2021

THE LEGISLATIVE ASSEMBLY FOR
THE AUSTRALIAN CAPITAL TERRITORY

Government Response to the Assembly Resolution of 31 March 2021 –

Urban Tree Canopy Coverage

Presented by
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ACT Government

Report to the Legislative Assembly of the Australian Capital Territory

Urban Tree Canopy Coverage

TRANSPORT CANBERRA AND CITY SERVICES DIRECTORATE

NOVEMBER 2021

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1.0 Executive Summary

On 29 March 2021, Government agreed to the final Urban Forest Strategy and its public release.

On 31 March 2021, the Legislative Assembly of the Australian Capital Territory (the Assembly) called on the Minister for Transport and City Services to report back to the Assembly by the last sitting day in 2021, including:

a) present to the Assembly:

   i. by the end of 2021, detail on the estimated contribution actions within each objective of the strategy will make towards achieving the canopy cover target;

   ii. by the end of 2021, detail on the estimated contribution different regions of Canberra will make towards achievement of the canopy cover target;

   iii. by the end of 2021, detail on suburbs identified for priority action to improve equity of canopy cover across Canberra;

   iv. annually, a progress update on all initiatives and their contribution towards the targets; and

   v. every five years, provide a report on the current tree canopy cover percentage, by suburb, for Canberra's urban footprint;

b) actively support community-led contributions towards the targets; and

c) ensure that the urban forest provides for habitat and resources for wildlife (flora and fauna) including threatened species and ecosystems, mature native trees, and culturally significant trees.

The full text of the resolution is at Appendix A.

This report sets out the information requested by the Assembly.

1.1 Definitions

The following terms used in this report have a specific, technical meaning:

Term/Acronym	Definition
GIS	Geographic Information Systems that creates, stores, manages, analyses, and maps all types of data related to positions on the earth's surface.
LiDAR	Light Detection and Ranging. A remote sensing method using light to measure ranges to objects on the surface of the earth and accurately image the landscape in three dimensions.
TCC	Tree Canopy Cover. An estimate of tree canopy coverage as a percentage of total land area.
Urban footprint	This has been determined as the ACT Divisions area and includes all trees above three metres, on both public and leased land. Where data has referred to a District, these are only the Division areas within the District.

2.0 Contribution of Actions in the Urban Forest Strategy

2.1 Community support for actions and objectives

The release of the Urban Forest Strategy 2021-2045 (the Strategy) followed community engagement undertaken in 2020 to seek feedback on the vision, objectives and actions of the draft Strategy. Over 240 people, including interested community groups, had their say by completing a survey or providing a written submission.

The Urban Forest Strategy sets out six objectives and the actions needed to overcome the challenges of species diversity, an ageing tree population, climate change and urban heat island effects.

The community were very supportive of the vision, objectives and actions of the Strategy, with 92% of respondents supporting the vision, 97% either fully or generally supportive of the objectives and seven of the nine actions in the Strategy highlighted by respondents as a key priority.

2.2 Contribution of actions

The Strategy has six key objectives to support a healthy, resilient and sustainable urban forest and achieve the 30% tree canopy cover (or equivalent benefit) target by 2045. Each objective is broken down into actions that provide a road map to guide government activities. These actions have been allocated a rating to reflect their potential contribution towards achieving the tree canopy target (Table 1):

- Major – key contributor to on-ground outcomes
- Moderate – provides direct support for on-ground actions
- Minor – cumulative on-ground impact that supports or complements other actions

Table 1 should be read in conjunction with the Strategy actions and status table (Appendix B) which outlines the progress made towards increased canopy cover in greater detail. Activities that are underway in 2021 that will provide the largest contribution to achieve the canopy cover target are the expanded planting program and legislative reform to enhance the protection for the existing urban forest. These major contributors will be supported by increasing community partnerships and education, and planning planting programs to promote equitable canopy cover, increase tree species diversity and promote biodiversity. The actions are designed to interact, complement and enhance each other to achieve a comprehensive outcome.

Table 1 Contributions of Urban Forest Strategy actions towards the canopy cover target

Objective	Action		Contribution
Protect the urban forest	1.1.1	Maintain and promote the Tree Register (under the Tree Protection Act (TPA))	Minor
	1.2.1	Review and update the TPA to ensure the threshold for protecting trees is appropriate	Major
	1.2.2	Review and update the TPA criteria for removal of protected trees to ensure it aligns with community values and expectations	Major
	1.2.3	Review and update the TPA and Public Unleased Land Act (PULA) to ensure appropriate compliance mechanisms exist to deter illegal tree removals or damage to trees on leased and unleased land, and respond appropriately when they occur	Moderate
	1.3.1	Consider developing a program to ensure the health of mature and remnant trees on unleased land	Minor
	1.3.2	Review and update the PULA to require all developers to erect prescribed fencing to protect existing trees on public land from damage prior to demolition, excavation and/or construction on adjacent blocks	Moderate
	1.3.3	Investigate incentives and programs to better provide for maintenance and care of registered and remnant trees on leased land	Minor
	1.3.4	Program cultural site assessments with a view to developing cultural tree management plans	Minor
	1.4.1	Investigate and implement administrative and technological reforms to systems and processes for administration of the Tree Protection Act to ensure they are streamlined, transparent and efficient	Moderate
Grow a resilient forest	2.1.1	With reference to the 2010 audit, obtain updated data on the current canopy cover of the public urban forest to inform a replacement program	Moderate
	2.1.2	Develop a sustainable program of end-of-life tree removals and replacements for removed trees and existing planting gaps to maintain the urban forest, including best-practice after-care for new plantings	Major
	2.1.3	Develop a sustainable planting program to increase canopy cover equitably across the urban footprint by establishing sufficient additional trees to meet the canopy cover target over the life of the Strategy	Major
	2.2.1	Consider introducing a canopy contribution framework for trees on both public and private land that ensures that when trees must be removed and cannot be replaced on site, they are replaced elsewhere through a contribution based on the value of the tree at the time of assessment	Major
	2.2.2	Review PULA to consider a tree bond scheme for trees on public (unleased) land that discourages tree removal and damage through development	Moderate
	2.3.1	Promote and periodically update the preferred species planting guide to assist the community in understanding what trees to plant on leased land	Minor

Objective	Action		Contribution
	2.3.2	Publish and regularly review a list of climate resilient trees	Minor
Balance & diversify the urban forest	3.1.1	Direct initial prioritisation for new plantings to existing planting gaps and addressing the most vulnerable communities	Major
	3.1.2	Undertake regular LiDAR data capture and analysis every 5 years to enable effective monitoring and evaluation of canopy coverage and permeability across the urban footprint	Major
	3.1.3	Progressively map suburbs at risk of losing canopy due to ageing trees to inform a planned removal and replanting program	Major
	3.2.1	Consider use of spatial mapping and citizen science programs to help identify areas with low species diversity and inform future plantings	Moderate
	3.3.1	Plan planting programs to achieve a best practice age profile of the urban forest by 2045	Major
	3.3.2	Ensure yearly maintenance programs involve adequate removal and replacement of end of life trees to develop a balanced age distribution	Major
Take an ecological approach and support biodiversity	4.1.1	Map remnant trees in the urban area	Minor
	4.1.2	Assess senescent and ageing native trees for retention as habitat preferentially to being removed	Minor
	4.1.3	Collaborate with the Environment, Planning and Sustainable Development Directorate (EPSDD) to enhance and conserve biodiversity and eco-cultural values of urban areas (Nature Conservation Strategy – Strategy 4)	Minor
	4.1.4	Identify opportunities to protect young seedlings growing from mature remnant trees on unleased public land where it is appropriate	Major
	4.2.1	Implement strategic planting to support wildlife and enhance movement and foraging opportunities across the city and wider landscape	Major
	4.2.2	Collaborate with EPSDD to undertake fine scale planning for habitat connectivity (Nature Conservation Strategy - Action 1.2)	Moderate
	4.3.1	Develop an urban wood reuse plan for trees removed from public land	Minor
	4.3.2	Ensure by-product from maintenance of the urban forest is used to support tree health and biodiversity conservation including in habitat restoration programs and nature-based park features	Minor
Develop infrastructure to support the urban forest and liveability	5.1.1	Investigate and promote use of permeable infrastructure (e.g. shared and bike paths, paving and car parks) in target areas	Moderate
	5.1.2	Continue to promote positive community behaviour in relation to managing and protecting nature strips and other public areas	Minor
	5.2.1	Collaborate across ACT Government to increase tree numbers in priority areas (Action 11 of the Living Infrastructure Plan (LIP))	Major
	5.2.2	Focus public tree plantings to support summer shading along active travel routes (Action 12 of the LIP)	Major
	5.2.3	Where possible, seek to widen road verges in areas where densification is occurring and along key active travel routes to accommodate additional tree planting	Moderate

Objective	Action		Contribution
	5.2.4	Collaborate with EPSDD to amend planning regulations to ensure suitable protection of existing trees and the establishment of new trees when planning infrastructure in new suburbs and in urban densification areas	Major
	5.2.5	Collaborate with EPSDD on the Planning review and TPA review to ensure consistent and appropriate decision making for protected trees	Major
	5.2.6	Where appropriate, install and maintain rain gardens and swales for urban water run-off in tree and understorey planting areas in urban streetscape upgrades and new estate developments	Moderate
	5.2.7	Review municipal design standards to include specifications on urban rain gardens and/or urban stormwater swales as planting locations on verges and other locations	Minor
Partner with the community	6.1.1	Expand and support community / volunteer programs to encompass a wider range of contributions to grow and maintain the urban forest	Minor
	6.1.2	Develop and make available to volunteers a citizen science data collection program	Minor
	6.2.1	Investigate incentives for retention of trees on private land including through collaboration with planning authorities	Major
	6.3.1	Develop community education material to convey the benefits of trees	Minor
	6.3.2	Build indigenous engagement in caring for the urban forest	Minor
	6.3.3	Consider ways to educate young people and how they can contribute to the urban forest	Minor

3.0 Contribution of different regions to Canberra's canopy cover

3.1 District canopy cover

The reasons for differing levels of canopy cover vary by district or region. Newer suburbs like Wright, Coombs and Throsby have very low levels of canopy cover as the trees in this area are still young. Failed juvenile trees are replaced as required, and any additional available planting sites are being populated to ensure the maximum canopy potential is establishing. Alternative location-specific solutions such as living infrastructure (green roofs for example) will also help to contribute in newer suburbs where planting sites are limited, particularly on leased land.

