National Street Tree Symposium

Program summary
2nd and 3rd September 2021
Day One: Virtual Presentations
Day Two: Online Workshop & Virtual Presentations
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<tr>
<td>8:50 - 9:05am</td>
<td>Glenn Williams/Dr Lyndal Plant</td>
<td>Director/Chair, TREENET</td>
<td>Welcome, Acknowledgement of Country &amp; Housekeeping</td>
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<tr>
<td>9:05 - 9:40am</td>
<td>Prof David Pannell</td>
<td>University of WA</td>
<td>Bob Such Keynote Address: “Green is the new Gold - the value of urban trees”</td>
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<td>9:40 - 9:45am</td>
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<td>Q and A for David</td>
<td>Q and A</td>
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<td>9:45 - 10:25am</td>
<td>Dr Greg Moore OAM</td>
<td>University of Melbourne</td>
<td>Street Trees Cost Models for Australia</td>
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<td>10:25 - 10:30am</td>
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<td>Q and A for Greg</td>
<td>Q and A</td>
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<tr>
<td>10:30 - 11:00am</td>
<td>TREENET AWARD PRESENTATION &amp; Refreshment Break</td>
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<tr>
<td>11:00 - 11:25am</td>
<td>Kirrilie Rowe, Darryl Gobbett</td>
<td>University of South Australia TREENET</td>
<td>A review on financial benefits of urban trees</td>
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<td>11:25 - 11:30am</td>
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<td>Q and A for Kirrilie</td>
<td>Q and A</td>
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<td>11:30 - 11:55am</td>
<td>Rob Bodenstaff, Dr Tim Johnson</td>
<td>The Arbor Centre, Uni SA; City of Mitcham; Flinders University</td>
<td>Return on Investment in Trees: It’s a ‘No Brainer’!</td>
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<td>11:55 - 12:00 noon</td>
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<td>Q and A for Rob and Tim</td>
<td>Q and A</td>
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<tr>
<td>12:00 - 12:25pm</td>
<td>Sam Middleton, Natasha Davis</td>
<td>Celebrating Red Gums, Trees For Life (SA)</td>
<td>Celebrating our Iconic Red Gums through the ‘Eco-Arts Red Gum Trail’</td>
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<td>12:25 - 12:30pm</td>
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<td>Q and A for Sam and Natasha</td>
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<td>12:30 - 1:30 pm</td>
<td>Refreshment Break</td>
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<td>1:30 - 1:50 pm</td>
<td>Ian Seccafien</td>
<td>Data Does Grow on Trees</td>
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<td>Ben Seamark</td>
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<td>1:50 - 1:55 pm</td>
<td>Q and A for Ian and Ben</td>
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<td>2:00 - 2:20 pm</td>
<td>Dr Samuel Holt</td>
<td>Greener, cooler and more sustainable communities: managing the urban forest into the future using geospatial data</td>
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<td>2:20 - 2:25 pm</td>
<td>Q and A for Samuel</td>
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<td>2:30 - 2:50 pm</td>
<td>Thami Croeser</td>
<td>From parking to parks: the benefits of planting trees in Melbourne's thousands of redundant car parking spaces</td>
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<td>2:50 - 2:55 pm</td>
<td>Q and A for Thami</td>
<td>Q and A</td>
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<td>3:00 - 3:30 pm</td>
<td>Refreshment Break</td>
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<td>3:30 - 3:50 pm</td>
<td>Dr Natasha Pauli</td>
<td>Shaping the living architecture of the street: Understanding Perth's native verge garden revolution</td>
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<td>3:50 - 3:55 pm</td>
<td>Q and A for Natasha</td>
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<tr>
<td>4:00 - 4:20 pm</td>
<td>Steven Pearce</td>
<td>Conservation Up Close &amp; Personal: Documenting and showcasing giant trees &amp; forests across the globe</td>
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<tr>
<td>4:20 - 4:25 pm</td>
<td>Q and A for Steve</td>
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### Conference Program - Day 2
Friday 3rd September 2021

#### AM - Live Online Session

**Time - Adelaide Time (ACST)**

| Live Online via Zoom: 10:30am -12:30 pm | Recruitment and Skills Shortage in the Urban Forest Industry - Arboriculture Australia | WORKSHOP/FORUM: Scene-setting presentations from industry reps, including Citywide, RTOs & Local Government. Identifying issues and seeking solutions |

