AGENDA
CULTURE AND COMMUNITY COMMITTEE
13 MAY 2025

MEMBERSHIP: Councillors J Black, L Butler, S Chowdhury, J Cowley, M Dickerson, R Ivey, K Richardson, A Ryan, P Toynton, P Wells and M Wright.

The meeting is scheduled to commence at 5:30 PM.

CONFIDENTIAL

CCC25/20 TENDER - WAYFINDING AND RESERVE SIGNAGE (ID25/763)

The Committee had before it the report dated 22 April 2025 from the Manager Recreation and Open Spaces regarding Tender - Wayfinding and Reserve Signage.

In accordance with the provisions of Section 9 (2A) of the Local Government Act 1993 the Chief Executive Officer is of the opinion that consideration of this item is likely to take place when the meeting is closed to the public for the following reason: information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business (Section 10A(2)(c)).

REPORT: Waterway Safety

DIVISION: Community, Culture and Places
REPORT DATE: 1 April 2025
TRIM REFERENCE: ID25/660

EXECUTIVE SUMMARY

Purpose	• Addressing Council resolution	
Issue	• Council to prepare a report outlining the recommended safety measures that could be implemented at Sandy Beach to mitigate the risk of future drowning incidents. The report will also explore potential water safety programs available for schools within the Local Government Area (LGA) to support student education in river safety, including potential delivery methods.	
Reasoning	• The recent drowning of a local teenager in the Macquarie River at Sandy Beach raises interest in the provision of signage and identification of water safety programs to assist with public education, and specifically the youth, to gain better understanding of the risks when entering inland waterways.	
Financial Implications	Budget Area	Community Services
	Funding Source	No budget allocated
	Proposed Cost	Proposed costs to be confirmed
	Ongoing Costs	Not applicable
Policy Implications	Policy Title	No policy
	Impact on Policy	Not applicable
Consultation	Community Services	External and Internal consultation

STRATEGIC DIRECTION

The Towards 2040 Community Strategic Plan is a vision for the development of the region out to the year 2040. The Plan includes six principal themes and a number of objectives and strategies. This report is aligned to:

Theme: 5 Liveability

CSP Objective: 5.5 Our community has access to a diverse range of recreational opportunities

Delivery Program Strategy: 5.5.1 Passive and active open space is located to maximise access and use by the community

RECOMMENDATION

1. **That the CEO seek to engage an independent third-party specialist to conduct a risk assessment of Council's formal inland waterway access points and provide recommendations to address identified issues.**
2. **That Council consider an allocation of $10,000 from the proposed Community, Culture and Places budget as part of its review of public comment to the Draft 2025/2026 Operational Plan and Budget.**
3. **That the CEO work with an independent third-party specialist to build a proposal for an inland waterways safety program for a targeted community audience and report back to Council for consideration.**

Craig Arms
Director Community, Culture and Places

RH
Community Development OfficerSeniors and People with Disability

BACKGROUND

After the recent tragic passing of a local youth in the Macquarie River at Sandy Beach (3 February 2025), the Chief Executive Officer was asked to provide information on existing water safety programs and provide advice on the installation of safety measures that could assist with community education regarding recreational activities relevant to inland waterways.

Previous Resolutions of Council

25 February 2025 *CCL25/18 Waterway Safety Program*	1. *That Dubbo Regional Council notes the tragic passing of Taonashe 'Latroy' Chivhaku who drowned in the Macquarie River at Sandy Beach, Dubbo on 3 February 2025, and expresses our deep sympathy to the family and friends of Latroy.* 2. *That Dubbo Regional Council notes the enormous outpouring of community support at the vigil held at Sandy Beach on the evening of 6 February 2025.* 3. *That Dubbo Regional Council discuss with the Chivhaku family regarding their desire for an appropriate memorial to Latroy at Sandy Beach.* 4. *That the CEO provide a report back to Council on appropriate safety measures that could be implemented at Sandy Beach to reduce the risk of future drowning incidents and investigate any suitable Water Safety programs that can be provided to schools in the LGA to assist with educating students in river safety, and options for delivery.*

REPORT

Royal Lifesaving Analysis

In 2014, the Royal Life Saving Society of Australia published a comprehensive 10-year analysis of drowning deaths in Australian rivers, creeks, and streams. The study highlights that these inland waterways are among the most dangerous locations for drowning incidents in the country. Key findings include:

- **High-risk groups**: Males accounted for most drowning deaths, with alcohol consumption often being a contributing factor.

- **Proximity to home**: Many drowning incidents occurred within 20 kilometres of the victim's residence.

- **Age groups**: Adults aged 25–54 were particularly vulnerable.

- **Preventive measures**: Recommendations include targeted education campaigns, improved signage, and community engagement to reduce risks.

(Drowning Deaths in Australian Rivers, Creeks and Streams: A 10-year analysis)

It is noted that the Dubbo LGA is a region with a growing population from multicultural backgrounds where swimming skills are uncertain, and where previous life experiences around waterways may have been more focussed on daily living activities (fishing, cooking) instead of recreational activities.

Council's Role in Water Safety

Staff met with Council insurers to discuss its role regarding the safety of people using inland waterways within the Dubbo LGA, as well as its expected response to the tragic event in February 2025 which resulted in the drowning of a local youth at Sandy Beach on the Macquarie River.

The NSW Government has published Practice Note 15: Water Safety (the 'Practice Note') since 1994 to help councils minimise risks associated with aquatic locations under their care and control to keep people as safe as possible while they enjoy the water. The latest update of the Practice Note was released in October 2017. The Practice Note concerns formally identified locations where Council encourages public to swim or access the water for recreational watercraft purposes. These typically include public pools, beaches and boat ramps or public areas specially designated for swimming.

It is important to state that Sandy Beach is not a designated public swimming area. It is a natural sandy bank of the Macquarie River popular for passive recreation. It is not sign posted to encourage swimming. Under the Practice Note, Councils may incur liability if they encourage people to swim where they otherwise might not.

The Practice Note does not provide a minimum set of standards that all councils must apply. Instead, it helps each council to develop, implement and document strategies and actions to maximise the safe public enjoyment of aquatic locations they manage and minimise the risk of death or injury.

Councils have two broad water safety functions under the Local Government Act:

- the performance of regulatory activities; and
- the provision of services

<u>Regulatory Activities</u>

These promote water safety under the Local Government Act and include:

Erecting notices (Chapter 16 Offences)

A council may erect notices or 'signs' controlling certain activities in public places. The terms of the sign may relate to any activity in the area or the use of the place (section 632(2)). Clear signs at access/ entry points are a key tool to help councils manage potential conflict and risk. Signs give councils broad, discretionary powers to manage how people behave in a public

place by setting clear expectations. Councils can take legal proceedings against offenders whose behaviour is contrary to the signs

Service Activities

These involve providing a service under section 24 of the Act and can be delegated. Common relevant council service activities include:

Providing aquatic recreation facilities

These include public pools and may be managed directly by the council or delegated under a lease, licence or other arrangement involving the land and/or facility. Councils still retain responsibility to make key decisions in relation to strategic planning, risk management and resourcing for facilities they manage under a lease, licence or other arrangement. The DRC Aquatic Leisure Centres are an example of these.

Water Safety Signage

Councils may place any signs approved by the council provided they are consistent with Australian Standard AS/NZS 2416.1:2010 Water safety signs and beach flags. These are intended for areas formally identified as public swimming areas (mostly public pools and beaches)

Water Safety Education

Many councils provide water safety education as a service to their communities. Water safety education typically focuses on pool and beach safety awareness, lifesaving skills, water familiarisation/swimming and water safety skills. There are non-government and private service providers in the Dubbo LGA that are providing similar services.

Boat ramps and Public Wharfs

To minimise risk, the Practice Note recommends that councils implement strategies that help ensure that all boaters and recreational watercraft users are adequately and reasonably warned about hazards related to boating activities. Warnings should be clear, comprehensible and close to where people embark and disembark for boating/watercraft activities such as public boat ramps and wharfs/jetties. Access points such as public boat ramps and wharfs/jetties should have the appropriate signage in place, and checked regularly as part of an overarching risk management strategy. Council manages five boat ramps across the LGA.

A Risk Management Approach

Inland waterway risk assessments are crucial for ensuring safety in areas like rivers, creeks, lakes, and dams. These assessments typically involve evaluating hazards such as currents, undertows, submerged objects, and accessibility issues. Organisations like the Royal Life Saving Society of Australia offer specialised services to help land managers identify risks and

implement safety measures. Their assessments cover areas like signage compliance, emergency management plans, and hazard identification.

Before seeking to install signage at identified locations, it is recommended that a risk assessment and review of existing signage be undertaken. This will allow for the financing of a strategic roll out of approved signage.

Existing Signage

Council's position with regards to fencing at identified locations, such as the South Dubbo Weir, and more broadly applied to the Macquarie River is that, naturally occurring riverbanks are not interfered with or fenced off despite the presence of naturally occurring hazards and risks.

In some instances, fencing has been installed along sections of the Macquarie River. An example is a section along Lady Cutler South whereby significant erosion of the high bank occurred during prolonged periods of high flows.

To advise the public of risks associated with the South Dubbo Weir, following the removal of the weir structure and replacement with the fish ladder, a risk warning sign was developed and approved for installation. It is a design recommended by Council's insurers should it wish to install signage to advise of inland waterway hazard.

The style of signage shown below includes both text and approved pictograms to help inform people with varying levels of literacy skills and multilingual backgrounds of the potential dangers of entering waterways. Importantly, the sign does not designate the area a public swimming location nor encourage the activity. It is not appropriate for all locations however.

Figure 1. River Risk Warning Sign endorsed by Council's Insurer

The below locations are managed by DRC and have direct access to an inland waterway. A recent initial audit of safety related signage indicates a need for a more systematic review and renewal.

- South Dubbo Weir
- Sandy Beach
- Lions Park West (boat ramp)
- Ollie Robbins Oval (boat ramp)
- Triathlon Stairs (LH. Ford Bridge and along the Tracker Riley Promenade)
- Butlers Falls
- Ponto Falls
- John Oxley Reserve
- Dickigundi Reserve
- Terramungamine Reserve
- Devils hole
- North Weir (depending on final access after bridge build)
- Caroline Reserve
- Bril Bral Reserve
- Pioneer Park Wellington
- Thornton Street boat ramp (known as "the shallows")
- Falls Road crossing Wellington

Existing Water Safety Related Programs

Connecting Community Services – Dubbo Neighbourhood Centre Ltd, operating as Connecting Community Services, is a community based not-for-profit organisation. They provide a variety of community services to assist families, children, youth and older people, and disadvantaged people in the community to improve their wellbeing and enhance their quality of life.

They have been providing free 10-week swimming programs for adults from multicultural background and less than 5 years since arriving in Australia, annually since 2022. They endeavour to continue this service pending annual funding opportunities.

