THE BOTANIC GARDENer

The magazine for botanic garden professionals

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Theme: Recovering from Disaster

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DISCLAIMER: Please note the views expressed in articles are not necessarily the views of BGANZ Council. We aim to encourage a broad range of articles.

Feedback and comments on the newsletter and articles are welcome. Please email: secretariat@bganz.org.au

COVER: Paddling down the Kauri Avenue after the January 2011 floods.
Photo credit: Joe Reichman

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The theme of the November issue is ***Engaging youth – in work and in play***. The deadline for contributions is Monday 17 September 2018. Please contact the Secretariat (secretariat@bganz.org.au) if you are intending to submit an article or have a contribution to other sections.

President's view

Paul Tracey, BGANZ President



Paul Tracey

In this issue we are looking at managing disaster but I am happy to say that BGANZ's start to the year has been anything but that, with our Council working hard on a number of projects to ensure our collective profile continues to grow.

BGANZ has agreed to work more closely with Botanic Gardens Conservation International (BGCI) and the International Association of Botanic Gardens (IABG) in 2018 with a focus on providing information from these international agencies to Australian and New Zealand gardens. The BGCI partnership will realise a number of outcomes in the near future with a commitment to deliver an Australian workshop in Canberra focussed on the red listing of *Eucalyptus* and *Corymbia* species and funding opportunities for the Global Trees Campaign for conservation actions on critically endangered trees; in addition, both IABG and BGCI are currently working on Botanic Garden Accreditation programs and on completion, BGANZ will distribute this information to our gardens.

The Botanic Gardens Education Network (BGEN) has rebranded, becoming the Botanic Gardens *Engagement* Network. Following a successful workshop at the Adelaide congress, it was decided to rebrand BGEN to focus on all aspects of engagement with our visitors to ensure the resources provided on the BGEN blog are accessible to a wider member audience. If you haven't seen the blog and the fantastic information sharing on this page, please head to https://bgenanz.wordpress.com/

David Sole, who is leading the organising committee for our next BGANZ Congress in Wellington, New Zealand, is busily working on the planning for what I am sure will be a fantastic event coinciding with the 150-year anniversary for the Wellington Botanic Garden. The Australian Garden History Society is also planning a conference in Wellington immediately after the BGANZ Congress, which will be an added incentive for our Australian members to 'cross the ditch' in 2019.

Dale Arvidsson has been busy planning the 'Botanic Endeavours 250' commemoration events celebrating 250 years of the discovery by Western science of the flora of New Zealand and Australia's east coast in 1769–70 and more than 40,000 years of traditional knowledge. Many of our gardens are working towards events to celebrate this milestone throughout 2019–20 and if your garden is interested in becoming involved there is some great information on the BGANZ website to guide you.

In 2017, BGANZ invested in engaging a partner consultant to provide training and expertise to guide Council in securing corporate partnerships and boost our financial capacity for Botanic Gardens.

I am excited to say that we have secured our first major partner in Augusta Golf Gars, an Australian company specialising in all types of golf cars and utility vehicles suited for use in our botanic gardens. We look forward to working with the team at Augusta into the future.

Finally, following feedback and discussion on the BGANZ Open Day at the Adelaide Congress, Council deliberated and renamed the event Botanic Gardens Day. This inclusive title is aimed at celebrating all gardens across our two countries and in particular the role of botanic gardens in plant conservation, so I hope our gardens will continue to embrace the event and watch it grow.

At the beginning of May I was at the opening of the Conservation and Research Garden at the Australian National Botanic Gardens, Canberra where our Australian ambassador Costa Georgiadis launched the 2018 Botanic Gardens Day to be held on 27 May.

At the time of going to print we have 75 gardens registered, which is fantastic, so as you read this column, I hope you had a wonderful Botanic Gardens Day experience and are looking forward to the next one.



Editorial insights

Dale Ardvisson, Managing Editor



Dale Ardvisson

'Botanic gardens (and arboreta) are ever changing environments' is a statement we use with event organisers and couples planning their 'big day' to emphasise that the landscape that they saw on their initial inspection may not look exactly the same in six months or a year's time on their special day. This covers plants in seasonal flower, short-lived annual plantings and even the odd tree that may have succumbed to age or weather. However, its use still didn't prepare me for my time at the Mackay Regional Botanic Gardens after Cyclone Ului crossed the coast north of the city and curled back across the hinterland in 2010.

In my own garden, one small Grevillea branch was the only causality when daylight came; on arriving at the botanic gardens I could not even get into the carpark as the devastation was so severe, with over 400 trees and shrubs smashed to pieces or lying on their side. I'm now in Brisbane and overseeing the management of many of the oldest trees in Queensland at the historic City Botanic Gardens along with a still developing site at Brisbane Botanic Gardens Mt Coot-tha, where new gardens and infrastructure are being built amongst remnant *Eucalyptus* and *Corymbia* (potential risk and disaster has many different guises). Needless to say, preparation for the 'worst case scenario' and protection of your greatest assets – your staff, the living collections and key infrastructure – is of vital importance to me and it is the theme of this edition of *THE BOTANIC GARDENer*.

Our feature interviewee Richard Barley from Royal Botanic Gardens, Kew provides an insight into his diverse portfolio and highlights his experiences with managing both biosecurity and financial risk. Richard Brown from the Mackay Regional Botanic Gardens continues the theme with his gardens' planning for weather preparedness and design consideration of the living collection when establishing a botanic garden in a sometimes volatile tropical climate. Bede Nottingham from the Christchurch Botanic Gardens shares with us how the city and the botanic gardens coped after the devastating earthquake of 2011, whilst Ricardo Simao from Royal Botanic Gardens Victoria (RBGV) highlights the double-edged sword that is fire risk and the benefits of fire for collection rejuvenation and wildlife in managed natural areas at RBGV's Cranbourne Gardens. Finally, Andrew Benison reflects on the history of site flooding along with considering adaptations for a changing climate to the living collection at Brisbane's historic Sherwood Arboretum.

From the largest institution to the smallest community-run gardens, identifying risk and preparing for disaster (and change) are essential – and sets a path for reacting to and recovering quickly when disaster strikes. The impact on our collections and the staff that manage them is at the very heart of best practice gardens' management. If this edition then inspires you to action, please use the BGANZ network to request sharing knowledge and work together with your colleagues if you are developing or renewing plans, policies and procedures.

As seen at the Royal Tasmanian Botanical Gardens in late May, you can't prevent the storm that tragically fells several 150-year-old conifers, but you can set up processes to minimise this loss and commence recovery with succession planning and by always asking: 'What if (insert calamity here) occurred….?' at your botanic gardens or arboretum.





Storm damage at Royal Tasmanian Botanical Gardens, May 2018. Photo: Royal Tasmanian Botanical Gardens

FEATURE INTERVIEW

Outstanding in the field

Tom McCarter interviews
Richard Barley, Director, Horticulture, Learning and Operations, Royal Botanic Gardens, Kew

I thought it would be interesting for BGANZ readers to hear about your path to Kew, and a bit about what your current role involves.



Richard Barley

When did your interest in horticulture start, and what has your career path been so far?

Who knows where one's interests start? When most of us were little kids we grew something or other. I certainly did – I grew my first eucalypt when I was five or six. It was a *Eucalyptus obliqua*, Messmate Stringybark, and it grew quite well and I was very, very excited by it. I was quite lucky in having that immersion in the Australian bush from a young age. My family would often go bushwalking, and along the track my parents would point out particular plants, and tell my brothers and me what they were called. That early grounding in the bush instilled a love and respect for the outdoors and nature in general in the young Barley.

I was not a very good academic student at school. 'Easily distracted' and 'immature' were two recurring themes in my reports, both quite accurate descriptions. After finishing school, and lacking any particular direction, I spent a year as an exchange student in the beautiful Appalachians, in North Carolina. This was a wonderful experience. On returning to Australia, I tried a few different things including working in the outback, but ultimately found my way back to Melbourne and started a short stint at the botanic gardens assisting with vegetation surveys for what was then the Ecology Section of Royal Botanic Gardens Melbourne (RBGM) [now Melbourne Gardens, RBGV]. What started as eight weeks' work (from April 1980) turned into a slightly more extended stay – I was there for 30 years, and completed a Degree in Horticulture (Burnley College) along the way.

In addition to the vegetation surveys, my roles at RBGM were quite varied, including data entry, scientific illustration, providing advice to regional botanic gardens, and research into nursery stock available in Victoria in the mid-1800s. I was fortunate to find myself as acting superintendent of the botanic garden in 1992, and that position then evolved ultimately into Director, Melbourne Gardens Division. One thing rather led to another, as they always do.

I left Melbourne (RBGM) to become CEO of Open Gardens Australia in 2010 and performed that role for three years, before my current position at RBG, Kew came up.

What does your role at Royal Botanic Gardens, Kew involve and what parts do you enjoy most about it?

I came to Kew in 2013 to take up the newly established role of Director of Horticulture, but since then a few other responsibilities have been added to that portfolio, so it's now Horticulture, Learning and Operations (HLO). In addition to horticulture (including Kew's School of Horticulture), it now includes the daily operations and visitor facing side of what we do: visitor hosting, the explorer bus, catering, constabulary, education, community engagement, volunteers and interpretation. In all, around 300 staff, plus volunteers.

I enjoy many things about my role at Kew. It's genuinely a privilege to work in such a place that has such extraordinary collections, amazing landscape and buildings, rich heritage, and associations with famous people who have influenced our knowledge of plants and fungi around the world. It's all of those things: the people, the science and the place.



The Great Broad Walk Borders project was the first of several significant landscape and building improvement projects recently undertaken within the Kew landscape, supported by a mix of private and public funds. Photo: RBG, Kew

What current and future projects are you working on?

