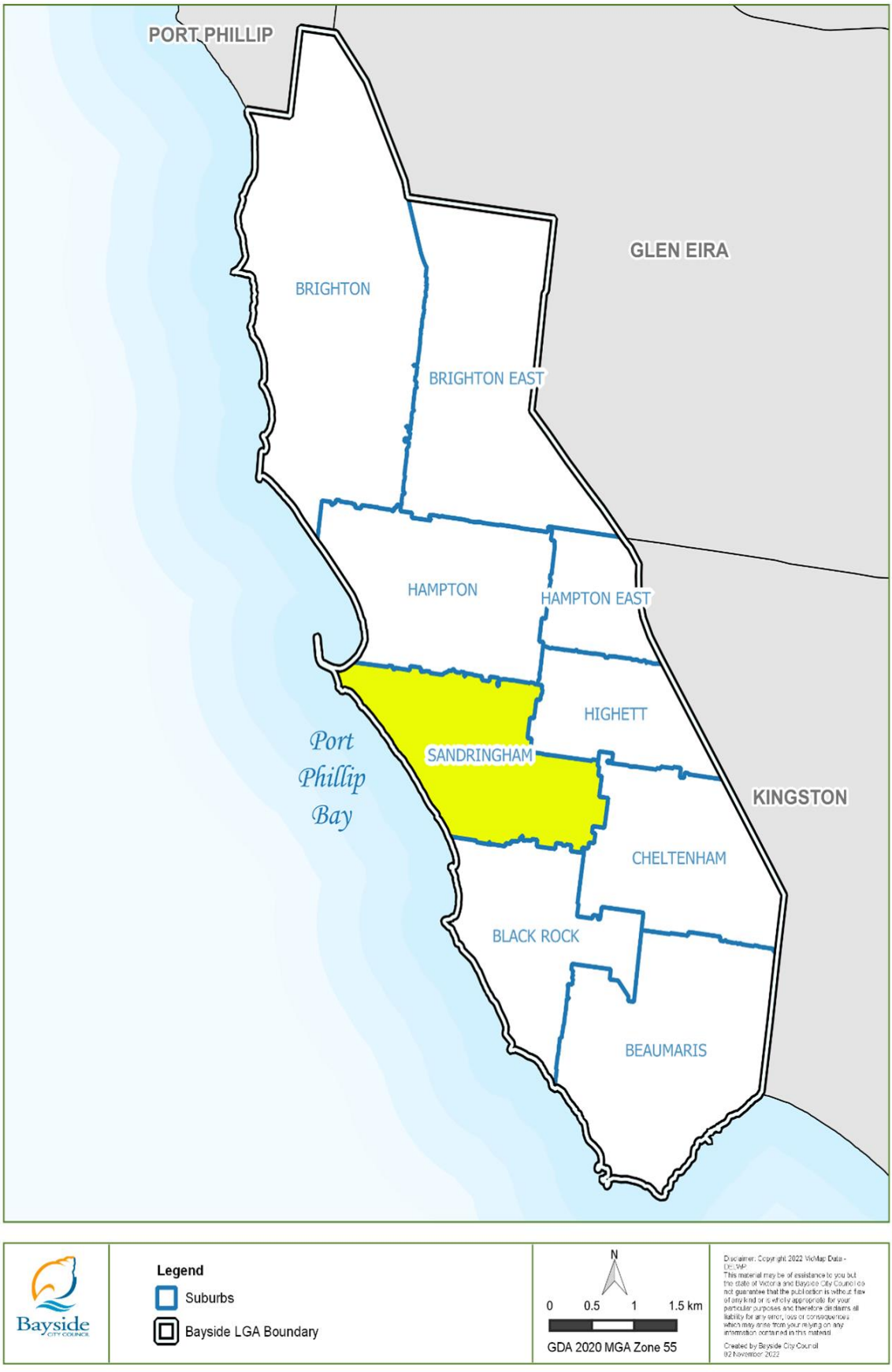
The Precinct Plans will help guide the implementation of the Bayside *Urban Forest Strategy* in Bayside and direct Council's focus to areas with low vegetation, to protect and enhance neighbourhood character and help achieve the objectives of the Bayside *Urban Forest Strategy.*

The prime objective of the Precinct Plan is to prioritise areas of greatest need, including areas with the lowest existing percentage canopy tree cover, as well as areas that are strategically located to mitigate urban heat island effects (including within major activity centres that are experiencing increased density and construction activity), areas of declining canopy or aging trees, highly trafficked pedestrian routes and gaps or vacancies in public planting.

Within this document, specific direction is provided on the selection of appropriate trees for the precinct. The Precinct Plans are performance-based in that they establish the desired outcomes for streets but do not prescribe specific species for each location.

High-performance guidelines have been developed to support the Precinct Plans with case studies and detailed guidance on how to achieve outcomes in street, parks and nature strips. Park and significant boulevard trees will be planted using existing master plans and site- specific plans to respond to the individual needs, challenges, and aspirations of the locality. This document focuses on the suburb of Sandringham.

Map 1: Sandringham's location within Bayside



Suburb Profile – Sandringham

Information in this Suburb Profile was accessed from Profile.id which utilises 2021 census data from the Australian Bureau of Statistics and population, household and age structure forecasts.

Population:
Sandringham is a changing suburb, both physically and demographically. Sandringham is currently experiencing moderate population growth, having increased by 788 people, from 10,138 in 2016 to 10,926 in 2021. It is forecasted that the population will continue to slowly grow to 11,753 (increasing by 8.7%) by 2041.

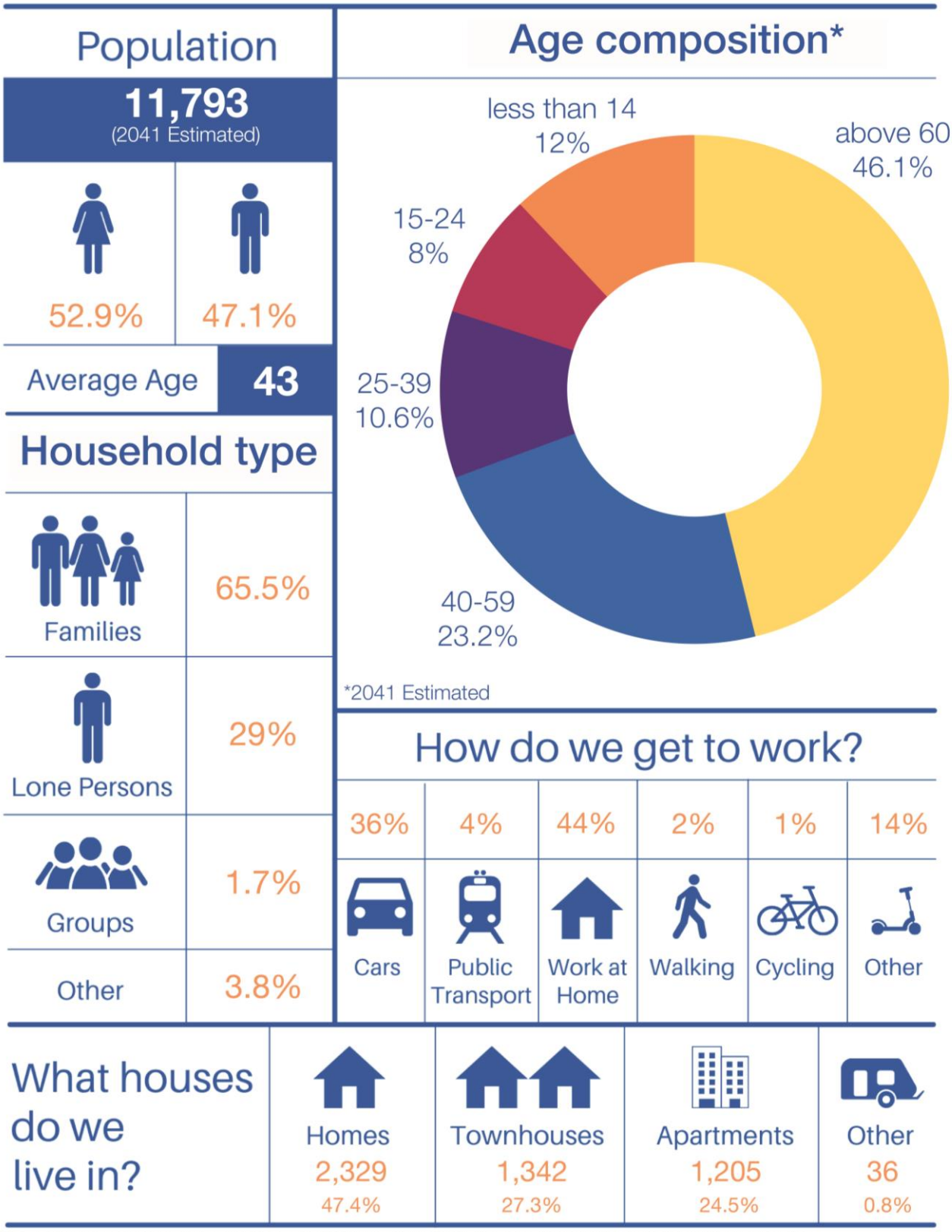
Age structure:
By 2041, it is anticipated that over 46.1% of residents in Sandringham will be above 60 years of age, in comparison to the current 29.2% (2021). It is expected that older populations may have greater difficulty maintaining gardens. Future housing will need to accommodate for an ageing population by providing a diverse housing typology, with a particular focus ensuring lone person households are accessible and adaptable for all ages. The provision of higher density housing provides residents living alone or with limited abilities the opportunity to live in smaller properties that require minimal garden maintenance.

Residential developments:
Residential development forecasts assume the number of dwellings in Sandringham will increase by an average of 56.5 dwellings per annum to 5,964 in 2041. It is anticipated these new dwellings may come in the form of low-rise apartment buildings and subdivision of existing lots into units. While population growth and housing growth is moderate, it is a factor contributing to the decrease in permeable surfaces to plant trees. Without the space, there is less ability for new trees to growth to maturity and provide large canopy.

Climate change:
The effects of climate change are anticipated to significantly impact tree canopy and vegetation. Due to climate change, there will be an increase in severe weather events including more intense rainfall over summer, leading to more frequent and severe flooding events. Trees can play an important role in mitigating the impacts of a flooding event. The soil under trees and vegetation absorbs water as opposed to urban impervious surfaces where the water just runs (such as pavement and roofs). The leafy canopy of trees also spreads out the rainfall and slows it down. This gives more time for the soil underneath to absorb the rainfall, resulting in less and slower runoff. As a result, the risk of flooding is reduced. When flooding does still occur, the volume and speed of the flood will be reduced. This will also reduce the need for larger stormwater gutters and pipes.

Mode of transport:
In 2021, 35.8% of Sandringham residents travelled to work by car compared to 49.7% in Greater Melbourne. Multiple modes of public transport are available, with trains accessible at Sandringham Station in Sandringham Village as well as bus routes servicing the suburb.

Sandringham Forecast for 2041



Note: Sandringham suburb population and age data is a 2023 estimation for 2041, which was retrieved from the Australian Bureau of Statistics.
All other data shown was retrieved from profile.id (2021).

Aerial of Sandringham

The vision for Sandringham's urban forest
Sandringham's established urban forest features a rich park network and avenues of street trees. This network will be enhanced with new indigenous plantings, providing the community with health and wellbeing benefits along with the natural beauty of nature within an urban setting.

Planning Controls applying to Sandringham

Vegetation Protection Overlay
Sandringham contains multiple areas protected by the Vegetation Protection Overlay Schedule 1 (VPO1), Schedule 2 (VPO2) and Schedule 3 (VPO3), which aims to protect areas of significant vegetation. VPO1 is found along the foreshore in Sandringham, and it aims to retain, protect, and enhance vegetation in coastal areas. Along the Sandringham Foreshore, remnant vegetation forms an integral component of vegetation character and overall ecosystem biodiversity. Biodiversity conservation of remnant vegetation is an essential component of responsible environment and natural resource management and is fundamental to the protection of ecosystems an environmental health.

VPO2 applies specifically to remnant bushland reserves that are discontinuous, landlocked and surrounded by either residential or industrial development, aiming to maintain the quality of the remaining fauna habitat and to create additional habitat in bushland areas. In Sandringham, VPO2 applies to the bushland areas located at George Street Reserve / Merindah Park and Bay Road Heathland Sanctuary. The vegetation of Bayside's remnant bushland reserves is significant for its diversity and environmental value in providing habitat areas of regional, state, national and worldwide significance. Permits are therefore required to remove, destroy, or lop any native vegetation in areas that are covered by the VPO2 (unless it is undertaken by or on behalf of the public land manager to maintain or improve the area as a flora and fauna conservation site).

A small section of Sandringham south of Edward Street and west of Bluff Road is covered by the VPO3 which aims to retain the amenity, aesthetic character, and habitat value of vegetation within the area. Aside from the protection of indigenous vegetation, it also seeks to promote the regeneration and planting of vegetation in Sandringham. Permits are required to remove, destroy, or lop any vegetation that is native to Australia in areas that are covered by the VPO3.

As VPO1 and VPO2 both apply to public land, the threat of loss of trees and vegetation is low. VPO3 however applies to both public and private land meaning Council has less control over whether trees are removed on land controlled by the Overlay.

VPO3 controls: permit removals
VPO3 aims to retain the amenity, aesthetic character, and habitat value of vegetation within the area by seeking the protection of a number of indigenous species that are of local significance. Under VPO3, a planning permit is required to remove, destroy, or lop any vegetation native to Australia. This does not apply to:

- The removal, destruction or lopping of vegetation which is less than 2 metres high or has a single trunk circumference of less than 0.5 metre at a height of 1 metre above ground level.
- The pruning of vegetation to remove that part of any branch which overhands an existing dwelling or is within 2 metres of an existing dwelling.

Benefits of strengthening the VPO3
As identified as an Action of the Bayside *Urban Forest Strategy*, Council is seeking to strengthen the Vegetation Protection Overlays to increase the effectiveness of the policy tool and maximise the retention of protected vegetation.

Any expansion of the VPO would help maintain existing trees and enhance Black Rock's leafy character, provide relief from urban heat island effects, filter air pollutants and better support the community's health and lifestyle.

Community feedback for VPO3
Council's community feedback survey provided an insight into the community's views on VPO controls. Council proposed to strengthen the VPO to protect more vegetation including non-native existing canopy trees, which 76.1% of respondents supported. The survey also captured some VPO related suggestions that have been summarised below:

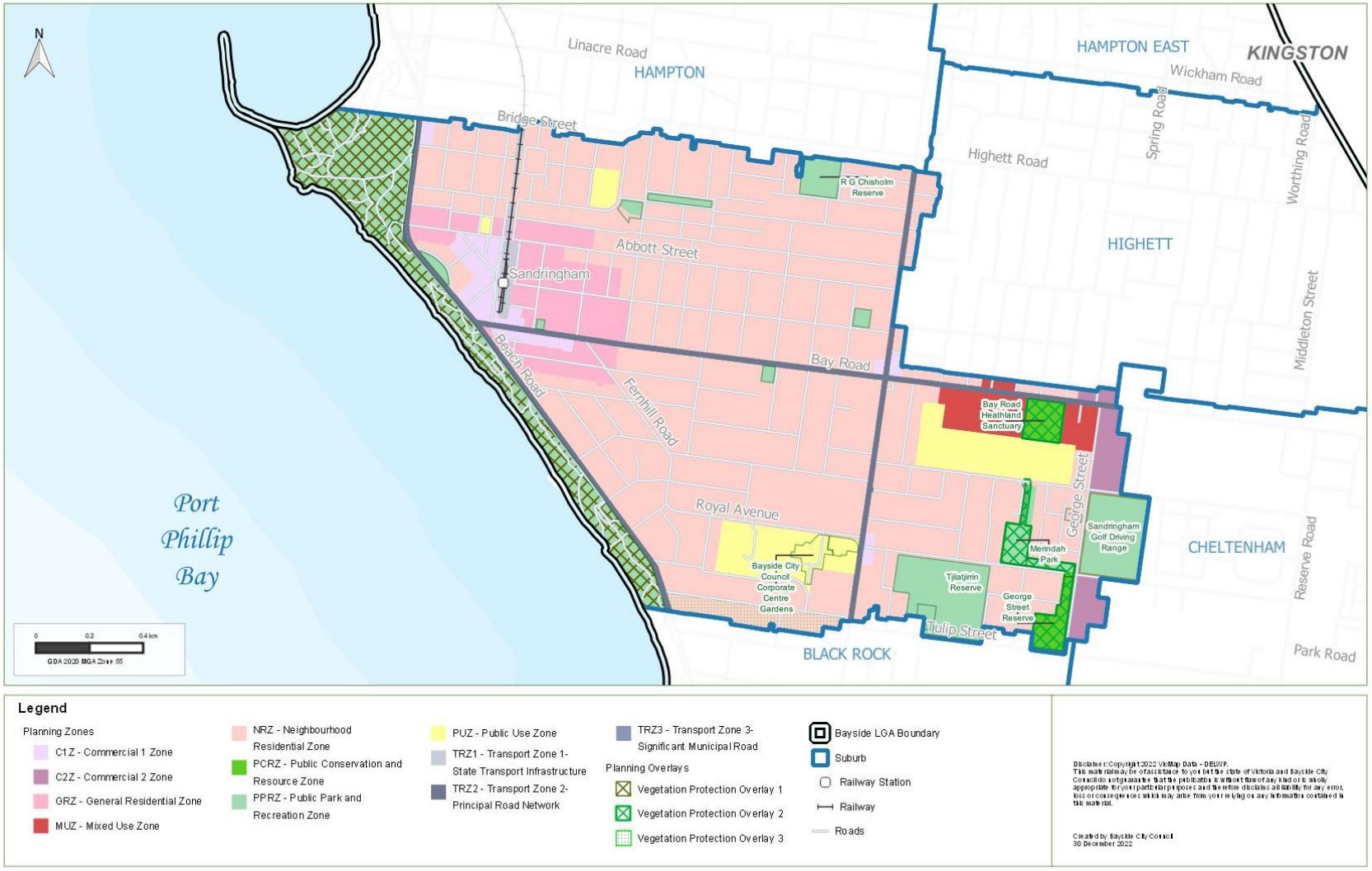
- VPO protections should be implemented across the whole of Bayside, particularly in Cheltenham, Highett and Hampton East, which already have the least tree canopy coverage in Bayside.
- Improve communication and education around VPO protections for residents and potential buyers in VPO affected areas.
- Review and strengthen the wording of VPO decision guidelines to prioritise tree retention over replanting.
- Undertake habitat studies to support the VPO habitat decision guidelines.
- There needs to be stricter enforcement of the VPO controls.
- The process of removing a VPO protected tree is time consuming and expensive. This discourages residents from planting native trees in the first place due to the issues it could cause in the future.

Residential and Commercial zones
The majority of Sandringham's residential land is zoned as Neighbourhood Residential Zone (NRZ) which is applied to areas where there will be minimal residential growth. The NRZ has a maximum building height of two-storeys. Residential growth in these areas mostly take the form of dual occupancy, the redevelopment of detached dwellings or small multi-dwelling developments.

Residential land within the Sandringham Village Major Activity Centre is zoned General Residential Zone (GRZ) which is applied to areas where there will be moderate residential growth. The GRZ has a maximum building height limit of three storeys. This allows for moderate density development including dual occupancy, unit developments and low-rise apartment buildings. Much of the core of the Sandringham Village is within the Commercial 1 Zone (C1Z) along Bay Road, Melrose Street, Waltham Street and Station Street. Commercial uses within Sandringham Village are mostly retail, with several restaurants and takeaway shops.

Neighbourhood Amenity Local Law 2021
Local Laws are laws utilised by Council to respond to issues and community needs within a local context. Within Bayside's Local Laws are guidelines around trees on private land. The law determines that any tree on private land is protected if the *"single or combined tree trunk circumference is 155 centimetres or more at one metre above ground level."* If a tree is protected it means that a permit must be acquired from council in order to remove or prune it. The same permit requirements apply to any tree on Council's Significant Tree Register.

Map 2: Planning Controls in Sandringham



Sandringham Neighbourhood Character

Sandringham attracts residents and visitors alike with its appealing character which features an array of architectural styles, an extensive foreshore, a large 'village' style shopping centre and an array of architectural styles. As population continues to grow, it is important that new development respects, supports and enhances the cherished characters of their surrounding neighbourhood. Clause 15.01-5L 'Bayside preferred neighbourhood character' in the Bayside Planning Scheme provides general objectives and policy guidelines for neighbourhood character precincts that have been set across the municipality.

