

ACT AUDITOR–GENERAL'S **PERFORMANCE AUDIT REPORT**

Urban Tree Management

The ACT Audit Office acknowledges the Ngunnawal people as the traditional custodians of the ACT and recognises any other people or families with connection to the lands of the ACT and region.

The ACT Audit Office acknowledges and respects their continuing culture and the contribution they make to the life of this city and this region.

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The Speaker
ACT Legislative Assembly
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Dear Madam Speaker

I am pleased to forward to you a Performance Audit Report titled 'Urban Tree Management' for tabling in the Legislative Assembly pursuant to Subsection 17(5) of the *Auditor-General Act 1996*.

The audit has been conducted in accordance with the requirements of the *Auditor-General Act 1996* and relevant professional standards including *ASAE 3500 – Performance Engagements*.

Yours sincerely



Michael Harris
Auditor-General
23 February 2024

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SUMMARY

Urban trees provide a range of benefits to the community including increased comfort through shading and amenity, habitat for birds and other wildlife, improved health and wellbeing and increased property values.

The *Urban Forest Strategy 2021-2045* (the Strategy) sets out the ACT Government's vision for a resilient and sustainable urban forest. A key feature of the Strategy is an intention to increase canopy cover to 30 percent by 2045. A key activity of the Strategy to achieve this is an intention to plant over 459,000 trees on urban public land.

The audit assessed the effectiveness of TCCS' management of urban trees to support the ACT Government's goal of achieving 30 percent tree canopy cover by 2045.

Conclusions

PLANNING FOR URBAN TREE MANAGEMENT

In order to achieve 30 percent canopy cover by 2045 the *Urban Forest Strategy 2021-2045* identifies an intention to plant 'over 450,000 trees' on urban public land. TCCS considers the estimate of trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS otherwise estimated that this equates to around 20,000 trees that would need to be planted annually for the next 25 years. TCCS has identified that this will be difficult to achieve and will require a significant and long-term investment in additional staffing resources, equipment and infrastructure.

Notwithstanding the difficulties anticipated in achieving the targets, TCCS has significantly increased its planting program in response to the *Urban Forest Strategy 2021-2045* and identified an intention to plant 54,000 trees over a four-year planting program through to 2023-24. This was a significant increase on the previous program. The program does not, however, address the need identified by TCCS to plant around 20,000 trees annually.

TCCS has undertaken a range of activities to plan for the increase in tree plantings including undertaking an audit to identify potential planting locations and working with other agencies to identify potential planting locations. Notwithstanding these activities, there are significant challenges to the increased tree planting program including difficulties in securing:

- in-house and contractor resources; and
- an appropriate supply of tree stock.

Managing community expectations for the planting of trees is also a challenge for TCCS. Approximately 12.4 percent of all tree plantings since Spring 2021 (2,485 trees) have been the subject of a re-route process. Re-routes describe the process for when a tree cannot be planted due to accessibility issues or conflict with other services or other preventative planting issues arise

at the time of planting. Re-routes are mostly caused by members of the community opposing the planting of a tree. Significant time and effort is required by TCCS to manage and minimise the risk of re-routes.

TCCS' supporting policy framework for urban tree management activities is partly developed. Much of the procedural documentation to guide TCCS' tree planting activities is in draft. The *Tree Management Policy* and *Tree Planting Policy* are still in development and should be finalised to provide high-level guidance and consistency on the operation of urban tree management activities.

TREE PLANTING, MAINTENANCE AND MANAGEMENT ACTIVITIES

Between 2020-21 and 2022-23 TCCS planted 28,809 trees through its inhouse planting team, contractors or volunteer community groups. Planting targets for 2020-21 and 2021-22 were achieved (6,000 and 10,000 respectively) but the planting target of 18,000 trees in 2022-23 was not achieved.

In response to the challenges associated with achieving the tree planting program TCCS has reduced future planting targets: 5000 trees in 2024-25; 5000 trees in 2025-26 (reduced from a prior target of 10,000); and 10,000 trees in 2026-27. Without appropriate planning, or other mitigation strategies, to make up this shortfall in future years and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have an impact on the goal to plant 459,000 trees and achieve 30 percent canopy cover by 2045.

TCCS also anticipates that future tree planting activities will focus on the removal and replacement of mature trees and working with other directorates on projects aimed at identifying opportunities to increase canopy cover on other land.

MONITORING AND REPORTING

TCCS has established systems to manage and record data on the day-to-day management of urban tree operational activities, and its public reporting on progress on its tree planting and management activities is timely, informative and largely balanced and partly consistent. There are opportunities to improve on its monitoring and reporting of urban tree management activities through:

- strengthening data quality controls for the IT system that records data on operational activities through additional training and development of quick guides for staff on different system functions; and
- including data on tree survival rates and cumulative planting in suburbs vulnerable to heat to provide a full picture of long-term performance against the canopy coverage goal.

Key findings

PLANNING FOR URBAN TREE MANAGEMENT

Paragraph

In 2019, CSIRO was commissioned by EPSDD to conduct a cost-benefit analysis of different urban forest management scenarios, including the economic feasibility of expanding Canberra's tree canopy cover to 30 percent by 2045. This analysis informed the development of the *Urban Forest Strategy 2021-2045*. To achieve 30 percent canopy coverage by 2045, the CSIRO identified the ACT's urban forest would need to have a population of over 1 million trees on public land. The CSIRO report identified that between 2018 and 2045, 459,216 trees would need to be planted on public land (approximately 16,000 trees every year from 2018 to 2045) and that 206,936 trees would reach the end of their life and require removal. TCCS considers that there are a number of limitations in relation to the modelling for the planting target and that the estimate of 459,000 trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS also considers that the figures modelled by the CSIRO would be difficult to achieve and that implementing the anticipated number of plantings and removals would require a significant and long-term investment in additional staffing resources, equipment and infrastructure.

2.13

In response to the *Urban Forest Strategy 2021-2045* TCCS significantly increased its tree planting program. In a November 2020 brief to the Minister for City Services, TCCS advised that it had 'increased its planting rate to around 4,000 per year' but that 'a further large and rapid increase in the number of tree plantings is necessary to ensure the 2045 target can be reached'. The brief noted 'currently, around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement'.

2.24

The November 2020 brief identified 54,000 trees were to be planted over a four-year planting program: 6,000 trees in 2020-21; 10,000 trees in 2021-22; 18,000 trees in 2022-23; and 20,000 trees in 2023-24. The increased planting targets were a significant increase on TCCS' historic tree planting numbers. The goal of 20,000 trees to be planted in 2023-24 is around 5.5 times the number of trees that were planted in the three years between 2016-17 and 2018-19. Notwithstanding the advice around the tree planting needs and risks associated with delay to the program, a figure of 20,000 was only envisaged for the fourth year of the tree planting program (2023-24).

2.25

The selection of tree species for planting programs is guided by *Municipal Infrastructure Standard 25: Plant species for urban landscapes* (MIS 25). In 2022 and 2023 TCCS, in collaboration with EPSDD, undertook a review of the Municipal Infrastructure Standards (MIS) and the Municipal Infrastructure Technical Specifications (MITS). This included a 'Cooler Greener Infrastructure Review' of the MIS and MITS, which aimed to assist with achieving tree canopy and permeability targets. The resulting report made nine key findings including: a 5 to 10 percent increase in tree canopy cover in a new street can be achieved by resolving conflicts between streetlights and trees; and a 20 to 30 percent increase in canopy cover in a new street can be achieved by refining the soil volumes and tree species list. In late

2.43

September 2023 the Executive Steering Committee overseeing the MIS and MITS review agreed to commence implementation of the report and its recommendations.

In 2019, the Australian National University’s (ANU) Fenner School of Environment and Society was engaged by EPSDD to undertake research into urban forest tree species that are suitable for the ACT. MIS 25 was reviewed and in doing so the research sought to identify tree species that would be suitable into the future and maximise summer-time cooling effect of Canberra’s urban areas. TCCS advised that MIS 25 was not updated in response to the ANU’s review and that ‘predictions of species unsuitable for continued utilisation into future climates has not yet been fully considered’. TCCS is currently undertaking a ‘Living Labs’ trial in collaboration with the Western Sydney University. The trial aims to assess the performance of new ‘climate-ready’ tree species in Canberra. Information from the trial is expected to inform an update to the preferred tree species list. 2.44

As part of preparatory work for the significant increase in tree planting numbers, in July 2020 TCCS established a six-person team to undertake a rapid audit of existing planting gaps. The audit was undertaken from July 2020 to December 2021. The audit identified 13,156 planting locations. An additional audit took place from January 2022 to November 2023, which identified a further 2,400 potential planting locations. TCCS advised that the audits were a useful input to the development of the tree planting programs and collectively they identified approximately half of the sites for trees planted by TCCS between July 2020 and June 2023. 2.55

EPSDD provides advice to TCCS on potential planting locations and tree species, with a particular focus on the effects of urban trees on habitat and biodiversity. There is tension between the ACT Government’s biodiversity goals and canopy coverage goals. Planting locations can be limited by goals associated with maintaining and promoting biodiversity in urban areas. There is an opportunity for further cross-directorate collaboration and discussion to balance these competing priorities and work towards increasing planting opportunities and ultimately canopy cover in urban areas. 2.56

The Yarralumla Nursery grows and supplies plant material for ACT Government landscape development projects, including tree seedlings for TCCS’ tree planting programs. A draft Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for 2022 to 2027 is under development. A MOU was previously developed for the period 2009 to 2014, but this was never finalised and remained in draft. Not having a current MOU in place with Yarralumla Nursery presents a risk to the program with the potential for each party to not clearly understand their roles, responsibilities and what they need to deliver to support a successful partnership. 2.61

In late 2020, in order to plan for the anticipated increase in planting targets, the Urban Treescapes Unit and the Yarralumla Nursery developed a production plan for tree species for the planting programs for the 2021 to 2024 period. The plan provided a guide for the species available for the forward years planting, with specific numbers to be confirmed prior to each planting program. There were a number of challenges 2.66

for the Yarralumla Nursery in ramping up propagation and procurement of tree seedlings including: inadequate space on site to store trees; and not being able to maintain the health of tree stock when planting programs were delayed. As a result of these challenges, TCCS advised that it is seeking additional holding areas for trees and exploring opportunities for procurement from other nurseries.

TCCS undertakes various activities that are aimed at increasing community engagement with, and awareness of the value of, urban trees. These activities include: Canberra Tree Week, and various other pilot programs. For example, the Street Forestry Program was launched in 2021 with the aim of assessing the community's level of awareness of street trees and the best ways of involving residents before trees are planted. An assessment of the program found that 17.6 percent of residents refused proposed new plantings on verges. The main reasons for tree rejection were residents': preference to use the verge for parking; perceptions about the high level of maintenance required to care for trees; and concerns about the safety of large species and root systems. These results demonstrate some of the challenges associated with growing the urban forest and achieving the canopy cover goal. 2.76

TCCS seeks to achieve its canopy cover goal through biannual planting programs. Biannual planting is undertaken in Autumn and Spring. To guide the biannual planting programs, TCCS has developed a *Program Planning Procedure* and other supporting policies and procedures. Some of the policies and procedures are partially complete and remain in draft. The policy and procedural guidance prioritise planting in locations that have been identified as hot and vulnerable with low canopy coverage. The documented procedures also take into consideration restrictions on planting locations (including available space for trees to grow and the impact on utilities, nature reserves and fire prone areas), appropriateness of tree species and the procurement of tree seedlings. 2.83

Re-routes describe the process for when a tree cannot be planted due to accessibility issues, or conflict with other services, or other issues that arise at the time of planting. Re-routes are mostly caused by members of the community opposing the planting of a tree. There has been an increase in the number of planting re-routes since the Spring 2021 planting program. A total of 2,485 trees have been subject to re-routing since Spring 2021 from a total number of 20,117 trees planted during this period. This represents 12.4 percent of all trees planted. TCCS estimates that each tree subject to re-routing adds 1 to 2 hours of effort to the planting program. 2.90

Residents can reject a street tree planting on the verge abutting their residence. TCCS advised that many residents who reject plantings do so in order to retain illegal verge parking space. TCCS advised that if members of the community oppose the planting of a tree on the nature strip outside their property, TCCS will seek another planting location so as to minimise abusive behaviour towards planting staff and reduce the risk of the new tree being vandalised or illegally removed. TCCS has developed a strategy to reduce the potential number of re-routes in future planting programs through increased engagement with residents on the benefits of trees and the types of tree species planted. This is a time-consuming and costly process. 2.95

<p>TCCS has not developed policy guidance articulating how urban tree management (including urban tree planting) is expected to contribute to the achievement of the canopy cover goal. What is specifically missing is how the planting of trees on unleased land is to be managed and coordinated to achieve the canopy cover goal. This includes not just TCCS planting, but the coordination of tree plantings by other directorates within the ACT’s urban footprint. Two key policy documents that are intended to provide high-level guidance and consistency on the operation of urban tree management activities, the <i>Tree Management Policy</i> and the <i>Tree Planting Policy</i>, are currently in draft, notwithstanding they have been in development for some time.</p>	<p>2.110</p>
<p>TCCS has developed a range of standards, policies, procedures and guidelines or factsheets that are of relevance to its urban tree management responsibilities. A review of the documents, of which there were 40, suggests that 18 were fully developed (i.e. the document was complete and finalised/published), 18 were partially developed (i.e. the document was partially completed and/or in draft). The status of the other three could not be determined. A 2018 internal review similarly identified gaps in Urban Treescapes procedural and administrative guidance and recommended the ‘development of policy as a priority’. Recommendations associated with this review are yet to be implemented.</p>	<p>2.119</p>
<p>TREE PLANTING, MAINTENANCE AND MANAGEMENT ACTIVITIES</p>	<p>Paragraph</p>
<p>Tree planting for the biannual planting programs may be undertaken by TCCS’ in-house planting team, contractors or volunteer community groups. TCCS has not developed any policy or procedural guidance for the purpose of allocating tree planting responsibilities. From 2020 TCCS has identified an intention to increase its in-house tree planting capability. In doing so TCCS has identified an intention that the delivery of planting programs would likely be split with 50 percent of the planting undertaken by the in-house team and 50 percent undertaken by contractors. However, this is not formally documented, along with considerations for the allocation of particular jobs and areas.</p>	<p>3.8</p>
<p>The <i>Tree Watering Trucks and Other Related Services Panel</i> facilitates the watering of newly-planted trees by contractors up to 13 weeks after planting. By virtue of the <i>Tree Watering Trucks and Other Related Services Panel</i>, between July 2022 and April 2023, 18,788 trees were watered by contractors. Because of the increased planting program, the number of trees on the watering program is expected to increase significantly. In 2023-24, an anticipated 57,000 trees are expected to be on the watering program, as well as a yet unknown number of trees planted on unleased land that would be handed to TCCS for ongoing management.</p>	<p>3.18</p>
<p>TCCS achieved the planting targets for 2020-21 and 2021-22. 6,146 trees were planted in 2020-21 against a target of 6,000 and 10,013 trees were planted in 2021-22 against a target of 10,000. TCCS did not achieve the planting target for 2022-23. As at 30 June 2023, TCCS had planted 12,650 trees against the target of 18,000, a 70 percent achievement against the target.</p>	<p>3.22</p>

Since 2020-21 the TCCS in-house planting team has planted 8,015 trees. This represents 27.8 percent of the total trees planted over the three years. The number of trees planted by the in-house planting team has increased significantly from 1,390 in 2020-21 to 4,384 in 2022-23. TCCS sought to increase its in-house planting team because of the increase in tree-planting targets since 2020; and difficulties associated with engaging contractor services. As at September 2023 the team comprises 33 FTE. 3.28

Since 2020-21, contractors have planted 17,352 trees. This represents 60 percent of the total number of trees planted between 2020-21 and 2022-23. Delays in TCCS renewing the tree planting contract panel arrangements impeded progress in achieving the planting targets in 2022-23. TCCS' panel arrangements for the tree planting services lapsed in December 2020, and new panel arrangements were not established until nearly two years later in November 2022. This resulted in delays to achieving the planting program targets for 2022-23 and impacted on contractor availability. For the Spring 2022 program, contractors planted 4,673 trees, which was lower than the anticipated 6,100 trees. 3.49

Between 2020-21 and 2022-23, 3,442 trees were planted by volunteers through community engagement activities. This represents 12 percent of the total number of trees planted in the period. The number of community plantings is a low percentage of the overall planting numbers. However, community engagement through the support of volunteer groups is viewed by TCCS as essential in building community acceptance of tree plantings and awareness of canopy coverage goals. TCCS advised that there is limited capacity to support additional volunteer groups in tree planting and maintenance activities, due to availability of resources and the additional workload involved in assisting volunteer groups. 3.57

Tree plantings undertaken by other ACT Government agencies contribute to overall canopy cover and towards the goal of 459,000 trees to be planted on public urban land. Between 2017-18 and 2022-23, 23,058 trees have been planted on unleased land and handed over to TCCS for ongoing management. This represents 39 per cent of the total tree plantings managed by TCCS (through its in-house planting team, contractors or community volunteers) during this period. The tree plantings are primarily undertaken (or overseen) by the Suburban Land Agency. TCCS has also worked with the Education Directorate by providing canopy cover data for 98 primary and secondary schools and providing advice on how to increase canopy on school land. 3.68

TCCS' planting data by suburb from 2019 to 2023 shows that it has made progress towards the goal of increasing tree plantings in hot and vulnerable suburbs. While overall there was a greater number of tree plantings in suburbs with higher canopy cover, suburbs with lower canopy cover have had more trees planted per hectare of TCCS land between 2019 and 2023. TCCS reports on the number of tree plantings in hot and vulnerable and low canopy cover suburbs in its annual reports and reports to the Legislative Assembly. The reporting does not, however, include the cumulative tree plantings since the commencement of the expanded planting program in 2019-20. This information would provide insight into how the expanded planting program 3.84

is supporting the goal of the *Urban Forest Strategy 2021-2045* on the equitable distribution of the urban forest.

The *Urban Forest Strategy 2021-2045* notes there are challenges associated with urban planning design and the ability to increase canopy cover in some areas. TCCS and EPSDD have projects in place to increase canopy coverage in new developments, and alternative approaches to increase canopy coverage where there is insufficient space for new tree plantings. 3.85

TCCS has advised of the difficulty of finding suitable planting sites, which threatens its ability to effectively deliver the program. In response to this challenge TCCS anticipates that future plantings will focus on the removal and replacement of mature trees and working with other directorates to identify opportunities to increase canopy cover on other land. TCCS also advised that, rather than removing trees reaching end of life at the level calculated by CSIRO through its modelling for the *Urban Forest Strategy 2021-2045*, the focus should be on extending the life of these trees to ensure they continue to contribute to the ACT’s canopy cover. 3.92

In response to challenges associated with achieving the tree planting program TCCS has identified an intention to reduce future planting targets. The following targets have been proposed: 5000 trees in 2024-25; 5000 trees in 2025-26 (reduced from a prior target on 10,000); and 10,000 trees in 2026-27. TCCS had formerly advised the Minister in November 2020 that ‘around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement’. The proposed targets would mean a shortfall of 40,000 trees between 2024-25 and 2026-27. Without appropriate planning, or other mitigation strategies, to make up this shortfall in future years and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have an impact on the goal to plant 459,000 trees and achieve 30 percent canopy cover by 2045. 3.99

TCCS’ operational maintenance activities for mature trees play an important role in achieving the 30 per cent canopy cover target. As opportunities for locations for new plantings are filled, the removal and replacement of mature trees will play an increasing role in building the urban tree canopy. However, TCCS has not yet developed or documented a ‘strategic tree replacement program’ or a strategic approach to replacing ageing trees. TCCS has, however, identified an intention to: engage environmental consultants to undertake a condition report of the ACT’s urban forest and progressively map suburbs at risk of losing canopy due to ageing trees; and employ a Senior Arborist to undertake inspections of mature trees and develop a timeline for renewal. These activities should be undertaken as a matter of priority. 3.112

MONITORING AND REPORTING Paragraph

TCCS relies on two management information systems for the day-to-day management of urban tree operational activities: ArcGIS Online for proactive planting, watering and removal activities; and Salesforce for reactive requests from the public on tree maintenance activities. Data is recorded in the systems at several 4.17

points during the urban tree management process including at the start of the activity, during key milestones and once the activity is completed. Data is used to monitor and analyse performance and inform how urban tree activities are managed.

The quality of data in TCCS' management information systems for the management of urban trees continues to remain a challenge. It may be impacted by in-house staff or contractors: not entering the correct data; or failing to update data when undertaking tree related activities. TCCS has in place a number of data quality controls that seek to ensure that the data recorded is complete, accurate and timely. TCCS has initiated a project to review the system data structure for ArcGIS Online, with a view to improving data capture and program reporting. However, there may also be opportunity to strengthen controls for Salesforce through additional training and development of quick guides for staff on different system functions (as TCCS has done for ArcGIS Online).

4.27

TCCS' progress on its tree planting and management activities is publicly reported through an Accountability Indicator in its annual report and in a report to the Legislative Assembly on progress of initiatives in the *Urban Forest Strategy 2021-2045* and their contribution to the canopy cover target. While TCCS' external reporting on urban trees is largely informative, balanced, timely and consistent; there could be improvements in clearly defining reporting criteria. TCCS' public reporting on its tree planting and management activities does not include information on cumulative plantings in hot and vulnerable suburbs since planting was prioritised in those areas in 2019-20, nor does it include data on survival rates for trees at appropriate periodic intervals. This information would provide greater insight on the long-term effectiveness of the ACT Government's planting program in meeting canopy coverage goals.

4.50

Recommendations

RECOMMENDATION 1 REVIEWING THE PREFERRED TREE SPECIES LIST

TCCS should:

- a) finalise the 'Living Labs' trial, which seeks to assess the performance of new 'climate-ready' tree species in Canberra; and
- b) update Municipal Infrastructure Standard 25: Plant species for urban landscapes based on the results of the trial.

RECOMMENDATION 2 CROSS-DIRECTORATE COLLABORATION ON BIODIVERSITY AND CANOPY COVER GOALS

TCCS and EPSDD should work collaboratively to review the Territory's biodiversity goals and canopy cover goals with a view to identifying opportunities to manage competing priorities and reduce limitations on locations for urban tree plantings.

RECOMMENDATION 3 MOU WITH YARRALUMLA NURSERY

TCCS should finalise the Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for the production and delivery of tree seedlings for the planting programs. The MOU should clearly document expectations for the production and supply of seedlings for future planting programs.

RECOMMENDATION 4 TREE MANAGEMENT AND PLANTING POLICIES

TCCS should:

- a) finalise the Tree Management Policy and Tree Planting Policy; and in doing so
- b) articulate how its urban tree management activities (including its urban tree planting activities) will contribute to the achievement of the 30 percent canopy cover goal.

RECOMMENDATION 5 POLICY AND PROCEDURAL GUIDANCE

TCCS should review and finalise its policy and procedural guidance for urban tree management.

RECOMMENDATION 6 ALLOCATION OF TREE PLANTING RESPONSIBILITIES

As part of the implementation of Recommendations 3 and 4, TCCS should develop guidance for the allocation of tree planting responsibilities between the in-house planting team, contractors and volunteers. The guidance should document the factors to be considered when allocating tree planting sites.

RECOMMENDATION 7 CONTRACT MANAGEMENT PLANS

TCCS should develop and finalise contract management plans for its Tree Watering Trucks and Other Related Services Panel and Urban Seasonal Tree Planting Services Panel.

RECOMMENDATION 8 REPORTING OF TREE PLANTINGS IN LOW CANOPY SUBURBS

TCCS should improve its public reporting of achievements against the *Urban Forest Strategy 2021-2045* by reporting on cumulative tree plantings in hot or vulnerable and low canopy coverage suburbs since the commencement of the expanded planting program in 2019-20.

RECOMMENDATION 9 STRATEGIC TREE REPLACEMENT PROGRAM

TCCS should develop and implement a strategic tree replacement program that focuses on:

- a) identifying mature trees at risk; and
- b) planning for the end-of-life removal and replacement of those trees.

RECOMMENDATION 10 DATA QUALITY CONTROLS

TCCS should strengthen data quality controls for the use of Salesforce for urban tree activities by:

- a) providing additional training to staff and contractors on its use; and

- b) developing quick guides on different system functions.

RECOMMENDATION 11 PUBLIC REPORTING OF ACHIEVEMENTS

TCCS should improve its public reporting on tree planting numbers and achievement against the canopy cover target by including data on tree survival rates and cumulative planting numbers in suburbs with low canopy coverage that are vulnerable to urban heat.

Agencies' responses

In accordance with subsection 18(2) of the *Auditor-General Act 1996*, the Transport Canberra and City Services Directorate, were provided with:

- a draft proposed report for comment. All comments were considered and required changes were reflected in the final proposed report; and
- a final proposed report for further comment. All comments were considered and required changes were reflected in the final report.

In accordance with subsection 18(2) of the *Auditor-General Act 1996*, the Environment, Planning and Sustainable Development Directorate, Education Directorate, City Renewal Authority and the Suburban Land Agency, were provided with:

- extracts of the draft proposed report for comment. All comments were considered and required changes were reflected in the final proposed report; and
- extracts of the final proposed report for further comment. All comments were considered and required changes were reflected in the final report.

As part of the final proposed report process, agencies were invited to provide comments for inclusion in the final report in the Summary chapter. No comments were provided for inclusion in this Summary chapter.

1 INTRODUCTION

Urban trees

- 1.1 Urban trees are defined as trees located in an urban setting. This includes trees on public and private land.
- 1.2 The Transport Canberra and City Services Directorate's (TCCS) April 2020 publication on the *Social, Economic and Environmental Values of Street Trees in the Urban Environment* identified the many benefits of urban trees including:
- ... increased comfort for residents through shading and amenity values, habitat for birds and other wildlife, improved health and wellbeing for local residents, and increased property values. Trees achieve these benefits through ameliorating climate and environmental extremes (e.g. heat island effects, noise pollution, wind, airborne pollution); providing environmental benefits (e.g. carbon storage and sequestration, habitat and ecosystem restoration) and being pleasant to live near (providing benefits for mental health and wellbeing).¹

Urban Forest Strategy 2021-2045

- 1.3 The *Urban Forest Strategy 2021-2045* (the Strategy) sets out the ACT Government's vision for a resilient and sustainable urban forest. The Strategy describes the urban forest as:
- ... all the trees and other vegetation, and the soil and water that support them, within the urban landscape.²
- 1.4 The Strategy sets out six objectives for the management of the ACT's urban forest:
- Objective 1 – protect the urban forest;
 - Objective 2 – grow a resilient forest;
 - Objective 3 – balance and diversify the urban forest;
 - Objective 4 – take an ecological approach and support diversity;
 - Objective 5 – develop infrastructure to support the urban forest and liveability; and
 - Objective 6 – partner with the community to grow and maintain the urban forest.
- 1.5 Objective 2, relating to growing a resilient forest, was the focus of this audit.

¹ TCCS, *Social, Economic and Environmental Values of Street Trees in the Urban Environment*, April 2020, p. 3.

² ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 9.

Growing a resilient forest

1.6 A key feature of the Strategy is an intention to increase canopy cover to 30 percent by 2045:

Current tree canopy cover is estimated to be around 19%. A significant proportion of the urban forest is ageing and will require renewal in the life of this Strategy. The ACT Government has set a clear goal of 30% canopy cover by 2045. To do this we need to not only protect the urban forest, but also invest in increasing overall canopy cover. This will require contributions through public funding but must also consider ways to leverage private and business contributions in a sustainable way that recognises the broad range of public and private benefits that accrue from a healthy and diverse urban forest.³

1.7 In relation to increasing canopy cover, the Strategy states:

Grow(ing) a resilient forest recognises the need to grow our tree canopy cover towards 30% while also ensuring that our urban forest is resilient. To grow the urban forest, we must invest in sustainable end-of-life removal and replacement programs as well as investing in new plantings across our urban areas.⁴

1.8 The Strategy identifies a series of activities to be undertaken for the purpose of growing a resilient forest. These activities, and timeframes for their implementation, are shown in Table 1-1.

³ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 36.

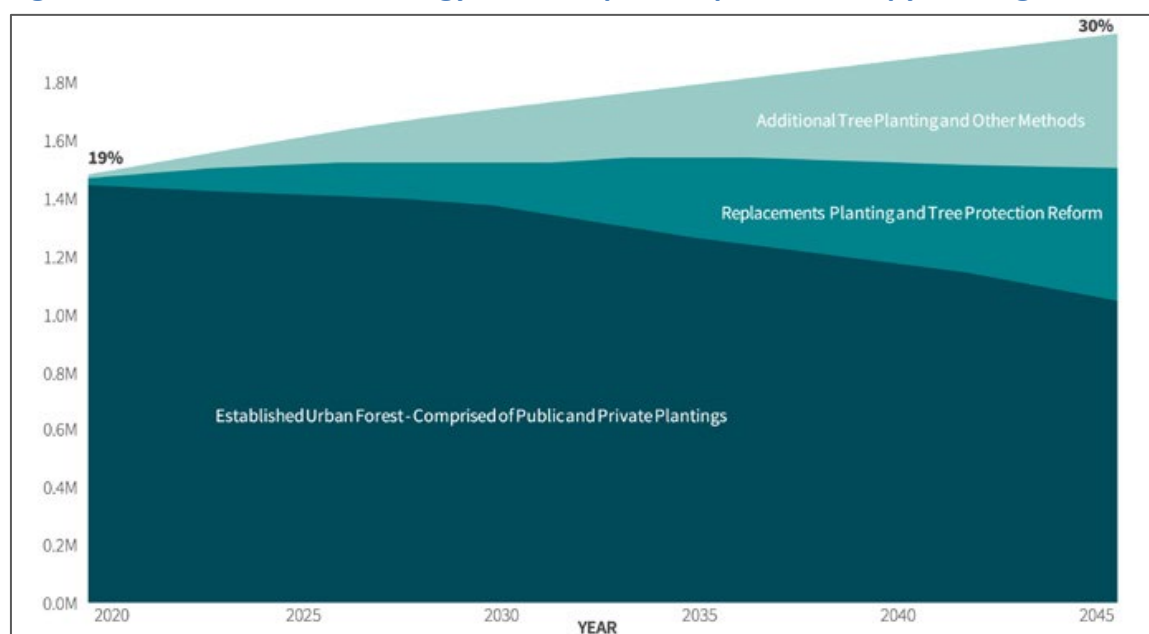
⁴ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 6. The 30 percent canopy coverage by 2045 goal is also a commitment in other ACT Government strategies and plans including: the *ACT Climate Change Strategy 2019 – 2025* and the *Sustainability Strategy 2021-2025* and the *Living Infrastructure Plan*.

