03

METHODOLOGY

03.1
PROJECT METHODOLOGY OVERVIEW

This chapter outlines the methodology used to develop an urban forest precinct plan for Albert Park & Middle Park, leading from high-level spatial data analysis to an implementable action plan.

The first step was a comprehensive analysis of all neighbourhood streets to assess their strategic importance and feasibility for increased canopy cover. Streets were 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 were 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.

1.

Desktop Analysis

Analysis and assessment of all neighbourhood streets to understand and quantify their strategic importance and acheivability for new canopy planting.

2.

Street Types

Streets are grouped into types based on physical features such as width, land use, existing canopy, and infrastructure.

3.

Design Toolkit

A design toolkit is created, linking specific canopy interventions to the street types defined in Step 2.

4.

Precinct Action Plan

An action plan presents key moves for the neighbourhood, informed by strategic analysis, Council insight, and Walk Quality research. It also outlines key open space guidance, and long-term implementation considerations.

5.

Business Case

The Precinct Action Plans and their supporting analysis can be utilised as a business case for Council's pipeline of capital works programming. There is an opportunity for the actions identified in the Precinct Plans to be fed back into State and Council strategies and policies more broadly.



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 land use, active and public transport, heat vulnerability and urban heat island data and biodiversity data. This was further strengthened through a desktop review of Council strategic documents.

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:

- Alignment With Objectives: a combined dataset to prioritse streets which have the greatest need for increased canopy, based on the objectives of the urban Forest Strategy.
- Achievability: In the final UFPP a combined dataset will be provided to highlight streets with more favourable conditions for planting, combining attributes such as wider verges, unrestricted parking controls and existing canopy percentages.
- 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 will ensure that tree canopy expansion is prioritised strategically, aligning with the broader goals of the UFPP and Council policy.

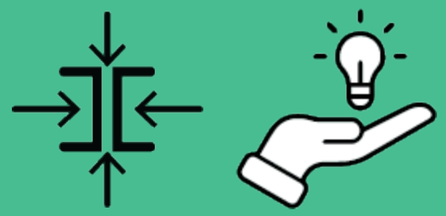
Alignment with Objectives

Data analysis 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. This will be provided in the final UFPP.



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.

INFORMS

- 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 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.

INFORMS

- Existing canopy coverage and uplift potential.
- Larger area of road reserve (width x length) which provides a general indication of impact potential.
- Whether the street has powerlines, which may constrain tree planting.
- 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.

INFORMS

- 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 contributes to heritage places and/or the character of the area.

Unknowns

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

TO BE CONFIRMED

- 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 FOREST OPPORTUNITIES

MOVEMENT AND PLACEMAKING

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 by providing streetscape and open space enhancements including opportunities for new canopy tree provision. These are summarised in the adjacent table.

The Shrine to Sea Masterplan along Kerferd Road is a major project that will be delivered in collaboration with Victorian State Government.

ENVIRONMENTAL CONSIDERATIONS

The background document review revealed several key strategic considerations for the ecological and hydrological functions of streets and open spaces in Albert Park and Middle Park. The City of Port Phillip is built on reclaimed land to the south and the north and soil contamination is an issue across the municipality. Growing vegetation near the coast can be challenging due to a combination of harsh environmental conditions that can include intense sun exposure, high winds, salt spray, and sandy soils. Much of the municipality is only one to three metres above sea level; and coastal areas are particularly exposed to the impacts of climate change, including flooding and erosion and sea-level rises that will cause change groundwater levels and quality.

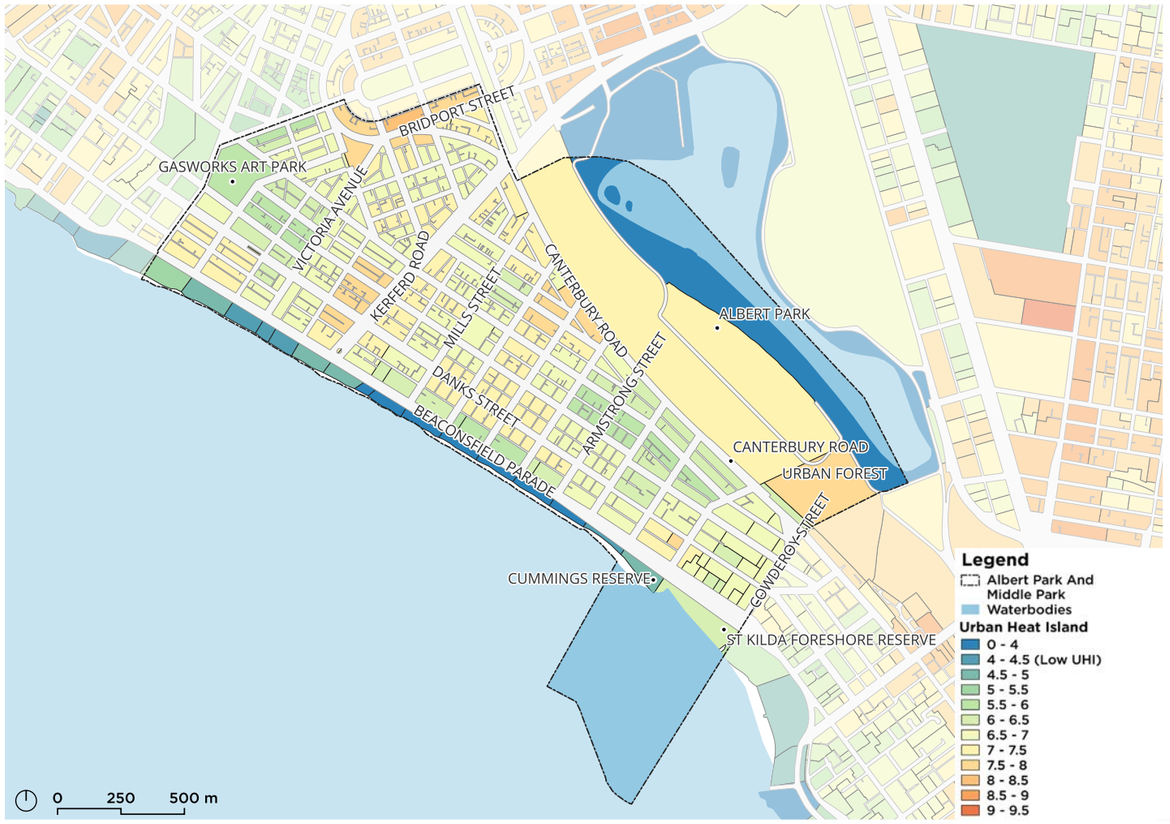
Pickles Street Dunes, Lagoon Reserve, Danks Street, Middle Park Beach Dunes, Fraser Street Dunes, West Beach Duines and the Canterbury Road Urban Forest contain some of the most ecologically significant open spaces in this precinct (and the municipality). The Danks Street Biolink has been a major renewal project along the Danks Street median. 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. Several projects within the precinct are either planned or underway with the potential to provide canopy increases. These are summarised in the adjacent table.