#### On-demand Online Sessions

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<tr>
<th>Presenter</th>
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| Dr Tim Johnson  
Dr Lyndal Plant, TREENET | Street tree species trials for the 2020s: WPW/TREENET How to Guide and support |
| Dr Scott Hawken, Director Planning and Urban Design, University of Adelaide | Miyawaki Miniforests and Beneficial Biodiversity Patches within Cities A |
| Dr Greg Moore OAM, University of Melbourne | Root penetration of PVC pipes |
| Mellissa Bradley, Water Sensitive SA | Precinct and lot scale WSUD and urban greening: How can latest research influence practice? |
| Simon Strauss, Active Tree Services | Canopy Cover measured by tree by year, affordably |
| Jason Summers - Remarkable Trees Julian Gregg | A developer’s perspective on investing in good street and park tree outcomes |
| Mark Roberts, Roberts Consulting, NZ | Change management and tree metrics |
| Alana Tucker, Arbor Day Foundation | Becoming a Tree City of the World |
Presenters, Bios and Topics - Day 1
Thursday 2nd September 2021

The Bob Such Keynote Address

Professor David Pannell

David Pannell is Professor of Agricultural and Resource Economics, University of Western Australia; Director, Co-Centre for Environmental Economics and Policy; ARC Federation Fellow (2007-2012); Distinguished Fellow and past president of the Australian Agricultural and Resource Economics Society; Fellow of the Academy of Social Sciences in Australia; and a Director of Natural Decisions Pty Ltd. His research includes the economics of urban greening; economics of land, water and nature conservation; environmental policy; and behaviour change to deliver environmental benefits. David has won awards for his research in the USA, Australia, Canada and the UK, including the 2009 Eureka Prize for Interdisciplinary Research.

Keynote Address 2

Dr Greg Moore OAM

Senior Research Associate of Burnley College, University of Melbourne was Principal of Burnley from 1988 to 2007, and Head of the School of Resource Management at the University from 2002 to 2007. With a general interest in horticultural plant science, revegetation and ecology, Greg is particularly interested in arboriculture. He was inaugural president of the International Society of Arboriculture, Australian Chapter, and has been a member of the National Trust’s Register of Significant Trees since 1988 and chair since 1996. He has served the boards of Greening Australia (Victoria) 1988-2012 and Trust for Nature, 2009-17. He has been on the board of TREENET (chair 2005-2019) and is on the board of Sustainable Gardening Australia. He has written three books, seven book chapters and has published over 200 scientific papers and articles. He was awarded an OAM in 2017 for services to the environment, particularly arboriculture.

Green is the new Gold - the value of urban trees

David will outline the key lessons we have learned about the value of urban trees. Trees are valuable even if they don’t generate profits for somebody. They potentially provide amenity, aesthetic benefits, cooling, and habitat for wildlife. But how can we quantify and monetise these non-financial benefits in a way that allows us to compare them to costs? Environmental economists have a range of techniques for doing so, and they have been widely applied to urban trees and vegetation.

Street Tree Cost Models for Australia

The costs of maintaining an urban tree over its lifecycle have been considered in several models. However, are these models typical of larger, long-lived urban street trees growing under Australian conditions? The costs of maintaining an urban street tree under Australian management regimes, including purchase and planting costs of a common street tree species, herbicide and mulching costs, the cost of irrigation over the first summer after spring planting and of formatively pruning the young tree were calculated based on data obtained from Australian local governments. The models demonstrated that costs associated with a street tree are high in the first 2-3 years of its life but much higher in the final year of life leading to removal. The lifetime costs of maintaining a street tree depending on the management scenario are between AUD$2800 - AUD$6220 and AUD$56 - AUD$124.40 per annum. Doubling the life span of a tree reduces the annual management cost by 30%.
A review on financial benefits of urban trees

With introduction from Darryl Gobbet

In recent years a significant number of papers have emerged describing the benefits to humans gained from urban trees and forests. Some studies have attempted to attach a financial benefit to these services. Given the number of papers, various types of literature reviews are also available. This paper synthesises those reviews and more recent papers relating to the financial benefits of urban trees.

Kirrilie Rowe

Kirrilie Rowe has recently completed a PhD in renewable energy for residential precincts. Her research has given communities a way forward when trying to maximise use of their own renewable energy. However, her interest extends beyond electricity, to encompass all ideas which create a socially and environmentally sustainable place to live. To this end, she undertook an internship with TREENEt, looking at the financial benefit of services provided by urban trees, as she understands the integration of greenspace in the urban environment is fundamental to a healthy community. Kirrilie’s working life has included working as a hydrogeologist with consultancies and government departments in South Australia, and later involvement with a company undertaking solar installations. Her aim is to combine all she has learnt and undertake further research into the potential benefits of alternative urban forms. To understand more about Kirrilie’s work, you can access her TEDx talk at: www.youtube.com/watch?v=QwLT7KVyyvA

Darryl Gobbett

Darryl has spent over 45 years in the public and private sectors, serving in senior management and economic and financial advisory roles. Darryl continues to provide regular commentary on the South Australian economy.