Table 1-1 *Urban Forest Strategy 2021-2045 actions relating to growing a resilient forest*

No.	Action	Status
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
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
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
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
2.2.2	Review PULA [<i>Public Unleased Land Act 2013</i>] to consider a tree bond scheme for trees on public (unleased) land that discourages tree removal and damage through development	Immediate
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
2.3.2	Publish and regularly review a list of climate resilient trees	Immediate

Source: *Urban Forest Strategy 2021-2045*.

1.9 The Strategy provides a high-level diagram of how canopy cover was expected to increase to 30 percent by 2045. This diagram is shown as Figure 1-1.

Figure 1-1 *Urban Forest Strategy – roadmap for 30 percent canopy coverage*

Source: *Urban Forest Strategy 2021-2045*.

1.10 Figure 1-1 shows that there is expected to be an overall decline in the current ‘established urban forest’ and that an increase in canopy cover is predicated on achieving a mix of:

- ‘additional tree plantings and other methods’; and
- ‘replacements planting and tree protection reform’.

Canopy cover

1.11 Canopy cover is the land area covered by tree crowns (branches, leaves and reproductive structures extending from the trunk or main stems).

1.12 Canopy cover is measured with reference to Canberra’s urban footprint. Canberra’s urban footprint is defined as the ‘geographic extent of the existing urban area’. It includes public and private land and will necessarily get bigger as the city continues to grow and expand. A 2020 report prepared by CSIRO (*Spatially explicit assessment of potential definitions of Canberra’s urban footprint for tree canopy cover measurement*, June 2020) provided considerations around how to define the urban footprint as part of assessing tree canopy cover. The report identified that tree canopy cover was to be measured on Canberra’s urban footprint excluding the following areas:

- Commonwealth land including land controlled by the National Capital Authority (NCA), Department of Defence and Canberra Airport;
- nature reserves and conservation areas; and
- major water bodies.

1.13 Trees located on public and private land are considered trees for the purpose of the canopy cover target.

1.14 The Strategy refers to a canopy cover figure of 19 percent as at 2019. This is based on mapping of the canopy cover for the ACT’s urban footprint that was undertaken in 2015. This figure was subsequently updated through further mapping of canopy cover, and a figure of 22.5 percent was identified for 2020.

Trees on urban public land

1.15 In the ACT there are over 820,000 trees on urban public land. This includes trees on suburban streets, at local shopping centres, along major roads and medians and in parks and open spaces.

1.16 A key activity of the Strategy is an intention to plant over 459,000 trees on urban public land. The Strategy states:

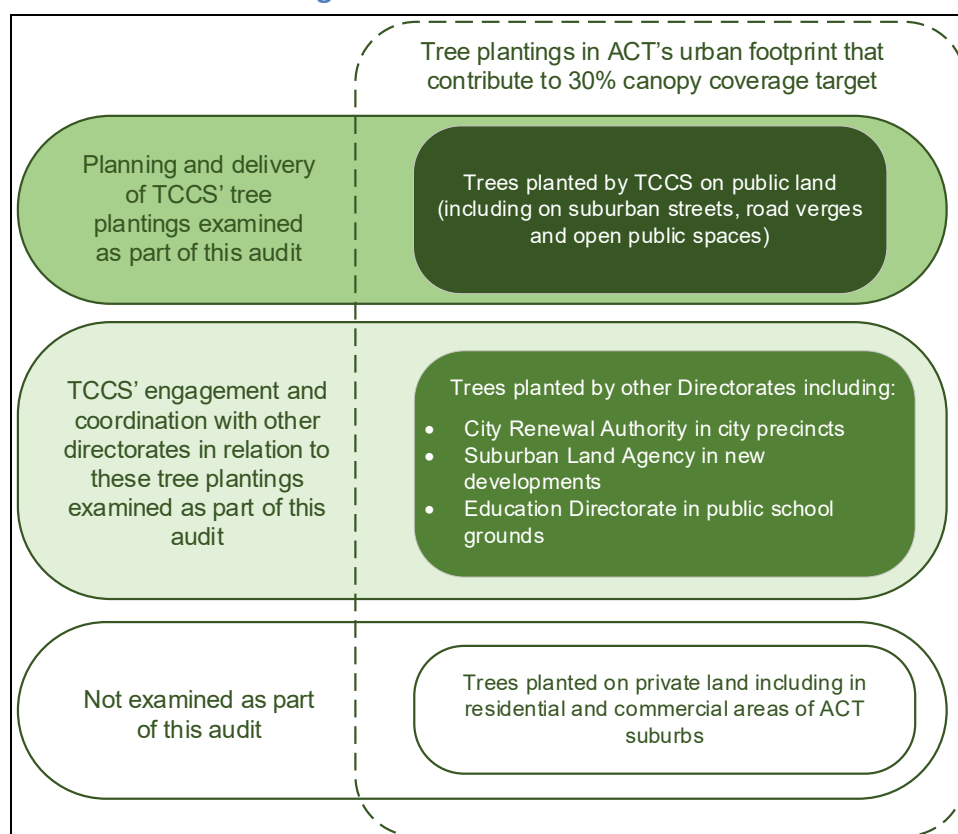
We know that to achieve our target of 30% canopy cover across the urban footprint we will need to plant over 450,000 trees on public land over the next 25 years.⁵

⁵ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 1.

TCCS tree management activities

- 1.17 City Services, within TCCS, is responsible for essential services and municipal infrastructure in the ACT. A key responsibility for TCCS is:
- managing trees on Canberra’s urban public land; and
 - protecting trees on leased land.
- 1.18 The audit focused on TCCS’ tree management activities. This includes its activities to:
- plant and manage trees on TCCS-managed land; and
 - engage with other ACT Government directorates and agencies to support tree planting and management activities on their land.
- 1.19 Figure 1-2 shows tree plantings in the ACT’s urban footprint that contribute to the canopy cover target and the elements of TCCS’ tree management activities that were considered as part of this audit.

Figure 1-2 Tree plantings that contribute to 30 percent canopy cover target and TCCS tree management activities



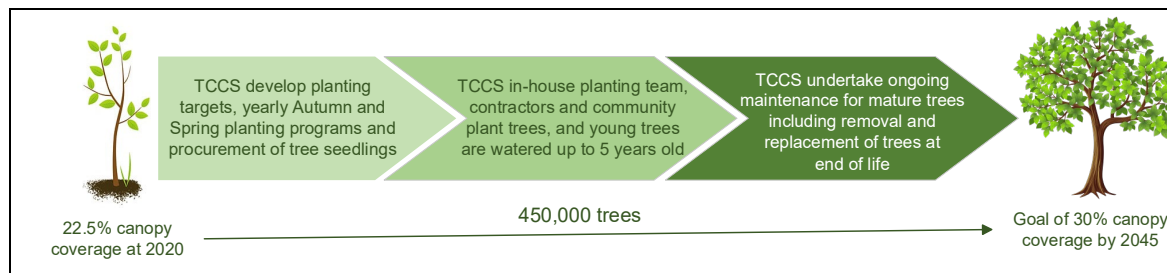
Source: ACT Audit Office based on TCCS documentation.

TCCS-managed land

- 1.20 TCCS’ activities to manage urban trees is important to increasing canopy cover from 22.5 percent (as at 2020) to 30 percent by 2045.

- 1.21 TCCS-managed land is the land on which public urban trees can be planted. It includes urban open spaces and road reserves. The majority of TCCS-managed land is pedestrian parkland (39 percent) or road verges (32 percent). Appendix B shows a map of urban public trees and urban open spaces in the ACT.
- 1.22 Figure 1-3 shows the role of TCCS' urban tree management activities for the purpose of achieving the canopy cover goal.

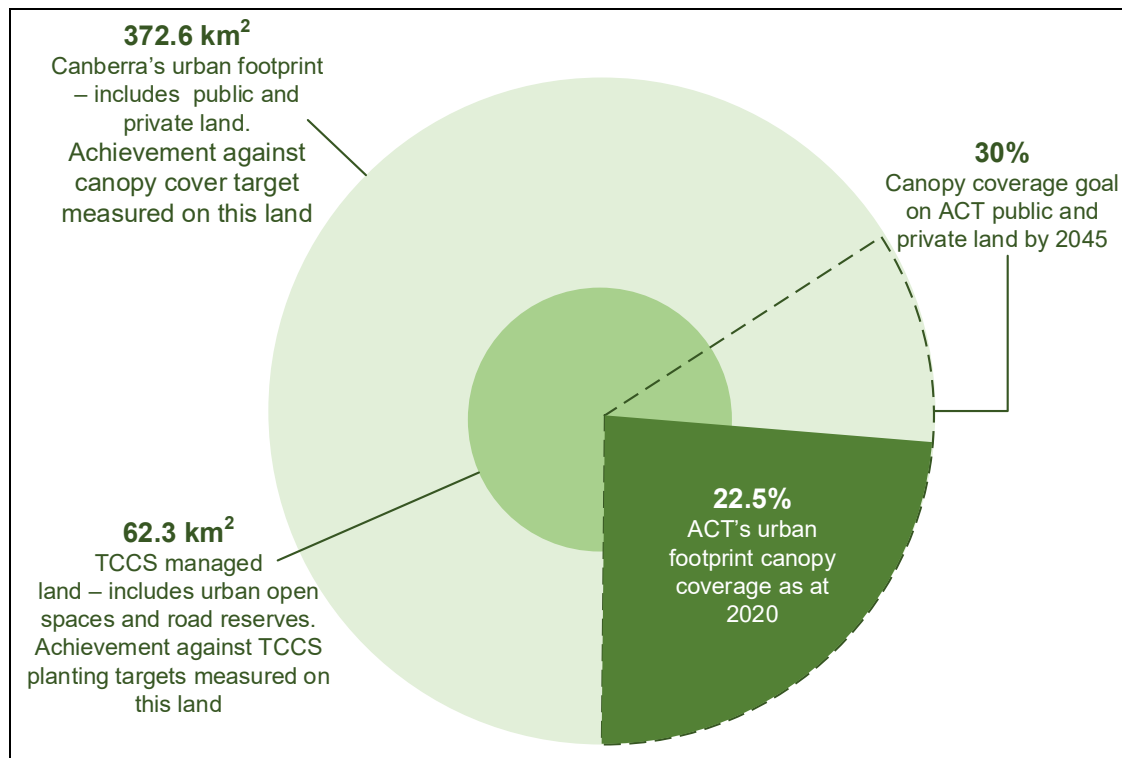
Figure 1-3 TCCS' urban tree management activities and the canopy cover goal



Source: ACT Audit Office based on TCCS documentation.

- 1.23 Figure 1-4 is a simplified representation of the land on which canopy cover is measured. It shows the proportion of TCCS-managed land within the broader urban footprint and the intended increase to 30 percent canopy cover. It is noted that current and future achievements against the canopy cover goal will not be proportional across the types of land in the ACT. By way of example, the 2019 ACT State of the Environment report noted that while overall canopy cover for the ACT was 19 percent, canopy coverage was 18.4 percent for residential land and 22.4 percent for TCCS-managed land.

Figure 1-4 TCCS-managed land and the Canberra urban footprint



Source: ACT Audit Office based on TCCS data.

Monitoring canopy cover

- 1.24 The monitoring of canopy cover is achieved through a Geographic Information System (GIS) analysis of Light Detection and Ranging (LiDAR) imagery. LiDAR is a surveying method that involves a plane taking measurements of the surface of the ground by laser and measuring the reflected light with a sensor. Differences in laser return times and wavelengths are then used to make digital 3D representations of the target surface and map urban tree coverage.
- 1.25 ACT suburbs' urban tree coverage was mapped in 2015 and 2020. All trees above three metres, on both public and leased land, were recognised as part of this mapping.
- 1.26 TCCS reported that canopy cover increased from 19 percent in 2015 to 22.5 percent in 2020. While overall canopy cover in 2020 was 22.5 percent, canopy cover varied from 8 percent to 38 percent across districts.
- 1.27 The *2022 Report to the Legislative Assembly on Urban Tree Canopy Coverage* notes that the accuracy of the 2015 LiDAR data was compromised by:
- a low LiDAR point density per metre;²
 - a misclassification of non-vegetative structures; and
 - the time of year the 2015 measurements were taken. The survey was conducted in late May when many deciduous trees had begun to lose leaves.

- 1.28 As a result, the 2015 dataset is less reliable than the 2020 dataset. In 2020, TCCS used in-house methodologies developed by geographic information systems (GIS) experts in TCCS, along with the input of specialists from EPSDD and CSIRO, to determine the tree canopy cover on public land. The in-house methodologies corrected identification of objects misclassified as trees in the 2015 LiDAR data (for example, cranes, utilities and powerlines).
- 1.29 The next LiDAR measurement is scheduled to take place in summer or early autumn of 2024-25 and every subsequent five years.

Distribution of the urban forest

- 1.30 The *Urban Forest Strategy 2021-2045* also recognises the challenges associated with the 'urban heat island effect' and the particular vulnerability to heat of some Canberra suburbs. The vulnerability of suburbs was determined by assessing data from a 2017 CSIRO land surface temperature study and combining this data with a vulnerability index based on socio-economic and age data.
- 1.31 An objective of the Strategy is to balance the urban forest and have as equitable distribution as possible of canopy cover across the ACT's suburbs. In relation to Objective 3 (balance and diversify the urban forest) the Strategy states:

The urban forest provides many benefits to the community and residents, but these benefits are not currently enjoyed equally by everyone in Canberra. An objective of this Strategy is to balance the urban forest and have as equitable a distribution as possible of canopy cover across our suburbs. Canberra suburbs are diverse and have significantly variable verge and block sizes.

This means that it will not be possible to achieve an ideal equal distribution of the urban forest – some suburbs can comfortably accommodate 40% canopy cover while others are not likely to ever reach beyond 20%.⁶

- 1.32 The Strategy states that balancing the canopy means:

... initially prioritising new planting efforts in areas that either have the lowest current canopy cover, highest impact of the heat island effect or are otherwise socially vulnerable. In practice, this means focusing on existing planting gaps where trees have previously been removed or are not present, particularly in locations where social vulnerability is high. Once this is achieved, the focus can turn to augmenting canopy cover in other locations and renewal of areas where canopy trees have reached the end of their useful life and need to be replaced in a staged approach to avoid loss of landscape character.⁷

⁶ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 40.

⁷ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 27.

1.33 The Strategy also notes that it will not be possible to achieve equitable distribution across all suburbs due to the different ways suburbs were designed. Some suburbs can comfortably accommodate 40 percent canopy cover while newer suburbs are unlikely to surpass 20 percent canopy cover through to 2045⁸:

In the case of Canberra, it will not be possible for complete equitable distribution across all suburbs due to the different ways suburbs were designed. Some suburbs, like Isaacs, are able to comfortably accommodate 40% canopy cover and should continue to maintain this. However, some newer suburbs, like Throsby, are unlikely to ever surpass 20% canopy cover.⁹

1.34 Notwithstanding these challenges the Strategy states:

For this Strategy, equitable distribution of the urban forest means ensuring planting efforts are prioritised in the areas where canopy cover is lowest and where residents are most vulnerable.¹⁰

Roles and responsibilities for urban tree management

Urban Treescapes unit

1.35 The Urban Treescapes unit in TCCS is responsible for:

- managing trees on public land; and
- protecting trees on private land in the ACT.

1.36 The Urban Treescapes unit has primary responsibility for the management of trees on public land including planting, inspection, pruning and replacement or removal. In addition to an in-house planting team, the Urban Treescapes unit engages and manages contractors to undertake tree planting and maintenance.

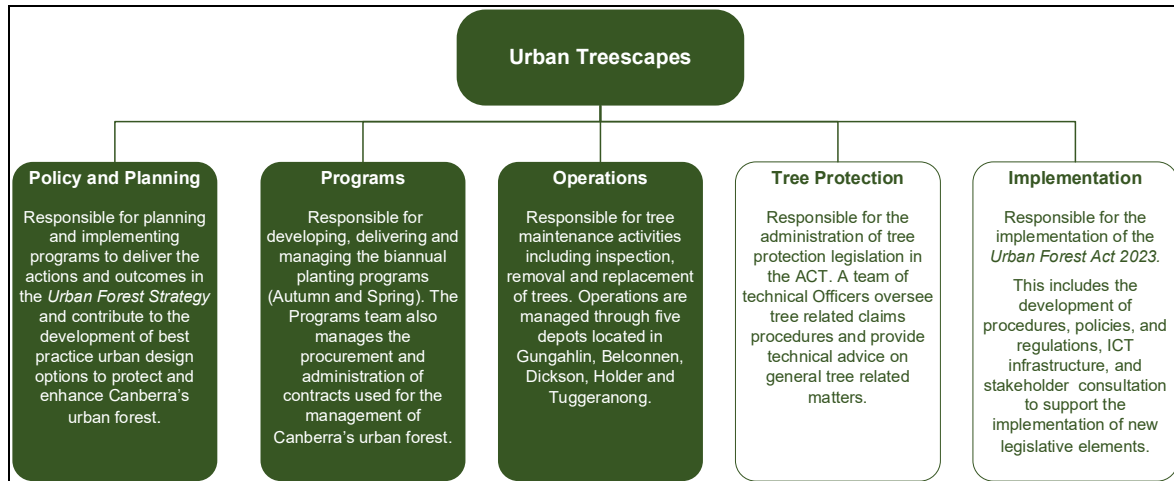
1.37 Figure 1-5 shows the Urban Treescapes unit and its various sub-units and their responsibilities. Sub-units specifically considered for this audit are highlighted in green.

⁸ In response to the draft proposed report the Suburban Land Agency advised that all suburbs currently being designed by the agency – and those that will be designed in the future - will be designed to achieve 30 percent canopy cover in the public realm of the development.

⁹ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 27.

¹⁰ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 27.

Figure 1-5 Urban Treescapes unit roles and responsibilities



Source: ACT Audit Office, based on TCCS documentation.

1.38 As at July 2023 the Urban Treescapes unit had 117 staff positions. This was an increase from 83 positions in 2021. The primary increase was in the Programs team; 32 new positions were created in 2023 to assist with meeting the planting targets.

Budget and expenditure

1.39 For 2023-24, the Urban Treescapes unit has a budget of \$16.321 million. Table 1-2 shows the budget and expenditure for the Urban Treescapes unit for 2021-22 and 2022-23.

Table 1-2 Urban Treescapes unit budget and expenditure (2021-22 and 2022-23)

Financial year	Total Budget (\$ million)	Total Expenditure (\$ million)
2021-22	14.673	14.159
2022-23	16.207	16.234

Source: ACT Audit Office, based on TCCS data.

Other stakeholders

1.40 There are a number of other stakeholders in the ACT Government, Federal Government and ACT community that are involved, or have an interest, in the management of urban trees. These are summarised in Table 1-3.

Table 1-3 Stakeholders involved in the management of urban trees

Stakeholder	Involvement or interest in the management of urban trees
Yarralumla Nursery (TCCS)	Urban Treescapes procures the tree seedlings for biannual planting programs through the Yarralumla Nursery. The Yarralumla Nursery is consulted on tree seedling availability for different tree species. A lead time of up to two years is required to ensure tree stock can be procured and propagated prior to planting, especially for exotic species which make up around half of the ACT's urban forest.

Stakeholder	Involvement or interest in the management of urban trees
Climate Change and Energy Division in the Environment, Planning and Sustainable Development Directorate (EPSDD)	<p>The Climate Change and Energy Division has policy responsibility for <i>Canberra's Living Infrastructure Plan: Cooling the City</i> and the 30 percent tree canopy cover target. It engages with TCCS on policy aspects of urban tree management, including the review of the design standards framework for open spaces.</p> <p>The Climate Change and Energy Division expects to fund the capture of the 2024-25 LiDAR dataset and subsequent derived datasets such as canopy cover and permeability. The 2024-25 LiDAR and derived products procurement will be led by the Office of Surveyor-General and Land Information in collaboration with several business areas in both EPSDD and TCCS, including Urban Treescapes.</p>
Environment, Heritage and Water Division (EPSDD)	<p>The Environment, Heritage and Water Division in EPSDD provides advice to help TCCS deliver components of the Urban Forestry Strategy which are relevant to ecological and biodiversity outcomes.</p> <p>Further, ACT Natural Resource Management (NRM) within the Environment, Heritage and Water Division, engages with TCCS to facilitate community tree planting events on urban open space through a variety of programs such as the ACT Environmental Grants program and Connecting Nature, Connecting People program.</p>
Office of Conservator of Flora and Fauna (EPSDD)	<p>The Office of Conservator of Flora and Fauna has an interest in urban tree management due to the potential benefits of urban trees to the ACT's environment and biodiversity goals. The Office of the Conservator of Flora and Fauna provides advice to TCCS on planting locations and tree species.</p>
ACT Heritage (EPSDD)	<p>TCCS engages with ACT Heritage for heritage listed trees or urban trees in heritage precincts. Heritage trees include those with Aboriginal cultural value or mature trees in garden city heritage precincts. These trees are protected under the <i>Urban Forest Act 2023</i>.</p> <p>ACT Heritage makes decisions to register heritage trees on the ACT Heritage Register and provides heritage advice and approvals for conservation and development works under the <i>Heritage Act 2004</i>.</p>
City Renewal Authority (CRA)	<p>TCCS engages with the CRA in relation to planting and maintenance of urban trees in city precincts. The city precincts include: Civic (North East, City Hill, South East, Acton Waterfront, and North West), Braddon, Haig Park, MacArthur Urban Node, Dickson and the Northbourne Corridor.</p> <p>CRA engages with TCCS regarding public realm upgrades within the City Renewal Precinct. The Design Review process includes TCCS consultation and approval of designs. This process helps to identify opportunities and challenges for new tree planting and management on the site and ensures optimal urban design outcomes for the public realm.</p> <p>The CRA's <i>Sustainability Strategy 2021-2025</i> aligns with goals in the <i>Urban Forest Strategy 2021-2045</i> and <i>Canberra's Living Infrastructure Plan: Cooling the City</i> to work towards a 30 percent canopy cover target.</p>

Stakeholder	Involvement or interest in the management of urban trees
Suburban Land Agency (SLA)	The SLA undertakes planning and construction of multiple developments in the ACT including tree planting in new developments. Assets are handed back to TCCS in the form of living infrastructure (trees and other landscaping). In its <i>Sustainability Strategy 2021-2025</i> , the SLA sets out several priorities related to the retention of remnant trees in development areas, intentions to increase planting and other green infrastructure through design and development, and to protect and enhance parks and green spaces.
National Capital Authority (NCA)	TCCS engages with the NCA for tree planting or maintenance activities on NCA designated land, which requires formal approvals.
Education Directorate	TCCS engages with the Education Directorate through the provision of advice on how to increase canopy cover on Education Directorate land and gifts trees to the Education Directorate as part of the Sustainable Schools Program.
Utility companies (ActewAGL, Evoenergy and ICON Water)	TCCS engages with utility companies on the impact of planting and maintenance of urban trees in relation to electric, gas or water utilities.
Volunteers and the community	TCCS engages with volunteers and the community on urban tree planting and maintenance activities, including through the Urban Parks and Places Volunteering Program.

Source: ACT Audit Office, based on TCCS documentation.

Stakeholder agencies

1.41 Table 1-4 shows the stakeholder agencies for urban tree management in the ACT, and their area of interest or involvement in urban trees.

Table 1-4 Stakeholder agencies for urban tree management in the ACT

Stakeholder	Area of interest or involvement in urban trees									
	Strategies and Plans	Input into planting locations	Input into tree species	Tree planting	Trees in city precincts	Heritage trees and precincts	Trees in new developments	Locations of trees near utilities	Trees on public school grounds	Trees on NCA designated land
Environment, Planning and Sustainable Development Directorate	✓	✓	✓		✓		✓		✓	
ACT Heritage		✓				✓				
City Renewal Authority	✓	✓	✓	✓	✓	✓	✓	✓		✓
Suburban Land Agency	✓	✓	✓	✓			✓			
National Capital Authority				✓						✓

Stakeholder	Area of interest or involvement in urban trees									
	Strategies and Plans	Input into planting locations	Input into tree species	Tree planting	Trees in city precincts	Heritage trees and precincts	Trees in new developments	Locations of trees near utilities	Trees on public school grounds	Trees on NCA designated land
Education Directorate				✓					✓	
Utilities (ICON, ACTEWAGL, Evoenergy)								✓		

Source: ACT Audit Office, based on TCCS and other documentation.

Audit objective and scope

Audit objective

1.42 The objective of the audit was to assess the effectiveness of TCCS' management of urban trees to support the ACT Government's goal of achieving 30 percent tree canopy cover by 2045.

Audit scope

1.43 The audit assessed TCCS' planning and delivery of urban tree management services. The audit assessed how effectively these activities support the ACT Government's goal of achieving 30 percent tree canopy cover by 2045.

Planning

1.44 An assessment of planning for urban tree management involved an assessment of planning documentation, risks assessments, resource allocation and decision-making processes for tree management.

1.45 This included consideration of whether:

- fit-for-purpose performance measures and targets have been established;
- the processes for data collection produces a reliable data set on which to analyse tree management activities; and
- progress against performance targets is being measured and reported.

Delivery

1.46 An assessment of delivery activities involved an assessment of operational matters associated with the Territory's urban trees.

1.47 This included consideration of whether:

- decision-making processes associated with the placement and type of trees are clearly documented and informed by data analysis and consultation with relevant stakeholders; and
- asset management activities such as watering, pruning and end-of-life planning are supported by a documented program of work, and effective coordination and oversight of the activities undertaken by responsible parties including contractors and volunteer groups.

Out of scope

1.48 The audit focussed on whether the planning and delivery of urban tree management activities are sufficient to support the canopy coverage goal. The audit did not consider:

- the longer-term commitments and broader goals outlined in the *Urban Forest Strategy 2021-2045* including changes to the legislative framework, the plans for developing infrastructure to support an urban forest and the Strategy's ecological and biodiversity goals.
- the regulatory obligations relating to urban tree management resulting from the *Urban Forest Bill 2022* (due to come into effect 1 January 2024) including the approval process relating to tree clearing on blocks of land where construction is to take place and changes to the ACT Government's strategy of 'tree for a tree' to tree replacement and replicating the canopy cover being destroyed.
- the management of trees on private land including the compliance and regulatory management of tree damaging activities for protected trees.
- community grants provided through the 'Adopt-a-park' grants program. Under this program, volunteer groups can apply for funding to undertake tree planting or maintain existing tree plantings.
- activities undertaken as part of the management of Environmental Offsets in the ACT, including activities undertaken by volunteer groups to manage threatened species habitat.

Audit criteria, approach and method

Audit criteria

1.49 The criteria for the audit are listed below:

- Criterion 1: Does TCCS have an overarching administrative framework for urban tree management?
 - There are clearly documented urban tree management plans and decision-making processes, supported by plans and procedures for day-to-day operational activities.
 - The urban tree management plans include consideration of the wider policy context and management of risks.
- Criterion 2: Does TCCS effectively coordinate responsible parties in urban tree operational activities?
 - There are clearly documented organisational roles and responsibilities in the management of urban tree operational activities.
 - TCCS has effective coordination and oversight of urban tree operational activities.
- Criterion 3: Has TCCS established monitoring and reporting arrangements to assess the effectiveness of urban tree operational activities?
 - There is complete, accurate and up-to-date data about urban tree operational activities.
 - There are performance measures and targets, and effective monitoring and reporting arrangements in place to assess urban tree operational activities.

Audit approach and method

1.50 The audit approach and method consisted of:

- reviewing relevant literature, and work undertaken on this subject by other jurisdictions to identify better practices;
- identifying and reviewing relevant information and documentation including the governance and accountability framework and related policy and procedures, research documents, and relevant reports;
- identifying and documenting internal controls, procedures and performance measures used to give effect to the policies and guidelines and to ensure compliance and evaluating the effectiveness of these controls;
- interviews and discussions with key staff at the selected agencies and directorates, and other stakeholders; and
- examination of data held and used by Transport Canberra and City Services on urban tree management including analysis, monitoring and reporting activities.

- 1.51 The audit was performed in accordance with *ASAE 3500 – Performance Engagements*. The audit adopted the policy and practice statements outlined in the Audit Office’s *Performance Audit Methods and Practices (PAMPr)* which is designed to comply with the requirements of the *Auditor-General Act 1996* and *ASAE 3500 – Performance Engagements*
- 1.52 In the conduct of this performance audit the ACT Audit Office complied with the independence and other relevant ethical requirements related to assurance engagements.

2 PLANNING FOR URBAN TREE MANAGEMENT

2.1 This chapter discusses TCCS' planning for achieving the 30 percent canopy cover goal by 2045. The chapter discusses:

- the modelling underpinning the 30 percent canopy cover goal and the development of yearly planting targets; and
- the planning activities undertaken prior to implementing annual tree planting program, including:
 - identifying planting gaps on public land;
 - determining appropriate tree species; and
 - planning for the procurement and propagation of tree seedlings.

Summary

Conclusions

In order to achieve 30 percent canopy cover by 2045 the *Urban Forest Strategy 2021-2045* identifies an intention to plant 'over 450,000 trees' on urban public land. TCCS considers the estimate of trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS otherwise estimated that this equates to around 20,000 trees that would need to be planted annually for the next 25 years. TCCS has identified that this will be difficult to achieve and will require a significant and long-term investment in additional staffing resources, equipment and infrastructure.

Notwithstanding the difficulties anticipated in achieving the targets, TCCS has significantly increased its planting program in response to the *Urban Forest Strategy 2021-2045* and identified an intention to plant 54,000 trees over a four-year planting program through to 2023-24. This was a significant increase on the previous program. The program does not, however, address the need identified by TCCS to plant around 20,000 trees annually.

TCCS has undertaken a range of activities to plan for the increase in tree plantings including undertaking an audit to identify potential planting locations and working with other agencies to identify potential planting locations. Notwithstanding these activities, there are significant challenges to the increased tree planting program including difficulties in securing:

- in-house and contractor resources; and
- an appropriate supply of tree stock.

Managing community expectations for the planting of trees is also a challenge for TCCS. Approximately 12.4 percent of all tree plantings since Spring 2021 (2,485 trees) have been the subject of a re-route process. Re-routes describe the process for when a tree cannot be planted due to accessibility issues or conflict with other services or other preventative planting issues arise at the time of planting. Re-routes are mostly cause by members of the community opposing

the planting of a tree. Significant time and effort is required by TCCS to manage and minimise the risk of re-routes.

TCCS' supporting policy framework for urban tree management activities is partly developed. Much of the procedural documentation to guide TCCS' tree planting activities is in draft. The *Tree Management Policy* and *Tree Planting Policy* are still in development and should be finalised to provide high-level guidance and consistency on the operation of urban tree management activities.