There is currently a huge amount of developmental work going on at Kew. The biggest element at the moment is the opening of the Temperate House in early May; it's the largest surviving Victorian glasshouse in the world and has been closed for five years for a £41 million restoration.

We're also working on a new children's garden, an evolution garden, replacing the arboretum nursery and also two of the aged catering facilities. And just embarking on developing a proper living collections plan for Kew and Wakehurst (Kew's second site in the West Sussex countryside). In the next few years the iconic Palm House will also need some restoration, but (hopefully) not to the same extent as the Temperate House.



Restoration hoarding screening work on the Temperate House at RBG, Kew Photo: Tom McCarter

I'd like to move on now to some questions relating to the theme, 'Recovering from Disaster'.

You have 35+ years of experience in botanic gardens. What are some of the crises you've witnessed during your leadership of these organisations?

I have been fortunate that I haven't been at the helm of anywhere that's had a disastrous bushfire, flood, cyclone or any of the other natural disasters. I have, however, been responsible for responding to some pretty serious biosecurity issues; for example, at RBGM when we had an outbreak of fire blight in 1997.

It was quite a serious issue for us, as while the disease was already in New Zealand at the time, it hadn't been recorded in Australia. It had serious implications for the apple export industry which was worth around $47 million per year. It led to us removing all the susceptible Rosaceae plants in the Melbourne Gardens, over 700 species among the susceptible genera, including some lovely specimens. The government had a keen eye on the issue because of the export trade implications for the apple industry, and it was also quite controversial, because there was

no logical explanation for why these positive samples had turned up at the botanic gardens, but nowhere else. It led to months of difficult decisions and public relations challenges, whilst always being aware of the potential impact on a huge number of apple producers and others whose livelihoods could have been devastated. The cost of dealing with the issue (including orchard surveys across Victoria) was around $2.2 million, and an estimated 250 people involved in the response actions.

…Can you tell us something you learnt from this experience?

Often situations like this evolve rapidly. You have to draw on the best advice, stay abreast of all the current information, and (usually) can never have the luxury of waiting for everything to be known before making decisions. You have to think on your feet, work with the best available evidence and be ready to make decisions quickly.

It's important to accept that sometimes you'll be wrong, and need to re-think decisions or actions. But be prepared to stand by what you're doing, and be able to explain and justify decisions and actions, and be honest.

Around the time that you arrived RBG, Kew was facing another sort of crisis; severe financial difficulties. Do you have any reflections on this situation?

You have to think on your feet, work with the best available evidence and be ready to make decisions quickly. It's important to accept that sometimes you'll be wrong...

It's been a very interesting period, moving from financial instability and a lack of strategic coherence, to the current situation where we are operating far more effectively and with much greater resilience. The first couple of years were pretty tricky at times, but we are well through that now, and we are starting to see the benefits of getting the house in order several years ago. We are realising the dividends from reorganising, ambitious planning and prioritising, and focusing on what we should be doing. Now we are better able to deliver key projects and activities, here in the UK and around the world.

Are there ever opportunities in a disaster/crisis? Or is this simply something you get with the benefit of hindsight?

I would put it the other way. If you have a reasonably robust and well thought out approach to what you're doing, then a disaster or a crisis is just another example of the whole range of challenges that comes along from time to time, and you'll be in good shape to deal with it.

If things are loose and ill-defined, then you're probably not well-equipped or prepared to deal with day-to-day business, let alone the amplified environments of disasters. It's about being resilient, well organised, and being clear about what you're there to do. This makes it easier to deal with the other unforeseen things that come along.

What can botanic gardens do to minimise the risks of disaster striking and better prepare for the worst?

Sometimes there's nothing you can do to minimise the risk, but what you can do is have the mitigations in place. You *can* predict some things. For example, during the great storm of 1987 Kew lost over 700 trees. We (or they, at the time) learnt a range of things from the storm; for example, the importance of keeping a decent windbreak on the western edge of the garden, and of ensuring where possible that there is reasonable capacity for wind flow through tree canopies. It's unlikely that if the same storm hit Kew again we would lose so many specimens.

Most places these days will have a table of risks, including natural disasters like storms, floods, fires, earthquakes, blizzards etc., and a range of mitigations that seek to ensure that the risks have appropriate levels of controls. For the most serious risks, there will be an appropriate contingency plan that flows on from this. Making sure that contingency or response plans are in place, updated and maintained is very important, as is ensuring that organisational responsibilities are very clear.

How can botanic gardens best protect their media profile during moments of crisis?

Media relations at any time have to be well thought out, but in a crisis or disaster, the timeframes to issue communications or respond to questions are much shorter. You usually can't afford to wait for a few hours to say something in a well-considered way, as the situation may have developed further within that timeframe. You have to be upfront, say exactly what's going on, and what is being done; you need to get people in the picture. That's not necessarily an approach that comes naturally for a lot of people, particularly if it's something serious. You have to be able to think clearly, and communicate calmly.

What do you think the benefit of networks such as BGANZ are for recovering from disasters?

Any network in any professional field can be helpful and a great resource. I think there's always benefit in people sharing their experiences, ideas, similar concerns and answers. Even if gardens aren't in exactly the same positions, similar geography, or on the same scale, then at least knowing that there is access to the support of professional colleagues is important. And of course, in regards to recovering from disasters, networks such as BGANZ can be vital sources of plant materials and seed collections, as well as expertise.

> You have to be upfront, say exactly what's going on, and what is being done; you need to get people in the picture.

Good networks in the local community are also important. For a lot of smaller gardens, they sometimes run on such limited resources, and for many regional gardens a lot of the work done is purely voluntary. You have to take your hat off to the volunteers who commit such time and effort for the benefit of these gardens. It says a lot about the spirit of our communities. You know that in the event of an emerging crisis or disaster those very same people, and the rest of the community will band together to help. Fostering stronger networks, both professional and in the local community, can help make gardens more resilient in disaster situations.

…Are strong community connections as important for larger gardens?

There's an expectation that for the larger gardens, the government agency or other funding source will deliver their responsibilities and do the right thing. But in reality, all garden organisations need community connections. This is a really important point, because it wasn't for the support of the community, many of the gardens would probably disappear over time.

Final thoughts

Do you miss anything from down-under?

Sunshine and warmth, as they're in slightly short measure here in England, most of the time. English gardens and countryside are extraordinary and without comparison in the world in many ways. But I do miss the Australian landscape, for its wideness, wildness, warmth, harshness, diversity, spirit of place … dammit, I've teared up! Luckily, we have managed to recruit some Aussie talent to Kew over the past year. Sharon Willoughby is doing great work on our interpretation!

What are you reading/writing/listening to?

The Princess's Garden. It's about Kew. Specifically, it's about Frederick, Prince of Wales in the 1700s, who initiated the styling of the landscape and started the plant collections before Augusta took over after his death. It's often said that Princess Augusta was the founder of Kew, but to be fair it was probably Prince Frederick who got the ball rolling before 1750. He sadly died after contracting a fever, after becoming drenched from the rain while out supervising works in the garden.

I'm also concurrently reading *Aunts Aren't Gentlemen* by P.G. Wodehouse, for obvious reasons.

Botanic news: from home and abroad

Botanic Gardens Day launch 2018 – and reflections

As we go to publication before this year's Botanic Gardens Day we will have all the news and reviews in the November edition of* THE BOTANIC GARDENer*, meanwhile BGANZ joined forces to launch of this year's open day with the launch of a new collection and garden at the Australian National Botanic Gardens (ANBG) in May.

Decked out in colourful raincoats and gardening gloves, a group of tiny gardeners assisted Botanic Gardens Day Ambassador Costa Georgiadis in launching the 2018 Botanic Gardens Day and ANBG's new Conservation and Research Garden.

The new garden was opened as part of the launch of Botanic Gardens Day. Now in its third year, over 75 gardens from across Australia and New Zealand were expected to celebrate the day on Sunday 27 May.

ANBG's Conservation and Research Garden features a living collection of threatened plant species, and gives visitors a first-hand look at the conservation work that botanic gardens undertake.

'The new garden contributes to the conservation of many threatened plants and by having these species here growing and thriving, acts as an insurance policy for the remaining plants surviving in the wild,' said David Taylor, ANBG's Curator Living Collections.





Botanic Gardens Day Ambassador Costa Georgiadis and children launching Botanic Gardens day at ANBG.

'The conservation and research garden is a great example of the important conservation work that botanic gardens across Australia and New Zealand are involved in and has been made possible by multiple partners working together to bring expertise in horticulture, science and seed production to secure the future of some of Australia's rare and unique plants.'

BGANZ aims to raise awareness of Botanic Gardens Day and its key conservation messages with a broader audience each year, and there has been wonderful support and encouragement from participating gardens this year.

BGANZ held the inaugural launch in 2016, at Royal Botanic Gardens Sydney, with Costa Georgiadis appearing. The 2017 launch was held in Canberra, at the ANBG, with the Australian Governor General launching the day.

While a lot of work went into organising and hosting the previous launch, BGANZ had not achieved its aim of gaining media coverage from the launch.

In 2018, with Costa in Canberra, and the launch of the ANBG Conservation and Research Garden, BGANZ secured ABC TV, ABC Radio, *Canberra Times*, *The Chronicle* (Canberra), and *Canberra Weekly*. This has been our best coverage so far, and BGANZ aims to take the launch to other capital cities and regional gardens in coming years.

While funds are limited to grow the days in different ways at this stage, BGANZ currently spends a small amount on video production and targeted Facebook advertising, to promote awareness of the Botanic Gardens Day and how your garden is involved. This year's promotional video can be viewed here.

