# **Appendix N: Kurilpa Street Tree Action Plan**

The Kurilpa Tree Planting Strategy is an initiative of Kurilpa Futures community group assisted by John Mongard Landscape Architects

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Rev. C





### **Project Outline:**

We propose to ramp up tree planting in Kurilpa to achieve BCC's own goal of 50 percent shade cover over footpaths and bikeways by 2031. Climate change will create local heat island impacts in Kurilpa and we seek to counter this health risk with the simple act of tree planting. Our goal is to partner with local residents and BCC to increase the tree canopy on the most important roads and public spaces for pedestrians and cyclists. We want to achieve active participation of local residents in sustaining the urban street tree corridors in Kurilpa.

Vulture Street is the first street which we propose for tree action, and this will be followed by tree actions to other priority streets, including Montague Road, Hardgrave Road, and Dornoch Terrace.

# **Kurilpa Street Tree Action Plan**

Greenspace has been the number one community priority in Kurilpa in the last twenty years. Over this period, hundreds of local residents have collaborated on ways to improve greenspace and tree cover. These collaborations and initiatives have been collated in the Greenspace Strategy, an evolving community action report which began in 2015. The document identifies 11 hectares of of local green space that can be reclaimed for the commons, as indicated on the map on page 2. Kurilpa Futures and West End Community Association community groups have both prioritised the planting to green the neighbourhood and this is supported by the local BCC Councillor and both the local State and Federal State Members of Parliament.

#### **Street Tree Priorities**

Melbourne Street subtropical boulevard is an excellent template for how major streets in Kurilpa Precinct should be upgraded. A subtropical mix of street trees with dense shade provide excellent walkways for the community. Council has a boulevards program and both Vulture Street and Montague Road are streets which should be considered for this program. Melbourne Street was upgraded over ten years ago as a subtropical boulevard with mixed species of canopy trees shading a series of sitting places. Bikeways and broader walkways are features. The intense population growth near both Vulture street and Montague Road warrants immediate integrated planning in order to expand the network of subtropical boulevards in Kurilpa Precinct.



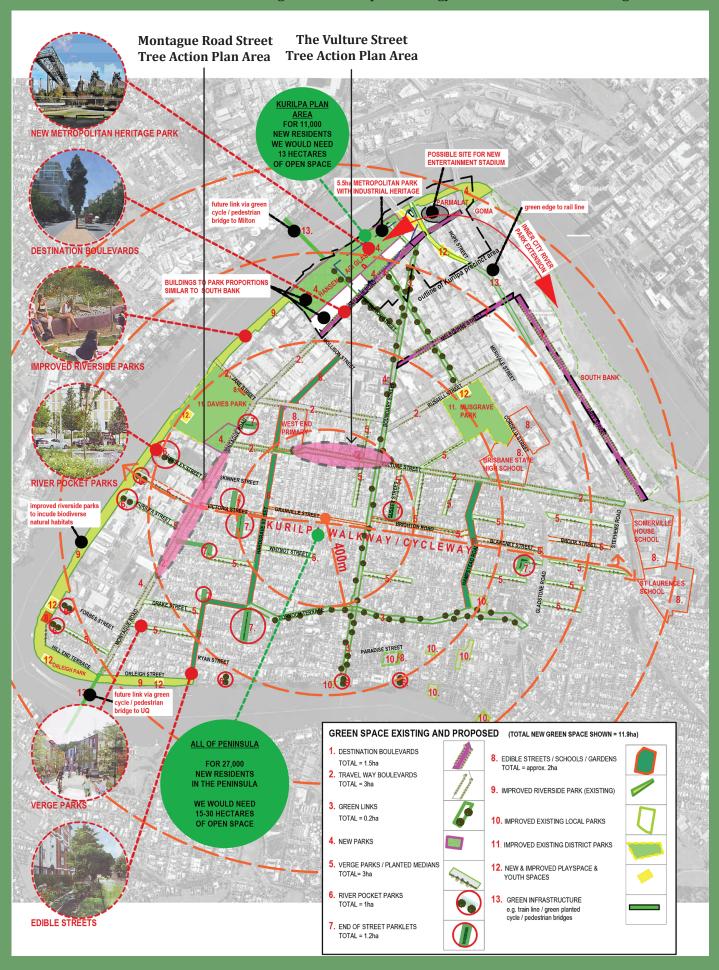
Vulture Street is a hot and unpleasant place to walk

# **Existing conditions**

Kurilpa has had no integrated streetscape works in the last thirty years. There are many street verges that currently have few trees or other plantings. The standard of landscape maintenance here is poor. The Glass Factory re-development created some new footpath verges and the new primary school re-development should create adjacent streetscape works with street trees and verge gardens.