Key findings

	Paragraph
In 2019, CSIRO was commissioned by EPSDD to conduct a cost-benefit analysis of different urban forest management scenarios, including the economic feasibility of expanding Canberra's tree canopy cover to 30 percent by 2045. This analysis informed the development of the <i>Urban Forest Strategy 2021-2045</i> . To achieve 30 percent canopy coverage by 2045, the CSIRO identified the ACT's urban forest would need to have a population of over 1 million trees on public land. The CSIRO report identified that between 2018 and 2045, 459,216 trees would need to be planted on public land (approximately 16,000 trees every year from 2018 to 2045) and that 206,936 trees would reach the end of their life and require removal. TCCS considers that there are a number of limitations in relation to the modelling for the planting target and that the estimate of 459,000 trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS also considers that the figures modelled by the CSIRO would be difficult to achieve and that implementing the anticipated number of plantings and removals would require a significant and long-term investment in additional staffing resources, equipment and infrastructure.	2.13
In response to the <i>Urban Forest Strategy 2021-2045</i> TCCS significantly increased its tree planting program. In a November 2020 brief to the Minister for City Services, TCCS advised that it had 'increased its planting rate to around 4,000 per year' but that 'a further large and rapid increase in the number of tree plantings is necessary to ensure the 2045 target can be reached'. The brief noted 'currently, around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement'.	2.24
The November 2020 brief identified 54,000 trees were to be planted over a four-year planting program: 6,000 trees in 2020-21; 10,000 trees in 2021-22; 18,000 trees in 2022-23; and 20,000 trees in 2023-24. The increased planting targets were a significant increase on TCCS' historic tree planting numbers. The goal of 20,000 trees to be planted in 2023-24 is around 5.5 times the number of trees that were planted in the three years between 2016-17 and 2018-19. Notwithstanding the advice around the tree planting needs and risks associated with delay to the program, a figure of 20,000 was only envisaged for the fourth year of the tree planting program (2023-24).	2.25
The selection of tree species for planting programs is guided by <i>Municipal Infrastructure Standard 25: Plant species for urban landscapes</i> (MIS 25). In 2022 and	2.43

2023 TCCS, in collaboration with EPSDD, undertook a review of the Municipal Infrastructure Standards (MIS) and the Municipal Infrastructure Technical Specifications (MITS). This included a 'Cooler Greener Infrastructure Review' of the MIS and MITS, which aimed to assist with achieving tree canopy and permeability targets. The resulting report made nine key findings including: a 5 to 10 percent increase in tree canopy cover in a new street can be achieved by resolving conflicts between streetlights and trees; and a 20 to 30 percent increase in canopy cover in a new street can be achieved by refining the soil volumes and tree species list. In late September 2023 the Executive Steering Committee overseeing the MIS and MITS review agreed to commence implementation of the report and its recommendations.

In 2019, the Australian National University's (ANU) Fenner School of Environment and Society was engaged by EPSDD to undertake research into urban forest tree species that are suitable for the ACT. MIS 25 was reviewed and in doing so the research sought to identify tree species that would be suitable into the future and maximise summer-time cooling effect of Canberra's urban areas. TCCS advised that MIS 25 was not updated in response to the ANU's review and that 'predictions of species unsuitable for continued utilisation into future climates has not yet been fully considered'. TCCS is currently undertaking a 'Living Labs' trial in collaboration with the Western Sydney University. The trial aims to assess the performance of new 'climate-ready' tree species in Canberra. Information from the trial is expected to inform an update to the preferred tree species list.

2.44

As part of preparatory work for the significant increase in tree planting numbers, in July 2020 TCCS established a six-person team to undertake a rapid audit of existing planting gaps. The audit was undertaken from July 2020 to December 2021. The audit identified 13,156 planting locations. An additional audit took place from January 2022 to November 2023, which identified a further 2,400 potential planting locations. TCCS advised that the audits were a useful input to the development of the tree planting programs and collectively they identified approximately half of the sites for trees planted by TCCS between July 2020 and June 2023.

2.55

EPSDD provides advice to TCCS on potential planting locations and tree species, with a particular focus on the effects of urban trees on habitat and biodiversity. There is tension between the ACT Government's biodiversity goals and canopy coverage goals. Planting locations can be limited by goals associated with maintaining and promoting biodiversity in urban areas. There is an opportunity for further cross-directorate collaboration and discussion to balance these competing priorities and work towards increasing planting opportunities and ultimately canopy cover in urban areas.

2.56

The Yarralumla Nursery grows and supplies plant material for ACT Government landscape development projects, including tree seedlings for TCCS' tree planting programs. A draft Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for 2022 to 2027 is under development. A MOU was previously developed for the period 2009 to 2014, but this was never finalised and remained in draft. Not having a current MOU in place with Yarralumla Nursery presents a risk to the program with the potential for each party to not clearly

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understand their roles, responsibilities and what they need to deliver to support a successful partnership.

In late 2020, in order to plan for the anticipated increase in planting targets, the Urban Treescapes Unit and the Yarralumla Nursery developed a production plan for tree species for the planting programs for the 2021 to 2024 period. The plan provided a guide for the species available for the forward years planting, with specific numbers to be confirmed prior to each planting program. There were a number of challenges for the Yarralumla Nursery in ramping up propagation and procurement of tree seedlings including: inadequate space on site to store trees; and not being able to maintain the health of tree stock when planting programs were delayed. As a result of these challenges, TCCS advised that it is seeking additional holding areas for trees and exploring opportunities for procurement from other nurseries.

2.66

TCCS undertakes various activities that are aimed at increasing community engagement with, and awareness of the value of, urban trees. These activities include: Canberra Tree Week, and various other pilot programs. For example, the Street Forestry Program was launched in 2021 with the aim of assessing the community's level of awareness of street trees and the best ways of involving residents before trees are planted. An assessment of the program found that 17.6 percent of residents refused proposed new plantings on verges. The main reasons for tree rejection were residents': preference to use the verge for parking; perceptions about the high level of maintenance required to care for trees; and concerns about the safety of large species and root systems. These results demonstrate some of the challenges associated with growing the urban forest and achieving the canopy cover goal.

2.76

TCCS seeks to achieve its canopy cover goal through biannual planting programs. Biannual planting is undertaken in Autumn and Spring. To guide the biannual planting programs, TCCS has developed a *Program Planning Procedure* and other supporting policies and procedures. Some of the policies and procedures are partially complete and remain in draft. The policy and procedural guidance prioritise planting in locations that have been identified as hot and vulnerable with low canopy coverage. The documented procedures also take into consideration restrictions on planting locations (including available space for trees to grow and the impact on utilities, nature reserves and fire prone areas), appropriateness of tree species and the procurement of tree seedlings.

2.83

Re-routes describe the process for when a tree cannot be planted due to accessibility issues, or conflict with other services, or other issues that arise at the time of planting. Re-routes are mostly caused by members of the community opposing the planting of a tree. There has been an increase in the number of planting re-routes since the Spring 2021 planting program. A total of 2,485 trees have been subject to re-routing since Spring 2021 from a total number of 20,117 trees planted during this period. This represents 12.4 percent of all trees planted. TCCS estimates that each tree subject to re-routing adds 1 to 2 hours of effort to the planting program.

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Residents can reject a street tree planting on the verge abutting their residence. TCCS advised that many residents who reject plantings do so in order to retain illegal

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verge parking space. TCCS advised that if members of the community oppose the planting of a tree on the nature strip outside their property, TCCS will seek another planting location so as to minimise abusive behaviour towards planting staff and reduce the risk of the new tree being vandalised or illegally removed. TCCS has developed a strategy to reduce the potential number of re-routes in future planting programs through increased engagement with residents on the benefits of trees and the types of tree species planted. This is a time-consuming and costly process.

TCCS has not developed policy guidance articulating how urban tree management (including urban tree planting) is expected to contribute to the achievement of the canopy cover goal. What is specifically missing is how the planting of trees on unleased land is to be managed and coordinated to achieve the canopy cover goal. This includes not just TCCS planting, but the coordination of tree plantings by other directorates within the ACT's urban footprint. Two key policy documents that are intended to provide high-level guidance and consistency on the operation of urban tree management activities, the *Tree Management Policy* and the *Tree Planting Policy*, are currently in draft, notwithstanding they have been in development for some time. 2.110

TCCS has developed a range of standards, policies, procedures and guidelines or factsheets that are of relevance to its urban tree management responsibilities. A review of the documents, of which there were 40, suggests that 18 were fully developed (i.e. the document was complete and finalised/published), 18 were partially developed (i.e. the document was partially completed and/or in draft). The status of the other three could not be determined. A 2018 internal review similarly identified gaps in Urban Treescapes procedural and administrative guidance and recommended the 'development of policy as a priority'. Recommendations associated with this review are yet to be implemented. 2.119

Development of planting targets

- 2.2 A key goal of the *Urban Forest Strategy 2021-2045* (the Strategy) is to achieve a target of 30 percent canopy cover by 2045. To help achieve this, the Strategy states that 'over 450,000 trees' will need to be planted on public land over the next 25 years (through to 2045).
- 2.3 The figure of 'over 450,000' trees is derived from a 2019 CSIRO report; *An environmental-economic accounting of services provided by the living infrastructure in the ACT: public urban forests and irrigated open spaces*. CSIRO conducted a cost-benefit analysis of various urban forest management scenarios to ascertain whether there was an economic case for expanding Canberra's tree canopy cover. One scenario which was modelled estimated that to increase tree canopy cover to 30 percent by 2045, 459,216 trees would need to be planted.

30 percent canopy cover goal

2.4 The objective of the CSIRO's research, commissioned by EPSDD in 2019 to inform the development of the Strategy, was to estimate the extent and value of urban forests and to assess the net benefits of different green asset management scenarios. When referring to the urban forest, the CSIRO's analysis and calculations focussed on urban trees on public land, excluding trees in nature reserves. The three scenarios assessed in relation to the urban forest were:

- **Business as Usual:** From 2013 to 2017 the CSIRO report noted that around 1,700 trees were removed and 1,300 planted annually by TCCS. This trend was projected to continue resulting in a gradual decline in the health and the extent of Canberra's urban forest.
- **Maintaining the current (2018) extent of the forest:** To maintain the overall condition of the ACT's urban forest as observed in 2018, trees at the end of their useful life would be removed and similar numbers of trees would be planted.
- **Increasing tree canopy cover to 30 percent:** Under this scenario the distribution and composition of the urban forest would be proactively managed to gradually increase tree canopy cover to 30 percent of publicly managed land (excluding nature reserves).

2.5 The CSIRO's analysis of the three scenarios identified that expanding the tree canopy cover had the highest benefit-cost ratio. The report recommended that the ACT Government consider prioritising the expansion of tree canopy cover up to 30 percent by 2045, over a continuation of the tree planting and maintenance regime that was in place at the time.

459,000 tree planting target

2.6 To achieve 30 percent canopy coverage by 2045, the CSIRO report identified the ACT's urban forest would need to have a population of over 1 million trees on public land. This figure was based on:

- a total population of 767,636 urban trees in 2018; and
- an expectation that, between 2018 and 2045, 206,936 trees would reach the end of their life and require removal.

2.7 As a result, the CSIRO report identified that between 2018 and 2045, 459,216 trees would need to be planted on public land (approximately 16,000 trees every year from 2018 to 2045).

Feasibility of the canopy cover goal

2.8 TCCS advised the Audit Office that the figures in the CSIRO report are unrealistic to achieve. Based on the CSIRO's calculations, TCCS would, on average, have to plant over 350 trees a week (and remove 190 trees a week every week for over 20 years). In 2019 TCCS advised the CSIRO for the purpose of CSIRO's modelling that:

... both ACT Government and the local arboriculture industry are not set up to deal with anything approaching this number of tree removals.

2.9 TCCS advised the Audit Office that implementing the anticipated number of plantings and removals would require a significant and long-term investment in additional staffing resources, equipment and infrastructure.

2.10 In response to the draft proposed report, TCCS advised that the estimate of 459,000 trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS further advised of the following limitations in relation to the CSIRO's modelling of the 459,000 tree planting target:

- A forecast need to remove over 200,000 trees at end of life was included in the modelling. This forecast was estimated in an audit undertaken in 2012, and recalibrated in a sample audit in 2015. However, these were simply estimated from a brief visual assessment at a moment in time predicting the number of years of life remaining, which is impacted with changing environmental conditions (e.g. El Nino or La Nina conditions).

...

- The CSIRO modelling was also based on the premise that the 2015 Lidar resulted in a 21% tree canopy cover, which has since been determined to be incorrect.

2.11 Furthermore, in response to the draft proposed report, TCCS advised of the following challenges associated with meeting the planting target:

- Funding has not been provided to date to undertake the predicted removals to enable plantings to occur as forecast in the modelling.

...

- At the time of appointing the 30% canopy target, a definition of Canberra's urban footprint was not yet determined. Following an analysis by CSIRO for EPSDD, it was determined by EPSDD that the urban footprint would be identified as the Divisions, or suburbs, which excluded nature reserves managed by EPSDD. It was argued that their inclusion did not significantly alter the current canopy cover, however, it has resulted in excluding potential planting sites.
- No assessment was undertaken to determine available planting sites prior to setting the 30% canopy target, nor sufficient time and resources applied to plan the significantly increased planting program. This includes checking for services and other management limitations (e.g. dam infrastructure, grasslands, etc) as well as determining resident acceptance of the planting.
- Planting stock must be ordered 1-2 years in advance, and as locations and species were not previously identified, the species ordered were based on ratios of previous species utilized, or percentages in place in the urban forest. As gaps in street plantings have become occupied these species have become harder to allocate.

- Canberra has designated street tree species which has added to the complexity for allocation of ordered tree stock to planting programs.

2.12 In response to the final proposed report EPSDD advised that the inclusion of nature reserves in the urban footprint:

... would have increased the canopy cover value while not necessarily contributing to the objective of the target to mitigate urban heat, particularly in areas where Canberrans live and work. This resulted in urban parks and playgrounds being included but nature reserves not being included.

2.13 In 2019, CSIRO was commissioned by EPSDD to conduct a cost-benefit analysis of different urban forest management scenarios, including the economic feasibility of expanding Canberra's tree canopy cover to 30 percent by 2045. This analysis informed the development of the *Urban Forest Strategy 2021-2045*. To achieve 30 percent canopy coverage by 2045, the CSIRO identified the ACT's urban forest would need to have a population of over 1 million trees on public land. The CSIRO report identified that between 2018 and 2045, 459,216 trees would need to be planted on public land (approximately 16,000 trees every year from 2018 to 2045) and that 206,936 trees would reach the end of their life and require removal. TCCS considers that there are a number of limitations in relation to the modelling for the planting target and that the estimate of 459,000 trees to be planted is 'an informed estimate' and should not be considered as absolute. TCCS also considers that the figures modelled by the CSIRO would be difficult to achieve and that implementing the anticipated number of plantings and removals would require a significant and long-term investment in additional staffing resources, equipment and infrastructure.

Increased tree planting program

2.14 In response to the *Urban Forest Strategy 2021-2045* TCCS significantly increased its tree planting program.

Existing tree planting program

2.15 Prior to 2019-20 TCCS' focus was on managing, rather than growing, the urban forest. New tree plantings were aimed at replacing trees that had reached end of life. In the decade prior to 2019-20 on average TCCS planted around 700-1,000 trees per year. In the three years to 2018-19 the following tree plantings were achieved:

- 1,360 trees were planted in 2016-17;
- 1,450 trees were planted in 2017-18; and
- 746 trees were planted in 2018-19.

Increased tree planting program

2.16 In a November 2020 brief to the Minister for City Services, TCCS advised:

... meeting the 30% canopy cover target and assisting in mitigating the impacts of climate change will require a significant increase in tree planting and renewal of ageing trees over the coming decades.

2.17 TCCS advised the Minister of a need to rapidly increase the tree planting program in order to meet the 2045 canopy cover target. TCCS noted that, at the time:

With additional funding, TCCS has increased its planting rate to around 4,000 per year, from historic averages of around 700-1,000 per year over the past decade.

2.18 TCCS also advised:

A further large and rapid increase in the number of tree plantings is necessary to ensure the 2045 target can be reached. Currently, around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement. In addition, the need for removals of trees at end of their useful life will increase over the next 25 years with financial and community engagement implications.

2.19 To this end, the brief identified the following tree planting targets:

- 6,000 trees planted in 2020-21;
- 10,000 trees planted in 2021-22;
- 18,000 trees planted in 2022-23; and
- 20,000 trees planted in 2023-24.

2.20 The increased planting targets are a significant increase on TCCS' historic tree planting numbers. The goal of 6,000 trees to be planted in 2020-21 was nearly twice the number of trees that were planted in the three years between 2016-17 and 2018-19. The goal of 20,000 trees to be planted in 2023-24 is around 5.5 times the number of trees that were planted in the three years between 2016-17 and 2018-19.

2.21 Notwithstanding the advice that 'around 20,000 trees must be established each year for the next 25 years' and 'any delays in reaching this number will increase the annual planting requirement' a figure of 20,000 was only envisaged for the fourth year of the tree planting program (2023-24).

2.22 The ACT Government subsequently allocated \$14 million to TCCS in the *2021-22 ACT Budget* to plant 54,000 trees over four years to 2024.

2.23 In response to the draft proposed report TCCS advised:

A gradual increase to planting numbers was unavoidable in order to allow time to build capacity, locate planting sites and coordinate supply of trees.

2.24 In response to the *Urban Forest Strategy 2021-2045* TCCS significantly increased its tree planting program. In a November 2020 brief to the Minister for City Services, TCCS advised that it had 'increased its planting rate to around 4,000 per year' but that 'a further large and

rapid increase in the number of tree plantings is necessary to ensure the 2045 target can be reached'. The brief noted 'currently, around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement'.

- 2.25 The November 2020 brief identified 54,000 trees were to be planted over a four-year planting program: 6,000 trees in 2020-21; 10,000 trees in 2021-22; 18,000 trees in 2022-23; and 20,000 trees in 2023-24. The increased planting targets were a significant increase on TCCS' historic tree planting numbers. The goal of 20,000 trees to be planted in 2023-24 is around 5.5 times the number of trees that were planted in the three years between 2016-17 and 2018-19. Notwithstanding the advice around the tree planting needs and risks associated with delay to the program, a figure of 20,000 was only envisaged for the fourth year of the tree planting program (2023-24).

Planning for increased planting targets

- 2.26 The November 2020 brief to the Minister for City Services highlighted the need to adequately plan and prepare for a planting program of 459,000 trees by 2045:

Planting trees on this scale requires an adequate lead time for planning, procurement and engagement with the community. A lead time of up to two years is needed to ensure tree stock is available, especially for exotic species which make up around half of the urban forest. In addition, industry and in-house capacity is currently inadequate to service the level of activity required. Preparation is required to enable industry to boost capacity and also to increase in-house capacity.

The basis for planting priorities in the current funded program is an audit of the urban forest undertaken in 2011-12 as well as remote sensing (LiDAR) data analysis from 2015. Further prioritisation and planning requires a fresh audit to be undertaken to update critical data, particularly about tree condition and life expectancy.

- 2.27 The November 2020 brief to the Minister:
- outlined the preparatory actions underway to meet this objective; and
 - identified that additional resources would be sought in 2021-22 and beyond to increase the planting rate to meet the target of 54,000 trees.
- 2.28 TCCS subsequently advised the Minister of the planning activities to support the delivery of increased planting targets. These activities are outlined in the following section of the report, with specific reference to:
- identification of appropriate trees for planting;
 - identification of appropriate places for planting; and
 - procurement and sourcing of trees for the planting program.
- 2.29 TCCS' activities to communicate, and engage with, the community is also discussed.

- 2.30 Activities to plan for, and procure, in-house, contractor and volunteer resources for the planting program are discussed in Chapter 3.

Identification of appropriate trees

Municipal Infrastructure Standards

- 2.31 Municipal Infrastructure Standards (MIS) apply to the public realm, including streets, parks and other open spaces managed by the ACT Government. The standards define how different elements of the public realm need to be designed to meet the ACT Government's requirements for public infrastructure that is functional, usable, safe and serviceable. There are 25 standards. Municipal Infrastructure Standards are publicly available on TCCS' website.
- 2.32 *Municipal Infrastructure Standard 25: Plant species for urban landscapes* (MIS 25) provides the overarching framework for the selection of urban tree species in the ACT. MIS 25 identifies tree species that are suitable for Canberra's conditions and can perform well in harsh climates. MIS 25 provides information on trees in various size categories including: soil volume requirements and calculation methods; clearance requirements from services and other hard infrastructure; and root barrier requirements.
- 2.33 MIS 25 is supported by *Municipal Infrastructure Standard 24: Soft Landscape Design* (MIS 24), which outlines key design standards for living infrastructure including trees, and *Municipal Infrastructure Standard 20: Street and Park Furniture* (MIS 20), which provides guidance on tree grates, tree guards and planter boxes.
- 2.34 TCCS advised that reviews of MIS 25 are undertaken as required. MIS 25 was last updated in January 2022 to incorporate Ngunnawal cultural management notes for plant species, based on work undertaken by an external consultant engaged by TCCS. The review included consultation with the Aboriginal and Torres Strait Islander Community and Programs Officer to include Ngunnawal references and an Acknowledgement of Country.
- 2.35 In advice provided for the purpose of the audit, the City Renewal Authority identified that the Municipal Infrastructure Standards provide standards for planting trees in an optimum growth environment, but that in a city precinct environment the competing requirements for space mean that the standards are difficult to achieve. The CRA advised that greater flexibility and less prescription with the standards in a city precinct environment could enable more tree planting opportunities to deliver against the ACT Government's canopy cover targets and support the CRA's urban renewal effort.

2022 review of Municipal Infrastructure Standards

- 2.36 In 2022 and 2023 TCCS, in collaboration with EPSDD, undertook a review of the Municipal Infrastructure Standards (MIS) and the Municipal Infrastructure Technical Specifications (MITS). This included a 'Cooler Greener Infrastructure Review' of the MIS and MITS, which aimed to assist achieving tree canopy and permeability targets. The resulting report made nine key findings including:
- a 5 to 10 percent increase in tree canopy cover in a new street can be achieved by resolving conflicts between streetlights and trees; and
 - a 20 to 30 percent increase in canopy cover in a new street can be achieved by refining the soil volumes and tree species list.
- 2.37 EPSDD advised that in late September 2023 the Executive Steering Committee overseeing the MIS and MITS review (including representatives from EPSDD, TCCS and Suburban Land Agency) agreed to commence implementation of the report. TCCS agreed to implement most of the actions relating to trees from the report.

Tree types and their suitability

- 2.38 TCCS and EPSDD have sought expert advice, and undertaken trials, to inform the type of tree species listed in MIS 25 and their suitability to Canberra's climate now and into the future.
- 2.39 In 2019, the Australian National University's (ANU) Fenner School of Environment and Society was engaged by EPSDD to undertake research into urban forest tree species that are suitable for the ACT. MIS 25 was reviewed and in doing so the research sought to identify tree species that would:
- be suitable (i.e. survive and thrive) for Canberra's projected future (2050, 2070 and 2090) climates; and
 - maximise summer-time cooling effect of Canberra's urban areas.
- 2.40 The report concluded that most species that were identified in MIS 25 were suitable, and that only a small number of species may not be sustainable in the expected climate in 2050.
- 2.41 TCCS advised that MIS 25 was not updated in response to the ANU's review, but that consideration will be given to the review in the future. TCCS further advised that:
- Predictions of species unsuitable for continued utilisation into future climates has not yet been fully considered. Species recommended for inclusion have been considered and some introduced as trials. Many of these species are frost sensitive, so while they may be suitable in time as Canberra experiences a rise in temperatures, they are not currently tolerant of our winter conditions. MIS25 will not be updated to include these species until they are confirmed suitable for Canberra's conditions.
- 2.42 TCCS is currently undertaking a 'Living Labs' trial in collaboration with the Western Sydney University. The trial aims to assess the performance of new 'climate-ready' tree species in

Canberra. Information from the trial is expected to inform an update to the preferred tree species list. The completion of the trials and updating of the preferred tree species list is identified as an immediate action item (to be implemented within two years) under the 'Grow a resilient forest' objective from the *Urban Forest Strategy 2021-2045*.

- 2.43 The selection of tree species for planting programs is guided by *Municipal Infrastructure Standard 25: Plant species for urban landscapes* (MIS 25). In 2022 and 2023 TCCS, in collaboration with EPSDD, undertook a review of the Municipal Infrastructure Standards (MIS) and the Municipal Infrastructure Technical Specifications (MITS). This included a 'Cooler Greener Infrastructure Review' of the MIS and MITS, which aimed to assist with achieving tree canopy and permeability targets. The resulting report made nine key findings including: a 5 to 10 percent increase in tree canopy cover in a new street can be achieved by resolving conflicts between streetlights and trees; and a 20 to 30 percent increase in canopy cover in a new street can be achieved by refining the soil volumes and tree species list. In late September 2023 the Executive Steering Committee overseeing the MIS and MITS review agreed to commence implementation of the report and its recommendations.
- 2.44 In 2019, the Australian National University's (ANU) Fenner School of Environment and Society was engaged by EPSDD to undertake research into urban forest tree species that are suitable for the ACT. MIS 25 was reviewed and in doing so the research sought to identify tree species that would be suitable into the future and maximise summer-time cooling effect of Canberra's urban areas. TCCS advised that MIS 25 was not updated in response to the ANU's review and that 'predictions of species unsuitable for continued utilisation into future climates has not yet been fully considered'. TCCS is currently undertaking a 'Living Labs' trial in collaboration with the Western Sydney University. The trial aims to assess the performance of new 'climate-ready' tree species in Canberra. Information from the trial is expected to inform an update to the preferred tree species list.

RECOMMENDATION 1 REVIEWING THE PREFERRED TREE SPECIES LIST

TCCS should:

- a) finalise the 'Living Labs' trial, which seeks to assess the performance of new 'climate-ready' tree species in Canberra; and
- b) update *Municipal Infrastructure Standard 25: Plant species for urban landscapes* based on the results of the trial.

Identification of appropriate places

- 2.45 As part of preparatory work for the significant increase in tree planting numbers, in July 2020 TCCS established a six-person team for the purpose of undertaking a rapid audit of existing planting gaps. The results of this audit were expected to inform the expanded planting program over the coming four years.
- 2.46 The audit was undertaken from July 2020 to December 2021 and took approximately 17 months. The data was captured spatially in ArcGIS Online, TCCS' primary IT system for the management of tree planting activities. TCCS advised that the audit:
- identified 13,156 potential planting locations; and
 - assisted in identifying proposed planting locations that informed the tree planting programs.
- 2.47 TCCS advised that not every potential planting site identified through the audit was suitable for tree plantings. TCCS noted there was turnover in the audit teams and that some of the audit team staff didn't have the appropriate skills to identify planting locations. As a result, some of the planting sites identified were not suitable for planting.
- 2.48 Another audit was conducted from January 2022 to November 2023 and this identified a further 2,400 potential planting locations.
- 2.49 The audits collectively identified a total of 15,556 potential planting locations. Between July 2020 and June 2023, TCCS planted a total of 28,809 trees. The audits therefore helped to identify around half of the sites for trees planted by TCCS between July 2020 and June 2023.
- 2.50 TCCS advised that similar audits will be undertaken on a rolling basis to inform future planting programs.

EPSDD input

- 2.51 EPSDD provides advice to TCCS on potential planting locations and tree species, with a particular focus on the effects of urban trees on habitat and biodiversity.

2.52 Notwithstanding this input, EPSDD advised the audit of instances of inappropriate planting, for example:

- trees were planted in native grasslands and subsequently had to be removed; and
- where the type of tree species planted was ‘weedy’, whereby the tree species could grow rapidly and take over a space, allowing them to outcompete local native species and reduce the biodiversity of the area.

2.53 In response to the draft proposed report TCCS advised:

... instances of inappropriate planting are not always undertaken by TCCS. These are often unapproved community plantings. TCCS always reacts promptly to the identification of inappropriate plantings and removes or relocates the trees, then updates spatial data layers identifying these sites as inappropriate if necessary.

2.54 TCCS also noted that there is a tension between the ACT Government’s biodiversity goals and canopy coverage goals. TCCS advised that planting locations can be limited by goals associated with maintaining and promoting biodiversity in urban areas (for example planting of only native species for which long-term survivability rates may not be as high as exotic species, or not planting close to grasslands or other protected areas due to potential impact on those areas’ biodiversity).

2.55 As part of preparatory work for the significant increase in tree planting numbers, in July 2020 TCCS established a six-person team to undertake a rapid audit of existing planting gaps. The audit was undertaken from July 2020 to December 2021. The audit identified 13,156 planting locations. An additional audit took place from January 2022 to November 2023, which identified a further 2,400 potential planting locations. TCCS advised that the audits were a useful input to the development of the tree planting programs and collectively they identified approximately half of the sites for trees planted by TCCS between July 2020 and June 2023.

2.56 EPSDD provides advice to TCCS on potential planting locations and tree species, with a particular focus on the effects of urban trees on habitat and biodiversity. There is tension between the ACT Government’s biodiversity goals and canopy coverage goals. Planting locations can be limited by goals associated with maintaining and promoting biodiversity in urban areas. There is an opportunity for further cross-directorate collaboration and discussion to balance these competing priorities and work towards increasing planting opportunities and ultimately canopy cover in urban areas.

RECOMMENDATION 2 CROSS-DIRECTORATE COLLABORATION ON BIODIVERSITY AND CANOPY COVER GOALS

TCCS and EPSDD should work collaboratively to review the Territory’s biodiversity goals and canopy cover goals with a view to identifying opportunities to manage competing priorities and reduce limitations on locations for urban tree plantings.

Procurement of tree seedlings

- 2.57 The Yarralumla Nursery grows and supplies plant material for ACT Government landscape development projects. This includes tree seedlings for TCCS' tree planting programs.
- 2.58 The cost of trees for the Spring 2022 and Autumn 2023 biannual planting programs was \$1.15 million. This included costs for the supply of approximately 20,000 trees of different pot sizes and species.

Memorandum of Understanding

- 2.59 A draft Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for 2022 to 2027 is under development. The draft MOU includes information on:
- the purpose of the partnership, including the overall objectives of the agreement;
 - the roles and responsibilities of each of the parties, including:
 - information on plant species and seedling numbers TCCS would require of Yarralumla Nursery;
 - the condition and timeframes in which seedlings must be provided by the Nursery; and
 - how services will be paid for and when;
 - the operational framework, including insurance and indemnity arrangements, communication protocols, dispute resolution and resourcing;
 - how often the terms of the MOU will be reviewed, with the draft specifying that the MOU should be reviewed annually; and
 - contact details including position titles for key personnel for each of the parties.
- 2.60 A MOU was previously developed for the period 2009 to 2014. This was never finalised and it remained in draft. TCCS advised that the previous MOU was relevant for the 2012 *Urban Forest Renewal Program* but, as this program subsequently ceased, the draft MOU was not completed.
- 2.61 The Yarralumla Nursery grows and supplies plant material for ACT Government landscape development projects, including tree seedlings for TCCS' tree planting programs. A draft Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for 2022 to 2027 is under development. A MOU was previously developed for the period 2009 to 2014, but this was never finalised and remained in draft. Not having a current MOU in place with Yarralumla Nursery presents a risk to the program with the potential for each party to not clearly understand their roles, responsibilities and what they need to deliver to support a successful partnership.