Royal Life Saving NSW/ACT/TAS is a registered charity, a not-for-profit organisation, a public benevolent institution and is a Public Company Limited by Guarantee. Royal Life Saving NSW is the leader in drowning prevention and water safety education in the NSW. A summary of their free and for fee programs, how these can be accessed, and grant opportunities available, is provided below:

<u>Primary school modules:</u>

- Schools must sign up as education partners with RLS to have access to resources.
- Most programs are free.

<u>Youth (High school students)</u>:

The following can be delivered as free online learning or by teachers. Schools need to register as education partners with RLS to access resources.

- Swim Safe, Swim Sober (free online course)

- Stage 4 or Stage 5 Community Lifesaver courses (Bronze e lifesaving- free online course)
- Stage 4 and 5 First Aid Awareness**:** Partner resources supplied but program is to be delivered by the high school PDHPE teacher.

Royal Lifesaving Society NSW-Act-TAS have a grants team and can partner with councils to deliver a funded program to at risk youth. Council/Schools can also apply for funding for educational sessions in schools.

The operator of DRC Aquatic Leisure Centres, Belgravia Leisure, provide programs delivered via partnerships with Royal Life Saving NSW/ACT/TAS and local swim instructors to develop the swimming skills of children, adults, and migrant groups.

Murungidyal Paddling Pathways is an initiative designed to empower young people aged 12 to 17 through an immersive paddling journey along the Macquarie-Wambuul River. The program focuses on building resilience, leadership, teamwork, and cultural connection, while also fostering positive relationships between youth and frontline Emergency Services personnel.

Participation from rural and remote communities, First Nations youth, at-risk youth, and those who may have had interactions with the justice system or police is prioritised. However, the program is open to all young people who would benefit from this transformative experience.

Council's Youth Development Officer (YDO) assists the program by providing support by reaching out to schools and young people in the Dubbo LGA.

Local High Schools

From desktop research and contact with local high schools, the following provide some insight as to what schools provide as per the NSW curriculum:

Water safety education includes programs like the **School Swimming and Water Safety program**, which offers structured lessons focusing on personal safety, survival swimming, and rescue skills.

- For younger students - "*Let's Be Water Safe!*"

- Secondary schools can also apply for funding to support water safety education for Year 7 and 8 students.

Some Schools also do Royal Life Saving's Bronze Medallion. It provides core skills and knowledge for people starting out on their lifesaving journey.

Memorial to the Family

Council Community Services staff have been in contact with Chivhaku family representatives regarding a permanent memorial. The family has informed Council that while they are still

processing their grief, they would prefer to delay the decision on a permanent memorial until a future time. They would like to see more funding go towards better signage outlining the risks of entering inland waterways.

Resourcing Implications

A third-party risk assessment of identified Council locations that facilitate access to inland waterways is expected to cost between $5,000 - $10,000. The intent of such work would be to define signage, design, location and cost, as well as examine existing risk management structures.

A Council led water safety program focused on Inland Waterway safety would need to be built and costed in consultation with a service provider.

REPORT: Existing and Future Strategic Mechanisms to Improve the Urban Tree Canopy Cover within Dubbo Regional Council

DIVISION: Community, Culture and Places
REPORT DATE: 25 March 2025
TRIM REFERENCE: ID25/545

EXECUTIVE SUMMARY

Purpose	• Addressing Council resolution	
Issue	• Explanation of strategic documents that currently exist and future documents that will be developed to help manage and improve the urban environment.	
Reasoning	• There is significant community interest to improve the tree canopy cover within our urban centres. The mechanisms by which this can be done are numerous and vary in costs and sophistication. To influence future strategic direction, it is important to base decision making from a position of understanding of past initiatives, current thinking and future intent.	
Financial Implications	Budget Area	Community Culture and Places / Recreation and Open Spaces
	Funding Source	Operational Budget
	Proposed Cost	$90,000 – Greening Strategy for the Urban Areas of Dubbo Regional Council.
	Ongoing Costs	To be determined by Council.
Policy Implications	Policy Title	Not applicable
	Impact on Policy	Not applicable

STRATEGIC DIRECTION

The Towards 2040 Community Strategic Plan is a vision for the development of the region out to the year 2040. The Plan includes six principal themes and a number of objectives and strategies. This report is aligned to:

Theme: 6 Environmental Sustainability

CSP Objective: 6.2 We recognise, plan for and respond to the impacts of climate change

Delivery Program Strategy: 6.2.1 The impacts of climate change are identified and addressed through collaboration with our community and government

RECOMMENDATION

1. **That Council consider as part of community feedback to the draft 2025/2026 budget and Delivery Program, increasing the level of funding for tree planting and maintenance programs to improve the health and canopy coverage of urban areas within the Dubbo local government area.**
2. **That Council actively explore external funding opportunities to increase its planting budget for urban trees, including the identified funds from the Federal Labor Government following its recent re-election, funds generated from the recycling / sale of assets, the entering into of Voluntary Planning Agreements with companies associated with Renewable Energy, and the implementation of the Public Tree Removal – Amenity Valuation Policy.**
3. **That Council allocate $90,000 of the $2million from the funds provided by the Federal Labor Government to develop and adopt a Greening Strategy for the urban areas of Dubbo Regional Council.**

Craig Arms
Director Community, Culture and Places

IM
Manager Recreation and Open Spaces

BACKGROUND

In terms of the growth of the City, and the development of a tree canopy cover, Dubbo has come a long way since 1966 (Photograph 1). Based on a slightly earlier assessment (1956), using the iTree canopy tool (iTree is a computer-based program that enables canopy cover to be estimated through the assessment of random points within a defined polygon. For Dubbo one thousand points were assessed). Dubbo had a canopy cover of approximately 2%.

Photograph 1. iTree assessment 1,000 points assessed on the 1959 image of Dubbo. The same 1,000 points were assessed in 1979 (5.3%), 1988 (5.1%), 2003 (9.5%) and 2017 (16.2%)

Photograph 2. Dubbo looking North, 1966 (unknown)

Photograph 3. Dubbo looking North, 2025 (GoogleEarth)

Using the same iTree canopy assessment tool in 2017 (and the same 1,000 points of reference) Dubbo had a canopy cover of 16.2%

The development of Dubbo's tree canopy can be attributed to many factors, including a greater awareness and appreciation of the benefits that trees provide to our urban areas. There are many benefits derived from urban trees, with some of these shown below in figure 1.

Figure 1. Benefits of urban trees. (Tree Cities)

While some of the derived benefits of increasing our canopy cover impact the population directly through reducing exposure to UV radiation by 75% (Parsons *et. al.* 1998), reducing

heat related illness by lowering localised temperatures by 2 degrees Celsius (Dept of Health (Victoria 2010) and improving mental wellbeing by increased green space (Maas *et. al*., 2009), there are other benefits such as increased visitation and economic activity (Wolf, K.L. 2014), reducing energy costs for heating and cooling (McPherson, Nowak, 1997) and protection of infrastructure assets from UV damage leading to increased life expectancy by up to 30% (Stringer *et. al*. (n.d)). There are significant environmental benefits such as reducing stormwater peak flows through rain capture in the canopy (190 – 380 litres) that protects our rivers and reduces infrastructure costs (Xiao, Q.; McPherson, E.G.; Simpson, J.R. & Ustin, S.L.,1998) and reduce airborne pollution and particles (Nowak, 2002) that assist in reducing respiratory illnesses.

Council staff have developed a range of initiatives to improve the canopy cover of our urban centres, however that effort reflects the limited resource allocation. If Dubbo Regional Council wishes to establish and sustain an improved tree canopy cover over its urban centres, then it needs a clear strategic plan built on understanding and a sustained long term funding commitment.

Outlined below is the completed, current, and intended operational and strategic intent built by Council staff with the objective of improved public tree management and expanded public tree canopy cover.

Previous Resolutions of Council

25/03/2025 CCL25/64	*That the CEO provide a report to Council outlining the strategic mechanisms currently in place, and being considered for the future, to improve urban tree canopy cover within the Local Government Area.*

REPORT

Since 2012 Dubbo Regional Council has been progressively building a strategic tree management framework for the tree assets that it manages to protect and improve the public urban forest. These assets are located across the local government area and are found on the parks, sporting facilities, reserves and streetscapes.

<u>Tree Preservation Order (Public Trees) and Significant Tree Register</u>

In 1995 Dubbo City Council adopted a Tree Preservation Order (Public Trees) to protect trees located on the land managed by Council. As part of the Tree Preservation Order (Public Trees), a Significant Tree Register was included. This register identified trees that have been nominated by the public, and by staff, that are considered "significant." The Tree Preservation Order (Public Trees) and Significant Tree Register are reviewed and updated periodically. When new trees are nominated, staff undertake an assessment of the tree against the stated criteria which identifies different categories of significance. Nominated trees are automatically covered under the Tree Preservation Order until a determination is reached.

Tree provision Condition incorporated into Development Applications (2012)

Prior to 2012 Developers were not required to include street tree planting in their estates. This was seen as a lost opportunity to help increase the canopy cover of the urban area at little to no cost to Council.

The Condition requires Developers to provide Council a planting plan for their development, identifying one tree per allotment (two for corner blocks) and the species. Council is required to approve the tree planting scheme prior to the release of the Development Approval, and an inspection is carried out at the Sub-division Certificate release to ensure it has been complied with.

Development of Tree Planting Standards (2012)

Associated with the Development Approval Condition, Council developed a suite of tree planting standards that Developers are required to follow to minimise infrastructure conflicts as the tree develops and to ensure the long-term viability of the tree in the landscape.

This suite of documents, comprising of eight location scenarios, were updated in 2017 and a new planting standard included following the adoption of the 'Stockholm Planting Methodology' for trees in road shoulders/asphalt.

The '*Stockholm Method*' is a planting methodology that creates a root vault underneath the road pavement that enables the root system of the tree to develop more fully by providing a non-compacted growing medium. Unlike other root vault systems, the Stockholm Method utilises larger rocks (250 – 300mm) as its structural component. Rock is preferred over plastic vault systems as it does not deteriorate, reducing the risk of failure. The spaces / voids between the rock is infilled with a blend of biochar (similar to charcoal) and compost. Biochar has exceptional water holding capacity and the compost is there to provide the trees with nutrients in its early stages. Over time the tree generates its own nutrient cycle through the development and death of root hairs.