Our best marketing tool is our member gardens, friends groups, employees and Facebook friends of every garden. Encouraging our members, contacts and friends, to share and promote through their own Facebook and/or twitter pages could extend the reach of Botanic Gardens Day to huge numbers.

This is an area we explore every year and feel could be improved on. How does BGANZ engage our members and contacts to increase awareness of the day? We welcome your ideas.

BGANZ Council will reflect on feedback from the 2018 event as it aims to ensure Botanic Gardens Day succeeds and grows in coming years.

If you have any feedback, we'd love to hear from you. Please contact Eamonn: secretariat@bganz.org.au



Botanic Gardens Day Ambassador Costa Georgiadis, BGANZ Council member and Curator/Director Mount Tomah Botanic Gardens Greg Bourke, and Video Producer Richard Snashall taking a break from Botanic Gardens Day promotional filming at Royal Botanic Gardens Sydney.


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BGANZ Members: Professional Development opportunities

BGANZ Council encourages all members to look out for these awards, and many other non-BGANZ annual awards each year. If you are looking for professional development opportunities, BGANZ has a list of awards and secondment opportunities on the BGANZ website. We will aim to keep it updated as new PD opportunities become available.

2018 award winner: Douglas McDougall – Jerusalem Botanical Garden

In April 2018, Douglas McDougall, the Grounds Manager of the Olive Pink Botanic Garden commenced a six month, horticultural scholarship program at the Jerusalem Botanical Garden. Doug discovered the program through the BGANZ updates and is looking forward to establishing a relationship with the two botanic gardens, where ideas and knowledge can be exchanged well into the future. The Jerusalem Botanical Garden has 6,000 species and is the largest plant collection in Israel. Doug will update BGANZ members on his stay in the next edition of *THE BOTANIC GARDENer*, due out in November 2018.



Doug McDougall at a recent plant sale, Olive Park Botanical Garden, Northern Territory.

And why not start planning for your trip to Jerusalem, 2019?

2018 BGANZ award applications closing soon

BGANZ Council is delighted to announce the BGANZ Awards for 2018. Applications are open until 31 July.

- **BGANZ Professional Development Award 2018 (closing date 31 July – Value $2,000 AUD)**
- **BGANZ Young Member Award 2018 (closing date 31 July – Value $500 AUD)**

And make a note in your diary for early next year.

- **BGANZ/American Public Garden Association 2019 (closing date 28 February 2019 – Value $800 USD)**

An opportunity to lead in a public horticulture environment?

BGANZ members are reminded that Longwood Gardens, one of the largest public gardens in North America, is offering a fellowship program in public horticulture. Applications open on 1 August and close on 1 October 2018. The Longwood Fellows Program was launched in the past 12 months and offers a 13-month residential learning experience designed for those who have a passion to lead in a public horticulture environment. If you think this program is for you, check out their website for more details or email the Program Director, Tamara Fleming, Ed.D. at fellowsprogram@longwoodgardens.org

BGANZ and Augusta Golf Cars announce partnership

BGANZ Council has an aim to increase financial resources as they work to improve member services. In March 2018 BGANZ was pleased to announce a corporate partnership with Augusta Golf Cars earlier this year.



Nico Schutte, Director Augusta Golf Cars, Graham Janson, National Commercial and Industrial Sales Manager Augusta Golf Cars, Paul Tracey, BGANZ President and Raymond Georgiou, Managing Director Augusta Golf Cars.

BGANZ President Paul Tracey said, 'BGANZ was thrilled to be partnering with Augusta Golf Cars and looked forward to developing a strong relationship with Augusta over the next 12 months.

'Our members use a range of vehicles across their garden spaces and various activities. Augusta Golf Cars provide a wide range of vehicles. BGANZ will be encouraging all our members, when assessing their next vehicle purchases, to include Augusta Golf Cars in their quote portfolio.'

Speaking at the signing of the partnership agreement, Raymond Georgiou, Managing Director, Augusta Golf Cars said, 'we are delighted to partner with BGANZ.

'Like all Australians and Kiwis we value the work and beautiful spaces botanic gardens provide.

'We believe we have the best range of environmentally friendly, sustainable, alternative vehicles on the market, whatever your garden, arboretum or park requires. We welcome all BGANZ members to contact us so we can assist with their needs.'

Learn more about **Augusta Golf Cars** here.

BGANZ member benefits

1. BGANZ partner with Augusta Golf Cars

BGANZ Members have a great opportunity to discuss all their transport requirements with Augusta Golf Cars. BGANZ encourages all members to contact Augusta Golf Cars to discuss future purchasing opportunities. More information about Augusta is available on the BGANZ website and in this edition of *THE BOTANIC GARDENer*.

2: Get a great new car deal!

For the exclusive benefit of BGANZ members, BGANZ has entered into a partnership with Autotender. BGANZ members can now get great prices when purchasing their new car through Autotender.

For more information on how members can get better car prices check out the information page here.

BGANZ member news

$9.9 million boost for George Brown Botanic Gardens

George Brown Darwin Botanic Gardens will undergo a $9.9 million facelift, with a new multi-purpose visitor and event centre to be built. The funding boost is part of an initiative forming a suite of cultural experiences aimed at revitalising Darwin's central business district. Read more
Source: Darwin Territory Government

John Bentley, President of the Friends of the Melton Botanic Garden and AAFBG Committee Member

John Bentley was awarded Melton Citizen of the Year by the City of Melton at their 2018 Australia Day Ceremony in January. The award was in recognition for John's work and encouragement in the Melton Botanic Garden over many years.

Congratulations John – great news!

Hamilton Gardens, New Zealand, launch new app

Technology developed by the University of Waikato is giving Hamilton Gardens' visitors an opportunity to learn more about Hamilton city's number one tourist attraction. The University has worked with Hamilton Gardens' staff to develop an app that provides information about the history and design of the themed gardens. Read more

A Master Plan for Brisbane Botanic Gardens Mt Coot-tha

Brisbane City Council has released the new master plan for the city's much-loved botanic gardens on the slopes of Mt Coot-tha. The Brisbane Botanic Gardens Mt Coot-tha Master Plan 2018 joins the City Botanic Gardens Master Plan 2015 in identifying key opportunities and future directions for the botanic gardens including development of the living collection, engaging visitors through world class interpretation and visitor education programs linked to the living collection, whilst improving facilities and accessibility within the gardens. Read more

MAPDA shortlisting for Royal Botanic Garden Sydney app

The Royal Botanic Garden Sydney was shortlisted in this year's Museums Australasia Multimedia & Publication Design Awards for their new interactive garden app. The award winners will be announced in early June.

When Greg Bourke finished school, he went off to become an electrician.

Now he loves to enter the glittering and sensual world of plants with a thirst for blood. Greg, Curator, Mount Tomah Botanic Gardens, recently talked to ABC's Off Track presenter, Ann Jones. Read more
Source: ABC



The hort. section

Brad Creme, City Parks Curator, Public Space Design and Open Space, City of Greater Bendigo



Brad Creme

First word

For this edition of the hort. section, I'd like to show you a project that is very close to my heart and work – Bendigo's newest piece of public open space, The Garden for the Future.

This is one of the largest projects the City of Greater Bendigo, Parks and Open Space team has been involved in, bringing together all parts of the organisation to deliver this wonderful new garden. It was a privilege to see this great team effort close up and to be involved in this project.

We celebrated the launch of The Garden for the Future with a grand opening on 22 April 2018. I look forward to welcoming you to the garden next time you just happen to be in Bendigo!



The Garden for the Future is open!

On the 22 April 2018, the City of Greater Bendigo Mayor Cr Margaret O'Rourke and the Hon. Jacinta Allan MP opened the Garden for the Future. The Grand Opening was a free community event attended by nearly 2000 people and featured local bands, food trucks, displays, tours and kids activities. This two-hectare, $4.6 million project is Stage 1 of the expansion of the Bendigo Botanic Gardens, White Hills.

The multi-award-winning masterplan for the site was developed and adopted by the City of Greater Bendigo in 2010. The landscape design was undertaken by TCL (Taylor Cullity Lethlean) Landscape Architecture and Urban Design, the shelter was designed by Peter Elliot Architects and the plant design by Paul Thompson. Construction was completed by ACE Landscapes. Planting the site was done in-house by the City of Greater Bendigo, Parks and Open Space team who planted nearly 30,000 plants between January and April 2018. The project was funded with contributions from the City of Greater Bendigo ($3.56 million), the Victorian State Government ($1 million), The Friends of Bendigo Botanic Gardens ($20,000) and the Bendigo Northern District Community Enterprise ($20,000).

The Garden for the Future was designed to perform multiple functions. It is an event space surrounding a multi-functional stage, shelter and amenities hub catering for concerts, performances, functions, outdoor cinema and parties. The stage area can also act as an educational space and outdoor classroom or sheltered space for passive recreation.



Staff from across the organisation participated in planting days. Photo: City of Greater Bendigo



Aerial view of The Garden for the Future and surrounding precinct as shown on opening day, with Heritage Garden (top right), the White Hills Football Oval (top left), the empty paddock (future arboretum and playground on the left), open space between the two gardens (future visitor centre) and the Bendigo Creek travelling through the middle of the site. Photo: City of Greater Bendigo

The garden balances the event space requirements with a diverse horticultural landscape. It is a 'boutique' event space within a botanic setting, capable of holding an audience of well over 1000 people. The garden also provides recreational opportunities with over 40 individual picnic lawns, 4700 square metres of turf, barbecues and seating.

Broader objectives of the project were to improve the liveability, health, wellbeing and economy of the area, providing an opportunity to lead the community in embracing the challenge of climate change and raising environmental awareness.