Production challenges

- 2.62 In late 2020, in order to plan for the anticipated increase in planting targets, the Urban Treescapes unit and the Yarralumla Nursery developed a production plan for tree species for the planting programs for the 2021 to 2024 period. The production plan provided an indicative list of quantities for each tree species per planting season and allowed for higher numbers of each species based on expected loss rates and commercial viability for the Nursery. The plan provided a guide for the species available for forward years planting, with specific numbers to be confirmed prior to each planting program.
- 2.63 There were a number of challenges for the Yarralumla Nursery in ramping up the propagation and procurement of tree seedlings for the increase in planting program numbers. These challenges included:
- not having adequate space on site to store trees; and
 - not being in a position to maintain the health of tree stock when planting programs were delayed.
- 2.64 In respect of the latter, recent planting programs have experienced delays and this has resulted in tree seedlings being held for a longer than anticipated period by Yarralumla Nursery. Combined with the limited space available for the storage of tree seedlings, this has resulted in increased workload for nursery staff in watering and moving trees that cannot be accommodated in irrigated watering areas because of a lack of space.
- 2.65 As a result of these challenges, TCCS advised that it is seeking additional holding areas for trees to address the spacing issues. TCCS also advised that it may explore opportunities for procurement from other nurseries.
- 2.66 In late 2020, in order to plan for the anticipated increase in planting targets, the Urban Treescapes Unit and the Yarralumla Nursery developed a production plan for tree species for the planting programs for the 2021 to 2024 period. The plan provided a guide for the species available for the forward years planting, with specific numbers to be confirmed prior to each planting program. There were a number of challenges for the Yarralumla Nursery in ramping up propagation and procurement of tree seedlings including: inadequate space on site to store trees; and not being able to maintain the health of tree stock when planting programs were delayed. As a result of these challenges, TCCS advised that it is seeking additional holding areas for trees and exploring opportunities for procurement from other nurseries.

RECOMMENDATION 3

MOU WITH YARRALUMLA NURSERY

TCCS should finalise the Memorandum of Understanding (MOU) between the Urban Treescapes unit and the Yarralumla Nursery for the production and delivery of tree seedlings for the planting programs. The MOU should clearly document expectations for the production and supply of seedlings for future planting programs.

Community engagement

Community engagement projects

2.67 TCCS undertakes various activities that are aimed at increasing community engagement with, and awareness of the value of, urban trees. These activities include:

- Canberra Tree Week, which seeks to increase community awareness on the value of urban trees; and
- various pilot programs that were commenced in 2020, 2021 and 2022, which were aimed at seeking residents' feedback on planting locations and improving residents' acceptance of new street trees.

Canberra Tree Week (ongoing)

2.68 Canberra Tree Week commenced in 2014 as an annual event celebrating all things trees. Tree Week provides an opportunity for the community to learn more about the value of trees in Canberra. It is held annually in May.

More Trees Program (pilot program)

2.69 The More Trees Program sought to increase community acceptance of street tree planting through education and engagement prior to planting street trees in six locations across Canberra vulnerable to extreme heat. The project sought to examine whether this improved residents' attitudes towards street trees and street tree survival in locations where trees have not survived in past plantings. The engagement formed part of a larger initiative to plant 1332 trees between 2018 and 2021 in residential areas that were particularly vulnerable to extreme urban heat.

Street Forestry Program (pilot program)

2.70 In 2021 the ACT Government launched the Street Forestry Program to partner with local communities to help grow the urban forest. The aim of the program was to assess the community's level of awareness of street trees and the best ways of involving residents before trees are planted. Feedback received through the program was to inform future street tree planting engagements with the community.

2.71 An assessment of the program found that 17.6 percent of residents refused proposed new plantings on verges. The main reasons for tree rejection were residents':

- preference to use the verge for parking;
- perceptions about the high level of maintenance required to care for trees; and
- concerns about the safety of large species and root systems.

2.72 The health and growth of the program's tree plantings are to be monitored over a five-year period and compared to controlled trees planted during the same period outside the program.

2.73 TCCS engaged with another six suburbs in September 2022 on the Street Forestry Program.

Citizen Science – Urban Forest Condition Assessment (pilot program)

2.74 TCCS is currently developing a citizen science pilot program to teach targeted volunteer groups on collecting and recording information about tree genus, species, age, and the health of trees. This project is aimed at capturing missing data in the ageing urban forest to improve future program and management decisions.

2.75 In addition to these projects, staff from TCCS also engage with non-government and community groups including:

- the Canberra Tree Network;
- Friends of ACT Trees; and
- the Australian Capital Tree Community Committee.

2.76 TCCS undertakes various activities that are aimed at increasing community engagement with, and awareness of the value of, urban trees. These activities include: Canberra Tree Week, and various other pilot programs. For example, the Street Forestry Program was launched in 2021 with the aim of assessing the community's level of awareness of street trees and the best ways of involving residents before trees are planted. An assessment of the program found that 17.6 percent of residents refused proposed new plantings on verges. The main reasons for tree rejection were residents': preference to use the verge for parking; perceptions about the high level of maintenance required to care for trees; and concerns about the safety of large species and root systems. These results demonstrate some of the challenges associated with growing the urban forest and achieving the canopy cover goal.

Biannual planting programs

2.77 TCCS seeks to achieve its canopy cover goal through biannual planting programs. The ACT Government response to the *Inquiry into the Urban Forest Bill 2022* noted the importance of the biannual planting programs and their contribution to achieving the canopy cover goal:

The urban forest management by the ACT Government is the operational pathway through which tree canopy targets are being pursued. Guided by the Urban Forest Strategy 2021- 2045, the ACT Government is actively pursuing spatial distribution of canopy cover through its tree maintenance and biannual planting programs on public land. These planting programs target areas that have been identified as vulnerable to urban heat, suburbs with low canopy cover, and renewal plantings where the ageing forest is likely to result in a short-term loss of canopy as trees at the end of their useful life require removal and replacement.

Site identification processes

- 2.78 Biannual planting is undertaken in Autumn and Spring. Planning is undertaken up to 12 months in advance.
- 2.79 To guide the biannual planting programs, TCCS has developed a *Program Planning Procedure*. The purpose of the procedure is to ‘provide direction and advice for assigning planting locations to our seasonal planting programs and selecting tree species’.
- 2.80 The *Program Planning Procedure* provides guidance for staff on:
- assigning planting locations to seasonal programs on ArcGIS Online; and
 - selecting tree species for the planting location.
- 2.81 In addition to the *Program Planning Procedure* TCCS is also guided by:
- *Public Tree Planting in the ACT* procedure (partially complete document in draft);
 - *How to process YourSay Requests* – a procedure to process community requests for tree planting (complete and current document);
 - *Working with the community to identify tree planting sites* (complete and current document); and
 - *Guidance notes – Tree Planting on Public Unleased Land* (complete and current document).
- 2.82 The biannual planting programs are informed by the consideration of a number of inputs. These are summarised in Table 2-1.

Table 2-1 Processes and inputs for the biannual planting programs

Step in developing biannual planting programs	Inputs and/or decision-making process
1. Identification of potential planting sites	In 2021-22 TCCS employed a team to undertake a rapid assessment of existing planting gaps to guide the identification of planting sites. Potential planting sites are further informed by: <ul style="list-style-type: none"> • Ministerial direction. • suburbs that have been identified as hot and vulnerable with low canopy cover. • public suggestions for tree locations through the YourSay website¹¹ or Fix My Street¹².

¹¹ Members of the Canberra community can assist in identifying potential tree planting sites, with a focus on areas where there aren't many trees or where existing trees are ageing or dying through the YourSay website: <https://yoursayconversations.act.gov.au/trees-act/tree-planting-across-cbr>

¹² Canberra residents can request a new planting through the Fix My Street online form: <https://www.accesscanberra.act.gov.au/s/fix-my-street>

Step in developing biannual planting programs	Inputs and/or decision-making process
	<p>Locations are determined in order of priority: Urgent (Ministerial request), High (low canopy coverage area), Medium (public request) or Low (high canopy coverage area).</p> <p>Additionally, potential planting sites must also take into account:</p> <ul style="list-style-type: none"> • available space and site conditions, including that trees have enough room to grow and meet required clearances (e.g. from driveways, footpaths, stormwater drains) and that there are appropriate soil conditions. • site restrictions, including bushfire zoning, asset protection zones, sites of ecological significance such as natural grasslands or homes to protected fauna. • proximity to services and infrastructure, such as the presence of underground services or exclusion zones around dam walls.
2. Inspection of planting locations	Once potential planting sites have been identified, planting locations are physically checked by the in-house planting team to ensure that the location meets the criteria.
3. Determine appropriate tree species	<p>Tree species for planting locations are guided by <i>Municipal Infrastructure Standard 25</i> and the Urban Treescapes unit's supporting policies and procedures.</p> <p>Once the planting location is determined, tree species are selected to align with the original landscape character of the area whilst meeting other considerations such as site space and conditions, fire abatement zones and proximity to nature reserves and watercourses. For trees in heritage precincts, or National Capital Authority (NCA) designated land, formal approvals must be sought from ACT Heritage or the NCA.</p>
4. Procurement of plants	<p>Tree seedlings for the biannual planting programs are procured through the Yarralumla Nursery. Prior to procurement, the Yarralumla Nursery is consulted on tree seedling availability for different tree species.</p> <p>A lead time of up to two years is required to ensure tree stock can be procured and propagated prior to planting, especially for exotic species which make up around half of the ACT's urban forest.</p>

Source: ACT Audit Office review of TCCS documentation.

2.83 TCCS seeks to achieve its canopy cover goal through biannual planting programs. Biannual planting is undertaken in Autumn and Spring. To guide the biannual planting programs, TCCS has developed a *Program Planning Procedure* and other supporting policies and procedures. Some of the policies and procedures are partially complete and remain in draft. The policy and procedural guidance prioritise planting in locations that have been identified as hot and vulnerable with low canopy coverage. The documented procedures also take into consideration restrictions on planting locations (including available space for trees to grow and the impact on utilities, nature reserves and fire prone areas), appropriateness of tree species and the procurement of tree seedlings.

Re-routes

- 2.84 Re-routes describe the process for when:
- a tree cannot be planted due to accessibility issues or conflict with other services; or
 - other preventative planting issues arise at the time of planting.
- 2.85 Re-routes may also be caused by members of the community opposing the planting of a tree.
- 2.86 There has been a significant increase in the number of planting re-routes since the Spring 2021 planting program.
- 2.87 TCCS advised the Minister for City Services in May 2023 that the major cause of re-routes was community planting rejections:
- In many suburbs across the city, there is a noted lack of support or awareness of our Urban Forest Strategy and the role that residents can play to contribute to the increase in our canopy cover. Residents currently have the ability to reject a street tree planting on the verge abutting their residence, many of whom reject plantings to retain illegal verge parking space.
- 2.88 TCCS estimates that each re-route takes up to one hour to relocate on the mapping system and a minimum of 1 to 2 hours for the planting contractor(s) or planting crew member to remove and plant elsewhere.
- 2.89 The number of re-routes for the planting programs for the last two years, including re-routes as a percentage of trees planted and the minimum workload in managing reroutes, is shown in Table 2-2. To calculate the minimum workload hours, the Audit Office used TCCS' method of calculation of one and half times the number of re-routes in the May 2023 advice to the Minister.

Table 2-2 Re-routes for biannual planting programs (2021-22 and 2022-23)

Planting program	Total number of trees planted by in-house planting team or contractors*	Number of re-routes (percentage of trees planted)	Minimum workload in managing re-routes (hours)
Autumn 2023	2,673	921 (34%)	1,382
Spring 2022	7,866	456 (6%)	684
Autumn 2022	4,731	690 (15%)	1,035
Spring 2021	4,847	418 (9%)	627

Note: * The planting numbers for volunteers and community groups are not included in this figure, as those plantings are not subject to re-routing.

Source: Audit Office based on TCCS data.

- 2.90 Re-routes describe the process for when a tree cannot be planted due to accessibility issues, or conflict with other services, or other issues that arise at the time of planting. Re-routes are mostly caused by members of the community opposing the planting of a tree. There has

been an increase in the number of planting re-routes since the Spring 2021 planting program. A total of 2,485 trees have been subject to re-routing since Spring 2021 from a total number of 20,117 trees planted during this period. This represents 12.4 percent of all trees planted. TCCS estimates that each tree subject to re-routing adds 1 to 2 hours of effort to the planting program.

Resident opposition

2.91 Residents can currently reject a street tree planting on the verge abutting their residence. TCCS advised that if members of the community oppose the planting of a tree on the nature strip outside their property, TCCS will seek another planting location in order to:

- minimise abusive behaviour towards planting staff; and
- reduce the risk of the new tree subsequently being vandalised or illegally removed.

2.92 TCCS advised that it has developed a strategy to reduce the number of potential re-routes caused by resident opposition:

To minimise resident refusals and resulting reroutes, the Programs team aim to persuade residents about the value of a new street tree and to resolve any concerns they may have. This includes speaking to residents about the benefits of trees and negotiating with residents on the proposed planting location and the street tree species where some flexibility is possible without affecting the consistency of the streetscape.

2.93 TCCS also advised that the strategy is time-consuming:

This strategy is extremely time consuming, and the team are less able to communicate with residents in this way due to limited time available to deliver the planting program. To minimise reroutes at the time of planting two rounds of residential notifications are proposed, however, to date, there has been insufficient time available prior to the commencement of our programs for this strategy to be put in place. To help reduce the time required to find a new location for a rerouted tree additional planting locations are identified for each species prior to delivering a planting program where possible. To be effective reroutes need to be close to the designated planting locations (within the same job lot area).

2.94 In advice provided for the purpose of the audit, the City Renewal Authority (CRA) identified the need for greater collaboration between Roads ACT and Access Canberra to improve regulation (and enforcement) of illegal vehicle parking on road verges (and public land), which is critical to the health and longevity of existing street tree assets.

2.95 Residents can reject a street tree planting on the verge abutting their residence. TCCS advised that many residents who reject plantings do so in order to retain illegal verge parking space. TCCS advised that if members of the community oppose the planting of a tree on the nature strip outside their property, TCCS will seek another planting location so as to minimise abusive behaviour towards planting staff and reduce the risk of the new tree being vandalised or illegally removed. TCCS has developed a strategy to reduce the potential number of re-routes in future planting programs through increased engagement with residents on the benefits of trees and the types of tree species planted. This is a time-consuming and costly process.

Policy and procedural guidance

2.96 Effective policy and procedural guidance supports an organisation's operations and activities. The benefits of effective policy and procedural guidance includes:

- clearly documented processes that can be followed;
- clear guidance for employees on roles and responsibilities;
- increased likelihood of employees complying with accepted work principles and standards; and
- reduced risk of ad hoc work practices developing and activities that do not meet accepted standards or legislative obligations.

Tree management and tree planting policies

2.97 TCCS is in the process of developing two key documents that are intended to provide high-level policy guidance for its urban tree management activities:

- the *Tree Management Policy*; and
- the *Tree Planting Policy*.

2.98 TCCS intends for the *Tree Management Policy* to be the overarching policy document with the *Tree Planting Policy* as a supporting policy.

Tree Management Policy

2.99 TCCS is in the process of developing the *Tree Management Policy*. As at November 2023, a standard TCCS policy template had been created, but the information in the template was yet to be populated.

2.100 An earlier *ACT Tree Management Policy* was prepared in 2016. It was never finalised and remained in draft form. The document identified its purpose as:

... the Directorate's overarching policy framework for the management of Canberra's urban forest and is accompanied by the Tree Management Procedures and Technical Guidelines. It will guide all ACT Government agencies responsible for tree management across the ACT's urban forest. By managing the ACT's urban forest in an efficient and collaborative manner the benefits of the urban forest will be enhanced now and into the future.

2.101 The draft 2016 *ACT Tree Management Policy* identified its scope as follows:

This policy will guide all ACT Government agencies responsible for tree management across the ACT's urban forest. It primarily relates to the administration of the *Tree Protection Act 2005* and the management of trees on unleased territory land. This policy covers trees located within the built-up urban area of the ACT and does not cover trees growing in nature reserves and national park (Namadgi National Park, Tidbindilla, Canberra Nature Parks and urban parks across Canberra).

2.102 The draft 2016 *ACT Tree Management Policy* inter alia:

- described the ACT's urban forest;
- described roles and responsibilities;
- provided policy statements and principles for tree protection and tree management; and
- discussed processes for communication and community engagement.

Tree Planting Policy

2.103 TCCS is in the process of developing the *Tree Planting Policy*. As at November 2023, a standard TCCS policy template had been created, but little information in the template had been populated. The draft policy states its purpose is to 'establish guiding principles to manage Canberra's diverse urban forest equally now and into the future'.

2.104 The draft *Tree Planting Policy* states:

This policy will guide TCCS in the management of tree planting on unleased territory land. This policy covers land located within the built-up urban area of the ACT and does not cover nature reserves and national parks (Namadgi National Park, Tidbindbilla, Canberra Nature Parks and urban reserves across Canberra).

2.105 The draft *Tree Planting Policy* is envisaged to include information on the policy principles associated with urban trees including environmental sustainability, community safety, co-existence with infrastructure, contribution to community well-being and expectations that tree planting and tree species will fit with the character of the city.

Policy gap

2.106 There is a gap in TCCS' policy guidance for the overall management of urban tree activities. The *Urban Forest Strategy 2021-2045* identifies that the 30 percent canopy cover goal will be measured on the ACT's urban footprint, with planting on unleased land¹³ in the ACT forming a large part of the achievement of that goal.

2.107 TCCS has not developed policy guidance articulating how urban tree management (including urban tree planting) is expected to contribute to the achievement of the canopy cover goal.

2.108 What is specifically missing is how the planting of trees on unleased land is to be managed and coordinated to achieve the canopy cover goal. This includes not just TCCS planting, but the coordination of tree plantings by other directorates within the ACT's urban footprint. While it is noted that the *Tree Management Policy* and *Tree Planting Policy* are still in development there is, at present, no indication that either of these draft policies will fulfill this purpose.

¹³ Unleased territory land is an area not subject to a lease agreement between the Agency and another person. It does not include privately owned unleased land.

2.109 One of the priorities for 2022-23 listed in TCCS' *2021-22 Annual Report* under 'Manage the urban forest' activity was to 'Finalise and ratify City Services Tree Management Policy'. This has not been achieved. This has been listed again as a priority for 2023-24 in TCCS' *2022-23 Annual Report*.

2.110 TCCS has not developed policy guidance articulating how urban tree management (including urban tree planting) is expected to contribute to the achievement of the canopy cover goal. What is specifically missing is how the planting of trees on unleased land is to be managed and coordinated to achieve the canopy cover goal. This includes not just TCCS planting, but the coordination of tree plantings by other directorates within the ACT's urban footprint. Two key policy documents that are intended to provide high-level guidance and consistency on the operation of urban tree management activities, the *Tree Management Policy* and the *Tree Planting Policy*, are currently in draft, notwithstanding they have been in development for some time.

RECOMMENDATION 4 TREE MANAGEMENT AND PLANTING POLICIES

TCCS should:

- a) finalise the *Tree Management Policy* and *Tree Planting Policy*; and in doing so
- b) articulate how its urban tree management activities (including its urban tree planting activities) will contribute to the achievement of the 30 percent canopy cover goal.

Policy and procedural guidance

2.111 Over several years, TCCS has developed standards, policies, procedures and guidelines to support its urban tree management activities. The documents may be categorised as relating to:

- tree planting activities;
- tree maintenance activities (watering, pruning, removal); and
- supporting activities (community engagement and use of IT systems).

2.112 The Audit Office identified three standards, two policies, 14 procedures and 21 guidelines or factsheets (40 documents) of relevance for TCCS and its urban tree management activities.

2018 internal review

2.113 A 2018 internal review identified gaps in Urban Treescapes procedural and administrative guidance and recommended the 'development of policy as a priority. Policies will support the team by providing definitive and consistent guidelines in undertaking all core services'.

2.114 The 2018 internal review found:

- there were no documented procedures for processing nominations for registered trees, tree removal, tree plantings, tree pruning and investigating damaged trees; and that
- TCCS should develop a service handbook rather than having several individual procedures;
 - the service handbook was recommended to include an overview of the team including structure, roles and responsibilities, document team processes and include reference to all other supporting material including policy, registers and forms; and
 - the service handbook was expected to provide a range of benefits including allowing for one source of knowledge, increasing knowledge retention, supporting induction and training for new employees and providing consistent messages across the team.

2.115 In response to the findings from the internal review, TCCS established a project to renew and consolidate the team's policies and procedures. TCCS advised that the project has progressed slowly, because TCCS has directed resources to day-to-day urban tree management operations.

Assessment of policy and procedural guidance

2.116 The Audit Office's assessment of the policy and procedural guidance is summarised in Table 2-3. Table 2-3 shows the type of documentation and an assessment of its current status (fully developed, partially developed or yet to be developed).

Table 2-3 Audit Office review of procedural and administrative guidance for urban tree management

Framework document	Planting Trees				Maintaining Trees			Coordination and supporting	
	Tree species selection and planting standards	Development of planting programs	Procurement of plants	Planting (in-house and contractor)	Watering	Pruning	Removal	Community engagement	IT systems
Standards	●								
Policy	○	●	○	●	○	○	○	○	○
Procedures	●	●	●	●	●	●	●	●	●
Guidelines/Factsheets	●	●	●	●	●	●	●	●	●

Note: The ACT Audit Office applied the following criteria to undertake an assessment of the policy framework:

- fully developed – document complete and finalised/published;
- ◐ partially developed – document partially completed and/or in draft; and
- not yet developed/unclear – development of document not yet started, or status of document could not be determined.

Source: ACT Audit Office analysis of TCCS documentation.

2.117 Of the 40 documents that were reviewed:

- 18 were assessed as fully developed;
- 19 were assessed as partially developed; and
- the status of the other three guidelines and factsheets could not be determined. In this respect, it is noted that the document was not clearly labelled as a guideline or factsheet and contained unstructured information.

2.118 The analysis in Table 2-3 shows:

- TCCS has in place a number of standards, procedures, guidelines and factsheets to guide day-to-day operations. However, many of the procedures and guidelines are still in draft;
- the recommendation from the 2018 audit that TCCS develop a service handbook instead of several individual procedures has not been implemented; and
- the procedures and guidelines were in various stages of completion, and many procedures and guidelines contained duplicate information, particularly around tree planting and identifying planting locations. This may prove challenging for staff accessing relevant and up-to-date information for their role.

2.119 TCCS has developed a range of standards, policies, procedures and guidelines or factsheets that are of relevance to its urban tree management responsibilities. A review of the documents, of which there were 40, suggests that 18 were fully developed (i.e. the document was complete and finalised/published), 18 were partially developed (i.e. the document was partially completed and/or in draft). The status of the other three could not be determined. A 2018 internal review similarly identified gaps in Urban Treescapes procedural and administrative guidance and recommended the 'development of policy as a priority'. Recommendations associated with this review are yet to be implemented.

RECOMMENDATION 5**POLICY AND PROCEDURAL GUIDANCE**

TCCS should review and finalise its policy and procedural guidance for urban tree management.

3 TREE PLANTING, MAINTENANCE AND MANAGEMENT ACTIVITIES

- 3.1 This chapter discusses TCCS' tree planting activities and achievements. The chapter discusses TCCS':
- development and implementation of biannual planting programs; and
 - progress against tree planting targets including tree planting by TCCS' in-house team, contractors and volunteers.
- 3.2 The chapter also discusses tree planting achievements in suburbs with low canopy cover as well as broader risks and challenges to the tree planting program.

Summary

Conclusion

Between 2020-21 and 2022-23 TCCS planted 28,809 trees through its inhouse planting team, contractors or volunteer community groups. Planting targets for 2020-21 and 2021-22 were achieved (6,000 and 10,000 respectively) but the planting target of 18,000 trees in 2022-23 was not achieved.

In response to the challenges associated with achieving the tree planting program TCCS has reduced future planting targets: 5000 trees in 2024-25; 5000 trees in 2025-26 (reduced from a prior target on 10,000); and 10,000 trees in 2026-27. Without appropriate planning, or other mitigation strategies, to make up this shortfall in future years and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have an impact on the goal to plant 459,000 trees and achieve 30 percent canopy cover by 2045.

TCCS also anticipates that future tree planting activities will focus on the removal and replacement of mature trees and working with other directorates on projects aimed at identifying opportunities to increase canopy cover on other land.

Key findings

Tree planting for the biannual planting programs may be undertaken by TCCS' in-house planting team, contractors or volunteer community groups. TCCS has not developed any policy or procedural guidance for the purpose of allocating tree planting responsibilities. From 2020 TCCS has identified an intention to increase its in-house tree planting capability. In doing so TCCS has identified an intention that the delivery of planting programs would likely be split with 50 percent of the planting

Paragraph

3.8

undertaken by the in-house team and 50 percent undertaken by contractors. However, this is not formally documented, along with considerations for the allocation of particular jobs and areas.

The *Tree Watering Trucks and Other Related Services Panel* facilitates the watering of newly-planted trees by contractors up to 13 weeks after planting. By virtue of the *Tree Watering Trucks and Other Related Services Panel*, between July 2022 and April 2023, 18,788 trees were watered by contractors. Because of the increased planting program, the number of trees on the watering program is expected to increase significantly. In 2023-24, an anticipated 57,000 trees are expected to be on the watering program, as well as a yet unknown number of trees planted on unleased land that would be handed to TCCS for ongoing management. 3.18

TCCS achieved the planting targets for 2020-21 and 2021-22. 6,146 trees were planted in 2020-21 against a target of 6,000 and 10,013 trees were planted in 2021-22 against a target of 10,000. TCCS did not achieve the planting target for 2022-23. As at 30 June 2023, TCCS had planted 12,650 trees against the target of 18,000, a 70 percent achievement against the target. 3.22

Since 2020-21 the TCCS in-house planting team has planted 8,015 trees. This represents 27.8 percent of the total trees planted over the three years. The number of trees planted by the in-house planting team has increased significantly from 1,390 in 2020-21 to 4,384 in 2022-23. TCCS sought to increase its in-house planting team because of the increase in tree-planting targets since 2020; and difficulties associated with engaging contractor services. As at September 2023 the team comprises 33 FTE. 3.28

Since 2020-21, contractors have planted 17,352 trees. This represents 60 percent of the total number of trees planted between 2020-21 and 2022-23. Delays in TCCS renewing the tree planting contract panel arrangements impeded progress in achieving the planting targets in 2022-23. TCCS' panel arrangements for the tree planting services lapsed in December 2020, and new panel arrangements were not established until nearly two years later in November 2022. This resulted in delays to achieving the planting program targets for 2022-23 and impacted on contractor availability. For the Spring 2022 program, contractors planted 4,673 trees, which was lower than the anticipated 6,100 trees. 3.49

Between 2020-21 and 2022-23, 3,442 trees were planted by volunteers through community engagement activities. This represents 12 percent of the total number of trees planted in the period. The number of community plantings is a low percentage of the overall planting numbers. However, community engagement through the support of volunteer groups is viewed by TCCS as essential in building community acceptance of tree plantings and awareness of canopy coverage goals. TCCS advised that there is limited capacity to support additional volunteer groups in tree planting and maintenance activities, due to availability of resources and the additional workload involved in assisting volunteer groups. 3.57

Tree plantings undertaken by other ACT Government agencies contribute to overall canopy cover and towards the goal of 459,000 trees to be planted on public urban 3.68

land. Between 2017-18 and 2022-23, 23,058 trees have been planted on unleased land and handed over to TCCS for ongoing management. This represents 39 per cent of the total tree plantings managed by TCCS (through its in-house planting team, contractors or community volunteers) during this period. The tree plantings are primarily undertaken (or overseen) by the Suburban Land Agency. TCCS has also worked with the Education Directorate by providing canopy cover data for 98 primary and secondary schools and providing advice on how to increase canopy on school land.