He is a Visiting Fellow at the SA Centre for Economic Studies at the University of Adelaide; a Graduate of the Australian Institute of Company Directors; a Director of Minda Inc., South Australia’s largest Not For Profit cognitive disability services provider; and a Director of a number of startup businesses.

Darryl has been the Honorary Treasurer at TREENEt since 2013 and enjoys his volunteer work in community and environmental services, including 30 years as a Grower Member of Trees For Life.
Return on Investment in Trees --- it's a 'NO BRAINER’

This session is about identifying where the real investment is when it comes to managing trees in an 'asset management' portfolio. About treating trees as part of an asset inventory in much the same way we consider power and water supply, communication infrastructure, drains, roads, footpaths, buildings and structures, as assets…… Recognising also that at many points within our common city spaces, part of a tree will interface with these other assets in some way.

We all know that trees are one of the most cost-effective and essential civil infrastructure components available to help sustain healthy communities and cities. Their above ground parts provide us with many attributes that have been well recorded in TREENET Symposiums. Their below ground parts also provide us with proven attributes in the management of stormwater and reduced spending on conventional drainage infrastructure. The space that tree roots occupy provide connectivity with soil and water resources that form an integral part of the urban ecology, while reducing heat-related illness and morbidity and a raft of benefits that we are continuing to research and bring to TREENET's library of resources.

We also know that trees are relatively inexpensive to install and establish, and returns on investment in trees can be massive, but many investments fail to deliver.

Achieving good return on investment in trees requires more than expertise and planning. Success in this regard requires a paradigm shift in what it is that we think we are investing in and why we would consider change.

Unlike other assets, trees are living assets. They grow and change in size and stature above and below ground. Without applying the right knowledge at the right time - well before the trees are planted – tree failures will continue. Resulting in asset management budgets continuing to be robbed of their real value. Ratepayers will continue to be duped and professions whose role it is to manage their assets, continue to be confused about what is ‘investment’ in trees and how to measure ‘return on investment’.

This paper summarises some of the costs of investing in trees, the returns that communities can realise from wise investment, and how future investment should be targeted to grow community wealth.

The challenge for our asset managers will be to re-assess how they can progressively re-purpose funds within their existing budgets.

The challenge for Arboricultural technicians and Urban Foresters will be in securing the right expertise at the right time, throughout the planning, establishment, growth and maturity stages of the tree's asset life cycle.

This session will demonstrate why going for this kind of change is a ‘NO BRAINER’ in maximising returns.

Presenters, Bios and Topics - Day 1
Thursday 2nd September 2021

Dr Tim Johnson

Dr Tim Johnson's experience as an arborist and civil engineer ensures his knowledge of the issues, opportunities and difficulties of delivering green engineering remains informed and current.

As an Industry Adjunct with the University of South Australia Tim’s research interests focus on engineering which supports trees so interactions between roots, infrastructure, water and soil deliver maximum benefit to urban communities and the environment.

His experience ‘on the tools’ and in technical roles in the private and public sectors underpins his practical approach to applied interdisciplinary research.

Working in local government as a Sustainable Infrastructure Engineer, Tim builds experimental design into working demonstrations to investigate nature-based solutions to some of the challenges associated with urbanisation and the changing environment.

Tim is a long-term member of TREENET’s Management Committee and Advisory Board, of the Institute of Public Works Engineers Australasia, Arboriculture Australia and the International Society of Arboriculture.

Rob Bodenstaff

Rob has spent the past 30 years pursuing the better management and utilisation of trees in Western Australia’s diverse urban environs.

Seeking and influencing others to engage in achieving better outcomes for urban trees, has been the driver for him. This has led to the creation of multi-disciplined expertise in arboricultural consultancy, tree canopy management, root zone management, veteran and icon tree management and civic tree farming, as well as being a recognised leader in mature tree transplanting in Australia and Internationally.

Rob’s firsthand experience in developing world leading tree transplanting techniques for mature trees within urban precincts, has brought to light many aspects of our native tree root systems that challenge common literature on the subject and also challenges the way we often manage tree roots in Western Australia’s endemic sands and soils.

His experience and the ongoing investigations, trials, projects and research is helping us discover better ways to successfully engineer trees into the unique built urban environment within Perth's coastal sands and broader regions; and that may well have application elsewhere.
Natasha Davis
Natasha is the CEO of Trees For Life and has a deep passion for Australian landscapes. She has worked in a diverse range of roles in politics, business, government and the community sector, all with a focus on creating a fairer society that operates in greater harmony with the natural world. She is also a mum and spends as much time in nature as possible.