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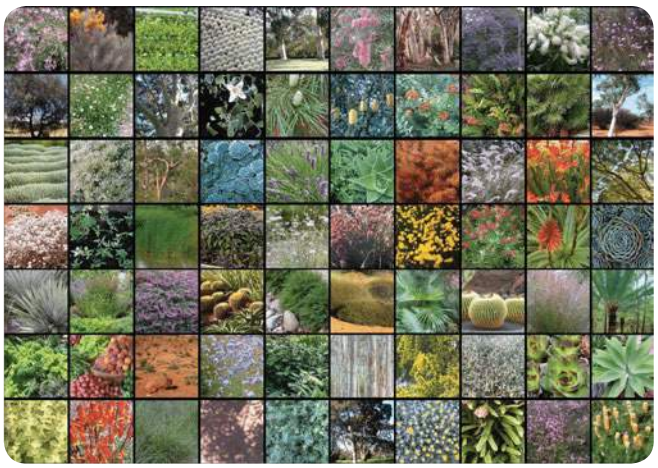
Contemporary horticulture on display

Bendigo is a great place to garden, with the disclaimer that *'only if you get the plant selection right'*. This garden showcases plants suited to Bendigo's current and future predicted climate. Traditional gardens in Bendigo have had to endure temperatures from between minus 2 degrees Celsius, up to 43 degrees. To 'climate proof' the garden though, we needed to use plants that can cope with temperatures between minus 5 degrees up to 46 degrees. As Bendigo gardeners can attest to, choosing the wrong plants can result in dead plants. Poor plant selection results in frostbitten plants in winter and sun-scorched plants in the summer.

Fortunately, gardeners don't have to choose between a traditional English cottage garden and a cactus garden. There is a whole world of plants in between to choose from and Paul Thompson has selected plants from similar climates to Bendigo such as Africa, the Mediterranean, the Middle East, Central America and around Australia.



Nearly 2000 people attended a free community event to mark the opening of the garden.
Photo: Brad Creme



Plant selection responds to a changing climate with 'big, beautiful and garden worthy' plant choices.
Photo: TCL

The garden has three main areas: the 'Around the World' garden featuring exotic plants from climate-matched regions of the world; the 'Around Australia' garden featuring plants from all over Australia that suit Bendigo's conditions; and the 'Fun and Fantasy' garden featuring mixed plantings of native and exotic plants, making this section very special.

Each area is divided into three sections displaying 'form and foliage', 'fruit' and 'flower'. These themes guide the garden development and provide a different landscape character as you move through the space.

The garden also includes unusual combinations of plants: a mass planting of Fuchsia Grevillea *Grevillea bipinnatifida* ssp *pagna* provides a groundcover for feature trees of European Yew *Taxus baccata*; a copse of Magnolias sits behind a cactus display; and *Eucalyptus* 'Moon Lagoon' features amongst a groundcover of Crassula succulents. These mass plantings are possibly the first time these pairings have been made in a public garden and certainly the first time I've seen them used together. They express Paul Thompson's vision of creating a 'new ecology for Bendigo' to give gardeners a broader scope of plant choice and landscape styles to use and experiment with at home.

There are many parallels and opposites throughout the garden and both sides of the garden seem to mirror each other using either Australian plants or exotic plants. Plant selection includes opposites such as 'simple and diverse', 'hardy and non-hardy', 'common and rare', 'slow and fast', 'short-lived and long-lived', 'permanent and ephemeral', 'reliable and experimental'. The diversity of plant choice will give our visitors, staff and tour guides lots to learn about as the garden grows.

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There are also many mini-collections within the garden including several species of Mahonia, Rhus, Acacia, Eucalyptus, Agave, Aloe, Strelitzia and even a turf collection. Each group has several 'species' displayed to help visitors understand the diversity available within these groups of plants and the most suitable members of the genus for planting in urban Bendigo gardens.

Bendigo's love affair with the backyard lawn is exemplified by having over seven commercially available types of turf on display, several native grass display beds and lawn alternatives such as groundcovers.

Contemporary design

Planning for projected climate change wasn't the only challenge the designers had in creating the Garden for the Future. There were also design challenges to overcome, not the least of which is that the site is located on the floodplain of the Bendigo Creek. TCL managed to design a space that would drain quickly under normal rain conditions and also act as a retarding basin during a '1 in a 100' year flood.



Window boxes will eventually be the only way to see through a large 'privacy hedge' separating different parts of the garden. Photo: Brad Creme

TCL's vision identified different parts of the site which would 'inspire us', 'bring us together', 'educate us', 'sustain us' and 'connect us'. These themes provide diversity and interest across the site in a unified way rather than just having a series of separate display gardens. This unique design will bring joy for years to come and be a focal point for learning about horticulture, ecology, sustainability and the environment. Seeing kids roll down the grassy hills and flinging a frisbee across the lawn was a highlight of the opening day celebrations for me and an intended outcome of the landscape design.

The provision of shade was also an important consideration and the diversity of trees in the garden will eventually provide a milder microclimate under which other plants will thrive and our visitors will enjoy.

Connecting people with plants

As well as the landscape design and plant selection, the Garden for the Future seeks to connect people with plants by finding ways to tell the story of each plant. Nearly every plant on display has a cultural story behind it. How was this plant used by the Indigenous people in its natural habitat – or how was it used by successive migrant communities who came later? What was it used for? Did it provide food, fibre, medicine, building materials? Was it used in art, ceremony or cultural practices by Indigenous people? Does it have contemporary uses in science, food or industry? Telling the 'backstory' of each plant allows us to connect people with individual plants and provides more than just an ornamental plant option for the backyard.

This way of interpreting the plants allows our tour guides to learn even more about the plants they know and love such as Brachychiton, Ceiba, Araucaria, Xanthorrhoea, Cactus, Themeda, Banksia, Citrus and more. It also helps us learn about plants we've never encountered before and helps us remember by learning a cultural story for each plant.

Learning about so many plants and communicating this with others takes a passion for gardens and horticulture. Fortunately, the Friends of Bendigo Botanic Gardens have been long-time supporters of this project and it was a privilege to be able to provide a sneak preview of the garden to the group prior to the official opening. They continue to tell the stories of the garden to the public and are great advocates for Bendigo's heritage gardens.



The Friends of Bendigo Botanic Gardens on a preview tour of the garden two weeks before opening day. Photo: Brad Creme

Plans for the 'future' garden

'Stage 2' of the expansion of the Bendigo Botanic Gardens involves building a Visitor Centre between the heritage and contemporary gardens which will be surrounded by ponds and edible gardens. Future stages of the masterplan include a playground, aquatic centre/splash-park, arboretum/ wetlands, carpark and works on the Bendigo Creek. Before we get to that though, we are seeking funding to complete some works in the Garden for the Future such as two Gathering Space Shelters, the Fun and Fantasy Garden Sculptures and the Promenade Seats. These finishing touches to the project are currently unfunded. There are also some rare plants and some trees to go in to finish off this exciting new garden.



Artists Impression of the garden at maturity, including the fun and fantasy sculptures. Photo: TCL

Find out more about the Bendigo Botanic Gardens by visiting Bendigo or visiting us online:

http://www.bendigobotanicgardens.com.au

https://www.facebook.com/bendigobotanicgarden/

https://www.instagram.com/bendigobotanicgardens/

When you're expecting the unexpected

– in the wake of the Christchurch earthquake

Bede Nottingham, Operations Team Leader, Christchurch Botanic Gardens

Background

In 2010–11 Christchurch suffered a series of devastating earthquakes, starting with a magnitude 7.1 south of the city on 4 September 2010. This caused widespread damage and several power outages. Only two residents were seriously injured.

There were several thousand aftershocks following this event, the strongest of which was a magnitude 6.3 shock that occurred six months later on 22 February 2011. Because this aftershock was centred under Christchurch, it was much more destructive and resulted in the deaths of 185 people. Civil Defence declared a state of emergency for Christchurch, initially a curfew was established between 7pm to 7am and the New Zealand Army was deployed. Christchurch's central city and eastern suburbs were badly affected, with damage to buildings and infrastructure already weakened by the pervious September earthquake and aftershocks. Significant liquefaction affected the eastern suburbs, producing around 400,000 tonnes of silt.

Impact on the Christchurch Botanic Gardens (CBG)

The earthquake on 4 September had minimal effect on the CBG. This was because of a number of factors.

It occurred in the early morning on a weekend day. There was no outward damage to plant collections including trees. There was also no significant damage to any buildings or infrastructure and the power outage was very short. For most staff, it was back to work on Monday as per normal. In fact the feeling of most residents at the time was that the city had been very lucky. However, the long-term effects of continuous aftershocks, which were totally random, and dealing with private insurance claims added to staff stress levels.

The aftershock on 22 February was a totally different event because it occurred at 12.51pm on a working day. And the damage to buildings and infrastructure was far worse.

Authorities cleared the central city of people, many ending up in the CBG. The Police established a cordon by the end of the day which denied access to the CBD (Central City Red Zone). The day after the earthquake, a state of national emergency was declared, which stayed in force until 30 April 2011.



