

GREENING BALACLAVA & ST KILDA EAST

URBAN FOREST PRECINCT PLAN



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We pay our respect to their Elders, past and present. We acknowledge and uphold their continuing relationship to this land.



Eucalyptus leucoxylon
Endemic Species of
Bunurong and Wurundjeri
Country.

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EXECUTIVE SUMMARY

The purpose of this Urban Forest Precinct Plan (UFPP) is to guide tree planting and biodiversity projects to achieve the targets and outcomes of the Urban Forest Strategy, creating a healthy, biodiverse and connected urban forest. This UFPP focuses on the Balaclava and St Kilda East neighbourhood, one of nine neighbourhoods in the City of Port Phillip (CoPP).

This UFPP is developed by LatStudios and the City of Port Phillip, and incorporates analysis by Swinburne Institute of Technology Walk Quality research project. The Walk Quality project analyses current streetscape conditions and ways to improve pedestrian accessibility, safety and comfort. The research identifies streets that are used frequently and lacking in shade, making them high priority for urban forest canopy increase.

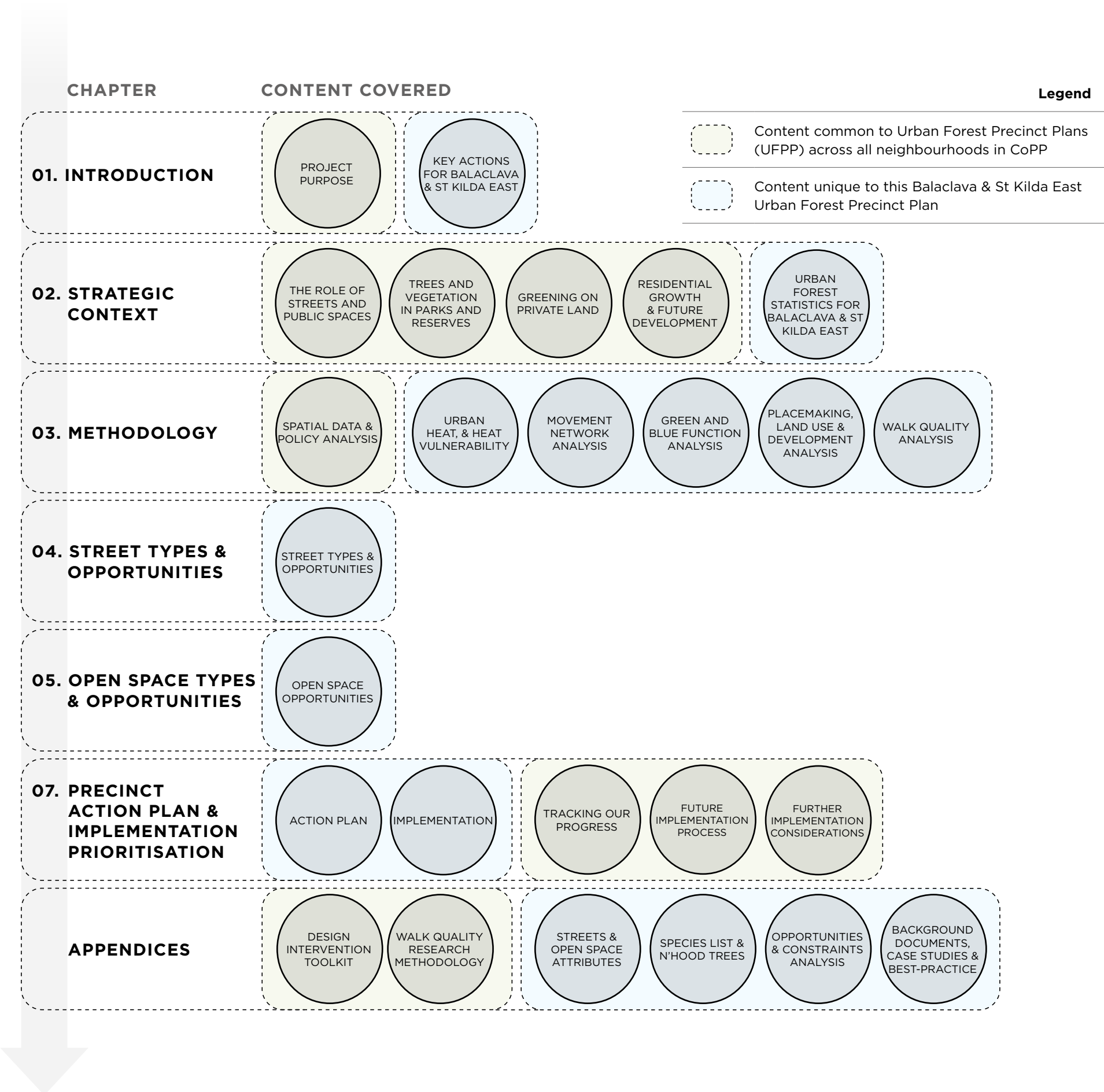
This UFPP for Balaclava and St Kilda East provides guidance for greening interventions, responding to the neighbourhood's unique existing and future character, the objectives of the Urban Forest Strategy, and addresses other neighbourhood-specific urban forest challenges.

The Urban Forest Strategy Objectives are:

1. Objective 1: Increased canopy cover on public and private land for a liveable, sustainable, equitable and vibrant city.
2. Objective 2: Cooler and greener city which is resilient to more extreme weather and changes in rainfall.
3. Objective 3: Our community is engaged, trees and plants are valued, and we build partnerships to green our urban environment across all land types.
4. Objective 4: A well-managed forest, including tree health and quality, pest and disease management, and succession planning for iconic species and locations.
5. Objective 5: A biodiverse urban forest with diverse species, healthy ecosystems and habitat.

This UFPP for Balaclava & St Kilda East:

- Identifies tree planting opportunities to improve equity, including shade in areas with higher heat vulnerability along key walking and cycling routes, public transport stops and around activity centres.
- Identifies opportunities for biodiverse planting in streets and parks.
- Captures delivery options aligning with water sensitive urban design, traffic safety and footpath renewal programs and partnering with other land holders.
- Identifies where minor uplifts can occur to existing streetscapes by infill planting filling in gaps or gradually transitioning trees to a different species to improve canopy cover and biodiversity.
- Provides a summary of how Council can work with other land holders for a greener neighbourhood.
- Provides a priority implementation plan for the next 10 years.



The background image shows a residential street scene. On the left, there are lush green trees and foliage. In the center, a utility pole with power lines is visible. On the right, there is a two-story brick house with several windows. The entire image is covered with a semi-transparent green overlay.

01 INTRODUCTION

01.1

FOCUS AREA

The suburbs of Balaclava and St Kilda East form one of nine neighbourhoods within the City of Port Phillip (CoPP). It is an established, predominantly residential neighbourhood with a range of street typologies, from major movement corridors down to access laneways.

In 2023, the CoPP assessed tree canopy cover on both public and private land between 2012 and 2022. The study examined canopy cover on roads, public spaces, and private properties. Over the ten-year period, the analysis revealed a slight overall decline in tree canopy cover of 0.69%. Roads had a canopy cover of approximately 26%, significantly higher than the average for inner-city Melbourne. Most canopy growth came from the growth of existing street trees, while canopy levels in parks remained largely unchanged. However, tree removals on private land reduced overall canopy cover by 1.09%. Notably, more than half of the private land canopy resulted from new plantings during this period.

From this study, it was revealed that the Balaclava and St Kilda East neighbourhood has an overall canopy cover of 20% - the second highest in the municipality after Elwood and Ripponlea.

Neighbourhood	Current Canopy Cover (2022)*
1 Elwood & Ripponlea	25%
2 Balaclava & St Kilda East	20%
3 St Kilda & St Kilda West	19%
4 St Kilda Road	16%
5 Albert Park & Middle Park	14%
6 South Melbourne	18%
7 Port Melbourne	16%
8 Montague	8%
9 Sandridge & Wirraway	8%

*Note that canopy cover excludes tree canopy within Albert Park. The canopy cover of Albert Park is 16%. For more information on canopy cover, see the City of Port Phillip’s Tree Ledger Report (2012-2022).



Figure 01: The nine neighbourhoods of the City of Port Phillip (CoPP).



01.2

PROJECT PURPOSE

URBAN FOREST STRATEGY (2024-2040)

In 2019, the hottest and driest year in Australia’s recorded history, the City of Port Phillip (CoPP) declared a climate emergency. The most effective way to mitigate urban heat islands is through greening, that is planting trees and diverse vegetation. Greening provides additional benefits including improved biodiversity, health and well-being, reduced air and noise pollution and enhanced commercial areas all of which contribute to liveable, sustainable, equitable and vibrant neighbourhoods.

To improve urban greening across the municipality, the City of Port Phillip (CoPP) released its second Urban Forest Strategy in 2024 (2024–2040), setting the following vision: *In the City of Port Phillip, urban greening is healthy and abundant, biodiversity is valued and supported, and nature connects the community.*

The Urban Forest Strategy contains five objectives:

1. Objective 1: Increased canopy cover on public and private land for a liveable, sustainable, equitable and vibrant city.
2. Objective 2: Cooler and greener city which is resilient to more extreme weather and changes in rainfall.
3. Objective 3: Our community is engaged, trees and plants are valued, and we build partnerships to green our urban environment across all land types.
4. Objective 4: A well-managed forest, including tree health and quality, pest and disease management, and succession planning for iconic species and locations.
5. Objective 5: A biodiverse urban forest with diverse species, healthy ecosystems and habitat.

As part of the Urban Forest Strategy, CoPP has set a target to achieve 30% canopy cover on streets and a minimum of 40% canopy cover in public spaces (excluding sports field areas) by 2040, along with an increase in biodiverse planting and permeable surfaces.

GREENING BALACLAVA & ST KILDA EAST, URBAN FOREST PRECINCT PLAN

The purpose of this Urban Forest Precinct Plan (UFPP) is to guide tree planting and biodiversity projects to achieve the Urban Forest Strategy’s targets and to develop a healthy, biodiverse and connected urban forest. This UFPP focusses on Balaclava and St Kilda East, providing a template for the future UFPP’s in the remaining eight neighbourhoods of the municipality.

Four key actions to achieve the Urban Forest Strategy’s objectives and targets for Balaclava and St Kilda East, which can be applied to other neighbourhoods within CoPP, are identified in the adjacent table and next page.

To ensure we are planting trees and greening where it is needed most, we have applied an equity lens to prioritise actions. In 2018 the Victorian Government undertook heat mapping across the wider Melbourne region. This mapping identified nine areas in Port Phillip that fall within the two highest categories of the ‘heat vulnerability index’.

We applied a Walk Quality analysis to enhance equity by focusing on key pedestrian areas to make walking, cycling and public transport more comfortable while ensuring our parks are cool and shady.

This precinct plan focuses on actions achievable in public spaces, streets, and parks, and where we can improve equity by:

- Prioritising tree canopy in key pedestrian areas to enhance comfort, particularly for those relying on public or community transport and for children along key school walking routes.
- Ensuring our neighbourhoods have cool, shady areas in parks and reserves. With good management, including tree and vegetation planting and access to drinking water, these areas can become cool refuges during hot weather, providing pockets of high canopy cover that help cool surrounding areas.
- Implementing targeted interventions in areas with high heat vulnerability. These interventions should be tailored to specific locations and could include additional street trees, rain gardens, or the introduction of more permeable surfaces and planting.

Some streets will require greater interventions to achieve optimal canopy and biodiversity outcomes. The Design Toolkit in Appendix B outlines various strategies that can be implemented in existing and new streets. Streets are prioritised based on where shade will most improve neighbourhood equity, as detailed in Chapter 6: Precinct Action Plan & Implementation Prioritisation.

Following the adoption of this UFPP, the next phase will involve detailed designs for priority streets, applying appropriate greening interventions from the Toolkit. Further community engagement will take place at this stage.

We will continue tree planting programs to fill in any gaps and work with residents on streets where we can slowly transition the species to improve canopy cover and resilience. We will continue to partner with other agencies to increase shade and promote biodiverse planting.

01.3

KEY ACTIONS

The following four overarching Key Actions are intended to guide and categorise specific neighbourhood opportunities to enhance the urban forest in Balaclava and St Kilda East, while also being relevant to other future neighbourhood precinct plans. These four Key Actions are explained in more detail on the following page, accompanied by a map illustrating ways in which they may be implemented within the neighbourhood.