The Kurilpa Street Tree Action Plan relates to existing verge side garden areas located along key walking routes, including Vulture Street and Montague Road. With additional funding, additional tree verges in this zone could be created by cutting out bitumen on footpaths. This would potentially double the number of trees and shade proposed in this zone. This tree planting action plan aims to create a template for ongoing tree planting in Kurilpa in a more planned and integrated manner. By targeting heat zones and proposing corridor tree plantings, it is envisaged that in 5-10 years time street shade could be tripled.

Figure 2: Green Space Strategy: Vulture Street Tree Planting Area



# Effects of a changing climate

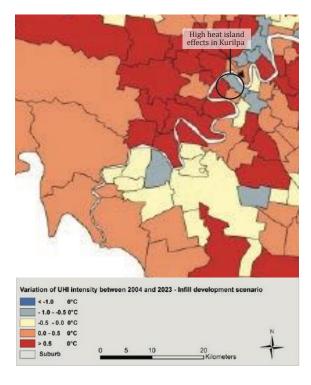
#### **Urban Heat Effects**

Cities like Brisbane are already feeling the impacts of climate change. Increased temperatures are already evident throughout the year, but particularly in our extended hot summers. According to QUT modelling, the Kurilpa precinct of West End and South Brisbane may feel urban heat island effects of up to 2.54 degrees Celsius higher than non-urban areas by the year 2023, especially under high infill development scenarios (Deilami 2017).

The CSIRO expects that by 2050, the number of hot days (>35 °C) will increase from approximately 2 days to 8 days per year in Brisbane (https://www.climatechangeinaustralia. gov.au/en/changing-climate/state-climate-statements/queensland/). When three or more days of consecutive high maximum and minimum temperatures occur, the Bureau of Meteorology describes it as a heat wave.

Known as 'silent killers', heat waves negatively impact human health. Risks are especially high for those with chronic health conditions, for those with poor housing and for outdoor workers, especially when high temperatures over several days combine with high humidity. In these conditions, even healthy people may begin to experience heat stress with prolonged activity or exposure. Heat stress causes fatigue, headache and muscle cramps, while heat stroke can lead to death.

Figure 1: Projected heat effects on inner Brisbane suburbs subject to high infill (Deilami 2017).



Source: Deilami, K. & Kamruzzaman, M. (2017). Modelling the urban heat island effect of smart growth policy scenarios in Brisbane. *Land Use Policy*, **64**, p. 38-55. https://eprints.gut.edu.au/104077/.

Australian Government climate models for Queensland suggest that heatwaves may become as frequent as 10% of the year in 2050 in Brisbane, Gold Coast and Noosa, where a single heatwave event may last up to two weeks. In 2030, they could last for 18 days or more (https://longpaddock.qld.gov.au/qld-future-climate/adapting/heatwaves/). The Brisbane City Council's 'Brisbane: clean, green, sustainable' goal for the city commits the increasing shade to 50% coverage of footpaths and bikeways in residential areas by 2031. We estimate that this Vulture street zone would currently have less than 10 percent shade cover over footpaths.

### **Drought and Flood**

Lived experience of drought and flood are very much a part of recent collective memory in West End. The area was one of the worst effected areas during the 2011 Brisbane floods. In spring 2014, areas of the peninsula were subject to a super cell storm that destroyed significant trees and damaged housing and property. The CSIRO expects these extreme rain events in Queensland to become more intense. In recent dry years, community green spaces and street trees have suffered. In future years, Queensland is expected to become drier in the May-October period. The Kurilpa community has considered both wetter and drier futures when developing local greening strategies.