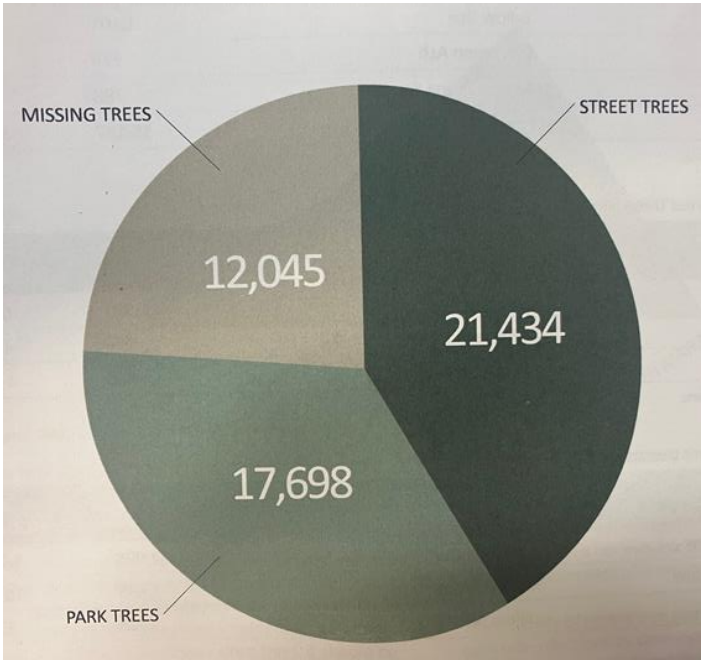
While the Stockholm Method is more expensive in the initial planting of the tree, the tree will perform better through the development of its canopy, be less prone to disease and should prevail in the landscape for a longer period.

Tree auditing – Dubbo (2012/2014)

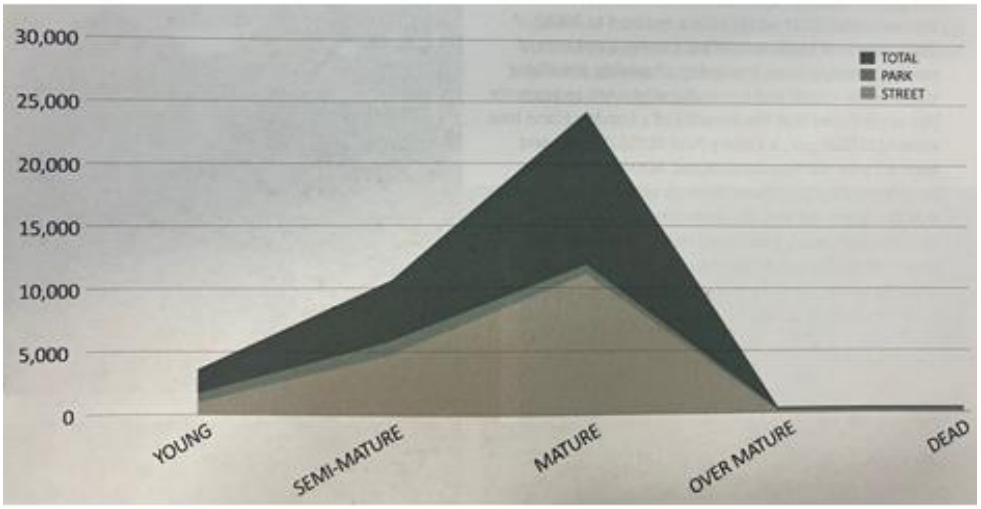
To be effective in asset management it is imperative that the size, scale and diversity of the asset group is known. In this case it was also important to create a base line for the health, useful life expectancy, species diversity and age categories.

The audit was carried out in two stages. The first stage centred on the original footprint of Dubbo (Macquarie River to Chelmsford Street and Myall Street to Cobra Street). This was expanded in 2014 to include the rest of the urban area. Some of the results from these initial audits are shown below.

Note: a 'missing tree' is one that has been removed and not replaced, or vacant site that has the potential for a tree to be planted.



Graph 1. Dubbo's Public Trees 2012/2014, with the inclusion of "missing trees"



Graph 2. Stages of maturity of the Dubbo's public trees (2012/2014)

LIFE EXPECTANCY	STREET	PARK	TOTAL	% OF TOTAL
< 5 YRS	499	282	781	2%
5 - 15 YRS	2,402	1,214	3,616	9%
15 - 40 YRS	10,685	8,565	19,250	49%
> 40 YRS	7,648	7,439	15,087	39%
DEAD	200	198	398	1%

Table 1. Useful Life Expectancy of Dubbo's public trees (2012/2014)

The tree audit data for Dubbo is now out of date and needs refreshing.

The tree age figures shown in Graph 2 and Table 1 point to a past concentrated planting effort in both the parks and streetscapes, maybe around 1980 – 1990. This helps to explain the over-representation of mature aged trees. In comparison, the low number of young and semi-young tress point to a lack of significant tree planting since then. This assertion is also supported by the tree maintenance budget, shown in Graph 3.

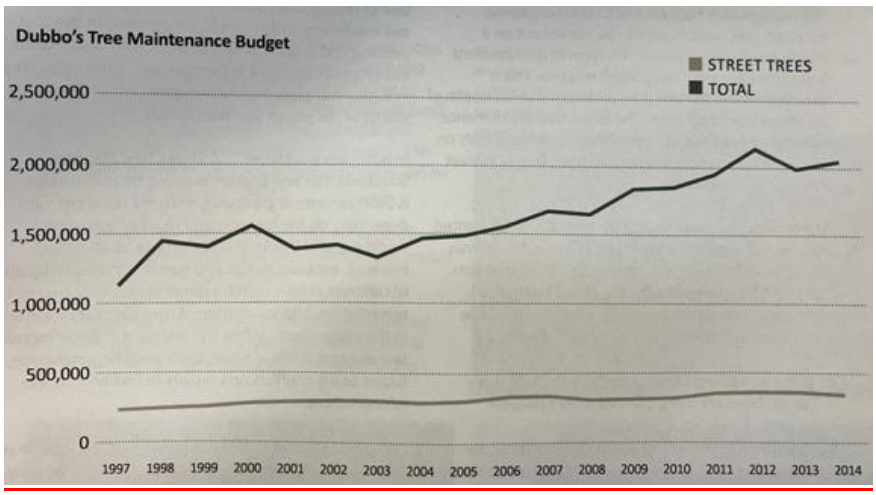
Notes:

1. *The data shown is 10 plus years old and the number of trees that have reached, or about to enter mature / over mature categories will have increased.*
2. *Additional tree planting has been carried out in new sub-divisions by Developers since the introduction of a Development Approval condition requiring one tree / allotment. This will help counterbalance the data somewhat, however many of the mature / over mature trees are in the central part of Dubbo.*
3. *Council is currently auditing Southlakes, Macquarie View, Outlook and other new estates to include newly planted trees into future reports.*

<u>Review of Urban Trees in Dubbo 2015</u>

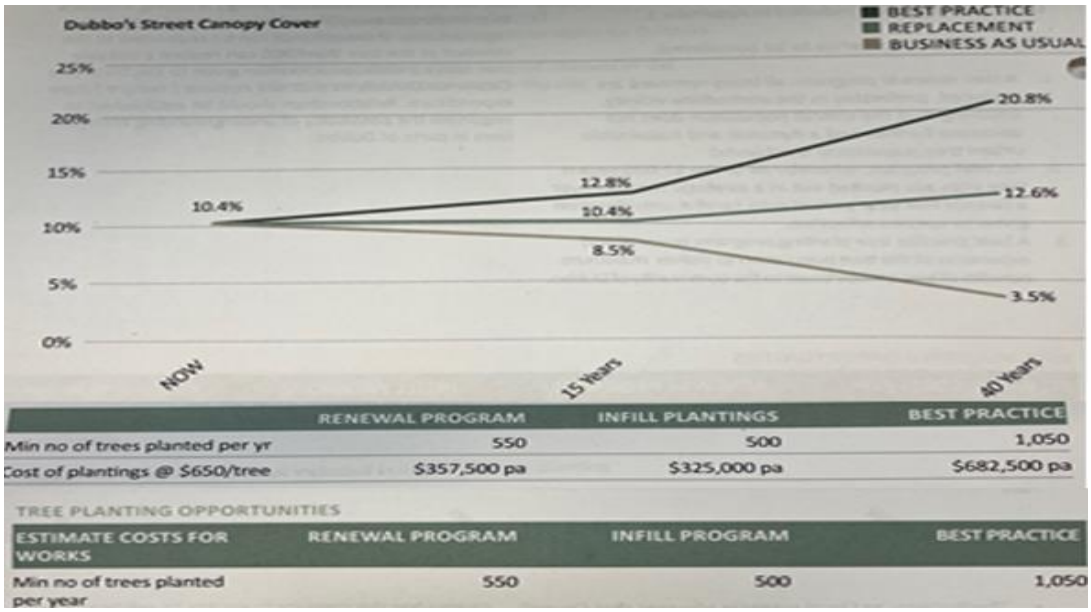
Following the receipt of the tree audit data, a consultant was engaged to undertake a review of the information and to assess it against historical and current budget (1997–2015) and other regional centres to help ascertain the reasons behind the missing the 12,000 trees and the public urban more generally.

Figure 1 below identifies the expenditure of the Civil Infrastructure function between 1997 and 2014. The responsibilities of this function included urban road maintenance and weed spraying and urban tree management. Whilst figure 1 shows an almost doubling of the function's overall budget between 1997 and 2014, the tree maintenance remained almost unchanged at $282,00 p.a. If C.P.I. is considered this is effectively a reduction in expenditure on street trees that has contributed greatly to the missing trees and the overall canopy cover, health and condition of the current urban forest.



Graph 3. Historical expenditure on tree maintenance in Dubbo City Council 1997 – 2014

As part of the review three scenarios were provided identifying the tree canopy cover at the time (10.4%) and the implications of each.



	RENEWAL PROGRAM	INFILL PLANTINGS	BEST PRACTICE
Min no of trees planted per yr	550	500	1,050
Cost of plantings @ $650/tree	$357,500 pa	$325,000 pa	$682,500 pa

TREE PLANTING OPPORTUNITIES

ESTIMATE COSTS FOR WORKS	RENEWAL PROGRAM	INFILL PROGRAM	BEST PRACTICE
Min no of trees planted per year	550	500	1,050

Figure 2. Projected canopy improvement with renewal and infill program totalling 1,050 trees per annum (2015). (Note 10.4% canopy figure was based on the iTree assessment).

A Changing Commitment to Funding Public Tree Planting

In response to the Review of Urban Trees in Dubbo 2015 and a report to Council, that included the information shown in figure 2.

This information also formed part of the Horticultural Service Business Plan that resulted in Council allocating $682,000 p.a. to adopt the Best Practice scenario, with these funds becoming available from 2020/2021. In February 2019 a Resolution of Council reprioritised these funds towards the proposed beautification of Talbragar Street. Concept plans were developed and publicly exhibited, and despite a positive response from the community the project was placed on hold due largely to the concerns of business operators.

The funds were then expended on tree planting in lower Talbragar, Wingewarra and Bultje streets as well as replacing the central median trees in Windsor Parade. Any remaining funds were expended on purchasing grates and collars to enable future tree planting using the Stockholm Methodology. The street tree planting budget was scaled back due to the impacts on Council budgets during the pandemic. For 2024/2025 the street tree planting budget was originally $104,000 p.a. for Dubbo / Wellington.

While there has been growth in the funds allocated for public tree maintenance there has been effectively no additional staff resources to address the increase in public tree numbers, including Wellington and the villages, the declining health or the aging population of the trees in our urban centres. It is estimated that public tree maintenance is resourced to approximately 50% of its current needs. Further work is required in this area to provide a more accurate assessment of the resourcing needs in this area.