Sam Middleton
Sam's love of Red Gums originated in the landscapes of the Adelaide Hills, but it was a move to South-West Victoria and a 'life amongst the Reds' which inspired the founding of 'Celebrating Red Gums'. Sam's background in various finance and administration roles within the agricultural, rural landscape and emergency services sectors enables her to comprehensively support the 'platform of opportunity' which the initiative extends to the wider community.

Celebrating our Iconic Red Gums through the 'Eco-Arts Red Gum Trail'
Celebrating Red Gums is a community-founded movement to facilitate connection with the past, present and future River Red Gum landscapes of Australia. One of the projects emerging from this initiative is an Eco-Arts Trail. Through the use of technology, innovation and artistic mediums, the project proposes to immerse trail-goers in a journey which deeply connects people with Australia’s iconic Red Gums.
Ian Seccafien

Ian Seccafien is the Coordinator Arboriculture at the City of Marion. With 20+ years of Local Government experience, previously as the Senior Urban Forest Officer at City Of Onkaparinga he provides strategic and operational coordination to manage and grow Marion’s urban forest. Starting his career as a Horticulture (Arboriculture) apprentice and working out in the field for over a decade, his experience and knowledge lead him into a tree assessment and contract supervision officer role. In recent years this has evolved into a strategic management role, working closely with his field teams to deliver service level improvements and strategic targets / actions relating to urban forestry management for the council.

Ben Seamark

Ben Seamark is an Environmental Manager and Consulting Arborist and has spent over 25 years working with trees. In 2018 Ben was awarded TREENET’s Leadership in Urban Forestry. He studied at Flinders University and the University of Adelaide and Brookway Park school of Horticulture.

Ben is the Co-founder of Forestree Australia, a tree management software system built to help cities plan, manage and grow urban trees. Forestree was launched in 2020, and in this short time has seen significant adoption by Council arborists who recognise a need for specialised software designed to manage not just trees, but the whole of life supply chain associated with urban forestry management.

Ben's work and life experiences have generated a passion for the tree industry and the role trees play in society and community, his other areas of interest include Environmental Economics, Information Technology and Horticultural Science.

Data Does Grow on Trees

Ian and Ben’s presentation will focus on how the successful integration of the Forestree Tree Management System into their tree operations has driven service delivery improvements. How the software’s connection to Power BI and subsequent data analysis has led to improved performance of staff and informed decision making around programs, reactive work and led to an increase in resources to meet tree planting targets. Culminating in the development of the Marion Tree Interactive, a community portal which showcases their urban forest to the community and the wider public.
Dr Samuel Holt
Sam is currently part of the Research & Development Team at Aerometrex, working closely with various stakeholders across the government & private sectors.
Sam has a strong foundation in Earth Sciences and a keen interest in the acquisition and processing of 3D geospatial datasets. He completed a PhD in Physical Volcanology and Bachelor of Science with Honours in Geology and Geophysics before pursuing his keen interest in remote sensing of the natural and urban environment by completing his Graduate Diploma in GIS & Remote Sensing.
He is passionate about building actionable information and solutions using geospatial data to enable environmental management experts and policymakers to build community resilience to a wide range of environmental hazards. Over the past year, Sam has led the development of Airborne LIDAR-derived methodologies aimed at quantitative modelling vegetation within the urban environment, with the goal of enabling all levels of government to work towards more sustainable communities.

Greener, cooler and more sustainable communities: managing the urban forest into the future using geospatial data
Preserving and increasing urban greenness, vegetation and urban tree canopy cover has become one of the most critical considerations for strategic planning within local government organisations. The urban forest and community green spaces have been identified as an important asset that policymakers can use to mitigate the many negative environmental effects of urbanisation and the environmental hazards associated with ongoing climate change, including Urban Heat Islands. As the scientific community’s understanding of the importance of the cooling effects of trees within urban environments has increased, so have the efforts of national, state, and local governments to measure, assess and increase the number of trees and green spaces within their government areas. Remote sensing technologies such as Light Detection and Ranging (LIDAR) can provide policy makers and environmental management experts at all government levels with the critical information required to assess the benefits and value of the urban forest.
Over the past year, Aerometrex has worked alongside numerous local and state governments across Australia to develop remote sensing methodologies specifically designed to measure the spatial distribution of tree canopy coverage, identify the amount of available ‘plantable’ space, quantify how the tree canopy is changing with time and classify the nature of the changes that are occurring. Presented here are the results of a range of case studies from across metropolitan Adelaide that have utilised LIDAR and aerial imagery to measure the urban forest to help develop urban forest management practices for the future, including:
• Metropolitan Adelaide’s 2018 LIDAR-derived tree canopy cover benchmark dataset.
• City-wide assessment of the amount and spatial distribution of plantable space across Adelaide.
• Assessing tree canopy change at the council scale to develop management policies to reduce ongoing threats to the urban forest.
From parking to parks: the benefits of planting trees in Melbourne's thousands of redundant car parking spaces