Melbourne Street, January 2011. Source: Jackie Ryan

#### Street Trees in a changing climate

The 2021 Intergovernmental Panel on Climate Change (IPCC) projects that 1.5 degree Celsius increase in temperatures above pre-industrial levels worldwide is virtually certain in the next decade. If carbon emissions do not reduce significantly now, a 2 degree Celsius increase in temperature is highly likely around 2050. The IPCC projects, with high confidence, that concurrent heatwaves and droughts are likely to become more frequent.

In highly urbanised cities, where heat effects are intensified, heatwaves will become more severe. This means that trees planted now need to respond to the reality of a hotter, drier climate, where rain is less frequent or which occurs in severe events. Species adapted to a climate similar to the dry tropics of Central Queensland (cities like Rockhampton), will be necessary if these trees are to survive and thrive in the hot summers of the Kurilpa area in the next ten years. Some hardier species, already common in local streets, are on the BCC council's approved street tree list and are also suited to the more extreme conditions of the dry tropics. A focus on species like *Flindersia australis*, *Harpullia pendula* and *Buckinghamia celissima* are recommended in the Kurilpa area tree planting palette in order to adapt to the changing climate.

#### The Kurilpa Street Tree Action Plan

A walking inspection of the Kurilpa peninsula undertaken by Kurilpa Futures Community Group and John Mongard Landscape Architects, reveals many opportunities to plant street trees. This action will help to achieve the key goals of improving the quality and functionality of green spaces on the peninsula. Additional street tree shade improves walkability by cooling the street to reduce urban heat effects. Better designed and maintained verges offer the potential to ensure plantings are more resilient to climate change and the anticipated extreme weather events it will bring. Several recent documents provide a useful framework which together shape the selection and location of proposed new plantings. Relevant documents include:

- Brisbane City Council's 'Brisbane: clean, green, sustainable 2017-2031' Urban Forest Goal
- Brisbane City Council's Centres Detail Design Manual and Citywide Streetscape Hierarchy 2013
- Mongard et. al: The Greenspace Strategy West End, Highgate Hill and South Brisbane 2021
- Queensland Government's South Brisbane Transport and Mobility Study 2019
- Kurilpa Futures' Shifting Climate, Shifting Places Workshop Report 2020
- Energex Safetree List 2021 and Brisbane City Council Street Tree list

#### **Community Priorities for Action**

In 2020 the Kurilpa Futures group organised a series of community workshops to discuss potential responses that could transform West End to respond effectively to a scenario of a projected +2 degrees Celsius by the summer of 2030. Hundreds of designers, planners and local residents participated in the *Shifting Climate, Shifting Places Summit* at The University of Queensland and shared their expertise and experiences. The summit developed a series of adaptation and mitigation strategies which were further brainstormed and developed by Kurilpa Futures collaborating with John Mongard Landscape Architects. The following key ideas from the climate summit are relevant for this action plan:

#### Adapting to heat: Design and Public Space:

- Designing cool microclimates by using large canopied shade trees and structures
- Create heat refuges that cover broad areas of the public realm
- Mandate cool paving / permeable paving systems to reduce urban heat impacts

#### Adapting to Water/Storms/Drought (Water Sensitive Urban Design (WSUD))

- Street tree programs that target flood and drought resistance
- Channeling and harvesting overland flow within and between sites to reduce impacts of flooding, sustain
  vegetation and create habitat. Techniques include rain gardens, targeted tree species, ponds, billabongs and
  street gardens.









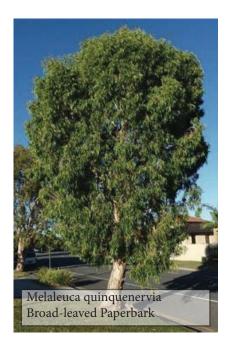


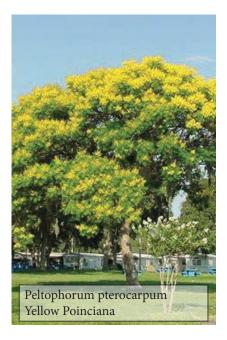


#### Street Tree Palette: for narrow verges or verges with power lines

These trees are suitable species for the Kurilpa Street Action Plan. They are derived from Energex and from the Brisbane City Council's nominated street tree species list as recommended for planting under power lines. The Society for Growing Australian Plants investigated the indigenous plants and trees relevant to the Kurilpa peninsula and some of these trees are also listed on their species list specific to South Brisbane and West End. This list reflects the alluvium, gravelly slopes and clay subsoils that characterise locally common soil types.