Dubbo Street Tree Master Plan (2016/2018)

In 2016, work commenced on the Dubbo Street Tree Master Plan, based on the tree audit results and the Review of Urban Trees in Dubbo. Dubbo was divided into eight precincts, shown in Figure 3.

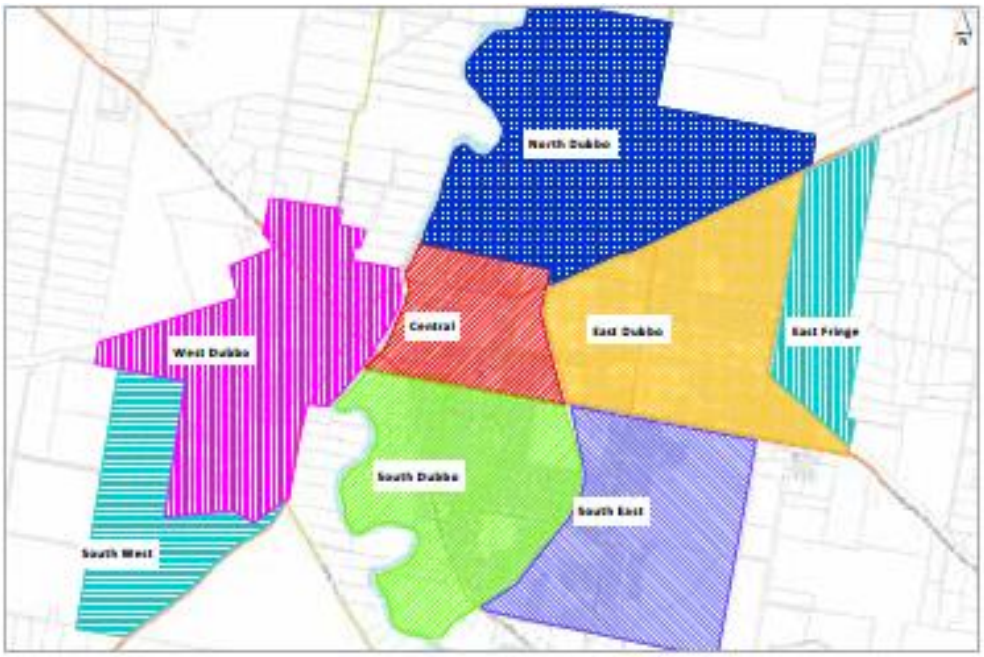


Figure 3. Eight precincts in the Dubbo Street Tree Master Plan.

The Dubbo Street Tree Master Plan identified the individual characteristics of each of the precincts, such as major parks, dominant species, tree demographics (age, useful life expectancy (ULE), amenity value, etc.). This information was then taken to develop a street prioritisation planting program based on the following:

i. Streets with a high percentage of trees with a ULE of 5 – 15 years.
ii. Streets with high levels of missing trees / vacant sites
iii. Streets located in lower socio-economic area to improve the amenity and provide cost benefits (savings in heating and cooling costs) to residents
iv. Streets with a high number of Customer Requests for street tree plantings
v. Streets that have no previous plantings and require new plantings.

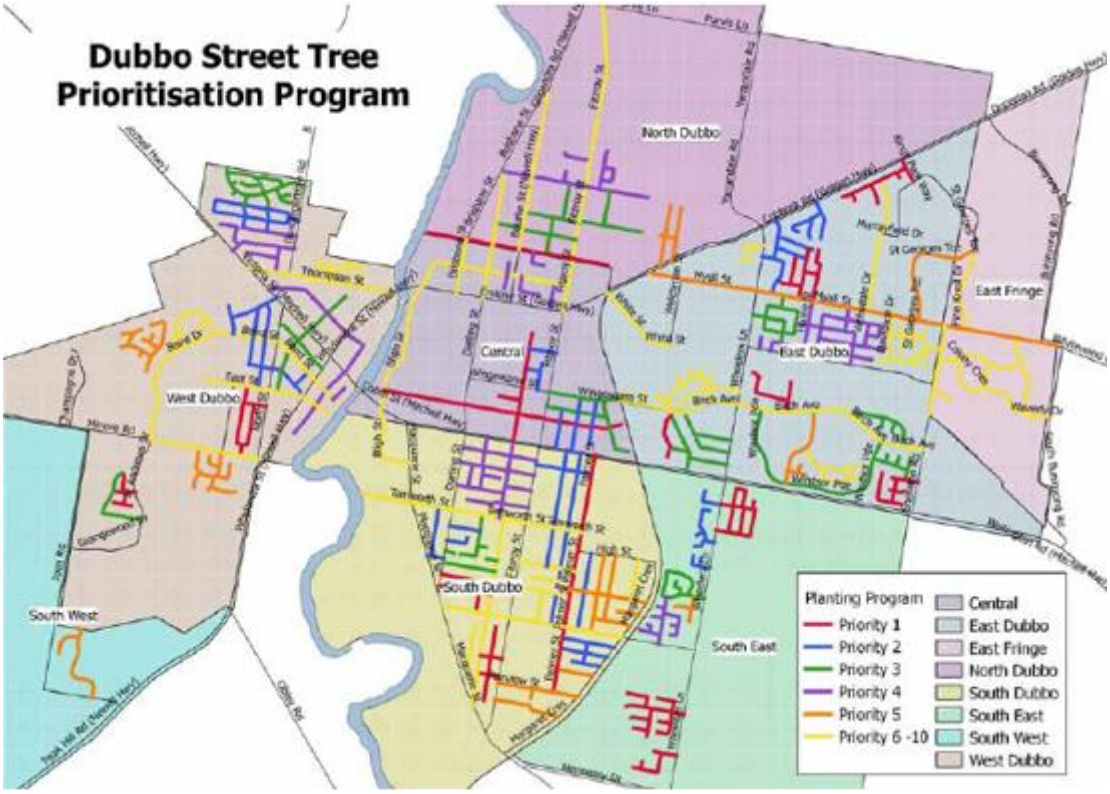


Figure 4. Priority planting by street – Dubbo Street Tree Master Plan 2018. "Priority" rather than "Year" is used as planting is dependent on funding allocations.

The Dubbo Street Tree Master Plan 2018 is comprised of three booklets:

i. the overview document that identifies and describes each of the eight precincts, replacement tree species for each street,
ii. a Tool Kit that includes a *Tree Selection Matrix* (250 species assessed against 14 criteria), street typologies and tree planting standards, and
iii. Street Trees for the City of Dubbo, based on the *Tree Selection Matrix*.

The Dubbo Street Tree Master Plan was adopted in 2018.

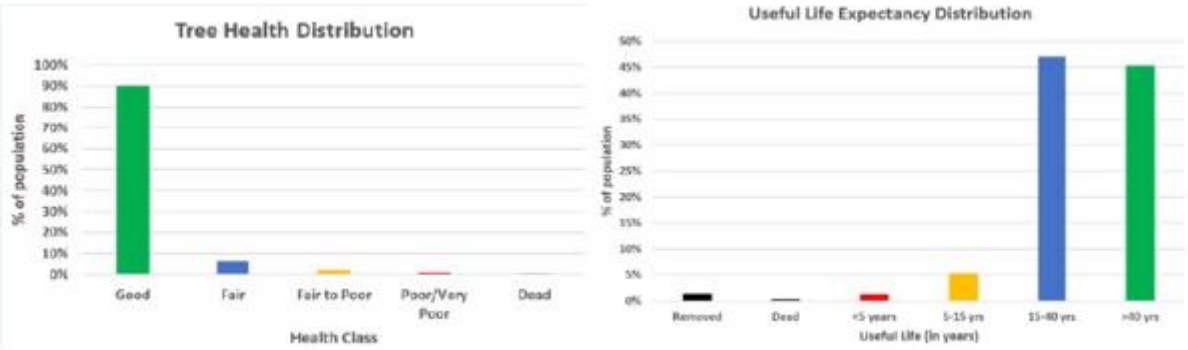
<u>Tree auditing – Wellington (2017/2019)</u>

Tree auditing commenced in Wellington in 2017 and was focussed on Cameron Park. The information gathered from this audit culminated in the development of the Cameron Park Master Plan 2017 and included a succession planting guide for the park. The remainder of Wellington was audited in 2019.

Just over 3,500 trees were identified in Wellington, with a further 1,100 missing trees or vacant sites identified. These need to be verified against site specific constraints.

Following the completion of the audit, work commenced on the development of the Wellington Street Tree Master Plan. The format of this document largely followed that of the Dubbo Street Tree Master Plan.

As with Dubbo, a street tree priority plan was developed for Wellington using the same criteria. The priority plan for Wellington is shown below in Figure 5.



Graphs 4 and 5. Results of Wellington tree audit 2017/2019 – tree health and Useful Life Expectancy.

The Wellington Street Tree Master Plan was adopted in 2023.

Council has recently completed an audit of the subdivisions established since 2012/14 with a further 3,500 trees identified, as well as a significant number of vacant tree spots (awaiting final report).

<u>Public Tree Removal – Amenity Valuation (2019)</u>

The intent of this policy is to protect individual and groups of public trees from removal without at least fair financial compensation that can then be used to offset the tree loss with supplementary planting elsewhere.

This Policy effectively enables a value to be calculated for an individual or group of trees using the City of Melbourne's model based on Yau's 1990 modified Maurer-Hoffman Formula. The model takes into account a number of factors including the size of the tree (that is related somewhat to the age of the tree), the species of the tree, the aesthetic value of the tree (e.g. is it a single tree, or part of an evenly planted avenue), its location (e.g. whether it is a reserve, village, residential street or park) and its overall condition (e.g. health, vigour, life expectancy).

Under the Policy, a tree is valued and correspondence sent out to the resident/developer advising them the amenity value, the cost of removal and replacement of tree. In most cases the customer chooses not to proceed with the removal of tree due to the value of the tree and associated costs. Since the implementation of the Policy, an estimated 60 trees have been retained in our landscape.

This policy has been reviewed and will be presented to Council soon seeking endorsement.

Figure 5. Priority planting by street – Wellington Street Tree Master Plan 2023.

ArborCarbon Aerial Survey (2024)

In March 2023 Council engaged ArborCarbon to undertake aerial survey and heat mapping of Dubbo and Wellington urban areas.