1	Designing New Streets for Greening and Shade
2	Enhancing and Maintaining Existing Streetscapes
3	Increasing Canopy and Biodiversity in Parks and Open Space
4	Greening Beyond Council Land through Partnerships and Advocacy

01.4 KEY ACTIONS - EXPLAINED

1 Designing New Streets for Greening and Shade

Integrate tree planting and biodiversity into new or redesigned streetscapes to maximise canopy cover, pedestrian comfort, and climate resilience, prioritising key pedestrian areas and areas with high heat vulnerability.



- Street tree design projects can improve tree canopy and biodiversity by changing the layout—like adjusting parking and planting trees in the road, adding central medians or kerb outstands. See the Intervention Toolkit in Appendix B for design options to maximise planting opportunities in constrained streets.
- Streetscape integration projects can align tree planting with transport, safety and urban design upgrades. For example, Inkerman and Carlisle Streets are busy local roads with shops. In 2024, Council approved a new design for Inkerman Street. A masterplan for Carlisle Street, including the St Kilda Library and Town Hall areas, is also being developed incorporating greening and canopy cover.
- Alexandra Street, between Dandenong and Balacava Roads, is a wide street with space to remove some parking and add greenery near St Kilda Cemetery, turning it into a green corridor.

2 Enhancing and Maintaining Existing Streetscapes

Improve the health, diversity, and canopy cover of existing street trees through proactive maintenance, infill planting, and species transition.



- Infill planting of new street trees in vacant street spaces is none of the most readily accessible ways to boost canopy cover.
- Some tree species are not providing enough shade or visual consistency along the street, and several are not suited to future climate conditions. Gradually replacing these trees with more suitable species, as they reach the end of their life, will help create a more resilient and climate-ready urban forest while maintaining canopy cover.
- Improvements to early tree establishment will help trees flourish, but some trees planted over the past decade have failed to thrive and will be identified for gradual replacement with ongoing tree audits and infill planting efforts.
- Council has 'business as usual' programs to uplift park and streetscape planting, implement water sensitive urban design to improve storm water quality, and install street modifications, such as speed bumps, to improve safety. These programs create opportunities for planting, improving canopy and biodiversity throughout the neighbourhood. Combining programs will result in multiple benefits and cost savings.

3 Increasing Canopy and Biodiversity in Parks and Open Space

Achieve 40% canopy cover in public open spaces and enhance biodiversity through targeted planting and community partnerships.



- Properties for new open space have been purchased and will be developed with canopy and biodiversity targets.
- Community gardening support will develop and expand community gardening opportunities, including plots in open spaces such as Hewison Reserve, Te Arai Reserve, Pakington St Reserve, continuing to support the long-standing St Kilda Community Gardens, and biodiversity planting with local community groups.
- Succession planting and biodiversity improvements to garden beds in parks and streetscapes will be delivered. For example, Alma Park is the neighbourhood's most significant open space. The historic park has 55% canopy cover with diverse tree species and remnant vegetation. Some trees are starting to decline and require succession planning. The Friends of Alma Park support biodiverse planting, with indigenous plants along the northern boundary.

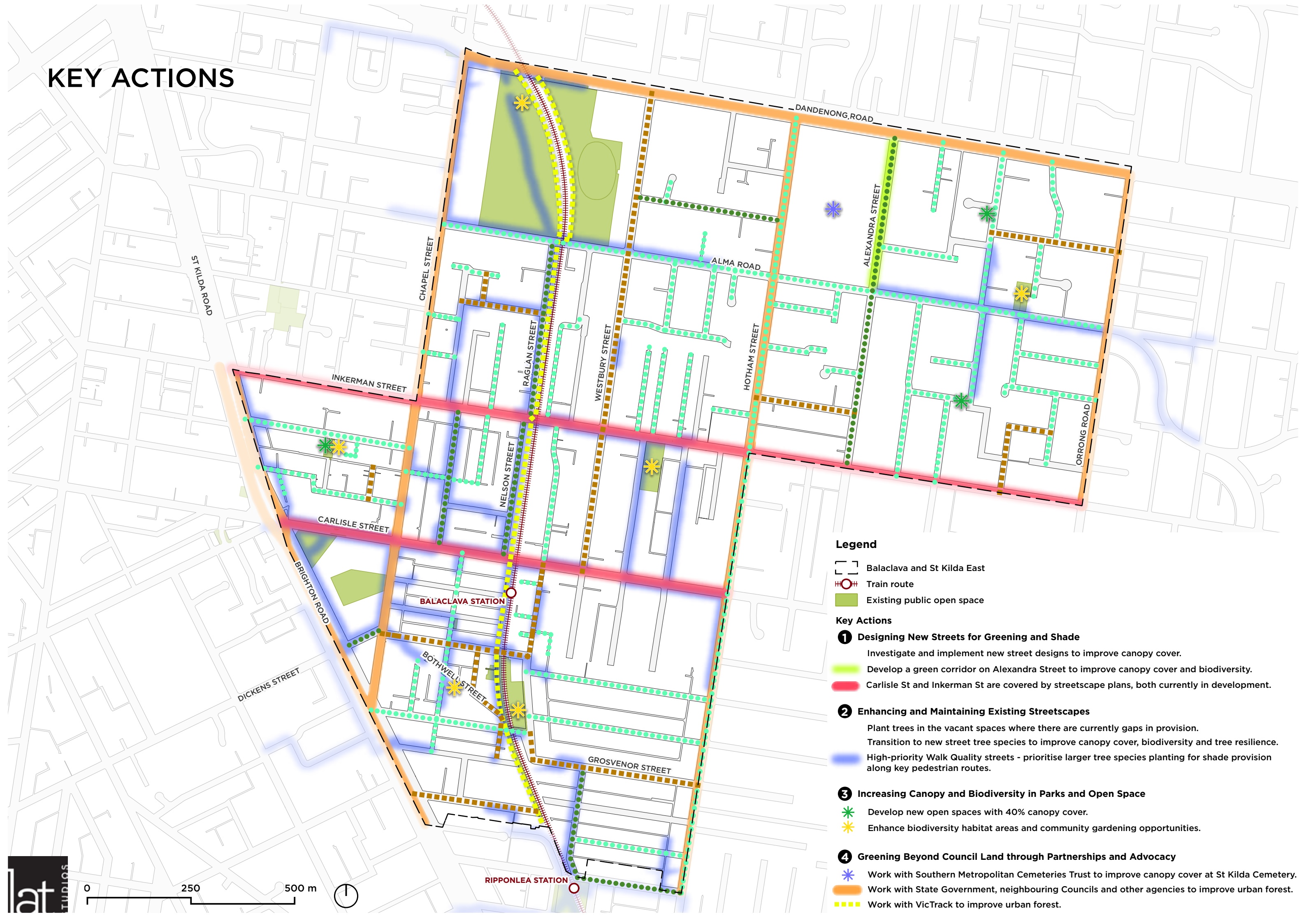
4 Greening Beyond Council Land through Partnerships and Advocacy

Expand the urban forest by working with other landholders and agencies to green non-Council land and improve shade at public transport stops.



- Comfortable public transport stops with shelter from sun and wind improves public transport access for everyone. Targeted tree planting near public transport stops will improve shade and shelter. Where trees cannot be planted, we will partner to trial alternative solutions, such as Yarra Tram's urban arbours.
- Canopy and biodiversity improvements throughout the neighbourhood will require collaborative working with State Government, neighbouring Councils, VicTrack along the rail line, with schools, and with the Southeast Metropolitan Cemeteries Trust. Council will continue to seek partnerships with landholders to improve greening outcomes across the precinct.

KEY ACTIONS





02

STRATEGIC CONTEXT

02.1 MULTI-FUNCTIONAL ROLE OF STREETS & PUBLIC SPACES

Streets and public spaces serve a variety of interconnected roles that extend far beyond just facilitating movement. They contribute to the overall character and sense of place, hosting a wide range of activities, from commerce to leisure.

Streets are essential for providing infrastructure such as power lines, stormwater and waste removal. In addition to human-centric infrastructure, streets play a crucial role in supporting biodiversity, green infrastructure and sustainable water management.

Public spaces are publicly owned lands that are primarily set aside for the purposes of outdoor recreation, nature conservation, passive outdoor enjoyment and public gatherings. Public spaces contribute to quality of life and are essential to the urban environment. Alongside greening and urban cooling, open spaces are valued as places to socialise, relax and unwind, to be outdoors and connect with nature, to play sport and exercise. They are spaces for hosting festivals and events and are spaces that protect and interpret contemporary and historical cultural values, diversity and identity and give a sense of place. Open spaces are places to enjoy the natural environment and be in contact with nature, and they offer opportunities to protect and enhance biodiversity and habitat values.

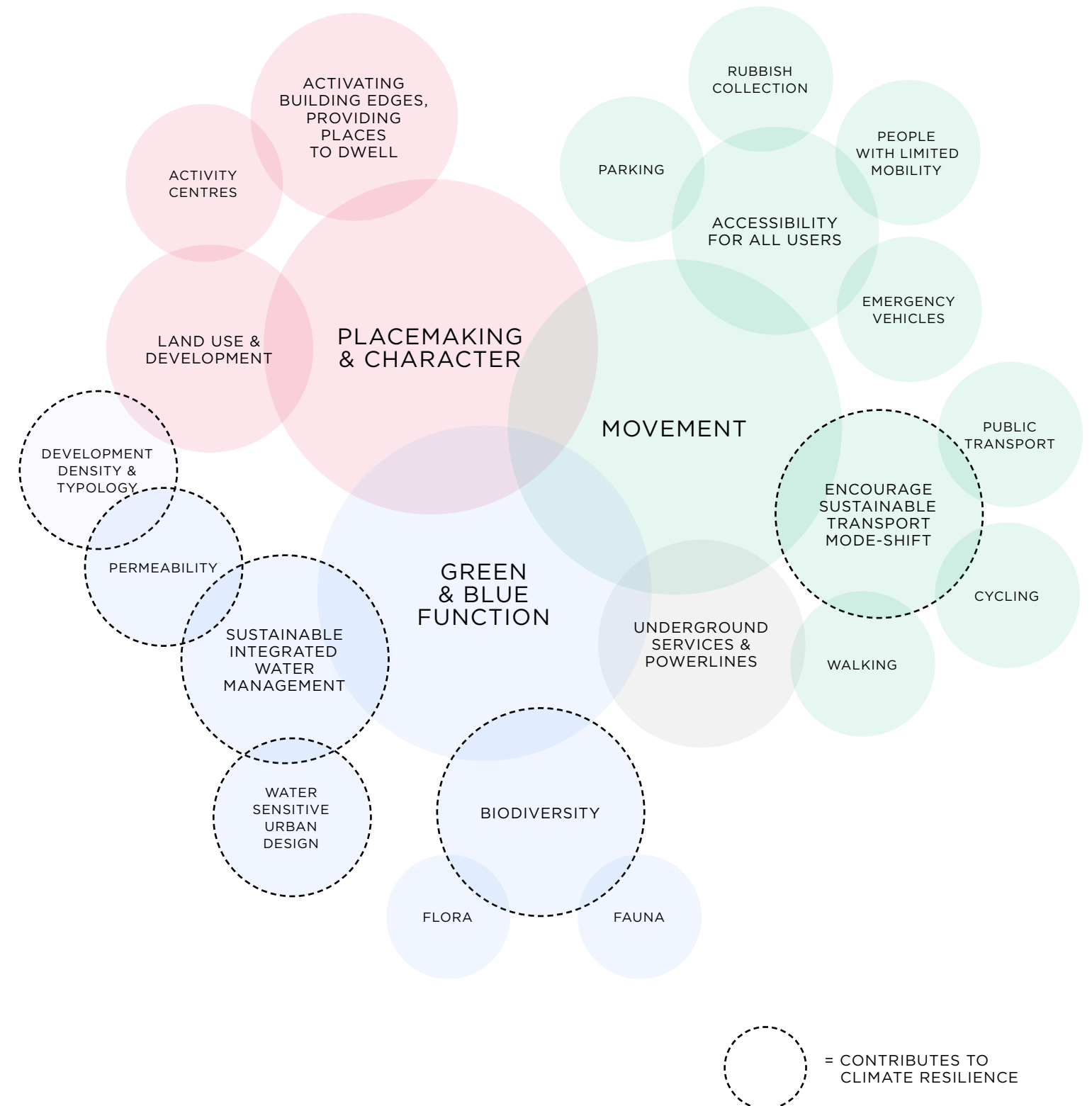
In order to deliver increased trees and vegetation, a mindful balance of the competing demands of streets and public spaces, including on street parking, with the numerous benefits of trees and biodiverse landscapes is essential.