Melbourne has large areas of on-street car-parking that could be converted into green space. In this presentation, I show (1) how these spaces can be identified, (2) how a carpark-sized planting area that delivers canopy, biodiversity and flood mitigation can fit in these spaces, and (3) give modelled results showing the benefits of converting this space in terms of canopy, stormwater interception and habitat connectivity.

Thami Croeser

Thami is an urban planner and spatial analyst, working at RMIT’s Centre for Urban Research. Thami works with cities around the world to prepare plans for urban green infrastructure in his role on the EU Urban GreenUp project. His particular interest is in helping cities find space for trees and greenery in their streets.

Shaping the living architecture of the street: Understanding Perth’s native verge garden revolution

Once a marginal practice, installing native plants on residential street verges is becoming increasingly common – and a number of Perth local governments (as well as state government entities) are actively promoting and incentivising the practice. However, little information is available on the benefits and challenges of transforming the street verge to a native garden, from either the residents’ point of view, nor from key stakeholders with an interest in streetscape management.

This talk will showcase the results of social-ecological research on suburban street verges in Perth, set within current trends in Perth’s urban forest. Natasha will discuss the social benefits and challenges for verge gardeners drawing on interviews with residents, as well as the potential habitat values, based on plant and insect surveys. Western Australia is leading the way in adopting verge gardens, which has likely been facilitated by a complex network of interactions and information sharing across networks including community leaders, industry, local and state government.

Dr Natasha Pauli

Natasha is a Senior Lecturer in Geography at the University of Western Australia, in the School of Agriculture and Environment and School of Social Sciences. Natasha’s research focusses on human-environment interactions. With a broad range of experiences across the biological and social sciences, she is passionate about finding opportunities for conserving and increasing biodiversity in urban, agricultural and natural settings. Prior to becoming an academic, Natasha has also worked in environmental consulting, state government, and the NGO sector.

The Tree Projects

In 2020 Steve launched the Tasmanian Big Tree Register and in 2021 released his film The Tasmanian Big Tree Hunters. He plans on revealing a 2m high print of his latest “tree portrait”, a snow covered 76m Eucalyptus obliqua deep in the Florentine Valley of Tasmania at the TREENET Symposium.

Steve’s presentation will cover the work of The Tree Projects so far and He will explain the technical process of climbing, rigging and creating a tree portrait. Steve will then go into the Tasmanian Big Tree Register and talk about his motivations for creating it as well as outline the current state of big tree threats and protections in Tasmania.

Steve Pearce

Steve along with his wife Dr Jen Sanger has travelled to many of the world’s big tree environments with the goal of exploring, climbing and photographing these monster trees. He has approached big trees and tree climbing from an exploratory artistic perspective and is dedicated to sharing the imagery and stories of these trees.
Recruitment and Skills Shortage in the Urban Forest Industry

The main objective of this workshop is to raise industry ownership of the issue and hopefully encourage people to volunteer to work on subprojects, so we don’t want to dictate solutions, but it would be good to lay the groundwork for ideas or solutions that are within the control of industry and therefore something we can take action on.

Michael Palamountain - Facilitator
Michael is a senior consulting arborist with Adelaide Arb Consultants. He began working in the field of arboriculture in 1998. He has a background in tree climbing and pruning with extensive qualifications and ongoing professional development relevant to the management of trees in the urban landscape including a Bachelor of Science and a Diploma in Arboriculture. He is a licensed and registered consulting arborist with Arboriculture Australia and a Certified Arborist with the International Society of Arboriculture. Michael likes riding his gravel bike and admiring majestic trees in the Adelaide Hills. He also likes locally made craft beer.

Damian Brennan
Damian Brennan has 17 years’ experience working within the South Australian Local Government sector, having undertaken various technical and operational positions. He has gained extensive industry experience through the practical implementation of Arboriculture works followed by managing, coordinating, and delivering progressive Arboriculture services, both within the City of Adelaide’s high-profile CBD setting and Adelaide Hills Council’s complex Mount Lofty Ranges environments. Most recently he has managed the on-ground implementation of the emergency and recovery response requirements resulting from both the 2019 Cuddle Creek and 2021 Cheery Gardens Bushfires, requiring extensive contractor engagement, staff resource management, machinery logistics and on ground site supervision of Arboriculture works programs to the value of $4.1 million. He holds an in-depth understanding of the requirements and challenges faced by Local Government to advocate for and proactively deliver modern arboricultural services. He has extensive experience in the review and implementation of operational workflow processes within established Arboriculture teams. He has an active interest in ensuring the Arboriculture Industry continues to evolve and adapt to foster an environment that encourages the development of tomorrow’s Arborists today.