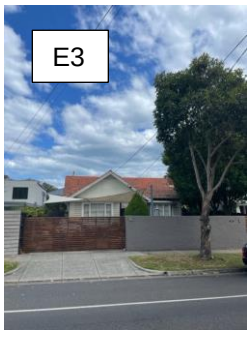
The western side of Sandringham (F1) contains predominantly Federation and Inter-War dwellings along with infill development from the 1950s onwards. Development along Beach Road is an eclectic mix of contemporary dwellings. Buildings have a consistency of setbacks within the streetscapes which have a lightness due to the frequent use of weatherboard or lighter coloured materials. Newer dwellings are often constructed of heavier materials such as brick. Gardens in this precinct are established with some areas having frequent large native trees, which creates a casual bayside setting, enhanced by native street trees.

The central area of Sandringham (E3 & E4) contains buildings for a range of eras, with a prevalence of California Bungalow style dwellings in the north and post WWII dwellings in the south. The central section of Sandringham also has examples of other development eras such as Inter-war and contemporary dwellings. The north has great examples of strong avenue street tree plantings, providing a green leafy street setting.

The area east of Bluff Road (G1 & G2) contains post-war dwellings reflecting across a variety of architectural styles. There are some pockets of more recent two storey development, some of it reproduction style. Gardens in this area are predominantly low lying, with exotic shrubs and lawn, occasional large trees providing a backdrop of vegetation.

Sandringham Beach Park is of Regional Significance as a predominantly intact belt of native coastal vegetation and associated gardens. Remnant belts of native vegetation exists along the length of Sandringham Park, listed on the Register of the National Estate. These belts are dominated mainly by *Coast Banksia* and *Coast Tea Tree*.

Examples of neighbourhood character across Sandringham.



Map 3: Sandringham Neighbourhood Character Precincts

The Urban Forest of Sandringham

In Sandringham, there is approximately 17.01% of tree canopy cover and 17.9% of understorey cover (2019). The urban forest of Sandringham is of a reasonable size and diversity, mainly consisting of native species, with some exotics present. Street trees are typically large scale and have been planted as avenues on many of the residential streets. Private gardens contain a mix of both native and exotic species. Together with distinctive parks, reserves and an extensive foreshore environment, Sandringham has a unique urban forest character.

History

Before European Settlement, Black Rock was inhabited by the Bunurong people of the Kulin Nation. In 1852, Sandringham was occupied by land speculator, Josiah Holloway, who attempted to sell land allotments in an estate named "Gypsy Village." In 1881 Gipsy Village had grown to have a population of 183 people, which grew further following the extension of the train line to Sandringham in 1887.

A landmark on Sandringham's foreshore is the band rotunda, situated directly opposite the Sandringham Hotel on a clifftop overlooking the beach. Built in 1926, the rotunda is surrounded by palm trees, lawns and gardens, with scenic views available from its upper level. Large palm trees also form an iconic character in the Sandringham Village Activity Centre.

By 1999, public space vegetation became a dominant component of Sandringham's vegetation character, with street trees typically being single, native species plantings, supplemented by some exotic avenue plantings. Public open spaces and reserves generally contained remnant indigenous vegetation, particularly around the boundary of sporting fields.[2]

Contemporary issues impacting Sandringham's urban forest

There are a number of contemporary issues impacting the urban forest of Sandringham which are causing a decline in canopy cover. These issues are associated with climate change, and its flow on effects such as the urban heat island effect and erratic weather events, are impacting and damaging the health and viability of tree and ground cover vegetation. Increasing tree and vegetation cover will help alleviate rising temperatures and dramatic changes in climatic conditions by providing shade and cooling effects.

For new developments on private and public land, Council considers all possible design solutions and ensures the application has met all relevant criteria. However, even with these measures in place, the removal of tree and understorey vegetation is an issue facing the entirety of Bayside and is a consequence of the increases in infill development which poses limitations on the provision of the permeable surfaces required for tree planting.

The removal of established gardens, large trees and understorey plantings is contributing to a loss of Sandringham's distinct vegetation character and is impacting biodiversity. Other issues impacting the urban forest include:

- Trees nearing the end of their useful lifespan can also create safety issues particularly for more vulnerable residents. As a tree becomes older it loses its strength as it is prone to falling or losing limbs. Council monitors the health of its trees to ensure any hazardous trees are removed. Council, however, cannot monitor the health of trees on private property as that is the responsibility of the landowner.

- Vandalism of public and private trees is another issue contributing to tree canopy loss across Bayside. Illegal removal, lopping or poisoning of trees occurs throughout Bayside by

[2] Bayside City Council, 'Vegetation Character Assessment – City of Bayside' by John Patrick Landscape Architects Pty Ltd, 1999.

members of the public for personal gain. A hotspot of this activity is along Beach Road where canopy trees are vandalised to gain better views of Port Phillip Bay. Another common example is the vandalism of trees due to the build up of leaf debris upon or near private property. Unpermitted removal, destruction, pruning and interference with trees and vegetation is illegal in Bayside. To deter vandals, Council has adopted a strong stance on vandalism and has installed signs and advertised on social media platforms an offering of rewards for information when and where an act of vandalism has occurred.

- Trees and vegetation play a vital role in mitigating coastal erosion and protecting Sandringham's foreshore. Removal (whether it be legal or illegal) of trees along the foreshore only further impact the environment and the ability to reduce coastal erosion. Legal removal of trees upon the foreshore should only be undertaken where considered necessary and appropriate.

Image 1: Trees in Sandringham Village Reserve

Image 2: Large tree in Royal Avenue

Image 3: Sandringham Foreshore vegetation

Tree canopy cover across Sandringham and various land uses

As indicated previously in this document, Sandringham has approximately 17.01% tree canopy cover and 17.9% understorey cover (2019). Of the 17.01% of tree canopy cover within Sandringham:

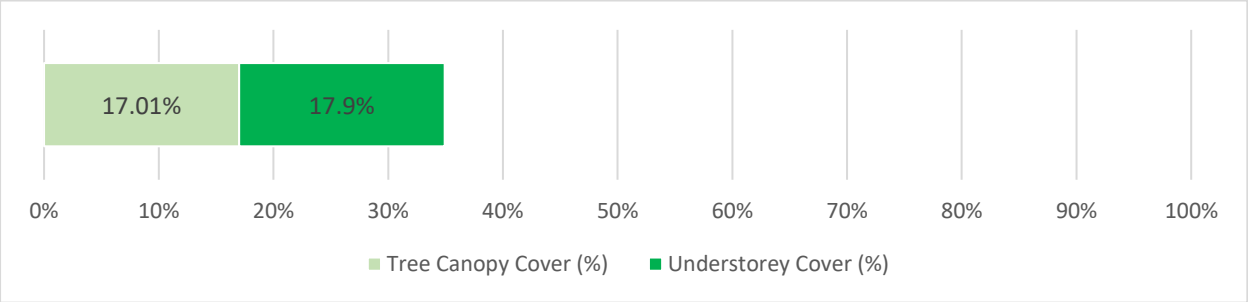
- 53.1% is located upon private residential and mixed-use areas;
- 25.62% is located upon streets;
- 8.95% is located upon open spaces and reserves;
- 8.32% is located upon 'other'; and
- 4.01% is located upon public use areas.

The number of trees on private land is of a reasonable amount in comparison to other suburbs within Bayside. Through encouragement and enhancement of planning controls on private land, it is hoped canopy cover can increase with time. Priority should also be placed on enhancing tree canopy cover on streets and open spaces and where possible, upon land within the public use zone.

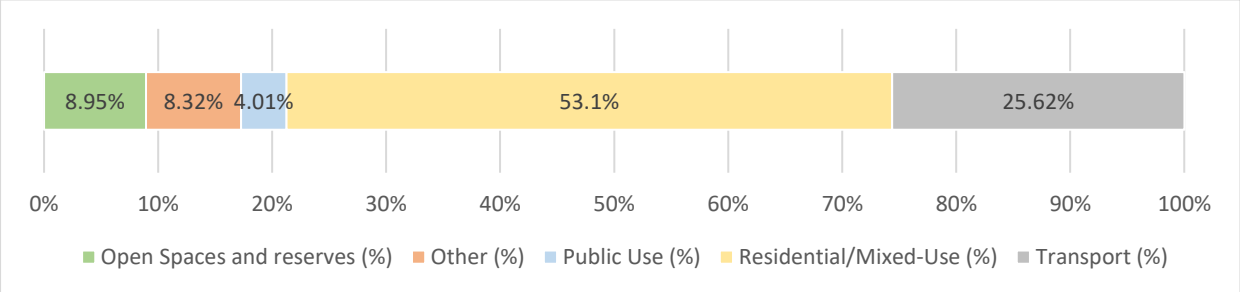
In 2022, there were 7,265 trees managed and maintained by Council throughout Sandringham, with 5,277 street trees, 1,980 park trees and 8 other location-specific trees. Monitoring the health and growth patterns of these trees is important to ensuring that Council understands how local conditions, affect tree and understorey plant populations to effectively plan for future planting programs and strategies across Sandringham.

In Sandringham, there is approximately 17.01% tree canopy cover and 17.9% understorey cover. The suburb of Sandringham will be a major contributor towards achieving Councils goal of 30% tree canopy cover by 2040 and the enhancement of understorey cover within the public and private realm.

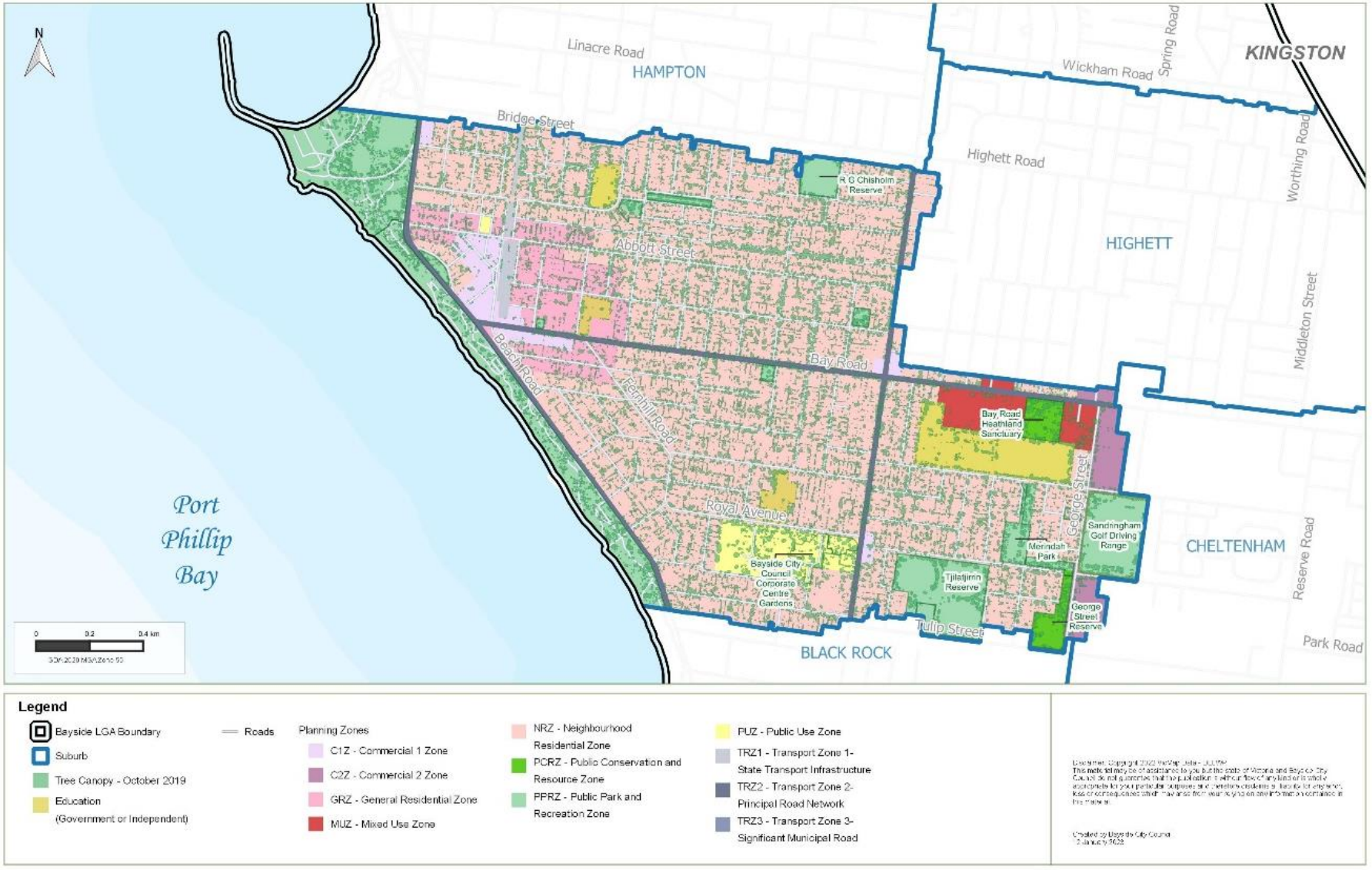
Graph 1. Total tree canopy cover in Sandringham



Graph 2. Tree canopy cover over various land uses in Sandringham



Map 4: Tree Canopy Cover across Sandringham



Council-managed Tree Population

Useful life expectancy (ULE)

Estimating the useful life expectancy of the council-managed tree population is regularly undertaken and can inform the future management options for tree's that have limited useful life left. The assessment of a tree's useful life expectancy provides an indication of health and tree appropriateness and involves an estimate of how long a tree is likely to remain in the landscape based on species, stage of life (cycle), health, amenity, environmental services contribution, conflicts with adjacent infrastructure and risk to the community.[3] It is not a measure of the biological life of the tree within the natural range of the species, but more a measure of the health status and the tree's positive contribution to the urban landscape.[3]

There are approximately 373 (4.3%) of council-managed trees that may not survive in Sandringham after the next 10 years. By 2040, a total of 5,264 (76.6%) council-managed trees may have reached the end of their useful life expectancy and will need to be replaced.

Where trees reaching the end of their useful life expectancy have been assessed and are no longer providing a benefit to the surrounding habitat, removal may be required. Where it has been found that trees reaching the end of their useful life still provide benefit and habitat, it should be retained as habitat tree as per the Tree Risk Assessment Tool (TRAQ).

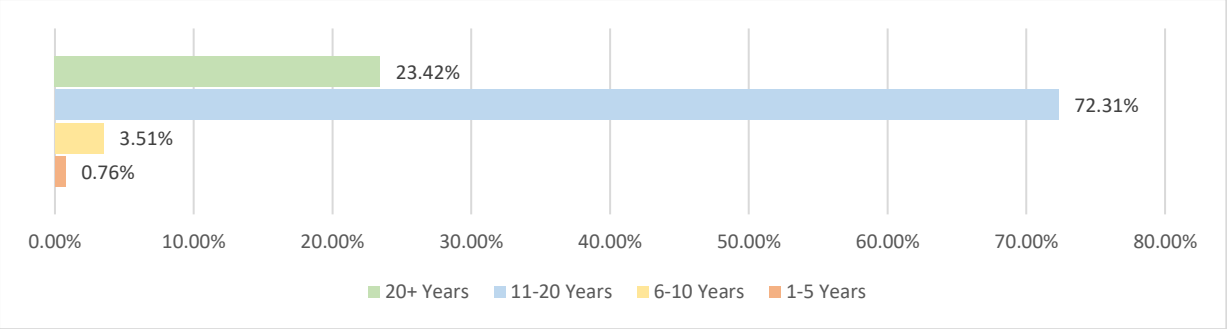
Where replacement of trees is required, new trees should be selected based on the existing surrounding vegetation, landscape character and ability to enhance habitat. Where there is a large concentration of trees required for replacement, this should be undertaken intermittently to enable varying ages and maturity.

The locations where there is a high concentration of trees which may require replacement within the next 10 years include Spring Street (section of Merindah Park), Picnic Gardens and the Abbott Street railway crossing (Map 5).

In Sandringham, approximately 4.3% of council-managed trees may not survive after the next 10 years.

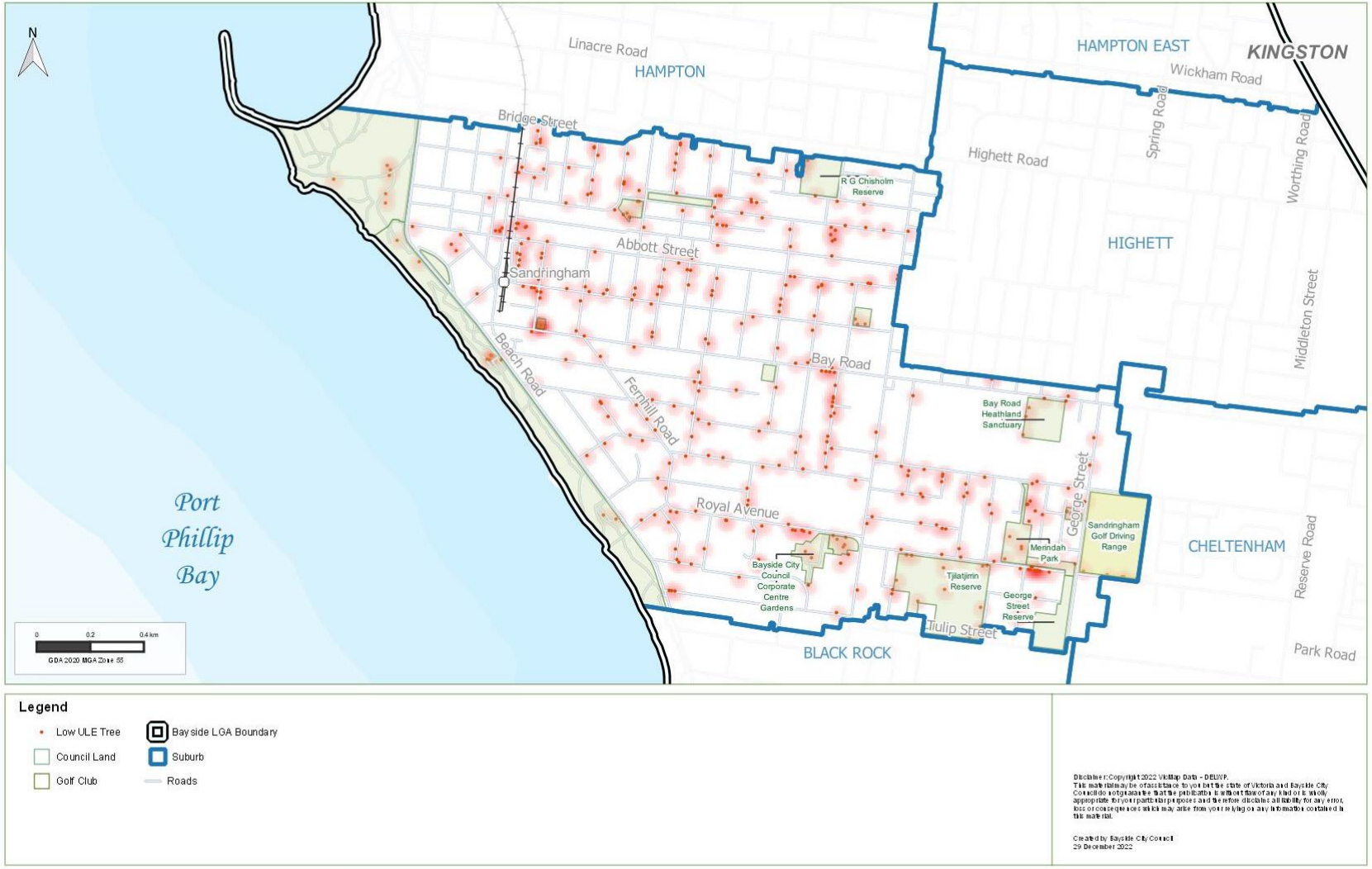
Where it has been found that trees reaching the end of their useful life still provide benefit and habitat, it should be retained as habitat tree as per the Tree Risk Assessment Tool (TRAQ).

Graph 3. Useful life expectancy of Council-owned trees in Sandringham



[3] Department of Health and Human Services, 'Arboricultural Assessment Holland Court, Flemington– 3.7 Useful Life Expectancy(ULE)', 2017, Available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0011/105500/SHRP-SH1-15.a.-Tree-Logic-Rpt_Holland-Court,-Flemington.pdf

Map 5: Location of trees with low ULE in Sandringham



Tree health and age

Approximately 82.8% of the council-managed street and park trees in Sandringham were classified as being in good health, while 7.8% were classified as excellent. Trees that are classified as poor, dangerous or dead make up for 1.8% of street and park trees in Sandringham.