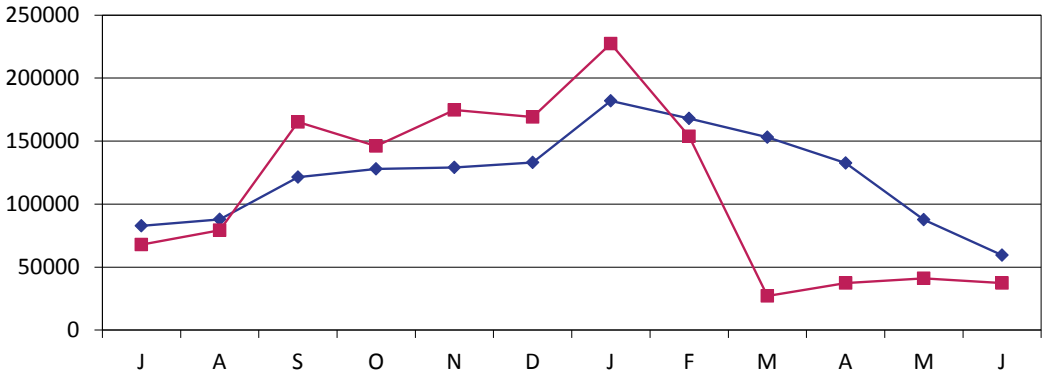
Armstrong Lawn, 22 February – the gardens became an impromptu gathering place when the authorities cleared the central city. Photo: Brian Appleton

Once again the CBG was extremely lucky that there was no major damage to any buildings. However, we did lose power, sewer and water services for an extended period. One large oak tree toppled over, damaging another three smaller trees. There was a small area of soil surface cracking from lateral spread next to the river, with a limited amount of liquefaction in the same area.

Visitor numbers

One impact of the September earthquake was a noticeable increase in visitor numbers, well above average for the time of year. We think this was due to parks and open spaces being perceived as safe places to be.

However, the total opposite happened after the February event. By setting up the Central City Red Zone Cordon it was perceived by the public that the CBG was within the Red Zone and therefore closed. Also, having the Army with armed personnel carriers at your front gate can be a bit off-putting. This had the effect of reducing our visitor numbers to well below our average for several months as illustrated in the below graph.



The blue line shows the average number of visitors per month from July 2006 to June 2010; the pink line shows the effect of the September and February events on visitor numbers in 2010/11.

Learnings from our experience of the February event

Staff

Immediately after any event all staff need to be accounted for. As with most of the world we use cell phones as our main internal communication tool. However, immediately following the aftershock all of the networks shut down because of overload. It is made very clear to all staff that they are required to report to the main yard to be signed-off as safe before leaving the site. This also showed the value of a site register/sign-on book. We now have battery powered handheld radios as a backup system for communication. All City Council staff have a Civil Defence (CD) requirement in their position descriptions. This means that a number of staff may be required off-site after an emergency. We had staff that were on CD duty for over 9 months – something to be factored in to any emergency/business continuity planning.

Long term loss of power

You soon learn how much we rely on power in the modern world: we had a power outage for three weeks. We did not have any backup generators on-site other than a small petrol model. Unless you very quickly organised to hire one, there were none available.

We now have two extra small inverter generators; however, these do only have limited output.

Because it was summer, we didn't require heating for the nursery or conservatories. If it had been during the winter, heating would have been critical for the survival of our indoor plant collections. Although the conservatories were not damaged directly by the earthquakes they were closed to the public for over three years as the four buildings that comprise the conservatory complex did not meet the new building earthquake standards set by the City Council for public buildings. This was also compounded by differing engineering reports, highlighting how important it is to have copies of As Built Plans and Engineering Reports for all buildings on-site. The staff were allowed limited access to the Cunningham Conservatory, so it was necessary to move a large percentage of the potted collection off-site. This was only possible because the council nursery had space free at the time.

Having no power also affected water and sewer because they rely on electric pumps. We didn't know the extent of the damage to both pipe systems until we had a regular power supply. It then quickly became obvious where the problems were, however, there were long delays in getting contractors on-site to carry out repairs. Two of our public toilet blocks had to remain closed for a number of weeks.

Trees

Initial damage to trees in the CBG was limited to removal of one large *Quercus robur* and three surrounding trees, and one *Tila* × *europea* next to the playground. This tree was interesting in that the lower lateral branches that had been previously lifted had dropped almost to ground level. The decision to remove this tree was made for health and safety reasons because of its situation next to the playground. In hindsight, it would have been interesting to study this tree to see what its reaction to this effect would have been. After three years there was a noticeable decline in the health of a number of other trees situated on or next to the riverbanks. *Betula pendula*, *Acer pseudoplatanus* and *Fraxinus excelsior* seem to have been the most affected. We think this is a reaction to root damage and soil level changes through lateral soil movement next to the river, resulting in a change in the relationship between the trees' roots and watertable height. Basically, the trees have drowned. This has occurred not just in the CBG but at many sites throughout the city and has had a detrimental effect on a large number of urban trees within the city. It appears this may continue for a number of years.

> One thing that came through for us is that your staff and community will step up and respond to any adversity.

In conclusion

Each emergency/disaster will be unique and any plan will end up being modified to meet the requirements of the situation. One thing that came through for us is that your staff and community will step up and respond to any adversity.

A case study of disaster resilience

– Mackay 12 months on

Richard Brown, Coordinator, Mackay Regional Botanic Gardens

Botanic gardens across the world will suffer from extreme weather events in one form or another. Whether this means your garden is susceptible to cyclones, bushfires or snow storms the most important thing is that the facility is prepared.

Obviously, each garden is different and each event is different so there is no silver bullet of resilience, instead each facility needs to be self-aware of the potential for these events, know how to respond afterwards and learn from the experience.

No one is perfect when it comes to disasters and there is always more to learn. Here at the Mackay Regional Botanic Gardens (MRBG) we don't proclaim to have all the answers but we can give a glimpse into some of the lessons learnt and things that have developed resilience over time. This article breaks the process down into four stages: Resistance, Preparation, Response and Recovery.



Mackay is located in Queensland's subtropical zone where cyclones are a heightened risk. Image: Google

Resistance

Building resistance comes from understanding; understanding the potential events, understanding the site and then understanding all the ways the events are likely to affect the site. Once these elements are understood it becomes possible to curate collections that are going to have a greater resistance to extreme events.

Start with the likely events. MRBG is located in the subtropical zone on the Central Queensland Coast of Australia, approximately 950 kilometres north of Brisbane and 735 kilometres south of Cairns. Its geographic location dictates that tropical cyclones are the most likely extreme event and although the climatic nature of this area means that droughts are a risk, they are considerably less likely; the focus here is on cyclonic risks.

Next, review the site. MRBG's location close to the mouth of the Pioneer River, established within a branch of the Pioneer River and less than 13 metres above sea level at its highest point, means flooding can affect the facility, in conjunction with a cyclone or following heavy rainfall events.

And next, examine the soil profiles. At MRBG we discovered much of the site consists of amorphous clays that originally supported grasslands, as opposed to riparian forests or a variety of botanic collections, resulting in a soil profile that lacks structure and varies considerably during times of wet and dry.

Then, one final consideration is the previous and current land use of the site. Many areas within our gardens have been subject to a variety of uses over time. These include light-impact activities such as recreation to heavy-impact activities such as stockpiling or intensive agriculture, and some areas have major underground infrastructure (i.e. water mains) running beneath them.

As the old saying goes, those who fail to plan, plan to fail. So, when considering your planning, the first thing to do is to select collections and specimens that will survive in the region, irrespective of extreme weather, and then choose the most suitable spots within the facility for the desired collections and specimens.

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MRBG's planning focused on collections showcasing species native to the Central Queensland Coast Bioregion, which helped build some natural resistance. During the process of master planning the most suitable location within the facility was chosen for the establishment of many collections – the most obvious example is establishing collections that are going to tolerate inundation within the flood zone.



The lagoons in full flood and collection inundated – thanks to suitable species selection this collection received minimal damage and no losses. Photo: R. Brown

Site preparation is always critical to achieving long-term success but when considering extreme events, it becomes increasingly important.

There is a point where no matter how much preparation you do nothing will be able to resist the harshest of events, so plan to allow a degree of failure to take place without it compromising an entire collection.



The Timber Tree collection with multiple specimens 'pushed over'; many of these had to be removed and sourcing suitable replacements proved troublesome. Photo: R. Brown

Tropical Cyclone Debbie showed us that a combination of soil type, compaction and development of subsurface hard pans resulted in some specimens being pushed over due to the inability of them to be able to form adequate root structures. Hindsight has taught us that straight line avenue plantings can be problematic. When a cyclone pushes over or brings down a few of the specimens within the avenue it can be extremely hard to source suitably mature replacements to fit into the collection.

> Site-wide general maintenance activities play a vital role in ensuring that you are as prepared as you can be for when disaster strikes.

Preparation

Once you know an event is imminent there is nothing you can do to stop it, so preparation for how you are going to deal with it becomes imperative.

Site-wide general maintenance activities play a vital role in ensuring that you are as prepared as you can be for when disaster strikes. Proactive planning and diligent execution of pruning activities and asset maintenance can save a lot of headaches. Extreme events will usually strike the most vulnerable points first and compound problems in the clean-up. When operating on a limited budget (as we all do) it's easy to delay these activities to save money, advance another collection or service another need, but be mindful that achieving a short-term need or adding minor value to an existing collection may end up coming back to bite you.



Regular site-wide maintenance like pruning can avert problems when disaster strikes. Photo: K. Blythe

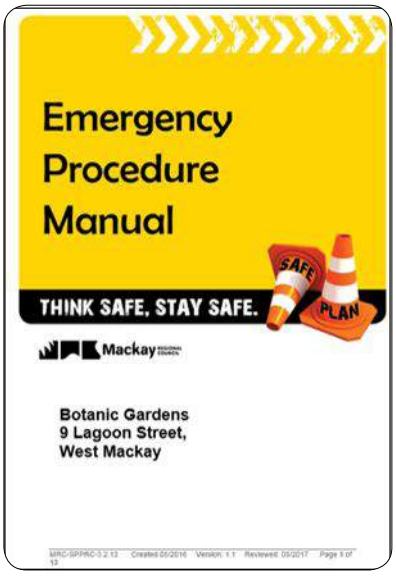
The establishment of an emergency plan that clearly lays out the 'who, what, where, when, why and how' of the preparation and response activities is also critical. This plan needs to be concise, site specific and up to date with the entire team aware of and accustomed to the process.