James Maund
James is a Board Member and Treasurer of Arboriculture Australia. He has been involved in recruitment and skills training for more than 20 years across all states and territories. James is currently the Managing Director of the Foresite Group, which comprises two training organisations and a labour hire business. Over the past seven years, James has built Arbortrim to become the leading provider of arboriculture training nationally. Foresite also provides civil construction, warehouse and road transport training and is accredited to licence for both heavy vehicles and high risk work. The Group place approximately 1,000 casual staff into employment each year through its labour hire business.

Combined these operations have provided James with an in depth understanding of the labour market and the challenges faced by both employers and job seekers.
Dr Lyndal Plant

Lyndal’s extensive local government urban forest management experience, research and engagement skills help align organisational goals with contemporary evidence gathering techniques to suit projects, policy development/review and cutting edge initiatives. Lyndal sees the forest, not just the trees – helps plan and monitor for outcomes, not just the outputs – focuses on trees for people (“human habitat” values) - and engages customers and partners.

Following 25 years in local government urban tree management, policy and regulatory control development and strategic planning, mostly with Brisbane City Council, Lyndal completed her PhD in urban forest econometrics. Since then Lyndal has consulted directly, or sub-consulted, to several local authorities and state government agencies on a range of urban forest projects. Lyndal has published and co-authored several journal articles and delivered many conference presentations in key fields of urban forest research.

Lyndal is the Chair of TREENET, advisor for the national WHICH PLANT WHERE project and supporter of the University of Melbourne, Australian School of Urban Forestry.

Dr Tim Johnson

Dr Tim Johnson’s experience as an arborist and civil engineer ensures his knowledge of the issues, opportunities and difficulties of delivering green engineering remains informed and current.

As an Industry Adjunct with the University of South Australia Tim’s research interests focus on engineering which supports trees so interactions between roots, infrastructure, water and soil deliver maximum benefit to urban communities and the environment.

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Tim is a long-term member of TREENET’s Management Committee and Advisory Board, of the Institute of Public Works Engineers Australasia, Arboriculture Australia and the International Society of Arboriculture.

Street tree species trials for the 2020s: WPW /TREENET How-to Guide and support

Street trees are on the front line of urban forest service delivery, supporting neighbourhood character, human health, waterway health, biodiversity, tourism and business vitality. In order to deliver these benefits, street tree populations must be both diverse and well suited to the local conditions. Currently, urban ecosystems are experiencing unprecedented levels of warming and shifts in rainfall patterns due to climate change, which means tree species selections that have succeeded in the past may fail to do so in the future. Therefore, it is vital that a range of climate ready tree species are identified to ensure the resilience of urban environments to climate change. This can be achieved through street tree trials.

As part of TREENET’s long term promotion of street tree species trial research, we are proud to promote the use of the newly released “How to” guide for street tree species trials, developed in collaboration with the national Which Plant Where project. Version 1 of the Guide provides an easy-to-follow, step-by-step plan to designing, implementing and monitoring scientifically rigorous trials of street tree species in an urban context. TREENET is also supporting partnerships between local government and nurseries in growing lesser known species for trials and sharing of trial results.
**Miyawaki Mini Forests and Beneficial Biodiversity Patches within Cities**

The Miyawaki Method of forestry is an innovative Japanese approach to the rapid, cultivation of biodiverse forest patches within cities and their surrounds. It is an emerging global phenomenon that has inspired industry leaders, communities, and environmental practitioners around the world. By using such techniques to introduce biodiversity back into human settlements, cities stand to benefit through greater health, industry productivity, and community engagement. This talk will examine the history of this movement and its potential for Adelaide and Australia.

**Root Penetration of PVC Pipes**

This presentation is based on research by Susan Bendel that focused on the interaction of roots from Eucalyptus leucoxylon, Lophostemon confertus, Callistemon salignus, Allocasuarina littoralis, Acer palmatum and Pyrus calleryana with stormwater pipes. The pipes had cracks of 0.04mm, 0.66mm and 1.48mm cut along their upper surfaces. There was no significant difference in the mass of roots in the pipes for the two larger crack widths. A second experiment using Eucalyptus leucoxylon, Melaleuca ericifolia, Ficus macrophylla and Salix fragilis found that a synthetic stormwater solution significantly increased growth compared with potable water. In this experiment tree roots were able to grow through holes of 0.5 mm diameter.