Like other established neighbourhoods in Melbourne, streets and footpaths in Balaclava and St Kilda East can be narrow, and sometimes trees and power poles can restrict accessibility along footpaths. We can improve accessibility by considering tree placement during the design process and when undertaking tree replacement programs.

Trees can help to:

- Reduce stormwater run-off and improve water quality.
- Contribute to cooler urban environments by reducing surface temperatures.
- Improve local air and soil quality.
- Reduce atmospheric carbon dioxide.
- Provide wildlife habitats and pollination opportunities.
- Increase property values.
- Extend the life of street surfaces.
- Enhance or define the character of an area.
- Promote human well-being by strengthening the community's connection with nature.

These strategic roles and physical conditions help to inform increased canopy and biodiversity opportunities. See the appendices for the full suite of opportunities and constraints analysis maps.



02.2 ACCOMMODATING TREES AND VEGETATION ON STREETS

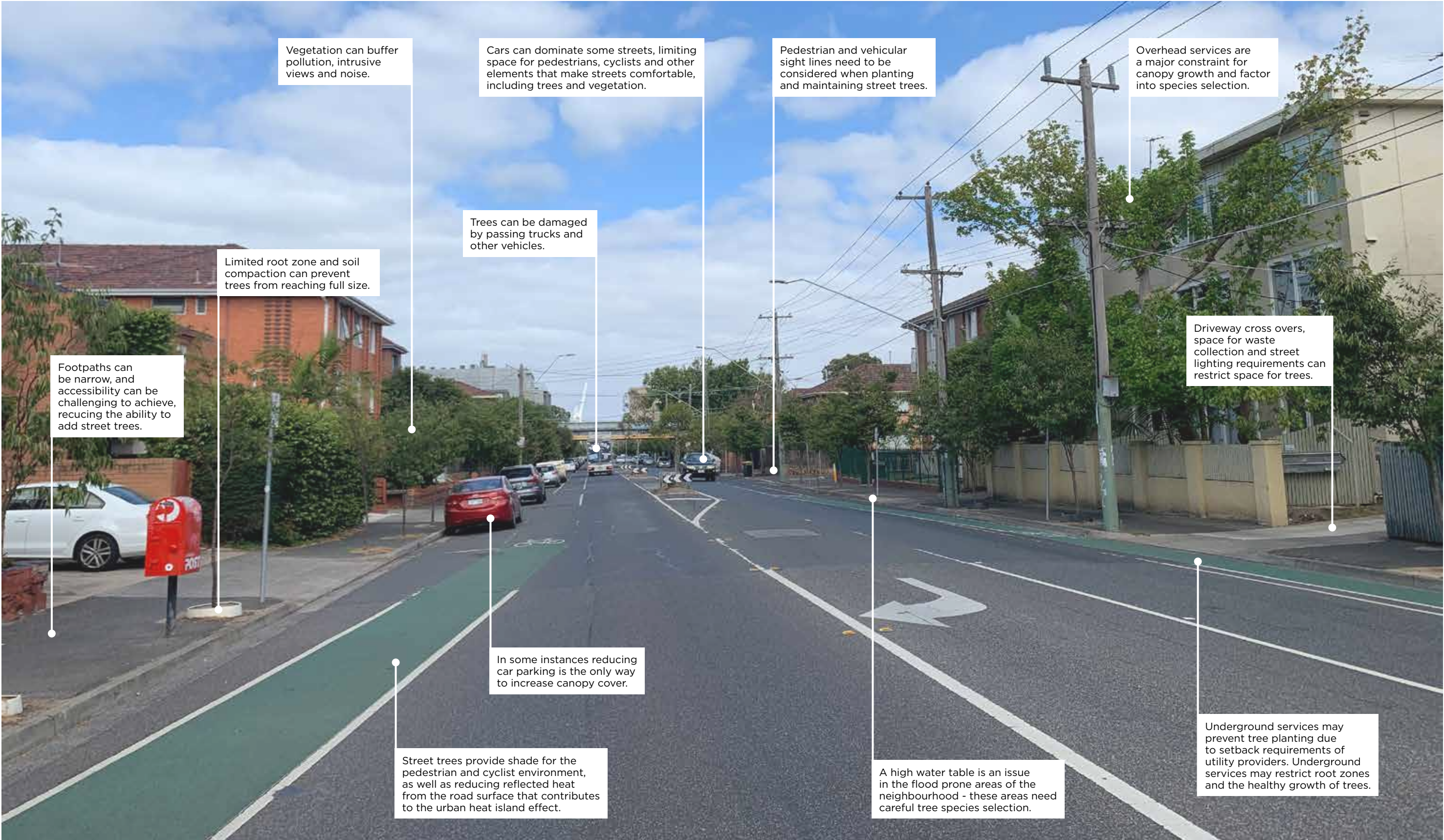


Figure 02: Inkerman Street highlights some of the key streetscape elements that influence a street’s function and ability to accommodate urban forest

02.3 ENHANCING TREES AND VEGETATION IN PARKS AND RESERVES



Figure 03: Alma Park highlights some of the key functions and considerations for healthy trees and vegetation in open spaces

02.4 GREENING ON PRIVATE LAND

The Urban Forest Strategy (2024-2040) recognises that everyone has a part to play in urban greening, including the objective that: *Our community is engaged, trees and plants are valued, and we build partnerships to green our urban environment across all land types.*

Private land accounts for 49% of the total land area in Port Phillip, making it a vital part of the city's urban green space network. Residential gardens, balconies, and street-adjacent nature strips provide critical habitat, cooling, and ecological benefits. Together, these spaces help to connect the broader network of public parks and reserves, creating a more resilient and liveable urban environment. Residents and private landholders play an important role in planting, maintaining, and caring for urban vegetation. Whether in private gardens, balconies, nature strips, or through community gardening projects, private greening is a fundamental component of urban biodiversity and the urban forest. Collaboration with local volunteers, community groups, and other organisations is key to creating and sustaining greener, healthier neighbourhoods.

As development and densification in our neighbourhoods continue, it will be important to work with developers and other stakeholders to embed greening, habitat connectivity and permeability into the urban form, ensuring a healthy future urban forest.

Education, advocacy, policy, guidance, engagement initiatives and partnerships are ways we can improve greening on private land. Areas of Victorian Government-managed land include many of the key transport routes in CoPP, where high-quality canopy cover is essential for promoting active travel and comfortable streets. The Sandringham train line, schools and the St Kilda Cemetery additionally offer opportunities to improve biodiversity and canopy cover by advocating to and collaborating with these private landowners.

The Urban Forest Strategy actions for private land include:

- For Victorian Government-Managed Land:
 - Action 6: Advocate to the Victorian Government to ensure appropriate consideration of canopy cover in Electrical Line Clearance Regulations and for funding to support engineered solutions that address safety while reducing negative impacts on canopy coverage.
 - Action 8: Advocate to Victorian Government, including the Department of Transport, Parks Victoria, VicTrack, Southern Metropolitan Cemeteries Trust, and other agencies to increase maintenance, canopy coverage and biodiversity on state-managed land in the municipality.
- For new developments:
 - Action 14: Facilitate increase of canopy trees, and other type of innovative and resilient urban greenery in private developments via planning tools.
 - Action 15: Protect significant trees and vegetation in private realm that are valued by communities, including large canopy trees and indigenous vegetation via suitable planning tools and develop clear guidelines for Significant Tree Removal applications under the Local Law.
 - Action 25: Partner with developers to support greening, permeability, biodiversity and stormwater detention in public and private spaces in line with Act and Adapt and the Public Space Strategy.
- For supporting home gardeners:
 - Action 22: Support the community to implement the Nature Strip Guidelines (2022) and Community Gardens Assessment Guidelines (2021) and continue to provide community gardening support to promote sustainable gardening and biodiversity in public spaces.
 - Action 23: Deliver annual community activities to educate, incentivise and build greening capacity to improve the urban forest including resources for home gardeners and investigate ways to support home and community gardening.
 - Action 24: Provide resources to educate residents and provide guidance to developers on planting, biodiversity, and sustainable gardens to enhance the urban forest on private property.



Figure 04: An example of a new development in CoPP that has allowed space for biodiverse habitat creation.



Figure 05: An example of an apartment in CoPP that has not contributed to the health of the urban forest.

02.5 RESIDENTIAL GROWTH & FUTURE DEVELOPMENT

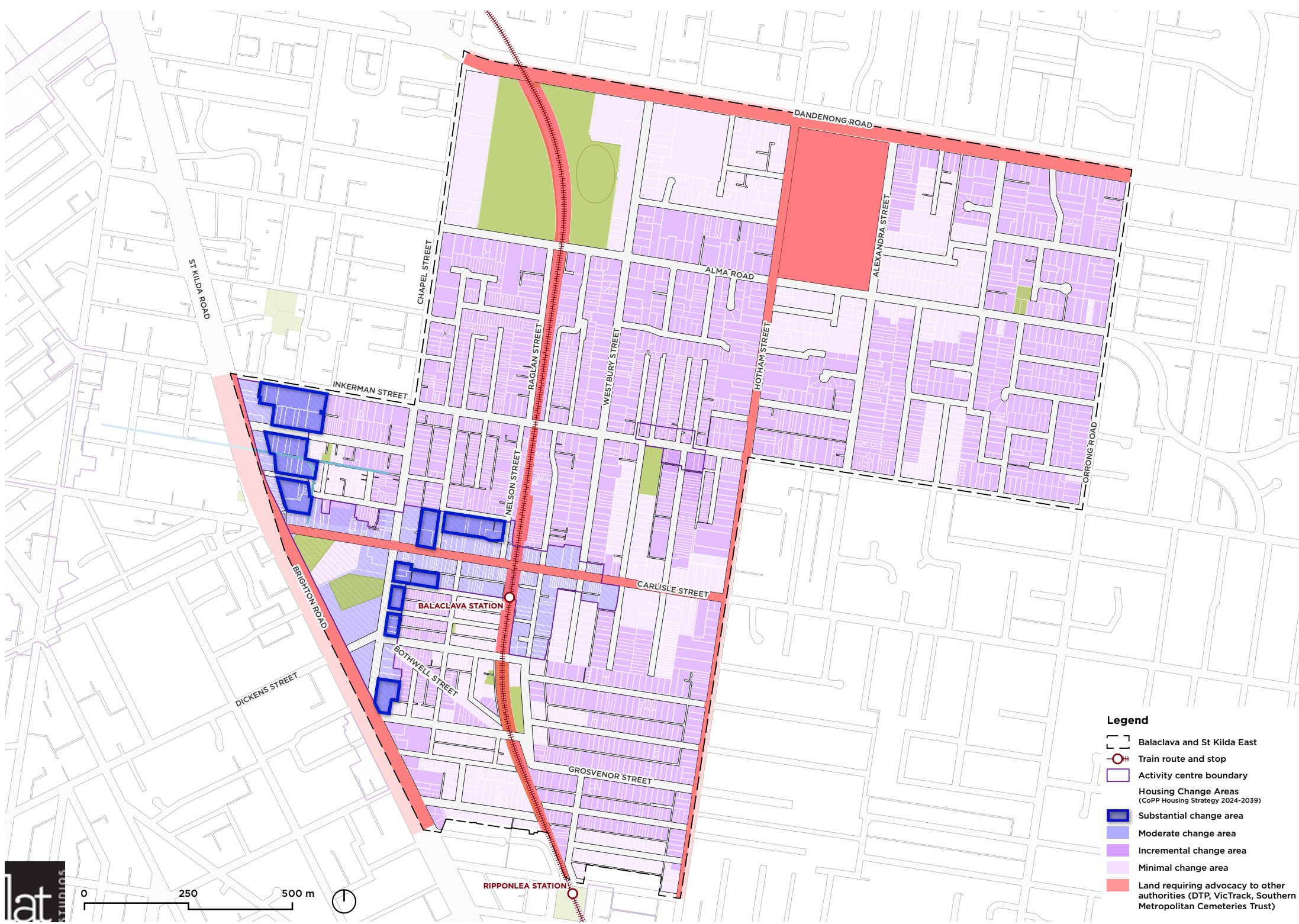
The population of the Balaclava and St Kilda East neighbourhood is approximately 17,000, with a population density of 7,240 persons per square kilometre. There are 9,430 dwellings in the neighbourhood, with an average household size of 1.88 persons per dwelling. Of these, 11.9% are separate houses, 36.9% are medium-density dwellings, and 50.1% are high-density dwellings (Profile ID, 2025).