These six species suggested for planting under powerlines are species that already thrive in street verges throughout the area and are nominated for specific locations throughout Kurilpa. For example, *Tabebuias* are growing well in Whynot Street and Hampstead Road. *Xanthostemons* are growing well along Vulture Street near Brisbane State High School, along Hardgrave Road, Dornoch Terrace and throughout Highgate Hill. *Syzygiums* surround West End State School. Numerous large Calliste*mons* and *Buckinghamias* shade similarly busy and wide streets like Dorchester Street and Stephens Road.













# Street Tree Palette: for verges without power lines

Kurilpa lacks shade. It has many existing verge gardens and tree build-outs that can accommodate for larger canopy trees. The species above are suggested for use in two situations in Vulture Street: the Pocket Park proposed in Zone 1 (*Peltophorum pterocarpum* and *Melaleuca quinquenervia*); and for broader verges unencumbered by powerlines, services or sightlines (*Flindersia and Harpullia sp.*).

These five trees are taken from the Brisbane City Council's nominated street tree species as suitable for planting in Kurilpa streetscapes. The selected species thrive in other streets in Kurilpa: *Flindersias* were planted in Russell Street in the 1990s and have grown to provide good shade. Well established *Melaleucas* are thriving along upper Boundary Street, Ryan Street and along Montague Road. They give good shade to urban streetscapes and are all adaptive to the likely future climate. Both natives and exotics are selected to provide the right tree that is best suited to the nominated locations.



This Street Tree Action Plan begins to implement these priorities and respond to the reality of a hotter, drier climate and more unpredictable and extreme weather events. It proposes three zones for tree planting action along Vulture Street: these are three street blocks which have very poor shade cover. These streets also have many existing footpath verges which can accommodate new infill trees (refer adjacent plan). Zone one has a road reserve area which can accommodate a new pocket-park with a grove of shade trees.



# Tree Planting Zone 1: Paris Street to Turin Street (near West End State School)

Actions: New trees to extend canopy over busy footpaths and on corners; A reclaimed pocket park featuring Water Sensitive Urban Design.

# Tree Planting Zone 2: Cambridge Street to Bond Street

Actions: new street corner trees and additional trees in existing verge gardens.

# Tree Planting Zone 3: Princhester Street to Thomas Street

Actions: new street corner and verge garden trees that maintain line of sight for cars and add shade to the street.







#### Tree Planting Action Zones - Hardgrave Road to Boundary Street

For the purposes of this Action Plan, Vulture Street has been divided into 3 Zones of existing trees and potential new infill tree plantings:



Some verges have garden build-outs at street corners which require good visibility to turning traffic. These verges would require advanced trees to be installed: species that are clear trunked to 2 metres (trees of 50-100 litre bag stock). Other verge gardens are not constrained by visibility and could accommodate standard smaller 45-75 litre tree stock. The pocket park area incorporates new verges that are well set back from Vulture Street and can accommodate some larger canopy trees. There are potentially 47 trees that could be planted in existing beds. Fifteen additional trees could be planted in new pocket park beds if some cement areas are removed.

Vulture Street was identified by the Kurilpa Futures community group in 2020 the highest priority streetscape requiring shade trees in the neighbourhood. This is because it carries large volumes of pedestrian traffic, has very little shade and it connects the key anchors of Davies Park, the West End State School and Boundary Street town centre. Currently, Vulture Street is a hot and congested streetscape which has few safe crossing points, inadequae footpaths with very poor levels of shade. The Greenspace Strategy identifies Vulture Street as a major corridor which should become a travel way boulevard accommodating pedestrians, bikes and vehicles in a shady pleasant corridor.