Older suburbs are more likely to have higher canopy cover because the blocks and road verges are larger and the trees more established. Canberra's urban forest was established over many decades and a significant number of trees will reach the end of their useful life expectancy (ULE) in the coming decades. Canopy cover in these areas may also be significantly affected by planning decisions that enable urban infill, resulting in a loss of mature trees on leased land.

To develop a best-practice age class distribution essential for future tree population stability it is necessary to:

- replace trees as they are removed- this will prevent rapid canopy loss due to the time taken by new plantings to reach their potential canopy size;
- enact renewal (removal and replacement of end of life trees) in a staged process to prevent the loss of an entire street's canopy at one time; and
- explore opportunities to increase canopy in parks and open spaces to offset predicted reduction in canopy due removal of ageing street trees and impacts of removals for infill development.

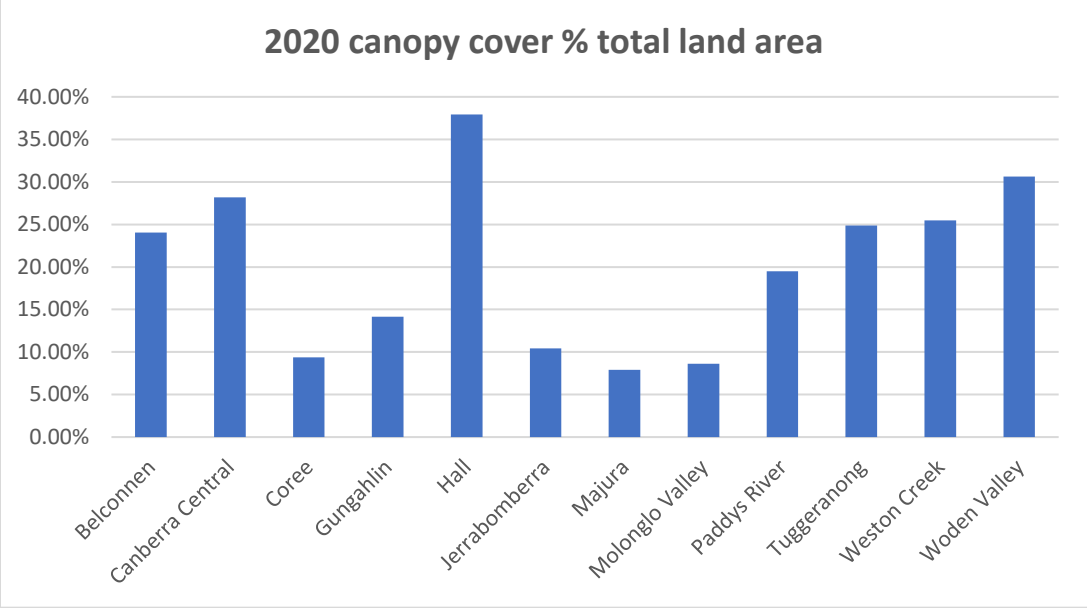
Tree canopy cover was measured in 2020 using the LiDAR remote sensing method. Table 2 shows the percentage of canopy coverage across each district as measured in 2020.

The 2020 tree canopy cover estimates in Figure 1 and Table 2 are a reliable baseline for consideration of existing canopy cover in Canberra. The districts with the highest canopy cover are Hall Village (37.94%), Woden Valley (30.64%), Canberra Central (28.2%), Weston Creek (25.48%), Tuggeranong (24.88%) and Belconnen (24.04%). The districts with the lowest canopy cover are Majura (7.92%), Molonglo Valley (8.62%), and Coree (9.38%).

Table 2 District canopy cover % of total land area in 2020

District	2020 canopy cover % total land area
Belconnen	24.04%
Canberra Central	28.20%
Coree	9.38%
Gungahlin	14.13%
Hall	37.94%
Jerrabomberra	10.42%
Majura	7.92%
Molonglo Valley	8.62%
Paddys River	19.48%
Tuggeranong	24.88%
Weston Creek	25.48%
Woden Valley	30.64%
Overall canopy cover	**22.51%**

Figure 1 2020 canopy cover % of total land area



3.2 Plantings across districts

Tree planting is prioritised in vacant street tree locations and in areas where residents have been identified as having an increased vulnerability to urban heat. The availability of tree stock also plays a role in selected street tree planting locations due to the need to maintain established species themes where appropriate.

In the early stages of the expanded planting program from 2019-20 onwards, the focus has been to respond to public planting requests and provide an equitable distribution of new trees across Canberra's districts. Tree planting is allocated within each program on a district basis. In selecting planting sites within each district, consideration is given to maximising efficiency of ongoing care and watering during establishment. Table 3 and Table 4 shows the balanced distribution of tree planting across Canberra during 2021.

As stated in section 3.1, it is anticipated that future plantings will increasingly focus on renewal of end-of-life trees as they are removed, rather than filling existing planting gaps. This will result in a shift in the allocation of future planting towards districts with the oldest age cohorts of trees.

Table 3 Autumn 2021 planting program

Districts	# Trees
Belconnen	977
Canberra Central	648
Gungahlin	680
Hall	18
Jerrabomberra	8
Molonglo Valley	87
Tuggeranong	592
Weston Creek	140
Woden Valley	625
Grand Total	**3,775**

Table 4 Spring 2021 Planting Program (projected figures)

Districts	# Trees
Belconnen	810
Canberra Central	772
Gungahlin	596
Hall	4
Jerrabomberra	35
Molonglo Valley	39
Tuggeranong	776
Weston Creek	237
Woden Valley	357
Additional urban open space and roadways	1,700
Grand Total	**5,326**

The spring 2021 program includes 1,700 native tube stock to be planted in urban open space and on major and arterial roadway verges by the inhouse planting team, bringing the total of trees planted across Canberra in the spring program to 5,326 trees and an overall 2021 total of 9,101 trees.

4.0 Suburbs/divisions identified for priority action

The Transport Canberra and City Services (TCCS) planting program is informed by data on canopy cover, the heat island effect and social vulnerability. As a result, planting focuses on filling gaps in residential streets in areas vulnerable to heat, with low levels of tree canopy cover and where canopy levels are decreasing due to trees reaching the end of their life. In these locations, priority will be given to public requests for new street trees and planting along active travel routes, consistent with actions in the Strategy.

4.1 Existing suburb canopy cover

Twenty-six suburbs of Canberra's 120 suburbs (also called divisions) have a tree canopy coverage higher than the 30% target and an additional 57 suburbs have a canopy cover between 20% and 30%. The suburbs with higher canopy coverage are generally found in Canberra's older regions developed prior to the 1990's. Figure 2 maps tree canopy cover across Canberra's suburbs as measured in 2020.

Twenty-six suburbs have a canopy cover of less than 15% as shown in Figure 3. Over half of these suburbs were developed within the last 15 years and canopy cover is expected to increase as the trees planted at development reach maturity.

Figure 2 Percentage tree canopy cover for each suburb/division over urban Canberra in 2020 (Source: ACT Government, 2021)

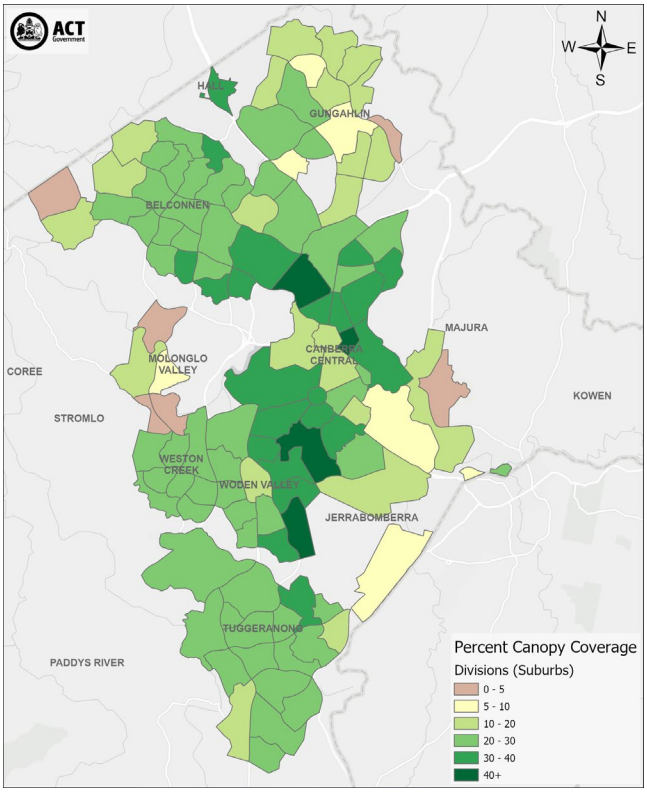
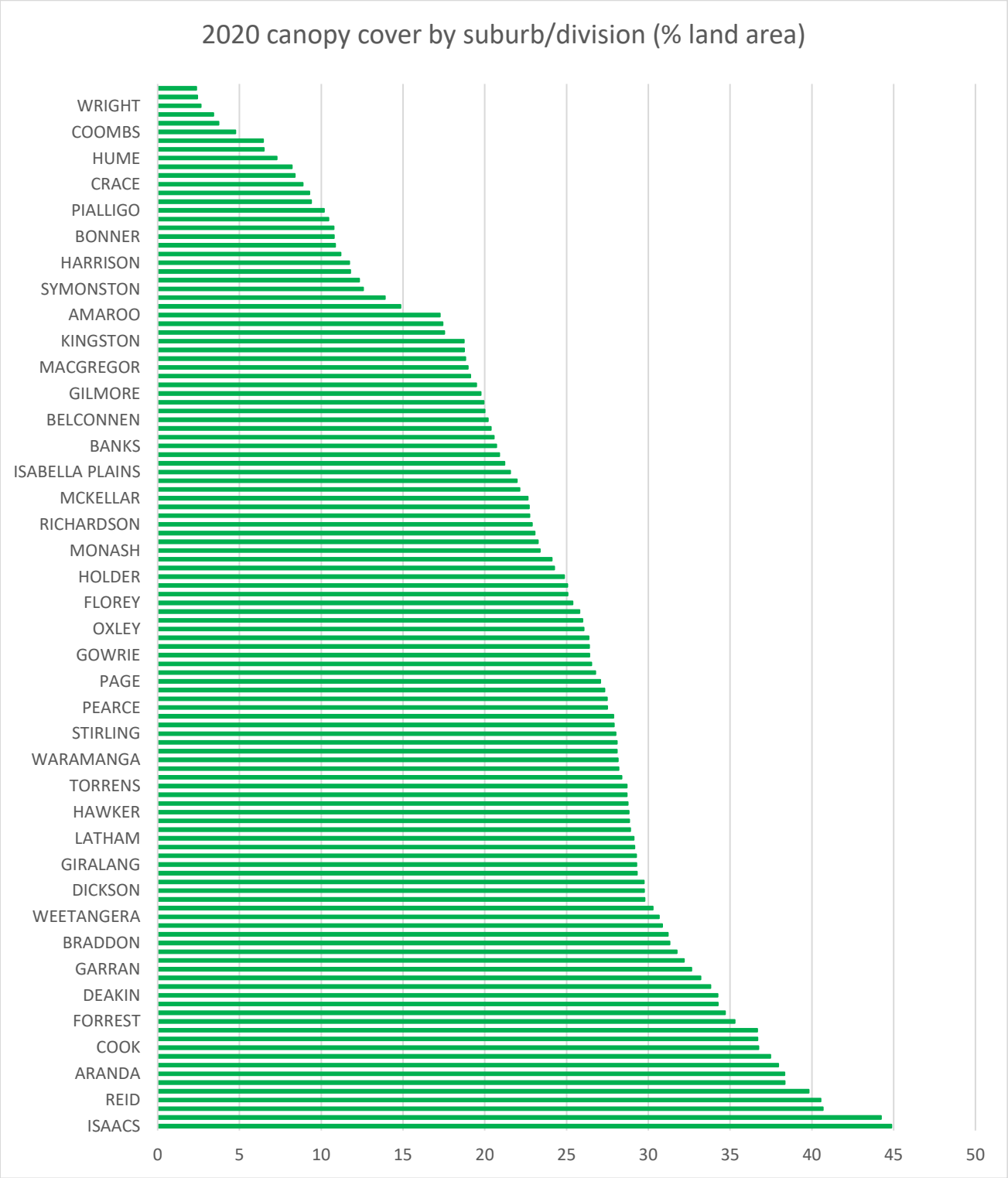