**Dr Scott Hawken**

Dr. Scott Hawken is an Urban Designer, Landscape Architect, and Landscape Archaeologist. His research and teaching bring together these three disciplines in creative ways. He is a strong supporter of the kind of transdisciplinary thinking necessary to tackle the large problems of our time. He is director of the planning and urban design program in the School of Architecture and Built Environment, University of Adelaide. He works across the planning and landscape architecture programs and convenes postgraduate courses in Landscape Architecture and Urban Design. His research spans Metropolitan Green Infrastructure, Smart Cities, Asian Urbanism and Long Term Sustainability. His research on Asian urbanism and archaeology has been publicised in feature length BBC, National Geographic documentaries and been published in various peer reviewed journals.

**Dr Greg Moore OAM**

Senior Research Associate of Burnley College, University of Melbourne was Principal of Burnley from 1988 to 2007, and Head of the School of Resource Management at the University from 2002 to 2007. With a general interest in horticultural plant science, revegetation and ecology, Greg is particularly interested in arboriculture. He was inaugural president of the International Society of Arboriculture, Australian Chapter, and has been a member of the National Trust's Register of Significant Trees since 1988 and chair since 1996. He has served the boards of Greening Australia (Victoria) 1988-2012 and Trust for Nature. 2009-17. He has been on the board of TRENET (chair 2005-2019) and is on the board of Sustainable Gardening Australia. He has written three books, seven book chapters and has published over 200 scientific papers and articles. He was awarded an OAM in 2017 for services to the environment, particularly arboriculture.
Presenters, Bios and Topics - Day 2
On-demand Sessions, Friday 3rd September 2021

**Precinct and lot scale WSUD and urban greening: How can latest research influence practice?**

The CRC for Water Sensitive Cities has provided evidence of the water cycle benefits of new approaches to urban design and housing typologies, what factors influence design quality of infill development and perceptions of Adelaide residents regarding a range of dwelling types, including the value attributed to private and communal green spaces on private land relative to other attributes.

Melissa Bradley will present key findings from the CRCWSC’s research and suggest possible ways to integrate the learnings in everyday practice.

**Mellissa Bradley**

Mellissa has more than 25 years’ experience working within the fields of civil design, development assessment, policy development, environmental management and construction management for stormwater and wastewater re-use schemes.

Her cross-disciplinary experience has enabled her to translate technical information and research into a form suitable for use by decision makers, policy writers and practitioners, providing the guidance and evidence base needed for urban greening and water sensitive cities transitions.

Melissa is committed to supporting industry and government achieve a cultural shift and build the technical capability required to mainstream water sensitive urban design practices.

For her contribution to urban water management, Mellissa was the recipient of the Leadership Award at the South Australian 2019 Smart Water Awards.

**Canopy Cover measured by tree by year, affordably**

Canopy cover benchmarking and change measurement is critical to urban greening strategy, planning, execution and verification. Previously, cost and effort has meant the intervals for assessment have often been 5 years or more with data based heavily reliant on sampling or averaging techniques, largely limiting the work to an historic point-in-time % measurement.

Using fine-scale (0.5m resolution) satellite imagery, taken at a specified time intervals and interpreted with AI (artificial intelligence – a trained, convolutional neutral network) to identify trees from visual and NIR spectral data, year on year data was analysed. In a surprising result, individual removed and hazard (dead) trees, tree growth and pruning/decline were clearly visualized. Information was then compared to climatic data (abiotic) and human effort/pest/disease (biotic). Integrating with a display interface (ArcGIS), canopy cover could be determined dynamically, measuring and segregating the % canopy cover based on and any viewable, subset area. By overlaying the data on cadastre, clear accountability could be allocated to by property ownership (e.g. private and LGA).

This approach provides a powerful management tool with hard, timely, visualised data and clear stakeholder accountability. It changes the urban greening strategy conversation from having a “tree planting” bias (because this has been the simplest measurable) to strategies encompassing a holistic view (including water, nutrients and retention) which, for the first time, can be measured, demonstrated and verified.

**Canopy Cover measured by tree by year, affordably**

**Simon Strauss**

Simon Strauss, B App Sc (with distinction), attended his first international Clean Air conference at Melbourne University as a student in the 1970’s. After working in the UK and Europe in the 80’s, Simon returned to Australia and was privileged to present a number of environmental awards for CASANZ whilst consulting on waste-water management using electronic nose technology. Joining Linfox in the 2000’s as Vice President – Strategy, Simon helped pioneer the successful CO2-e reduction, “Green Fox”, program as Business Unit Convener, ultimately resulting in a halving of Linfox’s /km carbon footprint and presenting at Sustainability conferences in Melbourne and Sydney during this period.