# Tree Planting Zone 1: Paris Street to Turin Street (near West End State School)



The corner of Paris and Vulture Streets includes extended verges with low vegetation and no existing trees. New trees here can be larger/taller species as there are no powerlines, but must be clean trunked to maintain sight lines for car and pedestrian traffic. Suggested here are larger species like yellow Poincianas, which offer colourful, wide shady canopies, and Paperbarks, which offer dense weeping foliage and height.



Verges on both sides of the corner of Vulture Street and Paris Street provide space for several larger shade trees, unencumbered by overhead power lines.



Verge on corner of Vulture Street and Turin Street, looking towards West End State School. There is potential for a large shade tree here.



Tree Planting Zone 1: Paris Street to Turin Street (Junction of Turin, Horan and Vulture Streets - near West End State School)

On the corner of Turin and Vulture Streets there are extended verges with low vegetation and few trees. The western verge is limited by a power line, but the eastern verge is not. Opposite, on the corner of Horan and Vulture Streets, the streetscape is limited by power lines. Trees here must be clean trunked to maintain sight lines for car and pedestrian traffic. A row of smaller shade trees is also suggested on the northern side of Vulture Street, to provide additional street shade for this busy pedestrian area.



View across Vulture Street of verges outside West End State School.



Verge on corner of Vulture Street and Horan Street, outside West End State School. A row of up to 6 additional small-medium sized trees would add significant shade to this side of the street, noting height constraints imposed by powerlines .



Verge on eastern corner of Vulture Street and Horan Street with room for at least one additional small-medium sized tree.

#### Tree Planting Zone 1: Paris Street to Turin Street (in front of 33 Vulture Street premises)



# **Proposed Pocket Park incorporating Water Sensitive Urban Design**

A pocket park could be reclaimed from the existing triangular shaped excess road reserve across the road form the State School. The area is large enough to add many new medium and larger trees to the existing scattered trees. Up to 39 new trees could be planted here to create a grove of shade. The main part of this forest grove could be Melaleuca trees. Peltophorums can be also centrally planted here as there is ample footpath area that needs shade.



The proposed design includes pebble lined drains that catch water run off from the adjacent sloped carpark and footpaths. A grove of paperbark trees is best suited to harvest the stormwater, adding extensive shade and dense local vegetation and a habitat sanctuary to the very busy urban streetscape.



# **Vulture Street Pocket Park Concept**

The pocket park proposes revegetation of some reduced existing paved areas and wide driveways in order to achieve high canopy coverage and cooling of the street, and to reduce the heat island effect evident from all the hardstand areas here. Placing benches under trees offers places to sit and wait for school parents, or a resting place for residents walking along Vulture street. Unnecessary cemented areas offer opportunity for conversion into much needed green space. The concept features the following elements:

- 1 Additional street gardens with additional street trees
- **2** Concrete and paved areas converted to street garden areas.



- **3** Footpath improvement and surface treatment.
- Decomposed granite path and sitting area with bench and concrete stools; gravel soakage pit under path.
- Rest stop shaded sitting area with concrete stools in decomposed granite area; gravel soakage pit under sitting area
- Existing driveway retained but reduced to BCC standard commercial driveway width. Balance of land to expand the park area.

# Tree Planting Zone 1: Paris Street to Turin Street (Pocket Park with WSUD)





1 Wide verges on corner of Vulture Street and Turin Street with one existing *Brachychiton acerifolius.* 



2 Two verges outside 33a Vulture Street, looking from Turin Street.



**2** Unshaded verge facing small carpark on Turin Street.



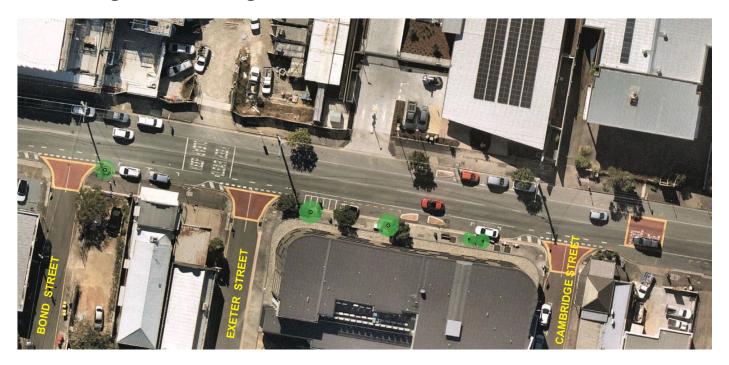
1 Verge outside 33 Vulture Street, in between existing driveways for 33a and 33b.