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.
	Improve Avenue-Style Street Tree Planting	Streets within the precinct including Armstrong Street, Bridport Street, Cowderoy Street, Mills Street and Montague Street are identified for additional street trees where feasible to increase canopy cover and improve pedestrian amenity and connections.	Public Space Strategy, 2022-2032 (pg 15)
	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).
	Foreshore	City of Port Phillip's 'Places for People - Public Space Strategy', identifies Middle Park and Albert Park foreshore for renewal through increased tree planting, enhanced infrastructure and advocacy for a coordinated plan to manage the impacts of climate change.	Public Space Strategy, 2022-2032 (pg 15-16)
	Danks Street Biolink	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 Danks Street Biolink was delivered in 2024 and has opportunities for future vegetation and tree plantings that emphasise rare indigenous species.	https://www.portphillip.vic.gov.au/about-the-council/projects-and-works/danks-street-biolink/
	Shrine to Sea Masterplan	City of Port Phillip will partner with Victorian State Government to deliver a new green boulevard linking Domain Gardens to Port Phillip Bay along Albert and Kerferd Roads. It will strengthen the boulevard's landscape character, Kerferd Road medians in particular present opportunity for tree planting. This increased canopy coverage will support the plans goals around layered habitats, climate resilience and improved stormwater management.	Yani Barribarripuyt (Formerly Shrine to Sea) Master Plan (2024)
1	Pickles Street Foreshore	City of Port Phillip's 'Places for People - Public Space Strategy', proposes the investigation of Pickles Street Foreshore for the planting of additional shade trees.	Places for People - Public Space Strategy 2022-2032 (pg 16)
2	Victoria Avenue (CoPP)	Victoria Avenue intersects with the Danks Street Biolink and therefore planting in and around the verges are an opportunity to support the diverse tree species selection of the project. City of Port Phillip's 'Places for People - Public Space Strategy', identifies Victoria Avenue Activity Centre as an opportunity to deliver avenue-style street tree planting. This will provide canopy cover to integrated seating and support pedestrian amenity and connections to the foreshore.	City of Port Phillip Planning Scheme Places for People - Public Space Strategy 2022-2032 (pg 16)
3	Bridport Street (CoPP)	City of Port Phillip's 'Places for People - Public Space Strategy', identifies Bridport Street Neighbourhood Activity Centre as an opportunity to deliver avenue-style street tree planting. This will provide canopy cover to integrated seating and support pedestrian amenity and connections to Gasworks Arts Park, Lemnos Square and the foreshore.	City of Port Phillip Planning Scheme Places for People - Public Space Strategy 2022-2032 (pg 16)
4	Armstrong Street (CoPP)	City of Port Phillip's 'Places for People - Public Space Strategy', identifies Armstrong Street Neighbourhood Activity Centre as an opportunity to deliver avenue-style street tree planting. This will provide canopy cover to integrated seating and support pedestrian amenity and connections to Albert Park Reserve, Armstrong Street shops and the foreshore. The City of Port Phillip Planning Scheme notes that design development within Armstrong Street Neighbourhood Activity Centre must respect views toward the foreshore, which has the potential to be impeded by existing street trees.	City of Port Phillip Planning Scheme Places for People - Public Space Strategy 2022-2032 (pg 16)


1
2
3
4
BRIDPORT STREET
VICTORIA AVENUE
KERFERD ROAD
DANKS STREET
MILLS STREET
ARMSTRONG STREET
CANTERBURY ROAD
BEACONSFIELD PARADE
COWDEROY STREET
0
250
500 m
Legend
Albert Park And Middle Park
Waterbodies
Foreshore
Open Space
Activity Centre Area
Existing Tree
Bus Stop
Tram Stop
Tram Route
Bus Route
Strategic Cycling Corridor

03.4

URBAN HEAT ISLAND



KEY CONSIDERATIONS:

The urban heat island (UHI) effect occurs when built-up areas become significantly warmer than their surroundings because hard surfaces absorb and retain heat while limited vegetation reduces natural cooling. It is assessed by comparing urban and rural temperatures and analysing factors such as surface materials, building density and vegetation cover. UHI impacts are strongest at night as stored heat is released, and mapping hotspots helps identify where canopy and greening efforts are most needed to provide cooling. In this context, Albert Park and Middle Park experience relatively low heat pressures, with temperatures intensifying somewhat around Bridport Street and towards the eastern edge of Albert Park open space.