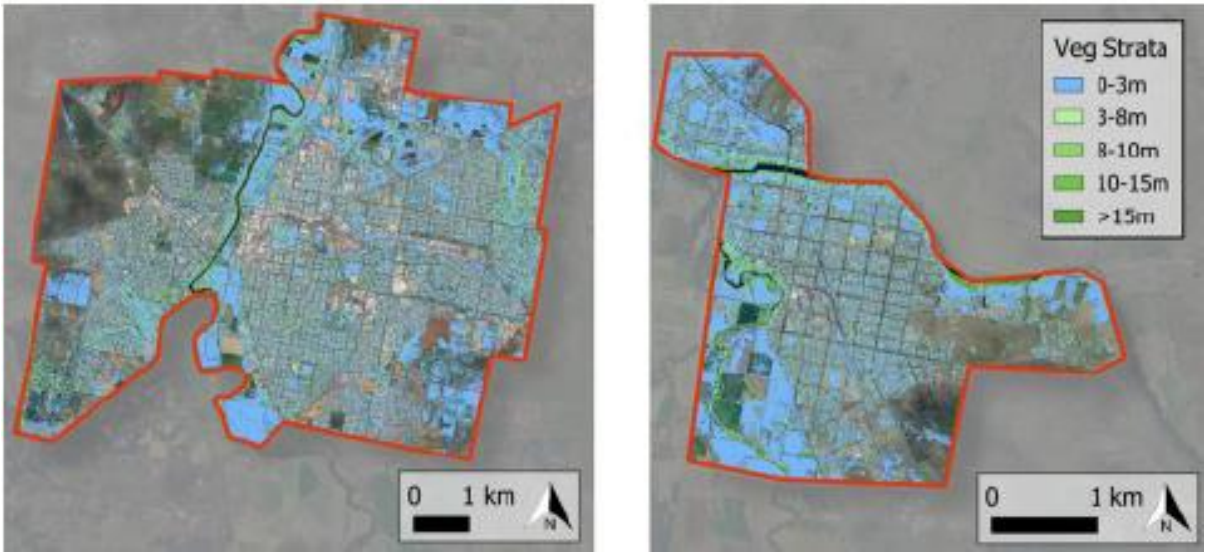


Figure 6. Height stratification of Dubbo and Wellington.

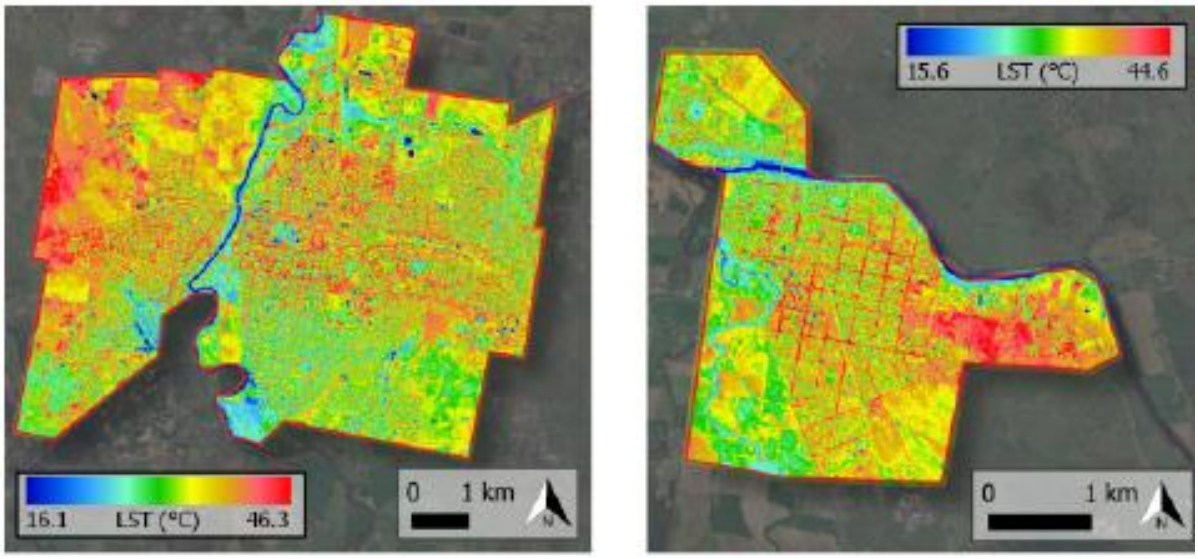
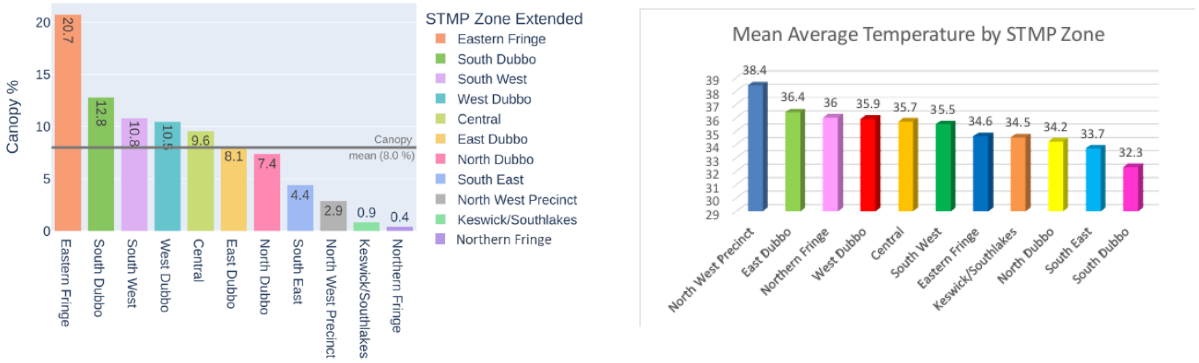
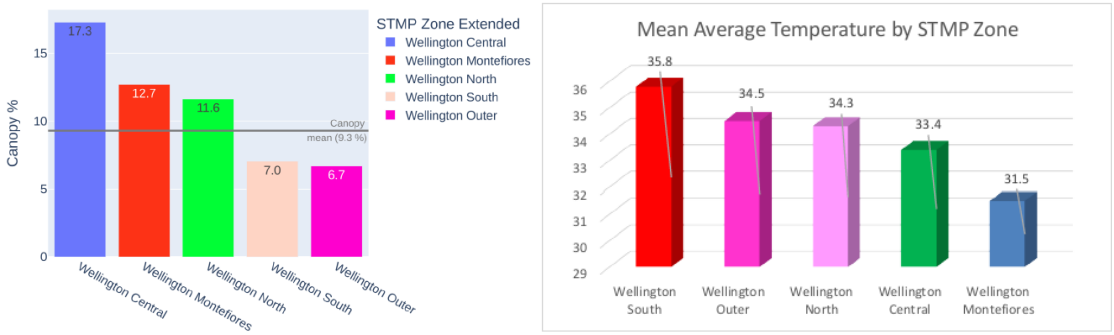


Figure 7. Land surface temperature of Dubbo and Wellington, 6 March 2023, temperature at Dubbo airport was 38.5 degrees Celsius (bom.gov.au)

The ArborCarbon 2024 report has allowed Council to undertake further analysis of the correlation between canopy cover and surface temperature for both Dubbo and Wellington, figures 6 and 7 respectively. Graphs 6 - 9 illustrate how the information can be utilised to map the relationship between cooling elements (e.g. irrigated grass, the river and more densely canopied areas) and heat absorbing / radiating elements (e.g. buildings, roads and unirrigated areas).



Graph 6 and 7. Tree cover (>3 metres) and surface temperature of Dubbo, 6 March 2023.



Graph 8 and 9. Tree cover (>3 metres) and surface temperature of Wellington, 6 March 2023.

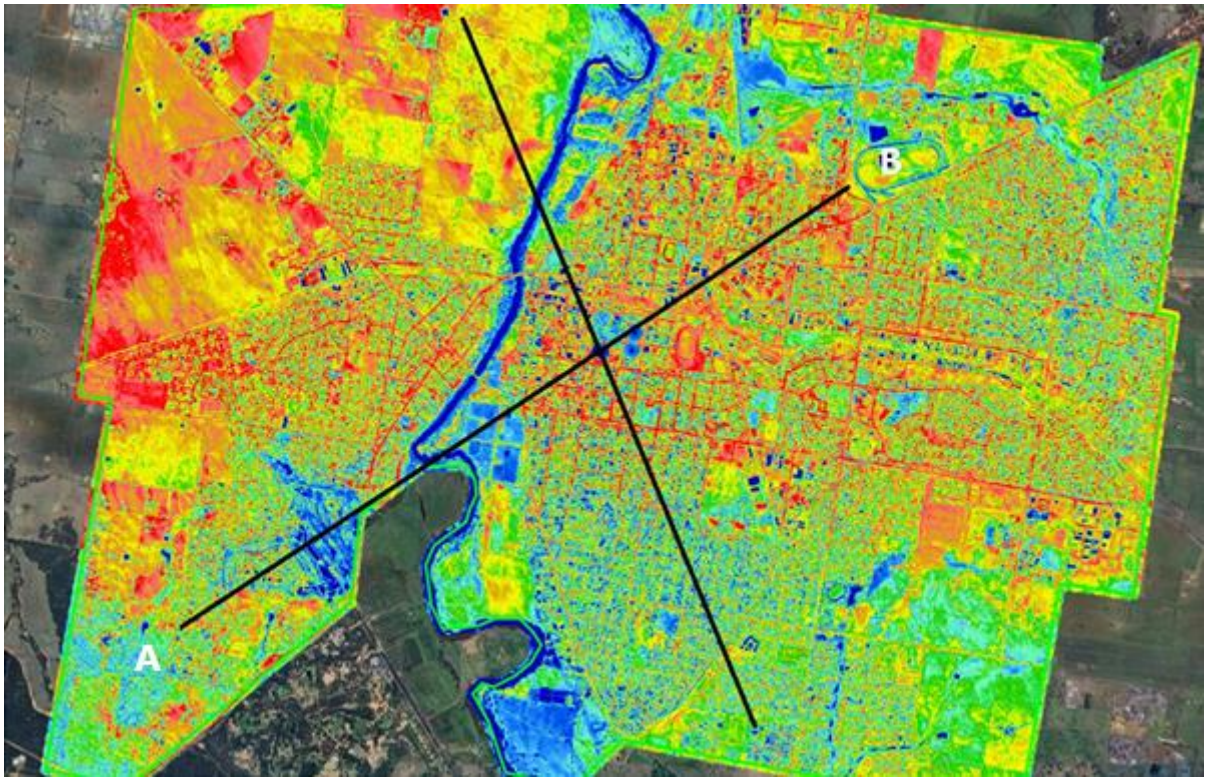
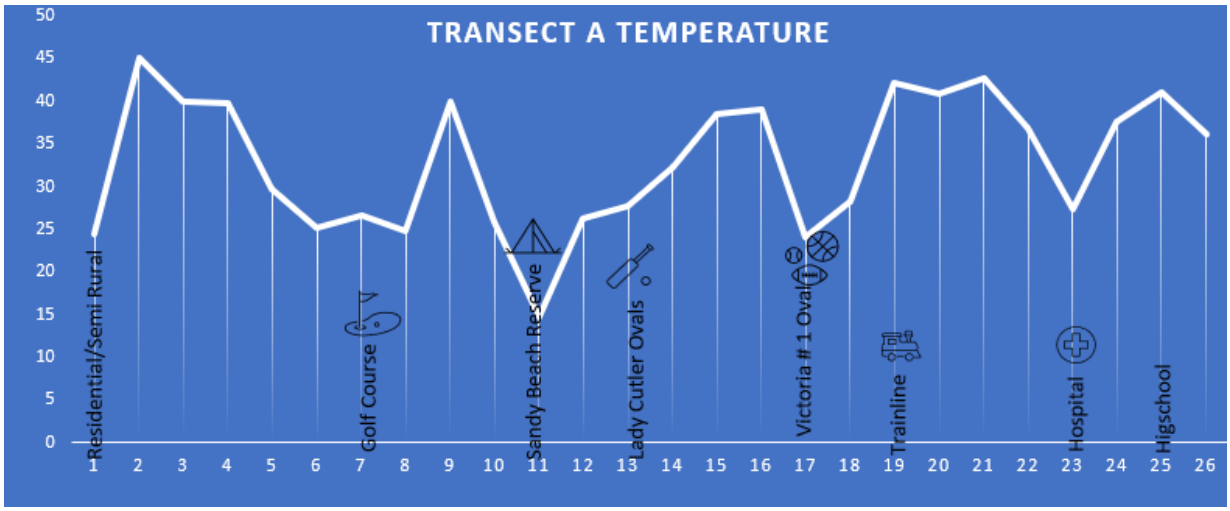


Figure 8. Land surface temperature of Dubbo, with transect lines (250m intervals)



Graph 10. Temperature readings from the Southeast to Northwest

This, and other information generated from this mapping exercise and the ArborCarbon report, will be included in the revision of existing documents, planting priority plans and future strategic documents such as the 'Greening Strategy'.