The Residential Development Framework Plan in the City of Port Phillip Housing Strategy 2024-2039 identifies areas where varying levels of housing growth and change are anticipated and encouraged. Most of the Balaclava and St Kilda East neighbourhood is expected to undergo incremental change, with pockets of minimal change in areas with heritage and/or valued neighbourhood character. Moderate to substantial change is anticipated around Carlisle Street, the southern end of Chapel Street, and along St Kilda Road.

Although change is expected, residential and precinct land capacity in the neighbourhood is somewhat constrained. A combination of factors - such as smaller lot sizes, fragmented ownership, and heritage and character restrictions - has informed a land capacity assessment. This assessment forecasts that 5% of the city's future net additional dwellings will be located between the Carlisle Street Major Activity Centre, Balaclava, and St Kilda East (Urban Enterprise, 2024). Across Port Phillip, nearly all (99%) of new dwellings approved in 2021 were apartments (Housing Strategy 2024-2039).

On private land, elements such as building envelopes, built form, lot size, driveways, and car parking affect the availability of space for tree planting. The prevalence of small lots and low-rise apartment buildings in the neighbourhood often limits opportunities for substantial tree planting on residential land.

It is important to note that while the Residential Development Framework Plan provides high-level guidance on the extent of housing change and growth envisaged in different areas, this does not mean that every lot within the identified change areas will experience the same level of growth (City of Port Phillip Housing Strategy 2024-2039). The full capacity for additional dwellings is unlikely to be realised over the 20-year period assessed (Urban Enterprise, 2024).



URBAN FOREST STATISTICS IN BALACLAVA & ST KILDA EAST

TREE DIVERSITY

A key management priority for the City of Port Phillip is maintaining a diverse range of tree species across the city and within neighbourhoods. Species diversity is essential for creating a resilient urban forest that can withstand pests, diseases and climate change. To achieve this, the Council aims to maintain a healthy mix of tree species, genera and families, ensuring that no single species exceeds 5-10% of the urban forest, no genus exceeds 10-20%, and no family exceeds 15-30%.

St Kilda East and Balaclava have a well-balanced tree population:

- Species diversity is good with only two tree species above 5% of the total neighbourhood tree population - the London Plane (6.9%) and Kanooka (6.1%), while all other species are below 5%.
- Genera distribution in St Kilda East and Balaclava is below 10% with the highest concentrations in the Platanus (Plane trees) and Ulmus (Elms) genera.
- Distribution in this area shows that the Myrtaceae family, which includes many native Australian trees, comprises 42.95% of the population, exceeding the upper level 30% target. However, all other tree families are below the lower 15% benchmark.

Managing the Myrtaceae family can be particularly challenging in Australian cities due to the large number of native species in this family and the community's preference for planting native trees resulting in overuse of this family. The Myrtaceae family includes over 70 genera and more than 1,500 species, encompassing iconic trees such as all Gums, Bottlebrushes, Paperbarks, and Lilly-pillies.

Overall, St Kilda East and Balaclava have a well-distributed mix of species, genera and families, with the Myrtaceae family being the exception as it accounts for a disproportionately large percentage of trees in the neighbourhood.

Trees in some streets are not performing well. In consultation with community, streets can be slowly transitioned to a new species when trees are at the end of their useful life expectancy.

TREE AGE

Maintaining a balanced range of tree ages is a crucial aspect of urban forest management, supporting the health, resilience and long-term sustainability of ecosystem services. A diverse age range ensures that the Council can effectively manage both young and old trees, which are often the most costly periods of the tree life cycle (site preparation, planting and formative pruning for young and removal for older trees).

Council currently has a young urban forest across St Kilda East and Balaclava with approximately half (47%) of all trees being 20 years old or younger. The young St Kilda East and Balaclava urban forest is predominantly due to the increased efforts by council to increase the number of trees planted annually over the past two decades, and the high level of maintenance pruning of urban trees lowering the expected lifetimes of most species.

A mix of young, mature, and old trees provides several benefits:

- Continuous canopy cover: helps mitigate sun and heat exposure across the city.
- Reduced risk of widespread tree loss: ensures that tree losses occur gradually over time rather than all at once.
- Enhanced carbon sequestration: older trees store more carbon and provide more shade, contributing to the environment and habitat.
- Urban forest succession: young trees play a key role in regenerating the urban forest over the long term.
- Cost-effective management: a balanced tree age profile spreads out maintenance costs and helps prevent large expenses in short time-frames.

When an urban forest is dominated by trees of similar ages, it becomes more vulnerable to disease and pest outbreaks, particularly if there is an over representation of mature or old trees. By staggering tree ages the Council can ensure more manageable maintenance schedules and reduce the risk of rapid, widespread tree loss.

Older trees tend to be more resilient to climate extremes, but younger trees are vital for adapting to future environmental conditions. By planning for a range of tree ages the Council can foster a stable, sustainable urban forest that will thrive for future generations.

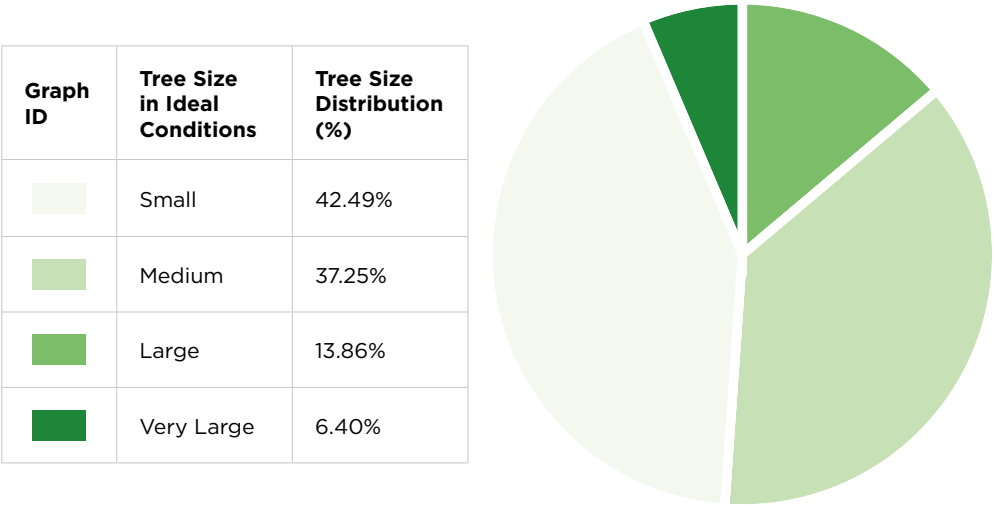
The adjacent info graphics break down some of the key metrics regarding the existing urban forest in Balaclava and St Kilda East.

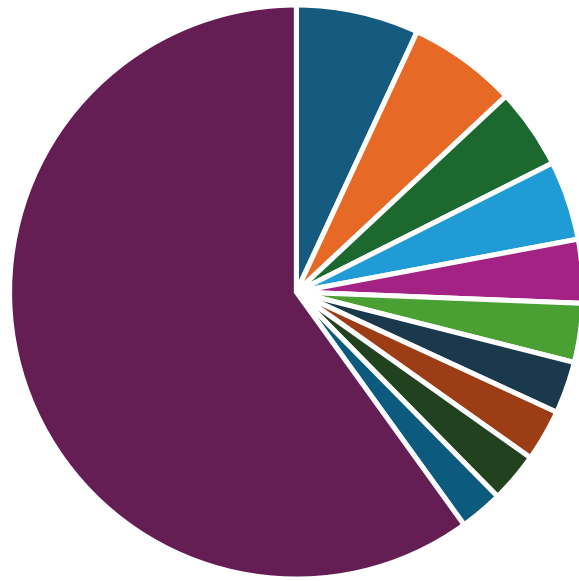
TREE AGE DIVERSITY IN BALACLAVA & ST KILDA EAST



TREE SIZE DIVERSITY IN BALACLAVA & ST KILDA EAST

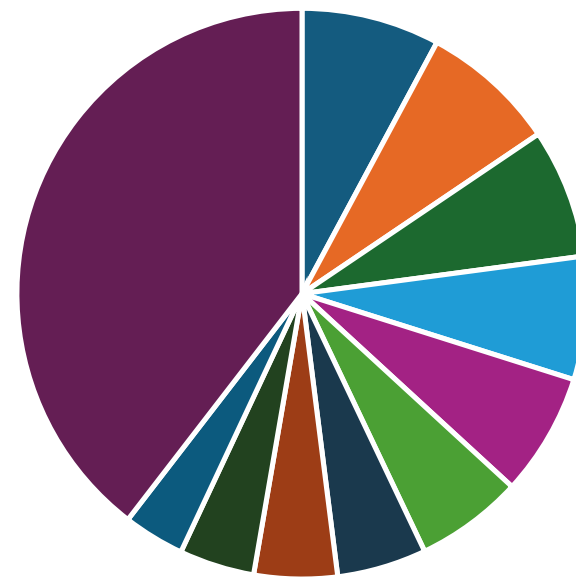
Note that this is the tree species' projected mature size in ideal growing conditions, which may not be achieved in street planting.





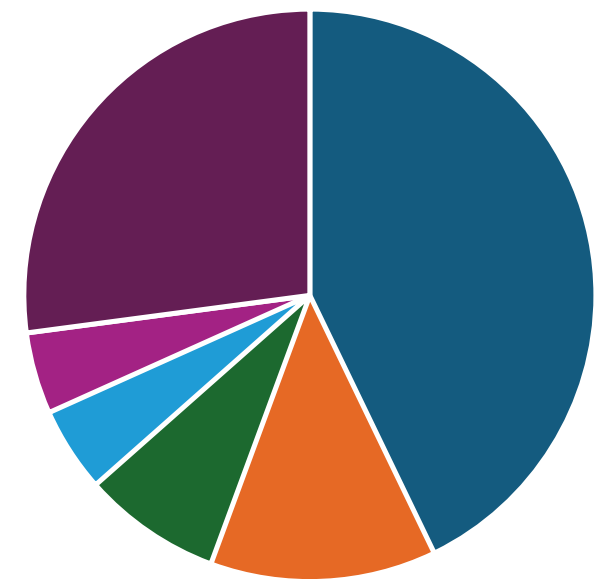
TREE SPECIES DIVERSITY IN BALACLAVA & ST KILDA EAST

Graph ID	Tree Species Botanical Name	Tree Species Common Name	Tree Species Distribution (%)
■	<i>Platanus X acerifolia</i>	London Plane	6.92%
■	<i>Tristaniopsis laurina</i>	Kanooka	6.13%
■	<i>Ulmus parvifolia</i>	Chinese Elm	4.54%
■	<i>Zelkova serrata</i> 'Green Vase'	Green Vase Japanese Elm	4.46%
■	<i>Corymbia maculata</i>	Spotted Gum	3.58%
■	<i>Melaleuca linariifolia</i>	Narrowleaf paperbark	3.32%
■	<i>Callistemon salignus</i>	Willow Bottlebrush	2.93%
■	<i>Pyrus calleryana</i>	Callery Pear	2.92%
■	<i>Lophostemon confertus</i>	Brush Box	2.82%
■	<i>Syzygium smithii</i>	Lilly Pilly	2.44%
■	Other		59.94%



TREE GENUS DIVERSITY IN BALACLAVA & ST KILDA EAST

Graph ID	Tree Genus	Tree Genus Distribution (%)
■	<i>Platanus</i>	7.85%
■	<i>Ulmus</i>	7.70%
■	<i>Eucalyptus</i>	7.33%
■	<i>Corymbia</i>	6.99%
■	<i>Melaleuca</i>	6.95%
■	<i>Tristaniopsis</i>	6.10%
■	<i>Zelkova</i>	5.07%
■	<i>Callistemon</i>	4.72%
■	<i>Pyrus</i>	4.26%
■	<i>Fraxinus</i>	3.47%
■	Other	39.54%



TREE FAMILY DIVERSITY IN BALACLAVA & ST KILDA EAST

Graph ID	Tree Family	Tree Family Distribution (%)
■	Myrtaceae	42.95%
■	Ulmaceae	12.82%
■	Platanaceae	7.88%
■	Oleaceae	4.82%
■	Rosaceae	4.63%
■	Other	27.17%