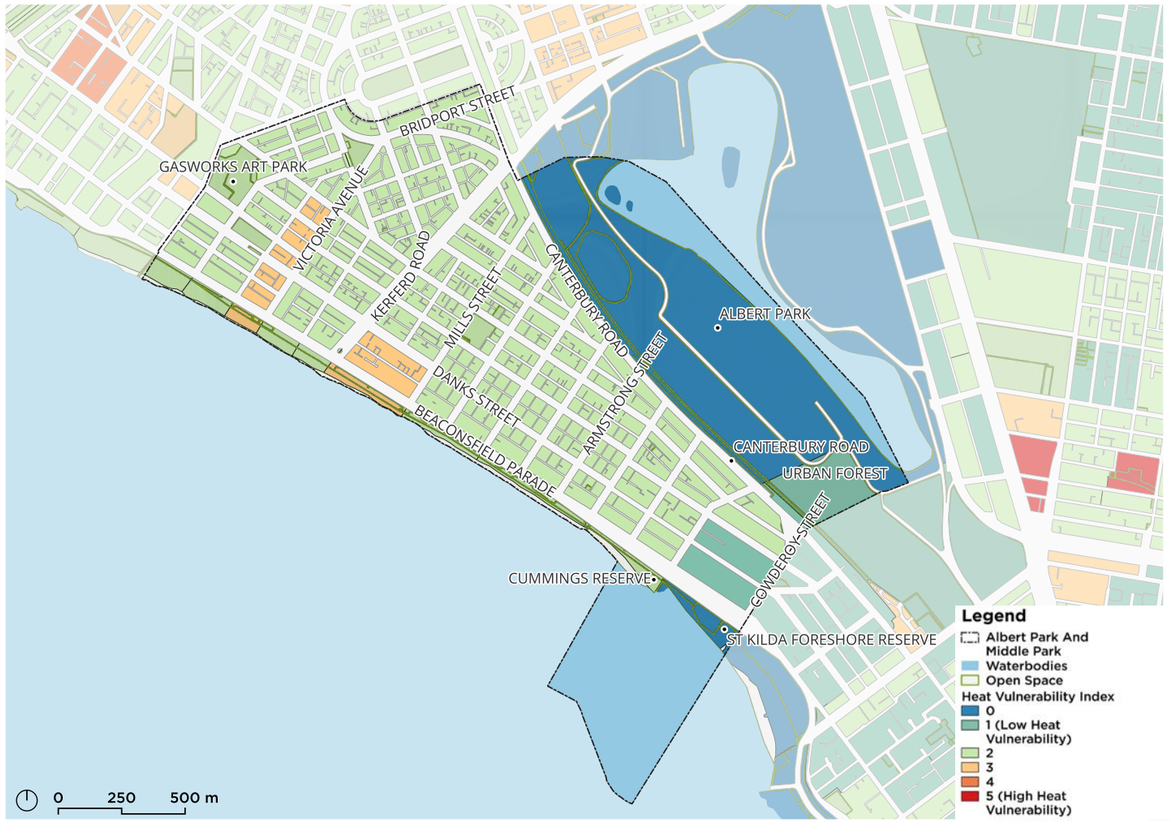
Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
☑		☑	☑	☑	☑

03.5

HEAT VULNERABILITY



KEY CONSIDERATIONS:

Heat vulnerability reflects how at risk individuals and communities are to adverse health impacts during extreme heat, and is assessed through three factors: exposure (such as UHI intensity and lack of shade), sensitivity (age, health conditions and socio-economic status) and adaptive capacity (access to cooling, green spaces and financial resources). The Victorian Government's Heat Vulnerability Index rates areas from 0–5, with higher scores indicating greater risk of heat-related illnesses, particularly for vulnerable groups like the elderly, children and low-income households. Albert Park and Middle Park predominantly falls in the lower range of heat vulnerability. Understanding these patterns helps prioritise interventions such as tree planting and greening.

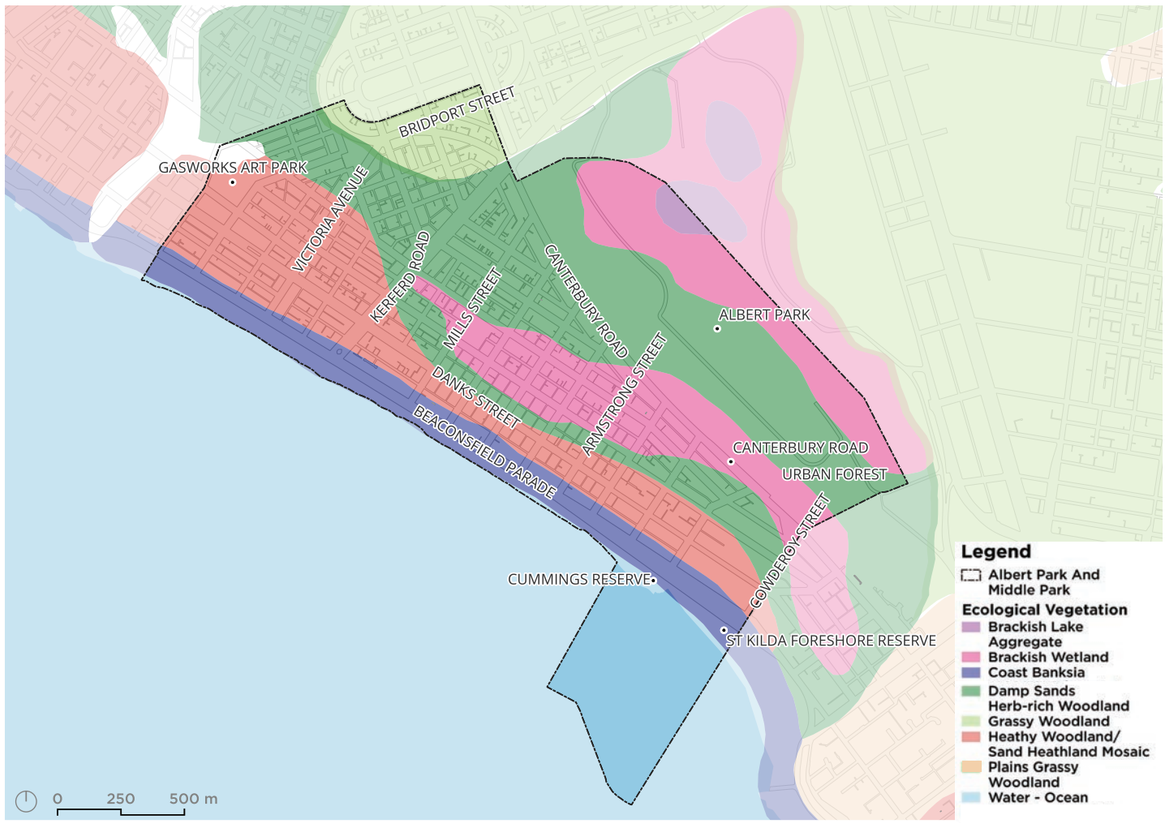
Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.6