Figure 3 2020 Tree canopy cover for each suburb/division in urban Canberra



4.2 Identified suburbs affected by heat and vulnerability

Suburbs where residents are more vulnerable to heat have been identified using surface temperature and socio-economic and age data. The Strategy contains detailed maps that show the areas where heat impacts are likely to be highest.

There is an inverse correlation between the 2020 tree canopy coverage across suburbs and vulnerability to urban heat shown in Figure 4 and Table 5 below. The suburbs with the highest canopy coverage, such as Isaacs, O'Conner, Red Hill and Reid are cooler and have a lower vulnerability to urban heat, while suburbs such as Uriarra Village, Pialligo, Canberra Airport and Wright have very low canopy cover and high vulnerability to urban heat.

While priority is given to planting in locations with greater vulnerability to urban heat during the planning of the seasonal planting programs, the planting statistics for these locations are impacted by the way the vulnerability mapping has been carried out. The heat vulnerability mapping relates primarily to residential zoned land and the mapping extends only to the road centreline. This often results in the capture of one side of the road verge but excludes the opposite verge where there are no residential zones, or where the socio-economic and age demographic of residents is considered less vulnerable. As a result, areas such as adjacent parks, active travel routes and connections to local shops, schools and other community facilities are not captured in the heat vulnerability maps. Despite this, priority is given to planting in all suitable locations in and adjacent to vulnerable areas.

In the 2021 seasonal planting programs 1,259 trees will be planted in locations overlaid with an increased vulnerability to the impacts of heat during the 2021, accounting for over 27% of street tree planting. This figure excludes a significant number of trees planted adjacent to the mapped vulnerable areas that provide cooling benefits and sheltered passages connecting residences to community services.

Figure 4 2020 Canopy cover and hot & vulnerability index

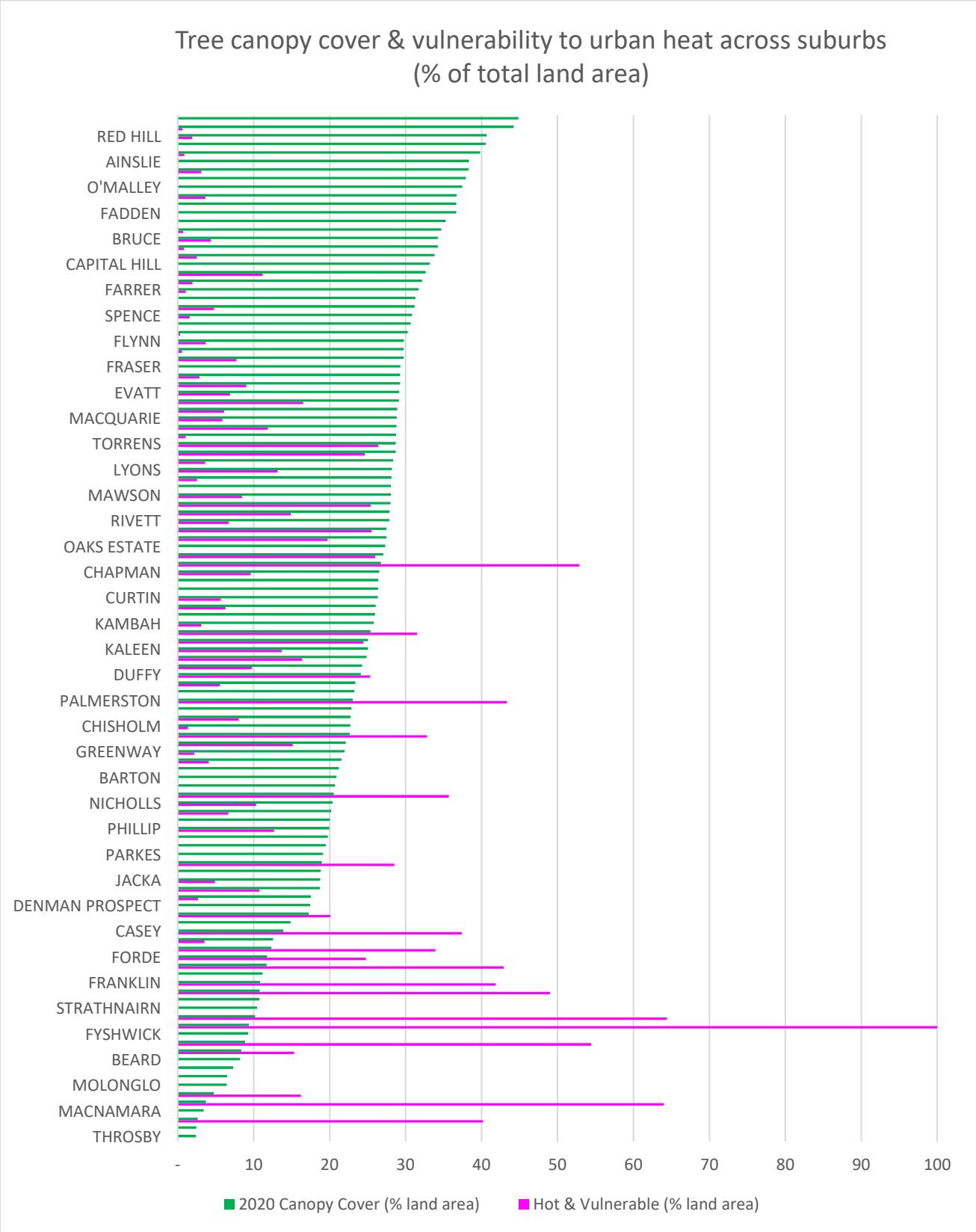


Table 5 2020 Canopy cover and vulnerability index

District name	Suburb (Division)	2020 canopy cover (% land area)	Hot & vulnerable (% land area)
Woden Valley	Isaacs	44.87	0
Canberra Central	O'Connor	44.23	0.62
Canberra Central	Red Hill	40.67	1.9
Canberra Central	Reid	40.53	0
Canberra Central	Hackett	39.81	0.87
Canberra Central	Ainslie	38.34	0
Belconnen	Aranda	38.32	3.12
Hall	Hall	37.94	0
Woden Valley	O'Malley	37.46	0
Belconnen	Cook	36.74	3.64
Canberra Central	Turner	36.68	0
Tuggeranong	Fadden	36.66	0
Canberra Central	Forrest	35.29	0
Canberra Central	Campbell	34.69	0.7
Belconnen	Bruce	34.25	4.38
Canberra Central	Deakin	34.24	0.82
Canberra Central	Downer	33.8	2.52
Canberra Central	Capital Hill	33.19	0
Woden Valley	Garran	32.63	11.17
Woden Valley	Hughes	32.18	1.93
Woden Valley	Farrer	31.74	1.06
Canberra Central	Braddon	31.3	0
Canberra Central	Griffith	31.19	4.77
Belconnen	Spence	30.85	1.55
Belconnen	Weetangera	30.65	0
Canberra Central	Yarralumla	30.27	0.29
Belconnen	Flynn	29.78	3.67
Canberra Central	Dickson	29.74	0.57
Belconnen	Melba	29.73	7.73
Belconnen	Fraser	29.31	0
Belconnen	Giralang	29.27	2.84
Canberra Central	Narrabundah	29.26	9.04
Belconnen	Evatt	29.15	6.88
Belconnen	Latham	29.11	16.52
Canberra Central	Watson	28.9	6.1
Belconnen	Macquarie	28.84	5.88
Belconnen	Hawker	28.81	11.87
Tuggeranong	Conder	28.74	1.03
Belconnen	Scullin	28.69	24.61
Woden Valley	Torrens	28.69	26.41