It's impossible to know exactly what situation you are going to be presented with so there is little point creating a plan that breaks activities down to miniscule detail. Instead, it needs to be kept at a high level and provide a more general focus to the response so that activities can be channelled into the highest priority areas.

When it comes to preparation our documents look at two things:

- Limiting damage – taking down shade sails, tidying up our works compound and securing any loose items around the site;
- Preparing to respond – ensuring all vehicles, tools, jerry cans and machines are full of fuel, in good working order and that other materials required (i.e. bar oil) are available.

On reflection, prior to Tropical Cyclone Debbie we failed to follow some of these procedures to the letter and were left with a large wheelie bin floating in our lagoon for quite some time. It had been left on-site by an event organiser, not collected prior to the cyclone and overlooked in our preparations.



Documenting emergency processes is critical

Response

Once the event has passed the gardens are not the most important thing for you to worry about. The team of people you employ (paid or volunteers) are the most important and their well-being needs to take precedence. This means being mindful that some might not be able to get in or they might have other issues that they need to face. For those who do make it to work, their safety must be the top priority.

The secondary hazards lying in wait may not necessarily be as obvious as a precarious tree hanging over a pathway but they can be equally as dangerous. Hidden depressions in previously flat areas, widowmakers hanging from trees or relocated wildlife are just some hazards and issues that need to be dealt with following a cyclone.

When it comes to getting stuck into the work following a crisis it's easy for people to panic or go into hyperdrive. This can happen when they realise how much work there is to do or how much previous work effort has been lost when a collection or specimen has been damaged. Again, this is where your emergency plan should help.

Your plan should lay out a clear command structure so that someone takes charge if the usual people/ person isn't able to make it in. From there it becomes a combination of a post-event assessment and a pre-determined prioritisation of tasks to concentrate the team's efforts.

For us, this involves conducting a post-event assessment to take stock across the site. This helps to identify any hazards, wrap our heads around some of the issues and see if there are any opportunities that are present (i.e. correcting a tree that's been pushed over slightly whilst the ground is still wet).



Barricading hazardous pathways became a priority. Photo: Dale Arvidsson

Without the ability to close our facility we barricade any hazardous pathways and then focus on getting them reopened on a prioritised basis. We developed a tiered approach with Primary, Secondary and Tertiary pathways and our emergency plan refers to working through them in that order. We did this in response, mindful of the fact that our facility provides an important transport link for many and that almost no matter what you do to barricade a pathway or how obvious the hazard is, some people will still try and walk the path in front of them.

> Regular breaks, plenty of water, getting the hard yards done in the morning and working in the shade where possible all help.

When we're out on the ground it becomes a full team 'all hands-on deck' approach with even those usually confined to the office assisting in the clean-up. Not only does this lighten the workload but helps to lift team morale in the toughest of times. It's important to be aware that whilst there is an additional workload to manage there is also more fatigue to manage. Our tropical cyclones don't generally bring us nice, cool weather that's enjoyable to work in; instead it's usually hot, humid and wet, so planning the day effectively is important. Regular breaks, plenty of water, getting the hard yards done in the morning and working in the shade where possible all help.

Photos, photos, photos and forms. It's also important that your on-ground actions can be translated to your off-ground actions afterwards. Make sure you get the photos of 'before, during and after' as well as keeping a record of what was removed from where. It's a lot easier to take a photo and fill out a deaccession form at the time you're removing specimens than it is days, weeks or months after the event. Believe it or not, the photos also provide a great way to celebrate the team's success after the clean-up has finished, providing a great visual reminder of their efforts.



Before' and 'after' images of the devastation and clean-up provides a tangible reminder of the recovery work. Photo: R. Brown

Recovery

Recovery can take time and exactly what needs to happen depends entirely on the event. However, it's likely that it will take several rounds of assessment, planning and action to get the results you're after.

It might mean replacing longstanding specimens that didn't survive, it might mean rebuilding damaged infrastructure or it might mean undertaking a critical review of a whole collection. Whatever it is, it's important to learn from the experience so as to develop better resistance and improve your planning for future events.

Recovery has a human aspect to it, too. The workload, the conditions, the stress and the loss can push teams or people to breaking point so once the worst is over take the time to stop, reflect and appreciate all the effort that went into the response.

Tropical Cyclone Debbie was over a year ago now but in some ways we are still recovering. Some specimens are yet to be replaced, and we've only just got around to removing a large *Brachychiton compactus* that developed crown rot as a result of the cyclone.

Fire – friend or foe?

– averting disaster and promoting biodiversity

Ricardo Simao, Environmental Systems Manager,
Royal Botanic Gardens Victoria

Cranbourne Gardens (CG) is one of a small number of botanic gardens nationally containing high conservation value remnant native bushland within its managed lands.

The gardens is one of two sites under the Royal Botanic Gardens Victoria (RBGV) umbrella, the other being the arguably more famous Melbourne Gardens (MG) in South Yarra. Cranbourne Gardens also houses the world famous and award-winning Australian Garden – a highly curated display of Australian native plants.

Almost 60 per cent of the 363 hectare site contains high quality indigenous vegetation communities comprising heathlands, woodlands and wetlands, which are home to a raft of native fauna; some like the Southern Brown Bandicoot *Isoodon obesulus* and Swamp Skink *Lissolepis coventryi* are on the Federal endangered list. Furthering the significance of the site is the fact that the ecological communities represented within the gardens once covered an extensive area between Port Phillip Bay and Westernport but since European settlement have been largely cleared for agriculture and housing.

TABLE 1: Ecological Vegetation Classes represented at Cranbourne Gardens

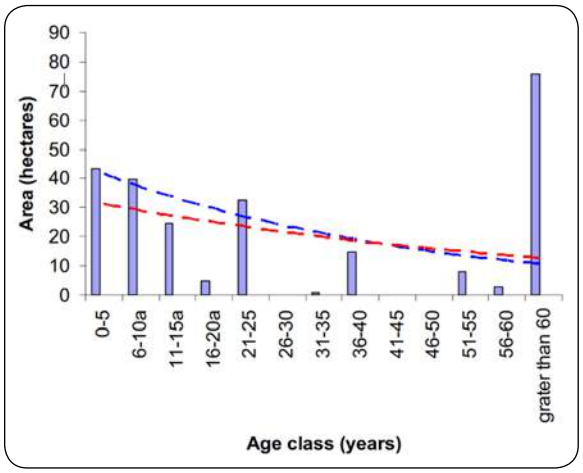
Ecological Vegetation Class	Area represented within CG (Ha)
Swamp Scrub	3.2
Riparian Scrub	21.8
Aquatic Herbfield	0.6
Grassy Woodland	21.9
Heathy Woodland	62.7
Damp Heathy Woodland	60
Sand Heathland	31.8
Total	**202**

Although the vegetation is considered high quality, it is by no means pristine. The site is no stranger to past disturbances ranging from sand mining operations, clearing, grazing, development, droughts and fire. In most cases, where the original soil disturbances were kept to a minimum, the vegetation can and has recovered to near previous states. Some areas have been scarred irrevocably.

One disturbance that is virtually guaranteed to recur is fire. All vegetation communities go through a series of ecological succession development stages (also known as seral stages)

following disturbance and the sclerophyllous heathlands and woodlands that occur across the site are no different. They are also highly flammable and fire has been an important determinant in the evolution of these communities.

The species richness and diversity that make up each of these communities is different according to its seral stage. Generally, richness and diversity decline over time as the community heads towards senescence or climax.



Actual and desirable age-class distribution for Indigenous vegetation at Cranbourne Gardens. Bars represent the area of vegetation in each age classe (current status). Dashed lines represent a generalised upper (blue) and lower (red) idealised aged class (what to aim for).

But if the management goal is to increase or maintain diversity in the landscape, then managing fire regimes is an important consideration. Indeed, the pattern of decreasing species richness with increasing time since fire underpins the use of ecological burning to maintain the floristic diversity of certain vegetation communities in Australia. It follows that a more diverse range of age classes present in the landscape leads to a higher diversity in species, in other words – pyrodiversity equals biodiversity. In practice, burn planning attempts to identify areas containing overrepresented age-classes and programs them to be burnt to better approximate the idealised age-class distribution. Where possible and appropriate, new burns should overlap areas with more than one fire history, in order to increase diversity of fire histories.

Clearly, if fires were allowed to go uncontrolled on-site, depending on pattern, frequency, intensity and season, they could have disastrous consequences on the natural environment. Indeed, fire has been identified as a threatening process under the *Flora and Fauna Guarantee Act 1988*, with the two specific processes being:

- High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition; and
- Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity.

At Cranbourne, the absolute minimum time between burns in any one area is considered to be at least twelve years. On the other end of the scale, burning too infrequently may cause the loss of plants that require fire to stimulate their growth or which are out-competed by longer-living species. Heaths can become quite old (50 years or more) without significant long-term effects, but a conservative maximum time between fires of about 25 years is seen as desirable.

When you take human life, built assets and horticultural assets into account, the potential for disastrous consequences increases exponentially.

We are lucky in that the recent fire history of the site is well documented. From bushfires in the 1950s prior to RBGV becoming the land manager to, of course, more recently planned burns carried out by both the Country Fire Authority and RBGV's in-house firefighting team.