HISTORICAL ECOLOGIES



KEY CONSIDERATIONS:

Historical ecologies are mapped using the Pre-1750 Ecological Vegetation Classes (EVCs), which describe the native vegetation communities that existed prior to widespread settlement, classified according to climate, soil, hydrology and landscape context. The precinct contains eight different EVCs, providing a crucial ecological baseline for understanding which tree and understorey species are truly endemic to an area. This supports species selections that enhance resilience, biodiversity and habitat connectivity across the precinct.

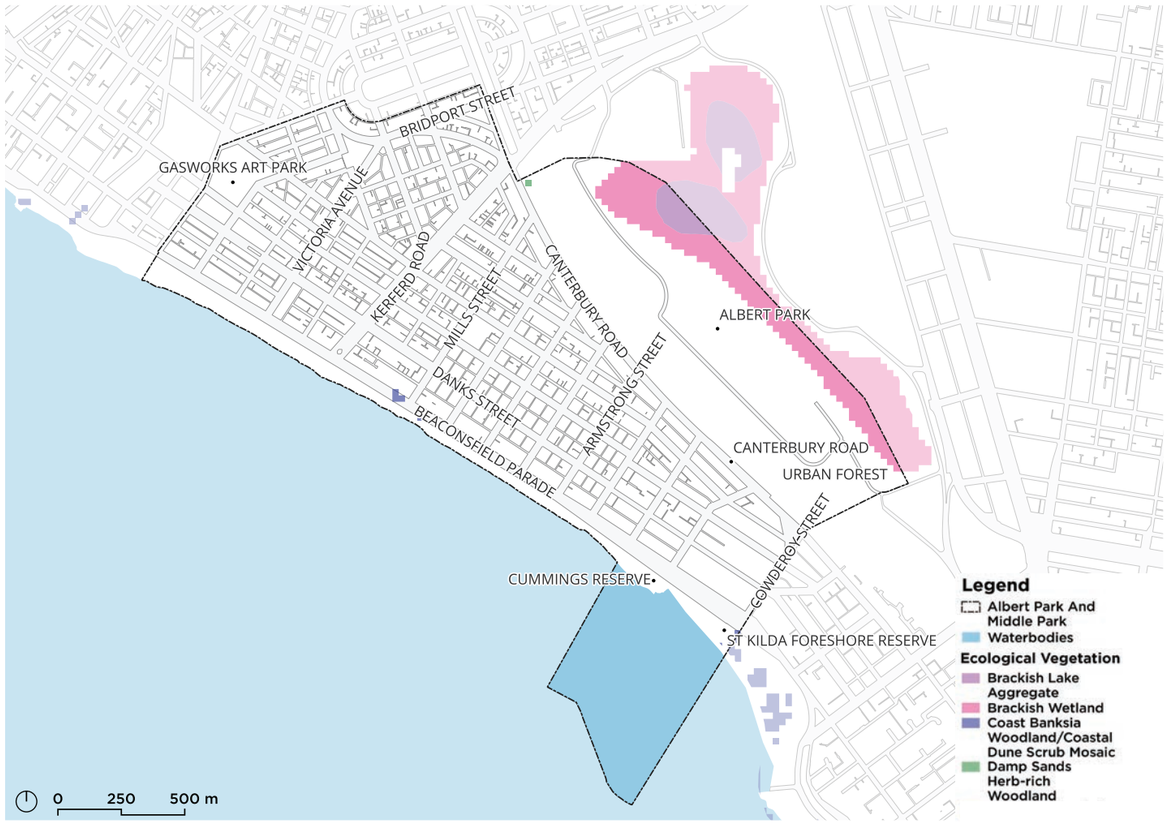
Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.7

REMNANT ECOLOGIES



KEY CONSIDERATIONS:

Remnant ecologies are mapped using the 2005 EVCs, which describe the native vegetation communities that have persisted since settlement, classified according to climate, soil, hydrology and landscape context. Within the precinct, scattered patches of remnant vegetation remain along the foreshore. This information can inform species selection, guide targeted ecological initiatives and help prioritise actions to strengthen resilience, biodiversity and habitat connectivity in key areas.