03 METHODOLOGY

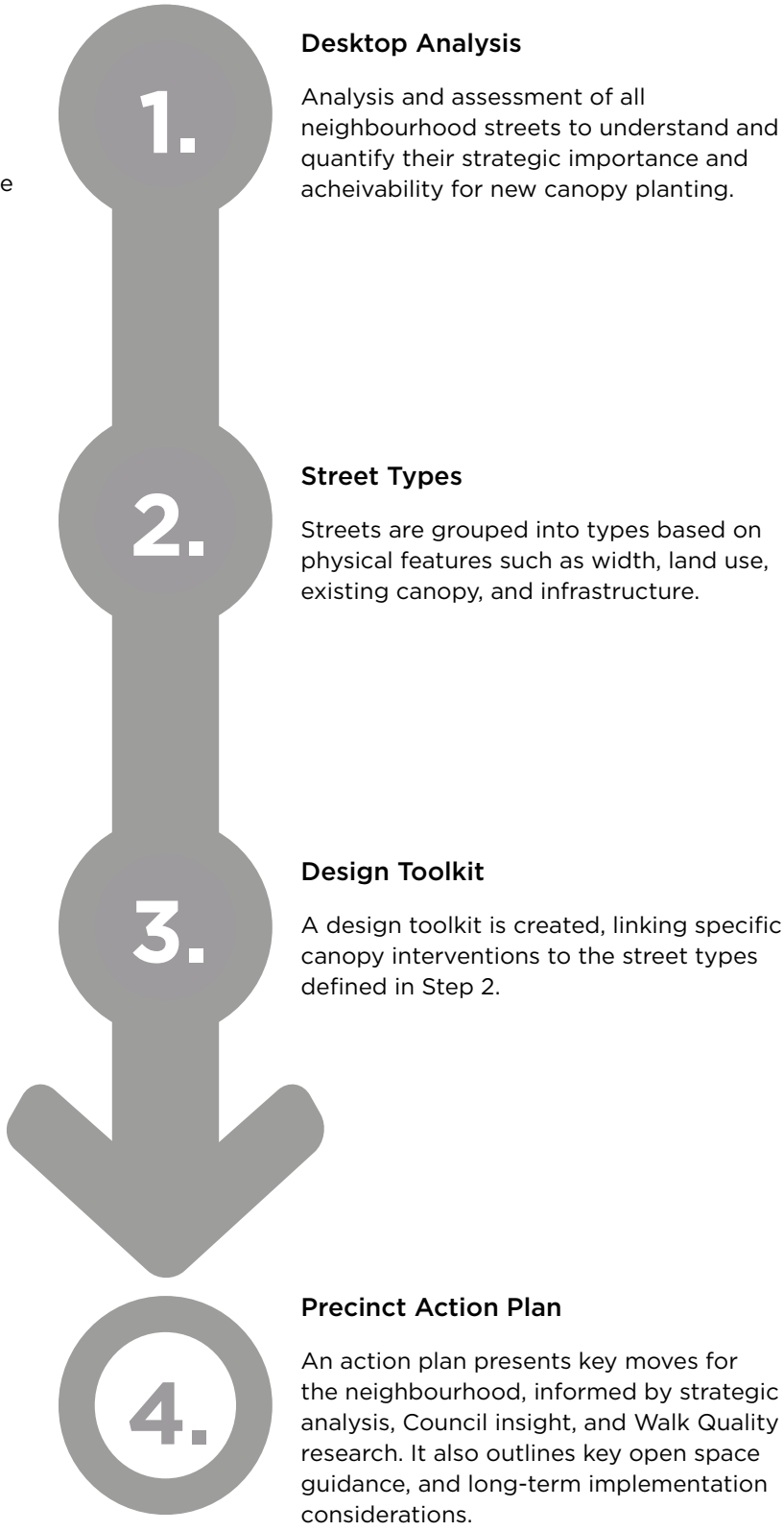
03.1

PROJECT METHODOLOGY OVERVIEW

This chapter outlines the methodology used to develop an urban forest precinct plan for Balaclava and St Kilda East, leading from high-level spatial data analysis to an implementable action plan.

The first step is a comprehensive analysis of all neighbourhood streets to assess their strategic importance and feasibility for increased canopy cover. Streets are then classified into typologies based on physical characteristics, forming the basis for a tailored design toolkit of streetscape canopy improvement interventions - see Appendix B. Streets and their requisite urban forest interventions are then prioritised through an action plan informed by spatial analysis, Council insight, and Walk Quality research findings.

This chapter highlights the spatial data analysis that took place as part of the first step in this project methodology, leading into the development of street types, a design toolkit and precinct action plan.



03.2

SPATIAL DATA & POLICY ANALYSIS

A detailed spatial analysis in GIS was undertaken to systematically map and assess key streetscape features and inform the recommended actions of the Urban Forest Precinct Plan.

The analysis utilised QGIS and Google Earth to assess data such as existing tree canopy coverage, footpath and verge width, road reserve dimensions, overhead utilities, land use zoning, planning overlays, street alignment, parking configurations, parking controls and topographic conditions.

By overlaying these datasets, the complexity of urban forest interventions was evaluated, identifying both constraints and opportunities for implementation of urban forest increases.

To further refine this assessment, a matrix classification was developed to categorise data into three key groups:

- **Prioritisation:** a combined dataset to indicate which streets have the greatest need for increased canopy, combining measurables such as areas with high urban heat exposure and low existing tree cover.

- **Achievability:** a combined dataset to highlight streets with more favourable conditions for planting, combining attributes such as wider verges and unrestricted parking controls.
- **Ongoing Review and Unknowns:** a data list of attributes which are either unknown, beyond the current project scope, or requiring further investigation in detailed design phases, such as soil quality and long-term maintenance feasibility. On the ground inspections identified streets with vacant tree plots and where species changes could occur.

This structured approach ensures that tree canopy expansion is prioritised strategically, aligning with the broader goals of the UFPP and Council policy.

Alignment with Objectives

Some data is used to help determine which streets should be prioritised to meet equity and Urban Forest Strategy objectives.



Achievability

Some data can be used to help determine which streets may have more favourable conditions for planting trees.



Ongoing Review

Some data can be used to help improve ongoing maintenance, biodiversity and planning strategy.



Unknowns

Some data is unknown at this stage, or not feasible to be considered within the scope of this project.

Some data may be relevant to determining ability to increase canopy coverage, however the data may be complicated to measure, or difficult to abstract for the purpose of making decisions.

This data may need to be considered during more detailed design phases.



WHAT HAS BEEN CONSIDERED?

DATA MAPPING

The accumulated opportunities and constraints data was reviewed to determine a short-list of key attributes which have a clear link towards delivering increased tree canopy.

Each street was assessed against this list to help determine an overall priority to guide Council's future actions.

For a full list of considered spatial data, refer to the opportunities & constraints mapping in the appendices.

DOCUMENT REVIEW

A review of existing Council strategies and reports and similar projects in other locations was undertaken to inform the UFPP. These documents helped identify Council aspirations for the functionality and hierarchy of streets and their various attributes.

For example, whether streets were identified as active travel corridors or potential biolinks, where the most substantial changes in residential density are forecast, and which streets have already been identified as being a priority for additional street tree planting. Some of the key implications from these documents have been summarised in the strategic analysis maps in the following pages.

Alignment with Objectives

Some data is used to determine which streets should be prioritised to meet equity and Urban Forest Strategy objectives.



- Ownership and responsibility – whether a street is Council-owned or other agency-managed to determine Council's role in delivery, partnership or advocacy.
- If there is an existing planning process underway to master plan a street, and if the UFPP can defer to this.
- Surrounding heat vulnerability index level
- If the street falls (or partially falls) within 400m walking catchment of an activity centre, and people are more likely to walk in any given street.
- Whether a street is a designated cycling route, to improve cyclist comfort and experience.
- Whether a street has public transport stops, for the purpose of shading passengers whilst waiting.
- Swinburne Walk Quality research recommendations for improving shade to sections of the pedestrian network.
- Potential to improve biodiversity.

Achievability

Some data can be used to help determine which streets may have more favourable conditions for planting trees.



- Existing canopy coverage and uplift potential.
- Larger area of road reserve (width x length) which provides a general indication of impact potential.
- Favourable street and powerline orientation to maximise tree growing size and urban heat island benefits.
- Whether the street has existing street driveway crossovers, which may reduce areas for planting.
- Potential surplus trafficable width within carriageways.
- If there are wider existing verges that provide more flexibility in choosing interventions.
- Appetite for altering existing street parking allowances.

Ongoing Review

Some data can be used to help improve ongoing maintenance, biodiversity and planning strategy.



- Age and health – trees that aren't thriving and are at the end of their useful life expectancy could be proactively replaced to increase canopy quicker.
- Abutting building heights and setbacks from road reserve may reduce available canopy spreading space.
- Consider future redevelopment sites, and potential to contribute towards urban forest.
- Whether street is prone to flooding or high water table. This can impact species selection and intervention choices.
- Consider existing street species diversity, and whether succession planting is recommended to improve resilience and fauna habitats.
- Whether a tree species has a contribution to neighbourhood character.

Unknowns

Some data is unknown at this stage, or unfeasible to be considered within the scope of this project.



- On-the-ground knowledge of existing trees (GIS data is a few years out of date and needs review).
- Underground utilities locations.
- Detailed costing of chosen interventions for each street.
- Community and stakeholder support.
- Cultural sensitivity and potential for heritage significance in underground locations.
- Geotechnical information and soil conditions.

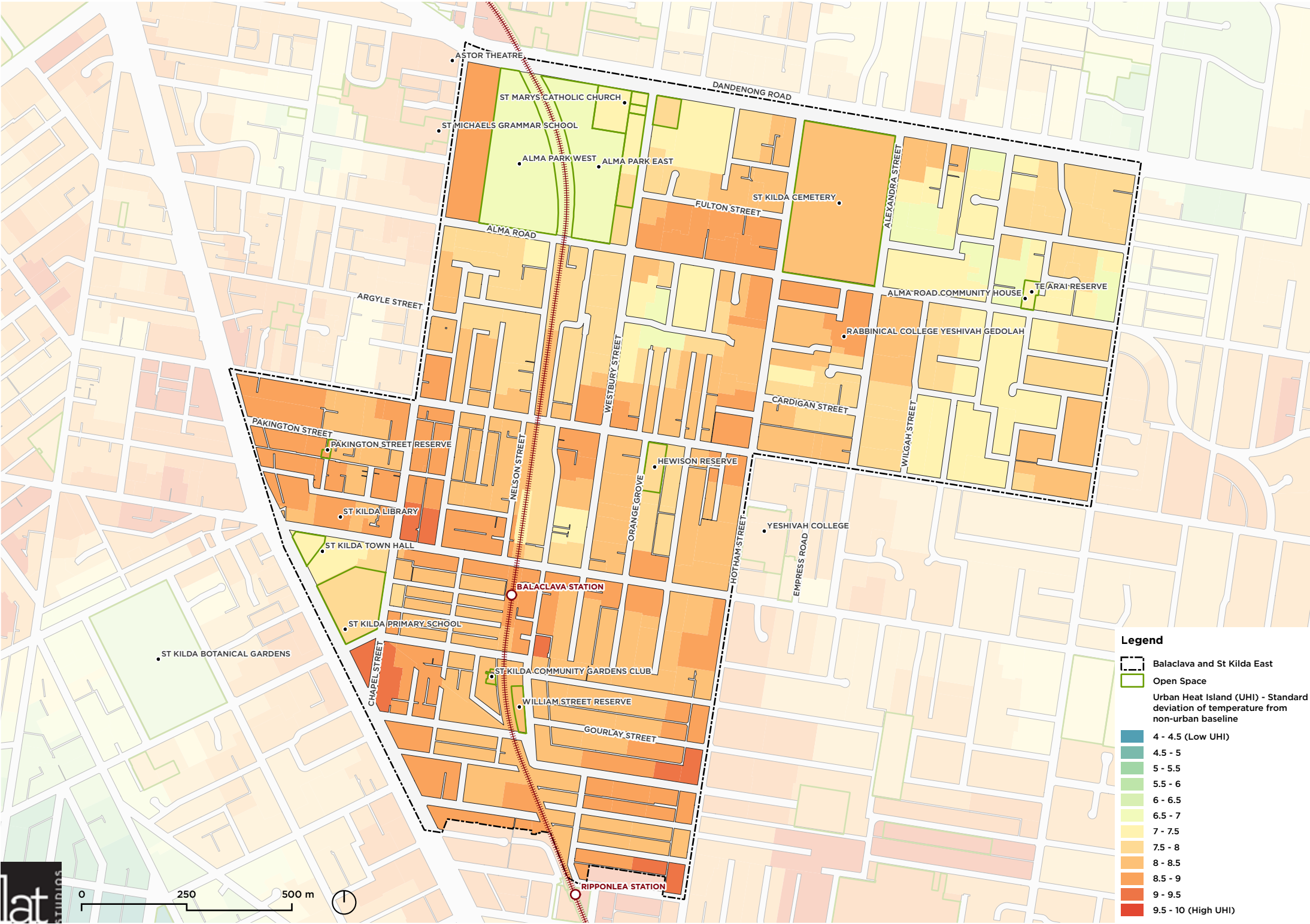
03.3

URBAN HEAT ISLAND

The urban heat island (UHI) effect refers to the phenomenon where urban areas experience significantly higher temperatures than surrounding rural areas due to human activities and built environments.