Tree Management System – Forestree (2025)

Dubbo Regional Council currently has a tree management program to assist in the management of the public trees. The program utilises the tree audit data and geo-references each tree alongside its collected attributes. The systems can provide analytical reports on tree demographics such as age, ULE, species distribution etc., as well as assisting in scheduling works, watering of new trees, stump removals, etc.

Educational information and program (2025)

Council has developed educational pamphlets for residents on Suitable Trees near Sewer Lines and are currently working on an information package to advise residents on how to care for new trees planted as part of the priority street tree planting program.

A broader education program is also being developed to promote the benefits of trees, public and private, and the importance of retaining them.

Greening strategy

The next major strategic document that is to be developed is a 'Greening Strategy for Dubbo, Wellington and Villages'. Utilising the information that has been collected, such as ArborCarbon 2024 and the existing Street Tree Master Plans, Council will identify a realistic and achievable canopy cover for each of the urban areas. Council cannot afford to be swayed by setting an unrealistic canopy target, especially as it only manages the public open spaces and street scapes. The following synopsis of Dubbo is provided:

- The footprint of Dubbo City shown in figure 2, is 3,550 ha (35,500,000m2).
- The ArborCarbon 2024 report provides a copy cover of 9.4% for the same area.

- Council's total public open space network is 443 ha (4,439,454 m2), or 12.5% of the total area.
- Over the public open space network, a canopy cover of 16.2% currently exists (iTree).
- If Council adopts a canopy target of 35% for parks, 15% for sporting ovals and 50% for urban reserves, this provides the opportunity to increase the canopy cover of the public open space network by 2.3%.
- However, when taken across the footprint of City this increase is effectively only from 2.06% to 2.35%.
- This does not consider the contribution by street trees.

The above case study illustrates that Council cannot only rely on additional plantings in the public open space realm to make a significant impact to our urban tree canopies.

This does not include any additional public open space associated with new developments, or any street tree planting, existing or planned.

The other consideration in setting these targets is the timeframe it takes for a tree to develop a canopy that is contributing to the overall coverage of the urban area. Most trees will not achieve this for 15 – 20 years.

CBD Street Planting Designs

As part of the development of the Greening Strategy, Council has been developing several street planting designs centred on the Dubbo CBD to improve the aesthetics, assist in reducing the heat island effect, encouraging people into the CBD, stimulate expenditure and providing environmental benefits.

Talbragar Street (Macquarie Street to Darling Street)

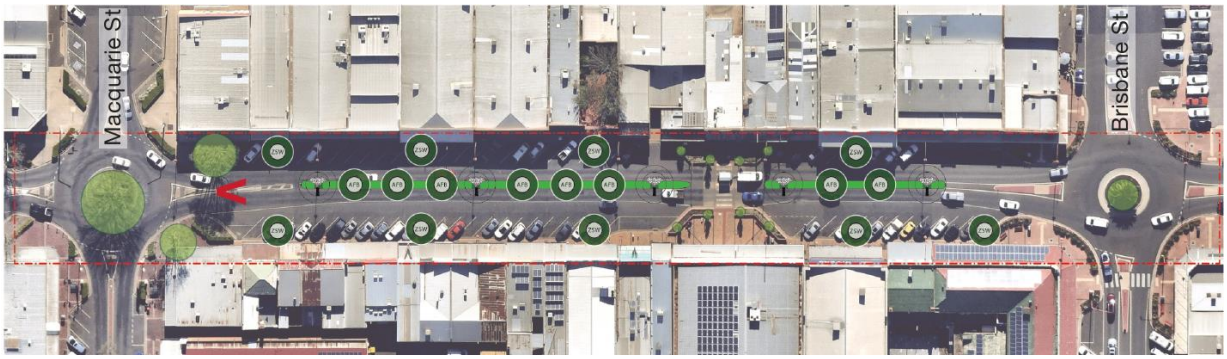


Figure 9. Talbragar Street: Preliminary tree planting locations, Macquarie Street to Brisbane Street.

Figure 10. Talbragar Street: Street visualisation looking east from <, in figure 11. Trees are shown at approximately 15 years of age and in full leaf.

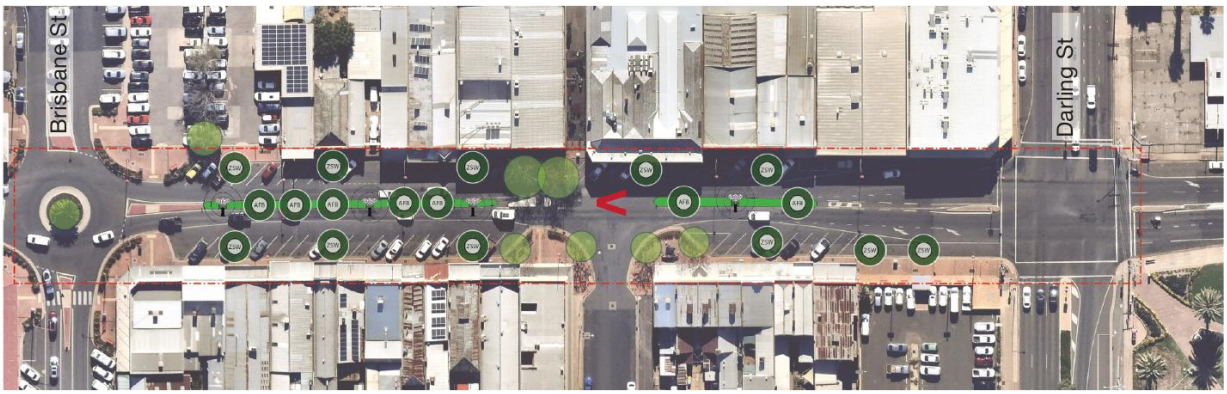


Figure 11. Talbragar Street: Preliminary tree planting locations, Brisbane Street to Darling Street.

Figure 12. Talbragar Street: Street visualisation looking east from <, in figure 13. Trees are shown at approximately 15 years of age, during early autumn.

The total hard surfaced area of Talbragar Street between Macquarie and Darling streets is approximately 9,740m^2. Allowing for a canopy width of eight metres at maturity for each of the *Zelkova serrata "Wireless"* and a canopy width of 12 metres for the *Angophora floribunda*, collectively the 35 trees will potentially provide an additional 2,700m^2 (28%) of shading at maturity of the hard surfaced areas of Talbragar Street. Past temperature recordings in Bultje Street have shown that the temperature of the asphalt can be up to 60% hotter than the ambient temperature (i.e. 42°C = 67°C).

Note: Talbragar Street is identified for major reconstruction works with the commencement of designs scheduled 2025/2026. Reconstruction work is currently not funded. To minimise disruption to business, shoppers and traffic the reconstruction of the road pavement and the beautification works should be undertaken as one project.

Estimated cost: $950,000 (tree related beautification project only).

Wingewarra Street (Darling Street to Chelmsford Street)

The existing Claret Ash (*Fraxinus oxycarpa 'raywoodii'*) avenue, between Gipps Street and Chelmsford Street was planted c1996/7.

Due to several factors, including planting methodology, species choice and disease, the avenue has failed and visually detracts from the streetscape.

Council has plans largely completed to remove the existing trees and replant using the Stockholm Method. It is proposed that 59 trees would be replanted in total, however a staged approach could be undertaken.

- Stage 1. Darling Street to Gipps Street (north side) $416,000
- Stage 2. Gipps Street to Fitzroy Street. $352,000
- Stage 3. Fitzroy Street to Hampden Street $504,000
- Stage 4. Hampden Street to Chelmsford Street $228,000

Estimated cost: $1,500,000.

Note: Completion of these works in stages may increase the overall cost of the project.

Carparks – Holls Avenue and Bligh / Wingewarra Street.

Both carparks are largely devoid of trees, as shown in Figure 15 and are relatively areas of asphalt. These asphaltic areas absorb and trap large amounts of heat throughout the day and release it back to the atmosphere at night.

Figure 13. Aerial plan of central Dubbo identifying Holls Avenue and Bligh / Wingewarra Street. Carparks

Figure 14 provides the heat map and average temperature for each of the carparks. The 'cool' section in the Bligh / Wingewarra Street carpark are trees that clearly demonstrate the cooling effect provided by large, canopied trees.

The heat map also provides information on how different surfaces absorb and trap heat. Examples include the roof of City Square that is significantly cooler than the adjacent carpark due to the lighter colour and the presence of a solar array. Steeply pitched roofs to the east of the carpark are also cooler than flat roofs.

The undeveloped land to the west of the Holls Street Carpark is only marginally cooler than the asphalt carpark. The cooler areas in Macquarie Street is the cooling effect of the larger trees on the sides, while the warmer temperatures down the centre of Macquarie Street is

the result of the constraints of the site that has prevented the trees from developing a full broad canopy to shade the road pavement.