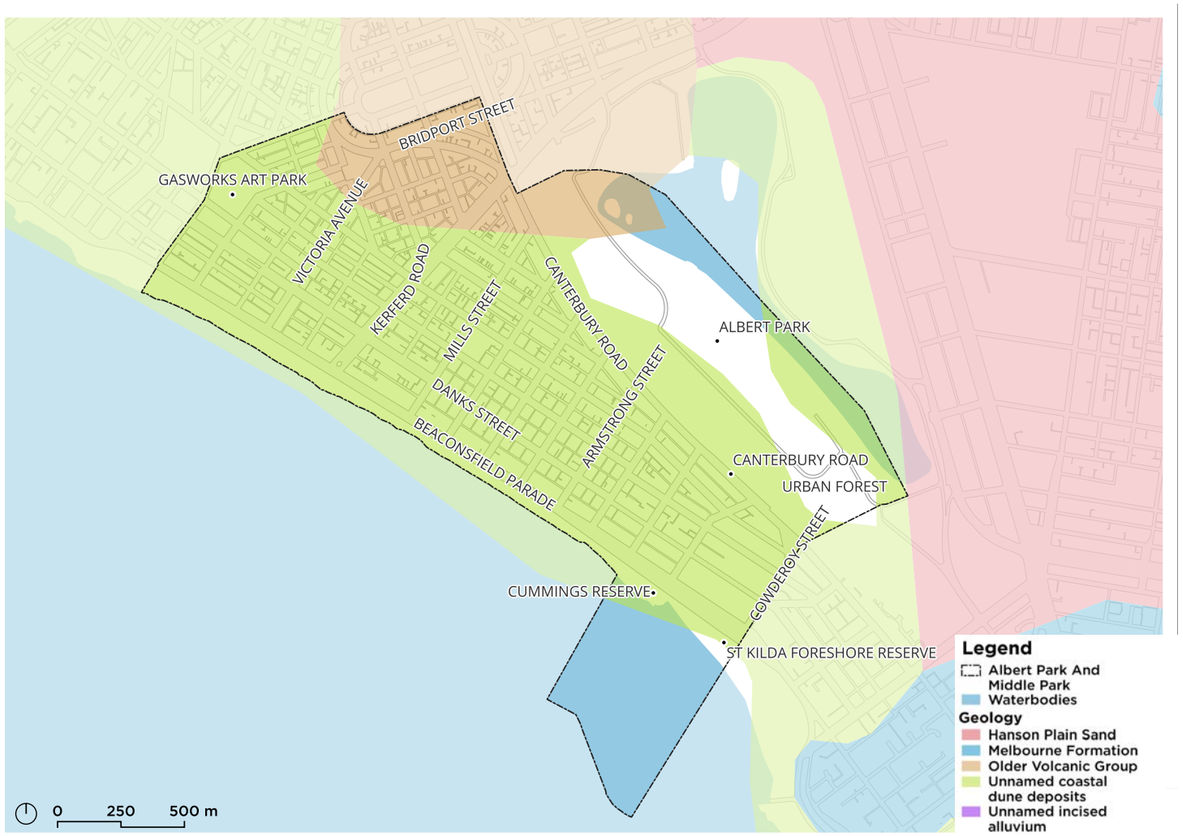
Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
☑			☑	☑	☑

03.8

GEOLOGY



KEY CONSIDERATIONS:

This broad scale geological map shows the soil and rock types that can be found near the surface reflecting soil conditions across the precinct. The foreshore and lower-lying areas are dominated by sandy dune and alluvial deposits, while heavier clays and older geological formations occur further inland. These soil units determine the suitability of tree species selections, shape drainage patterns, and landscape performance, influencing how different parts of the precinct respond to change. Understanding this soil variation can guide species selection, inform water-sensitive design responses and support targeted habitat restoration. It also assists in prioritising areas where soil constraints or opportunities may influence long-term resilience, ecological outcomes and the feasibility of future landscape interventions.

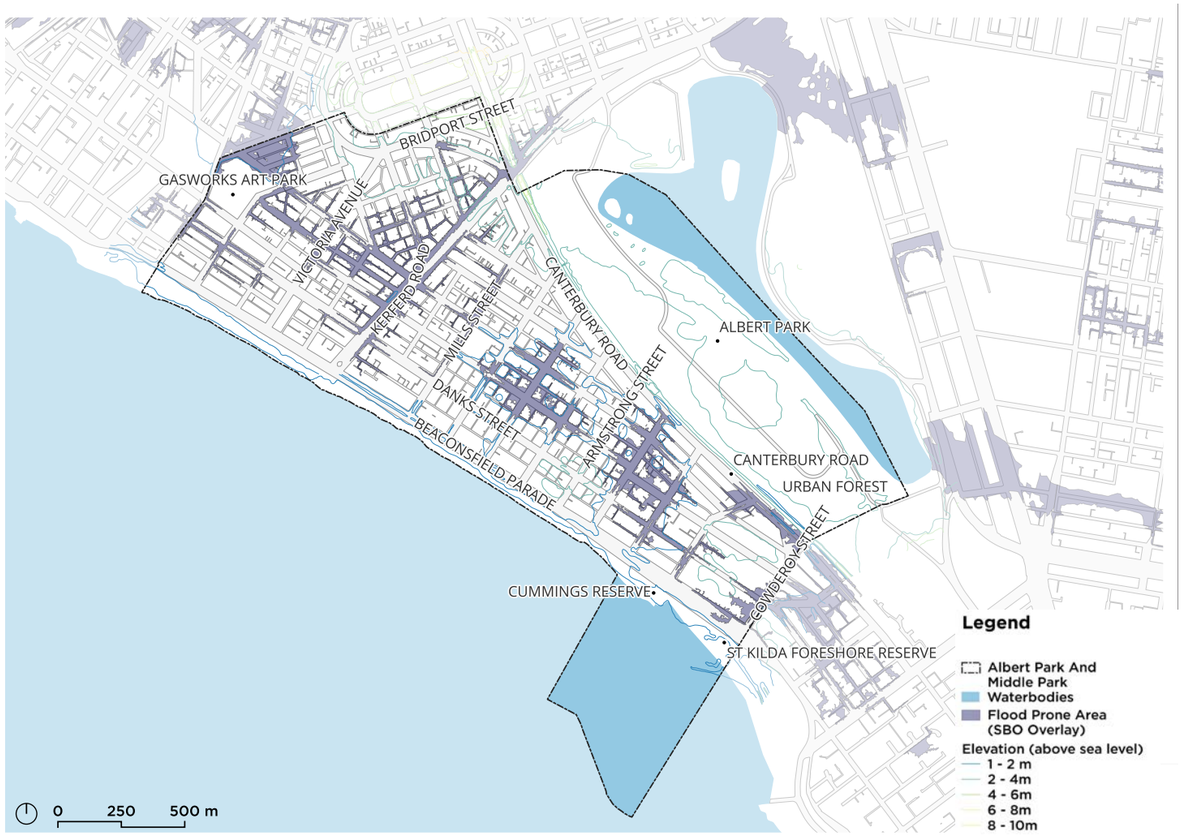
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WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.9

ELEVATION AND INUNDATION



KEY CONSIDERATIONS:

This map shows elevation as well as flood-prone areas to show which streets may experience stormwater accumulation or flows. This information may hold implications for tree species selection or design intervention choices in the UFPP. Water Sensitive Urban Design (WSUD) interventions in flood-prone streets (such as permeable pavements, rain gardens, and bioretention 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.

Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
☑			☑		

03.10

EXISTING TREES



KEY CONSIDERATIONS:

This map shows existing canopy in streets and open spaces. The map is based on Council-provided data and shows 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, selection of infill species, the street tree tool kit and selecting street types.

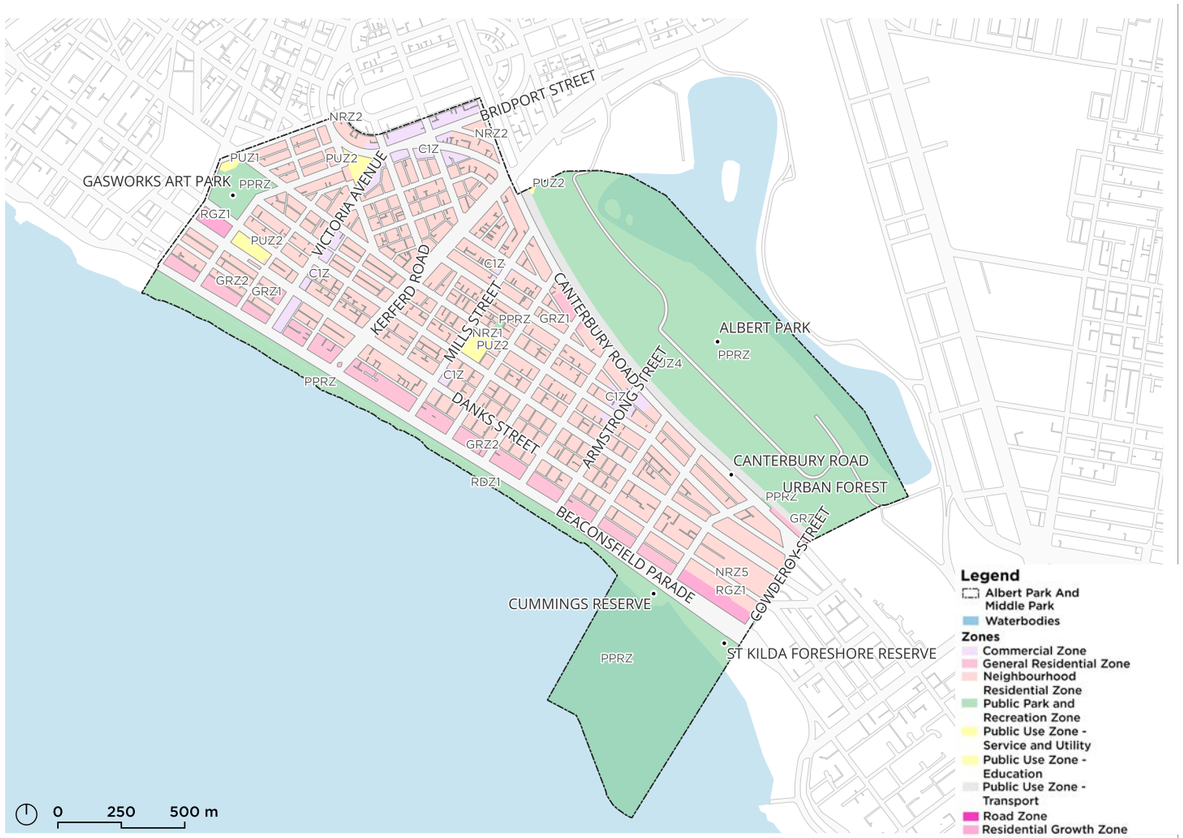
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WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.11

ZONING



KEY CONSIDERATIONS:

This map shows land use zoning in Albert Park and Middle Park. Zoning has fed into the development and selection of the street types for the UFPP. This is based on the different land uses in certain areas affecting the type of street tree planting that is appropriate.

Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.12
MOVEMENT



KEY CONSIDERATIONS:

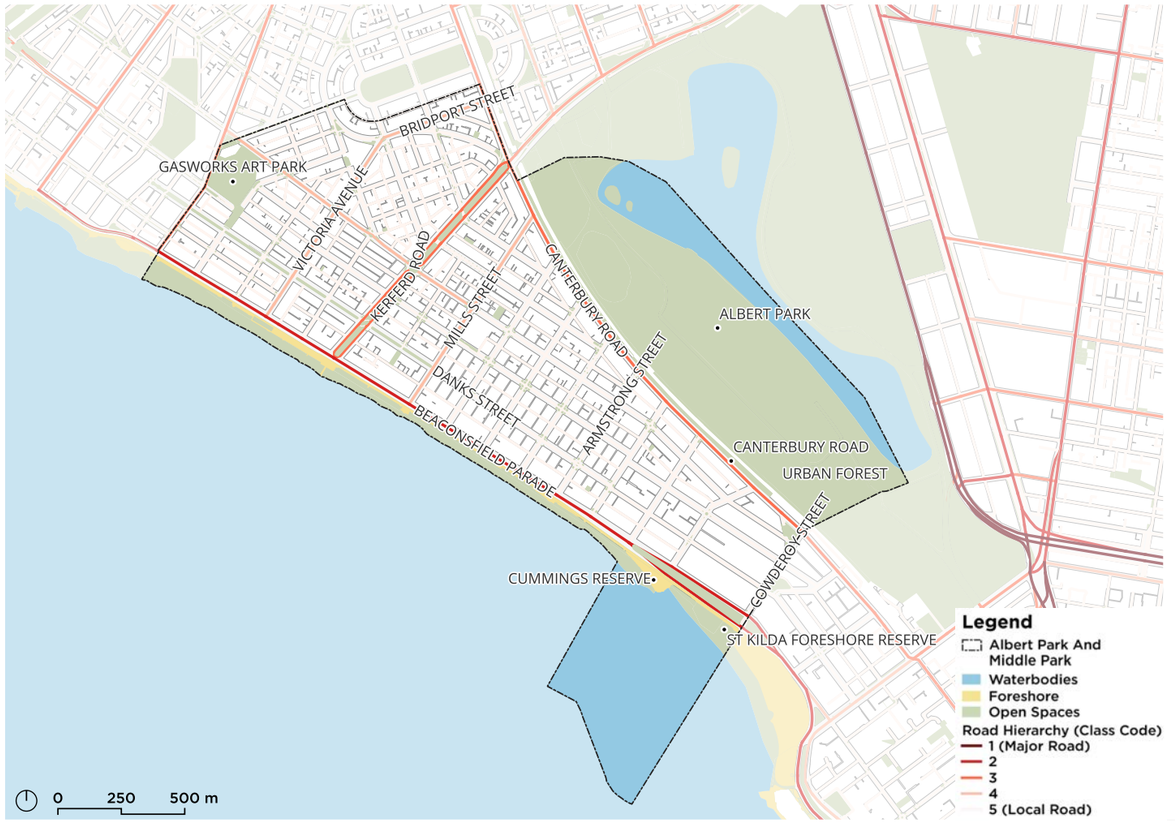
This map shows the public transport routes and stops in Albert Park and Middle Park, including buses and trams. Public transport has fed into the street types that were developed for the UFPP as well as the priority process for determining streets requiring intervention. The map also shows the Strategic Cycling Corridor which has also fed into the priority process.

Note: Data represented in this map is correct at the time of publication.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.13
ROAD HIERARCHY



KEY CONSIDERATIONS:

This map shows the hierarchy of roads in the precinct based on the VicRoads Road Class Code data which categorises roads based on their size and function. Road hierarchy has fed into the street types as well as the street assessment priority process.

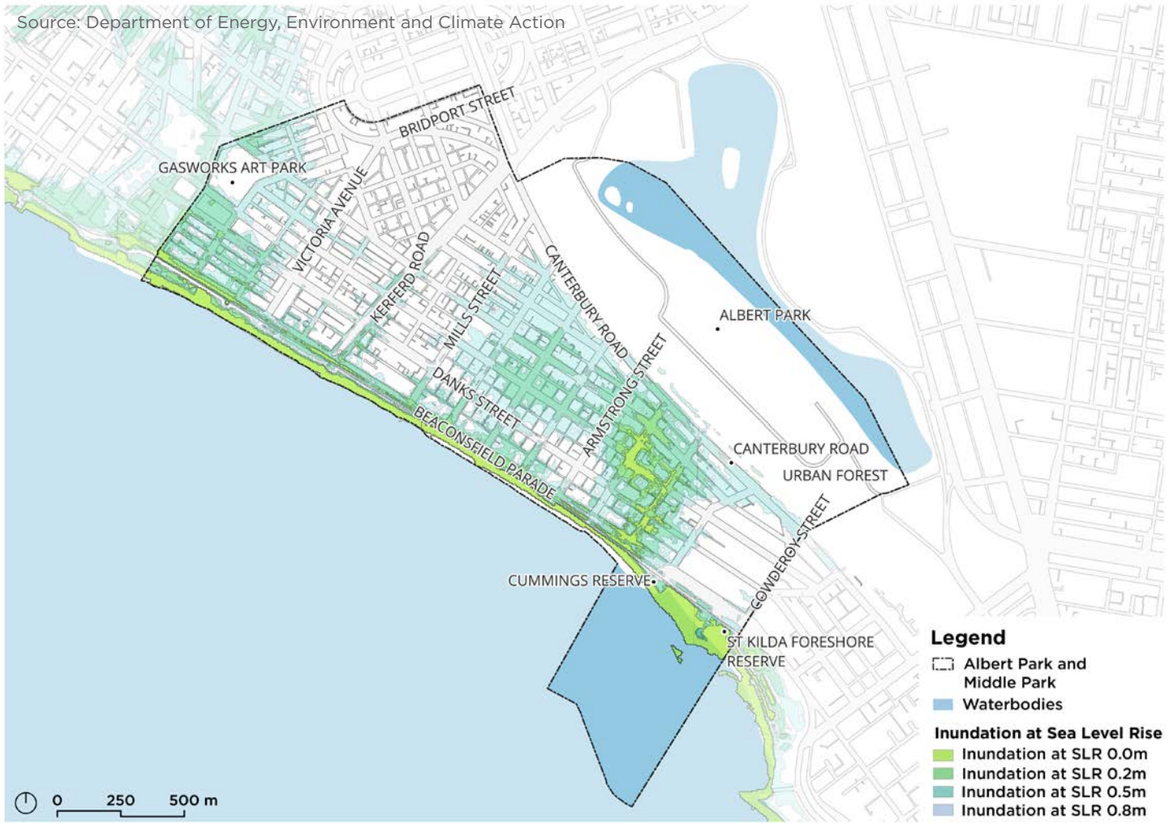
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WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
☑	☑		☑	☑	

03.14

INUNDATION EXTENT



KEY CONSIDERATIONS:

The Victorian Government has modelled storm tides and mapped coastal inundation to improve understanding of flood prone areas and assist with planning for hazard adaptation. This map shows the storm tide inundation extents for various sea level rise scenarios from 0.0m to 0.8m. It shows areas potentially affected by short-term (temporary) inundation (in the absence of any management measures). Within the City of Port Phillip some of the lower lying land near the coast is prone to coastal flooding. With sea level rise, areas flooded by the sea during storms may become bigger. Coastal flooding can also combine with catchment flooding of creeks, waterways and drains due to rainfall. This information may hold implications for tree species selection (trees may need to be tolerant to periods of waterlogging and/or salt) or design intervention choices in the UFPP.