This occurs because materials like concrete, asphalt and buildings absorb and retain heat, while a lack of vegetation reduces natural cooling through shade and evapotranspiration. UHI is measured by comparing temperature differences between urban and rural areas, analysing land surface temperatures, and assessing contributing factors such as building density, impervious surfaces and vegetation cover.

The effect is more pronounced at night when heat stored in urban infrastructure is released, keeping temperatures elevated for longer periods. Mapping UHI hotspots allows planners to prioritise areas most in need of cooling interventions, ensuring that urban greening efforts effectively lower temperatures, enhance biodiversity, and improve overall liveability, particularly for vulnerable communities.



03.4 HEAT VULNERABILITY

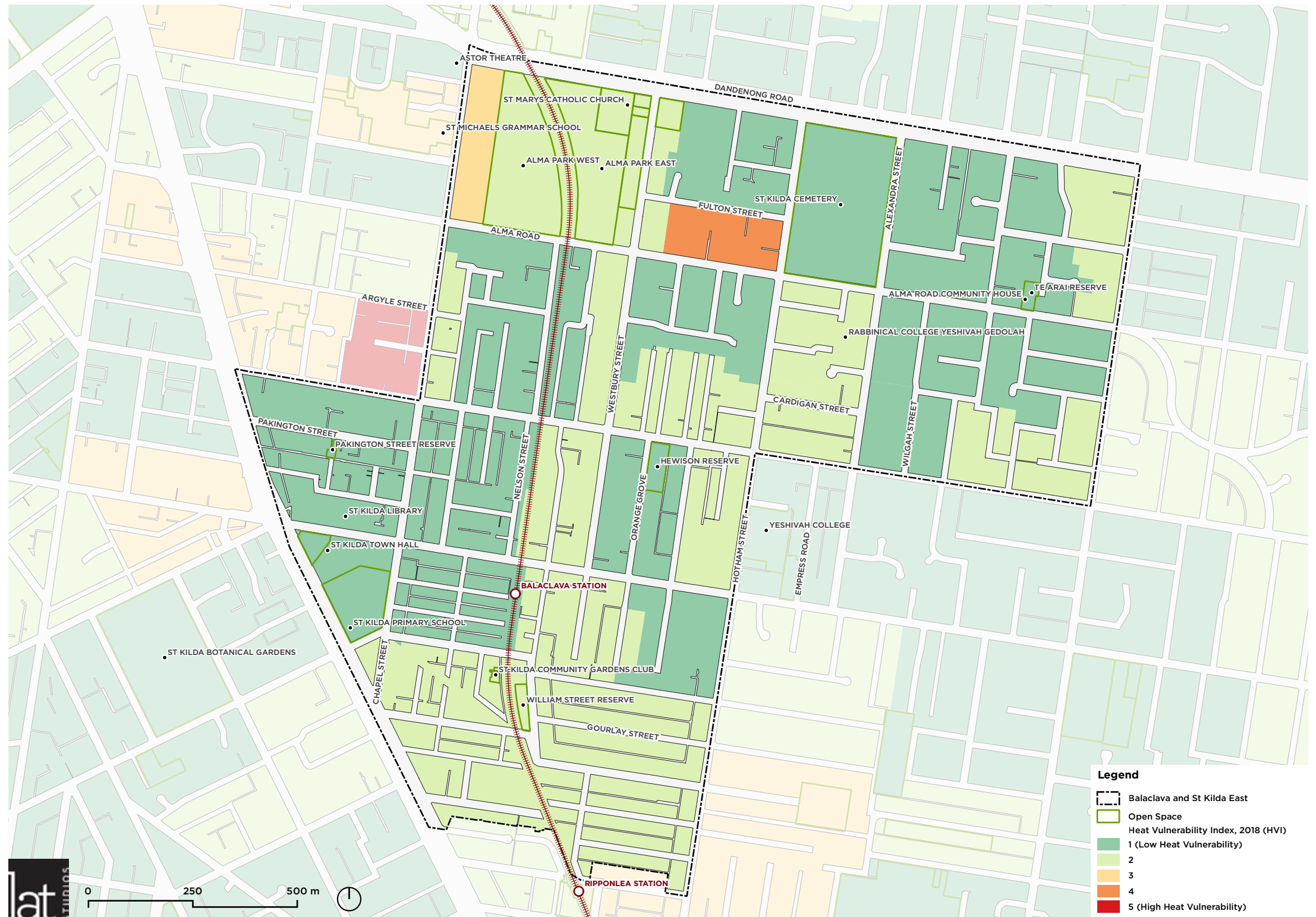
In 2018 the Victorian Government developed a heat vulnerability index (HVI) for Melbourne. Heat vulnerability refers to the extent to which individuals and communities are at risk of adverse health impacts due to extreme heat events. It is assessed based on three key factors:

- Exposure, which considers environmental conditions like urban heat islands and lack of shade;
- Sensitivity, which includes demographic and health-related factors such as age, pre-existing medical conditions and socio-economic status;
- Adaptive capacity, which reflects the ability of individuals and communities to cope with heat, including access to cooling infrastructure, green spaces and financial resources.

The HVI rating of each area is on a scale of 0 (low vulnerability) to 5 (high vulnerability).

Areas with high heat vulnerability often experience increased health risks, including heat stress, dehydration and heat-related illnesses, particularly among vulnerable populations like the elderly, children and low-income groups.

Understanding heat vulnerability is essential for prioritising interventions that enhance urban resilience. Tree planting, green roofs and shaded public spaces can significantly lower surface and air temperatures reducing the intensity of urban heat islands. High-risk areas can be prioritised for actions to maximise cooling benefits, improve public health outcomes and create more liveable, climate-adaptive neighbourhoods.



03.5

MOVEMENT NETWORK

The movement and placemaking functions of streets is an important factor in determining where and how increased tree planting can occur. Trees add shade and shelter that make streets more comfortable for walking, cycling and catching public transport.

Several projects within the precinct are improving movement corridors, including Westbury Street, where pop-up bike lanes are being trialled; Carlisle Street, which currently has a streetscape plan under development to guide future upgrades to the street and public realm (consultation occurring later in 2025); and Inkerman Street, where designs for the Inkerman Safe Travel Corridor project between St Kilda Road and Orrong Road, Glen Eira Road, were released for community feedback in 2024.

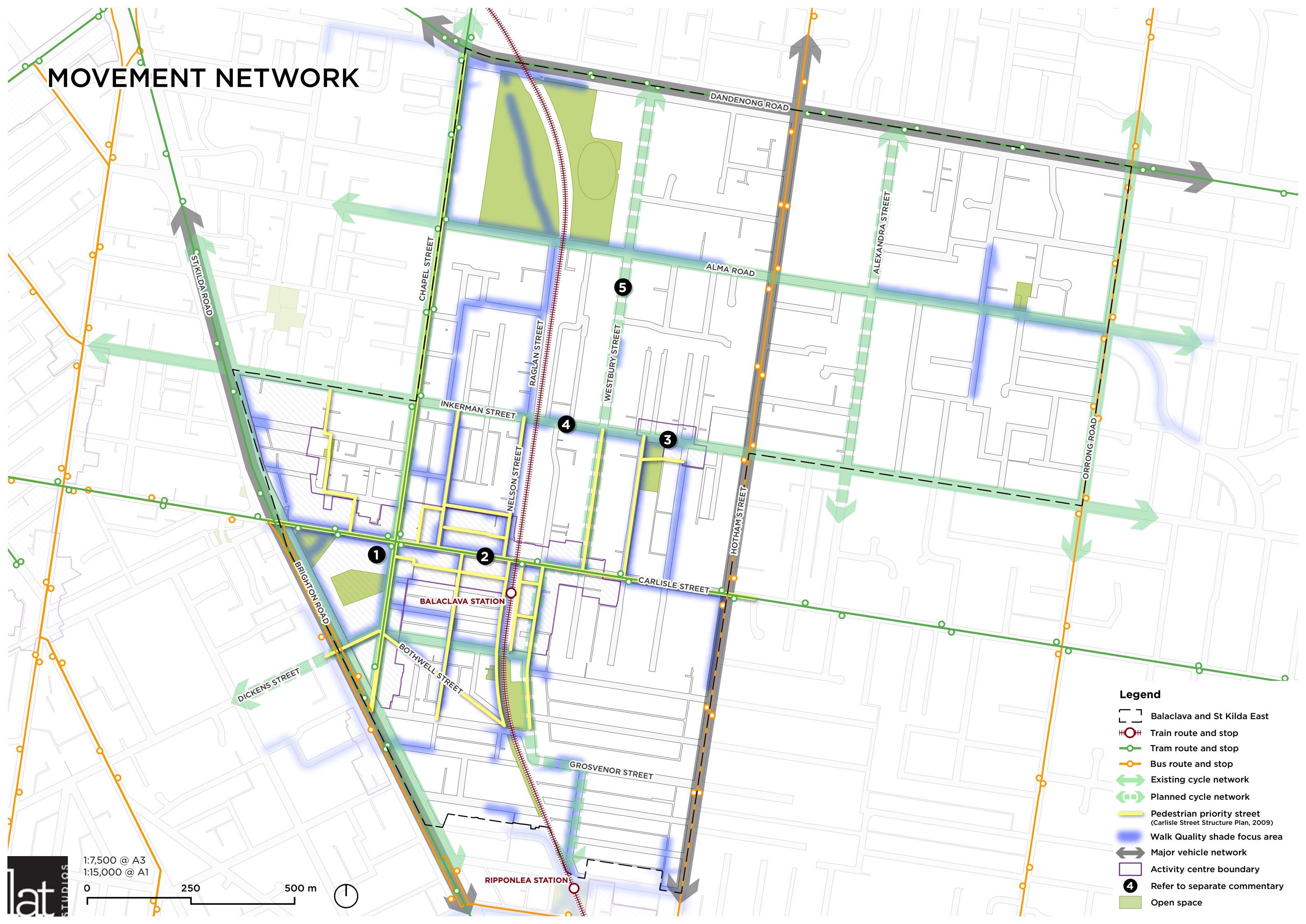
To assess pedestrian movement through the neighbourhood, the Walk Quality project created detailed models of the neighbourhood to evaluate shading and overshadowing effects from buildings and trees. The analysis integrated shade maps with pedestrian catchments to evaluate walking routes factoring in urban design elements such as pedestrian accessibility, slope, thermal comfort, risk and pollution.

The tool developed by the Walk Quality project calculates walking access catchments while factoring in shade quality within a comfortable ten minute walk. By simulating pedestrian routes to key destinations under defined sun-exposure limits, the tool identifies priority streets for shade improvements, such as tree planting or infrastructure upgrades. Key destinations modelled include activity centres at Carlisle Street, Orrong Road, Inkerman Street, Chapel Street Windsor, Ripponlea Shopping Strip, and Windsor, Balaclava and Ripponlea train stations, as well as Alma Park and Alma Road Community Centre. This innovative approach not only quantifies shade coverage but also visualises its impact on pedestrian behaviour, enabling targeted interventions to enhance urban walkability.

The streets identified as priorities for closing gaps in the shade network through the Walk Quality analysis were: Alma Road, Nelson Street, Camden Street, Glen Eira Avenue, Oak Grove, William Street, Inkerman Street and Carlisle Street as a high priority, with Lansdowne Road, Westbury Street, Marlborough Street, Rosamond Street and Nightingale Street as medium priority streets to improve walkability.