TCCS' planting data by suburb from 2019 to 2023 shows that it has made progress towards the goal of increasing tree plantings in hot and vulnerable suburbs. While overall there was a greater number of tree plantings in suburbs with higher canopy cover, suburbs with lower canopy cover have had more trees planted per hectare of TCCS land between 2019 and 2023. TCCS reports on the number of tree plantings in hot and vulnerable and low canopy cover suburbs in its annual reports and reports to the Legislative Assembly. The reporting does not, however, include the cumulative tree plantings since the commencement of the expanded planting program in 2019-20. This information would provide insight into how the expanded planting program is supporting the goal of the *Urban Forest Strategy 2021-2045* on the equitable distribution of the urban forest. 3.84

The *Urban Forest Strategy 2021-2045* notes there are challenges associated with urban planning design and the ability to increase canopy cover in some areas. TCCS and EPSDD have projects in place to increase canopy coverage in new developments, and alternative approaches to increase canopy coverage where there is insufficient space for new tree plantings. 3.85

TCCS has advised of the difficulty of finding suitable planting sites, which threatens its ability to effectively deliver the program. In response to this challenge TCCS anticipates that future plantings will focus on the removal and replacement of mature trees and working with other directorates to identify opportunities to increase canopy cover on other land. TCCS also advised that, rather than removing trees reaching end of life at the level calculated by CSIRO through its modelling for the *Urban Forest Strategy 2021-2045*, the focus should be on extending the life of these trees to ensure they continue to contribute to the ACT's canopy cover. 3.92

In response to challenges associated with achieving the tree planting program TCCS has identified an intention to reduce future planting targets. The following targets have been proposed: 5000 trees in 2024-25; 5000 trees in 2025-26 (reduced from a prior target on 10,000); and 10,000 trees in 2026-27. TCCS had formerly advised the Minister in November 2020 that 'around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement'. The proposed targets would mean a shortfall of 40,000 trees between 2024-25 and 2026-27. Without appropriate planning, or other mitigation strategies, to make up this shortfall in future years and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have an impact on the goal to plant 459,000 trees and achieve 30 percent canopy cover by 2045. 3.99

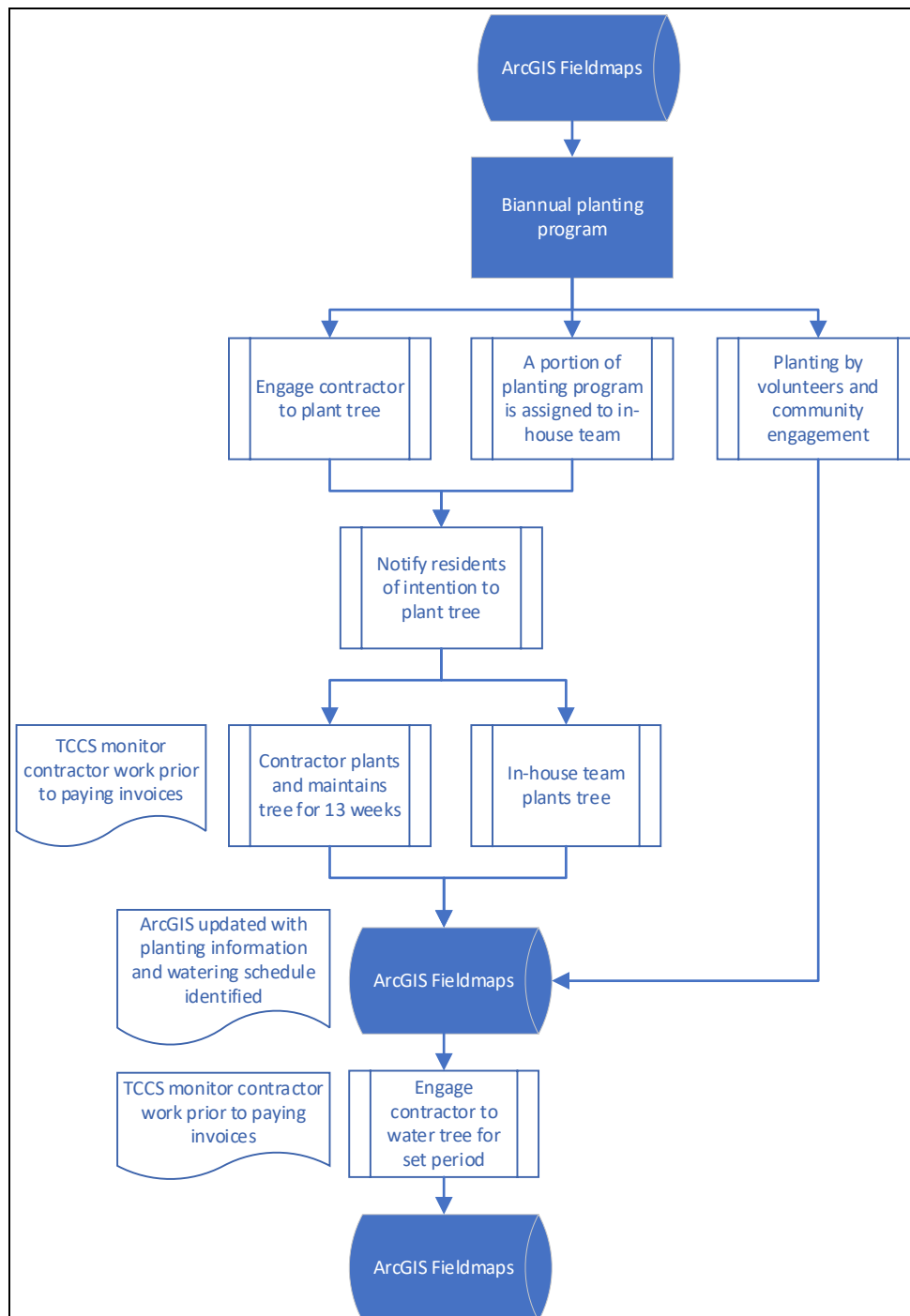
TCCS' operational maintenance activities for mature trees play an important role in achieving the 30 per cent canopy cover target. As opportunities for locations for new plantings are filled, the removal and replacement of mature trees will play an increasing role in building the urban tree canopy. However, TCCS has not yet developed or documented a 'strategic tree replacement program' or a strategic approach to replacing ageing trees. TCCS has, however, identified an intention to: engage environmental consultants to undertake a condition report of the ACT's urban forest and progressively map suburbs at risk of losing canopy due to ageing trees; and employ a Senior Arborist to undertake inspections of mature trees and develop a timeline for renewal. These activities should be undertaken as a matter of priority.

3.112

Tree planting and watering activities

- 3.3 Figure 3-1 outlines processes for the planting and watering of trees for the purpose of the biannual planting programs.

Figure 3-1 Processes for the coordination of tree planting and watering



Source: ACT Audit Office analysis of TCCS documentation.

Tree planting

Allocation of tree planting responsibilities

3.4 Tree planting for biannual planting programs may be undertaken by TCCS’ in-house planting team, contractors or volunteer community groups.

- 3.5 TCCS has not developed any policy or procedural guidance for the purpose of allocating tree planting responsibilities. TCCS' partially completed *Tree Planting Policy* and the procedural guidance for staff on the development of biannual planting programs do not document or provide insight on how the tree planting program is to be distributed amongst the in-house planting team, contractors or volunteers.
- 3.6 From 2020 TCCS has had an intention to increase its in-house tree planting capability. In doing so TCCS has identified an intention that the delivery of planting programs would likely be split with 50 percent of the planting undertaken by the in-house team and 50 percent undertaken by contractors.
- 3.7 TCCS also identified the in-house team would focus on planting tube and smaller stock in open space areas and easily accessed street tree locations. TCCS also identified that contractor planting numbers would be dependent on available funding and that volunteers would supplement remaining planting numbers.
- 3.8 Tree planting for the biannual planting programs may be undertaken by TCCS' in-house planting team, contractors or volunteer community groups. TCCS has not developed any policy or procedural guidance for the purpose of allocating tree planting responsibilities. From 2020 TCCS has identified an intention to increase its in-house tree planting capability. In doing so TCCS has identified an intention that the delivery of planting programs would likely be split with 50 percent of the planting undertaken by the in-house team and 50 percent undertaken by contractors. However, this is not formally documented, along with considerations for the allocation of particular jobs and areas.

RECOMMENDATION 6 ALLOCATION OF TREE PLANTING RESPONSIBILITIES

As part of the implementation of Recommendations 3 and 4, TCCS should develop guidance for the allocation of tree planting responsibilities between the in-house planting team, contractors and volunteers. The guidance should document the factors to be considered when allocating tree planting sites.

Tree watering

- 3.9 Watering of newly-planted trees is generally undertaken by contractors managed by the Urban Treescapes unit. The in-house planting team has also undertaken the watering of trees since it was established in 2020.
- 3.10 After the initial planting, trees are watered to facilitate their establishment and survival. Trees under three years of age in non-irrigated areas are generally watered monthly from November to April. During unusually dry weather, trees may receive additional water.

Contractor panel

3.11 TCCS has a number of panel arrangements in place with contractors for the management of urban trees. One of these is the *Tree Watering Trucks and Other Related Services Panel*. Table 3-1 shows information associated with this Panel as listed on the ACT Government Contracts Register.

Table 3-1 Tree Watering Trucks and Other Related Services Panel

Contract name	Maximum panel amount (GST inc)	Contract details
Tree Watering Trucks and Other Related Services Panel	\$ 2,475,000	<ul style="list-style-type: none"> Start date of 1 November 2019, end date of 13 November 2023. There are four panel members. The contract is for services including watering of trees, shrubs and general ancillary services for street and parkland trees within the urban areas of Canberra.

Source: ACT Audit Office summary of ACT Government Contract Register [Contracts Register - Procurement ACT](#) and internal TCCS documentation.

3.12 By virtue of the *Tree Watering Trucks and Other Related Services Panel*, between July 2022 and April 2023, 18,788 trees were watered by contractors. A further 1,278 trees, which were supposed to be watered, were identified as dead, missing, inaccessible or vandalised.

3.13 Because of the increased planting program, the number of trees on the watering program is expected to increase significantly. In saying this, however, the actual number of trees expected to be watered is subject to weather conditions.

3.14 In 2022-23, there were 31,200 trees on the watering program (for both contractors and the in-house planting team). These included newly planted trees coming off the initial 13-week consolidation period. Not all of these trees required watering, particularly in the second half of 2022.

3.15 In 2023-24, an anticipated 57,000 trees are expected to be on the watering program, as well as a yet unknown number of tree plantings on unleased land that would be handed to TCCS for ongoing management. The latter part of 2023 has been a comparatively dry period for the ACT, in contrast to earlier years.

Contractor management

3.16 The preparation and use of a contract management plan is best practice and is also a requirement of TCCS' *Procurement and Contract Management Framework*. Contract management plans document the contract details, administration of the panel including meeting and reporting schedules, payment schedules and key performance indicators.

3.17 TCCS has not developed a panel contract management plan for the *Tree Watering Trucks and Other Related Services Panel*.

3.18 The *Tree Watering Trucks and Other Related Services Panel* facilitates the watering of newly-planted trees by contractors up to 13 weeks after planting. By virtue of the *Tree Watering Trucks and Other Related Services Panel*, between July 2022 and April 2023, 18,788 trees were watered by contractors. Because of the increased planting program, the number of trees on the watering program is expected to increase significantly. In 2023-24, an anticipated 57,000 trees are expected to be on the watering program, as well as a yet unknown number of trees planted on unleased land that would be handed to TCCS for ongoing management.

Progress against tree planting targets

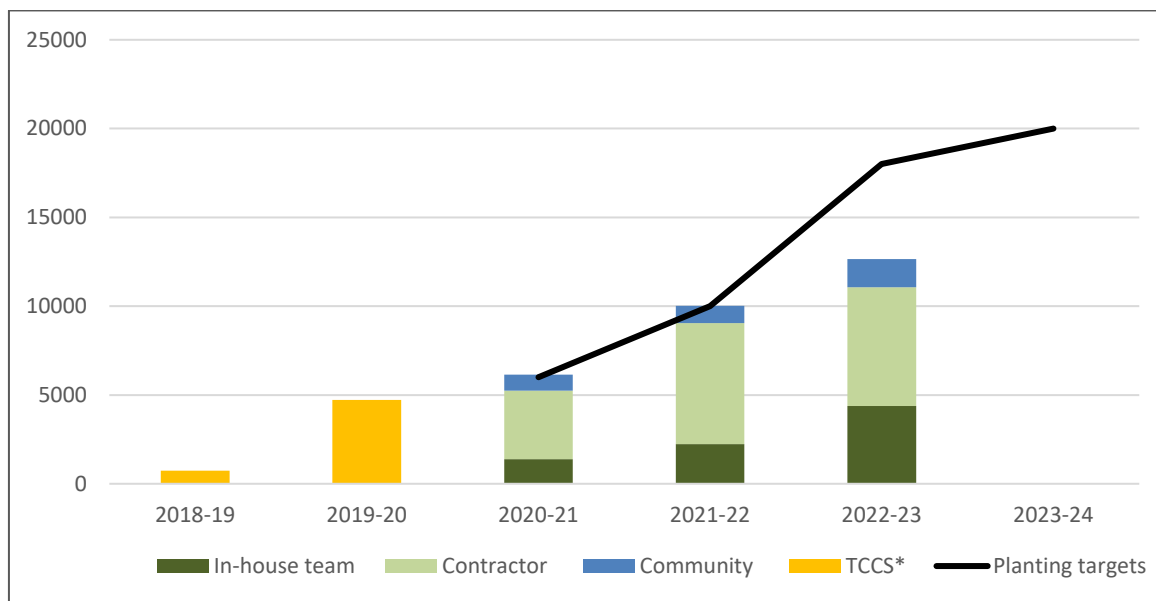
3.19 As discussed in Chapter 2, TCCS developed the following planting targets for the four years to 2023-24:

- 6,000 trees planted in 2020-21;
- 10,000 trees planted in 2021-22;
- 18,000 trees planted in 2022-23; and
- 20,000 trees planted in 2023-24.

3.20 Figure 3-2 shows:

- TCCS' progress against tree planting targets as at 30 June 2023; and
- a breakdown of trees planted by TCCS' in-house team, contractors and community volunteers.

Figure 3-2 Progress against TCCS tree planting targets (2018-19 to 2023-24)



Note: * Prior to 2019-20, TCCS’s focus was on planting in response to a request for a tree by a member of the public or to replace a mature tree that had reached its end of life. This planting would have been undertaken by a contractor engaged by TCCS, or staff from Urban Treescapes operations team.

Source: ACT Audit Office analysis of TCCS data.

3.21 A review of progress against the tree planting targets shows:

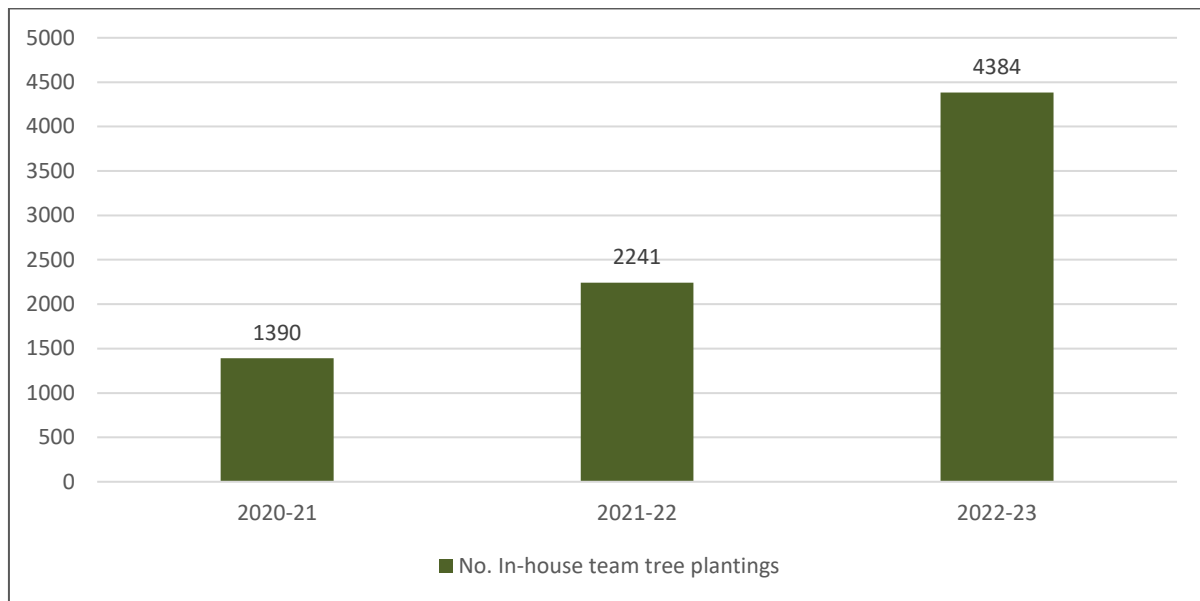
- TCCS achieved the planting targets for 2020-21 and 2021-22. 6,146 trees were planted in 2020-21 against a target of 6,000 and 10,013 trees were planted in 2021-22 against a target of 10,000;
- TCCS did not achieve the planting target for 2022-23. As at 30 June 2023, TCCS had planted 12,650 trees against the target of 18,000, a 70 percent achievement against the target; and
- the majority of trees planted between 2020-21 and 2022-23 were planted by contractors. 17,352 trees were planted by contractors, compared to 8,015 planted by the in-house planting team and 3,442 planted by volunteers.

3.22 TCCS achieved the planting targets for 2020-21 and 2021-22. 6,146 trees were planted in 2020-21 against a target of 6,000 and 10,013 trees were planted in 2021-22 against a target of 10,000. TCCS did not achieve the planting target for 2022-23. As at 30 June 2023, TCCS had planted 12,650 trees against the target of 18,000, a 70 percent achievement against the target.

In-house planting team

In-house planting team achievements

3.23 Figure 3-3 shows the number of trees planted by TCCS’ in-house planting team in the three years to 2022-23.

Figure 3-3 Number of plantings by TCCS in-house planting team (2020-21 to 2022-23)

Source: ACT Audit Office analysis of TCCS data.

3.24 Since 2020-21, the in-house planting team has planted 8,015 trees. This represents 27.8 percent of the total trees planted over the three years. The number of trees planted by the in-house planting team has increased significantly from 1,390 in 2020-21 to 4,384 in 2022-23.

In-house planting team resources

3.25 TCCS has increased its in-house planting team in recent years. This is because of:

- the increase in tree-planting targets since 2020; and
- difficulties associated with engaging contractors to undertake tree planting.

3.26 The increase in the in-house planting team was achieved by adding a number of temporary positions and then converting those positions to permanent positions over time:

- in 2019-20, funding was provided for seven Full-Time Equivalent (FTE) temporary planting team positions through to 2022-23. TCCS' in-house planting team was then created in 2020 as part of the *Jobs for Canberrans Program*;
- in 2021-22, funding was provided for an additional 11 FTE temporary planting team positions. The 18 temporary positions were subsequently converted to permanent positions under the ACT Government *Secure Workforce Conversion Policy*; and
- the in-house planting team was expanded further in 2022 through the addition of four FTE, by converting funding previously earmarked for the use of contractors. The contractor funding was re-allocated to the in-house planting team because of difficulties associated with engaging contractor services.

3.27 The in-house planting team has since been increased by an additional 11 FTE in September 2023. As at September 2023 FTE staffing for the in-house planting team is 33.

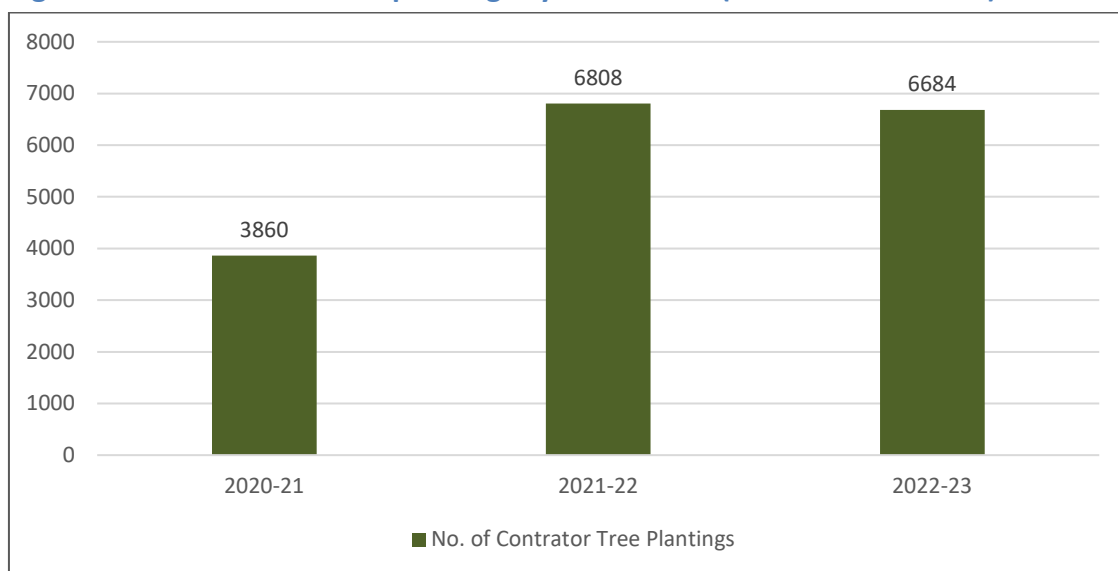
3.28 Since 2020-21 the TCCS in-house planting team has planted 8,015 trees. This represents 27.8 percent of the total trees planted over the three years. The number of trees planted by the in-house planting team has increased significantly from 1,390 in 2020-21 to 4,384 in 2022-23. TCCS sought to increase its in-house planting team because of the increase in tree-planting targets since 2020; and difficulties associated with engaging contractor services. As at September 2023 the team comprises 33 FTE.

Contractors

Contractor tree planting achievements

3.29 Figure 3-4 shows the number of contractor tree plantings in the three years to 2022-23.

Figure 3-4 Number of tree plantings by contractors (2020-21 to 2022-23)



Source: ACT Audit Office analysis of TCCS data.

3.30 Since 2020-21, contractors have planted 17,352 trees. This represents 60 percent of the total number of trees planted between 2020-21 and 2022-23.

3.31 Despite an increase in planting targets from 10,000 trees in 2021-22 to 18,000 trees in 2022-23, the number of trees planted by contractors in recent years has remained stable. TCCS internal briefing documents, and briefs to the Minister for City Services, have identified challenges associated with using contractors to meet increased planting targets including:

- an increase in the baseline contractor planting costs of around 30 percent between 2020 and 2023; and
- limitations in the capacity of the market to meet increased tree planting requirements.

3.32 Shortcomings in TCCS' approach to establishing panel contract arrangements has also hampered TCCS' ability to engage contractor services.

Panel contractors

3.33 The *Urban Seasonal Tree Planting Services Panel* provides for the engagement of contractors for the purpose of urban tree planting. Table 3-2 shows information associated with this Panel, as listed on the ACT Government Contracts Register.

Table 3-2 Urban Seasonal Tree Planting Services Panel

Contract name	Maximum panel amount (GST inc)	Contract details
Urban Seasonal Tree Planting Services Panel	\$1,020,000	<ul style="list-style-type: none"> • Start date of 23 November 2022, end date of 22 November 2025. • There are five panel members. • Services under the contract include the planting and establishment of trees in streets, parks and other open spaces within the urban areas of Canberra including: <ul style="list-style-type: none"> – collecting and caring for trees to be planted within the assigned Job Lots; – site preparation and planting of assigned trees, including undertaking site assessments, prior to the commencement of planting; and – maintenance of assigned trees throughout the agreed consolidation period(s) prior to a handover back to TCCS.

Source: ACT Audit Office summary of ACT Government Contract Register [Contracts Register - Procurement ACT](#) and internal TCCS documentation.

Procurement of panel contractors

3.34 Delays in renewing the tree planting contract panel arrangements have impeded progress in achieving the planting targets.

3.35 Under the Territory's procurement requirements:

- purchases for goods and services under the \$200,000 (GST inclusive) threshold follow a simple procurement process where at least three written quotations from suppliers for the procurement of services must be sought; and
- purchases for goods and services over the \$200,000 (GST inclusive) threshold follow a complex procurement process and need to be conducted as an open tender.

3.36 A previous panel arrangement for tree planting expired in December 2020. Although there was an option to extend the previous panel arrangement to December 2022, this option was not exercised. TCCS instead undertook a procurement exercise to establish a new panel. This necessarily involved time and effort. A September 2022 minute to Executive Business Manager for City Presentation advised:

... the new Panel Arrangement is not yet in place largely due to a lengthy evaluation and consensus period caused by the limited availability of evaluation panel members.

Interim procurement process

- 3.37 As a stop gap measure until the new panel arrangements were set up, TCCS sought to engage contractors to undertake planting work through an interim procurement process. As initially envisaged, the interim procurement process was intended to engage contractors for the planting of approximately 3,000 of the planned 6,100 contracted tree plantings for the Spring 2022 planting program.
- 3.38 TCCS identified five geographical regions for the planting lots with a view to seeking quotes from potential suppliers for each of the regions. TCCS expected that the value of the services for all five regions would amount to approximately \$900,000, but that the value for any one region would not exceed \$200,000. In this way, TCCS intended to run five simple procurement processes as an interim measure, while it finalised the complex procurement process for the ongoing panel arrangement.
- 3.39 A September 2022 minute associated with the procurement identified risks associated with this approach:
- Despite this open approach to industry suppliers there is the potential that limited industry interest will result in one supplier being awarded more than one contract and therefore more than \$200,000 value work.
- This low value 'procurement splitting' approach is not best practice however we are limited in a workable solution to achieve our operational requirements.
- 3.40 The September 2022 minute associated with the procurement did identify, however, that:
- The low value procurement process still results in a formal evaluation and value for money procurement. This approach has been implemented successfully for the Spring 2021 and Autumn 2022 seasonal planting program...
- 3.41 Notwithstanding this advice, ACT Government procurement guidance to government officials undertaking procurements states:
- You must not split a purchase into several smaller purchases to avoid the \$25,000 or \$200,000 (including GST) thresholds. The splitting of a project into more than one individual buying package to make it less than either threshold is not best procurement practice and contrary to the principle of good governance.
- 3.42 TCCS' approach intended for the remaining half of the trees (3,100 of 6,100 anticipated contractor plantings) to be procured under the new *Urban Seasonal Tree Planting Services Panel*, which was expected to be established midway through the seasonal program.
- 3.43 The procurement-splitting approach was not agreed to. Instead, in mid-September 2022, expressions of interest were sought from three suppliers for tree planting services for six separate job lots (geographical locations), for an expected total contract value of \$190,000. As a result of the procurement:
- three contracts were awarded to three separate contractors, each of which was responsible for delivering two job lots each;

- the contract values were \$59,927, \$41,500, and \$51,294 (all GST inclusive), and covered the six-month period from 11 October 2022 to 28 April 2023; and
 - each of the three contractors planted around 200 trees (around 600 trees in total).
- 3.44 Contractors were issued work orders under the panel arrangements in late November 2022. The remaining job lots (job lots 9 to 49) for the Spring 2022 planting program were planted by the in-house planting team or contractors under the newly established *Urban Seasonal Tree Planting Services Panel*. Twenty-two of the job lots were re-issued to contractors under the panel arrangements in late February 2023.
- 3.45 For the Spring 2022 planting program, contractors planted 4,673 trees; this was lower than the anticipated 6,100 trees. To make up the shortfall in contractor planting numbers for the Spring 2022 program, the in-house planting team planted 3,193 trees; this is higher than the anticipated 2,000 trees. In total for 2022-23 (Spring 2022 and Autumn 2023 planting programs), 12,650 trees were planted; this is a shortfall of 5,350 trees against the target of 18,000 trees.

Management of panel contractors

- 3.46 TCCS has developed procedures for contractors undertaking tree planting, watering and maintenance activities. TCCS is responsible for inspections of trees that are newly planted and again after an initial 13-week consolidation period. Key performance indicators for the contractors undertaking tree planting include:
- 90 percent of tree stock meet planting requirements including correct tree species planted, correct planting location, and tree is healthy and in good condition;
 - 100 percent of tree stock are planted with tree basins free of weeds and with adequate mulch cover;
 - 100 percent of tree stock is planted in required timeframe ready for handover to TCCS after consolidation period;
 - 90 percent of services are performed to specification and less than 10 percent require rectification or replacement and 90 percent of rectification and replacement occurs in seven days; and
 - 100 percent compliance with reporting or documentation required by TCCS to required standard.
- 3.47 The preparation and use of a contract management plan is best practice and is also a requirement of TCCS' *Procurement and Contract Management Framework*. Contract management plans seek to document the contract details, administration of the panel including meeting and reporting schedules, payment schedules and key performance indicators.
- 3.48 TCCS is in the process of developing a panel contract management plan for the *Urban Seasonal Tree Planting Services Panel*. The plan is currently in draft and partially complete.

3.49 Since 2020-21, contractors have planted 17,352 trees. This represents 60 percent of the total number of trees planted between 2020-21 and 2022-23. Delays in TCCS renewing the tree planting contract panel arrangements impeded progress in achieving the planting targets in 2022-23. TCCS' panel arrangements for the tree planting services lapsed in December 2020, and new panel arrangements were not established until nearly two years later in November 2022. This resulted in delays to achieving the planting program targets for 2022-23 and impacted on contractor availability. For the Spring 2022 program, contractors planted 4,673 trees, which was lower than the anticipated 6,100 trees.

RECOMMENDATION 7 CONTRACT MANAGEMENT PLANS

TCCS should develop and finalise contract management plans for its *Tree Watering Trucks and Other Related Services Panel* and *Urban Seasonal Tree Planting Services Panel*.

Volunteers and community groups

3.50 TCCS engages with volunteers and the community for the planting and maintenance of trees in public parks and public land. TCCS also undertakes community engagement activities to raise awareness of tree planting programs.

3.51 Table 3-3 outlines TCCS' activities to engage with the community specifically for the purpose of planting and maintaining urban trees.

Table 3-3 TCCS engagement with volunteers and the community

Activity	Description
Urban Parks and Places Volunteer groups	<ul style="list-style-type: none"> The Urban Parks and Places (UPP) volunteering program provides the community with opportunities to contribute to the conservation, presentation, and maintenance of Canberra's public urban open space areas. Urban open space areas include parks, playgrounds, grasslands, green spaces, shopping centres, creeks, wetlands and lake surrounds. The program is managed and overseen by the UPP Volunteering unit within TCCS, with involvement from the Urban Treescapes unit. The ACT Government works with the three ACT Catchment Groups - Ginninderra, Southern and Molonglo and there are 92 urban volunteer groups. Of these 92 groups, 41 were involved in tree planting activities in 2021-22.
Adopt a park community grants projects	<ul style="list-style-type: none"> The Adopt-a-Park grants program aims to promote long-term landscape resilience that provides benefits for the Canberra community, through strengthening the capacity of existing registered volunteer groups to undertake ACT Government-endorsed projects. The administration of this program is out of scope for this audit, however the number of tree plantings for this program is included in the total number of volunteer group tree plantings in TCCS data.

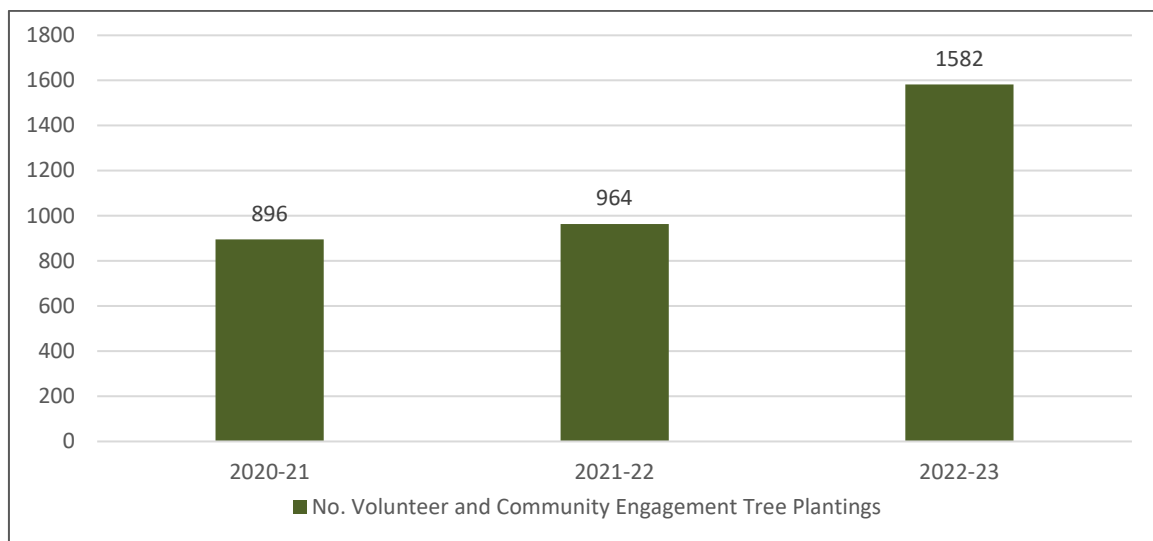
Activity	Description
Community planting days and community gifted plants	<ul style="list-style-type: none"> Urban Treescapes engages with community groups to organise planting events. The community is encouraged to sign up to UPP Volunteering group in the first instance but if there is sufficient community interest, TCCS will arrange community planting days. Urban Treescapes Team may supply tree stock, planting materials and on-site assistance, as well as assessing site suitability and species selection and liaising with other stakeholders to approve planting plans. An example of a community planting day was TCCS coordinating with EPSDD in autumn 2023 to plant 550 trees through a Landcare event focussed on teaching the community how to plant and care for trees. In addition to the community planting days, TCCS also gifts plants to the community. In October 2022, TCCS gifted the tree stock to celebrate Woden’s 60th Birthday and improve canopy coverage on private blocks within the ACT’s urban Footprint.