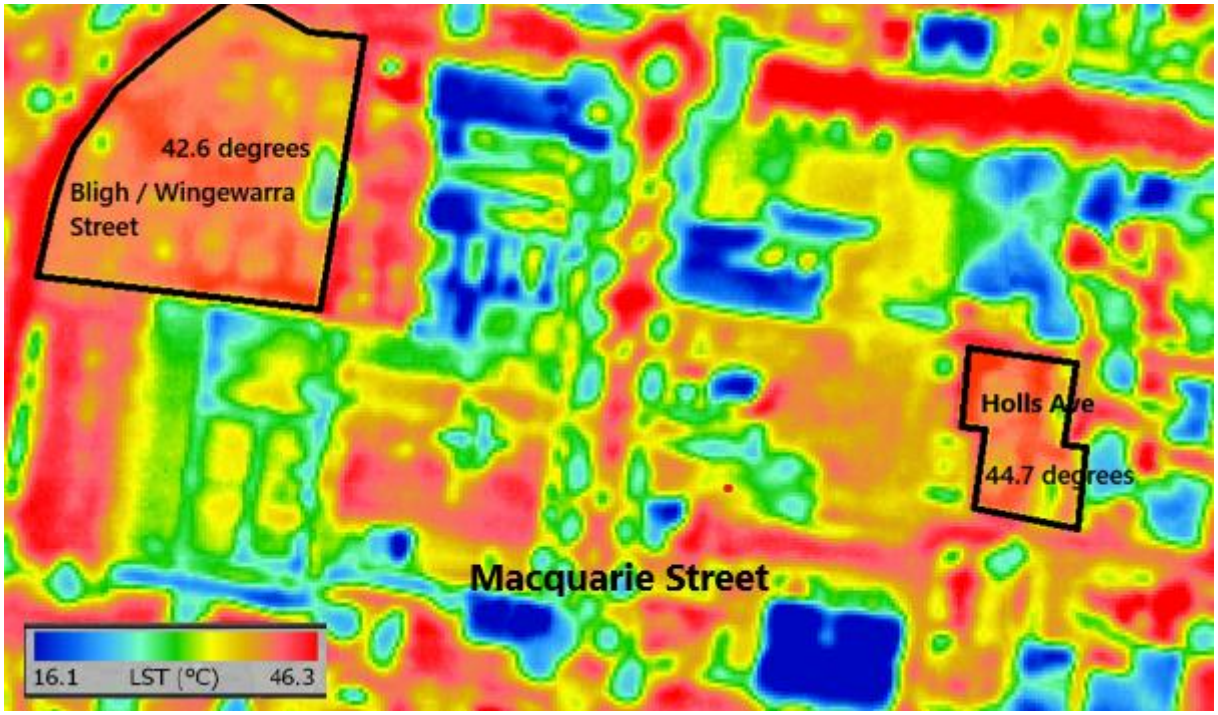


Figure 14. Heat map showing two carparks, and average temperatures (ArborCarbon 2024). 6 March 2023, temperature at Dubbo airport was 38.5 degrees Celsius (bom.gov.au)

An estimated 14 trees could be planted in Bligh / Wingewarra Street carpark that could potentially increase the level of shade by approximately 17%.

An estimated six trees could be planted in Holls Street carpark that could potentially increase the level of shade by approximately 31%.

No designs exist for either site and additional trees, especially in the Bligh / Wingewarra Street carpark, may be possible without adversely impacting car parking spaces.

Estimated cost: $350,000

Council has designs for tree planting in the following areas:

- Wingewarra Street (Chelmsford Street to Windsor Parade)
  Estimate: $1,750,000
- Warne Street (Nanima Crescent to Arthur Street)
  Estimate: $260,000
- Nanima Crescent (east side)
  Estimate: $320,000
- Gipps Street (Wingewarra Street to Bultje Street – kerb and gutter replacement
  Estimate (trees only): $175,000
- Brisbane Street (Reakes Avenue to Mitchell Street) – kerb and gutter replacement
  Estimate (trees only): $150,000

Some of these projects are related to infrastructure renewal and provide an opportunity to replace trees that are in poor condition or nearing their ULE and provide Council the opportunity to be proactive in helping to renew the urban forest.

The above projects are examples of what can be achieved through the development and implementation of a Greening Strategy. Once a Greening Strategy is developed and adopted it provides Council with additional opportunities to seek external funding to implement the strategy in an informed manner.

There has been a significant amount of work already carried out in the strategic tree management realm. Further development is ongoing, with the view of creating a legacy of liveable urban centres for future generations.

Climate change and tree species selection

Arias et.al. 2021 has developed several scenarios based on varying emission levels and the potential impact that it may have on surface mean temperatures. In the SSP-4.5 scenario (intermediate emissions) it is projected that global mean surface temperature is likely to increase 2.1 – 3.5°C by 2081 – 2100, whereas under the SSP5-8.5 scenario global mean surface temperature is projected to increase by 3.3 – 5.7°C. In both scenarios an increase in the frequency and intensity of heat waves and drought conditions are expected.

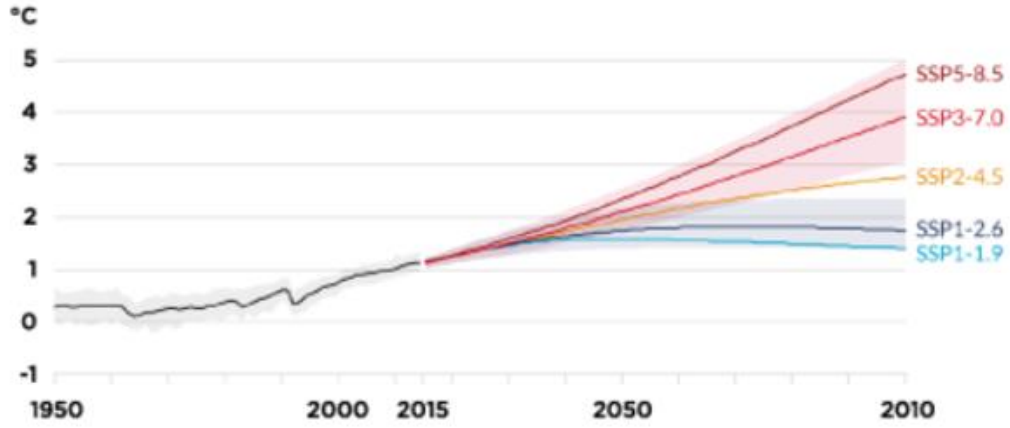


Figure 15. Global surface temperature change for 5 scenarios (central estimate solid, very likely range shaded for SPP1-2.6 and SSP3-7.0) relative to 1850 – 1900 (From Arias et.al 2021).

Dubbo presently has a mean average temperature of 17.2°C. Under the SSP 4.5 scenario the mean average temperature could increase to 19.3 – 20.7°C, and under the SSP 8.5 scenario this range could increase to 20.9 – 22.9°C. Comparison mean average temperatures for Charleville and Mt Isa are 21°C and 24.6°C. As part of determining appropriate species to plant to help secure our canopy cover due to the changing climatic conditions discussions with Mt Isa Regional Council have taken place. Additionally, an assessment of some 625 tree species, including those currently identified in Council's preferred tree selection palette, has been undertaken to assist in determining potential tree species for future planting. This assessment indicates that Council needs to transition its planting palette to accommodate the projected increase in temperatures as even some of our hardiest species, including

Eucalyptus sideroxylon (Mugga Ironbark) will start to move out of their optimum growth zone.

Operational Resource Commitment

To achieve a doubling of our urban tree canopy (Dubbo), as shown in figure 2, takes a long-term commitment from Council. This commitment comes from two fundamental areas. The first is sufficient and ongoing funding to infill vacant sites and to plant enough trees to help counteract the loss of trees from natural attrition. The second is providing the resources, either internal or external of Council, to ensure the establishment of the trees, including a watering program for the first three years, and the implementation of a proactive tree management approach that includes inspection, formative and structural pruning.

Tree management within the local government area is under resourced by at least 50%, aside from the resources required to implement a tree maintenance program.

Based on Council planting the best practice scenario, shown in figure 2, of 1,050 trees / p.a. and if all trees are planted in grass verges the annual cost would be $1,155,000 for Year 1 increasing to $1,336,650 in Year 4.

If one hundred trees are planted in road shoulders and 950 in grass verges the cost projection is $2,595,000 in Year 1 increasing to $3,003,360 in Year 4.

The cost of Council to increase its watering capacity would align with the demand and would be an additional cost to Council of approximately $130,500 p.a. for an extra water truck and operator. By Year 4 Council would need the additional four trucks and operators at a cost of $522,343.88 p.a.

Several Councils, including Greater Bendigo and Wellington Shire Council (both in Victoria), have taken the approach of allocating $28/year/tree. As Dubbo Regional Council has 46,700 public trees this would effectively more than double the current expenditure on the public urban forest to $1,307,572 (up from $628,887 (2024/2025)). This number would need to increase by approximately $30,000 p.a. if Council adopted the Best Practice approach (figure 2) of planting 1,050 tree each year.

Tree Planting since 2021

Since 2021 Council has either planted itself or overseen the planting of ~3,852 trees. 2,875 of these trees (approximately 75%) are natives. These trees have been planted in streetscapes, parks and reserves and mostly within the urban areas of Dubbo and Wellington.

These trees have been funded from both internal and external funds including grants and the enforcement of Development Approval conditions.

Future Opportunities

Dubbo is in a strong position to leverage off several opportunities that currently present themselves. These include:

1. Following the re-election of the Federal Labor party, Dubbo has been identified for a funding contribution of $2 million for tree planting in its Central Business District. $90,000 of these funds could potentially be used to develop the Greening Strategy for Dubbo Regional Council (urban areas that include the villages) that would provide strategic goals and recommendations that would assist in future external grant applications to increase our urban canopy cover. This approach of utilising the proceeds of a low utilised space for asset renewal and recycling for the broader community's benefit is supported by the State Government.

2. Future land sales. As The LGA continues to grow, strategic sale of land can provide funds to expand tree planting projects.

3. The establishment of Voluntary Planning Agreements (VPA) with developers can make a financial contribution towards the greening of the City. These VPAs can also be successfully tied with other projects and strategies, including those related to SPARC (Public Art).

Summary

It is recognised that the community greatly values the contribution that trees make to our urban environment through the range of benefits that provide and that there is a strong preference to increasing our urban canopies. Council can contribute to the further development of the canopy cover through additional planting in public reserves. However, the impact of this is significantly limited by the land area, and use, that Council manages. Of the 3,550 hectares that is identified as "Dubbo", only 443 hectares (12.5%) is managed as public open space. Even with a concerted effort to reaching canopy covers of 35% for parks, 15% for sporting facilities and 50% of riverside reserves, this will increase of coverage 2.06% to 2.35%. This exemplifies the importance that street trees make to our urban canopy, as well as the contribution from private properties.

Since 2012 Council has been progressively developing a strategic framework for the management of the public trees under its control. There has been a lot of work undertaken in both planting public trees, but also generating the strategic information needed to most efficiently direct public money and staff effort. Council is now at the point where it can start to pull this information together into a Greening Strategy for the Urban Areas of Dubbo Regional Council. This is a large project and one that is best outsourced to a third-party provider. The strategy will build on the information already gathered, engage with the community, set realistic canopy cover targets for the urban areas and help inform the allocation of funds to meet these objectives.

Existing CBD designs that would form the base of a Greening Strategy are in place and in total amount to ~$2,925,000 for Dubbo and $580,000 for Wellington.

To minimise wasted money, time and effort through dying trees, operational maintenance resources will need to increase or be diverted from existing maintenance service levels to reflect the expanding public tree portfolio.