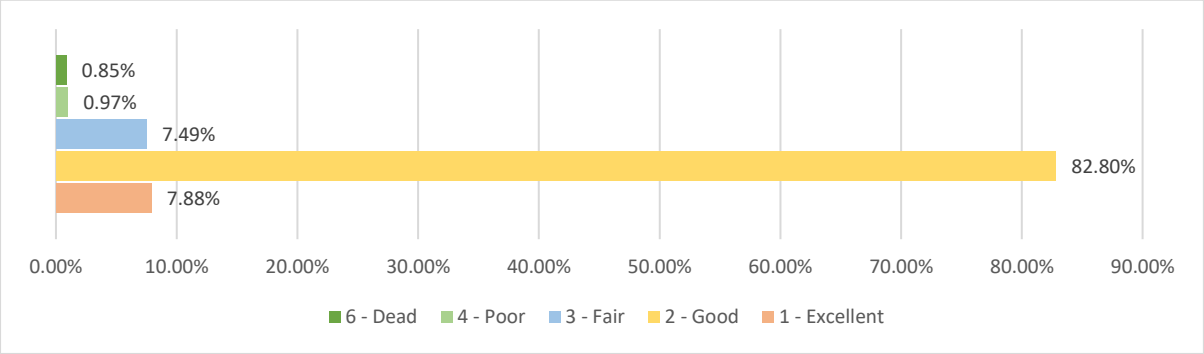
There is a reasonable level of diversity in the age of trees within Sandringham. As seen in Graph 5, the highest proportions are new and semi-mature, making up 38.3% and 32.1% respectively.

Map 6 provides the location of those trees that are in poor health, dangerous or dead. Trees that have been identified as dead are mostly located in Merindah Park, Royal Avenue Reserve and Bamfield Reserve Park, with an extremely high concentration in Merindah Park. There are also a number of dead street trees across Sandringham, namely Keats Street and Queens Square. Through the continued use of the Tree Risk Assessment Tool, Council will retain those trees and vegetation that provide a service to the ecosystem.

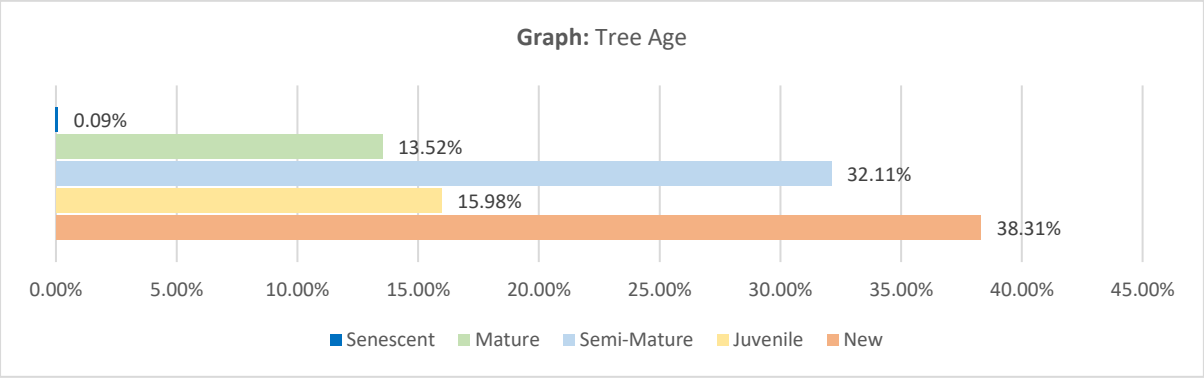
In 2022, 82.8% of the council-owned street and park trees in Sandringham, were classified as being in good health. Trees that are classified as poor, dangerous or dead make up for 1.8%.

Through the continued use of the Tree Risk Assessment Tool, council will retain the trees and vegetation that provide a service to the ecosystem.

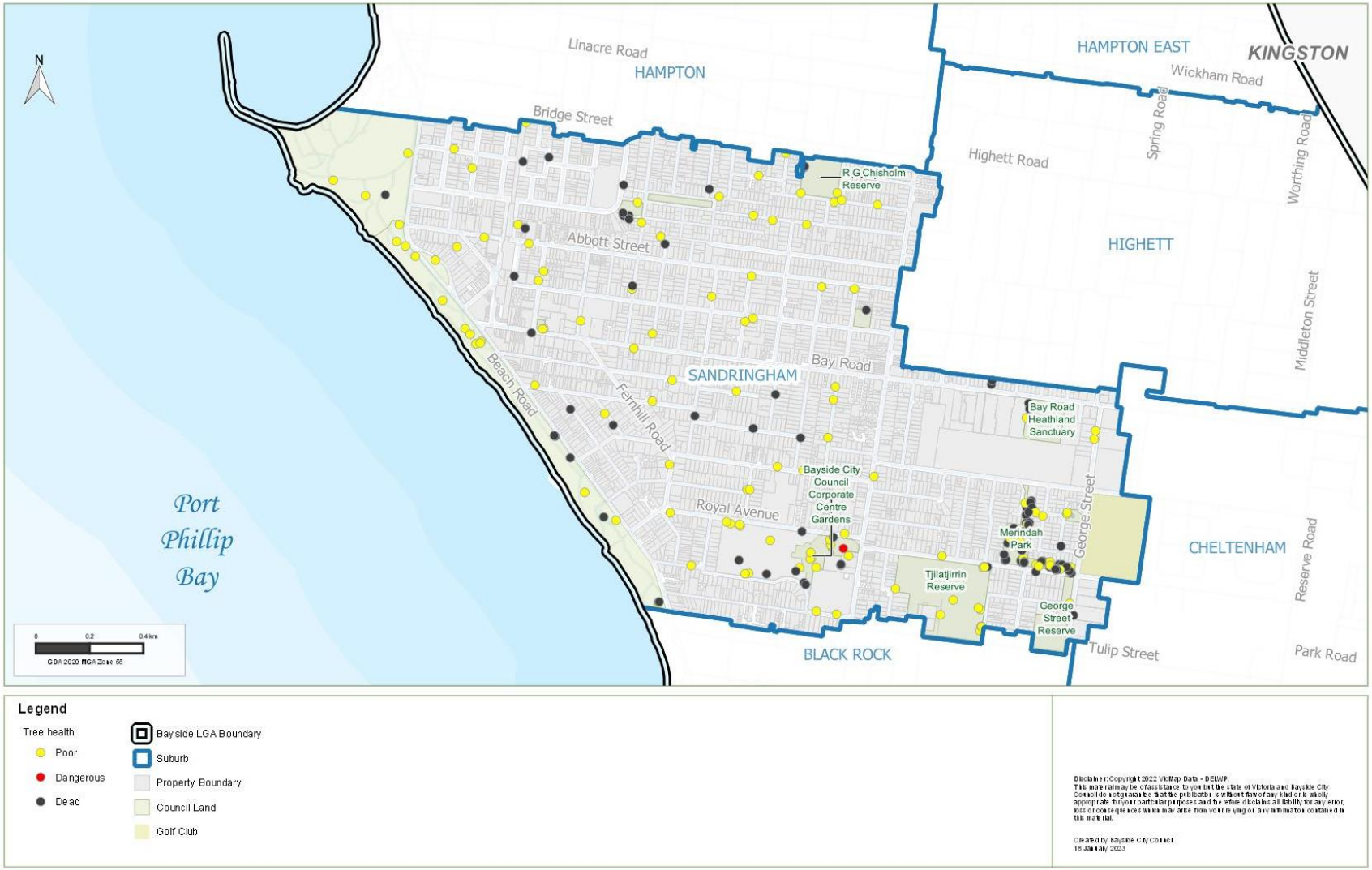
Graph 4. Tree health in Sandringham



Graph 5. Tree age in Sandringham

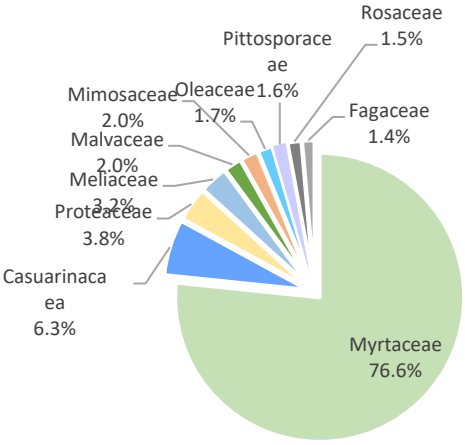


Map 6: Tree Health in Sandringham

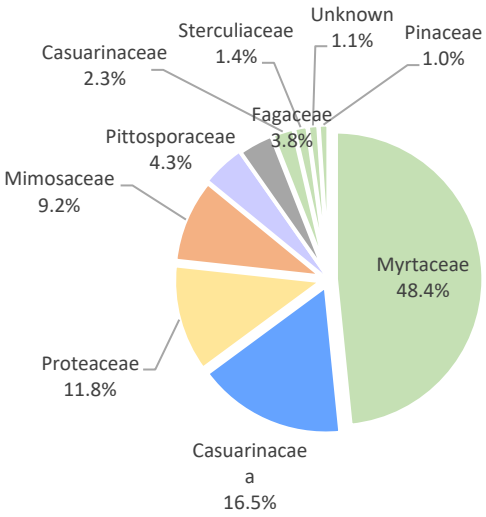


Species diversity

A resilient urban forest has a diverse range of species from different families. As seen in graphs 6 and 7, Sandringham's Street and park trees are largely dominated by *Myrtaceae*, making up to 76.6% of all street trees and 48.4% of all park trees. The *Casuarinacaea* family follows, making up up 6.3% of all street trees and 16.5% of all park trees, with other families making up about 17% of street trees and 35% of park trees.



Graph 6. Diversity of street tree species in Sandringham



Graph 7. Diversity of park tree species in Sandringham

The reliance of a small number of species, and a lack of spatial diversity in species distribution leaves the urban forest vulnerable to threats from pests and disease. Diversification of the family composition of the urban forest was a key challenge that was previously identified in the *Bayside Street and Park Tree Guide* and reiterated within the Bayside *Urban Forest Strategy.*

The following families currently form part of the overall tree population in Sandringham's streets and parks at a significantly lower percentage than the *Myrtaceae* family. The inclusion and increase of these families should be targeted through the actions and implementation of this Precinct Plan, ensuring that different types of trees align with the neighbourhood character of the surrounding locality:

- Oleaceae
- Casuarinacaea
- Proteaceae
- Mimosaceae
- Pittosporaceae
- Fagaceae
- Sterculiaceae
- Pinaceae
- Meliaceae
- Malvaceae
- Oleaceae
- Pittosporaceae
- Rosaceae

To improve species diversity, Bayside City Council is undertaking investigations through its *Park Improvement and Habitat Linkage Plan* to understand which species (trees and vegetation) would best support specific locations in Bayside and encourage the rebuilding of the ecological foundations in Bayside.

Currently Sandringham's street and park tree population is largely dominated by the *Myrtaceae* family (eucalyptus etc.), making up 48.4% of park trees and 76.6% of all street trees.

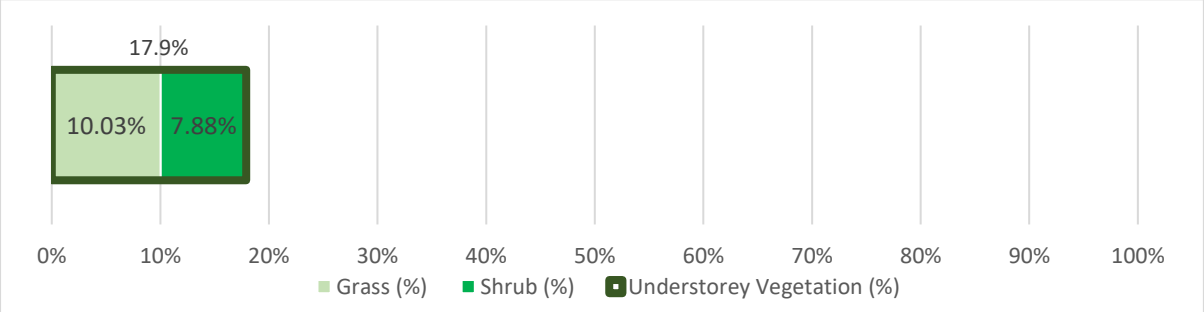
Understorey planting in Sandringham

This section investigates the potential habitat and biodiversity corridors in Sandringham across public and private land to understand where further opportunities are to increase habitat connectivity and improve biodiversity.

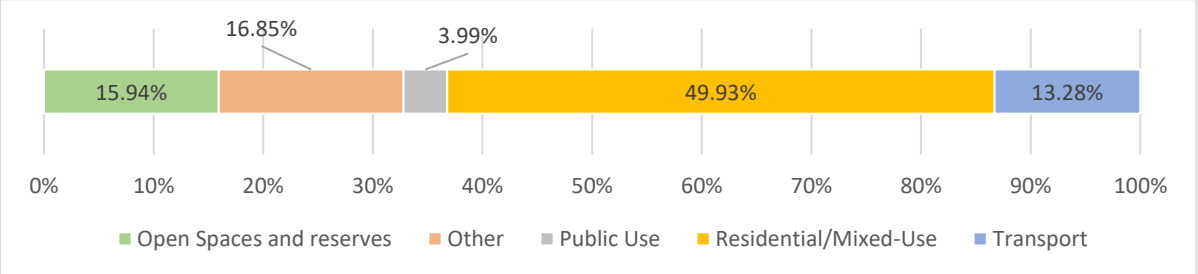
Understorey vegetation includes small trees, shrubs, herbs, grasses, mosses and lichens that occupy the vegetation layers below the canopy of taller trees.[4] Bayside's *Urban Forest Strategy* has three major goals to ensure the increase and improvement of the urban forest and the functions it serves. Two of these goals recognise the importance of understorey plantings. In addition, one of the strategic objectives of the Bayside *Urban Forest Strategy* is to support and enhance our local biodiversity and protect locally endangered and native species. This will be achieved by improving habitat connectivity and the protection and planting of Ecological Vegetation Classes (EVCs) through the implementation of the *Park Improvement and Habitat Linkage Plan* 2022 which involves identifying the suitable locations to prioritise understorey planting.

There is currently 17.9% understorey vegetation coverage in Sandringham, with 49.3% being located within residential and mixed-use areas within the suburb. Open space and reserves then make up 15.94% of understorey cover and 13.28% on streets. Opportunities exist to increase understorey planting upon all land uses, with particular priority on those areas that have very low percentage understorey planting (0-10%). These locations have been identified in Map 7 and include sections of Station Street, George Street, Abbott Street, Bluff Road, Bay Road and Beach Road.

Graph 8. Percentage distribution of understorey vegetation as grass and shrubs in Sandringham

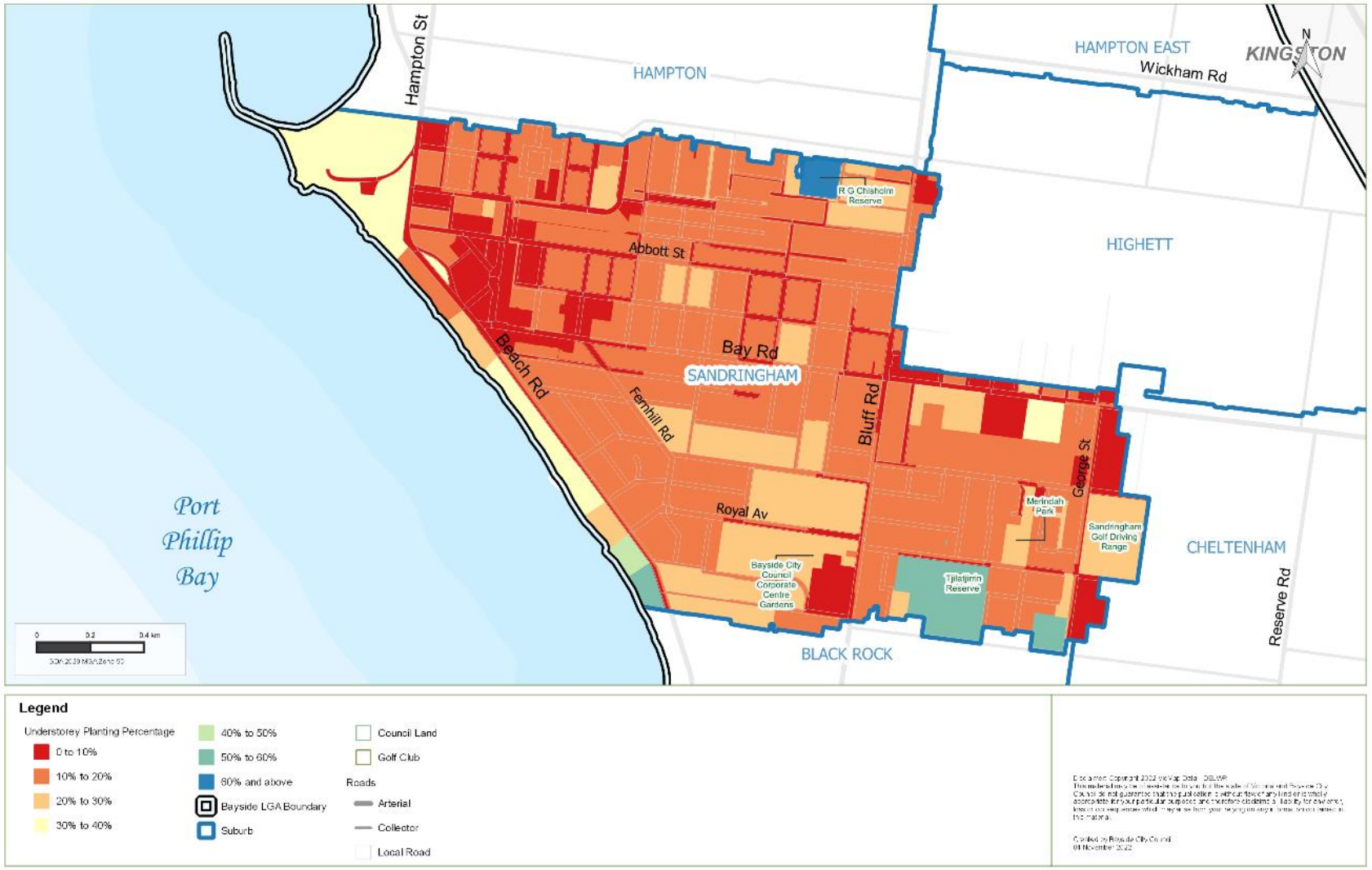


Graph 9. Percentage distribution of understorey vegetation in different land uses



[4] Land for Wildlife Queensland, 'The Value of Understorey Vegetation' Note V6, available at: https://www.lfwseq.org.au/wp-content/uploads/2016/11/The-Value-of-Understorey-Vegetation.pdf

Map 7: Understorey Planting in Sandringham



Urban Heat Island

Urban heat island effect in Sandringham

Urban heat island effect is the phenomenon of dense urban areas having significantly warmer air and land surface temperatures than surrounding areas.[5] It is primarily a result of impervious hard surfaces that generate heat and low vegetation cover that fails to provide adequate shade and natural cooling.

Urban heat data was captured in 2018 and provided in Map 8 below. The results are relatively moderate, with areas along the foreshore being least impacted. The eastern inland portion of the suburb is most impacted, which is where the Bayside Business District is located (BBD) and development is considerably more intensive.

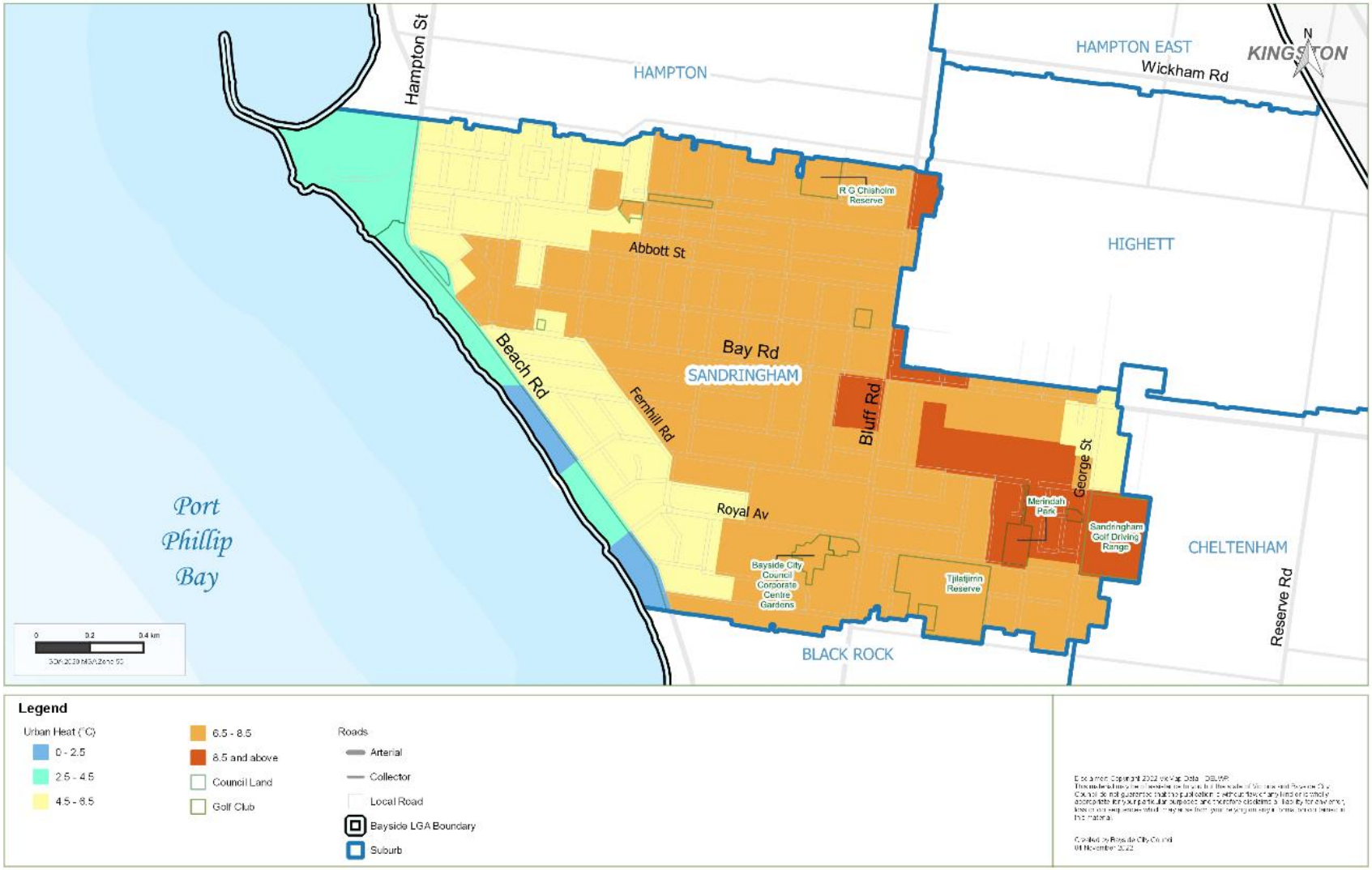
Streets that may be subject to potential impacts include Bay Road, Bluff Road, George Street, Rose Street, Holloway Road, Wangara Road, Spring Street, Talinga Road, Cooke Street, Holloway Close, Forrest Court, Balmoral Avenue, Regent Court, Lansell Avenue, Clements Street, Frances Street and Regworth Court. These streets are displayed on Map 20 later in the Plan.