1 Long verges on Vulture Street, in between existing driveways.

# Tree Planting Zone 2: Cambridge Street to Bond Street - 5 trees



New trees here are constrained by the awnings outside the shops at street level. Infill trees are proposed to be planted alongside existing trees to add shade to the hardscape area. Corner trees will need to maintain sight lines for car traffic. It is assumed the new police/state school streetscapes will provide street trees adjacent to the new developments .





There is room for two additional small-medium sized trees in each of these two verges between Cambridge and Exeter Streets.





A small verge on the corner of Vulture Street and Bond Street could accommodate a medium sized shade tree. A cross street power line should be taken into account here.

# **Tree Planting Zone 3: Princhester Street to Thomas Street.**



On the corner of Thomas Street and Vulture Street there are extended verges with low vegetation and no trees on the footpaths. Trees here must be clean trunked to maintain sight lines for car and pedestrian traffic, but they are not limited by power lines. The Bunyappa Park corner can accommodate two small/medium trees.



View across Vulture Street-Thomas Street intersection. New trees here would be advanced stock with clear trunk species to 2m.



Verge on northern corner of Thomas Street - Vulture Street at Bunyapa Park.





Verge on south-eastern corner of Vulture Street and Thomas Street, outside Kim Thanh Hot Bread.



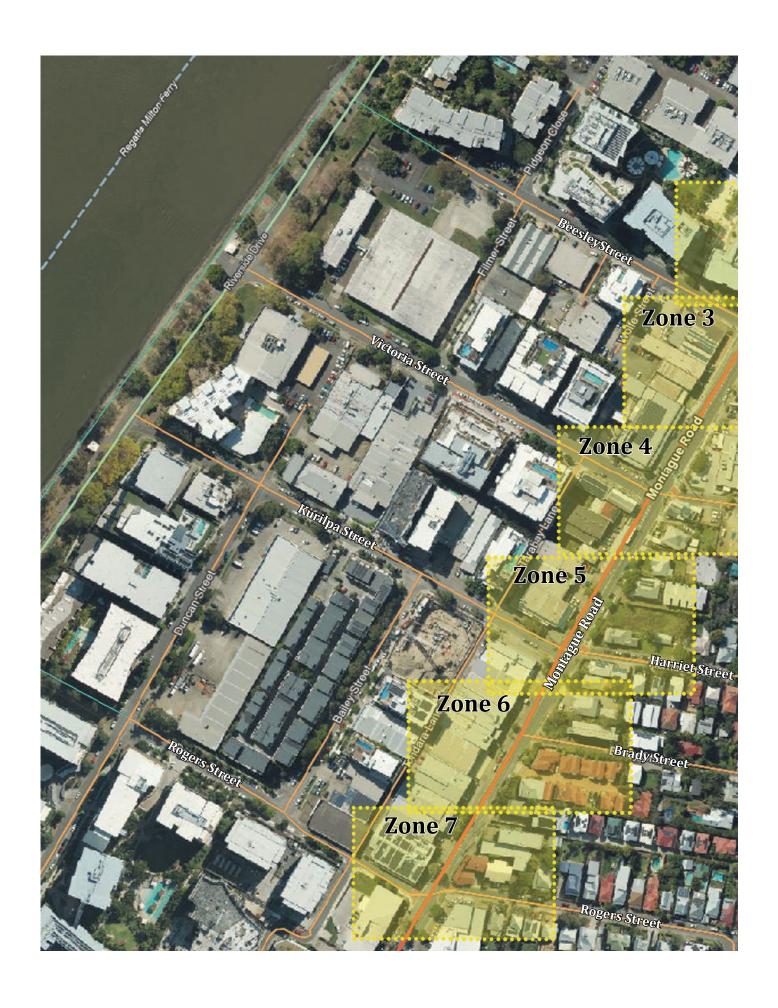


Verges on either side of the corner of Vulture Street and Princhester Street.