District name	Suburb (Division)	2020 canopy cover (% land area)	Hot & vulnerable (% land area)
Belconnen	Charnwood	28.36	3.61
Woden Valley	Lyons	28.19	13.16
Weston Creek	Waramanga	28.14	2.53
Woden Valley	Mawson	28.08	8.46
Tuggeranong	Theodore	28.08	0
Weston Creek	Stirling	28.01	25.4
Weston Creek	Fisher	27.9	14.89
Weston Creek	Rivett	27.87	6.7
Woden Valley	Pearce	27.49	25.52
Woden Valley	Chifley	27.47	19.74
Jerrabomberra	Oaks Estate	27.32	0
Belconnen	Page	27.06	26.01
Belconnen	Higgins	26.76	52.89
Weston Creek	Chapman	26.52	9.6
Tuggeranong	Gowrie	26.4	0
Tuggeranong	Wanniassa	26.39	0
Woden Valley	Curtin	26.35	5.65
Tuggeranong	Oxley	26.05	6.3
Tuggeranong	Calwell	25.98	0
Tuggeranong	Kambah	25.8	3.12
Belconnen	Florey	25.37	31.51
Belconnen	Holt	25.06	24.44
Belconnen	Kaleen	25.05	13.7
Weston Creek	Holder	24.86	16.35
Tuggeranong	Bonython	24.25	9.75
Weston Creek	Duffy	24.1	25.33
Tuggeranong	Monash	23.37	5.57
Tuggeranong	Macarthur	23.25	0
Gungahlin	Palmerston	23.05	43.36
Tuggeranong	Richardson	22.89	0
Canberra Central	Lyneham	22.74	8.03
Tuggeranong	Chisholm	22.71	1.33
Belconnen	McKellar	22.63	32.82
Weston Creek	Weston	22.13	15.13
Tuggeranong	Greenway	21.96	2.19
Tuggeranong	Isabella Plains	21.55	4.08
Canberra Central	Russell	21.2	0
Canberra Central	Barton	20.89	0
Tuggeranong	Banks	20.7	0
Gungahlin	Ngunnawal	20.56	35.7
Gungahlin	Nicholls	20.38	10.31

District name	Suburb (Division)	2020 canopy cover (% land area)	Hot & vulnerable (% land area)
Belconnen	Belconnen	20.2	6.66
Canberra Central	Acton	20	0
Woden Valley	Phillip	19.94	12.67
Tuggeranong	Gilmore	19.75	0
Paddys River	Tharwa	19.48	0
Canberra Central	Parkes	19.12	0
Belconnen	Macgregor	18.96	28.53
Tuggeranong	Gordon	18.82	0
Gungahlin	Jacka	18.74	4.91
Canberra Central	Kingston	18.72	10.76
Canberra Central	City	17.53	2.67
Molonglo Valley	Denman Prospect	17.42	0
Gungahlin	Amaroo	17.25	20.08
Gungahlin	Mitchell	14.85	0
Gungahlin	Casey	13.9	37.4
Jerrabomberra	Symonston	12.56	3.53
Belconnen	Dunlop	12.32	33.94
Gungahlin	Forde	11.77	24.76
Gungahlin	Harrison	11.71	42.9
Belconnen	Lawson	11.18	0
Gungahlin	Franklin	10.86	41.87
Gungahlin	Bonner	10.78	49.01
Gungahlin	Taylor	10.76	0
Belconnen	Strathnairn	10.44	0
Majura	Pialligo	10.18	64.42
Coree	Uriarra Village	9.38	99.99
Canberra Central	Fyshwick	9.28	0
Gungahlin	Crace	8.87	54.44
Gungahlin	Gungahlin	8.38	15.32
Jerrabomberra	Beard	8.2	0
Jerrabomberra	Hume	7.28	0
Gungahlin	Moncrieff	6.5	0
Molonglo Valley	Molonglo	6.45	0
Molonglo Valley	Coombs	4.75	16.22
Majura	Canberra Airport	3.72	64
Belconnen	Macnamara	3.41	0
Molonglo Valley	Wright	2.63	40.2
Molonglo Valley	Whitlam	2.43	0
Gungahlin	Throsby	2.37	0

4.3 Suburb planting program 2021-22

Approximately 17,000 vacant street tree planting sites identified in a Canberra-wide audit will remain following the spring 2021 planting program of over 5,200 trees. Over 5,000 new trees will also be planted in the autumn 2022 program with priority given to planting in the vacant street tree sites located in areas with low canopy cover and an increased vulnerability to urban heat. Planting will also be prioritised along active travel routes within suburbs with lower canopy cover.

Routine consultation with residents about proposed street tree plantings has revealed a significant rate of refusal from residents in suburbs with low canopy cover and increased areas of vulnerability to urban heat. Proposed plantings that are not supported by the adjacent resident are not progressed and this decreases the number of trees that can be planted in areas with the greatest need. To address this, a higher level of engagement is planned in such areas, including offering residents a choice of two different species. This is expected to result in more street trees being planted but will also present a departure from the consistent, themed streetscapes found in many parts of Canberra.

5.0 Annual progress update on initiatives

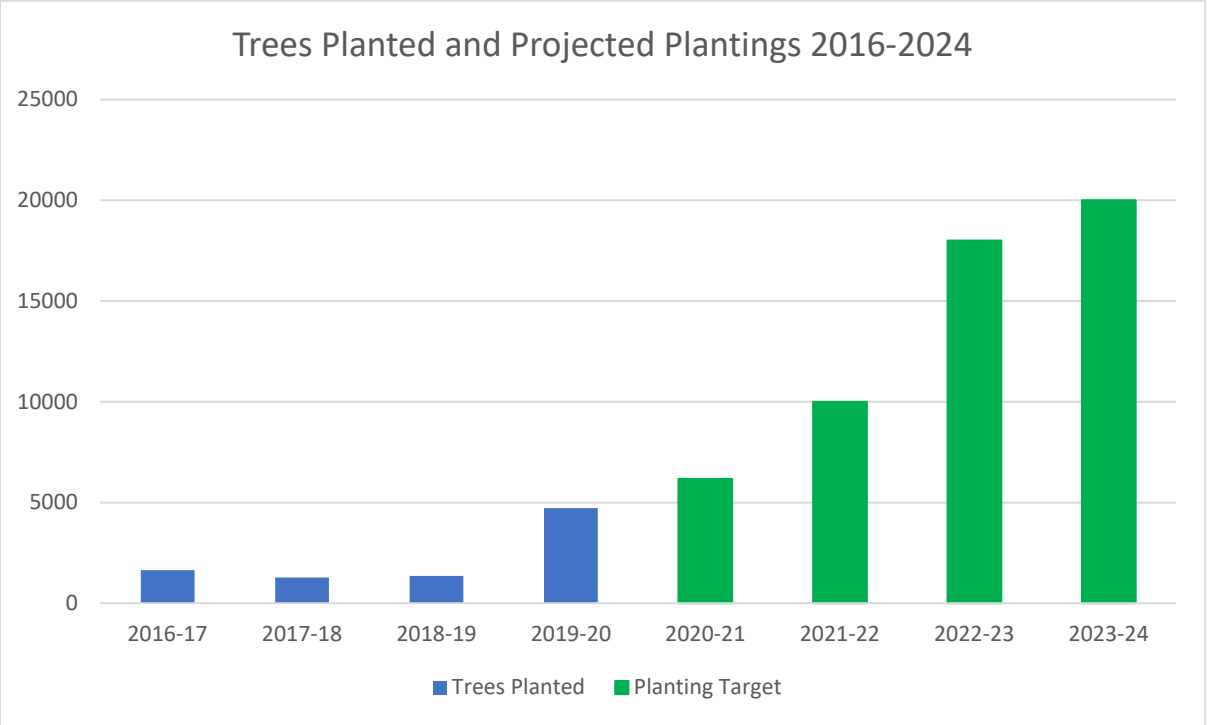
5.1 Planting

Over 9,000 trees will be planted in streets, parks and open spaces during 2021. This includes 4,635 trees programmed to be planted in streets, and 1,259 trees to be planted in areas identified with an increased vulnerability to urban heat. The final planting figures will be influenced by the rate of resident acceptance of proposed street trees.

1,458 trees are programmed to be planted in 2021 in response to planting locations identified by the public through the YourSay website. 663 trees will be planted this year in response to enquiries received through the Fix My Street online form and Access Canberra.

Recent and projected plantings are shown in Figure 5, with the predicted annual planting numbers required to achieve 30% canopy cover by 2045 reached in 2023-24. This is based on modelling undertaken by the CSIRO in 2019 described in the Urban Forest Strategy. The progressive increase in planting numbers provides the necessary time to plan and develop propagation programs with Yarralumla Nursery to ensure ongoing stock supply.

Figure 5 Trees planted from 2016-17 and projected to 2023-24



5.2 Updated LiDAR information

The monitoring of TCC to achieve the 30% canopy cover by 2045 target is being carried out through a Geographic Information System (GIS) analysis of LiDAR imagery.

Analysis of TCC was undertaken in 2015 and 2020 however the two datasets are not directly comparable because the 2015 dataset has been shown to be less reliable than recent data. The accuracy of the 2015 analysis is compromised by a low LiDAR point density per m² (compared to 2020 LiDAR data), a misclassification of non-vegetative structures and the time of year the 2015 measurements were taken (being captured in late May when many deciduous trees had begun to lose leaves).

Using methodologies developed in-house by ACT Government staff, the TCC for 2020 is estimated to be 22.5% of Canberra's urban footprint. There is substantially higher confidence in the 2020 data as a baseline estimate of TCC and moving forward, the result from the 2020 LiDAR data should be referred to and used instead of any of the previous 2015 estimates.

The 2020 estimates will now provide a baseline from which to measure tree canopy cover into the future towards the 2045 target. These estimates will also enable identification of areas where tree canopy cover is low and prioritisation of planting in these areas to ensure equitable tree canopy cover across Canberra.

A summary of progress against all Strategy actions is at Appendix B.

6.0 Support for community led contributions towards targets

The Strategy identified the need to partner with the community to grow and maintain the urban forest and recognised the important role that community and volunteer groups have in growing and maintaining our urban forest.