In the 2010’s, Simon consulted to Glencore mines in Australia and Africa on subjects such as waste management and SO2 emission monitoring and control. After joining ATS and attending the 2019 Arboriculture Australia Alice Springs and Treenet conferences, Simon’s vision for a new business - Active Green Services – along with pioneering innovations in drone-based inspections, satellite & AI applications and Tier 1 software solutions approach to arboriculture challenges lead to the establishment and launch of that new business at Treenet 2020. Simon brings a working lifetime of environmental experiences providing quality, strategic oversight and business acumen to help ensure Active Green clients achieve optimal outcomes.
Presenters, Bios and Topics - Day 2
On-demand Sessions, Friday 3rd September 2021

Jason Summers
Over 23 years of local government experience in Parks management in a growing City. Passionate about trees and creating parks and streetscapes that flourish. Recently started a new business called Remarkable Trees and helping people get great results growing trees for their projects. With a mix of Contracting and consulting on all things to do with trees.

Julian Gregg
Landscape architect with over 14 years’ experience in urban development and infrastructure projects across Australia and Canada. Currently leading the design and delivery of landscape projects for Woodlea, Melbourne’s fastest growing community. Actively involved in the implementation of a successful tree strategy that involves early procurement, targeted installation, and ongoing maintenance. Other current projects include retail, heritage, infrastructure, and a range of community based projects.

Mark Roberts
Mark Roberts is a former President of the ISA and the New Zealand Arboricultural Association. He has been honoured nationally and internationally for his services to arboriculture and the profession. His relaxed and approachable presenting style has seen him talk on varied topics across the world stage. He has been called a ‘thought leader’ with his ability to offer simple yet useable insight to complex issues.

Mark has written industry articles for over 20 years and his works are published nationally and internationally. He is a consulting arborist based in Dunedin New Zealand, where he is the owner of the arborist collective Roberts Consulting Ltd.

Change management and tree metrics
The World Health Organization estimate that 60% of the world’s population will live in urban areas by 2030; the competition for urban space will only increase and good planning is required. But history would suggest that even with the best-laid plans the ‘place’ that an urban tree grows in is likely to completely change two or three times during the life of the tree. It is not a case of change being good or bad, change will happen.

Change management and tree metrics looks at managing the individual tree as part of the urban forest, how the sum of the parts can be greater than the whole. By defining the role and function of a tree we can set metrics against it and measure the results. By giving a tree a purpose we can work out if it is achieving what it is supposed to achieve, we can manage the tree in relation to the forest and the forest in relation to its purpose. In this presentation I shall introduce the concept of repurposing our existing tree stock and explore opportunities that are often overlooked in big picture multi-discipline management. I shall examine the disconnect between what we know and what we do and try to form a connection for all the parties involved. Collaboration is the key to achieving real change and collaboration starts with a common purpose.

Going forward, pre-emptive engineering of urban green space and succession planning is key but as far as our urban forests go we need to understand what can be done with what we have, to make what we will have better. To achieve real change, not only do we need to change how we work, but we need to change how we think about the work we do.

A developer’s perspective on investing in good street and park tree outcomes
Woodlea model as a Case Study by Jason Summers (project arborist) and Julian Gregg Project Manager.
Alana Tucker
Alana Tucker is the Programme Manager for the Tree City programmes at the Arbor Day Foundation, including Tree City USA and Tree Cities of the World. As an urban planner, she conducted streetscape and parks planning projects in Detroit prior to coming to the Foundation. She holds a Bachelor Degree in International Business from the University of Nebraska-Lincoln and a Master’s of Urban Planning from the University of Michigan. Her favourite tree is Populus tremuloides, the quaking aspen.

Becoming a Tree City of the World
Alana will discuss the five standards required for application to become a Tree City of the World. She will provide examples of other cities and how they achieved recognition, and provide the important deadlines for this year’s applications.
The 22\textsuperscript{nd} National Street Tree Symposium is Mobile Again!

To make the most of your virtual experience with TREENET 2021 we strongly encourage you to download the mobile app that will enhance your experience of the event. The App has many features and will be the key way for you to interact with presenters and others as part of the event. All questions for the Q&A sessions will be taken through the app.

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https://www.surveymonkey.com/r/TREENET2021

Continuing Education Units (CEUs) are available for ISA Accreditation as well as for Registered Arborists with Arboriculture Australia. Contact amy@treenet.org for the relevant forms.
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