Prior to active fire management of the site, bushfires tended to cover a large proportion of the site as can be seen in the below pictures comparing the extent of a single event bushfire in the 1950s and the extent of a 10-year planned burning program. Bushfires also burn much hotter as they typically happen during the height of summer versus planned fires that are carried out in cooler and wetter seasons.



Extent of a single bushfire event in the 1950s (left) and the extent of a 10-year planned burning program (right). Source: RBGV

Cranbourne Gardens has had an extensive history involving the use of fire and is relatively advanced in its operational preparations and response to fire events but the issues mentioned thus far don't paint the whole picture.

Along with vegetation requirements and threats of large scale uncontrolled fire, rapid urbanisation, climate change predictions and the sometimes lack of data regarding individual fauna requirements and other components of an ecosystem (invertebrates, fungi, soil biota) are all part of the equation that need to be considered as part of the overall fire management of the site.

Urbanisation, fire risk and management

Urbanisation brings with it two major concerns: fragmentation of already fragile habitats and an increased fire risk. The aerial imagery below shows the rapid development over the last 12 years surrounding the gardens. The image on the left is from 2005 and the one on the right is from 2017.

It is easy to see that Cranbourne Gardens will soon become an island amongst a sea of medium density housing – 6400 housing lots are planned for the new suburb of Botanic Ridge, equating to



Google Earth imagery comparing land-use changes between 2005 (left) and 2017 (right); rapid urbanisation is clearly seen. Source: Digital Globe and Google Earth

roughly 18,000 new residents! Whilst we have been involved in the planning process, resulting in the inclusion of some mitigating measures in part of the design of these new suburbs (fire buffer zones, wildlife corridors, under road wildlife crossings, cat and European honey bee keeping free zones as examples), it remains that there will be less refuge for plants and animals in the case of a large-scale fire event, which will increase significantly due to higher population densities.

Lightning strikes are the most common source of unplanned fires on public land in Victoria, accounting for approximately 25–35 per cent of all fires. Other common ignition sources and their approximate frequency are: arson (15 per cent), escapes from human activities (15 per cent) and agricultural burn-off (10 per cent). The remaining 20 per cent of fires originate from a variety of sources including: re-lights from planned burns, vehicle/machinery ignition, waste disposal, power transmission lines and building fires.

To date, the story is different for Cranbourne Gardens given the smaller area available for lightning strikes to hit and until recently, the low population density. Of the nine unplanned fires that have been officially recorded at the gardens, three were suspected to be the result of arson (33 per cent), and only 11 per cent were from lightning strikes. With increased housing and the attendant rise in population and projected increased visitation to the gardens, one would expect the trend for more human-caused fire to increase, both in deliberately lit fires as well as accidental.

Furthermore, whilst to date our neighbours have been sympathetic to the management practices at the gardens, future neighbours may be less so. Smoke created by planned burning can have a significant impact on some individuals and as the surrounding population density builds, we will find ourselves having to conduct much more extensive community consultation prior to undertaking planned burns, considerably increasing the resourcing of a planned burn.

Climate change and other challenges

Since at least 2009, RBGV has recognised that added to this is the reality that climate change will likely bring longer fire seasons characterised by more extreme fire danger conditions. Higher temperatures, altered water cycles and increases in extreme weather events, will add to these pressures. The effect of disturbance is magnified too as habitats become more fragmented. Increased 'edge' effects, reflecting changes in populations/communities at the interface of different habitats, increase the exposure of native vegetation, waterways and the wildlife they support to environmental conditions (such as fire, drought, and climate change), human influences, weeds and predators. There is a greater chance of isolated populations becoming extinct as a result of the effects of disturbance. Because of this vulnerability, it is particularly important that fire management be carried out in a way that does not place further pressure on native vegetation and waterways and the habitat it provides through reducing habitat quality or connections.

Sometimes, in the world of conservation and land management, one action creates unintended and undesirable outcomes. As a direct result 15 years ago of erecting a 9 km feral proof fence around the entire perimeter of Cranbourne Gardens to keep fox and cat numbers low, a very small population of Swamp Wallabies *Wallabia bicolor* was trapped within the fenceline. Over time this population grew beyond the carrying capacity of the site. Vegetation structure was impacted to the point that we now have to erect wallaby exclusion fences around recently burnt areas to ensure that seedlings stand a chance to survive.



Wallaby exclusion fencing erected after a planned burn in autumn 2017 to protect seedlings regenerating after the fire. Photo: Tricia Stewart

How much to burn?

In 2015, the Victorian State Government moved from a hectare-based performance target to a risk-reduction target after adopting all recommendations from the Inspector-General for Emergency Management's *Review of Performance Targets for Fuel Management on Public Land.* Since 2004, we have been working at Cranbourne Gardens on the estimated maximum fire interval requirements in terms of creating age-class diversity vegetation communities, effectively adopting a 'risk-reduction' approach long before it became recommended policy. As mentioned earlier, the Fire Ecology Working Group identified at the time that an appropriate burning program would see an average of 30–40 hectares burnt during each five-year period (6–8 hectares/year).

Burning is only one tool in the fire manager's kit. The overall fire management of the site also includes:

- Fire Management Zones – Classifying areas as a mechanism for mitigating risks posed by bushfire and the protection of biodiversity. A key function is to reduce the intensity of a bushfire assisting suppression efforts. Fuel hazard assessments and vegetation management actions are conducted prior to each fire season. For each of the management zones, works can take the form of slashing, pruning or burning.
- Site Closures – Full or partial, triggered by the declared Fire Danger Rating for the day to reduce risk of accidental bushfire ignition and arson and protect visitors.
- Patrols and fire checks.
- Design and management of built assets.
- Fire Operations Group – to manage all operational aspects of fire management, including firefighters.
- Firefighting Team – A team of RBGV staff from across all departments, trained and accredited to deliver the planned burn program and undertake bushfire mitigation and suppression activities.
- Firefighting infrastructure – Vehicles, equipment, water supply, tracks, etc.
- RBGV and CFA operational relationship – CFA retains ultimate responsibility for fire suppression at the gardens, RBGV assists the CFA in any way it can.
- Established and documented Fire Management Policy, Procedure, Operations Plan and other related emergency and evacuation plans.

So, back to the original question: is fire friend or foe? I hope by now I've painted the picture that it depends on which lens you use. It seems clear though that fire management at Cranbourne Gardens should continue to be seen as cautious, prudent and experimental. Ongoing care is to be taken to avoid 'putting all eggs in the one basket' to avoid detrimental outcomes. The burn program needs to remain flexible and adaptive using the best information available. New technology and research must continually be evaluated and incorporated as far as is practicable in the management of the site.



RBGV's Natural Areas Team Leader Tricia Stewart on lighting crew duties at a recent planned burn at Cranbourne Gardens. Photo: Ricardo Simao

FEATURE GARDEN

Sherwood Arboretum – adapting to 'climate variability on steroids'

Andrew Benison, President, Friends of Sherwood Arboretum Association Inc.

Poet Dorothea Mackellar could not have summed up the current Australian experience of weather better when she wrote *My Country* over a century ago.

Her words, 'I love a sunburnt country, A land of sweeping plains, Of ragged mountain ranges, Of droughts and flooding rains', are a very timely reminder of the variability of today's climate on all things botanical.

Just upstream of the iconic Indooroopilly suspension bridge sits the 15-ha heritage-listed Sherwood Arboretum, home to more than 1000 Australian native trees, on the banks of the Brisbane River.

The site is also a text book example of a local catchment with the in-flow of two creeks, fed by a leafy urban environment, into a basin topography with wetlands, which out-flow into a creek leading to the nearby Brisbane River.

The never-to-be-forgotten event

Just six years after 72 prominent citizens planted a signature avenue of Queensland Kauri *Agathis robusta* trees to celebrate the opening of Brisbane's first arboretum dedicated to Australian native trees, the city was struck by a catastrophic flood in 1931.

More major floods were to follow.

The never-to-be forgotten event of the devastating 1974 Brisbane floods are remembered in the arboretum by a simple historic marker of angled timber beams, reflecting the power and destructive force of untamed water on our river city.

The 1974 catastrophe, the city's highest flood since 1893, inundated large areas of Brisbane, including all but the highest ridges in the arboretum.

Thankfully, the destructive January 2011 flood was two metres below the peak of the previous major flood of 1974, which cost 14 lives and left an estimated 6700 homes ruined.

A lone canoeist paddling down the arboretum's submerged avenue of Kauri trees remains a powerful reminder of the impact of this most recent major flood on this botanic site.

The challenge of managing this 93-year-old arboretum, one of Brisbane's three major botanic treasures, includes this periodic river flooding and short-term flash flooding, when the arboretum's local catchment can be overwhelmed by extremely heavy rains.



Paddling down the Kauri Avenue after the January 2011 floods. Photo: Joe Reichman

The challenge of managing this 93-year-old arboretum, one of Brisbane's three major botanic treasures, includes this periodic river flooding and short-term flash flooding.

These deluges are likely to become more frequent

For example, on the 19 June 2016, the recording of 165 mm of rain in just a few hours merged the arboretum's twin lakes into one, inundating the low-lying section of the historic Kauri avenue.

These deluges and also more prolonged dry periods are likely to become more frequent according to Dr Joëlle Gergis, an award-winning Australian climate scientist and author.

In her recently launched book, *Sunburnt Country: The history and future of climate change in Australia*, Dr Gergis provides a detailed history for the first time of our climate variability, drawing upon a range of historical and scientific sources.

The author, from the University of Melbourne's School of Earth Sciences, led the South-Eastern Australian Climate Reconstruction Project, which was awarded the 2014 Eureka Prize for Excellence in Interdisciplinary Scientific Research.