TCCS has been working with community groups from across all five primary regions in Canberra to enhance the urban forest. Figure 6 shows the locations of registered community groups and Figure 7 displays the locations of community tree planting events in spring 2020, autumn 2021 and proposed plantings for spring 2021.

Urban Parks and Places volunteers make improvements to local urban open space areas and are involved in the following activities:

- weed control and removal programs
- horticultural maintenance
- litter collection
- monitoring and reporting issues
- park restoration projects
- minor tree maintenance activities
- habitat restoration
- planting and maintaining plants
- community education and social events
- citizen science
- training and workshops
- conservation projects.

Figure 6 Registered community groups

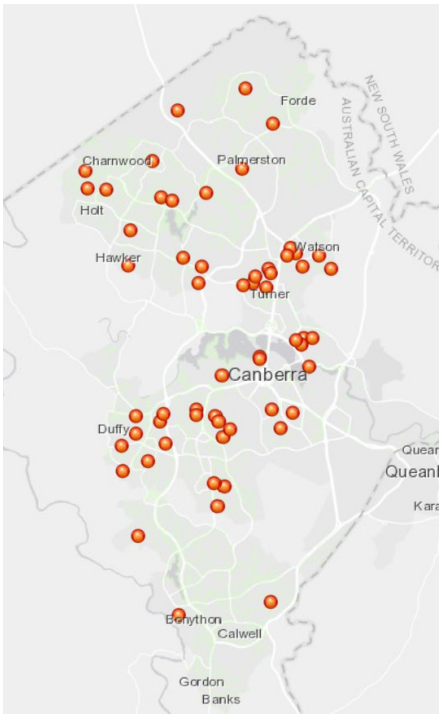


Figure 7 Community tree planting events 2020-2021

Additionally, TCCS has provided support to community groups who are working to achieve environmental outcomes by providing specialised tree knowledge. Outcomes have included providing improved habitat and breeding sites for iconic local and vulnerable bird species including Superb Parrots and Gang-gang cockatoos and restoring and revegetating urban waterways.

In 2019-20 and 2020-21, TCCS collaborated with the Environment, Planning and Sustainable Development Directorate to deliver the ACT Environment and Nature in the City Grants.

6.1 Urban Parks and Places volunteering

The Urban Parks and Places volunteering is a community partnership between the local community and the ACT Government through TCCS. The program allows the community to get involved in a hands-on way to contribute to the conservation, presentation and maintenance of Canberra's many public urban open space areas. TCCS works with the three ACT Catchment Groups (Ginninderra, Southern and Molonglo) to support around 60 volunteer groups that undertake works on TCCS-managed land.

TCCS support for volunteer groups includes provision of mulch from urban forest maintenance activities. In 2020-2021, over 3,000m^3 of mulch was provided to community groups for urban landcare projects. In addition, TCCS provided over 900 logs to schools and community groups for nature playgrounds and park improvements and the Parks and Conservation Service for natural regeneration projects.

During 2020-21, 39 groups were engaged in tree-related activities. These groups collectively planted 896 trees, undertook young tree maintenance, data collection for mapping and minor pruning.

6.2 Adopt-a-Park program

The Adopt-a-Park program is a grants program for community groups to support their work in caring for local parks and open spaces. It supports existing volunteer groups and encourages the establishment of new ones. Projects funded under the grant in the past include ecological restoration projects, local garden projects, revegetation projects to increase shade and canopy cover and educational and training workshops to give the volunteers the skills they need to undertake this work. Volunteers are supported by an ACT Government place coordinator and is a great way to enhance our open spaces, foster community engagement and ownership and to bring people together into the outdoors.

With funding provided in the 2021-22 ACT Budget, the Adopt-a-Park program will continue over the next 3 years. The expanded program will focus primarily on tree planting outcomes, with the number of trees to be planted a factor that will be considered in the assessment of applications.

Figure 8 Downer micro-forest

(Source: https://climatefactory.com.au/community-micro-forests-downer/)

6.3 In-house planting team to support community groups

The TCCS in-house planting team planted over 450 trees in partnership with community groups. This team also undertook planting and maintenance of young trees (formative pruning, watering, repair and weeding of mulched watering basins), significant tree care (weeding and mulching beneath remnant native trees and significant mature trees), transplanting of trees planted in inappropriate locations and to facilitate road upgrades, and preparation of future planting sites through weeding and mulching.

6.4 Citizen Science

A community program is being developed to collect missing data about the trees in our ageing urban forest to improve future program and management decisions. This Citizen Science Project will train volunteers to collect and record information about the tree genus, species, age and health of trees. A pilot project with 3 groups will be launched when COVID restrictions are lifted.

Citizen Science Pilot Project	
Trial location	**Groups involved**
Telopea Park	Kingston and Barton Residents Group Narrabundah College ANU – Forestry students
Fetherston Gardens, Weston	Friends of Fetherston Gardens
Yarralumla	Yarralumla Residents Association

6.5 Tree Week 2021

TCCS organised and facilitated Canberra Tree Week 2021 from 1- 9 May. The successful event included 34 diverse and engaging activities such as guided walks, talks, exhibitions, poetry workshops and tree climbing. Events were hosted by 15 organisations and individuals across Canberra and in neighbouring regional NSW.

Organisations that hosted events included:

- ACT Libraries
- Cool Country Natives Nursery
- Tracy Benson
- Treecreate
- National Arboretum, Canberra
- Friends of ACT Trees
- Sarah St Vincent Welsh (Kindred Trees)
- Yarralumla Nursery
- Associate Professor Cris Brack, ANU
- Jan Morgan, ANU
- City Renewal Authority
- Braidwood Garden Club
- Australian National Botanic Gardens
- Queanbeyan Palerang Regional Council
- Canberra Tree Network

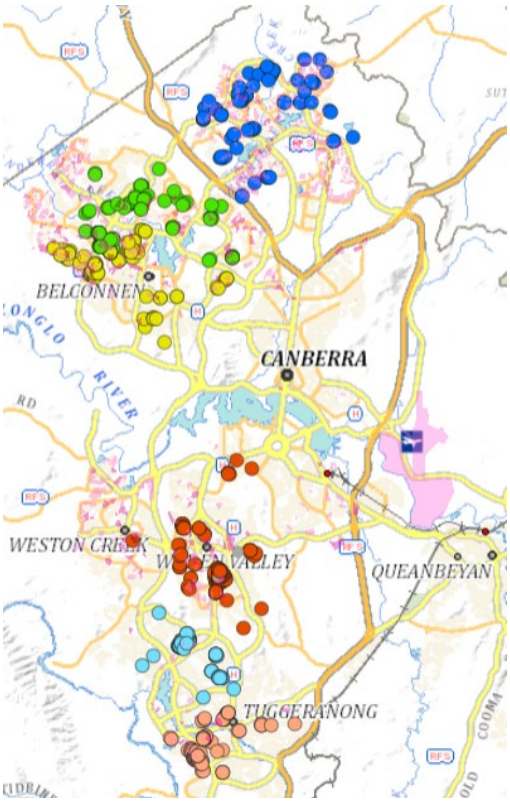
6.6 Street Forestry Program

TCCS launched a targeted community engagement program in April/May 2021 to increase the number of street trees in selected streets across six suburbs in Canberra that have low canopy cover and have been identified as being vulnerable to urban heat (Figure 9). The Street Forestry Program (SFP) was designed to engage residents of the selected streets to increase awareness of the benefits of street trees and how to help care for them, and to involve residents in the selection of the species and specific location of their new street tree.

The SFP also aimed to help government learn more on how people use and value their nature strip and to explore whether increased engagement prior to planting can increase acceptance and uptake of new street trees and enhance tree health outcomes by promoting a stewardship approach by residents.

For a street tree to survive and thrive, it needs to be accepted and cared for by the adjacent residents. Increased awareness on the value and benefits of street trees and what actions people can take care for street trees builds community support, increases opportunities to plant trees on nature strips and potentially improves the health and longevity of these plantings. Healthier, longer lived trees will provide more shade and cooling benefits to residents and will take less government resources to maintain.

Figure 9 Tree planting on SFP streets overlaid with urban heat mapping (areas shaded in pink have been identified as more vulnerable to urban heat)



As part of the SFP 1163 residents were sent an introductory letter, engagement survey and street tree species vote card and invited to attend a webinar and local pop-up stall. 137 residents completed the initial engagement survey and 20 completed the follow up survey. 191 street tree species vote cards were received.

A scientific report on the social, environmental and economic value of street trees and a brochure outlining the importance and basic tree requirements of street trees were made available on the City Services website to increase public awareness on the benefits of the urban forest and the small actions that individuals can take to help street trees thrive.

327 trees were planted in the vacant tree planting sites within the six selected SFP streets (see Figure 10). Tree acceptance and refusal rates were recorded during the engagement and planting period and compared to designated control streets. Resident refusals were the most common reason for not planting in proposed street tree locations within selected SFP streets however refusal rates varied widely across the six suburbs (see Figure 11). The overall proportion of proposed street tree plantings that were refused by residents engaged through the SFP was 17.6%.

Figure 10 Distribution of trees planted across the selected sites during the SFP

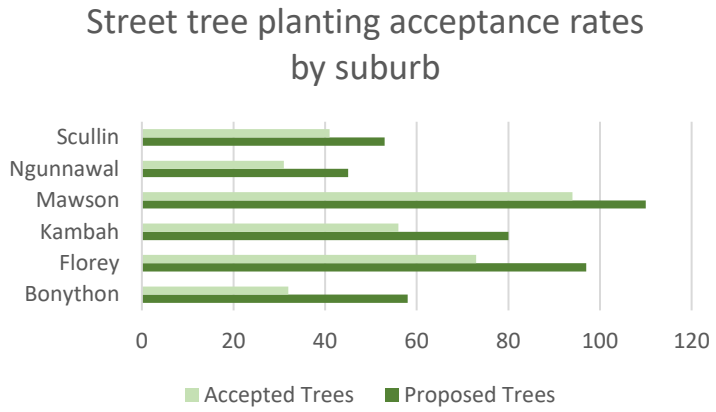
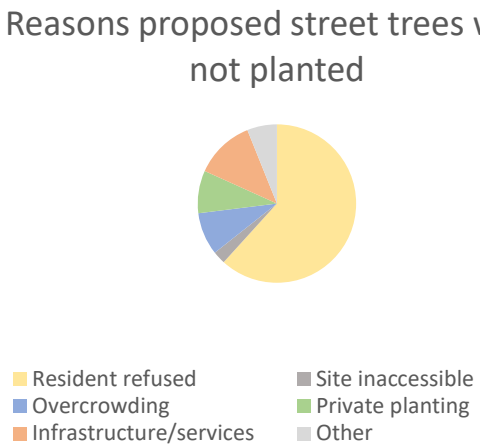


Figure 11 Breakdown of reasons for planting refusal



The health and growth of the SFP tree plantings will be monitored over the next five years and compared to trees planted in similar streets at the same time but without any additional engagement. This comparison will indicate whether increased engagement prior to planting has had a positive effect on tree health by increasing a sense of stewardship.