Source: ACT Audit Office review of TCCS documentation.

Community volunteer tree planting achievements

3.52 Figure 3-5 shows the number of trees planted by community volunteers in the three years to 2022-23.

Figure 3-5 Number of tree plantings by community volunteers (2020-21 to 2022-23)



Source: ACT Audit Office analysis of TCCS data.

3.53 Between 2020-21 and 2022-23, 3,442 trees were planted by volunteers or through community engagement activities. This represents 12 percent of the total number of trees planted in the period. The number of community volunteer plantings is a low percentage of the overall planting numbers. However, community engagement through the support of volunteer groups is viewed by TCCS as essential in building community acceptance of tree plantings and awareness of canopy coverage goals. Partnering with the community is a key objective from the *Urban Forest Strategy 2021-2045* (Objective 6).

3.54 In a brief to the Minister for City Services in May 2023, TCCS advised that the number of trees being planted by community groups was relatively small compared to other programs and that there are limitations to increasing the community planting program due to:

- Restrictions on the number of Registered Community groups with Place Management. No further groups are being accepted, as the Place Management team member managing the groups is at capacity. Planting activities have already been undertaken with the majority of existing groups.
- Many of the community group members are unable to physically undertake the planting themselves, requiring our team to undertake the work.

3.55 TCCS advised that there is limited capacity to support additional community volunteer groups in tree planting and maintenance activities, due to availability of resources and the additional workload involved in assisting volunteer groups. Further, TCCS advised that much of the volunteer activity occurs on weekends, requiring supporting staff to attend outside normal working hours.

Support for community volunteer groups

3.56 TCCS has one dedicated FTE employee that supports the 92 Urban Parks and Places Volunteering Groups. Nevertheless, staff from the Urban Treescapes unit in TCCS also support volunteer groups with advice on tree species selection and assistance in determining appropriate planting sites. The in-house planting team may also aid volunteer groups through pre-digging holes for tree planting sites, delivering mulch and watering.

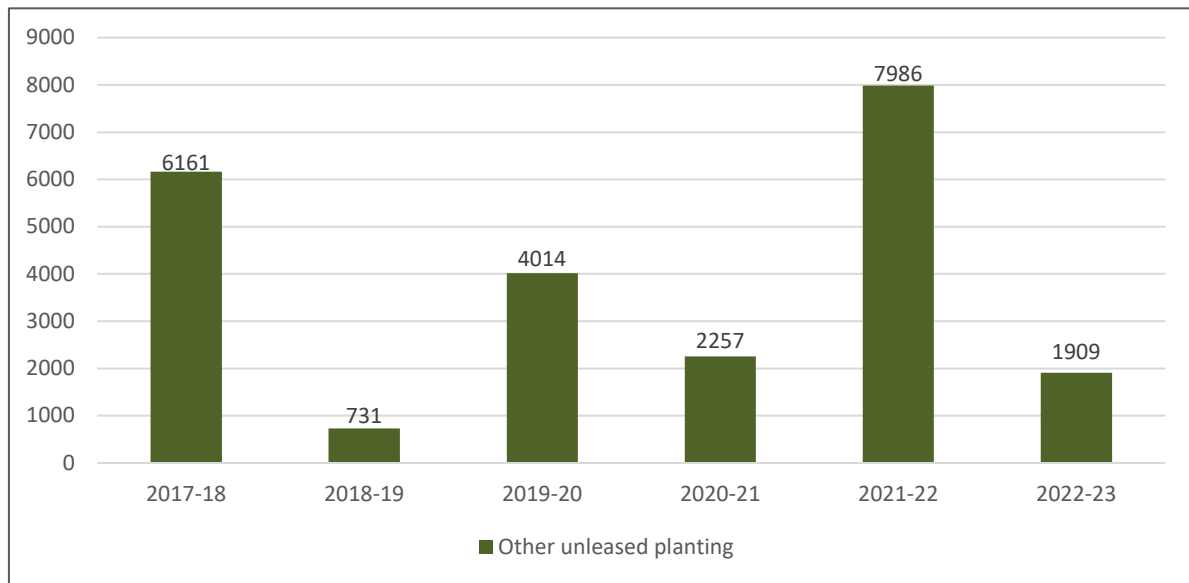
3.57 Between 2020-21 and 2022-23, 3,442 trees were planted by volunteers through community engagement activities. This represents 12 percent of the total number of trees planted in the period. The number of community plantings is a low percentage of the overall planting numbers. However, community engagement through the support of volunteer groups is viewed by TCCS as essential in building community acceptance of tree plantings and awareness of canopy coverage goals. TCCS advised that there is limited capacity to support additional volunteer groups in tree planting and maintenance activities, due to availability of resources and the additional workload involved in assisting volunteer groups.

Contributions from other agencies

3.58 Tree plantings undertaken by other ACT Government agencies contribute to overall canopy cover and towards the goal of 459,000 trees to be planted on public urban land. Tree plantings by other agencies are not, however, considered in the calculations for reporting against TCCS' Accountability Indicator (see Chapter 4).

Tree plantings on unleased land

3.59 Figure 3-6 shows tree plantings on unleased land from 2017-18 to 2022-23. These include trees handed to TCCS through development processes including trees planted as part of new estate development, infill and urban renewal projects.

Figure 3-6 Tree plantings on unleased land by other agencies (2017-18 to 2022-23)

Source: TCCS data.

- 3.60 Between 2017-18 and 2022-23, 23,058 trees have been planted on unleased land and handed over to TCCS for ongoing management. This represents 39 percent of the total tree plantings managed by TCCS (through its in-house planting team, contractors or community volunteers) during this period. This data is reported as tree plantings on unleased land by agencies other than TCCS in annual reports to the Legislative Assembly on urban tree canopy cover.
- 3.61 TCCS advised that it cannot determine from the data which agency undertook the planting as this information is not recorded in ArcGIS online. TCCS advised that there are plans to introduce additional fields into ArcGIS online so this information is recorded in the future. Nevertheless, it is apparent that the tree plantings were primarily undertaken (or overseen) by the Suburban Land Agency.

Suburban Land Agency

- 3.62 The Suburban Land Agency (SLA) undertakes the planning for, and construction of, multiple developments in the ACT. This includes planting of trees in new developments. The SLA manages the care of the trees for the period the land is still being developed, or in special cases, for an extended maintenance period.
- 3.63 The SLA advised that the extent of canopy on new developments will vary according to the species selected, the appropriate size of trees in specific settings and site conditions. Nevertheless, the SLA advised that trees are planted in sufficient numbers to contribute to the 30 percent tree canopy cover goals. The SLA advised that the process for determining the number of trees is informed by:
- the SLA engaging landscape architects to design the landscape elements of estates including tree planting locations and tree species. These landscape architects use

expert knowledge to determine the appropriate number of trees that should be planted in public spaces and in estates to provide places that are attractive, shady and resilient, and ensure trees planted sufficiently contribute to the 30 percent tree canopy cover target for the suburb.

- The SLA consulting with TCCS, and other agencies as required, including through the circulation of Estate Development Plans (EDP) and Development Applications (DA).
 - TCCS provide comments on landscape plans, particularly on species selection, location and number of trees, which SLA will seek to accommodate against comments from other directorates.
 - there can be conflicting objectives with issues such as sight lines, streetlights and location of utilities, which have to be considered.

3.64 The SLA advised that there is no Territory-wide framework to determine the number of trees that must be planted in a given area to ensure tree canopy cover percentage targets are met and that such a framework would ensure the SLA can more accurately report on the percentage of tree canopy cover new plantings would deliver.

City Renewal Authority

3.65 TCCS and CRA partner together to plant trees in city precincts. In recent years this has included:

- 39 advanced sized street trees¹⁴ in urban planting sites across Braddon and the City in late 2019;
- 17 advanced sized street trees in sites across Braddon in Autumn 2021; and
- 49 trees in 2022-23 including 14 trees in Braddon, 18 trees in Haig Park and 17 trees in Dickson.

3.66 These tree plantings are included in reporting on TCCS' planting targets and contribute to the overall canopy cover goal.

Education Directorate

3.67 In 2022 TCCS provided 2015 and 2020 canopy cover data for 98 primary and secondary schools to the Education Directorate. On average the percentage of canopy cover for the 98 schools increased from 16 per cent in 2015 to 21 per cent in 2020. In 2022 and 2023, TCCS also provided the Education Directorate with advice on how to increase canopy cover on school land and has also gifted trees to the Education Directorate as part of the Sustainable Schools Program.

3.68 Tree plantings undertaken by other ACT Government agencies contribute to overall canopy cover and towards the goal of 459,000 trees to be planted on public urban land. Between 2017-18 and 2022-23, 23,058 trees have been planted on unleased land and handed over

¹⁴ The advanced trees had a minimum height of 2.5 to 3.5 metres.

to TCCS for ongoing management. This represents 39 per cent of the total tree plantings managed by TCCS (through its in-house planting team, contractors or community volunteers) during this period. The tree plantings are primarily undertaken (or overseen) by the Suburban Land Agency. TCCS has also worked with the Education Directorate by providing canopy cover data for 98 primary and secondary schools and providing advice on how to increase canopy on school land.

Tree plantings in suburbs with low canopy cover

3.69 A key goal of the *Urban Forest Strategy 2021-2045* is ‘to support equitable distribution of the urban forest so all can benefit from it’. The *2022 Report to the Legislative Assembly on Urban Tree Canopy Coverage* notes that:

Tree planting in the ACT is prioritised in vacant street tree locations and in areas where residents have been identified as having an increased vulnerability to urban heat ... Since the commencement of the expanded planting program in 2019-20, the focus has moved from responding to public planting requests to the equitable distribution of new trees across Canberra’s districts.

Prioritisation of trees in suburbs with low canopy cover

3.70 TCCS’ *Program Planning Procedure*, which is used for the purpose of assigning planting locations to the biannual planting programs, identifies tree plantings in hot and vulnerable suburbs as a high priority.

3.71 The Audit Office examined tree planting data by suburb since 2019-20 against canopy cover data from 2020. The Audit Office sought to assess if there are more plantings in low canopy cover suburbs with a view to supporting the equitable distribution of ACT’s urban forest.

3.72 With a focus since 2019-20 on the equitable distribution of tree plantings across Canberra suburbs, it was expected that there would be a greater number of plantings on land in suburbs with lower canopy coverage.

3.73 This analysis is shown in Table 3-4. Table 3-4 shows:

- suburbs in the ACT grouped by 2020 canopy cover (ranging from suburbs with less than 10 per cent canopy coverage through to suburbs with greater than 30 per cent canopy coverage);
- the number of suburbs in each suburb grouping;
- examples of suburbs included in the grouping;
- the total land in hectares managed by TCCS in each suburb grouping on which urban trees can be planted;
- the number of tree plantings in the suburb groupings from 2019 through to 2023; and
- the number of trees planted per hectare in the suburb groupings from 2019 to 2023.

Table 3-4 Analysis of tree plantings by suburb against existing canopy cover (2019-20 to 2022-23)

Suburb grouping by 2020 canopy coverage (no. of suburbs in grouping)	Examples of suburbs included in grouping	Land managed by TCCS (ha)	No. of tree plantings 2019-2023	Trees planted per ha. of TCCS land
< 10% canopy coverage (14 suburbs)	Includes Throsby, Whitlam, Wright and Moncrieff	457	2,364	5.2
>10% and <20% canopy coverage (24 suburbs)	Includes Harrison, Franklin, Gordon and Casey	1,207	5,854	4.8
> 20% and < 30% canopy coverage (56 suburbs)	Includes Wanniasa, Scullin, Holt and Watson	3,405	15,684	4.6
> 30% and < 45% canopy coverage (26 suburbs)	Includes Isaacs, Red Hill, Hughes and Campbell	1,113	4,889	4.4

Source: ACT Audit Office analysis of TCCS data.

3.74 Table 3-4 shows:

- suburbs with lower canopy cover (less than 10 per cent of land area) tend to have less land managed by TCCS, which means there is less land available in those suburbs for tree plantings; and
- while overall there was a greater number of tree plantings in suburbs with higher canopy cover (over 20 per cent canopy cover), suburbs with lower canopy cover have had more trees planted per hectare of TCCS land between 2019 and 2023. This reflects the increased focus equitable distribution of new trees during this period.

3.75 Although it has been a focus of tree plantings since 2019, there are some limiting factors in planting trees suburbs with lower canopy cover. These include:

- the public land managed by TCCS and subsequently the land available for planting trees varies significantly by suburb to suburb. Some suburbs have less than one hectare of land managed by TCCS, and others over 200 hectares; and
- tree plantings in rural areas can be limited by the need for keeping areas clear for fire abatement zones, a greater area of private land with farms (less street verges and public open spaces for tree planting), and adjacent grasslands on which trees cannot be planted for ecological reasons.

3.76 In response to the draft proposed report TCCS advised:

The identification of plantings in hot and vulnerable sites can be problematic due to limitations in ArcGIS. Plantings across the street from an identified polygon are not automatically detected in filters, so these must be manually added.

...

Many of the low canopy areas, which often coincide with the hot and vulnerable category, are also the new suburbs with young trees. These do not always require significant plantings as planting sites are occupied, and only the passage of time will result in increased canopy cover.

Reporting of tree plantings in suburbs with low canopy cover

3.77 TCCS reports on the number of annual tree plantings for the preceding year in hot and vulnerable and low canopy cover suburbs in its annual reports and reports to the Legislative Assembly on Urban Tree Canopy Coverage.

3.78 This reporting, however, does not include the cumulative tree plantings in hot or vulnerable and low canopy cover suburbs since the commencement of the expanded planting program in 2019-20. This would provide insight into how the expanded planting program is supporting the goal of the *Urban Forest Strategy 2021-2045* on the equitable distribution of the urban forest.

Limitations of planning design

3.79 The *Urban Forest Strategy 2021-2045* also notes challenges associated with urban planning design and the ability to increase canopy cover in some areas:

It will not be possible for complete equitable distribution across all suburbs due to the different ways suburbs were designed. Some suburbs, like Isaacs, are able to comfortably accommodate 40% canopy cover and should continue to maintain this. However, some newer suburbs, like Throsby, are unlikely to ever surpass 20% canopy cover.¹⁵

3.80 To help address this issue, TCCS and EPSDD have been working on a project to amend planning regulations to facilitate:

- the suitable protection of existing trees; and
- the establishment of new trees when planning for infrastructure in new suburbs and in urban densification areas.

3.81 As part of this project, the ACT Government has varied the Territory Plan, through Variation 369, to introduce rules relating to tree cover for residential developments on private land.¹⁶ Prior to the introduction of this variation, there were no rules requiring ACT residential landowners to have a minimum level of tree canopy cover on their private block. Variation 329 came into effect in September 2022. The aim of the variation is to increase tree canopy cover across the city. Variation 369 introduced new rules requiring:

- a minimum tree canopy cover for multi-unit developments and single dwelling blocks; and
- that developments provide a minimum level of tree planting, with associated requirements for canopy trees, on compact, mid-sized and large residential blocks.

¹⁵ ACT Government, *Urban Forest Strategy 2021-2045*, March 2021, p. 27.

¹⁶ The Territory Plan is a statutory document that guides planning and development in the ACT. The Territory plan is used to manage development in the ACT, particularly how land is used and what can be built; assess development application; and guide the development of new estates and the management of public land.

- 3.82 In response to the draft proposed report EPSDD advised that the new planning system introduced in late 2023 has further strengthened rules to increase tree canopy cover across the city, including:
- stronger tree canopy requirements for greenfield residential subdivision;
 - new tree canopy requirements for the Community Facility Zone¹⁷; and
 - new tree canopy requirements for commercial zones.
- 3.83 *Canberra's Living Infrastructure Plan: Cooling the City* supports alternative approaches to meet the tree canopy cover in suburbs where there is insufficient space for tree planting. This includes green roofs and walls, wetlands and rain gardens, water features and fountains, watered grass, shrub beds and climbers on structures.
- 3.84 TCCS' planting data by suburb from 2019 to 2023 shows that it has made progress towards the goal of increasing tree plantings in hot and vulnerable suburbs. While overall there was a greater number of tree plantings in suburbs with higher canopy cover, suburbs with lower canopy cover have had more trees planted per hectare of TCCS land between 2019 and 2023. TCCS reports on the number of tree plantings in hot and vulnerable and low canopy cover suburbs in its annual reports and reports to the Legislative Assembly. The reporting does not, however, include the cumulative tree plantings since the commencement of the expanded planting program in 2019-20. This information would provide insight into how the expanded planting program is supporting the goal of the *Urban Forest Strategy 2021-2045* on the equitable distribution of the urban forest.
- 3.85 The *Urban Forest Strategy 2021-2045* notes there are challenges associated with urban planning design and the ability to increase canopy cover in some areas. TCCS and EPSDD have projects in place to increase canopy coverage in new developments, and alternative approaches to increase canopy coverage where there is insufficient space for new tree plantings.

RECOMMENDATION 8 REPORTING OF TREE PLANTINGS IN LOW CANOPY SUBURBS

TCCS should improve its public reporting of achievements against the *Urban Forest Strategy 2021-2045* by reporting on cumulative tree plantings in hot or vulnerable and low canopy coverage suburbs since the commencement of the expanded planting program in 2019-20.

¹⁷ A Community Facility Zone is defined under the Territory Plan as providing accessible sites for key government and non-government facilities and services for individuals, families and communities.

Risks and challenges to the tree planting program

3.86 This chapter has highlighted a series of risks and challenges to the tree planting program. TCCS is adapting to the risks and challenges of the tree planting program by:

- identifying alternative community and inter-directorate programs to assist with the target of planting 20,000 trees in 2023-24;
- refocusing its tree planting activities towards:
 - the removal and replacement of mature trees;
 - working with other agencies to identify projects aimed at increasing canopy coverage on other areas of public land not managed by TCCS; and
- revising its future tree planting targets.

Alternative community and inter-directorate programs

3.87 As of January 2024, TCCS has prepared a draft Ministerial Brief that advises:

Various community and inter-Directorate programs have been identified to assist with the target of planting 20,000 trees in 2023-24. Without these additional programs, there is a significant risk that the 20,000 target may not be met.

3.88 The draft Ministerial Brief identifies programs through which TCCS intends to engage with the community and other agencies to provide trees for planting including:

- ‘Shade our Play’ school tree program – this initiative commenced in late 2022-23 with a view to increasing canopy cover on public school grounds in the ACT. An estimated 1,000 trees is expected to be made available to the program in 2023-24;
- ‘My tree, Our forest’ resident tree program – TCCS is planning to distribute trees to interested residents through this program. One program is expected to run in March 2024 and another program is expected to run in May 2024. Residents will be invited to attend the Yarralumla Nursery on designated days and collect up to three trees per residence. An estimated 1,000 trees will be made available through this program;
- ‘Shade our Community’ – this program is similar to the ‘Shade our Play’ school tree program, but is instead aimed at distributing trees to not-for-profit groups, churches and community groups for planting on leased land or surrounding unleased land. TCCS had commenced conversations with community groups to determine the viability of this program; and
- ACT Historic Places – TCCS commenced discussion with ACT Historic Places to identify opportunities for collaboration in planting opportunities on heritage sites including Lanyon Homestead, Calthorpe’s House and Mugga-Mugga.

3.89 The draft Ministerial Brief advises:

TCCS has engaged with PACS [ACT Parks and Conservation Service] to determine appropriate nature reserves within the urban footprint where planting would contribute to the 30% canopy cover target. Native tubestock or small pots will be provided and possibly planted by Urban Treescapes internal planting team if needed.

Future directions for the planting program

3.90 TCCS advised the Minister for City Services in May 2023 of the many constraints in identifying suitable planting locations despite Canberra's relatively large urban footprint and low density:

There are considerable constraints to the effective delivery of our program due to difficulties finding suitable planting sites. Constraints include, but are not limited to; limitations to land access, development implications, site contamination, roadside restrictions on ≥80km roads, heritage, environmental restrictions e.g. Native grasslands, utility easements, contractor capacity and plant sourcing and storage. The assessment processes associated with planning are cumbersome and time consuming with current staff capacity not adequate.

3.91 Due to constraints in planting locations, TCCS anticipates that future plantings will focus on the removal and replacement of mature trees and working with other directorates in the ACT government to identify opportunities to increase canopy cover. TCCS advised that, rather than removing trees reaching end of life at the level calculated by CSIRO through its modelling for the *Urban Forest Strategy 2021-2045*, the focus should be on extending the life of these trees to ensure they continue to contribute to the ACT's canopy cover. TCCS advised that the planned *Urban Forest Condition Report* assists in this goal.

3.92 TCCS has advised of the difficulty of finding suitable planting sites, which threatens its ability to effectively deliver the program. In response to this challenge TCCS anticipates that future plantings will focus on the removal and replacement of mature trees and working with other directorates to identify opportunities to increase canopy cover on other land. TCCS also advised that, rather than removing trees reaching end of life at the level calculated by CSIRO through its modelling for the *Urban Forest Strategy 2021-2045*, the focus should be on extending the life of these trees to ensure they continue to contribute to the ACT's canopy cover.

Revisions to the planting targets

3.93 In the same brief (May 2023) TCCS highlighted several challenges to achieving the planting targets. The challenges identified in the brief included staff turnover, constraints in identifying appropriate planting locations, increased number of re-routed plantings, increased contractor costs and increased anticipated watering of new trees due to changing watering patterns.

3.94 To address these issues, TCCS identified an intention to reduce the planting targets from 2024-25 onwards. The brief noted that:

The target in planting programs beyond 2023-24 has been adjusted to better enable future planning, to facilitate expansion of the urban forest and facilitate necessary tree removals for renewal plantings.

3.95 The following planting targets were proposed:

- 5000 trees in 2024-25;
- 5000 trees in 2025-26 (reduced from a prior target of 10,000); and
- 10,000 trees in 2026-27.

3.96 TCCS provided advice to the Audit Office in January 2024 on the proposed planting numbers from 2024-25 onwards:

The proposed reduction in planting numbers is largely attributed to insufficient funding for renewal of the urban forest, i.e. removal to enable replacement, and insufficient resourcing to identify suitable planting sites and the corresponding appropriate species. The vast majority of planting to date has been infill planting in gaps in verge plantings or in previously unplanted open space areas. Many of these easy-to-identify locations have now been filled and increased conflict with other services/other management programs/public opinion are being experienced.

3.97 TCCS advised the Audit Office that, as at November 2023, there has been no decision in relation to the proposed reduction in planting numbers from 2024-25. Further, TCCS advised that:

Half the requested funding for planting in 2024-25 was incorporated in the Urban Forest Act budget bid for 2023-24. This is not sufficient to plant the proposed 5,000 trees and further funding will be sought in the Urban Forest Strategy 2024-25 budget bid. As forward ordering of plants will be limited due to confirmation of the additional funding delayed until June 2024, this may affect the delivery of planting programs in 2024-25.

3.98 TCCS had previously advised the Minister for City Services in November 2020 that ‘around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement’. Based on this, the adjusted targets would mean a shortfall of 40,000 trees between 2024-25 and 2026-27. Without appropriate planning to make up this shortfall in future years and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have impacts on the goals to plant 459,000 trees and achieve 30 percent canopy cover by 2045.

3.99 In response to challenges associated with achieving the tree planting program TCCS has identified an intention to reduce future planting targets. The following targets have been proposed: 5000 trees in 2024-25; 5000 trees in 2025-26 (reduced from a prior target on 10,000); and 10,000 trees in 2026-27. TCCS had formerly advised the Minister in November 2020 that ‘around 20,000 trees must be established each year for the next 25 years and any delays in reaching this number will increase the annual planting requirement’. The proposed targets would mean a shortfall of 40,000 trees between 2024-25 and 2026-27. Without appropriate planning, or other mitigation strategies, to make up this shortfall in future years

and address the ongoing risks and challenges to the planting program, the reduction in planting targets will have an impact on the goal to plant 459,000 trees and achieve 30 percent canopy cover by 2045.

Management of mature trees

3.100 The Urban Treescapes unit undertakes operational activities for the management of mature trees on public land. This includes activities for pruning, assessment and inspection, removal and/or replacement.

3.101 Operations are managed through five depots based in Gungahlin, Belconnen, Dickson, Holder and Tuggeranong.

3.102 A 2020 brief to the Minister for City Services highlighted the important role of tree maintenance in achieving the 30 per cent canopy target:

Achieving the canopy cover target requires not only new plantings but also enhanced maintenance of existing trees to extend their useful life, proper maintenance of newly planted trees to ensure their health and vigour, and timely removal and replacement of end of life trees.

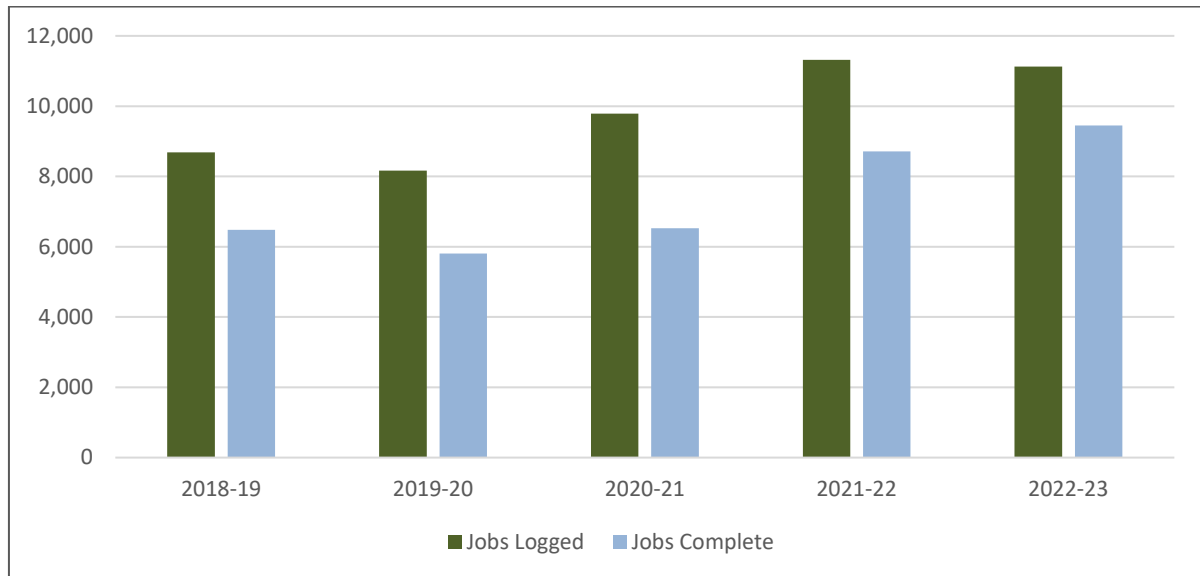
Tree maintenance

Community requests

3.103 Members of the public can submit a tree maintenance request through the Fix My Street portal. Operational staff then undertake an inspection of the tree in order to make a decision as to whether the request requires action. Requests are then assigned a timeframe for completion (Urgent, High, Medium or Low). Operational staff will action the request, or for removals of trees over 10 metres a contractor will be engaged.

3.104 Figure 3-7 shows the number of tree related jobs logged and completed by Urban Treescapes unit maintenance teams between 2018-19 and 2022-23.

Figure 3-7 Number of tree-related jobs logged and completed by operations units (2018-19 to 2022-23)



Source: Audit Office, based on TCCS data.

3.105 Figure 3-7 shows an increase in jobs from 8,685 in 2018-19 to 11,319 and 11,129 in 2021-22 and 2022-23 respectively. TCCS advised the Minister for City Services in May 2023 that the increase in job numbers could be attributed to:

- the impact of the West Belconnen supercell thunderstorm in January 2022;¹⁸ and
- the reduced number of jobs completed in 2022-23 due to the unavailability of trained arborists.

Tree risk assessments

3.106 TCCS has developed a risk management policy for urban tree assessments. The policy provides guidance on the benefit-risk analysis of urban trees to assist with decision-making for the management of tree related risk, primarily with regard to public trees. The policy seeks to manage risk to the community while minimising the removal of mature trees that form part of the urban forest. The document was approved in June 2023. The policy provides a comprehensive risk assessment framework including:

- defined roles and responsibilities in relation to tree assessment including required training courses for staff;
- the decision-making processes for tree assessments;
- a four-tier risk rating system to manage the risk from Canberra's urban trees and branches falling;

¹⁸ On 3 January 2022, a supercell thunderstorm occurred in West Belconnen which caused significant damage to the area. The Legislative Assembly's Standing Committee on Health and Community Wellbeing undertook an inquiry into the West Belconnen Supercell thunderstorm. Its report, released in September 2022, made several recommendations including three in relation to removal of potential hazardous trees.

- documents the record keeping and report methods for tree assessments; and
- defines annual Key Performance Indicators (KPIs) to assess the efficiency and effectiveness of tree assessments.

End-of-life tree management

3.107 In May 2023, TCCS advised the Minister for City Services of an increased role for maintenance teams in undertaking removals of end-of-life trees in coming years to allow for replanting opportunities as part of reaching the canopy cover goals:

The capacity of in-house operations and industry arborists will need to be progressively developed to ensure adequate resources are in place to cater for the removal of hazardous and ageing trees and thus provide the space for tree planting. Modelling estimates that over 200,000 trees will reach end of life by 2045, representing a significant deterioration of Canberra's urban forest and a real risk to our capacity to deliver a 30% canopy target without a proactive removal and renewal program.

This should also be paired with a program of maintenance and mature tree care to extend the life of the mature population in the urban forest.

Strategic tree replacement program

3.108 TCCS' website states that 'groups of ageing trees in parks and streets may be part of a strategic tree replacement program'. However, TCCS has not developed or documented a 'strategic tree replacement program' or a strategic approach to replacing ageing trees.

3.109 As discussed in paragraphs 2.115 to 2.117, policies and procedures around tree renewal, removal and replacement are still in draft.