Map ID	Plan Feature	Urban Forest Precinct Plan Implications	Source
	Public Transport Network	Streets will need to maintain adequate space for functionality of trams and buses. No network route changes are planned for the study area. The property parcels which contain train infrastructure generally are designated Transport 1 Zone, and are owned by VicTrack. For the purposes of the UFPP, this may mean Council will need to play more of an advocacy role to increase canopy in these locations (instead of an implementation role).	CoPP Integrated Transport Strategy (pg 49) VicPlan Zoning – Transport Zone 1
	Existing Bicycle Network	Many existing streets already have clearly marked bicycle lanes or bicycle priority. These existing routes are also reflected in CoPP's Integrated Transport Strategy (Page 43).	Nearmap Aerial Imagery 2024 Integrated Transport Strategy (Page 43)
	Planned Bicycle Network	CoPP's Integrated Transport Strategy also identifies additional cycle route formalisation and expansions in several streets. The numbered notations identify implementation processes underway to improve the cycle network.	CoPP Integrated Transport Strategy (Page 43)
	Pedestrian Priority Streets	Priority Accessible Walking Routes have been identified within the Carlisle Street Activity Centre Plan. The guidance for these streets is general in nature, but broadly encourages these streets to enable safe, comfortable and seamless movement for pedestrians and mobility limited users. It is important to note that the study area for the Activity Centre Plan does not capture the whole of the study area for the UFPP, so aspiring for higher pedestrian experience should not necessarily be limited to the streets marked on this map.	Carlisle Street Activity Centre Structure Plan (page 46)
	Major Vehicle Network	There are several major roads which are managed by the Department of Transport and Planning (DTP) within the study area. This requires Council to play more of an advocacy role to increase street canopy (instead of an implementation role).	VicPlan Zoning – Transport Zone 2
	Carlisle Street Major Activity Centre (MAC)	The Carlisle Street Major Activity Centre has a focus on the local community, with a diverse mix of retail, commercial, civic and community services (west of Chapel Street) and leisure and living opportunities. Notably in Clause 11 of the Planning Scheme is the goal of “designing development to be self-sufficient in on-site car parking and providing on-site car parking” to reduce parking pressure on streets and encourage waking. Any future guidance within the UFPP report should consider the increased walking, outdoor dining and retail needs of this area.	Clause 11.03-1L-03 - Carlisle Street Major Activity Centre
	Carlisle Street	A new streetscape plan for Carlisle Street is under development to guide future upgrades to the street and the public realm. This plan will provide more detailed analysis and direction of Carlisle St including increasing canopy cover and biodiversity.	Advice from CoPP
	Inkerman Street Local Activity Centre (LAC)	The Inkerman Street Local Activity Centre is smaller in scale and does not have the same level of access to public transport when compared to the Carlisle Street MAC. This centre is encouraged to “support convenience retailing, and personal / business services roles” for the area. Like Carlisle Street, Inkerman Street LAC guidance should be cognisant of the increased pedestrian activities in this area.	Clause 11.03-1L-04 - Inkerman Street Local Activity Centre, St Kilda East.
	Inkerman Street	Concept designs for Inkerman Safe Travel Corridor between St Kilda Road and Orrong Road were made public for community feedback. Subsequently Design Option B was chosen. This street configuration creates opportunities for additional kerb build-outs for tree and understory planting. Given this project will consider implementation to a greater detail than the UFPP, consideration of canopy coverage of Inkerman Street could defer (or collaborate) towards the outcomes this project.	https://haveyoursay.portphillip.vic.gov.au/help-improve-road-safety-inkerman-street
	Westbury Street	Pop-up bikes lanes have been installed along Westbury Street as part of the DTP Pop-up Bike Lanes Program to support more people to ride bikes across Melbourne. DTP have now confirmed that original road configurations will be reinstated due to community feedback. Whilst the implementation of bike priority in Westbury Street is unresolved, it remains a focus of the Integrated Transport Strategy and therefore the UFPP should still consider appropriate urban forest interventions that enable a pleasant cycling experience.	CoPP: https://www.portphillip.vic.gov.au/about-the-council/projects-and-works/departments-of-transport-s-pop-up-bike-lane-program Department of Transport and Planning
	Walk Quality Shade Priority Streets	The Walk Quality analysis by Swinburne University ties into the movement network by illustrating where there are gaps in the provision of shade for walking catchments from key activity nodes, thus identifying the priority streets for shade improvements. Some of the main streets identified as high priority through the Walk Quality research include: Alma Rd, Nelson St, Raglan St, Camden St, Glen Eira Ave, Oak Grove, Godfrey Ave, William St, Inkerman St and Carlisle St, with Lansdowne Rd, Westbury St, Marlborough St, Rosamond St and Nightingale St as medium priority streets to improve walkability.	Swinburne University Walk Quality Assessment

MOVEMENT NETWORK



- Legend**
- Balaclava and St Kilda East
 - Train route and stop
 - Tram route and stop
 - Bus route and stop
 - Existing cycle network
 - Planned cycle network
 - Pedestrian priority street (Carlisle Street Structure Plan, 2009)
 - Walk Quality shade focus area
 - Major vehicle network
 - Activity centre boundary
 - Refer to separate commentary
 - Open space

03.6

GREEN & BLUE FUNCTION

The background document review revealed several key strategic considerations for the ecological and hydrological functions of streets and open spaces in Balaclava and St Kilda East. Alma Park is the most ecologically significant open space in the neighbourhood, featuring areas of remnant Plains Grassy Woodland and significant remnant eucalypts and other mature trees. It is important to consider the location and role of both existing and future open spaces and how the urban forest can integrate into this open space network to create shaded, walkable streets and enhance habitat connectivity.

The Bothwell Street Biolink project is another significant consideration with understorey planting and a Woody Meadows project currently underway. Several lots of land have been purchased in areas of need for future open spaces across the neighbourhood, and a green corridor project is planned for the wide stretch of Alexandra Street running alongside the St Kilda Cemetery.

See Chapter 05 for a more detailed analysis of all existing and planned open spaces in the neighbourhood.

Map ID	Plan Feature	Urban Forest Precinct Plan Implications	Source
	Existing Trees	Based on Council-provided data, this layer identifies locations and ‘crown size’ of existing trees as recorded in 2022. This dataset provides insight towards areas of higher or lower canopy coverage and assists in determining canopy intervention priorities across the study area.	GIS shapefile layer ‘all_council_trees’ (2022) provided by CoPP.
	Green Link	<p>The ‘Greenline’ is a community-proposed idea of a heavily landscaped shade and habitat corridor running north-south along the rail. This concept is well supported by the community, however its implementation is complex with varied land ownerships, soil contamination and other constraints. The UFPP can support the vision by delivering elements in part.</p> <p>As suggested in the Public Space Strategy, advocate to, and partner with, VicTrack to beautify a small portion of the Green Line from Balaclava Station down to the rail bridge, including planter boxes and public artwork to test and trial future use and inform future investment over time.</p>	‘Greening Port Phillip - Urban Forest Strategy Stage 1B Engagement Findings Report’ and Green Line Proposal (Greenline Alliance) community-initiated report. https://pecan.org.au/projects/
	Street Tree Focus	Within the Carlisle Street Activity Centre Structure Plan there are several streets that have been identified for ‘proposed or potential / new street planting / greening’ which potentiality supports a higher prioritisation within the UFPP.	Carlisle Street Activity Centre Structure Plan (page 40)
	Improve Avenue-Style Street Tree Planting	Streets in the area bound by Alma Road, Inkerman Street, Chapel Street and Hotham Street are identified for additional street trees where feasible to increase canopy cover and improve pedestrian amenity. Many local streets south of Carlisle Street have also been identified for additional street trees where feasible to increase urban greening and shading to improve the pedestrian experience and connections from Balaclava Walk.	Public Space Strategy, 2022-2032 (page 18)
	Bothwell Street Biolink	<p>The Biolink is a part of the Greening Port Phillip Strategy that envisions CoPP as having a “healthy and diverse urban forest that uses innovative greening solutions to enhance the community’s daily experience, ensuring environmental, economic, cultural and social sustainability for future generations.” The improvements for Bothwell Street are under construction.</p> <p>The endemic EVC of Bothwell Street is the endangered Grassy Woodland (EVC 175). This is a variable open eucalypt (or occasionally sheoak) woodland over a diverse ground layer of grasses and herbs. The shrub component is usually sparse. It occurs on sites with moderate fertility on plains or undulating hills on a range of geology. Larger landscaping interventions within the study area could also consider replicating this EVC species mix.</p>	<p>https://www.portphillip.vic.gov.au/about-the-council/projects-and-works/bothwell-st-biolink</p> <p>Draft Foreshore and Hinterland Vegetation Management Plan 2023 (Practical Ecology)</p>
	Alexandra Street Green Corridor	A wide street running between Dandenong and Balaclava Roads, Alexandra Street is a great opportunity to de-pave areas currently used for parking adjacent to the St Kilda Cemetery, and transform the street into a green corridor.	Council advice.
	Existing Public Open Space	There are opportunities to review the existing canopy, design, function of these open spaces to identify potential canopy uplift. The UFPP should support the Public Space Strategy’s suggested open space planting actions (listed on pages 250-251) where possible.	Public Space Strategy - Technical Report (pages 231-251).
	Restricted Open Space	Semi-public areas such as the Cemetery and parking areas play a role in delivering urban forest. The UFPP can advocate for consideration of these spaces.	
	Newly Acquired Land for Public Space	There are current initiatives being considered by the CoPP to improve the quality or coverage of open spaces across the study area offering opportunities to deliver more tree canopy.	Places for People - Public Space Strategy vol. 3 (page 18) and email advice from CoPP.
	Dickens Street Trial Public Space	Temporary partial street closure of Dickens Street to trial additional public space, including potential road closure and removal of carparks and some beautification (e.g. parklet, planter pots and paint treatments). Engagement was carried out in early 2025. Engagement will inform how to move forward with this park and future budget bids.	
	Elevation / Topography Hillshade	Elevation data has been shown because it is relevant to consider in parallel with overland water flow and flood prone areas. This provides high-level guidance on slope across the site and how individual streets can contribute towards the overall integrated water management (IWM) of the study area.	GIS shapefile layer ‘50cm Contours Reprojected’ (date unknown) provided by CoPP.
	Flood Prone Areas (Special Building Overlay)	<p>Flood-prone areas have been mapped to show which streets may experience stormwater accumulation, or experience stormwater flows. This information may hold implications for tree species selection or design intervention choices in UFPP.</p> <p>Water Sensitive Urban Design (WSUD) interventions in flood-prone streets (such as permeable pavements, rain gardens, and bio-retention systems) could help absorb and manage stormwater locally, easing pressure on stormwater infrastructure. The UFPP could also consider tree species which are more resilient when experiencing flooding or extended dry conditions.</p>	VicPlan Overlays – Special Building Overlay (SBO)

GREEN & BLUE FUNCTION



Legend

- Balaclava and St Kilda East
- Train route and stop
- Existing tree (based on 2022 data)
- 47m Elevation (above sea level)
- 3m
- Flood-Prone Area (SBO Overlay)
- Public open space
- Restricted open space
- Newly Acquired Land for Public Space
- Dickens Street Trial Public Space
- Future Alexandra Street Linear Green Space Project
- Green Line (community proposal)
- Street Tree Focus (Carlisle Street Structure Plan, 2009)
- Improve Avenue-Style Street Tree Planting (Public Space Strategy, 2022-2032)
- Bothwell Street Biolink