Tree Planting Action Zones: Montague St (Vulture St - Rogers St)

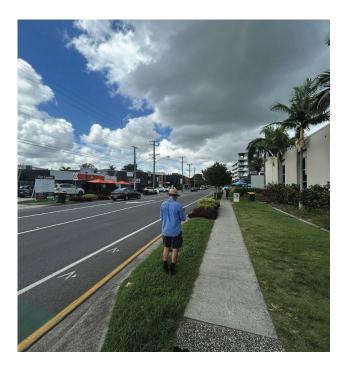




# **Tree Planting Zone 1: Vulture Street to Ashington Street**



Along Montague Road between Vulture Street and Ashington Street there are verges with either low, or no vegetation and trees on the footpaths. Introducing trees here would have no limitations to sight lines regarding car and pedestrian traffic. The only limitation is regarding the power lines on the eastern side of the road.





**1-6**: The verge adjacent to Montague Road and the Queensland Building and Construction Commission building.





**7, 8-10**: Views from the verge adjacent to the Queensland Building and Construction Commission building, on the corner of Montague Road and Pidgeon Close.



**64-65**: The verge in-between Vulture Street and Ashington Street, located in front of BK Pizza.

#### Tree Planting Zone 2: Pidgeon Close to Beesley Street



Between Pidgeon Close and Beesley Street there is a section of verges that display acceptable coverage of vegetation, and other verges against footpaths that provide no vegetation or shade. All the proposed areas on the eastern side of Montague Road are restricted due to the power lines above and sight lines for driveways. Where as the proposed areas on the western side are not restricted regarding power lines.





**11:** Views from outside Banette - French Bakery and Bistro and Light and Co Apartments along Montague Road. This is where a good example is set of what is trying to be achieved (right).



**12-13**: A garden bed outside Banette - French Bakery and Bistro.



**14**: A garden bed on northern corner of Beesley Street and Montague Road. The trees here will need to allow for sight lines regarding cars and pedestrians.



**59-61**: The verge in front of the RAW Art school, to the north of Skinner Street.

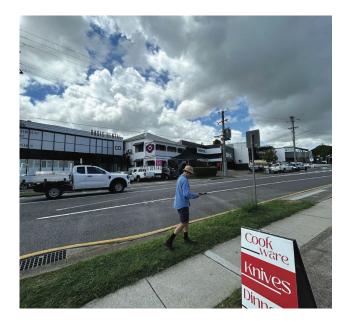


**62-63**: A verge outside of 314 Montague Road on the opposite side of the road to the French Bakery.

# **Tree Planting Zone 3: Skinner Street to Victoria Street**



There area extended verges south of Skinner St along Montague Road that provide no vegetation and shade along the footpaths. The proposed trees on the eastern side of Montague Road are limited by power lines and sight lines regarding driveways and street corners.





**15**: A verge on the southern corner of Beesley Street and Montague Road outside of Marcia's on Montague.



**49**: The verge outside of the Taxi Film Production and Babel Creative buildings at the northern end of Montague Road - Bus Stop 10.



**50-51**: The verge outside of Inertia Fitness on Montague Road.



**52-55**: The verge opposite where Beesley Street joins Montague Road adjacent to the motorcycle parks.



**56**: The verge on southern corner of Skinner Street and Montague Road, outside of Adorne retail and Power Moves - Reformer and hot mat pilates.



**57-58**: The southern corner of Skinner St and Montague road, this view is directed east down Skinner St.

# **Tree Planting Zone 4: Skinner Street to Victoria Street**



Following the inclusion of the Aldi supermarket, accessible spaces for vegetation have been limited throughout this area. The image above displays there is a clear lack of shade in this area. The same limitations as mentioned previously regarding the power lines overhead along the eastern side of Montague Road apply to this area also.



**16**: The verge containing grass directly south of the corner of Victoria St and Montague Road.



The new development in this area missed an opportunity to provide shade to pedestrians.