Council will investigate opportunities to prioritise planting on Council land that is most impacted by urban heat island effects. In Activity Centres that are facing high temperatures innovative techniques such as green roofs and walls will be explored and encouraged to increase vegetation.

Due to larger areas that have impervious hard surfaces, that generate heat, and low understorey planting, the eastern area of Sandringham will reach threshold temperatures for heat-related illness in vulnerable populations more often and for longer than surrounding areas.

[5] Resilient Melbourne and The Nature Conservancy, 'Living Melbourne – Our metropolitan Urban Forest',2019, Available at https://livingmelbourne.org.au/wp-content/uploads/2022/10/Strategy_online.pdf

Map 8 - Urban Heat



Biodiversity Assessment

To help inform the Bayside *Urban Forest Strategy*, Council undertook a desktop biodiversity assessment across the entire municipality. The purpose of the desktop biodiversity assessment was to assess and identify the existing ecological values present within the municipality and identify key areas where biodiversity could be improved. This section of the Precinct Plan will focus on the findings of this assessment within the suburb of Sandringham.

Strategic Biodiversity Value Score

The Strategic Biodiversity Value (SBV) is a ranking system developed by the Department of Environment, Land, Water and Planning (DELWP) that ranks the biodiversity contribution that a location has to Victoria's overall biodiversity. The SBV is presented as a score ranging between 0 and 1 and is mapped across all areas of Victoria.[6]

A review of the SBV scores mapped within the council region was undertaken, with the results shown on Map 9. While the majority of Sandringham did not present a high SBV score, there were a few key areas where the score is higher, between 0.8 and 1, indicating that these areas have a higher conservation value. Specifically, these areas included:

- Sandringham Beach Park Reserve
- Bay Road Heathland Sanctuary.

George Street Reserve also presented with an SBV score, which was between 0.2 - 0.4. The remainder of the foreshore reserve generally has an SBV score between 0.2 and 0.4, where native vegetation exists between the road and water's edge.

Future planting within these areas should focus on ensuring the SBV scores modelled within these areas do not decrease, by promoting native restoration and plantings in these areas when required.

Ecological Vegetation Classes (EVCs)

As part of this study, a review of Ecological Vegetation Classes (EVCs) model was undertaken. A total of 8 EVCs were modelled within the Bayside area. The modelled distribution of the 2005 DELWP (now DEECA) mapping extent, highlights that the majority of the study area has been cleared and no longer represents the EVCs. This is largely due to the extensive residential development that has occurred, and the associated road, rail and commercial development.

Of the 8 EVCs modelled within Bayside, three were present within Sandringham, specifically the Coastal Headland Scrub/Coast Banksia Woodland Mosaic along the foreshore, the Heathy Woodland/Sand Heathland Mosaic at George Street Reserve and Bay Road Heathland Sanctuary as well as Grassy Woodland/Damp Sands Herb-rich Woodland Mosaic at Bay Road Heathland Sanctuary. The species palette provides guidance on species of trees and vegetation that should be planted to enhance the character and enhance the ecological values of the urban forest.

[6] Desktop Biodiversity Assessment for the Urban Forest Strategy, Bayside City Council (2022)

Map 9 - Biodiversity Value Score

Map 10 – Historic Ecological Vegetation Classes

Park Improvement and Habitat Linkage Plan

A key outcome from the *Park Improvement and Habitat Linkage Plan 2022* is to identify where vegetation planting can be implemented or improved to link areas of open space and provide habitat corridors and to prioritise areas for immediate planting on council land.

The objective of the plan is to assist in increasing the diversity of indigenous and native plantings in council-owned open space outside the conservation reserve system and strengthen the connections between natural areas.

Conservation reserves in Sandringham

- George Street Reserve
- Bay Road Heathland Sanctuary
- Sandringham Foreshore – south
- Picnic Point.

Two major actions identified in the *Park Improvement and Habitat Linkage Plan* that correspond to the *Sandringham Precinct Plan* are:

Streetscapes – Wherever possible, increase the extent of indigenous understorey vegetation in verges, nature strips, roundabouts, traffic islands and edges of carparks or other less frequented or unused areas.

Parklands – Expand on areas of existing native vegetation (both patches and individual trees) with dense understorey plantings, or identify locations for additional native plantings, to create structurally diverse 'habitat planting zones'.

Core Habitat Patches

1. Picnic Point
2. Sandringham Foreshore - south
3. Allambee Park & adjoining properties
4. Firbank Grammar (Royal Avenue)
5. Royal Avenue Reserve
6. Tjilatjirrin Reserve
7. George Street Reserve
8. Merindah Park
9. Bay Road Heathlsnd Sanctuary
10. Sandringham Driving Range

Map 10 - Habitat Linkages and Improvement (Core areas)

Priority Habitat Improvement Areas
Priority habitat locations are primarily associated with parks or reserves that currently support high quality habitat values (such as bushland or foreshore reserves) or have the potential to provide core habitat with further investment through on-ground plantings and complimentary habitat structures.[7]

Priority Habitat Improvement Areas identified in Sandringham are:

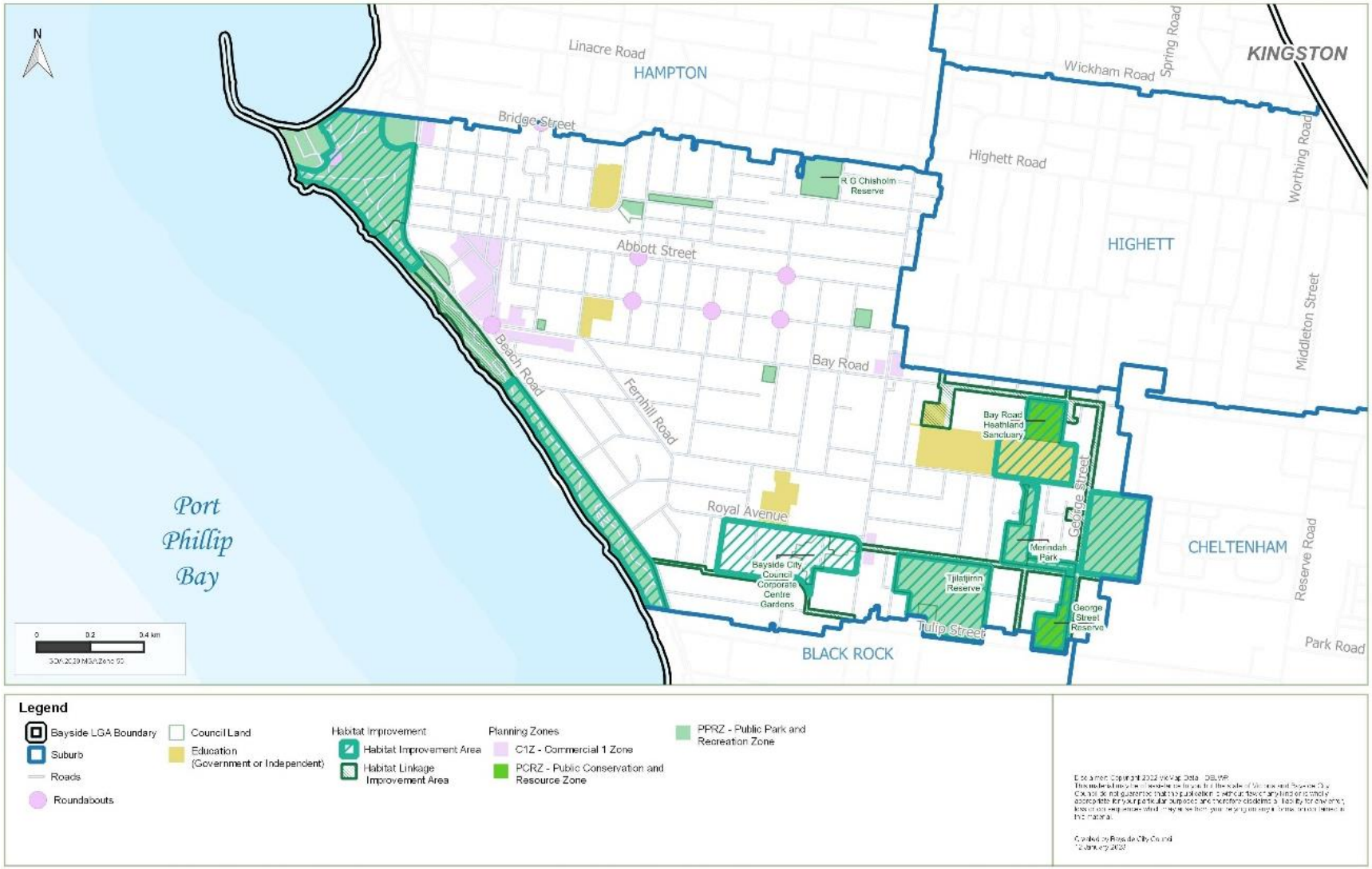
- Picnic Point foreshore
- Sandringham foreshore
- George Street Reserve
- Tjilajirrin Reserve
- Sandringham Driving Range
- Bay Road Heathland Sanctuary
- Merindah Park
- Pobblebonk Park
- Royal Avenue Reserve.

Priority Linkage Improvement Areas
Linkage Improvement Areas are primarily associated with public road reserves with the objective being to increase the functional diversity of vegetation within these areas to improve connectivity for a broader range of species.[7] Locations of priority linkages identified across the municipality have been restricted to public land, except for limited instances within privately owned golf courses.

- Picnic Point to Sandringham Foreshore – South
- Sandringham Foreshore - South to George Street Reserve via Royal Avenue Reserve and Tjilajirrin Reserve
- Sandringham Secondary College to George Street Reserve via Bay Road and George Street.

[7] Park Improvement and Habitat Linkage Plan, Bayside City Council (2022)

Map 11: Habitat Linkages and Improvements



Trees on Private Land

While we encourage and support the increase of tree canopy cover on private land, it is recognised that the uptake of tree planting on private land can only be enforced through better planning mechanisms, education, advocacy and commitment from the community.

The objectives of the Bayside *Urban Forest Strategy* is to prioritise and strengthen the support for retaining existing trees on public and private land and to strengthen Council's ability to retain and monitor trees on both public and private land.

Regulations involving trees on private land

Under the Neighbourhood Amenity Local Law 2021, a permit is required for the removal of a tree that is on the Significant Tree Register or a canopy tree that has a single or combined trunk greater than 155 centimetres measured at 1 metre above ground level.

There are several mechanisms currently in place within the Bayside Planning Scheme that require a planning permit to be granted for tree removal. These mechanisms include but are not limited to the Vegetation Protection Overlay (VPO), Significant Landscape Overlay (SLO) and the Heritage Overlay (HO). There is currently no land within Brighton that is within the Significant Landscape Overlay, however there are several trees and vegetation protected by the Heritage Overlay.

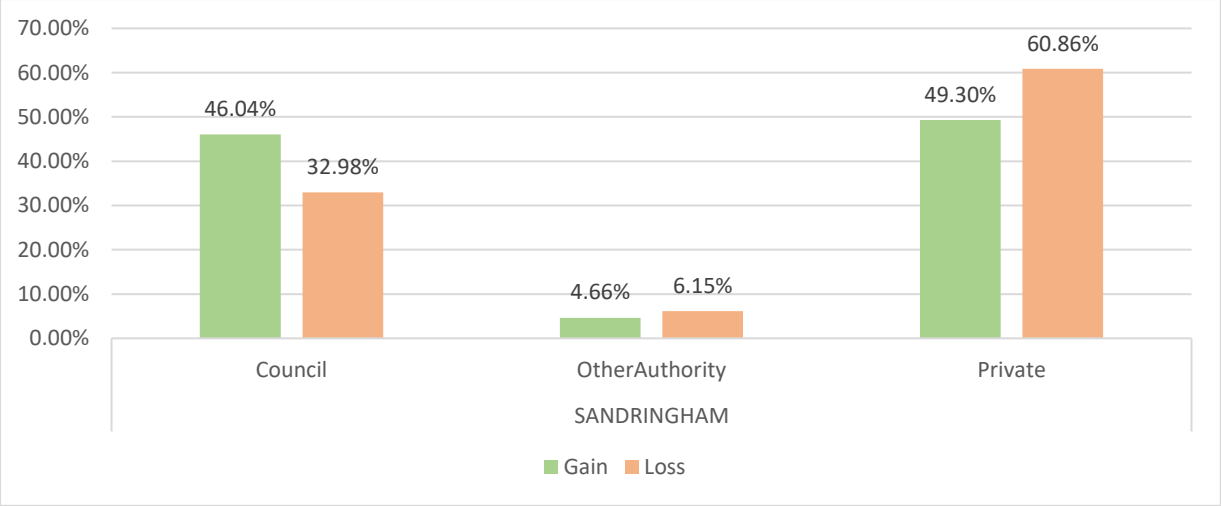
It is difficult to approximate the number of trees removed from private land each year under a planning permit as this is not separately recorded (and one application can be for multiple tree removals), let alone the extent of tree removal that is legal or illegal.

Tree loss and gain in Sandringham on private land

Map 13 shows tree canopy loss and gain in Sandringham from 2015 to 2019. The source aerial photography datasets were obtained from the State Government's Coordinated Imagery Program (CIP). The datasets from 2015 and 2019 were further compared by the council's GIS team to identify changed areas of vegetation.

As indicated in Graph 10, while private land contributed to 49.3% of tree canopy gains in Sandringham, it also contributed to 60.9% of tree canopy losses. Conversely, council-owned land contributed 46% to tree canopy gain versus 33% of tree canopy loss. Losses and gains were calculated by comparing 2015 and 2019 canopy cover data.

Graph 10: Tree Canopy across various land ownerships



Encouragement of trees on private land

As mentioned in the Bayside *Urban Forest Strategy*, community engagement will be essential in growing the urban forest on private land and Council will continue to be proactive in communicating the benefits of trees and vegetation on private land.

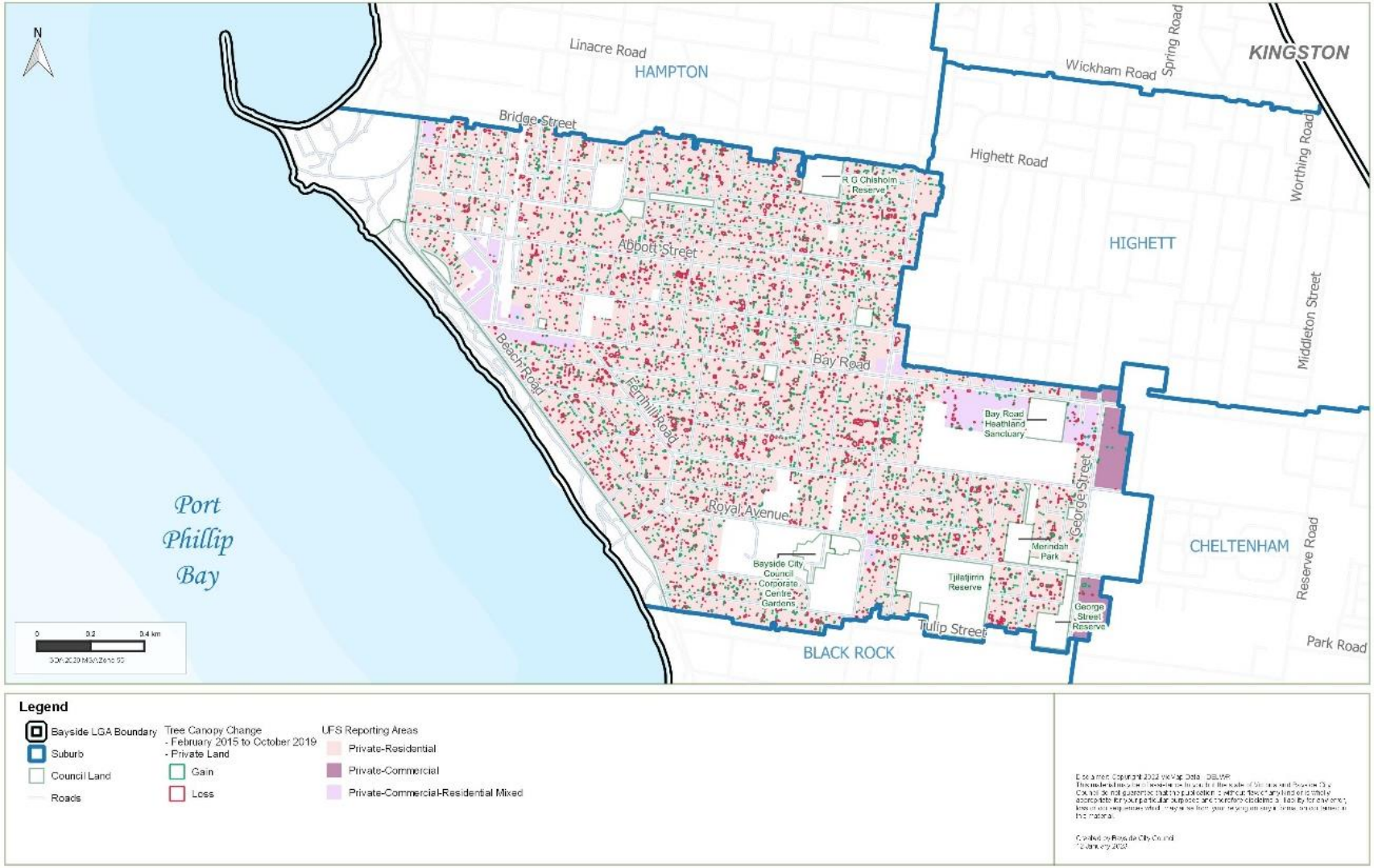
Council will also investigate opportunities to provide free tree and vegetation giveaways to residents. This will provide Council with a pathway to influence the tree and vegetation cover that exists on private land and help residents maintain the health of their trees and gardens. Bayside already has a strong network of 'Friends of' groups and community volunteers who carry out tree and vegetation plantings and would be great allies in this work.

Council will encourage landowner participation in greening, particularly for areas identified as having less canopy cover. This is being undertaken through communications and engagement actions that has a focus on education, awareness on the benefits of vegetation, and participation in increased tree planting through various education programs.

There has been a greater interest from the younger population of Bayside to participate in increasing vegetation cover. Council will continue to run educational programs within schools and work alongside the community to reach the *Urban Forest Strategy* target of 30% canopy cover across Bayside by 2040.

As part of the Bayside *Urban Forest Strategy* Implementation Plan, Council is exploring opportunities to include further policies and planning mechanisms within the Bayside Planning Scheme with an aim to maintain and increase tree canopy and vegetation on private land.

Map 13 - Vegetation loss and gain on private land in Sandringham



Sandringham in Images

The following images show examples of low, medium, and high tree canopy coverage in Sandringham.

Image 6. Balmoral Avenue, an example of a road with low tree canopy coverage.

Image 7. Meredith Street, an example of a road with medium tree canopy coverage.