3.110 The CRA made the following observations on the management of urban trees in city precincts and in doing so identified opportunities for improvement:

- many trees in Canberra's inner urban areas were planted and established at similar times, and therefore many trees in the urban forest will reach end of life simultaneously. The CRA noted that while succession planning is a primary goal of the *Urban Forest Strategy 2021-2045*, it has not been well translated into a clear pathway of action for the city. The CRA identified a need to work with TCCS to develop a succession plan for the mature trees in Canberra's inner urban areas that are expected to reach end of life in coming years. The CRA identified that the succession plan could include establishing an interactive map of strategic tree planting locations with the city precinct that identified tree nearing end of life, and suitable tree species for various locations based on urban and environmental conditions and maintenance requirements. The plan would aim to improve the viability of the urban forest within city precincts and maintain canopy coverage; and
- there is a tension between priority for tree protection and the safety of the public realm in relation to the maintenance of trees. Tree protection tends to override other factors necessary for ensuring a safe public realm. For example, to support the perception of safety within the public realm it may sometimes be beneficial to uplift

canopies to improve sightlines, which is a small modification with limited impacts on trees but that can have significant safety benefits.

3.111 TCCS advised that due to limitations in planting locations, future planting programs will explore opportunities for new planting locations as ageing trees reach their end-of-life and require removal. TCCS has activities underway to plan for this, including:

- the engagement of environmental consultants to undertake a condition report of the ACT's urban forest (the *Urban Forest Condition Report*), and progressively map suburbs at risk of losing canopy due to ageing trees. This would involve taking a multi-spectral thermal imagery index to assess the health of mature urban trees and assist in planning for end-of-life and removals of those trees. TCCS advised that the data is scheduled to be capture in February 2024 and the final data analysis and report due to be delivered in June 2024. It is anticipated that the data from this review could be integrated into ArcGIS Online, TCCS' IT system for the management of urban trees; and
- the creation of a Senior Arborist role at the Technical Officer 4 level to undertake inspections of mature trees and develop a timeline for renewal, as well as assisting with engagement with the community on the renewal and removal process for urban trees.

3.112 TCCS' operational maintenance activities for mature trees play an important role in achieving the 30 per cent canopy cover target. As opportunities for locations for new plantings are filled, the removal and replacement of mature trees will play an increasing role in building the urban tree canopy. However, TCCS has not yet developed or documented a 'strategic tree replacement program' or a strategic approach to replacing ageing trees. TCCS has, however, identified an intention to: engage environmental consultants to undertake a condition report of the ACT's urban forest and progressively map suburbs at risk of losing canopy due to ageing trees; and employ a Senior Arborist to undertake inspections of mature trees and develop a timeline for renewal. These activities should be undertaken as a matter of priority.

RECOMMENDATION 9 STRATEGIC TREE REPLACEMENT PROGRAM

TCCS should develop and implement a strategic tree replacement program that focuses on:

- a) identifying mature trees at risk; and
- b) planning for the end-of-life removal and replacement of those trees.

4 MONITORING AND REPORTING

4.1 This chapter discusses TCCS' monitoring and reporting of its urban tree management activities. The chapter discusses TCCS':

- urban tree management data and IT systems, including how data is recorded and viewed, and the data quality controls in place;
- use of urban tree management data to identify risks to achieving planting targets and drive continuous improvement; and
- monitoring and reporting arrangements, including performance measures and targets, external and internal reporting.

Summary

Conclusion

TCCS has established systems to manage and record data on the day-to-day management of urban tree operational activities, and its public reporting on progress on its tree planting and management activities is timely, informative and largely balanced and partly consistent. There are opportunities to improve on its monitoring and reporting of urban tree management activities through:

- strengthening data quality controls for the IT system that records data on operational activities through additional training and development of quick guides for staff on different system functions; and
- including data on tree survival rates and cumulative planting in suburbs vulnerable to heat to provide a full picture of long-term performance against the canopy coverage goal.

Key findings

TCCS relies on two management information systems for the day-to-day management of urban tree operational activities: ArcGIS Online for proactive planting, watering and removal activities; and Salesforce for reactive requests from the public on tree maintenance activities. Data is recorded in the systems at several points during the urban tree management process including at the start of the activity, during key milestones and once the activity is completed. Data is used to monitor and analyse performance and inform how urban tree activities are managed.

Paragraph

4.17

The quality of data in TCCS' management information systems for the management of urban trees continues to remain a challenge. It may be impacted by in-house staff or contractors: not entering the correct data; or failing to update data when undertaking tree related activities. TCCS has in place a number of data quality controls that seek to ensure that the data recorded is complete, accurate and timely. TCCS has initiated a project to review the system data structure for ArcGIS Online, with a view to improving data capture and program reporting. However, there may also be opportunity to strengthen controls for Salesforce through additional training and development of quick guides for staff on different system functions (as TCCS has done for ArcGIS Online).

4.27

TCCS' progress on its tree planting and management activities is publicly reported through an Accountability Indicator in its annual report and in a report to the Legislative Assembly on progress of initiatives in the *Urban Forest Strategy 2021-2045* and their contribution to the canopy cover target. While TCCS' external reporting on urban trees is largely informative, balanced, timely and consistent; there could be improvements in clearly defining reporting criteria. TCCS' public reporting on its tree planting and management activities does not include information on cumulative plantings in hot and vulnerable suburbs since planting was prioritised in those areas in 2019-20, nor does it include data on survival rates for trees at appropriate periodic intervals. This information would provide greater insight on the long-term effectiveness of the ACT Government's planting program in meeting canopy coverage goals.

4.50

Information management

Management information systems

4.2 TCCS uses three management information systems for its urban tree management activities: ArcGIS Online; Salesforce and Assetic.

ArcGIS Online

4.3 ArcGIS Online is the key information system for TCCS' urban tree management activities. It is a TCCS-managed system. There are three layers of data for urban tree management activities:

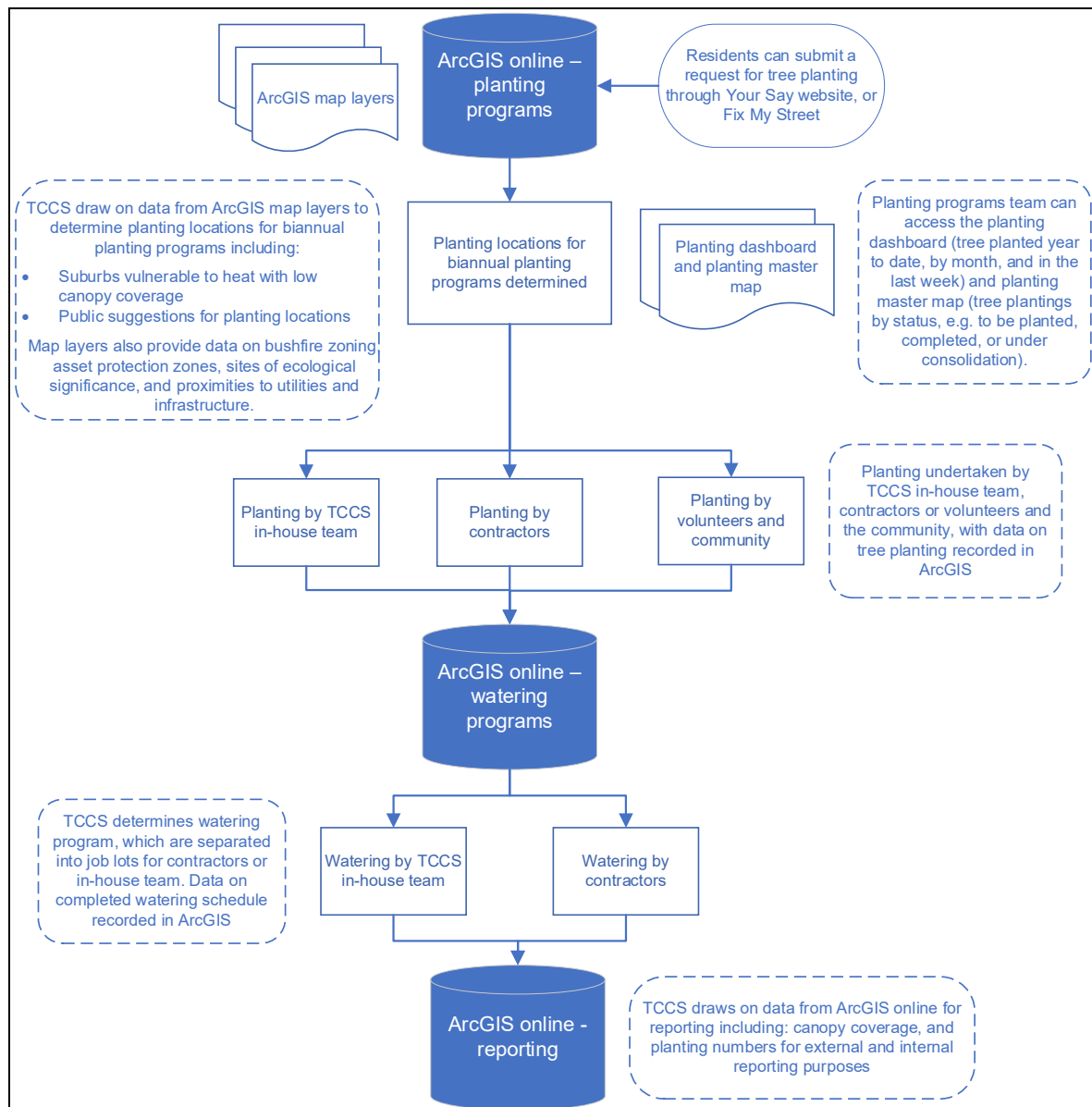
- tree planting – data relating to the biannual planting programs and the juvenile tree watering program;
- tree assessments – data relating to tree audits and assessments and the tree removal program and tree replacement program; and
- gifted trees – data relating to trees gifted by the community and/or planted by volunteer groups.

4.4 ArcGIS Online also includes LiDAR survey data from the 2015 and 2020 assessments. These geospatial data sets are used by TCCS to assess tree canopy coverage. While ArcGIS Online includes data from 2005 onwards, the Urban Treescapes unit started using ArcGIS Online to deliver programs in 2014. This means that data from 2014 onwards is more reliable.

Tree planting and watering activities

4.5 Figure 4-1 outlines how data is recorded in ArcGIS Online in relation to TCCS’ urban tree planting and watering activities.

Figure 4-1 Recording data on urban tree planting and watering activities



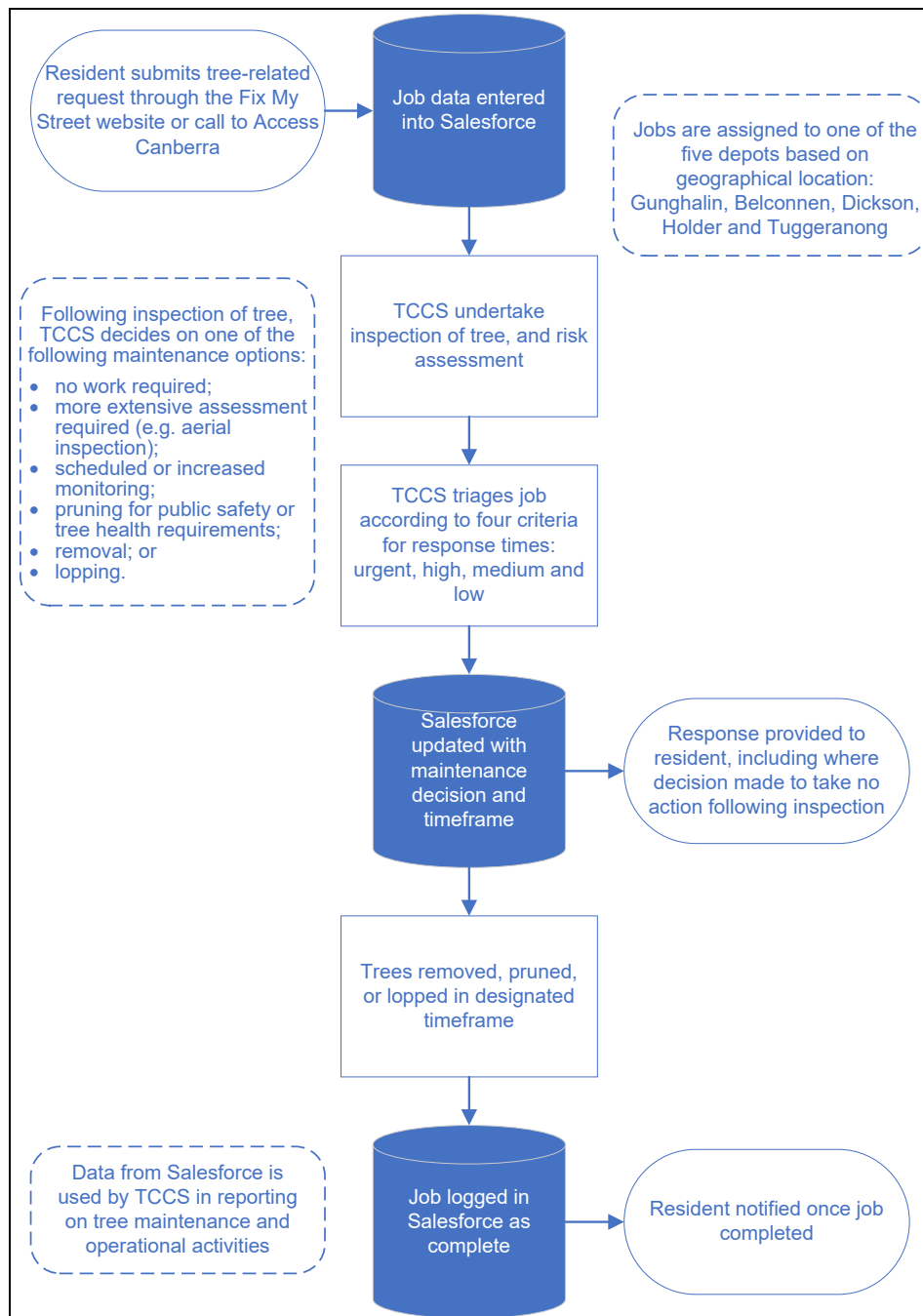
Source: ACT Audit Office based on TCCS documentation.

- 4.6 ArcGIS Online produces a planting dashboard and planting master map that is used by the Urban Treescapes unit to deliver the planting program:
- the planting dashboard displays the trees planted year to date, by month over the last 12 months, and in the last seven days; and
 - the planting map displays the status of the current tree planting program including:
 - trees yet to be planted;
 - trees completed or under consolidation (i.e. the 13 week period where the tree is managed by contractors prior to being handed back to TCCS for ongoing management); and
 - where trees have been vandalised, are missing or not viable.
- 4.7 By clicking on each tree planting icon on the map, information in relation to the tree is displayed including:
- location;
 - who planted the tree;
 - the tree species; and
 - when the tree was planted.
- 4.8 A screenshot displaying the planting map is included in Appendix C.
- 4.9 As part of a project to improve ArcGIS Online, TCCS expects that the planting dashboard and map will be redeveloped with improved functionality to provide authoritative reporting (see paragraph 4.26).

Salesforce

- 4.10 TCCS uses Salesforce to manage tree maintenance requests (pruning, removal or inspection) made by members of the public to Access Canberra or through the Fix My Street website. TCCS has used Salesforce since 2021. TCCS manages the Salesforce database, while the Fix My Street interface is managed by Access Canberra.
- 4.11 Tree-related requests are managed by the Operations team in the Urban Treescapes unit. Members of the public can also request a new tree planting through the Fix My Street website.
- 4.12 ArcGIS Online and Salesforce are not linked and manual entry of data is sometimes required between the systems (such as public requests on planting locations). However, as the two systems manage largely discrete parts of operational tree activities ('reactive' maintenance requests as opposed to 'proactive' tree planting activities) the lack of linkages between the systems has limited impact on how the systems are used.
- 4.13 Figure 4-2 outlines how data is recorded in Salesforce in relation to TCCS' urban tree maintenance activities.

Figure 4-2 Recording data for urban tree maintenance activities



Source: ACT Audit Office based on TCCS documentation.

Assetic

4.14 Assetic is an asset management system. Assetic replaced TCCS' Integrated Asset Management System (IAMS) in 2019. The asset management module in Assetic is used to capture data on trees as assets. Its purpose is to:

- enable reporting by suburb or region on the value and assets of trees; and
- record the financial impact of tree maintenance.

- 4.15 The primary systems used by TCCS for the day-to-day management of urban tree operational activities are ArcGIS Online and Salesforce. Apart from managing a small part of the workflow for tree removals, Assetic is not used for the day-to-day management of urban trees.
- 4.16 The audit focused on TCCS' use of ArcGIS Online and Salesforce. Data collected in ArcGIS Online and Salesforce is used to monitor and analyse performance and inform how urban tree activities are managed, including:
- using data on heat vulnerable suburbs with low canopy cover to guide planting locations (paragraph 3.68);
 - using data collected through an audit of planting gaps to inform biannual planting programs and plans to collect data on the urban forest to inform a program of replacement and renewal for mature urban trees (discussed in Chapters 2 and 3); and
 - informing the Minister for City Services on achievement against planting targets, limitations to achieving planting targets and to support requests for additional fundings through annual business cases (discussed in Chapter 2).
- 4.17 TCCS relies on two management information systems for the day-to-day management of urban tree operational activities: ArcGIS Online for proactive planting, watering and removal activities; and Salesforce for reactive requests from the public on tree maintenance activities. Data is recorded in the systems at several points during the urban tree management process including at the start of the activity, during key milestones and once the activity is completed. Data is used to monitor and analyse performance and inform how urban tree activities are managed.

Data quality controls

- 4.18 Data quality controls seek to ensure that information to make key business decisions is reliable, accurate and complete. Data quality controls for information systems seek to ensure that data is:
- fit for purpose; and
 - supported by proactive monitoring and management.
- 4.19 Common characteristics of fit for purpose data are: accuracy, completeness, consistency, timeliness and uniqueness (deduplicated data). Poor quality data can result from incorrect data entry, changes in business rules or version control issues due to difficulty in identifying the latest version of data.
- 4.20 Through discussions with TCCS and a review of TCCS supporting documentation for the use of ArcGIS Online and Salesforce it was apparent that TCCS had some controls in place for entering data into the systems but that there were also areas for improvement.

Data quality controls

4.21 Data quality controls that are in place include:

- new system users are provided with training and supported by a user guide on basic system functions. For ArcGIS Online, quick guides have been developed for different functions (planting, watering and removals);
- restrictions on who can enter data:
 - for ArcGIS Online planting and watering program data is separated into job lots and assigned to contractors – contractors can only view, and add data to, their assigned job lots;
 - for Salesforce, operations teams can view and add data to assigned jobs for their depot (based on geographical location).
- data on tree-related activities are recorded in real time on tablets or through a mobile application in the field. This assists with maintaining the timeliness of data.

4.22 There are further controls associated with the completeness and accuracy of data prior to the data being used for reporting purposes. For ArcGIS Online, data is assessed for discrepancies by the Data and Asset Integration team in TCCS. For Salesforce, TCCS has established a position in the operations team that is responsible for managing and monitoring the system and the completeness and accuracy of operational data.

Data quality areas for improvement

4.23 TCCS advised that data quality continues to remain a challenge and may be impacted by in-house staff or contractors:

- not entering the correct data; or
- failing to update data when undertaking tree related activities.

4.24 In this respect, high staff turnover in the programs and operational team present a risk to accurate data entry due to limited time for adequate training.

4.25 TCCS also advised that, for ArcGIS Online, as the layers of data on tree plantings and associated information has been built up over time, the system has started to lag and this has limited the reporting function. For example, for field staff system lag has meant that it is difficult and time consuming to record all the information required for reporting. Further, there the type of reports, and the way the data can be viewed by users, is limited.

4.26 To address the issues with ArcGIS Online lagging and limited reporting functions, TCCS has initiated a project to review the system data structure. The project is currently underway with a view to improving data capture and program reporting. The project will also involve the development of data dictionaries, data migration and a redevelopment of maps and dashboards. TCCS advised that it has identified a contractor to build the new system architecture for ArcGIS in mid to late September 2023 and that data migration will be scheduled once the new system architecture is built.

- 4.27 The quality of data in TCCS' management information systems for the management of urban trees continues to remain a challenge. It may be impacted by in-house staff or contractors: not entering the correct data; or failing to update data when undertaking tree related activities. TCCS has in place a number of data quality controls that seek to ensure that the data recorded is complete, accurate and timely. TCCS has initiated a project to review the system data structure for ArcGIS Online, with a view to improving data capture and program reporting. However, there may also be opportunity to strengthen controls for Salesforce through additional training and development of quick guides for staff on different system functions (as TCCS has done for ArcGIS Online).

RECOMMENDATION 10 DATA QUALITY CONTROLS

TCCS should strengthen data quality controls for the use of Salesforce for urban tree activities by:

- a) providing additional training to staff and contractors on its use; and
- b) developing quick guides on different system functions.

Monitoring and reporting performance

Performance measures and targets

- 4.28 TCCS has two primary performance measures that are reported on publicly:
- progress towards achieving the 30 percent canopy cover goal; and
 - achievement of the yearly planting targets.
- 4.29 Performance measures and targets relating to tree planting and canopy cover are summarised in Table 4-1.

Table 4-1 Performance measures and targets for tree planting and canopy cover

Performance measure(s) or target(s)	Type of measure	Data used to assess target	Reporting frequency and where reported
Progress against 30 percent canopy coverage goal	Externally (publicly) reported	LiDAR data recorded in ArcGIS	Reported annually as part of annual reports on urban tree canopy cover to the Legislative Assembly. Updated data is included every five years when new LiDAR measurements are taken of canopy coverage.
Achievement against yearly planting targets	Externally (publicly) reported	Data recorded on tree planting numbers in ArcGIS Online	Reported annually as part of: <ul style="list-style-type: none"> • Accountability Indicator reporting in annual reports; and

Performance measure(s) or target(s)	Type of measure	Data used to assess target	Reporting frequency and where reported
			<ul style="list-style-type: none"> annual reports on urban tree canopy cover to the Legislative Assembly.
Achievement against weekly planting numbers	Internally reported	Data recorded on planting numbers in ArcGIS Online	Reported weekly to the Minister for City Services.

Source: ACT Audit Office analysis of publicly available and supplied documentation and advice by TCCS.

4.30 Progress against the 30 percent canopy cover goal is reported annually to the Legislative Assembly. The data is updated every five years based on LiDAR measurements of canopy coverage. Progress against yearly planting targets is reported to the Legislative Assembly and in TCCS' annual reports.

Annual reporting

TCCS annual report

4.31 TCCS' annual reports contain information on achievement against tree planting goals for the preceding year, including the number of tree plantings broken down by the in-house planting team, contractors and volunteers. Data is also included on planting locations (for example street verges or open parks) and how many trees were planted in response to public suggestions.

4.32 Annual reports also include information on community engagement initiatives and tree maintenance requests. The annual reports identify the priorities for urban tree management for the following year.

Reporting against the Accountability Indicator

4.33 Accountability Indicators are measures of an agency's performance in delivering its outputs. Accountability Indicator achievements are reported to the Legislative Assembly in February (6-month results) and are published in the annual report (full-year results).

4.34 The *ACT Budget 2022-23* identifies that plantings are to be reported as an Accountability Indicator against a 90 percent target of the annual commitment of trees to be planted in 2022-23. This is the first year the Accountability Indicator has been reported against. The reporting requirements are outlined below:

- the cut off dates for reporting data is 31 December for the 6-month results, and 30 June for the full-year results;
- variances from the target by more than or equal to 5 percent are required to be explained;
- trees that have been planted that subsequently failed or become vandalised are to be counted as completed plantings toward the total count;

- trees planted by contractors that fail or are vandalised during the consolidation period are expected to be either:
 - a) replaced by contractors in that location and will not be counted again
 - b) counted but not replaced due to the likelihood of repeated failure or vandalism, or
 - c) replaced at a future time and be counted as a new planting to reflect the planning involved, cost of purchasing the replacement tree and the cost of planting and consolidation of the replacement tree.
- plantings given as gifted, or part of capital works programs are not to be included.

4.35 Reporting against the Accountability Indicator for 2022-23 is summarised in Table 4-2.

Table 4-2 Reporting against Accountability Indicator

Target	6 monthly report (31 December 2022)	Full year report (30 June 2023)
<i>Achievement against 90% target, variance, and reasons for variance</i>	<p>45% achievement (50% variance)</p> <p>Reasons provided for the variance were:</p> <ul style="list-style-type: none"> • delays in the establishment of the new planting panel which limited the availability of contractors; and • wet weather which postponed volunteer planting events. <p>To address these issues, TCCS noted that it sought funding to grow its in-house planting team so that the planting target could be met regardless of future market limitations.</p>	<p>70.3% achievement (21.9% variance)</p> <p>Reasons provided for the variance were:</p> <ul style="list-style-type: none"> • delays in the establishment of the new planting panel which limited the availability of contractors; • shortage of contractors submitting quotes for work for subsequent planting programs at a price that represented value for money; • wet weather which postponed volunteer planting events; • limitation in sourcing suitable planting sites; • residents refusing street tree plantings outside of their homes; and • high staff turnover in in-house planting team. <p>To address these issues TCCS reported that it had increased the size of the inhouse planting team.</p>
<i>Achievement against planting target numbers</i>	<p>4,025 trees planted against a target of 9,000 trees, including:</p> <ul style="list-style-type: none"> • 3,625 trees planted by TCCS in-house team, contractors or volunteers; and • 400 gifted trees. 	<p>12,650 trees planted against a target of 18,000 trees, including:</p> <ul style="list-style-type: none"> • 11,680 trees planted by TCCS in-house team, contractors, or volunteers, and • 970 gifted trees.

Source: ACT Audit Office summary of TCCS reporting against Accountability Indicator.

4.36 In response to the draft proposed report, TCCS also advised that a further reason for the variance was that constant wet weather delayed all planting operations as trucks were not able to access grassed areas for significant periods of time.

- 4.37 Both the 6 monthly report and full year report included gifted plants in the total number of tree plantings. This is despite the Accountability Indicator's caveat that gifted plantings are not to be included in the reporting numbers. TCCS advised the Audit Office that 'gifted' trees are those planted by developers and accepted by TCCS (reported as 'other unleased planting' in the reports to the Legislative Assembly) rather than trees gifted by TCCS to the community. However, this is not clearly defined in the reporting requirements for the Accountability Indicator.
- 4.38 Although vandalised or missing trees are counted in the final planting numbers for reporting against the Accountability Indicator, analysis of TCCS data shows that this is a small percentage of total planting numbers. For its Spring 2022 and Autumn 2023 planting programs, 327 trees were vandalised, missing or failed, representing around 2.9 percent of trees planted during that period.

Reporting to the Legislative Assembly

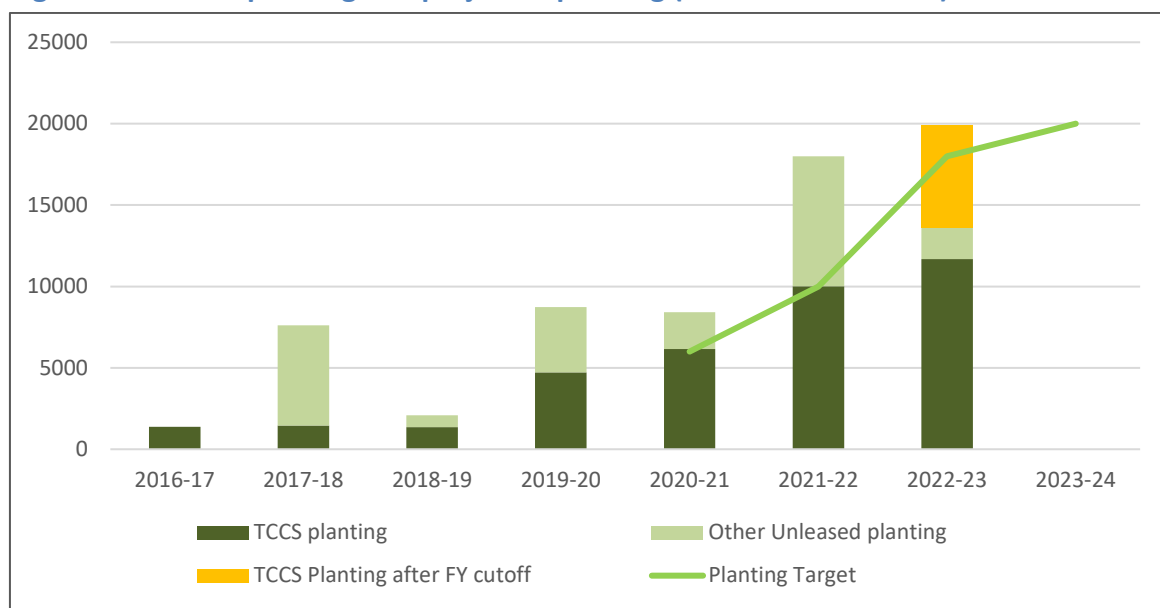
- 4.39 The Minister for City Services reports annually to the Legislative Assembly on the progress of initiatives in the *Urban Forest Strategy 2021-2045* and their contribution towards the canopy cover target. To date, three reports have been provided:
- November 2021 (covering the period 2020-21);
 - November 2022 (covering the period 2021-22); and
 - November 2023 (covering the period 2022-23).
- 4.40 The reports from the Minister to the Legislative Assembly include information on:
- canopy cover and tree plantings across ACT districts;
 - existing canopy cover and suburbs identified for priority action, including those with vulnerability to heat;
 - a breakdown of tree plantings by location, public suggestion, TCCS and other unleased planting; and
 - initiatives to support urban tree planting including installation of permeable surfaces and community engagement activities.
- 4.41 The *2023 Report to the Legislative Assembly on the Urban Tree Canopy Coverage* noted that a total of 12,650 trees were planted in 2022-23 against a goal of 18,000 trees, but that the target was achieved in early 2023-24.
- 4.42 The *Urban Forest Strategy 2021-2045* identified 51 actions against each of the six objectives of the Strategy. The *2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage* identified that 17 of the 51 action items make a major contribution towards the canopy cover target. The report included information on progress against the Strategy's action items. Of the 17 action items, 12 are specifically relevant to this audit.

4.43 This reporting is analysed in Appendix D of this report. Appendix D summarises:

- the 12 action items;
- progress against the action items as reported in the *2023 Report to the Legislative Assembly on the Urban Tree Canopy Coverage*; and
- the Audit Office’s comments or findings against these action items.

4.44 The *2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage* includes a figure on tree planting and projected planting from 2016-17 to 2023-24 (Figure 4-3). ‘Unleased planting’ refers to tree plantings as part of new estate development, infill and urban renewal projects.

Figure 4-3 Tree planting and projected planting (2016-17 to 2023-24)



Source: TCCS data and analysis.