A report summarising the program findings is expected to be completed in late 2021 and will provide an analysis on the methodology and initial results and recommend strategies for effective community engagement in future planting programs.

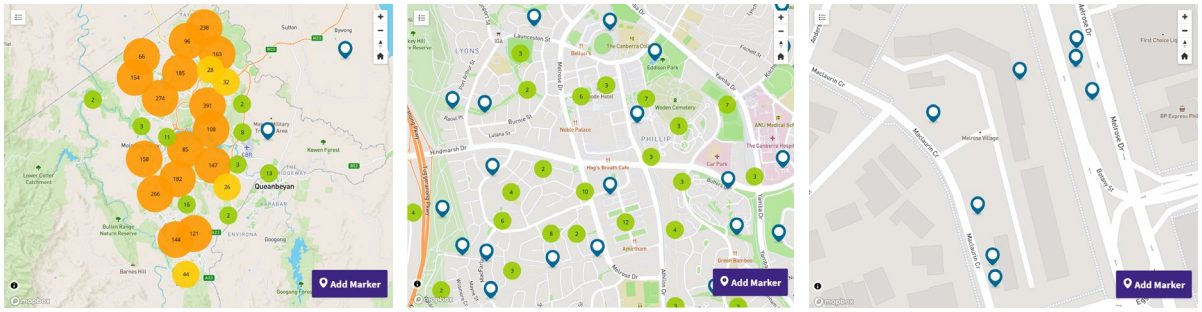
6.7 Your Say planting map

The community were also able to suggest planting locations via YourSay on the interactive map (Figure 12) and there have been over 3,100 planting locations recommended by the community since the map launched in late 2019.

These suggestions have been utilised to guide planting locations in recent programs. Over 1,450 trees will be planted in response to Your Say enquiries in 2021.

https://yoursayconversations.act.gov.au/trees-act/tree-planting-across-cbr

Figure 12 Your Say planting map



6.8 Grants

Since 2019-20, TCCS has collaborated with EPSDD to deliver the ACT Environment and Nature in the City Grants.

2021-2022 ACT Environment and Nature in the City Grants this year funded community projects to a value of $300,000.

These projects will support environmental activities consistent with the ACT Government's policies and priorities. They help strengthen participation and engagement in community led environmental initiatives.

The ACT Environment Grants have been funded annually by the ACT Government since 1997 with this year $200,000 made available. Additionally, $100,000.00 of funding was made available for the Nature in the City Grants through an initiative to enhance and improve the liveability of our urban open spaces.

2021-2022 ACT Environment Grants

In the 2021-2022 round of the ACT Environment Grants, 27 applications were received to a total value of over $607,526.

Nine projects to the value of $202,281 were successful (Table 3) and will contribute to the improvement of the ACT's ecosystem health and conservation outcomes.

Project activities included weed and erosion control, care and rehabilitation of native wildlife, and support for on-ground citizen science projects. The successful project proponents and projects were:

Table 6 2021-22 ACT Environment Grant recipients

Project	Applicant	Amount
Protection of Pink-tailed worm lizard habitat on Tuggeranong Hill and Farrer Ridge	Friends of Tuggeranong Hill, Farrer Ridge ParkCare Group and Southern Act Catchment Group	$26,200
Turtles nesting in the city	Ginninderra Catchment Group	$25,000
Herbaceous Weed Control on Red Hill	Red Hill Regenerators and Southern Act Catchment Group	$31,806
Riparian Rescue with Outward Bound	Outward Bound and Southern Act Catchment Group	$24,375
Oaks Estate Riverbank Track Woody Weed Regrowth Control	Molonglo Conservation Group	$35,000
Flea Bog Flat Biodiversity Management Plan and Training	Friends of Flea Bog Flat and Ginninderra Catchment Group	$9,890
Urban Biodiversity at Croke Place	Croke Place Landcare group and Ginninderra Catchment Group	$8,140
ENV202200045 - Dryandra Woodlands Rehabilitation (year 2)	The Friends of Dryandra Woodland and Molonglo Conservation Group	$14,495
ENV202200049 - Blue Gum Point woodland restoration, Yarralumla (year 2)	Friend of Grasslands	$27,375

2021-2022 ACT Nature in the City Grants

In the 2021-2022 round of the ACT Nature in the City Grants, 14 applications were received to a total value of over $181,476.

Eight projects to the value of $97,128 were successful (Table 4) and will contribute to the improvement of the ACT's urban open spaces liveability, ecosystem health and conservation outcomes.

Table 7 2021-2022 ACT Nature in the City Grant recipients

Group	Project description	Funding amount
Molonglo Conservation Group	**Coombs Park -** To create an urban nature belt to enhance biodiversity, increase canopy cover and improve habitat for wildlife. The project will educate the community about environmental issues including weed identification and removal.	$14,810

Group	Project description	Funding amount
Friends of RSL Park Campbell & RSL Australia ACT Branch Inc	**Improving Urban Landscape Health, RSL Park Campbell, Stage 1 -** Develop an integrated landscape plan for the park that will include connecting pathways, weed removal and improving biodiversity by enhancing understorey planting.	$14,700
SEE-Change	**Watson Micro-forest Project -** Increase canopy cover and reduce heat and increase resilience to climate change by planting climate ready species, Project aims to develop toolkits for similar projects in the future. WSUD principles- retro fitting infrastructure and constructing swales to increase water infiltration.	$15,000
Ginninderra Catchment Group	**Ginninderra Urban Revegetation -** Undertake native planting to increase canopy cover, increase stormwater infiltration. Focus on climate ready species. Replace hard impermeable surfaces. WSUD using natural features to increase infiltration. Site selection will focus on heat island hotspots to reduce heat and provide local amenity.	$13,100
Emu Creek Landcare and Ginninderra Catchment Group	**Urban Cooling in Belconnen -** To increase canopy cover, increase water infiltration by using permeable surfaces. Use of climate ready plants, improving soil health and function. Plantings to target urban heat island hotspots.	$2,555
Capital Region Community Services	**Holt Community Micro-forest -** Develop a masterplan that will Increase canopy cover and reduce heat and increase resilience to climate change by planting climate ready species.	$15,000
Friends of Grasslands, SEE-Change and Southern ACT Catchment Group	**Improved native diversity and cooling of Monash's Pond and Grassland sites -** To increase canopy cover to promote urban cooling. Reduce sediment loads into Isabella Ponds by decreasing velocity of runoff by increasing planting to reduce erosion. Weed removal from grassland, increasing soil health and function. Community engagement to improve public amenity.	$14,700
Friends of Mawson Ponds and Woden Valley Community Council	**Mawson Ponds Wildlife Corridor -** Project aims to create a wildlife corridor, enhance habitat connectivity through urban areas and manage these urban wetlands to support implementation of the ACT Nature Conservation Strategy.	$7,263
	Total Grant Funding	**$97,128**

7.0 Provision for habitat and resources for wildlife (flora and fauna)

7.1 Policy

The provision of habitat and resources for wildlife including threatened species and ecosystems, mature native trees and culturally significant trees is addressed in the Strategy. The loss of mature native trees (including hollow-bearing trees) and a lack of recruitment was added to the List of Key Threatening Processes under section 87 of the Nature Conservation Act 2014 (NC Act) in September 2018 (*Notifiable Instrument—Nature Conservation Key Threatening Processes List 2018 (No 1) NI2018-538*). The associated Conservation Advice is Notifiable Instrument NI2018–536.

While the ACT has a significant proportion of its land in reserves, there remains an imperative to protect existing trees and enhance recruitment in the urban environment. TCCS has supported EPSDD in the development of The Loss of Mature Native Trees Key Threatening Process Draft Action Plan, which outlines a series of actions to protect and conserve and extend the standing life of mature native trees, particularly through to hollow development and beyond. Actions also include increasing the ecological importance within the Tree Protection Act.

7.2 Planting and natural recruitment

The 2021-22 ACT Budget provides for an increased urban tree planting target of 54,000 trees by 2024. Over 9,000 trees will be planted in vacant street, park and open space locations in 2021 and an additional 17,000 vacant street tree gaps have been identified across Canberra for future planting from spring 2021. Urban open space is also progressively being mapped for planting opportunities.

Species will be selected for their suitability in an increasingly hotter and drier climate and with an aim of increasing the diversity of Canberra's public urban trees.

TCCS is collaborating with EPSDD and other organisations to ensure that species diversity is optimised for habitat and connectivity, particularly on main and arterial roads and connecting urban open space.

Community groups are actively supported in planting initiatives and conservation activities that encourage natural regeneration, such as Fowles Street Woodland Park, Weston and Griffith Woodland.

Other actions include:

- 'Tree Selector' online tool to help inform the community of appropriate tree species selection is under development.
- Community engagement to increase active care of trees adjacent to residences and businesses incl. factsheet, social media posts and City Services website.

- Urban open space sites for future tree health and biodiversity improvement trial identified in collaboration with EPSDD.
- GPS fitted to mowers to enable alarms for no-mow areas to prevent accidental impacts on naturally recruited trees.