Image 8. Vincent Street, an example of a road with high tree canopy coverage.

Key Constraints – Infrastructure

Finding locations for street and park tree planting can be challenging as it is important to ensure trees do not compromise the existing above and below infrastructure, as well as the existing uses and accessibility of the space.

Small tree under powerlines

Tree trimmed under powerlines

Certain pieces of infrastructure introduce constraints that impact the ability to plant trees. Street and park tree selection for trees growing under powerlines needs to consider a particular species' tolerance for pruning. For example, a tree that has a natural branching habit and a good wound response to mechanical damage would be considered an appropriate tree species for growing under powerlines.

In streets that have small or narrow nature strips, a smaller tree species will be considered for the powerline side of the street. In those circumstances, the trees on both sides of the street should have similar foliage and form to provide a consistent vegetation character for the street.

As a phase 1 action of this plan, council will facilitate the negotiations between the residents and relevant authorities to support the undergrounding of powerlines (and other services) if there is sufficient interest in a street. Council will also advocate to VicRoads and other authorities for undergrounding the powerlines and plant vegetation on the Principal Transport Network. Other infrastructure that must be considered when undertaking tree and vegetation planting includes:

- Footpaths
- Kerb and channel
- Roadways
- Playgrounds
- Pathways
- Private infrastructure
- Public infrastructure.

When selecting tree species for planting, Council officers should consider which species will be the least destructive to underground infrastructure. Potential opportunities to install root barrier systems and other protection mechanisms are also investigated at the locations of key underground infrastructure. This will ensure that Council can increase vegetation cover whilst protecting existing infrastructure and reducing demand for maintenance.

It is also important to note that infrastructure can also be constrained due to weather events. The *Climate Emergency Action Plan* 2020 requires that new infrastructure be designed to higher environmental standards and is located with consideration to future flood and storm surge risk. Existing infrastructure has to be retrofitted to reduce environmental impact and to improve resilience. It is critical to consider how each piece of new infrastructure can contribute to a more resilient built environment. Adapting to climate change requires taking actions to lessen its adverse consequences and increase capacity to withstand the stresses and shocks associated with natural hazards and extreme weather events. Investing in climate change adaption helps to embed economic, social, and environmental resilience to protect the most vulnerable to the consequences of climate change.

Map 14 – Infrastructure servicing across Sandringham

Key Opportunities

Greening Sandringham

Increasing tree canopy cover to reach 30% and vegetation cover to reach 30% across Sandringham by 2040.

Biodiverse suburb

Create a diverse and healthy urban forest that reinforces greater outcomes for biodiversity.

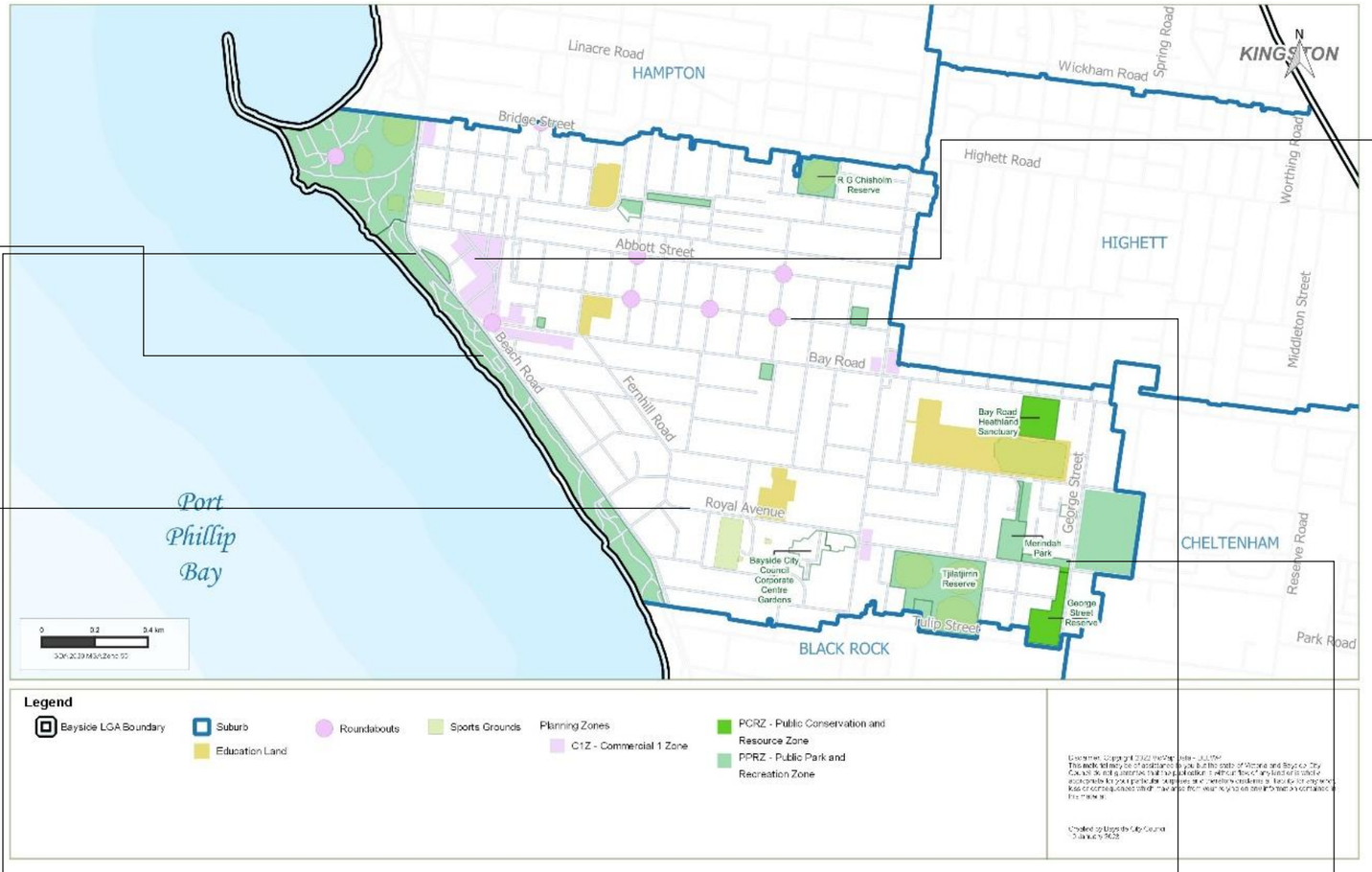
Improve monitoring and maintain

Improve the ability to monitor and track along with maintaining our existing canopy cover and avoid further decline.

Encourage residents and private owners

Learn together, educate each other, encourage and celebrate greater care and protection.

Map 16 – Key Opportunities in Sandringham



Nature strips
In terms of tree planting, the Street and Park Tree Management Policy states that:
'*Council aims to have 100% of suitable sites within Bayside planted with a tree to contribute to the municipality's leafy character. Most property frontages in Bayside can accommodate at least one tree within the nature strip*.'

Council-owned open spaces
Sandringham has approximately 53.4 hectares of open space that includes parks, reserves, and foreshore areas.

Opportunity exists to increase the number of canopy trees planted in council- owned open spaces, with the most prominent example being along the foreshore. Priority should also be given to parks and reserves where core habitat patches exist as well as habitat linkage and improvement areas.

Council-owned projects
There is a significant opportunity to increase vegetation cover in Sandringham through council-owned projects like the renewal or development of community buildings and sporting club facilities. Each Council project has site-specific issues and opportunities that need to be considered as part of the project scope. Examples of this include having a buffer around Council buildings and sporting ovals to ensure new plantings do not hinder future projects. When planting near sporting ovals maintenance of future trees must be considered to ensure sporting events can still run.

Priority Linkage Improvement Areas

- Picnic Point to Sandringham Foreshore – South
- Sandringham Foreshore - South to George Street Reserve via Royal Avenue Reserve and Tjilajirrin Reserve
- Sandringham Secondary College to George Street Reserve via Bay Road and George Street.

Commercial areas
Across Sandringham there are three areas that are zoned for commercial use. These include:

- Sandringham Village (Major Activity Centre)
- Beach Road & Georgiana Street (Small Neighbourhood Activity Centre)
- Bluff Road & Bay Road (Small Neighbourhood Activity Centre)
- Bluff Road & Spring Street (Small Neighbourhood Activity Centre)
- Bluff Road & Edward Street (Small Neighbourhood Activity Centre) (part)

The character of these commercial centres can be improved by increasing the amount of vegetation. This will create more appealing centres that will attract a greater number of visitors and therefore increase business for local traders.

When planting trees in commercial areas conflicting priorities such as the demand for car parking, footpath activation, shop awnings, street lighting and road signage must be considered. Innovative techniques such as green roofs and walls and replacing trees in poor health should be explored and encouraged to increase vegetation.

Educational land
Council will work with other State Government departments and with private owners to increase vegetation cover on educational land. The schools within Sandringham are Sandringham College, Sandringham Primary School, Sandringham East Primary School, Sacred Heart Parish School, Firbank Grammar Junior School.

Roundabouts
Roundabouts will be considered as opportunities to plant canopy trees and understorey planting when appropriate. New plantings must not affect sight lines, safety or accessibility for larger vehicles. To ensure future planting is appropriate a Road Safety Audit will be completed before and after installation.

Prioritising Trees and Vegetation in streets

Streets make up approximately 20.9% of the total area of Sandringham. When prioritising where to plant, it is important to focus resources in the locations that need it most. This includes consideration of where we have opportunities to plant understorey, improvement of habitat, where the highest density of people reside, and where very low canopy cover exists.

Tree replacements are only identified for streets where the useful life expectancy of multiple trees is rated at less than 10 years.

Planting priorities

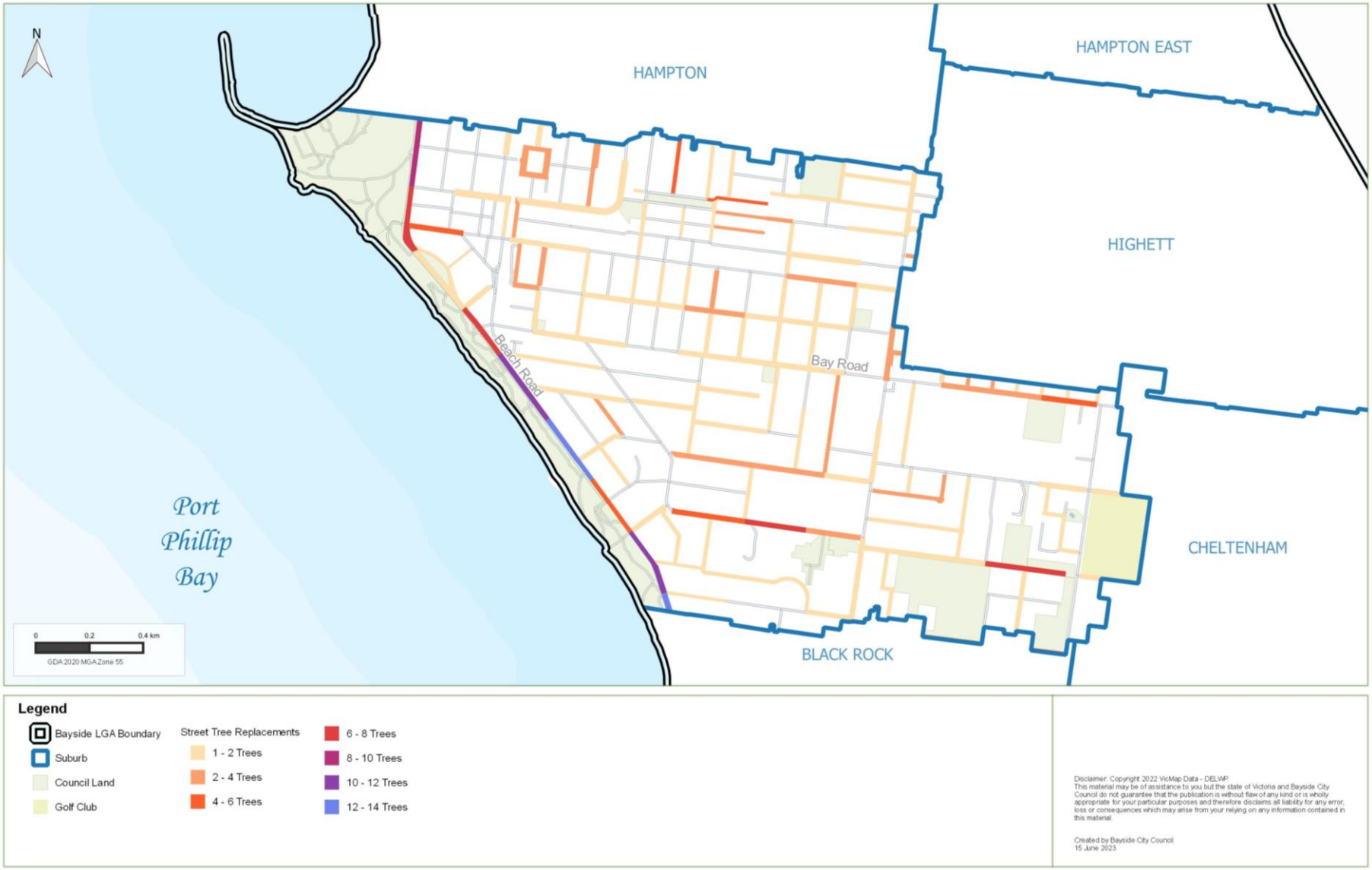
The Implementation Plan later in this document identifies phase 1 actions that are to be delivered within the next 5 years. These actions along with the *Park Improvements and Habitat Linkages Plan 2022* will identify priority areas and inform the planting program.

As a response to the Bayside *Urban Forest Strategy*, Council is committed to increasing tree planting every year. Maps 17 to 20 identify priority locations to be targeted in Council's Annual Tree Planting program.

The Annual Tree Planting Program provides a great opportunity to increase species diversity, habitat and local character. A general rule of thumb that should be applied is the 10:20:30 rule, where the urban tree population includes no more than 10% of any one species, 20% of any one genus, or 30% of any family.

How the Precinct Plan guides planting

Map 17 – Location of Tree Replacements required in next 10 years in Sandringham



Map 18 – Streets with less than 20% Tree Canopy Cover in Sandringham

Map 19 – Streets with High Urban Heat Island Effect in Sandringham

Implementation Plan

The following set of actions specifically identifies outcomes for trees and vegetation planting. They provide the framework for change within Sandringham with outcomes informed by all the other factors outlined in previous sections.

Phase	Objective	Action	Responsibility	Timeframe	Resources required	Measure
Create a diverse and healthy urban forest that reinforces greater outcomes for biodiversity.						
Phase 1	Prioritise and increase planting on identified habitat and biodiversity corridors across public land to enhance habitat linkages.	Investigate opportunities to provide increased understorey planting in areas identified as part of Council's *Park Improvement and Habitat Linkage Plan* (Map 10 - 11), including: Priority Habitat Improvement Areas: • Picnic Point foreshore • Sandringham foreshore • George Street Reserve • Tjilajirrin Reserve • Sandringham Driving Range • Bay Road Heathland Sanctuary • Merindah Park • Pobblebonk Park • Royal Avenue Reserve. Priority Linkage Improvement Areas: • Picnic Point to Sandringham Foreshore – South • Sandringham Foreshore - South to George Street Reserve via Royal Avenue Reserve and Tjilajirrin Reserve • Sandringham Secondary College to George Street Reserve via Bay Road and George Street. Core habitat patches: • Picnic Point • Sandringham Foreshore - south • Allambee Park & adjoining properties • Firbank Grammar (Royal Avenue) • Royal Avenue Reserve • Tjilatjirrin Reserve • George Street Reserve • Merindah Park • Bay Road Heathlsnd Sanctuary • Sandringham Driving Range	Open Space	Year 1 & 2	Budget allocated for 2022/23 and 2023/24 financial years.	*Park Improvement Habitat Linkage Plan* and the *Urban Forest Strategy Annual Reporting Program.*
Phase 1	Enhance biodiversity outcomes on private land.	Encourage private landowners to plant vegetation on nature strips within their street and provide support and tools to assist. To ensure new plants enhance habitat and biodiversity, Council officers should recommend appropriate plants listed in Appendix 3 Species Palette of this document.	Urban Strategy, Communication and Engagement	Ongoing	Budget may be required to create and implement specific engagement plans.	Utilise engagement evaluation matrix to measure success. Increased number of community members involved in activities. Increased demand from residents for vegetation outside their house.
Phase 1 & 2	Create new open space, pocket parks, micro-forests in the suburb seeking new biodiversity or habitat corridors.	Investigate opportunities to seek funds to support the acquisition of land for new open spaces to connect core habitat patches.	Open Space	Ongoing	Resources required for advocacy	Number of grants / opportunities applied for.

Phase	Objective	Action	Responsibility	Timeframe	Resources required	Measure
Phase 1	Ensure humans and wildlife can simultaneously and safely access densely vegetated areas, streets and reserves	Support the undergrounding of powerlines where it is at the request of the community and at their full cost. Facilitate the negotiations between the residents and relevant authorities to support the undergrounding of powerlines (and other services) if there is sufficient interest in a street.	Asset Protection, Urban Strategy	Ongoing	No budget required	Number of streets where undergrounding of powerlines has been implemented
Enhance landscape outcomes and increase tree and vegetation cover to reach 30% across Brighton by prioritising areas in greatest need						
Phase 1	Increase tree and understorey cover at areas with greatest need to enhance landscape outcomes, provide for heating and cooling benefits and combat climate change.	Investigate opportunities to increase canopy tree and understorey planting at the following streets which have been identified as having low canopy cover (less than 20%): • Abbott Street In addition, investigate opportunities to increase tree and understorey cover at the following streets which have been identified as hot spots due to potential impacts from Urban Heat Island effects: • Bay Road • Bluff Road • George Street • Rose Street • Holloway Road • Wangara Road • Spring Street • Talinga Road • Cooke Street • Holloway Close • Forrest Court • Balmoral Avenue • Regent Court • Lansell Avenue • Clements Street • Frances Street • Regworth Court.	Open Space	Year 1 to 5	Budget and resources will be required to increase the number of trees and understorey plants to be planted.	Number of plants planted *Urban Forest Strategy Annual Reporting Program.*
Phase 1	Planting canopy trees and understorey vegetation on roundabouts that currently do not have vegetation to enhance landscape outcomes.	Investigate opportunities to provide canopy cover and/or understorey planting at the following roundabouts (as per Map 16): • Codrington Street / Sandringham Road New plantings must not affect sight lines, safety or accessibility for larger vehicles.	Open Space, Integrated transport team to guide and undertake road safety audit before and after planting. Council's contractor (Citywide) health and safety standards to be followed.	Year 1 to 5	Budget and resources will be required to increase the number of trees and understorey plants to be planted.	Number of plants planted *Urban Forest Strategy Annual Reporting Program.*
Phase 2	Increase utilisation of green walls and green roofs in Activity Centre area.	Encourage innovative greening in Sandringham Village and other Small Activity Centres by promoting and piloting different greening initiatives. Investigate opportunities to introduce mechanisms to increase green roofs and walls within Activity Centres.	Development Services, Economic Development, Strategic Planning	Year 5 to 10	Economic Development team may require budget to run pilot programs.	Number of plants planted *Urban Forest Strategy Annual Reporting Program*
Phase 1	Increase tree canopy cover by prioritising vacant tree sites.	As part of the Annual Tree Planting Program, continue to identify the current vacant sites and prioritise planting at these sites.	Open Space	Ongoing	Budget and resources will be required to increase the number of trees and understorey plants to be planted.	Number of plants planted *Urban Forest Strategy Annual Reporting Program.*

Phase	Objective	Action	Responsibility	Timeframe	Resources required	Measure
Learn together, educate each other, encourage, and celebrate greater care and protection of the Bayside Urban Forest						
Phase 1	Increase planting on VicRoads that have less than 20% of tree canopy cover.	Advocate to the VicRoads and other authorities for increased planting on Bay Road, Bluff Road, Beach Road and Fernhill Road.	Open Space, Urban Strategy	Ongoing	No budget required.	A commitment made to plant trees on the streets maintained by VicRoads.
Phase 1	Increase awareness amongst the community around the importance of vegetation through various programs and communication material.	Continue to run student and community educational programs to increase awareness around vegetation planting and protection.	Urban Strategy, Communication & Engagement	Ongoing	Budget may be required to create and implement educational programs.	Number of educational programs undertaken every year.
Phase 1 and 2	Ensure humans and wildlife can simultaneously and safely access densely vegetated areas, streets and reserves.	Advocate to VicRoads and other authorities for the undergrounding of powerlines.	Urban Strategy	Ongoing	No budget required.	Funding received and/or partnerships created.
Phase 1 and 2	Reframe Council's approach to major council-owned projects, capital infrastructure renewal projects as opportunity to increase urban forestry outcomes.	Explore opportunities within road reconstruction projects to provide new tree plots as boulevard planting or in between car parking bays to enhance tree and vegetation cover upon local streets.	Project Services	Ongoing	Budget will be considered as part of the project scope.	Number of plants planted. Urban Forest Strategy Annual Reporting Program.
Maintain our existing canopy cover across Brighton and avoid any further decline where possible						
Phase 2	Ensure our urban forest is healthy and resilient.	Where trees reaching the end of their useful life expectancy have been assessed and are no longer providing a benefit to the surrounding habitat, removal may be required. Replacement trees should be selected based on the surrounding environment, neighbourhood character (where relevant) and above and below ground infrastructure. It is noted that there are various trees potentially reaching the end of their useful life expectancy at locations identified in Map 5. Where it has been found that trees reaching the end of their useful life still provide benefit and habitat, it should be retained as a habitat tree as per the Tree Risk Assessment Tool (TRAQ).	Open Space	Year 5 to 10	Budget and resources will be required to increase the number of trees and understorey plants to be planted.	Number of replacement plants planted, and number of those trees retained for habitat. *Urban Forest Strategy Annual Reporting Program.*
Phase 1 and 2	Increase Council's ability to protect trees from vandalism.	Explore additional opportunities to minimise vandalism, particularly along the foreshore: Consider the preparation of a communications and engagement strategy targeted to private property owners and the wider community.	Local Laws, Open Space	Year 1 to 3	Budget and resources will be required to explore opportunities.	Utilise engagement evaluation matrix to measure success.
Phase 2	Provide safer and cleaner streets for our residents and visitors	As tree and vegetation cover increases with time, ensure future maintenance contracts appropriately funds the clean-up of tree leaves and debris on streets and public land.	City Asset, Open Space	Year 5 to 10	Additional budget may be required for maintenance contract.	The number of requests for additional service.