**45**: The verge opposite the proposed tree number **16** outside a residential building.



**46-48**: The verge in the middle of the new bus stop and outside of the early learning centre has adequate room for a number of trees.

# Tree Planting Zone 5: Victoria Street to Kurilpa Street



Heading towards Kurilpa Street and Harriet Street along Montague Road, a number of locations were noted where more trees could be added. New trees on these verges would need to be advanced clear trunk species to 2m, to provide adequate sight lines for driveways. Limitations regarding power lines along the eastern side of Montague Road still apply in this area.



**17**: The view on the pathway outside the Montague Road's 7 Day Medical Centre shows space in a verge next to an exsiting tree.



**18**: The verge on the southern corner of Kurilpa Street and Montague Road (opposite The Montague Hotel).



**19**: The verge to the north of the Bus Stop 11 and Veneziano Coffee Roasters.



**44**: The verge outside of the vacant block to the north of Harriet Street and opposite of the Medical Centre.



**43**: This verge is in front of the vacant block.



**42**: The garden bed to the north along the corner of Harriet St and Montague Road.





**39-41**: The verge and garden bed to the south of Harriet Street directly opposite the end of Kurilpa Street.

# **Tree Planting Zone 6: Harriet Street to Brady Street**



This area starts to the south of Kurilpa Street along Montague Road including the entrance to Brady Street. Several driveways enter Montague Road throughout this area and thus ideally new trees will be advanced with clear trunks above 2m. Limitations regarding the trees on the eastern side of Montague Road remain with the powerlines above.



**20**: The verge next to Bus Stop 11 and Veneziano Coffee Roasters. A new tree here would provide more shade for pedestrians waiting for the bus.



**24**: A view from the pathway outside of the Queensland Conservation Council.

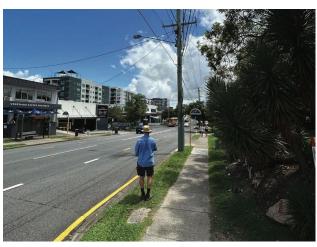




**21-23**: View from the pathway outside of the Queensland Conservation Council, opposite to Brady Street.



**37-38**: The verge on the opposite side of the road to Veneziano Coffee Roasters, in front of Next Level Health and Oracle Investment Services.



**35-36**: Verge on the northern corner of Brady Street and Montague Road, opposite Veneziano Coffee



**34**: The verge on the southern side of the corner of Brady Street and Montague Road, in front of Mews on Montague.



**31-33**: The verge on the southern side of Mews on Montague, opposite the Queensland Conservation Council.

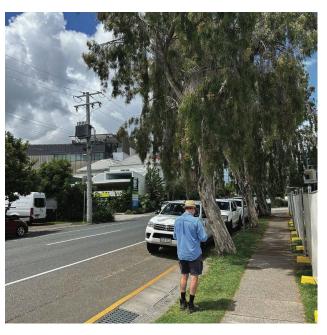
#### Tree Planting Zone 7: Brady Street to Rogers Street.



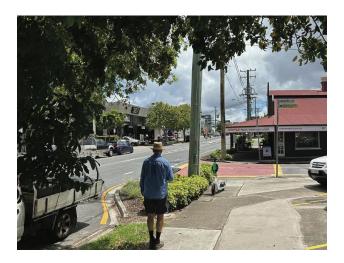
Continuing South-West along Montague Road beyond Rogers Street, there are a number of established trees and some low lying vegetation throughout the verges. On the corners of Rogers Street and Montague Road, there are extended verges with no trees on the footpaths. Similar limitations should be advised here due to the powerlines running along the right side of Montague Road, and sight lines with consideration to driveways and street corners.



**25**: A small section of verge in-between two trees outside of Freedom Suites, opposite the road of RE/MAX Next International.



**26**: The view from the pathway along the under-development of BANKSIDE to the south of Rogers Street (West).





**27-28**: An extended verge on southern side of Rogers Street (East) with some existing low-lying vegetaion.





**29**: An extended verge on the northern side of Rogers Street (East), adjacent to RE/MAX Next International.



30: A small verge inbetween a driveway and pathway to the north of Rogers Street (East)