WHAT THE DATA HAS CONTRIBUTED TO:

KEY ACTIONS	STREET TYPES	STREET TREE TOOLKIT	SPECIES SELECTION	STREET PRIORITY	OPEN SPACE
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03.15

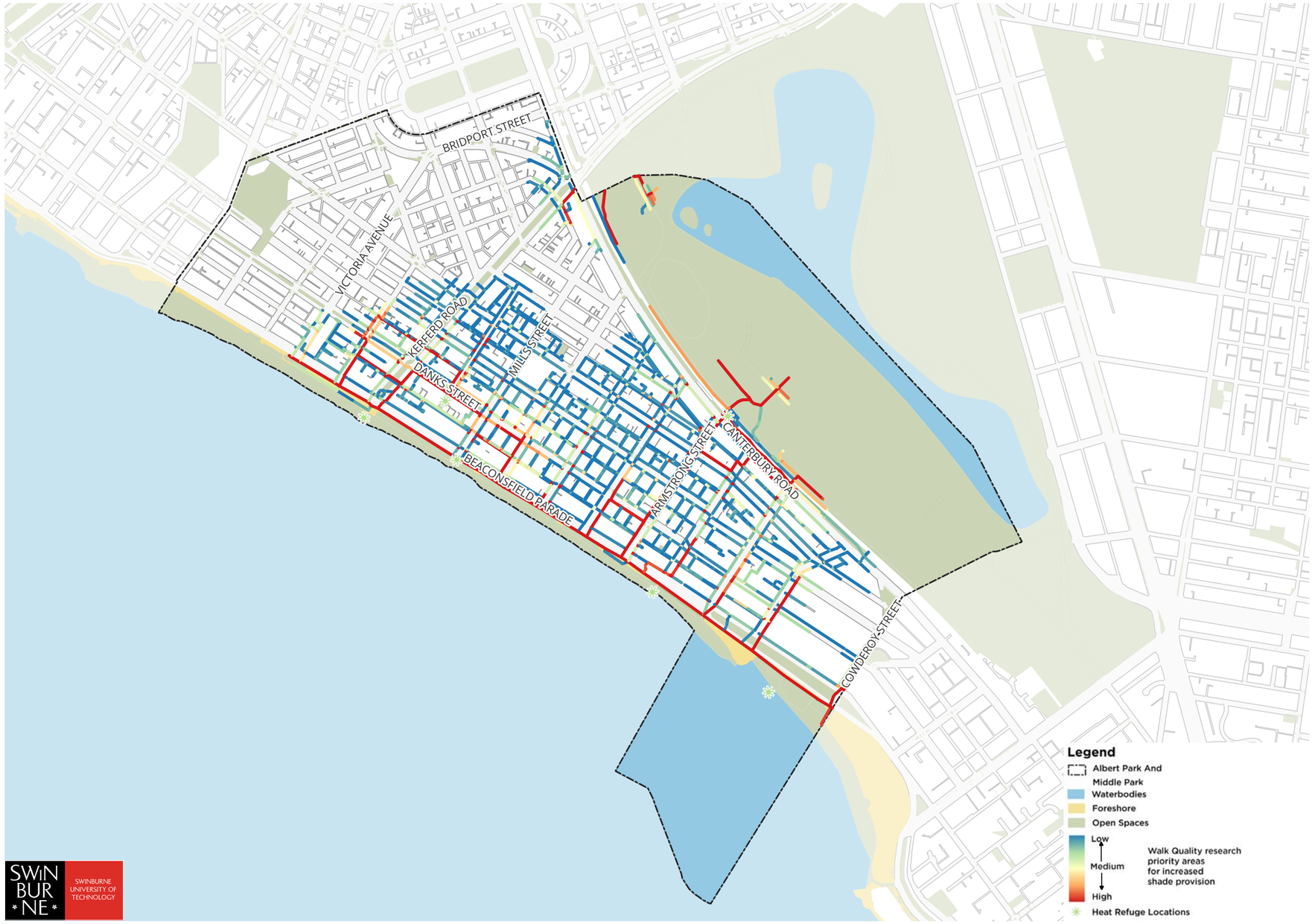
WALK QUALITY - PRIORITY STREETS FOR SHADE INCREASE

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.

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.



03.16

HIGH-PRIORITY STREETS

The prioritisation of precinct streets has been informed by research to date undertaken by LatStudios, in collaboration with City of Port Phillip. The Swinburne University Walk Quality assessment has informed the prioritisation process but does not contribute to the overall scoring of streets. This scoring process has been detailed in the Street Attributes Table, in Appendix A. Attributes that have informed scores include proximity to activity centres, presence of cycling infrastructure, road ownership, public transport, heat vulnerability, urban heat island, council strategy, biodiversity connections.

As the Swinburne Walk Quality Assessment focuses directly on tree canopy, an attribute not included in the scoring process, results may differ between the two prioritisation mappings. Swinburne Walk Quality results are more granular (i.e. not averaged across the length of the street), therefore cannot be easily integrated into the scoring process. Therefore the walk quality results should be considered an added overlay to the street prioritisation mapping, informing key areas for intervention along high priority streets.

Refer to Appendix A for the full table of assessed street prioritisation as per the adjacent mapping.