7.3 Cultural site assessments and strategic indigenous planting

Site assessments have been undertaken on TCCS managed lands to establish sites and trees of cultural significance. This is being carried out to increase cultural awareness among staff and preserve the cultural significance of the ACT on lands that TCCS maintain. *Municipal Infrastructure Standard 25 – Plant species for Urban Landscape Projects* (MIS25) has also been updated to include Ngunnawal Cultural notes which identify the local traditional Aboriginal plants of the ACT region.
https://www.cityservices.act.gov.au/__data/assets/pdf_file/0004/1378543/Municipal-Infrastructure-Standards-25-Plant-Species-for-Urban-Landscape-Projects.pdf

Figure 13 Excerpt from MIS 25 Plant Species for Urban Landscape Projects

Botanical Name	Code	Height x width (m)	Target Soil Volume (m^3) & site restrictions	Tree shape category	Root barrier zone (m)	Management and siting notes	Design Characteristics	Flowering times	Nectar, Pollen, Fruit	Forager	Ngunnawal cultural notes
Eucalyptus blaxlandii	Ebx	20 x 15	ASV Class 4 ≥70m^3	1	2.5	High frost and moderate drought tolerance. Grows in poor soils including gravels.	Blaxland's stringybark. Reddish deeply furrowed bark. Slightly sickle shaped leaves.	Spring	Nectar Pollen Seeds	Bees	Ngunnawal people would use the tree to make shelters and rope.
Eucalyptus bridgesiana	Ebr	20 x 15	ASV Class 4 ≥70m^3 Urban areas. Poorly drained sites. Wet sites.	1	2.5	High frost and moderate drought tolerance. Tolerates exposed sites. Does not tolerate water logging. Known host for native mistletoe.	Apple box. Grey short-fibred bark. Heart shaped juvenile leaves. Keystone local species that provides wildlife habitat.	Autumn	High Pollen Nectar Seeds	Bees,Birds. Keystone local species that provides wildlife habitat.	Ngunnawal people would use the tree to make shields and coolamons. They also used the bark to heat water.
Eucalyptus elata	Eel	25 x 15	ASV Class 5 ≥100m^3 Dry sites. Exposed sites.	1	3	Moderate frost and drought tolerance. Prefers moist sites such as creeks and watercourses. Formative pruning important to avoid multi-branching.	River peppermint. Light green foliage. Bark sheds in ribbons. Large, fast growing.	Spring	Nectar Pollen Seeds	Bees, Birds.	Ngunnawal people would use the leaves to make tea.

This will enable TCCS to determine which species to use and where to plant them to reflect the cultural significance of that area, or which are complimentary understorey plants for significant trees.

A trial of native wildflowers beneath remnant trees as an alternative weed management approach to regular herbicide applications has also been introduced. A reduction in chemical use, restriction of access leading to compaction and improved microclimate conditions will improve the health and prolong the life of these important keystone species. The introduction of increased bird and insect predators are equally important to the health of our plants by controlling pest insects such as aphids, psyllids, scale insects, mites, caterpillars and grasshoppers.

7.4 Collaboration with ACT for Bees

The update to MIS25 also included additional information incorporated through collaboration with the ACT for Bees community group, detailing the flowering time, nectar/pollen/fruit produced and the forager which utilises these bounties.

The soon-to-be released Urban Planting Calendar for the ACT has been produced by ACT for Bees and the ACT Government to enable the implementation of strategic planting to support bees and other beneficial insects and birds with a diverse range of foraging opportunities across the city and wider landscape.

Street and urban open space plantings have the potential to provide a key range of food and habitat for pollinators, creating a network of corridors across the urban forest. By providing these resources in urban green spaces, native bees and other pollinator populations can be attracted and sustained, which in turn supports the biodiversity within urban landscapes and improves the health and vigour of our urban forest.

7.5 ACT Urban Habitat and Connectivity Project

EPSDD are currently working on the ACT Urban Habitat and Connectivity Project. Creating and maintaining habitat connectivity through Canberra's urban space is an important part of conserving native plant and animal populations within the ACT. Careful planning decisions around future urban development and habitat restoration activities can help prevent the significant impacts of habitat loss and fragmentation on urban biodiversity and provide resilience for wildlife against the impacts of climate change.

The urban connectivity project aims to deliver an interactive platform to guide planning, development and restoration decision making, and in turn support enhanced habitat connectivity for urban wildlife. To inform the habitat connectivity needs in the ACT, expert opinion will be used for quantifying the connectivity needs of key species groups through a structure expert elicitation process known as the IDEA protocol. This information will feed into the development of a spatial planning tool that will broadly follow the "Linking Nature In The City" framework developed by the City of Melbourne to map the basic structural and functional habitat requirements, dispersal capacity and functional barriers for key species groups to enable prioritised planning for current and future wildlife connectivity corridors.

Alongside other ACT Government priority projects around Healthy Waterways, Urban Forests, Active Travel, and the use of Living Infrastructure to cool our city, this project aims to contribute to a prioritisation framework for the protection, conservation, and restoration of green spaces for biodiversity within our growing city. The implementation of this project longer term seeks to support the use of citizen science and the enthusiasm of our Canberra community to enhance the liveability of our city for both people and wildlife.

7.6 Distribution of urban wood by-product

Urban wood waste was extensively recycled in 2020-21 to provide approximately 3,000 m^2 of mulch for use by volunteer groups and community organisations and approximately 900 large logs were salvaged for use as coarse woody debris in nature reserves and in urban green space and as perching structures within a public wetland (see 6.1).

Both mulch and logs were used to support the creation of nature playspaces and salvaged logs were provided to be milled for school woodwork projects. Mulch was also extensively used by TCCS staff on unleased land across the city in garden beds, under trees and around new tree plantings.

The reuse of urban wood by-product will be further investigated in 2021-22. There is potential use of woodchip in the pilot Food Organics and garden Organics (FOGO) program and initial research undertaken to investigate the production of Biochar and sawn timber.

Appendix A Resolution of the Assembly – 31 March 2021

Speaker

Mr Chris Steel
Minister for Transport and City Services
Legislative Assembly for the ACT
CANBERRA ACT 2601

Dear Mr Steel

URBAN TREE CANOPY COVERAGE

At its meeting on Wednesday, 31 March 2021, the Assembly passed the following resolution:

"That this Assembly:

(1) notes that:

(a) the ACT Government's *ACT Climate Change Strategy 2019–25, Canberra Living Infrastructure Plan: Cooling the City*, and Urban Forest Strategy, recognise the increasingly critical role that living infrastructure plays in our city, with a key commitment being the "30% tree canopy cover (or equivalent) and 30% permeable surfaces in Canberra's urban footprint by 2045" (the targets);

(b) urban trees are recognised for their role in micro-climate regulation, including reducing the urban heat island effect, reducing air pollutants, increasing carbon sequestration, improving resilience in a changing climate, conserving and enhancing biodiversity and providing recreation and wellbeing benefits to residents;

(c) all three major parties of the ACT Legislative Assembly support an increase in the urban tree canopy of the ACT to at least 30 percent. To date, the differentials are delivery of the targets (timeframe), budget allocations and exact measures; and

(d) achievement of the targets will require coordinated, long-term and active participation from ACT residents and many different parts of government and tri-partisan support; and

(2) calls on the ACT Government to:

(a) present to the Assembly:

(i) by the end of 2021, detail on the estimated contribution actions within each objective of the strategy will make towards achieving the canopy cover target;

Legislative Assembly for the Australian Capital Territory
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(ii) by the end of 2021, detail on the estimated contribution different regions of Canberra will make towards achievement of the canopy cover target;

(iii) by the end of 2021, detail on suburbs identified for priority action to improve equity of canopy cover across Canberra;

(iv) annually, a progress update on all initiatives and their contribution towards the targets; and

(v) every five years, provide a report on the current tree canopy cover percentage, by suburb, for Canberra's urban footprint;

(b) actively support community-led contributions towards the targets; and

(c) ensure that the urban forest provides for habitat and resources for wildlife (flora and fauna) including threatened species and ecosystems, mature native trees, and culturally significant trees."

Yours sincerely

Mr Mark Parton
Acting Speaker
12 April 2021

Appendix B Progress against Strategy Actions

Immediate actions (within 2 years)

Objective	No.	Actions	Timeframe	Status Year 1 2021
Protect the urban forest	1.2.1	Review and update the TPA to ensure the threshold for protecting trees is appropriate	Immediate	• TPA review underway
	1.2.2	Review and update the TPA criteria for removal of protected trees to ensure it aligns with community values and expectations	Immediate	• TPA criteria under review
	1.2.3	Review and update the TPA and PULA to ensure appropriate compliance mechanisms exist to deter illegal tree removals or damage to trees on leased and unleased land, and respond appropriately when they occur	Immediate	• TPA review underway
	1.3.1	Consider developing a program to ensure the health of mature and remnant trees on unleased land	Immediate	• Community engagement to increase active care of trees adjacent to residences and businesses incl. factsheet, social media posts and City Services website • Trial of native wildflowers beneath remnant trees as an alternative weed management approach to regular herbicide applications • Urban open space sites identified for future tree health and biodiversity improvement trial (unfunded at this stage) • Loss of Mature Native Trees Threatening Process Draft Action Plan agreement between EPSDD and TCCS
	1.3.2	Review and update the PULA to require all developers to erect prescribed fencing to protect existing trees on public land from damage prior to demolition, excavation and/or construction on adjacent block/s	Immediate	• TPA review underway • These requirements will be strengthened during the update of the TCCS Reference Document 4: LMPPs (underway)

	1.4.1	Investigate and implement administrative and technological reforms to systems and processes for administration of the Tree Protection Act to ensure they are streamlined, transparent and efficient	Immediate	• TPA administrative systems and processes under review
Grow a resilient forest	2.1.1	With reference to the 2010 audit, obtain updated data on the current canopy cover of the public urban forest to inform a replacement program.	Immediate	• Analysis of LiDAR measurements to inform analysis of canopy coverage completed • Canopy cover percentages across suburbs used to identify priority suburbs for planting • Established a Technical Working group composed of specialists from EPSDD and TCCS to assess boundary options for the analysis of urban tree canopy cover
	2.1.2	Develop a sustainable program of end-of-life tree removals and replacements for removed trees and existing planting gaps to maintain the urban forest, including best-practice after-care for new plantings	Immediate	• Over 9,000 trees to be planted in vacant street, park and open space locations in 2021 • Urban tree planting target increased to 54,000 trees by 2024 • An additional 17,000 vacant street tree gaps identified across Canberra for planting from spring 2021
	2.2.1	Consider introducing a canopy contribution framework for trees on both public and private land that ensures that when trees must be removed and cannot be replaced on site, they are replaced elsewhere through a contribution based on the value of the tree at the time of assessment	Immediate	• TPA review underway
	2.2.2	Review PULA to consider a tree bond scheme for trees on public (unleased) land that discourages tree removal and damage through development	Immediate	• TPA review underway