Reporting on hot and vulnerable suburbs

4.45 The 2021, 2022 and 2023 reports to the Legislative Assembly on urban tree canopy cover include data on suburbs affected by heat and vulnerability. These are suburbs where it has been determined that residents are more vulnerable to urban heat. Vulnerability indices for suburbs (as a percentage of land area) were determined by assessing data from a 2017 CSIRO land surface temperature study, combined with a vulnerability index based on socio-economic and age data.

4.46 A third of the suburbs (40 of the 120 suburbs) listed in the reports to the Legislative Assembly are identified as having 0 percent land area identified as hot and vulnerable. As shown in Table 4-3 generally there is an inverse correlation between the 2020 tree canopy coverage across suburbs and the vulnerability to urban heat, indicating that suburbs with low canopy coverage tend to be more vulnerable to urban heat.

Table 4-3 Average canopy coverage in hot and vulnerable suburb groupings

Land area identified as hot and vulnerable (No. of suburbs in grouping)	Examples of suburbs included in grouping	Average percentage of canopy cover of suburbs included in grouping
> 50 % land area (5 suburbs)	Uriarra Village, Crace, Higgins, Canberra Airport, Pialligo	11.8%
> 30% and < 50% land area (10 suburbs)	Includes Harrison, Franklin, Wright and Casey	15.4%
> 20% and < 30% land area (10 suburbs)	Includes MacGregor, Scullin, Holt and Amaroo	23.7%
> 10% and < 20% land area (14 suburbs)	Includes Gungahlin, Coombs, Weston, and Kaleen	22.7%
< 10% land area (41 suburbs)	Includes Monash, Griffith, Watson and Cook	28.8%
0% land area (40 suburbs)	Includes Isaacs, Turner, Fadden and Forrest	22.1%

Source: ACT Audit Office analysis of TCCS data.

4.47 Many of the suburbs in the least heat vulnerable category (those with vulnerability index of 0 percent) have very high canopy cover, e.g. Isaacs and Fadden have canopy coverage of 44.9 percent and 36.7 percent respectively. However, there are a number of suburbs with a vulnerability index of 0 percent that have low canopy coverage. Of the 40 suburbs identified as having 0 percent vulnerability index, eight have less than 10 percent canopy cover. This includes suburbs such as Whitlam and Throsby which have 2.43 percent and 2.37 percent canopy coverage respectively. TCCS advised the Audit Office that:

The reason the suburbs have 0 indicated is that using socio-economic and age data identifies that these suburbs as being of no risk of Hot & Vulnerable ... This is due to the suburbs only being constructed at the time [the vulnerability indices were determined] and no vulnerable people listed as residing there. As the suburbs are now populated, we will need to redo the assessment, or at least put a note in the next report to indicate that those figures are no longer applicable and need to be reviewed.

Analysis of performance reporting

4.48 The June 2023 ACT Audit Office publication on *Insights on performance reporting* identifies a series of elements that are important for publicly reporting performance. The ACT Audit Office assessed TCCS' external reporting on its urban tree management against these elements. A summary of this analysis is shown in Table 4-4.

Table 4-4 Assessment of TCCS' external reporting on urban trees against ACT Audit Office publication *Insights on performance reporting*

Performance reporting element and description	Audit Office assessment of TCCS external reporting
<p>Informative performance reporting</p> <p>Assists with transparency and accountability, providing factual, tangible, explanatory information. Including factors which may have impacted on performance.</p>	<p>Largely met</p> <ul style="list-style-type: none"> • TCCS' public reporting includes total planting numbers, and further breakdowns (for example, which group planted trees, where trees were planted and when) to provide insights to performance. • Factors impacting on performance are included with explanatory statements. • There are further opportunities to include data on tree survival rates and cumulative planting in suburbs vulnerable to heat to provide a full picture of long-term performance against goals.
<p>Fair and balanced performance reporting</p> <p>Reporting should provide a fair and balanced assessment, conveying an unbiased account of performance. Including an honest appraisal of shortfalls and reasoning for occurrence.</p>	<p>Largely met</p> <ul style="list-style-type: none"> • TCCS' public reporting on urban trees acknowledges the challenges in meeting planting targets and lists the limitations and how these will be addressed. • However, fair and balanced reporting is undermined if the differences between planting numbers in the various reports are not clearly explained, or criteria for reporting is not met (for example, inclusion of gifted trees in accountability indicator reporting or ensuring that gifted trees are clearly defined).
<p>Timely performance reporting</p> <p>Performance reporting is of value when it is timely. Any delays to the preparation and publication of performance reporting diminishes its value and relevance.</p>	<p>Fully met</p> <ul style="list-style-type: none"> • TCCS reports annually on urban trees in its annual report, to the Legislative Assembly and 6-monthly progress reports on the Accountability Indicator.
<p>Comparable and consistent performance reporting</p> <p>Periodic reporting such as on a quarterly, half-yearly or annual basis can provide users with a picture of performance over time. Actions, goals and objectives are reported in a consistent approach.</p>	<p>Largely met</p> <ul style="list-style-type: none"> • TCCS' public reporting in annual reports and to the Legislative Assembly are generally consistent over time and provide points of comparison on performance. • There are some inconsistencies with the way data is reported publicly. For example, the inclusion of unleased plantings in some publications but not others.

Source: ACT Audit Office analysis of TCCS documentation.

Shortcomings in public reporting

4.49 There are some limitations to the information on the tree planting programs reported to the Legislative Assembly on canopy cover targets and in TCCS' annual reports:

- annual tree planting numbers in suburbs vulnerable to urban heat with low canopy coverage are reported on, but not cumulative tree plantings numbers since 2019-20 the equitable distribution of canopy cover was first prioritised in the biannual planting programs. Cumulative planting numbers in these suburbs may provide a more

complete picture of the ACT Government's long-term progress in addressing urban heat and suburbs with low canopy coverage through tree planting initiatives; and

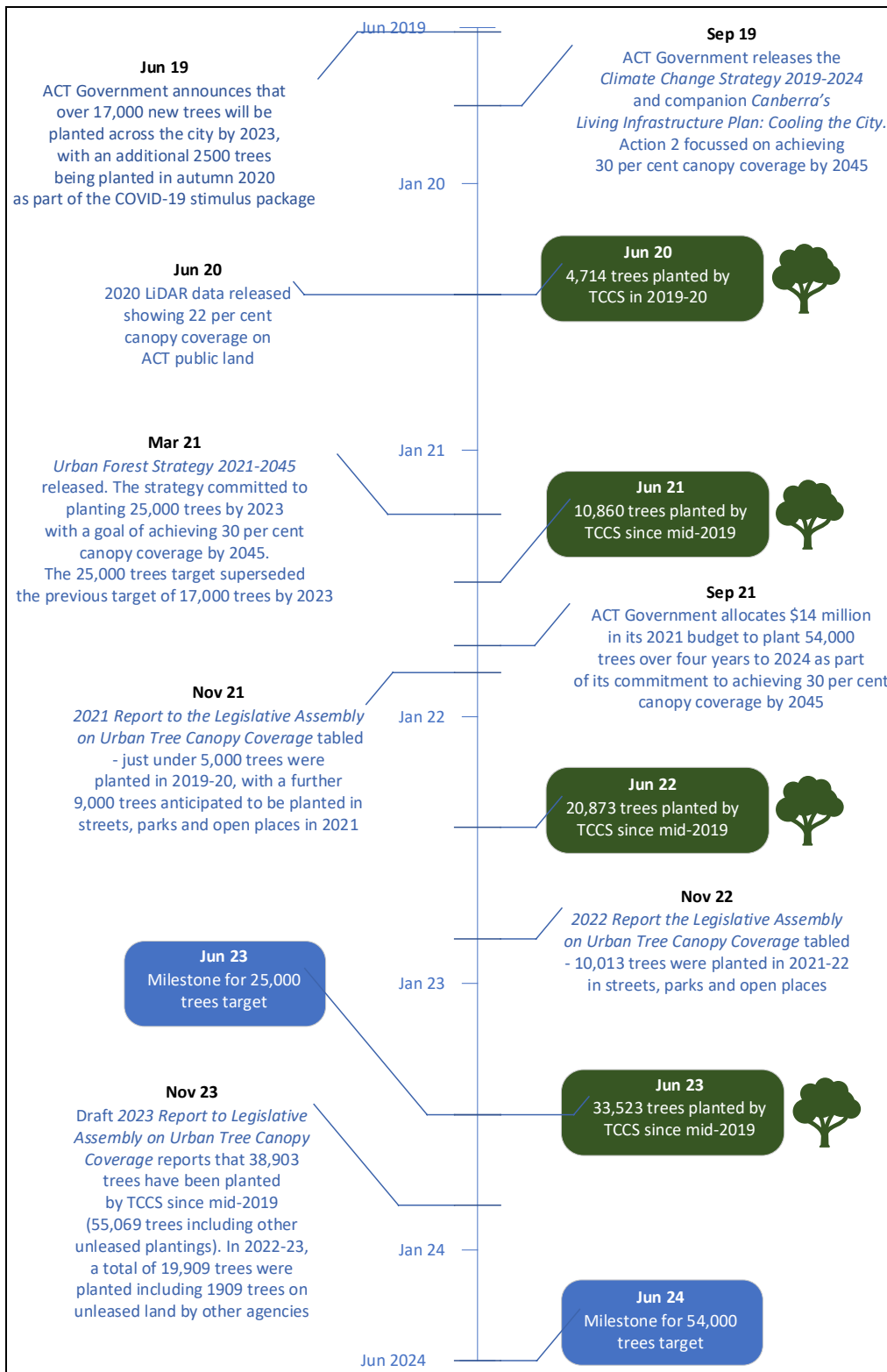
- data on survival rates for trees at appropriate periodic intervals (for example at 2, 5 and/or 10 years) is not reported on. This information could provide greater insight on the long-term effectiveness of the ACT Government's planting program in meeting canopy coverage goals.

4.50 TCCS' progress on its tree planting and management activities is publicly reported through an Accountability Indicator in its annual report and in a report to the Legislative Assembly on progress of initiatives in the *Urban Forest Strategy 2021-2045* and their contribution to the canopy cover target. While TCCS' external reporting on urban trees is largely informative, balanced, timely and consistent; there could be improvements in clearly defining reporting criteria. TCCS' public reporting on its tree planting and management activities does not include information on cumulative plantings in hot and vulnerable suburbs since planting was prioritised in those areas in 2019-20, nor does it include data on survival rates for trees at appropriate periodic intervals. This information would provide greater insight on the long-term effectiveness of the ACT Government's planting program in meeting canopy coverage goals.

RECOMMENDATION 11 PUBLIC REPORTING OF ACHIEVEMENTS

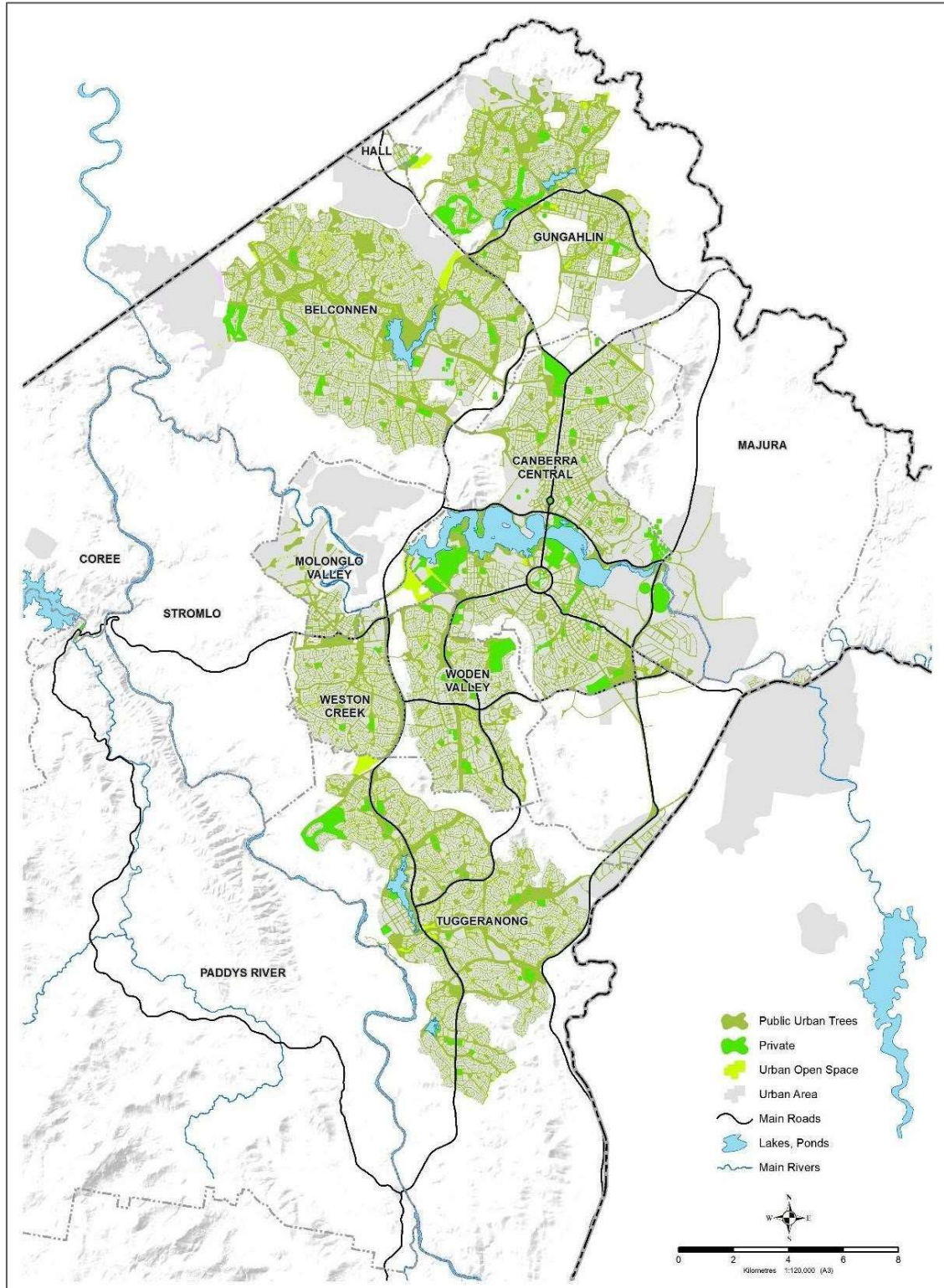
TCCS should improve its public reporting on tree planting numbers and achievement against the canopy cover target by including data on tree survival rates and cumulative planting numbers in suburbs with low canopy coverage that are vulnerable to urban heat.

APPENDIX A: URBAN TREE MANAGEMENT – KEY MILESTONES



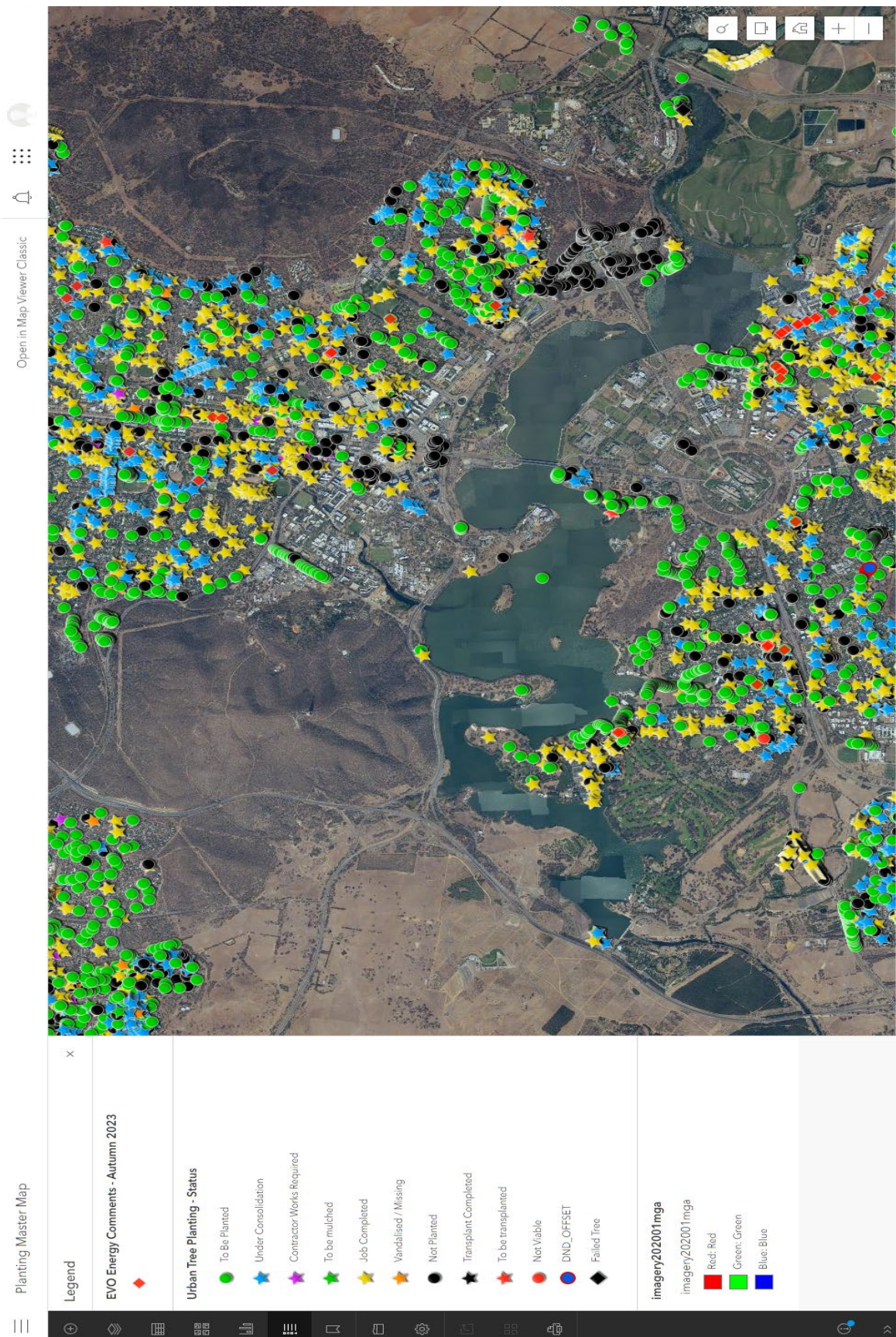
Source: ACT Audit Office, based on publicly available information and TCCS documentation.

APPENDIX B: MAP OF PUBLIC URBAN TREES AND URBAN OPEN SPACES IN THE ACT



Source: CSIRO, An environmental-economic accounting of services provided by the living infrastructure in the ACT: public urban forests and irrigated open space, January 2019, p. 19.

APPENDIX C: ARCGIS ONLINE – PLANTING MAP



APPENDIX D: PROGRESS AGAINST URBAN FOREST STRATEGY GOALS

Progress against Urban Forest Strategy actions identified as having a major contribution to canopy coverage and in scope for this audit

Action item and no.	Timeframe for achievement	Status of actions included in 2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage	ACT Audit Office comment or finding on action item
Objective 1: Protect the urban forest			
No action items identified as having a major contribution to canopy coverage and in scope for this audit.			
Objective 2: Grow a resilient forest			
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 (within 2 years)	<ul style="list-style-type: none"> Over 12,650 trees planted in vacant street, park and open space locations in 2022-2023 with 18,000 target met in early 23-24. Urban tree planting target increased to 54,000 trees by 2024. 	<ul style="list-style-type: none"> TCCS' website states that 'Groups of ageing trees in parks and streets may be part of a strategic tree replacement program' however a review of TCCS' records management system and policies, procedures, and guidelines for the management of urban trees found that documentation on tree retention, removal and renewal is yet to be developed. Further, the audit found that the two policy documents 'Tree Management Policy' and 'Tree Planting Policy' that should provide high-level guidance and consistency on the operation of urban tree management activities are still in development.
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	Short/ongoing (within 5 years)	<ul style="list-style-type: none"> Analysis of LIDAR measurements and canopy coverage percentages used to identify priority suburbs for planting programs. Specialists engaged by TCCS and EPSDD to assess boundary options for canopy coverage. Over 12,650 trees planted in vacant street, park and open space locations in 	<ul style="list-style-type: none"> A review of canopy coverage data, suburbs vulnerable to urban heat and the tree planting data for suburbs is included at paragraphs 3.71-3.82. TCCS' planting data for 2021 to 2023 does not illustrate a clear relationship between planting locations and suburbs vulnerable to heat which indicates the influence of other factors in determining planting locations. Other factors

Action item and no.	Timeframe for achievement	Status of actions included in <i>2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage</i>	ACT Audit Office comment or finding on action item
cover target over the life of the Strategy		2022-2023 with 18,000 target met in early 23-24. <ul style="list-style-type: none"> • Urban tree planting target increased to 54,000 trees by 2024. • Tree planting is prioritised in vacant planting gaps and in areas that have been identified as being more vulnerable to urban heat. 	include the way vulnerability mapping has been carried out, and the way suburbs are designed limiting the options to increase canopy coverage through tree plantings.
Objective 3: 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 (within 2 years)	<ul style="list-style-type: none"> • Tree planting is prioritised in vacant planting gaps and in areas that have been identified as being more vulnerable to urban heat. 	<ul style="list-style-type: none"> • See comment against action item 2.13.
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	Ongoing (long term 20 years)	<ul style="list-style-type: none"> • LiDAR capture in 2020 to be repeated every 5 years. • Urban Forest Condition report to inform urban forest renewal planned for 2023-24 using high-resolution, multi-spectral, and thermal imagery capture and analysis for ACT urban areas. 	<ul style="list-style-type: none"> • The ACT's canopy coverage on public land has increased from 19 percent in 2015 to 22.5 percent in 2020. • The next LiDAR capture is schedule for 2025.
3.1.3 Progressively map suburbs at risk of losing canopy due to ageing trees to inform a	Short/ongoing (within 5 years)	<ul style="list-style-type: none"> • Urban Forest Condition report to inform urban forest renewal planned for 2023-24. 	<ul style="list-style-type: none"> • TCCS advised the ACT Audit Office in September 2023 that it has commenced planning activities for the engagement of environmental consultants to undertake a condition report

Action item and no.	Timeframe for achievement	Status of actions included in <i>2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage</i>	ACT Audit Office comment or finding on action item
planned removal and replanting program			
3.3.1 Plan planting programs to achieve a best practice age profile of the urban forest by 2045	Ongoing (long term 20 years)	<ul style="list-style-type: none"> • Infill planting in ageing suburbs to offset future removal of ageing trees. • Urban Forest Condition report to inform urban forest renewal planned for 2023-24. 	<ul style="list-style-type: none"> • See comment against action items 3.1.2 and 3.1.3.
3.3.2 Ensure yearly maintenance programs involve adequate removal and replacement of end-of-life trees to develop a balanced age distribution	Ongoing (long term 20 years)	<ul style="list-style-type: none"> • Expansion of maintenance team in 2020. Further expansion of capacity to be sought in future budgets. 	<ul style="list-style-type: none"> • As opportunities for locations for new plantings are filled, the removal and replacement of mature trees will play an increasing role in building the urban tree canopy. The audit found that TCCS is taking steps to plan for the increase in removals and replacements of mature trees through expanding its maintenance team, the engagement of environmental consultants to undertake a condition report of the urban forest and the creation of a senior arborist role to engage with the community and develop a timeline for renewal for urban trees.
Objective 4: Take an ecological approach and support biodiversity			
4.1.4 Identify opportunities to protect young seedlings growing from mature remnant trees on unleased public land where it is appropriate	Ongoing (long term 20 years)	<ul style="list-style-type: none"> • Collaborating with EPSDD to identify sites. • EPSDD 'Connecting Nature Connecting People' initiative. • ACT NRM Sustainable Urban Green Spaces project. • Mowers installed with GPS to alert to no mow zones. 	<ul style="list-style-type: none"> • EPSDD provide advice to TCCS on potential planting locations and tree species, with a particular focus on the effects of urban trees on habitat and biodiversity. • There is a tension between the ACT Government's canopy coverage goals and the biodiversity goals, particularly around the impact and limitation on potential planting sites.

Action item and no.	Timeframe for achievement	Status of actions included in <i>2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage</i>	ACT Audit Office comment or finding on action item
			<ul style="list-style-type: none"> There may be opportunities for cross-directorate collaboration and discussion, with an aim of identifying opportunities to manage these competing priorities to work towards increasing canopy coverage in urban areas.
<p>4.2.1 Implement strategic planting to support wildlife and enhance movement and foraging opportunities across the city and wider landscape</p>	<p>Medium term (within 10 years)</p>	<ul style="list-style-type: none"> Replacement planting program of main and arterial road verges and connecting open space. Collaborating with ACT NRM on Sustainable Urban Green Spaces project. EPSDD 'Connecting Nature Connecting People' initiative. Loss of Mature Native Trees Threatening Process Draft action plan agreement between EPSDD and TCCS. Biodiversity mapping by EPSDD to inform TCCS planting programs - ACT Urban Habitat and Connectivity Tool and ACT Ecological Network Dashboard. Urban Forest Ecological Advice project informing planting to connect urban habitat. 	<ul style="list-style-type: none"> See comment against action item 4.1.4.
<p>Objective 5: Develop infrastructure to support the urban forest and liveability</p>			
<p>5.2.1 Collaborate across ACT Government to increase tree numbers in priority areas (Action 11 of the Living</p>	<p>Ongoing (20 years, long term)</p>	<ul style="list-style-type: none"> Increased planting in priority areas is underway. Collaboration with EPSDD to plan for habitat connectivity and active travel and negotiate tree retention in development projects. Collaboration with ACT Education and ACT 	<ul style="list-style-type: none"> TCCS determines planting locations based on existing planting gaps with a prioritisation on suburbs with low canopy coverage that have been identified as hot and vulnerable, and planting locations suggested by the public. TCCS has collaborated with the Education Directorate to

Action item and no.	Timeframe for achievement	Status of actions included in <i>2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage</i>	ACT Audit Office comment or finding on action item
Infrastructure Plan (LIP))		<p>Property Group to build spatial tree asset layer.</p> <ul style="list-style-type: none"> • Collaboration with ACT Education, Parks and Conservation Service and CMTEDD Sport and Rec for planting opportunities • Collaboration with ACT NRM on Sustainable Urban Green Spaces project. • Collaboration with EPSDD on the Microclimate guide, Climate wise landscape guide, Climate wise planning report and Tree canopy cover equivalence tool. • Collaboration with SLA on Plant a Tree in Your Canberra Garden. • EPSDD report on Cooling benefits of living infrastructure 	increase planting locations on public school grounds, EPSDD on planting locations in relation to biodiversity goals and living infrastructure and Suburban Land Agency on trees in Canberra gardens.
5.2.2 Focus public tree plantings to support summer shading along active travel routes (Action 12 of the LIP)	Short term (within 5 years)	<ul style="list-style-type: none"> • Tree planting alongside active travel routes prioritised during planning of open space and roadside planting programs 	<ul style="list-style-type: none"> • A review of TCCS' planting procedures did not find reference to the prioritisation of planting alongside active travel routes. • TCCS advised that 'Urban Treescapes has engaged with Active Travel to discuss their target of 20% shading and can identify active travel routes through ArcGIS. Plantings along active travel routes are targeted by officers marking up proposed planting locations and the Design and development coordinators engage with developers of projects on unleased land to ensure that adequate planting is incorporated in the design'.
5.2.4 Collaborate with EPSDD	Immediate (within 2 years)	<ul style="list-style-type: none"> • Collaboration with EPSDD undertaken prior to 	<ul style="list-style-type: none"> • TCCS has collaborated with EPSDD on the planning

Action item and no.	Timeframe for achievement	Status of actions included in <i>2023 Report to the Legislative Assembly on Urban Tree Canopy Coverage</i>	ACT Audit Office comment or finding on action item
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		release of Variation 369 (minimum tree planting requirements on leased land at development). <ul style="list-style-type: none"> • Collaborating with EPSDD on the ACT Planning System Review and Reform. • Release of Urban Open Space Land Management Plan. 	review and Variation 369 came into effect in September 2022. <ul style="list-style-type: none"> • Since 2017-18, there has been over 23,000 trees planted on unleased land by other agencies, including in new developments. This represents 39 percent of all trees planted by TCCS and other agencies from 2017-18 to 2022-23.
Objective 6: Partner with the community to grow and maintain the urban forest			
<i>No action items identified as having a major contribution to canopy coverage and in scope for this audit.</i>			

Source: TCCS, *2022 Report to Legislative Assembly on Urban Tree Canopy Coverage*, November 2022, Appendix A – Progress Against Strategy Actions, pp. 42-52, and ACT Audit Office analysis.

Audit reports

Reports Published in 2023-24	
Report No. 11 - 2023	2022-23 Financial Audits – Financial Results and Audit Findings
Report No. 10 - 2023	Human Resources Information Management System (HRIMS) Program
Report No. 09 - 2023	2022-23 Financial Audits Overview
Report No. 08 - 2023	Supports for students with disability in ACT public schools
Report No. 07 - 2023	Annual Report 2022-23
Report No. 06 - 2023	Implementation of the ACT Aboriginal and Torres Strait Islander Agreement
Report No. 05 - 2023	Activities of the Government Procurement Board
Reports Published in 2022-23	
Report No. 04 - 2023	Procurement of a hybrid electric fire truck
Report No. 03 - 2023	Financial Management Services for Protected Persons
Report No. 02 - 2023	Management of Operation Reboot (Outpatients)
Report No. 01 - 2023	Construction occupations licensing
Report No. 10 - 2022	2021-22 Financial Audits Financial Results and Audit Findings
Report No. 09 - 2022	ACT Emergency Services Agency cleaning services arrangement
Report No. 08 - 2022	2021-22 Financial Audits – Overview
Report No. 07 - 2022	ACT Childhood Healthy Eating and Active Living Programs
Report No. 06 - 2022	Annual Report 2021-22
Report No. 05 - 2022	Procurement and contracting activities for the Acton Waterfront Project
Reports Published in 2021-22	
Report No. 04 - 2022	Governance arrangements for the planning of services for Parkwood, Ginninderry
Report No. 03 - 2022	Taxi Subsidy Scheme
Report No. 02 - 2022	Fraud Prevention
Report No. 01 - 2022	Management of Detainee mental health services in the AMC
Report No. 13 - 2021	Campbell Primary School Modernisation Project Procurement
Report No. 12 - 2021	2020-21 Financial Audits – Financial Results and Audit Findings
Report No. 11 - 2021	Digital Records Management
Report No. 10 - 2021	2020-21 Financial Audits Overview
Report No. 09 - 2021	Annual Report 2020-21
Report No. 08 - 2021	Canberra Light Rail Stage 2a: Economic Analysis

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