REPORT: Update of Tree Audits and Tree Costs to Improve the Canopy Cover of the Urban Areas of Dubbo Regional Council.

DIVISION: Community, Culture and Places
REPORT DATE: 30 March 2025
TRIM REFERENCE: ID25/631

EXECUTIVE SUMMARY

Purpose	• Addressing Council resolution.	
Issue	• Provide advice and costings of the future management and improvements to the urban environment through additional tree planting and increased maintenance.	
Reasoning	• Our community has expressed a strong desire to improve the canopy cover and health of the public tree within our urban environment.	
Financial Implications	Budget Area	Community Culture and Places / Recreation and Open Space
	Funding Source	General rates
	Proposed Cost	To be confirmed
	Ongoing Costs	To be confirmed
Policy Implications	Policy Title	No Policy implications
	Impact on Policy	Not applicable

STRATEGIC DIRECTION

The Towards 2040 Community Strategic Plan is a vision for the development of the region out to the year 2040. The Plan includes six principal themes and a number of objectives and strategies. This report is aligned to:

Theme: 4 Leadership

CSP Objective: 4.1 Council provides transparent, fair and accountable leadership and governance

Delivery Program Strategy: 4.1.2 Council's decision-making processes are open, transparent and accountable

RECOMMENDATION

That Council consider the costings identified in the report while evaluating community feedback to the draft 2025/2026 budget and draft Delivery Program.

Craig Arms
Director Community, Culture and Places

IM
Manager Recreation and Open Spaces

BACKGROUND

The community have expressed that they strongly value trees. While there is a strong community desire to increase the canopy cover of our urban areas to help mitigate the urban heat island effect and our warming climate, there are substantial costs involved in achieving this. Based on a 2015 Review of Urban Trees in Dubbo, 1,050 trees are required to be planted in Dubbo alone each year to achieve a doubling of the canopy cover. By Year 3, this program would cost more than $2,511,000 p.a. This covers tree planting, watering and establishment and proactive tree management. It excludes volunteer programs, auditing of the urban trees and educational programs.

The present tree planting budget is $104,000 (supplemented with external funds as they become available).

Previous Resolutions of Council

25/03/2025 CCL/67	1. *That the results of previous audits of Council's urban street trees and the Street Tree Master Plans be provided to Councillors as part of their consideration of the draft 2025-2026 Operational Plan and associated budget.* 2. *That costings be developed for street tree and park tree activities to be considered as part of the draft 2025-26 to 2028-29 four-year budget. Services to be costed are:* *a. Replacement street tree planting four-year program to address gaps identified in previous audits.* *b. Maintenance program for newly planted trees included education of adjacent properties as to the benefit of street tree canopy cover.* *c. Introduction of a community tree planting program to be held four times per annum over four years.*

REPORT

A Dubbo tree audit was conducted in two stages over 2012/2014 and identified 39,134 urban public trees, of which 21,434 were in the streetscapes and 17,700 located in the public open space network. The results from the audit identified that there were 12,045 missing trees / vacant sites (a 'missing tree' is one that has been removed and not replaced, 'vacant site' has the potential for a tree to be planted).

Since this initial audit Dubbo has grown, and several new sub-divisions are not included in the existing data set and a significant number of trees have been planted within the open space network.

Council has commenced auditing these new sub-divisions. It is estimated that there will be 5,000 new trees / missing trees identified.

Further auditing will be undertaken as funding allows. The costs of undertaking this work is estimated at $208,000.

The estimated cost to replace the 11,588 missing trees / vacant spots in Dubbo and Wellington is $25,102,000.

Based on Council planting the best practice scenario of 1,050 trees / p.a. and if all trees are planted in grass verges the annual cost would be $1,155,000 for Year 1 increasing to $1,336,650 in Year 4.

However, it reasonable to expect that approximately 10% of the trees would be planted in the road shoulder using the Stockholm Methodology. On that basis the estimated costs start at $2,595,000 in year 1 through to $3,003,650 in year 4.

A "Review of Urban Trees in Dubbo" was undertaken in May 2015 to help ascertain the condition of the public urban forest, and to assist in the development of a funding strategy to improve the health and overall condition of the trees. To summarise, 42,498 trees require attention to some level, ranging from pruning to removal.

Wellington public urban trees were audited commencing in 2017 and finalised in 2019. The audit identified 3,051 trees and a further 1,100 missing trees / vacant sites.

Without up-to-date tree audit information for Dubbo and the inclusion of the Wellington information, it is difficult to forecast the maintenance budgets required to maintain these assets. However, in the 2015 report an attempt was made to quantify the costs. In short, it is estimated that the cost of undertaking recommended maintenance work to the identified tree cohort of Dubbo and Wellington is ~$9.7M.

Recent Tree Planting

Council recently conducted a trial of planting tube stock in irrigated parks and water retardation basins with minimal maintenance. 118 trees were planted, plus an additional 26 to infill early losses. From this planting only 13 trees survived. The failure of the trees can be attributed to a range of reasons, mostly lack of soil moisture and vandalism. Alternative planting strategies are under development to increase survival rates. This illustrates the importance of planting trees as part of a structured and budgeted maintenance program.

Street Tree Master Plans

Since the adoption of the Dubbo Street Tree Master Plan 2018, six priority streets have had plantings undertaken, noting that not all residents want to have a tree planted in front of their residence.

Council has recently conducted a letter box drop in the Southeast area of Dubbo and covering several streets, in preparation for the Autumn plantings.

Maintenance costs for newly established trees / education program

If, based on the recommendations of the 2015 Review of Urban Trees in Dubbo, Council aimed to plant 1,050 p.a. as part of a renewal and infill program this would effectively help double the tree canopy over 40 years.

Council had funded $682,000 p.a. for planting of the 1,050 trees. Subsequent budgets reallocated this funding. Current allocation for tree planting for Dubbo and Wellington is $104,000.

Planting of the trees is only the first step. Tree establishment requires regular watering through approximately eight months of the year. Below are the resources needed to water 1,050 trees for three years. The number of trees accumulate from Year 1 to Year 3 before they stabilise at 3,150. These figures do not consider the trees that are already on the watering list.

Year	Cumulative No. Trees	Watering Events Required (20 / tree)	Watering Capacity	Deficit
1	1,050	21,000	1,248	19,752
2	2100	42,000	1,248	40,752
3	3,150	63,000	1,248	61,752

To meet the full-time watering demands of our tree establishment, Council would require a significant resource expansion.

- Four (4) Watering Trucks: These trucks should have larger tank capacities to minimise refilling and maximise efficiency. At an estimated annual cost of $50,000 per truck, this totals $200,000 per year.

- Four (4) Additional Staff Members: These staff members would operate the watering trucks. At an annual cost of $80,585.97 per operator, this totals $322,343 per year.

The combined annual cost for the required trucks and staff would be $522,343.

To effectively manage and maintain the existing public urban forest and the added plantings Council will need to significantly increase its investment in these assets.

The current allocation of staff time for tree management is below and reflects “reactive” tree management rather than an initiative-taking approach.

Tree management within the local government area is under resourced by at least 50%, aside from the resources required to implement a tree establishment / watering and maintenance program of the level being discussed. Further work is required in this area to fully assess and quantify the resourcing requirements for public trees across the Dubbo local government area.

An alternative consideration is allocating a $/year/tree. This is an approach that Greater Bendigo and Wellington Shire Council (both in Victoria) have taken. These Councils allocate $28/year/tree. Based on Figure 1 that shows Dubbo Regional Council has 46,700 trees this would effectively more than double the current expenditure on the public urban forest to $1,307,572 (up from $628,887 (2024/2025)). This number would need to increase by approximately $30,000 p.a. if Council adopted the Best Practice approach (figure 2) of planting 1,050 tree each year.

Education Campaign

Council is currently developing an education program related to increasing the appreciation and care of trees within the urban areas of Dubbo Regional Council. This program will include information pamphlets on how to care for your tree, the importance of street trees to our urban areas, as well as providing advice on right species for our area. The development of this program and supporting information package is approximately $10,000.

Community tree planting four times / year.

Between 1995 and 2004 Dubbo City Council planted over 100,000 trees within the urban areas. Whilst community tree plants help in enhancing the community's awareness there is a significant amount of work required leading up to, and during the event, in preparation of the areas. This includes Dial Before You Dig investigations, weed spraying, irrigation, and water connections (including the ongoing annual cost of backflow prevention testing).

Based on the associated costs in preparation and volunteer management an estimate to plant 5,000 trees p.a. is between $150,000 - $180,000 dependent on location and site.

Not included in the above figure is the cost of managing the volunteers themselves during the event. Under the *Work Health and Safety Act 2011* volunteers receive the same protection as employees and Council must take all reasonable precautions to ensure a safe work environment and that the volunteers are supervised to a satisfactory and appropriate level. In 2018, following the death of a volunteer, a NSW Council was fined $750,000 following an investigation by Safework that found that Council had breached the WHS Act 2011.

Council should not provide free trees to residents to plant on their grass verge for the following reasons:

- Within the grass verge there are underground services including gas, electrical, NBN, and water. Encouraging residents to plant trees in this congested space leaves Council open to litigation if a resident invertedly damages a service, or potentially injure / kill themselves. It is a legal requirement that a DBYD is conducted when mechanically excavating a site.
- Council is trying to standardise species within individual streets to increase the amenity value of the street, and to reduce maintenance costs.

If there is a desire to provide free 'trees', they should be moderate size, non-invasive species such as Crepe Myrtles and Callistemons.

Resourcing Implications

The intent of this report is to provide advice on both the current situation in terms of the funding of the public trees, and options and costs associated with improved management of the urban forest and increasing the canopy cover of our urban areas.

Resource implications to the Organisation is dependent on the outcome of the decisions of Council in the future development and management of the urban forest.

In summary:

Replacement street tree planting four-year program to address gaps identified in previous audits.

Based on Council planting the best practice scenario, shown in figure 5, of 1,050 trees / p.a. and if all trees are planted in grass verges the annual cost would be $1,155,000 for Year 1 increasing to $1,336,650 in Year 4.

If 100 trees are planted in road shoulders and 950 in grass verges the cost is projected to be $2,595,000 in Year 1 increasing to $3,003,360 in Year 4.

Maintenance program for newly planted trees included education of adjacent properties as to the benefit of street tree canopy cover.

By Year 3 the number of trees requiring regular watering will have stabilised at around 3,150. This does not include the existing watering program, which moves with the seasons.

The cost of Council to increase its watering capacity to align with the demand would be an additional ~$130,500 p.a. for an extra water truck and operator. By Year 4 Council would need the additional four trucks and operators at a cost of $522,343.88 p.a.

The cost of the development and implementation of an educational program is $10,000. Subsequent years will be lower and is estimated at $5,000 p.a.

Introduction of a community tree planting program to be held four times per annum over four years.

Based on the associated costs in preparation and volunteer management an estimate to plant 5,000 trees p.a. is between $150,000 - $180,000 dependent on location and site. The operational resources to prepare and manage this program will be subtracted from mowing and general maintenance effort.