Phase	Objective	Action	Responsibility	Timeframe	Resources required	Measure
Phase 1	Strengthen requirements and advocacy to maintain and increase vegetation on private land.	Prepare Planning Scheme Amendments to strengthen the protection of vegetation on private land.	Development Services, Urban Strategy	Year 1 to 5	Planning Scheme Amendment process to be funded via operation budget. Budget may be required to prepare detailed background information.	Preparation of Planning Scheme Amendments

Appendix 1: Guiding Principles and Considerations

Council is responsible for the management of road reserves, parks, public spaces, and foreshore reserves and has an active tree planting and maintenance program, which is guided by the *Park and Street Tree Management Policy*. As such, council has a greater degree of control and influence over the tree population on council-managed land.

Planting in streets and parks presents a variety of challenges, and there are important principles to use in responding to those challenges that will help to meet the *Urban Forest Strategy* targets. A complete and expanded set of these principles is included in the *Street and Park Tree Selection Guide 2016* and should be referred to when designing or planting any streetscape.

Sandringham has a distinctive character dominated by natives and local indigenous species. Future plantings should focus on increasing the presence of indigenous species. A small section of Sandringham south of Edward Street and west of Bluff Road is in the VPO3 and is to be planted with a minimum of 80% indigenous tree, as per the requirements of the planning overlay.

Planting types and locations in streets

1. **Large canopy trees**

A single large canopy tree provides greater benefits in terms of cooling, rainwater interception and other ecosystem services than multiple small trees totalling the same canopy extent. Prioritise the use of large canopy trees, with larger trees planted preferentially in centre medians or tree islands, then in the roadway and then the footpath.

We recognise that there are restrictions where medium or small size trees would be more appropriate due to competing infrastructure. Understorey planting in these locations is also encouraged.

2. **Constrained planting spaces**

a.) *Cut-outs.* Planting in cut-outs in the road or footpaths provides a useful alternative where there may be insufficient space on the nature strip. Suitability for planting in the road or footpath will depend on road or footpath width and other factors such as traffic volume and impact to on-street parking.

b.) *Planting in road reserve:* Designing in-road tree pits where there is opportunity to plant trees in between on-street parking spaces, traffic islands and buffer areas like street corners.

c.) *Narrow Streets:* Narrow streets, including narrow footpaths and no nature strips, are best landscaped via tree planting within the parking lanes to either side, although this is partly limited by the need to maintain car parking spaces.

3. **Roundabouts**

Roundabouts will be considered as opportunities to plant canopy trees and understorey planting when appropriate. New plantings must not affect sight lines, safety or accessibility for larger vehicles. To ensure future planting is appropriate a Road Safety Audit will be completed before and after installation.

4. **Boulevards**

For the boulevards, consider inter-planting with large canopy trees and shrubs to enhance the existing canopy cover. Council will be working with DELWP and VicRoads to prepare a long-term boulevard strategy. Where possible the philosophy of establishing boulevards should extend to local streets.

5. **Streets and powerlines**

a.) *Residential streets.* Low voltage overhead wires are present on one side of most residential streets. Where medians exist for large canopy tree planting, small to medium trees on the

side with overhead constraints should be selected, always prioritising understorey planting. Understorey planting in the area of Sandringham with VPO3 should be indigenous species.

b.) *Streets with small nature strip and powerlines:* In streets that have small or very small nature strips, a smaller growing tree will be considered for the powerline side of the street. In those circumstances, the trees on both sides of the street should have similar foliage and form to provide a consistent theme for the street.

c.) *Tree pruning:* In streets where footpath trees provide the only canopy, medium to large trees that can be effectively pruned around powerlines should be selected. Street and park tree selection for trees growing under power lines will consider the species' tolerance for pruning. For example, a tree that has a natural branching habit and a good wound response to mechanical damage would be considered an appropriate tree for growing under powerlines.

d.) *Underground powerlines:* Although overhead powerlines are typically more economical, they are susceptible to damage from windborne tree branches, debris, and high wind conditions from extreme weather.

Council will facilitate the negotiations between the residents and relevant authorities to support the undergrounding of powerlines (and other services) if there is sufficient interest in a street.

6. Planting patterns and species choice

Sandringham's urban forest character is strongly connected to gum trees, and there will continue to be a higher population of gum trees in Sandringham. In terms of opportunities to increase diversity in streets, kerb out stands, roundabouts and road ends should be considered as opportunities to plant species drawn from a wider palette that are unique to that location or intersection and provide visual interest. These areas should also be considered as opportunities to create landmark feature landscapes and to support understorey planting.

7. Important Facades

In streets with important public buildings or building that have heritage importance, deciduous trees should be given preference so that building façades are exposed over winter.

The convention of planting avenues, or consistent lines of a single species, can limit species diversity. However, avenue plantings are important to local character in many streets and open spaces. To balance these two conflicting pressures, it is important to identify ways to minimise the extent of homogeneous avenue planting while maintaining a strong design outcome.

8. Selection Criteria for street trees:

The following factors can be considered for selection of suitable street tree species:

- Relationship with local landscape character
  - garden character, surrounding streetscape
  - vegetation protection overlays, heritage values
  - maintain existing landscape character by selection of low fruiting cultivators where possible
  - replacing difficult to replace existing species with species demonstrating similar characteristics, e.g. growth habit, foliage colour and size.
- Ability to tolerate and thrive in a site's environmental conditions: species that have or can adapt to local conditions like climate, soil, coastal and salt tolerances, pests and diseases.
- Possible future damage to infrastructure as assessed against identified current issues with footpaths, kerb and channel, roadways, private infrastructure and powerlines.

9. Permeable surfaces

Impermeable surfaces such as pavements, roofing and building coverage increase the risk of flooding in urban areas. Comparatively, permeable surfaces are made of porous materials that allow stormwater to flow though, which reduces the volume of stormwater runoff that enters the drainage system. This helps improve water quality as it reduces the number of pollutants that enter waterways and habitats.

For new private residential development, at least 20% of the site should have surfaces that can absorb water such as lawns, garden beds or permeable paving. Council has developed the *Integrated Water Management Plan 2019 – 2039*, called ‘Water for Bayside’, to provide clear direction to deliver high priority integrated water management and water sensitive urban design (WSUD) activities. A key technique to improve water management is to increase permeability and incorporate WSUD into new developments and council projects.


1


2a


2b


2c

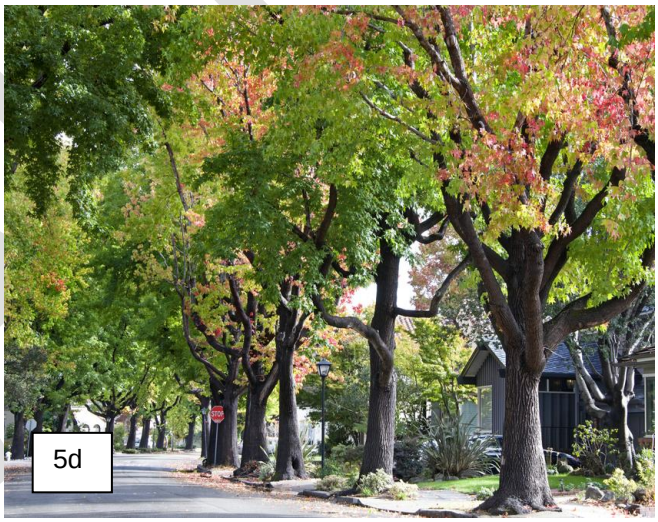

3


4

5a


5c


5b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6

Appendix 2: Case Studies

The following case studies showcase high-quality landscaping that combines the use of indigenous and native vegetation and high-quality design. A precinct's landscape helps define its character in much the same way as architecture or urban design because trees and other vegetation physically define a place. Landscapes are the setting for many everyday recreational and leisure activities and help forge a sense of connection to place.

1. Tennyson Street

The landscaping at Tennyson Street provides a good example of how residents can increase understory vegetation cover on their nature strips. The example displays a diversity of indigenous and native species that provides habitat and food for local fauna and insects while also contributing positively to the character of the streetscape.

2. Bay Road

The following case study showcases an example of understory nature strip planting that could be improved. The plant pictured is *Agapanthus* which is an exotic pest that forms dense stands, causing them to become the dominant species wherever they grow. This leads to the loss of indigenous and native plants that previously occupied the area. *Agapanthus* also spread very easily and are difficult to eradicate. A great alternative to *Agapanthus* is the Spreading *Flax-lily*. The Spreading *Flax-lily* is an indigenous plant which also has purple flowers and a similar bushy appearance.

Appendix 3: Sandringham Species Palette

Species Palette

The following species provided are of guidance only. The Ecological Vegetation Classes (EVC) that exist in Sandringham have informed the species palette as they focus on retaining and increasing native vegetation. In the suburb of Sandringham, the EVCs found are Coastal Banksia Woodland/Coastal Dune Scrub Mosaic, Coastal Headland Scrub/Coast Banksia Woodland Mosaic (EVC 892) and the Damp Sands Herb-rich Woodland (EVC 719). By prioritising the listed species, emphasis will be given on restoring native vegetation, to replicate the original vegetation of the area.

Coastal trees, grasses and other species are key genera across Sandringham, forming an important part of the character of the suburb's urban forest. Species from many other genera will also be planted to increase the diversity of tree species, with the aim to reduce the vulnerability of Sandringham's urban forest. The prepared species palette for Sandringham seeks to enhance the already diverse urban forest while also ensuring species are complimentary to the EVCs found within the suburb.

When selecting tree species for planting, responsible teams should consider which species will be the least destructive to underground infrastructure. This will ensure that Council can increase vegetation cover whilst protecting existing infrastructure and reducing demand for maintenance. Bayside City Council has developed *Live Bayside Plant Bayside 2022* as a guide to inform all future planting on public and private land. Residents are encouraged to use the guide in conjunction with the Sandringham Species Palette when undertaking planting on their private properties. The *Live Bayside Plant Bayside* Guide features a selection of plants including:

- Herbs and groundcovers
- Creepers and climbers
- Lilies, grasses and tussocks
- Small shrubs
- Large shrubs
- Trees.

Council promotes the use of indigenous plants as they occur naturally within Bayside and have adapted to the conditions within the local environment such as soil and climate. Please note, all indigenous plants provide habitat and food for local birds, insects, and other native animals.

General Indigenous Planting List

The following list of Indigenous plants is provided as guidance only and should be considered for planting on public and private land and provides additional information as to the suitability of plants to the surrounding environment.

Indigenous plants are the original flora, or plants that occur naturally, in a given location. Indigenous plants have adapted to the soils, topography and climate of the local area because they have evolved to the conditions within the local environment. Indigenous species also help to maintain the ecological balance of the local ecosystem, as plants and animals depend upon one another for their survival.

Of the 6 EVCs modelled within Bayside, two have been identified within Sandringham. The Coastal Banksia Woodland/Coastal Dune Scrub Mosaic, Coastal Headland Scrub/Coast Banksia Woodland Mosaic (EVC 892) and the Damp Sands Herb-rich Woodland (EVC 719). If available, these species can be planted where soil conditions are suitable, in representation of the EVCs that were historically present within the suburb (as per Map 10).

The indigenous list provides information on each plant regarding the approximate size at maturity, the type of environment the species are most suited to, and the EVC classification that the plant is historically within (if relevant):

- A plants are adaptable, growing well in most soil types and aspects
- C plants are for the coast – dune scrub and woodland
- D plants prefer dry, well-drained soils and can tolerate dryness once established
- S plants prefer or tolerate full shade
- H plants prefer heath or woodland
- W plants prefer or tolerate moist soils, wetness and periodic inundation.
- Where plants are suitable within several environments, all relevant letters are written (e.g HCDA)

Plants that are not readily available, difficult to source or prone to weediness are marked on the list below, as follows:

- * local to Bayside but difficult to propagate (not readily available)
- (W) local to Bayside but not propagated due to weediness.
- (S) not local to Bayside but could be available at a Sandbelt Indigenous Nursery (Greenlink Sandbelt Indigenous Nursery; Westgate Biodiversity: Bili Nursery & Landcare; Frankston Indigenous Nursery; Mornington Peninsula Indigenous Nursery - Briars Nursery.
- (N) not local to Bayside

Species Name	**Common Name**	**Key**	**EVC Mosiac**
Climbing Plants			
Billardiera mutabilis (syn. B. scandens)	Common Appleberry	HA	719, 3
Cassytha glabella (W)	Slender Dodder-laurel		892
Clematis microphylla var.microphylla	Small-leaved Clematis	HCA	919, 921
Comesperma volubile	Love Creeper		719, 3
Galium australe	Tangled Bedsttraw	Scrambler	919, 921
Hardenburgia violacea	Purple Coral Pea	HD	
Muehlenbeckia adpressa	Climbing Lignum	HCDSh	
Grasses and Tussocks			
Austrostipa flavescens	Coast Spear-grass	50cm x 50cm CA	921
Austrostipa mollis	Soft Spear-grass	30cm x 30cm HA	719, 921, 3
Austrostipa stipoides	Prickly Spear-grass	1m x 1m CD	
Baumea rubiginosa	Soft Twig-rush	Understorey graminoid	707
Caesia parviflora	Pale Grass-lily	10-50cm x 10-25cm HD	
Carex pumila	Strand Sedge	20-80cm CW	
Deyeuxia quadriseta	Reed Bent-grass	15cm x 40cm HD	719, 3
Dianella brevicaulis	Small-flower Flax-lilly	60cm x 50cm HCDShA	919
Dianella laevis	Pale Flax-lily	60cm x 50cm HA	

Species Name	**Common Name**	**Key**	**EVC Mosiac**
Dianella longifolia	Arching Flax-lily	To 1.3m x 0.4-1m	
Dianella revoluta	Black-anther Flax-lily	50cm x Spreading HCShA	719, 3
Dichelachne crinita	Long-hair Plume-grass	20cm x 30cm HD	
Distichlis distichophylla	Australian Salt-grass	10cm x Spreading CA	
Eragrostis brownii	Common Love-grass	20cm x 20cm HA	
Ficinia nodosa *	Knobby Club-sedge	50cm x 50cm HCA	919
Gahnia radula (S)	Thatch Saw-sedge		719, 892, 3
Gahnia siberiana (S)	Red-fruit Saw-sedge		892
Hypolaena fastigiata	Tassel Rope-rush		892
Juncus pallidus	Rush	1m x 50cm HCA	
Lachnagrostis billardierei (S)	Coast Blown-grass		
Lepidosperma concavum *	Sandhll Sword-sedge		719, 892, 921, 3
Lepidosperma laterale *	Variable Sword-sedge		719, 3
Lomandra filiformis	Wattle Mat-rush	50cm x 30cm HDShA	719, 3
Lomandra longifolia	Spiny-headed Mat-rush	1m x 1m HCDShA	719, 707, 3
Lomandra multiflora	Many-flowered Mat-rush	30cm x 30cm HAD	
Microlaena stipoides var stipoides	Weeping Grass	30cm x 50cm HCA	719, 3
Patersonia occidentalis	Long Purple-flag	40cm x 40cm HDW	
Poa labillardieri	Common Tussock-grass	50cm x 50cm HA	
Poa poiformis	Coast or Blue Tussock-grass	50cm x 50cm CA	919
Poa sieberana	Tussock-grass	30cm x 30cm HA	719, 3
Rytidosperma caespitosum (syn. Austrodanthonia caespitosa)	Common Wallaby-grass	40cm x 40cm HCA	
Rytidosperma geniculatum (syn. Austrodanthonia geniculatum)	Kneed Wallaby-grass	15cm x 15cm HCA	921
Rytidosperma racemosum	Clustered Wallaby-grass	20cm x 20cm HCDW	
Rytidosperma setaceum	Bristly Wallaby-grass	60-70cm x 40cm HCDW	
Schoenus brevifolius (N)	Zig-zag Bog-sedge		892
Spinifex sericeus	Hairy Spinifex	30cm x Spreading CDW	
Sporobolus virginicus	Salt or Sand Couch	10cm x Spreading CA	

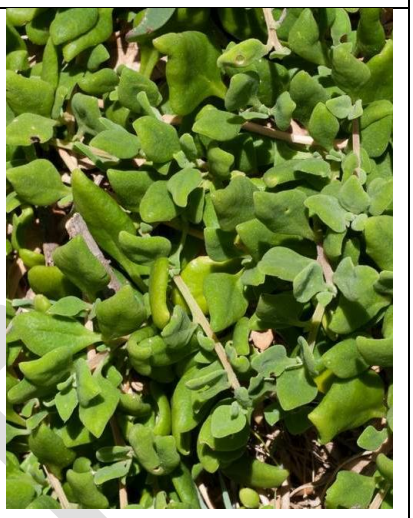
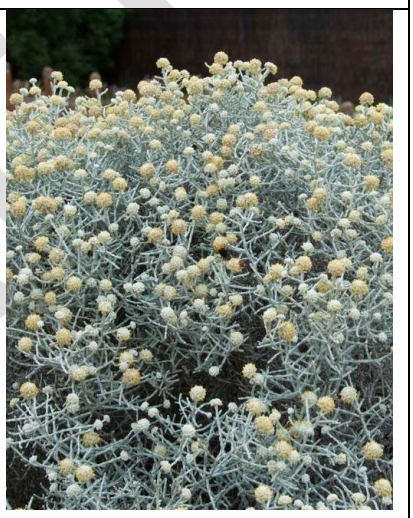
Species Name	Common Name	Key	EVC Mosiac
Tetrarrhena juncea	Forest wire-grass		719, 3
Themeda triandra	Kangaroo Grass	50cm x 50cm HA	719, 3
Thelionema caespitosum	Tufted Lily	20-90cm x 0.5-1.30cm HA	
Tricoryne eliator	Yellow Rush-lily	30-50cm x 30-50cm HD	
Triglochin striatum	Streaked Arrowgrass	10cm x 20cm CW	
Xanthorrhoea minor subsp. lutea	Small Grass-tree	50cm x 50cm HD	719, 892, 3
Groundcovers & Wildflowers			
Acaena novae-zelandiae	Bidgee-widgee	Prostrate x 1m CShA	
Acrotriche serrulata	Honey Pots	10-30cm x 0.5-1m HD	719, 3
Actites megalocarpa	Dune Thistle	10-60 High CD	
Amperea xiphoclada var. xiphoclada	Broom Spurge	40cm x 40cm HD	719, 892, 3
Apium prostratum ssp prostratum	Sea Celery	20cm x 50cm CW	
Arthropodium strictum	Chocolate Lily	30cm x 30cm HA	
Astroloma humifusum	Cranberry Heath	10-50cm x 1-1.5m HD	719, 3
Bossiaea prostrata	Creeping Bossiaea	10cm x 50cm HD	719
Brachycome parvula	Coast Daisy	20cm x 20cm CW	
Burchardia umbellata	Milkmaids	30cm x 10cm HDW	
Carpobrotus rossii	Karkalla	10cm x 1m CD	921
Centella cordifolia (S)	Centella	understorey herb	707
Chamaescilla corymbosa	Blue Stars	10cm x 10cm HW	
Chrysocephalum apiculatum	Common Everlasting	20cm x 50cm HD	
Comsperma volubile	Love Creeper	Open slender vine HD	
Coronidium scorpiodies	Button Everlasting	30cm x 30cm HD	
Dichondra repens	Kidney-weed	Prostrate x 1m HCA	919, 719, 921, 3
Disphyma crassifolium subsp. Clavellatum	Rounded Noon-flower	Prostrate x 1m CA	919
*Drosera whittakeri subsp. Aberrans **	Scented Sundew		719, 3
*Drosera peltata subsp. Auriculata **	Tall Sundew		719, 892, 3
Einadia nutans	Nodding Saltbush	20cm x 1m HCDA	
Enchylaena tomentosa	Ruby Saltbush, Barrier Saltbush	Prostrate - 1m x 0.5-1m CD	
Epilogium billardierianum	Variable Willow-herb		707
Frankenia pauciflora	Southern Sea-heath	10cm x 50cm CD	