	2.3.1	Promote and periodically update the preferred species planting guide to assist the community in understanding what trees to plant on leased land	Immediate	• MIS25 updated in 2021 and will continue to be reviewed • 'Tree Selector' online tool to help inform the community of appropriate tree species selection is under development • ACT pollination calendar under development in partnership with ACT for Bees
	2.3.2	Publish and regularly review a list of climate resilient trees	Immediate	• A Living Labs trial to assess the performance of new 'climate-ready' tree species in Canberra is underway. Information from the trial will inform the update of the preferred tree species list
Balance and diversify the urban forest	3.1.1	Direct initial prioritisation for new plantings to existing planting gaps and addressing the most vulnerable communities	Immediate/ Ongoing	• Tree planting is prioritised in vacant planting gaps and in areas that have been identified as being more vulnerable to urban heat • 1,259 trees planted in hot and vulnerable locations in 2021, accounting for >27% of street tree planting
Develop infrastructure to support the urban forest & liveability	5.2.4	Collaborate with EPSDD to amend planning regulations to ensure suitable protection of existing trees and the establishment of new trees when planning infrastructure in new suburbs and in urban densification areas	Immediate	• Collaboration with EPSDD regarding Draft Variation 369 (minimum tree planting requirements on leased land at development)
	5.2.5	Collaborate with EPSDD on the Planning review and TPA review to ensure consistent and appropriate decision making for protected trees	Immediate	• TPA review underway
Partner with the community	6.1.2	Develop and make available to volunteers a citizen science data collection program	Immediate	• A Citizen Science program to capture data on the condition of urban trees is under development • Small citizen science trials undertaken at Telopea Park, Curtin, Fetherston Gardens and Yarralumla

Short term actions (within 5 years)

Objective	No.	Actions	Timeframe	Status Year 1 2021
Protect the urban forest	1.3.3	Investigate incentives and programs to better provide for the protection, maintenance and care of registered and remnant trees on leased land	Short	• TPA review underway • Discussions underway with MBA regarding an annual Tree Protection industry award
	1.3.4	Program cultural site assessments with a view to developing cultural tree management plans	Short	• TCCS cultural site assessments are underway, with results informing the design and selection of tree planting in urban open space • Planning underway to develop a process to seek advice from Indigenous cultural representatives prior to planting in urban open space
Grow a resilient forest	2.1.3	Develop a sustainable planting program to increase canopy cover equitably across the urban footprint by establishing sufficient additional trees to meet the canopy cover target over the life of the Strategy	Short/ Ongoing	• As per 2.1.1, 2.1.2 and 3.1.1
Balance and diversify the urban forest	3.1.3	Progressively map suburbs at risk of losing canopy due to ageing trees to inform a planned removal and replanting program	Short/ Ongoing	• Urban Forest Condition report to inform UF renewal planned for 2022
Take an ecological approach and support biodiversity	4.1.1	Map remnant trees in the urban area	Short	• LiDAR capture and Urban Forest Condition report will assist as a starting point for field assessments to accurately map remnant trees
	4.3.1	Develop an urban wood reuse plan for trees removed from public land	Short	• To be commenced in 2022
Develop infrastructure to support the urban forest & liability	5.1.1	Investigate and promote use of permeable infrastructure (e.g. shared and bike paths, paving and car parks) in target areas	Short/ Ongoing	• Jamison Shopping Centre WSUD tree pit trial constructed in August 2020 • Ongoing repair and installation of flexible permeable tree surrounds is underway.

	5.2.2	Focus public tree plantings to support summer shading along active travel routes (Action 12 of the LIP)	Short	• Tree planting alongside active travel routes prioritised during planning of open space and roadside planting programs
	5.2.7	Review municipal design standards to include specifications on urban rain gardens and/or urban stormwater swales as planting locations on verges and other locations	Short	• The MIS suite will continue to be reviewed and updated periodically
Partner with the community	6.3.1	Develop community education material to convey the benefits of trees	Short	• Social, Economic and Environmental Values of Street Trees report commissioned and made publicly available • Brochure created on the benefits of street trees and how residents can help care for them • Development of short videos on the benefits of trees and how to care for them under development
	6.3.3	Consider ways to educate young people and how they can contribute to the urban forest	Short	• Tree planting events held with primary school classes in 2021 • Encourage schools and youth groups to hold Tree Week activities • Coordinate celebrations for National Tree Day, World Forestry Day, World Environment Day and Arbor Day • Investigate collaboration with Greening Australia for educational program

Medium term actions (within 10 years)

Objective	No.	Actions	Timeframe	Status Year 1 2021
Balance and diversity the urban forest	3.2.1	Consider use of spatial mapping and citizen science programs to help identify areas with low species diversity and inform future plantings	Medium	• As per 6.1.2

Take an ecological approach and support biodiversity	4.1.3	Collaborate with EPSDD to enhance and conserve biodiversity and eco-cultural values of urban areas (Nature Conservation Strategy – Strategy 4)	Medium	• Urban open space sites for future tree health and biodiversity improvement trial identified in collaboration with EPSDD (unfunded at this stage) • Loss of Mature Native Trees Threatening Process Draft Action Plan agreement between EPSDD and TCCS • Biodiversity mapping underway by EPSDD to inform TCCS planting programs
	4.2.1	Implement strategic planting to support wildlife and enhance movement and foraging opportunities across the city and wider landscape	Medium	• As per 4.1.3 • Replacement planting program of main and arterial road verges and connecting open space
	4.2.2	Collaborate with EPSDD to undertake fine scale planning for habitat connectivity (Nature Conservation Strategy - Action 1.2)	Medium	• As per 4.1.3
Develop infrastructure to support the urban forest & liability	5.2.6	Where appropriate, install and maintain rain gardens and swales for urban water run-off in tree and understorey planting areas in urban streetscape upgrades and new estate developments	Medium/ Ongoing	• Jamison Shopping Centre WSUD tree pit trial constructed in August 2020 • Infrastructure installed in upgrade and greenfields developments such as Anketell St, Tuggeranong and Whitlam. • Collaborated with EPSDD on the Whitlam Living Infrastructure pilot
Partner with the community	6.2.1	Investigate incentives for retention of trees on private land including through collaboration with planning authorities	Medium	• Collaboration with EPSDD regarding Draft Variation 369 (minimum tree planting requirements on leased land at development) • Ongoing investigation of options
	6.3.2	Build indigenous engagement in caring for the urban forest	Medium	• As per 1.3.4 • Investigating engagement opportunities • Ensuring all procurement opportunities shared with indigenous organisations

Long term (20 years) and ongoing actions

Objective	No.	Actions	Timeframe	Status Year 1 2021
Protect the urban forest	1.1.1	Maintain and promote the Tree Register (under the TPA)	Ongoing	• City Services website • Promotion pending review of TPA
Balance and diversity the urban forest	3.1.2	Consider undertaking regular LiDAR data capture and analysis to enable effective monitoring and evaluation of canopy coverage and permeability across the urban footprint	Ongoing	• LiDAR capture in 2020 to be repeated every 5 years
	3.3.1	Plan planting programs to achieve a best practice age profile of the urban forest by 2045	Ongoing	• Infill planting in ageing suburbs to offset future removal of ageing trees • Urban Forest Condition report to inform UF renewal planned for 2022
	3.3.2	Ensure yearly maintenance programs involve adequate removal and replacement of end-of-life trees to develop a balanced age distribution	Ongoing	• Expansion of maintenance team in 2020 • Further expansion of capacity to be sought in future budgets
Take an ecological approach and support biodiversity	4.1.2	Assess senescent and ageing native trees for retention as habitat in preference to being removed	Ongoing	• Trees marked for removal reviewed by second arborist prior to program • Open space trees retained as habitat if structurally sound
	4.1.4	Identify opportunities to protect young seedlings growing from mature remnant trees on unleased public land where it is appropriate	Ongoing	• Collaborating with EPSDD to identify sites • Mowers installed with GPS to alert to no mow zones
	4.3.2	Ensure by-product from maintenance of the urban forest is used to support tree health and biodiversity conservation including in habitat restoration programs and nature-based park features	Ongoing	• Wood by-product continues to be directed to habitat restoration projects, nature-based park features and mulch for reuse across the ACT
Develop infrastructure to support the urban forest and liveability	5.1.2	Continue to promote positive community behaviour in relation to managing and protecting nature strips and other public areas	Ongoing	• Brochure developed on the value of street trees and ways in which residents can help care for their street tree • Social media campaigns utilised periodically • Short videos under development

	5.2.1	Collaborate across ACT Government to increase tree numbers in priority areas (Action 11 of the LIP)	Ongoing	• Increased planting in priority areas is underway • Collaboration with EPSDD to plan for habitat connectivity & active travel and negotiate tree retention in development projects • Collaboration with ACT Education and ACT Property Group to build spatial tree asset layer • Collaboration with EPSDD on the Microclimate guide, Climate wise landscape guide, Climate wise planning report and Tree canopy cover equivalence tool • EPSDD report on Cooling benefits of living infrastructure.
	5.2.3	Where possible, seek to widen road verges in areas where densification is occurring and along key active travel routes to accommodate additional tree planting	Long	
Partner with the community	6.1.1	Expand and support community / volunteer programs to encompass a wider range of contributions to maintenance of the urban forest	Ongoing	• Rapid expansion of community volunteer programs is underway • Adopt a park funding continued until 2023-24 • Collaboration with EPSDD to deliver ACT Nature in the Cities grants program • Community groups assisted to develop programs to promote cultural awareness, restore and revegetate waterways, and deliver environmental outcomes for improved habitat.