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03.7

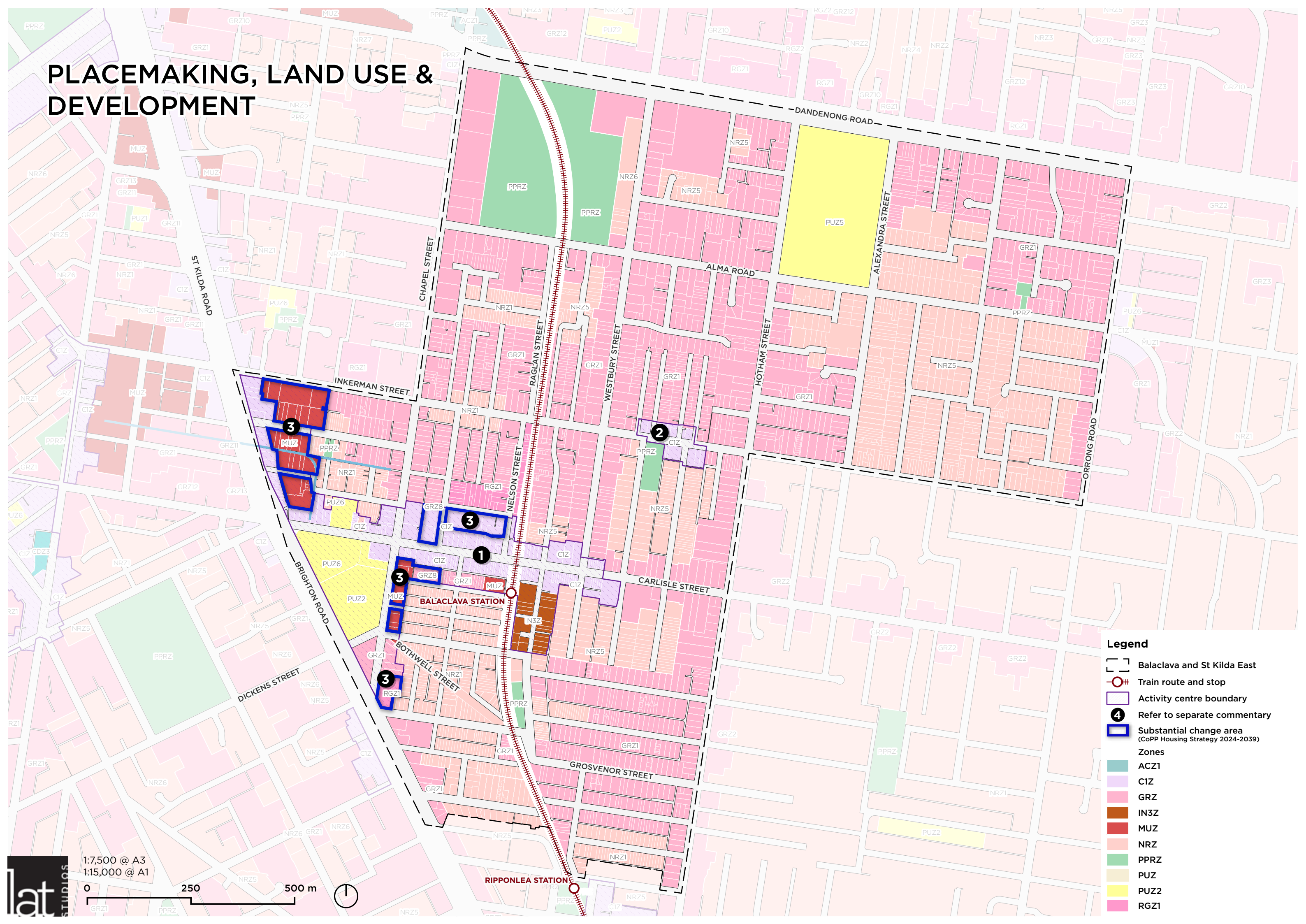
PLACEMAKING, LAND USE & DEVELOPMENT

The Balaclava and St Kilda East neighbourhood is an established, predominantly residential area located at the eastern edge of the City of Port Phillip. The most notable non-residential variations in land use are within the Carlisle Street Major Activity Centre, a traditional Melbourne strip shopping area centred around Balaclava Train Station, running from St Kilda Road in the west to Orange Grove in the east. The Carlisle Street Major Activity Centre includes pockets of public use zones for key facilities such as the St Kilda Town Hall and Library, mixed-use zones to the south and north-west of Carlisle Street, and one of the few remaining industrial zones along William Street.

There is also a smaller Local Activity Centre located on Inkerman Street. Several areas, including blocks on Chapel Street, those surrounding the Inkerman Street Aldi Shopping Centre, and the Balaclava Woolworths and Coles, have been earmarked for substantial change under the City of Port Phillip’s Housing Strategy (2024–2039).

Map ID	Plan Feature	Urban Forest Precinct Plan Implications	Source
1	Carlisle Street Major Activity Centre (MAC)	<ul style="list-style-type: none">• The Carlisle Street Major Activity Centre is a traditional Melbourne strip shopping centre.• The existing Carlisle Street strip is zoned Commercial Zone 1 and extends from St Kilda Road in the west to Orange Grove in the east.• To the south-west of the strip is an area zoned for Public Use (either PUZ2 or PUZ6), which accommodates the St Kilda Town Hall and the St Kilda Primary School, with the St Kilda Library also zoned PUZ6.• South of Carlisle Street is a mixed-use zone along Chapel Street, predominantly featuring a multi-unit residential development alongside older factory buildings. This area is also designated for substantial change in the City of Port Phillip’s recent Housing Strategy, 2024-2039.• An Industrial 3 zone (IN3Z) is located to the south of Carlisle Street along William Street, which is the only remaining area of industrially zoned land in St Kilda.• To the north-west of Carlisle Street, the commercial zone (C1Z) continues up the eastern edge of St Kilda Road. This area includes office uses as well as highway-based retail establishments.• Behind this commercial frontage on St Kilda Road, encompassing Inkerman, Pakington, and Martin Streets, is a mixed-use zone featuring new commercial/residential developments, such as the Aldi development, alongside some remaining factory buildings. This area is also designated for substantial change in the City of Port Phillip's recent Housing Strategy, 2024-2039.• There is a small pocket of residential growth zone (RGZ1) at the southern end of Chapel Street – currently an Australia Post warehouse and car park - that has been designated for substantial change in CoPP's Housing Strategy.• The Woolworths and Coles buildings and car parks at the centre of the MAC have also been designated as areas for substantial change.	<p>City of Port Phillip Housing Strategy, 2024-2039</p> <p>Carlisle Street Urban Design Framework (2009)</p> <p>VicPlan / VicData</p>
2	Inkerman Street Local Activity Centre (LAC)	<ul style="list-style-type: none">• There is a local commercial area or Local Activity Centre (LAC) on Inkerman Street between Sebastopol Street to the west and Chusan Street to the east. This pocket is commercial one zoned (C1Z), and includes a collection of restaurants, retail shops, mechanics, and the Inkerman Hotel – all in older single to two storey buildings and warehouses.• Hewison Reserve interfaces the strip to the south-west.	<p>VicPlan / VicData</p>
3	Substantial Change Areas	<ul style="list-style-type: none">• CoPP is currently finalising updated zoning which will guide levels of change in different areas of the UFPP study area. This spatial layer will highlight streets that may experience substantial or minimal population change. There are a range of corresponding implementation opportunities and constraints arising from this, for example: encouraging consolidation of properties may unlock opportunity to plant trees on adjacent streets, streets experiencing minimal change may provide certainty around parking needs and therefore canopy interventions.• It is worth noting that the Housing Strategy, 2024-2039 identifies areas of substantial, moderate, incremental, and minimal change, however the report does not detail what this change may look like.• As designated in the City of Port Phillip’s Housing Strategy, 2024-2039, there are several areas marked for substantial change. Mid- and high-rise apartment buildings, as well as mixed-use developments (as outlined in the relevant adopted structure plan), are generally suitable for these areas.• These areas all fall within the boundary of the Carlisle Street Major Activity Centre. They include:<ul style="list-style-type: none">- Three blocks of mixed use zone (MUZ) South of Carlisle Street along Chapel Street, predominantly featuring a multi-unit residential development alongside older factory buildings.- Three blocks behind St Kilda Road, encompassing Inkerman, Pakington, and Martin Streets, featuring new commercial/residential developments, such as the Aldi development, alongside some remaining factory buildings.- A small pocket of residential growth zone (RGZ1) at the southern end of Chapel Street – currently an Australia Post warehouse and car park.- The Woolworths and Coles buildings and car parks at the centre of the Carlisle Street MAC.• The rest of the Carlisle Street MAC that can be considered residential land is marked for moderate change. The rest of the Balaclava and St Kilda East neighbourhood is marked for either incremental or minimal change.	<p>City of Port Phillip Housing Strategy, 2024-2039</p>

PLACEMAKING, LAND USE & DEVELOPMENT



- Legend**
- Balaclava and St Kilda East
 - Train route and stop
 - Activity centre boundary
 - Refer to separate commentary
 - Substantial change area
 - (CoPP Housing Strategy 2024-2039)

- Zones**
- ACZ1
 - C1Z
 - GRZ
 - IN3Z
 - MUZ
 - NRZ
 - PPRZ
 - PUZ
 - PUZ2
 - RGZ1

1:7,500 @ A3
1:15,000 @ A1

0 250 500 m



WALK QUALITY - PRIORITY STREETS FOR SHADE INCREASE

Port Phillip has partnered with the Walk Quality research project, a collaboration between Swinburne University of Technology and the University of Melbourne, aiming to enhance urban walkability by developing a design platform that evaluates and tests improvements to pedestrian experiences.

Funded by the Australian Research Council (ARC) Linkage Grant and industry partners, the project focuses on key urban design elements that affect pedestrian comfort, such as accessibility, slope, thermal comfort, conflicts with motor vehicles and cyclists, and pollution. A significant component of the research - and one that aligns closely with this UFPP - is the analysis of the impact of shade on walkability.

Using advanced 3D modelling techniques, the project team has developed detailed representations of municipal areas to assess where pedestrian paths are and aren't shaded. Walking catchments have been generated for key destinations and heat refuge locations across the municipality - including Balaclava and Ripponlea train stations, the Carlisle Street, Inkerman Street and Orrong Road activity centres, Alma Park, and several community facilities throughout the neighbourhood.

These walking catchments simulate the distance a pedestrian could walk under defined sun exposure time limits (2-, 4-, 6-, 8-, and 10-minute catchments). From this, street segments consistently affected by insufficient shading across multiple pedestrian catchments are identified as high priority for increased canopy cover, as shown in the adjacent map. This approach quantifies existing shade coverage and visualises its impact on pedestrian behaviour, supporting targeted interventions to enhance urban walkability.



WALK QUALITY - TEST CASE STUDY: NELSON STREET

To demonstrate the potential application of the Walk Quality research methodology and to illustrate the impact of increasing tree canopy cover, a test case study was carried out on Nelson Street, Balaclava — a street identified as a high priority for increased shade in the Walk Quality research project.

The aim of the test case study was to model additional tree planting opportunities along Nelson Street and then re-run the Walk Quality shade analysis to show how increased canopy cover in this one high-priority streetscape could expand shaded walking catchments for pedestrians in the neighbourhood.

As shown in Figure O6, potential new tree locations were proposed for footpath cutouts, as well as buildouts or road cut-outs where they were deemed possible (green dots), noting that a full feasibility assessment of tree planting opportunities has not been conducted. Several existing trees were also plotted to be remodelled, as their size had significantly increased since the conditions used in the initial shade model (yellow dots). All proposed and existing trees were categorised by type and size, based on their location and site constraints. The tree size categories were:

Size	Height (m)	Width (m)	Projected canopy at maturity (m²)
Small	6	4	12.57
Medium	10	8	50.27
Large	15	12	113.10
Very Large	30	16	201.06

Figure O7 illustrates how this hypothetical increase in canopy cover would enhance pedestrian access to shaded routes. It compares the existing four-minute shaded walking catchment with the extended catchment following the modelling of additional canopy cover.

This test case study not only demonstrates the effectiveness of the Walk Quality research in identifying priority streets for increased tree canopy - maximising shade benefits for the pedestrian environment - but also highlights the tangible benefits of the canopy interventions proposed in this Urban Forest Precinct Plan (UFPP).

Note that all shade modelling is based on peak summer conditions (December at 3:30pm).



Figure O6: Illustrating the potential for increased shade from additional canopy interventions on Nelson Street, Balaclava.



Figure O7: The map above shows the potential for increased pedestrian shade resulting from the Nelson Street test case study interventions. It compares the existing four-minute shaded walking catchment with the extended catchment following the modelling of additional canopy cover.

03.10

HIGH-PRIORITY STREETS

The findings from the strategic context review and spatial data and policy analysis, including the Walk Quality Research prioritisation, have determined which streets should be considered high priority.

This prioritisation has also considered which streets have a higher degree of achievability to increase tree canopy, meaning there are less physical or strategic constraints. 28 of the neighbourhood's key streets have been selected and ranked by priority, shown on the adjacent map.

Refer to Appendix A for the full table of assessed streets and features across the neighbourhood.





Figure 08: New trees are planted along the rail corridor at Alma Park, the neighbourhood's largest open space (photo by City of Port Phillip).