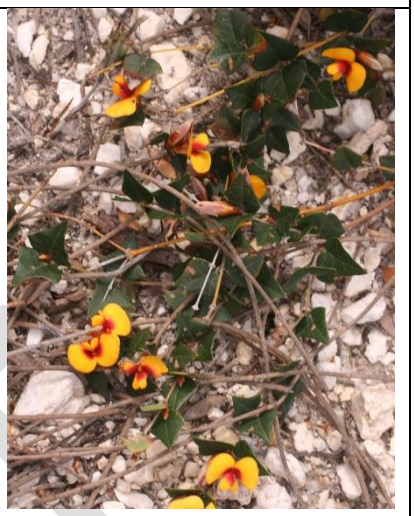
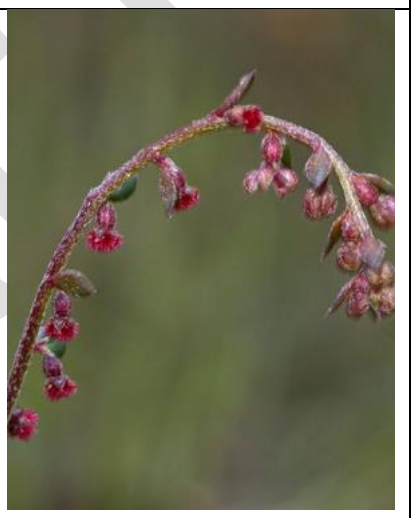
Species Name	**Common Name**	**Key**	**EVC Mosiac**
Geranium solanderi	Austral Cranesbill	20cm x 30cm HA	719, 3
Gonocarpus humilis (N)	Shade Raspwort		892
Gonocarpus micranthus	Creeping Raspwort	Prostrate x 50cm W	
Gonocarpus tetragynus	Poverty Raspwort	20cm x 30cm HA	3
Goodenia hummilis	Swamp Goodenia	5-10cm x .5-1.5m W	919, 707
Goodenia geniculata	Bent Goodenia	5-10cm x 10-50cm HA	
Goodenia radicans	Shiny Swamp-mat	10cm x 50cm CW	
Gratiola pubescens (N)	Glandular Brooklime	understorey herb	707
Haloragis brownii (N)	Swamp Raspwort	understorey herb	919, 921
Hibbertia acicularis	Prickly Guinea-flower	30cm x 50cm HD	
Hydrocotyle laxiflora	Stinking Pennywort	10-40cm x1-2m HDW	719, 3
Isotoma fluviatilis	Swamp Isotoma	Prostrate x 1m W	
Kennedia prostrata	Running Postman	Prostrate x 1m HCD	
Lachnagrostis billardierei (S)	Coast Blown-grass		919
Lagenophora stipitata	Common Bottle-daisy	5cm x 20cm HCA	
Laxmannia orientalis	Dwarf Wire Lily	5cm x 10cm HD	
Lobelia anceps	Angled Lobelia	Prostrate x 50cm HW	919, 921
Lobelia pratioides	Poison Lobelia	Prostrate x 50cm HW	
Opercularia ovata	Broad Stinkweed	10cm x 20cm HA	
Opercularia varia	Variable Stinkweed		719, 3
Orndullia reniformis (syn Villarsia reniformis)	Running Marsh flower		707
Pelargonium australe	Austral Stork's-bill	50cm x 50cm CA	
Pelargonium inodorum	Kopata	30cm x 30cm HA	
Pimelea humilis	Common Rice-flower	30cm x 40cm HA	
Pimelea octophylla	Woolly Rice-flower	0.4-1m x 20-50cm HD	
Platylobium obtusangulum	Common Flat-pea	40cm x 1m HD	892
Platysace heterophylla	Slender Platysace	30cm x 30cm HDW	
Podotheca angustifolia	Sticky-Long Heads	2 - 30cm high HD	
Poranthera microphylla	Small Poranthera		719, 3
Pterostylis longifolia	Tall Greenhood		719, 3
Pteridium esculentum	Austral bracken		919, 719, 892, 921, 3
Sarcocornia quinqueflora	Beaded Glasswort or Samphire	Prostrate x 50cm CW	919, 921
Senecio minimus (S)	Shrubby Fireweed	Understorey Herb	919, 921

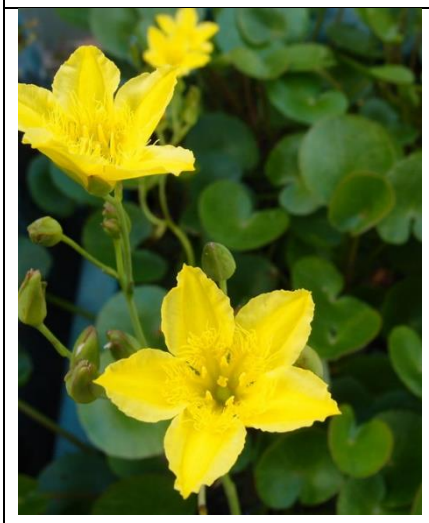
Species Name	**Common Name**	**Key**	**EVC Mosiac**
Stylidium graminifolium	Grass Trigger-plant	30cm x 30cm HDW	
Tetragonia implexicoma	Bower Spinach	Prostrate x 1m CA	919, 921
Tetragonia tetragonioides	New Zealand Spinach	Prostrate x 1m CA	
Thysanotus patersonii	Twining Fringe-lily	0.1 - 1m HD	
Thysanotus tuberosus	Common Fringe-lily	15-60cm x 15-20cm HD	
Tracymene composita	Wild Parsnip	0.8-1.5 x 0.5-1m HD	
Triglochin proceum	Water Ribbons	Understorey graminoid	707
Viola hederacea	Ivy-leaf or Native violet	10cm x 1m HCWSh	919, 719, 921, 3
Small to Medium Trees (5m - 10m)			
Acacia implexa	Lightwood	8m x 4m HShA	
Acacia mearnsii	Black Wattle	7m x 4m HCD	719, 3
Acacia melanoxylon	Blackwood	8m x 5m HWA	719, 3
Allocasuarina littoralis	Black She-oak	8m x 3m HDSh	719, 3
Allocasuarina verticillata	Drooping She-oak	8m x 3m CD	
Bursaria spinosa	Sweet Bursaria	6m x 3m HCA	
Leptospermum laevigatum	Coast Tea-tree	6m x 3m CDA	919, 921
Melaleuca ericifolia	Swamp Paperbark	5m x 2m HCDWA	
Large trees			
Banksia integrifolia	Coast Banksia	15m x 6m CD	919, 921
Eucalyptus camaldulensis	River Red Gum	30m x 20m HA	
Eucalyptus melliodora	Yellow Box	20m x 10m HA	
Eucalyptus ovata	Swamp Gum	20m x 15m HW	707
Eucalyptus pauciflora	Snow Gum or White Sallee	10m x 6m HA	
Eucalyptus viminalis ssp pryoriana	Coast Manna-gum	15m x 10m HCD	919, 719, 892, 3
Eucalyptus radiata	Narrow-leaf Peppermint	15m x 10m HD	892
Small Shrubs (50cm - 2m)			
Species name	Common name	Key	
Acacia brownii	Heath Wattle	1m x 1m HD	
Acacia longifolia	Coast wattle		919, 921
Acacia suaveolens	Sweet Wattle	2m x 2m HD	
Acacia ulicifolia	Juniper Wattle	1m x 1m HW	
Allocasuarina paradoxa	Green She-oak	1.5m x 1.5m HDSh	3
Aotus ericoides	Common Aotus	1m x 1m HWD	

Species Name	Common Name	Key	EVC Mosiac
Atriplex cinerea	Coast or Grey Saltbush	2m x 2m CD	
Bossiaea cinerea	Showy Bossiaea	1m x 1m HCD	
Correa alba	White Correa	1m x 1m CA	
Correa reflexa	Common Correa	1m x 1m HShA	
Daviesia ulicifolia	Gorse Bitter-pea	1m x 50cm HA	
Dillwynia cinerascens	Grey Parrot-pea	.6-1.5m x .5-1.5m HD	
Dillwynia glaberrima	Heath or Smooth Parrot-pea	1m x 50cm HDSh	719, 892, 3
Epacris impressa	Common Heath	1m x 50cm HA	719, 892, 3
Goodenia ovata	Hop Goodenia	1m x 1m HCA	
Gompholobium huegelii	Common Wedge-pea	0.3-1m x 0.3-1m HDSh	
Hibbertia fasciculata var. prostrata	Stalked or Bundled Guinea-flower	50cm x 30cm HD	892
Hibbertia riparia	Erect Guinea-flower	50cm x 50cm HA	719, 3
Hibbertia sericea	Silky Guinea-flower	30-100cm x 60cm HD	
Isopogon ceratophullus	Horny Cone-bush	20-60cm x 0.5-1.2m HD	
Lasiopetalum baueri	Slender Velvet-bush	1m x 1m CDA	
Leptospermum myrsinoides	Heath or Silky Tea-tree	1.5m x 1m HA	719, 892, 3
Leucophyta brownii	Cushion Bush	50cm x 50cm CD	919
Leucopogon virgatus	Common Beard-heath	50cm x 50cm HD	719, 892, 3
Monotoca scoparia	Prickly Broom-heath		892
Myoporum petiolatum	Sticky Boobialla	1.5m x 1.5m CA	
Olearia ramulosa	Twiggly Daisy-bush	1.5m x 1m HD	
Pimelea humilis	Common Rice flower		719, 3
Rhagodia candolleana subsp. candolleana	Seaberry Saltbush	1m x 2m CA	919, 921
Ricinocarpus pinifolius *	Wedding Bush	1-3m x 1-2.5m HD	
Sambucus gaudichaudiana (N)	White Elderberry		919, 921
Suaeda australis	Austral Seablite	50cm x 50cm CW	
Medium to Large Shrubs			
Acacia sophorae	Coast Wattle	4m x 4m CA	
Acacia oxycedrus	Spike Wattle	4m x 3m HWA	
Acacia paradoxa	Hedge Wattle	3m x 2m HCA	719
Acacia stricta	Hop Wattle	4m x 2m HCShA	
Alyxia buxifolia	Sea Box	2m x 2m CD	

Species Name	Common Name	Key	EVC Mosiac
Banksia marginata	Silver Banksia	5m x 3m HDA	719, 892, 3
Cassinia aculeata (S)	Common Cassinia		719, 3
Cassinia longifolia	Long-leaf Cassinia	2-4m x 2-3m HDSh	
Exocarpos cupressiformis *	Cherry Ballart		719, 3
Indigofera australis	Austral Indigo	2m x 1.5m HA	
Kunzea leptospermoides	Yarra Burgan	3m x 2m HA	
Leptospermum continentale	Prickly Tea-tree	3m x 2m HWA	719, 892, 707, 3
Leucopogon parviflorus	Coast Beard-heath	3m x 2m CD	919, 921
Melaleuca squarrosa	Scented Paperbark	3m x 1.5m HW	
Myoporum insulare	Common Boobialla	5m x 3m CA	
Olearia axillaris	Coast Daisy-bush	2m x 2m CD	
Olearia glutinosa	Sticky Daisy-bush	2m x 2m CD	
Ozothamnus ferrugineus	Tree Everlasting	3m x 2m HWA	
Pomaderris paniculosa	Shining Coast Pomaderris	2m x 1.5m CDA	
Solanum laciniatum	Large Kangaroo Apple	2m x 2m HCA	
Viminaria juncea	Golden Spray	4m x 2m HA	

Seaberry Saltbush	Rounded Noon-flower	Bower Spinach
		
Common Wallaby-grass	Beaded Glasswort	Cushion Bush
		
Knobby Club-sedge	Tangled Bedstraw	Coast Blown-grass
		

Bundled Guinea-flower	Heath Tea-tree	Common Flat-pea
		
Zig-zag Bog-sedge	Tassel Rope-rush	Shade Raspwort
		
Small Grass-tree	Red-fruit Saw-sedge	Broom Spurge
		

Running Marsh-flower	Centella	Swamp Goodenia
		
Glandular Brooklime	Pithy Sword-sedge	Soft Twig-rush
		
Variable Willow-herb	Water Ribbons	Prickly Tea-tree
		

Native and Exotic Species List

Native species are plant species that did not historically originate within the bayside region but were extant in other regions within the Australian continent. Exotic species are those plants that have been introduced and are not native to Australia and therefore did not historically occur within Bayside.

Bayside's urban forest is a mix of native, indigenous and exotic species. While priority is placed on increasing the use of indigenous species, the historic planting of exotic, native and indigenous species is a core element of the character in certain areas of Bayside.

The use of native and exotic plants in this list is encouraged in areas where it is considered to have a positive impact on the surrounding environment and neighbourhood. This is of relevance where the existing plant(s) enhances the neighbourhood character. In these areas replanting like for like is encouraged.

Council also utilises various native and exotic plant species as part of its Annual Tree planting program, as listed in the Street and Park Tree Management Policy.

Native Species List

Botanical name	**Common name**
Climbers and Scramblers	
Muehlenbeckia adpressa	Maidenhair Vine
Pandorea spp.	Wonga Wonga Vine
Hibbertia scandens	Climbing Guinea Flower
Clematis microphylla	Small leaved Clematis
Kennedia spp.	Dusky Coral Pea
Hardenbergia componiana	Native Wisteria
Cissus antarctica	Kangaroo Vine
Jasminum suavissimum	Native Jasmine
Gynochthodes jasminoides	Jasmine Morinda

Groundcovers, Grasses <1m	
Acacia SPP.	Wattle
Acacia spp.	Prickly Wattle
Allocasuarina spp.	Sheoak
Alyxia buxifolia	Sea box
Anigozanthos spp.	Kangaroo Paw
Aotus ericoides	Common Aotus
Atroplex cineria	Coast Saltbush
Austrostipa stipiodes	Prickly spear-grass
Banksia spp.	Banksia
Boronia spp.	Boronia
Brachyscome spp.	Cut-leaved daisy
Bursaria spinosa	Sweet Bursaria
Callistemon sp.	Bottle Brush
Calothamnus sp.	One-sided bottlebrush
Carpobrotus sp.	Pigface

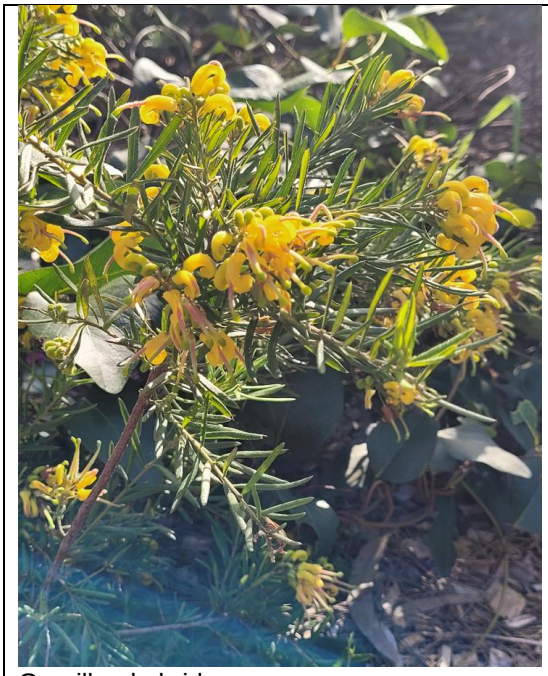
Chamelaucium spp.	Geraldon Wax
Einadia nutans	Nodding Saltbush
Gompholobium huegelii	Common Wedge-pea
Goodenia ovata	Hop Goodenia
Hardenbergia spp.	Purple coral pea
Hibbertia fasciculata var. prostrata	Bundled Guinea-flower
Indigofera australis	Austral Indigo
Juncus pallidus	Pale Rush
Stylidium graminifolium	Grass Trigger-plant
Wahlenbergia spp.	Native Bluebell
Xerochrysum	Everlasting Daisies
Eremophila spp.	Emu Bush
Lechenaultia spp.	Blue Lechenaultia
Lomandra spp.	Spiny-head Mat-rush
Pycnosorus spp.	Billy Buttons

Cut Leaved Daisy

Geralton Wax

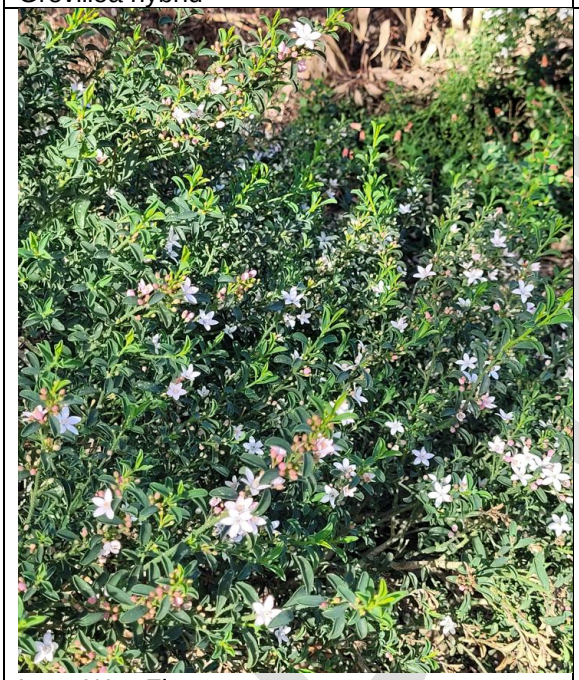
Grevillea

Native Fuscia



Grevillea hybrid

One sided bottlebrush

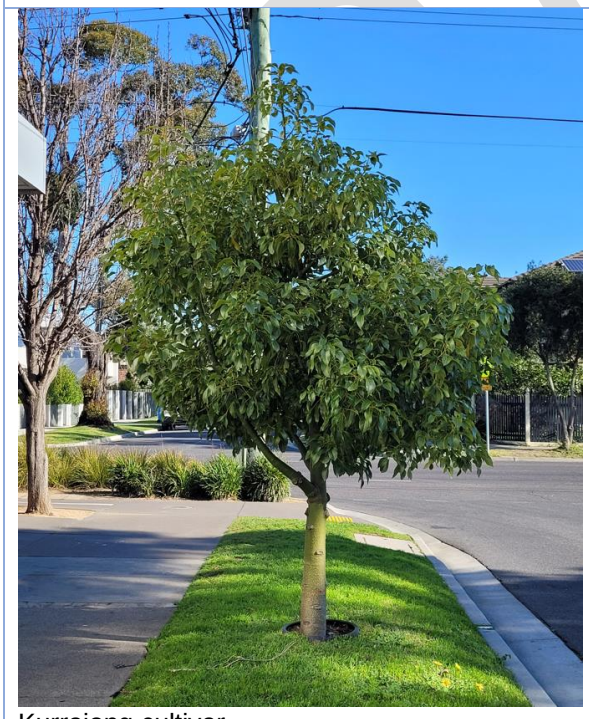


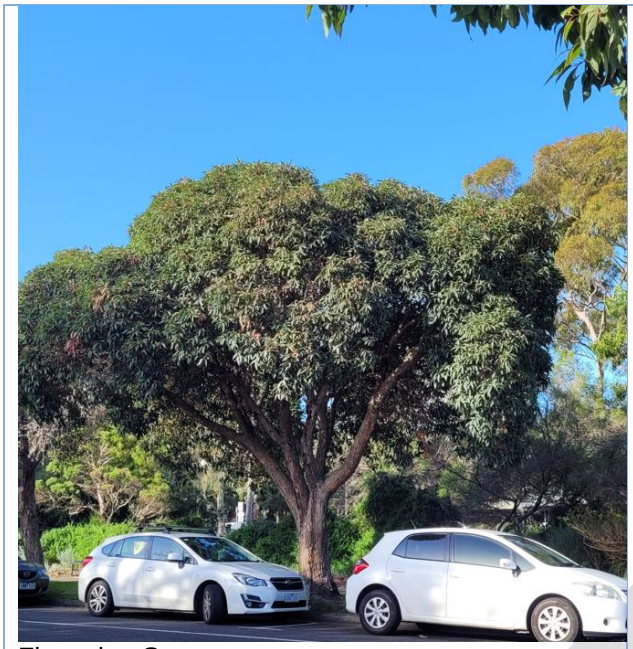
Long Wax Flower

Sasparilla vine

Botanical name	Common name
Native plants 1m - 5m	
Banksia spp.	Banksia
Brachychiton 'cultivars'	Kurrajong or Bottletree
Eucalyptus spp.	Gum trees
Corymbia cultivars	Flowering eucalyptus
Ficus microcarpa var hillii	Laurel fig
Ficus virens	White fig
Hakea spp.	Needle bush
Kunzea ericoides	White tea tree
Leptospermum spp.	Tea tree
Melaleuca spp.	Paperbark
Olearia axillaris	Coast daisy bush
Grevillea spp.	Grevillea
Tristaniopsis spp.	Kanooka or Water Gum
Melaleuca spp.	Tea tree
Correa spp.	Native Fuscia
Crowea spp.	Waxflower
Myoporum spp.	Boobialla
Olearia ramulosa	Twiggy Daisy-bush
Prostanthera spp.	Mintbush
Westringia spp.	Native Rosemary
Philotheca spp.	Long leafed wax flower
Buddleia spp.	Butterfly bush
Kunzea spp.	kunzea
Olearia	Daisy-bush
Dianella spp.	Blue flax lily
Aloygne spp.	Native Hibiscus

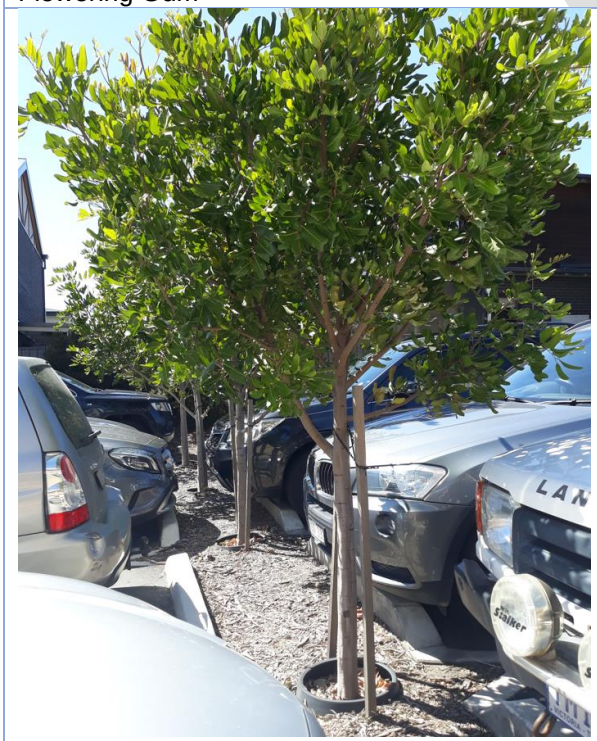
Botanical name	Common name
Native trees >5m	
Acacia spp.	Wattles
Acmena spp.	Lilipilli
Agathis robusta	Kauri
Agonis flexuosa	West Australian Weeping Peppermint
Allocasuarina spp.	She Oaks
Angophora spp.	Flowering Eucalypts
Araucaria spp.	Australian conifers
Banksia spp.	Banksia
Brachychiton spp.	Kurrajong or Bottletree
Callistemon spp.	Bottlebrush
Casuarina spp.	She Oaks
Corymbia spp.	Flowering Eucalypts

Cupaniopsis anacardioides	Tuckeroo
Elaeocarpus reticulatus	Blueberry Ash
Eucalyptus spp.	Gum trees
Ficus spp.	Fig trees
Flindersia australis	Australian teak
Geijera parviflora	Wilga
Grevillea hilliana	Grevillea tree
Grevillea robusta	Grevillea tree
Hymenosporum flavum	Native frangipani
Lophostemon confertus	Qld Brush Box
Lophostemon confertus Variegatus	Variegated Qld Brush Box
Macadamia integrifolia	Macadamia
Melaleuca spp.	Paperbark
Melia azedarach	White cedar
Melia azedarach 'Elite'	White cedar
Pittosporum spp.	Australian laurel
Podocarpus spp.	Plum pine
Stenocarpus sinuatus	Firewheel tree
Syncarpia glomulifera	Turpentine tree
Syzygium paniculatum	Brush cherry
Taxandria juniperina	Native cedar
Waterhousea floribunda	lilipilli
Wollemia noblilis	Wollemia pine
 Kurrajong cultivar	 Eucalyptus



Flowering Gum

Hakea



Tuckeroo

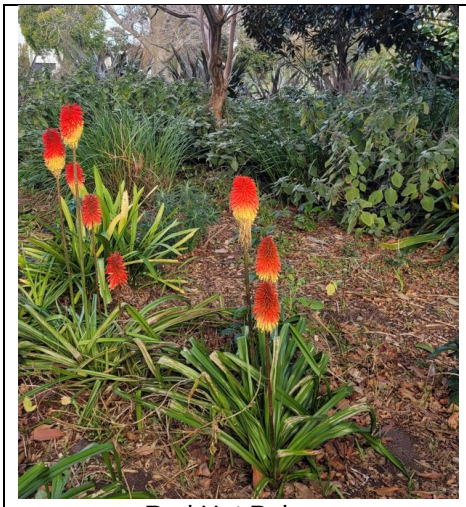
Lemon Scented Gums

Dwarf Eucalypt

Banksia

Exotic Plant List

Botanical Name	Common Name
Ground cover & Grasses <1m	
Abelia sp.	Abelia
Achillia spp.	Yarrow
Argyranthemu spp.	Daisies
Blechnum spp.	Silver Lady – dwarf tree fern
Bromeliads spp.	Bromeliad
Buxus sempervirens suffruticosa	Dutch box
Canna spp.	Canna Lily
Clivia spp.	Bush lily
Convolvulus spp.	Bindweed
Coprosma spp.	New Zealand laurel
Daphne spp.	Daphne
Escallonia spp.	Apple Blossom
Hebe spp.	Emerald Green Hebe
Hemerocallis spp.	Daylily
Liriope spp.	Lilyturf
Lithodora spp.	Purple gromwell
Nandina domestica	Heavenly Bamboo
Nuphar japonica	Japanese Pond Lily
Nymphoides indica	Water Snowflake
Orontium aquaticum	Golden Club
Phlebodium spp.	'Davana'
Plectranthus spp.	Little Spurflower
Rhaphiolepis spp.	Oriental Pearl
Sagittaria spp.	Arrowhead
Salvia spp.	Sage
Sedum spp.	Stonecrop
Senecio spp.	Groundsel



Red Hot Pokers

Box

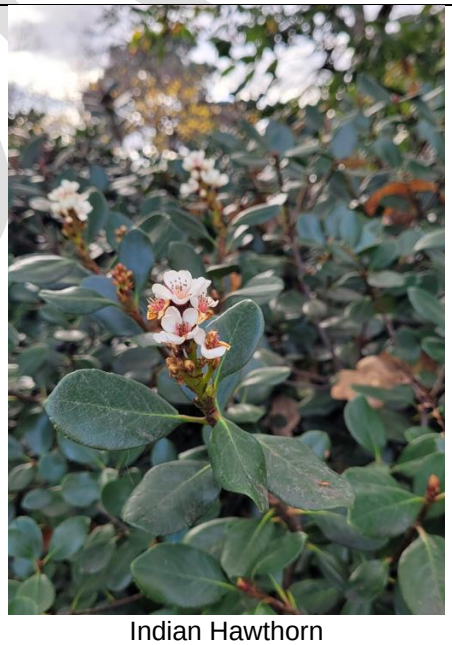
Camellia

Daphne

Liriope

Bindweed

Salvia



Indian Hawthorn

Arrowhead

Botanical Name	Common Name
Midstory Canopy 1m – 5m	
Aeonium spp.	Saucer plant
Aloe spp.	Aloe Vera
Buxus spp.	Box
Camellia spp.	Camellia
Centranthus spp.	Valerian
Chamaemelum spp.	Camomile
Choisia spp.	Mexican Orange Blossum
Cistus spp.	Rock-rose
Cotinus spp.	Smoke bush
Cotula spp.	Buttonweed
Cotyledon spp.	Succulents
Dracaena spp.	Dragon trees
Echium spp.	Pride of Madeira
Euphorbia spp.	Spurge
Gardenia spp.	Gardenia
Helichrysum spp.	Everlasting
Hibiscus spp.	Hibiscus
Hypericum spp.	St John's wort
Juniperus spp.	Junipers
Lavandula spp.	Lavander
Myrtus communis	Common myrtle
Osteospermum spp.	African Daisies
Phlomis spp.	Jerusalem sage
Phormium tenax & cultivars	Flax
Phormium tenax & cultivars	New Zealand Flax
Pinus spp.	Pine trees
Rhododendron spp.	Azalea & Rhododendron varieties
Rosa spp.	Species Roses
Rosa x hybrida	Hybrid Tea Roses
Rosemary officinalis	Rosemary
Sedum spp.	Stonecrops

Stryletzia spp.	Bird of Paradise
Thymus spp.	Thyme

Botanical Name	**Common Name**
Canopy Tree >5m	
Abies spp.	Fir
Acca spp.	Feijoa
Acer spp.	Maple species and cultivars
Afrocarpus falcatus	Common Yellow
Arbutus unedo	Strawberry tree
Betula spp.	Birch
Catalpa spp.	Cigar tree
Cedrus spp.	Cedar
Celtis occidentalis	European nettle tree
Celtis occidentalis	Common Hackberry
Cercis siliquastrum	Judas Tree
Cupressus spp.	Cypress
Fraxinus spp.	European Ash
Ginkgo biloba	Ginkgo
Gleditsia triacanthos var.inermis Varieties	Honey locust
Jacaranda mimosifolia	Jacaranda
Juniperus spp.	Junipers
Lagerstroemia spp & cultivars	Crepe Myrtle
Liquidambar spp.	Sweet gum
Maclura pomifera	Osange Orange
Magnolia spp.	Magnolia
Malus spp.	Apple
Morus alba Pendula	Mulberry
Olea europaea	Olive
Phoenix canariensis	Canary Date Palm
Picea spp.	Spruces
Pinus spp.	Pine trees
Pistacia chinensis	Chinese pistacia

Platanus orientalis	Oriental Plane
Platanus X acerifolia	London Plane
Prunus spp.	Plum
Pyrus spp.	Pear
Quercus spp.	Oak
Sapium sebiferum	Chinese Tallow
Sophora japonica	Princeton Upright
Taxodium distichum	Bold Cypress
Tilia spp.	Basswood
Trachycarpus fortunei	Windmill Palm
Ulmus spp.	Elm
Washingtonia filifera	Dessert fan palm
Washingtonia robusta	Mexican Fan Palm
Zelkova serrata	Green Vase

 Maple	 Honey Locust	 Cedar
 Ash	 Maidenhair tree	 Osage orange
 Magnolia	 Pine	 Chinese pistachio

Glossary

Biodiversity: 'All components of the living world: the number and variety of plants, animals, and other living things (including fungi and micro-organisms) across our land, rivers, coast, and ocean. It includes the diversity of their genetic information, the habitats, and ecosystems within which they live, and their connections with other life forms and the natural world'.[8]

Canopy cover is the layer formed by the branches and crowns of plants or trees. The cover can be continuous, as in primary forests, or discontinuous - with gaps as in an urban area. Canopy is defined in Living Melbourne as vegetation above three metres in height.[9]

Canopy tree: A tree which has, or at maturity is likely to have, sufficient height and canopy characteristics to make a positive contribution to local amenity, sense of place, micro climate and/or biodiversity. Minimum 8 x 4 metres.[10]

Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.[11]

Climate change adaptation is the process of adjustment to actual or expected climate and its effects.[12]

Climate change mitigation is the human intervention to reduce the sources or enhance the sinks of greenhouse gases.[12]

Climate Emergency refers to the catastrophic changes to the climate brought about by human activity that poses a dangerous threat to all life on the planet.[12]

Environmentally Sustainable Development refers to development that is designed, constructed, and managed to optimise climate resilience, energy efficiency, integrated water management, indoor environment quality, the circular economy, low carbon transport and urban ecology.[13]

General Residential Zone (GRZ) is applied to land in areas where growth and housing diversity is anticipated. It is expected that the type of housing provided will evolve over time to provide more diverse forms of housing, but not at the expense of existing open garden character.[14]

[8] The State of Victoria Department of Environment, Land, Water and Planning, 'Protecting Victoria's Environment – Biodiversity 2037', 2017, Available at https://www.environment.vic.gov.au/biodiversity/biodiversity-plan
[9] CID Bio-Science, 'Forest and Plant Canopy Analysis – Tools and Methods', 2019, Available at https://cid-inc.com/blog/forest-plant-canopy-analysis-tools-methods/
[10] Bayside City Council, 'Local Law Guidelines, Neighbourhood Amenity Local Law 2021', 2021, Available at https://www.bayside.vic.gov.au/sites/default/files/2022-05/Neighbourhood%20Amenity%20Local%20Law%202021%20Guidelines%20-%20Final.pdf
[11] Definition has been sourced from 'Bayside's Climate Emergency Action Plan 2020-2025 – Glossary', 2019, Available at https://www.bayside.vic.gov.au/sites/default/files/sustainability_and_environment/climate_emergency_action_plan_v1.2_140920_for_web.pdf
[12] Department of Health and Human Services, 'Arboricultural Assessment Holland Court, Flemington– 3.7 Useful Life Expectancy(ULE)', 2017, available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0011/105500/SHRP-SH1-15.a.-Tree-Logic-Rpt_Holland-Court,-Flemington.pdf
[13] Bayside Sustainable Building and Infrastructure Policy (updated 2021)
[14] Victorian Planning Authority, 'Reformed Residential Zones – General Residential Zone', 2017, Available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0023/103865/General-Residential-Zone.pdf

Greenways are a form of landscape planning. They are linear open space corridors in the built or natural environment, which preserve biodiversity or other aspects of a sustainable environment, and generally engage the community in recreational use.[15]

Habitat: All the physical and biological things that collectively make up the place where a plant or animal lives.[16]

Habitat Corridor: A habitat corridor is a linear two-dimensional landscape element that differs from the surrounding vegetation, in both vegetation structure and form, and connects two or more patches, of otherwise isolated, habitat that have been connected in historical time, this is meant to function as a conduit for both plants and animals.[17]

Heat Vulnerability Index: The heat vulnerability index (HVI) is represented by a scale of 1 to 5 based on quintiles, with 1 representing low exposure, low sensitivity or high adaptive capacity and 5 representing high exposure, high sensitivity or low adaptive capacity. We integrated indicators of heat vulnerability to calculate a Heat Vulnerability Index (HVI) at SA1 level. The index consists of three component layers: heat exposure, sensitivity to heat, and adaptive capability. Integration was accomplished by adding the scores from the three vulnerability components, dividing the SA1s into quintiles, and attributing SA1s with a Heat Vulnerability Rating scaled from 1 to 5.[18]

Neighbourhood Residential Zone (NRZ) is applied to land that has been identified as having specific neighbourhood, heritage, environmental or landscape character values that distinguish the land from other parts of the municipality or surrounding area.[19]

Permeability: The readiness with which a surface, whether man-made (such as a paved road) or natural (such as soil or rock) allows water, air or plant roots to penetrate or pass through.[20]

Residential Growth Zone (RGZ) is considered a substantial change area where medium density housing growth and diversity of housing types is encouraged, for example town houses and apartments around activity centres and close to train stations.[21]

Resilience: The capacity of individuals, institutions, businesses and systems within a city to adapt, survive and thrive no matter what kind of chronic stresses and acute shocks they experience.[12]

[15] University of New South Wales, 'The future of greenways in Sydney,' by P. Crawshaw, 2009, available at: https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools_and_engagement/resources/_notes/5A2_41.pdf

[16] Resilient Melbourne and The Nature Conservancy, 'Living Melbourne – Our metropolitan Urban Forest',2019, Available at https://resilientmelbourne.com.au/wp-content/uploads/2019/05/LivingMelbourne_Strategy_online.pdf

[17] Definition as used in 'Corridors for Habitat and Biodiversity Conservation in the Act with Links to the Region' from 'The theory of wildlife corridor capability – in Nature Conservation 2: The role of corridors', 1991 by Soulé, M. E. and M. E. Gilpin, Available at https://www.parliament.act.gov.au/__data/assets/pdf_file/0008/381077/PE_06_Environment_attach.pdf

[18] Department of Environment, Land, Water and Planning, Victorian Government 'Urban Vegetation, Urban Heat Islands and Heat Vulnerability Assessment in Melbourne, 2018', Available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0018/440181/UHI-and-HVI2018_Report_v1.pdf

[19] Victorian Planning Authority, 'Using the residential zones – Planning Practice Note 91, Clause 32.09', 2019, Available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0033/445389/PPN91-Using-the-residential-zones.pdf

[20] DELWP, 'Land for Wildlife' available at: https://www.wildlife.vic.gov.au/protecting-wildlife/land-for-wildlife

[21] Victorian Planning Authority website, 'Frequently Asked Questions – What is a Residential Growth Zone (RGZ)', 2017, Available at https://vpa.vic.gov.au/faq/berwick-residential-growth-zone-rgz/

SEIFA: Socio-Economic Indexes for Areas (SEIFA) measures the relative level of socio-economic disadvantage and/or advantage based on a range of Census characteristics.[22]

Senescence is the process by which cells irreversibly stop dividing and enter a state of permanent growth arrest without undergoing cell death.[23]

Significant Landscape Overlay (SLO): The Significant Landscape Overlay (SLO) is the most appropriate planning scheme tool for protecting and managing significant landscapes. Its purpose is to identify significant landscapes, and conserve and enhance their character. The SLO can require a permit to construct a building or construct or carry out works, construct a fence, and remove, destroy, or lop any vegetation.[24]

Significant Tree: Some trees, through age, size, and rarity of planting or association with historical events achieve a higher level of importance on private or public land. Identifies the following the categories used to define significant trees as scientific, social, historic and aesthetic.[25]

Tree Canopy: The uppermost trees or branches of trees in a forest, forming an almost continuous layer of foliage. The topmost layer of bioactivity in a forest setting.[5]

Urban Forest encompasses all of the trees, shrubs and grasslands – and the soil and water that support them. An urban forest incorporates vegetation in streets, parks, gardens, plazas, campuses, river and creek embankments, coastal foreshores, wetlands, railway corridors, community gardens, green walls, balconies, and roofs.[5]

Urban Heat Island Effect: The phenomenon of dense urban areas having significantly warmer air and land surface temperatures than surrounding rural areas.[5]

Useful Life Expectancy (ULE): Assessment of useful life expectancy provides an indication of health and tree appropriateness and involves an estimate of how long a tree is likely to remain in the landscape based on species, stage of life (cycle), health, amenity, environmental services contribution, conflicts with adjacent infrastructure and risk to the community. It is not a measure of the biological life of the tree within the natural range of the species. It is more a measure of the health status and the tree's positive contribution to the urban landscape.

Vegetation Protection Overlay (VPO): The VPO focuses on the protection of significant vegetation, including native and introduced vegetation in urban environments. The overlay can be applied to individual trees, groups of trees or areas of significant vegetation. It requires a landowner to obtain a permit to remove, destroy or lop any vegetation specified in a schedule to the overlay subject to a list of exemptions. Some of those exemptions apply to particular types of vegetation and others apply to specific situations, for example, to clear vegetation from electricity lines and to ensure emergency access.[26]

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[22] Id community, 'Demographic Resources', Available at https://profile.id.com.au/bayside/seifa-disadvantage-small-area?WebID=10

[23] CSIRO Linked Data Registry, 'Definition of Senescence', Available at http://registry.it.csiro.au/def/keyword/nature/subjects/senescence

[24] Victorian Planning Authority, 'DPCD South West Victoria Landscape Assessment Study – Regional Overview Report', 2013, Available at https://www.planning.vic.gov.au/__data/assets/pdf_file/0023/94820/ROR-Chapter-5-Implementation-Part-2.pdf

[25] Bayside City Council, 'Significant Tree Management Policy 2020', 2020, Available at https://www.bayside.vic.gov.au/sites/default/files/trees_parks_and_beaches/significant_tree_management_policy_2020.pdf

[26] Victorian Law Reform Commission, '4. Planning law and regulation affecting trees on private land - Vegetation Protection Overlay, Available at https://lawreform.vic.gov.au/content/introduction-34

Vulnerability: Exposure to contingencies and stress, and the difficulty in coping with them. This can apply to ecosystems, trees, people, and places.[27]

Water Sensitive Urban Design (WSUD) is a more sustainable approach to urban planning and design to make use of stormwater and reduce the harm it causes to our natural waterways.[28]

[27] GreenFacts, 'Vulnerability (in ecosystems), available at: https://www.greenfacts.org/glossary/tuv/vulnerability-ecosystems.htm

[28] Melbourne Water, 'Introduction to WSUD', available at: https://www.melbournewater.com.au/building-and-works/stormwater-management/introduction-wsud

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