During her research for the book, Dr Gergis uncovered the previously lost weather journal of the First Fleet astronomer William Dawes, who recorded the climatic conditions experienced by the fledgling colonial settlement from 1788 to 1791.



Climate scientist and author, Dr Joëlle Gergis. Photo: Andrew Benison

Some of the oldest trees living in Australasia

Her wide research also included the results of ice-core studies and the interpretation of the distinct bands in coral cores and also tree rings from some of the oldest trees living in Australasia, the New Zealand Kauri *Agathis australis,* the giants of Waipoua Forest.

However, it is not the portrait of our past climate but the heightened variability of our future climate that is the most concerning for the care of major botanic sites like Sherwood Arboretum.

The author makes the point that Australia's natural climate cycles are occurring against the background of a warmer planet.

If the world continues along our current high-emissions path, global average temperatures are projected to increase by between 2.6 °C and 4.8 °C (above the 1986–2005 levels) by the end of the century.

Dr Gergis notes that the climate extremes that have shaped our past are set to intensify, with longer and hotter droughts, interspersed with torrential deluges, increasingly catastrophic bushfires, more severe flooding and greater environmental damage.

The author told a recent Brisbane audience at the Lord Mayor's 'Writers in Residence' series that Australia already has a lot of in-built vulnerability to extreme climate.

This included the El Niño and La Niña events in the Pacific Ocean, the variability in the Indian and Southern Oceans and the reality that our island continent is located in one of our planet's great desert belts.

'So, what has actually happened over the past century is that Australia's climate has warmed by a degree,' Dr Gergis said, 'While that may not sound like much, our climate system is very sensitive to even small fractions of a degree in terms of warming. It shifts all the baseline up so it becomes even more variable.

'So that's why I refer to it as climate variability on steroids, as it's giving our natural variability a bit more of a kick.'

How does this all affect the arboretum's recovery and preparation for both river inundation and flash flooding of the local catchment and also prolonged periods when the fine silt soils lose their moisture during drier periods?

Thanks to the support of Brisbane City Council, following sustained advocacy from the community-based Friends of Sherwood Arboretum Association (FOSA), there is now a much stronger focus on maintaining the integrity of the historic Kauri avenue.



The historic avenue of Queensland Kauri trees. Photo: Andrew Benison

Council's senior arborists, with the professional help of a soil scientist and a hydrologist, are working to achieve the long-term restoration of these Queensland Kauri trees with their lifespan potentially of more than 300 years.

The Kauri avenue, incidentally, is one of the few examples in Australia where citizens came together to plant a landmark avenue of trees to celebrate the opening of a major botanic gardens or arboretum.

The ravages of the 20th and 21st centuries

The avenue's planters included a wide cross-section of 1920s society, from the popular Queensland Governor, Sir Matthew Nathan and the first Lord Mayor of Greater Brisbane, William Jolly to leading scientists and pioneering conservationists, such as Romeo Lahey.

While these cone-bearing trees can trace their origins back to the Jurassic period, some 140 to 190 million years ago, it is the ravages of the 20th and 21st centuries that have taken their toll on the avenue.

As well intended as the arboretum's founders were in 1925 in choosing Queensland Kauri trees, these rainforest giants have suffered the ill-effects of flooding, storm damage, soil compaction from vehicles, mowers and people, and also a rising water table along the avenue's low section.

> While these cone-bearing trees can trace their origins back to the Jurassic period, some 140 to 190 million years ago, it is the ravages of the 20th and 21st centuries that have taken their toll.

The Queensland Kauri are certainly a majestic rainforest species.

However, unlike the Hoop pine *Araucaria cunninghamii* or the Norfolk Island Pine *Araucaria heterophylla,* the Kauri trees definitely don't like getting 'wet feet'.

Since 2015, Council has been progressively replacing 15 Queensland Kauri trees, 12 in temporary raised earthen mounds well above the high water table, in the section of the avenue closest to the arboretum's wetlands.

Last December, Council completed a $108,000 project to help improve the growing conditions for all 72 Queensland Kauri trees by promoting the increased uptake of oxygen, nutrients and moisture into the compacted and poorer quality soil along the avenue's north-south corridor.

Reduce the high water table

Following the findings of a soil scientist, aeration equipment was used to help break-up the compacted soil around each Queensland Kauri.

With this work completed, quality mulch was then spread to help promote improved root growth for each of the trees.

Subject to Council's 2018–19 budget, the next stage of the project involves completing the design works, based on a recent hydrology study, for a below-ground drainage system to reduce the high water table in the avenue's low-lying section.



Young replacement Queensland Kauri trees after the June 2016 deluge. Photo: Andrew Benison

With future Council funding, the design stage could be followed by a major project to install the drainage system and allow the lowering of the 12 young replacement Queensland Kauri trees from their raised earthen mounds to a more stable ground-level position.

The effects on the big, old remnant trees

The Curator of Brisbane Botanic Gardens, Dale Arvidsson, who is responsible for the arboretum's living collection, is wisely looking well ahead to the future direction of the arboretum in the face of increasing climate variability.

The nutrient-rich intake from a millennium of past flooding events certainly influenced the founding fathers, led by forestry, botanic, scientific and government interests, to select the riverside site for the arboretum, which was officially opened on 21 March 1925.

However, the loss of the original native vegetation that produced large amounts of organic material and the subsequent removal of mud and silt (for health and amenity reasons) after flooding events, have combined to reduce the fertility of the arboretum's fine silt soils.

While new specimen trees planted can adapt to these conditions, Dale is concerned about the effects on the big, old remnant trees remaining on the arboretum site.



Forest Red Gums along the banks of the Brisbane River. Photo: Andrew Benison

'Trees, such as the Forest Red Gums *Eucalyptus tereticornis,* which once received these silt-laden nutrients, could experience an overall reduction of health and vigour in future years.

'This may lead to the shedding of limbs and trunks as some trees, unable to sustain their full capacity, compartmentalise and shut themselves off.'

With more intense rainfall events and longer and drier periods, he expects that we are not going to see soils with the same moisture retention in the future.

'If we look at most trees which have ever fallen over, we can see that the majority of their root systems are in the top one metre of the ground where the fine silts, soft soils, organic matter, water and nutrients are,' Dale said.

Selection of more dry rainforest species

Dale believes they will need to look at other ways they can add nutrients to the soil and encourage tree health, and look at what moisture retention can be achieved.

'We really have to look holistically at this site in the face of a changing climate.'

He indicated that adapting to a changing climate may also involve turning to the selection of more dry-rainforest species for the arboretum. Unlike true rainforest species, which often receive year-round moisture, these species have adapted over millennia to conditions which can be very wet in summer but in winter time extremely dry.

'These trees could be the ones we should be using more of as these species already have adapted to a different climate that is a lot more extreme. The trees in these dry rainforest areas already have adaptations, for example, some are semi-deciduous.

'So, in the dryer periods, often the cooler parts of the year, they will shed their leaves. However, as soon as the rainfall comes back, they will regain their leaf growth.'

As the arboretum's Queensland Kauri trees stand as sentinels on the passing of time, it is worth remembering the wise words of anthropologist Margaret Mead, quoted by Dr Gergis in regard to the global concern about our changing climate: 'Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has'.

For more information, email FOSA at info@sherwoodarboretum.com.au

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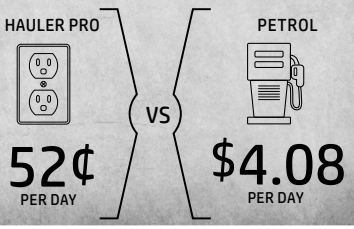
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Botanic Gardens Reports

Networking with New Zealand Plant Conservationists

Emma Bodley, Auckland Botanic Gardens

During the Botanic Gardens Australia and New Zealand (BGANZ) Congress 22–25 October 2017 in Adelaide, I was lucky enough to be awarded the Young Member Award to assist with attending the New Zealand Plant Conservation Network (NZPCN) conference in Hokitika in November 2017. I attended the first day of talks at the conference where there were a number of taxonomic updates including *Kunzea* revision, *Cardamine* overview and *Wahlenbergia*, distribution and population updates and plant ecology studies. One of the highlight talks for me was from Colin Meurk of Manaaki Whenua Landcare Research about using native plants in urban areas, particularly as they rebuild Christchurch post-earthquake.

This talk was very relevant to botanic gardens as he showed how plant assemblages can be used in lots of different ways, adding environmental, social and mental health benefits to our communities. Colin also highlighted the importance of derelict areas, motorway verges, green roofs and pockets of typically unusable spaces as homes for rare plants. This is something I agree with as many of our native threatened plants grow in disturbed or low-fertility sites and should be encouraged to grow there. Why not have rare plants growing in urban areas? This might be one way to have *ex situ* populations that can easily be monitored in urban spaces.

After receiving the funding from BGANZ, I decided to use this conference as an opportunity to promote the plant conservation projects that some other BGANZ members have been working on recently. Having previously spoken about my own gardens' conservation efforts, this provided a challenge to speak about work that I was less familiar with. Also, wanting to inspire New Zealand conservationists to think differently about plant conservation and consider how local botanic gardens can play a role in their projects, I discussed the role of BGANZ and the forums they provide, promoting the magazine as a way to stay up to date with what gardens are doing across a range of themes. In addition,



Department of Conservation (DOC) and BGANZ memorandum of understanding signing on 10 May 2017: left to right, Bec Stanley (BGANZ NZ convenor), Lou Sanson (DOC Director-General), Jack Hobbs (BGANZ Executive Member), Hon. Maggie Barry (former Minister of Conservation). Photo: Sandra Jack

I mentioned the recent signing of a Memorandum of Understanding between BGANZ (NZ chapter) and the Department of Conservation to work together in partnership on national plant conservation projects.

A number of Australian botanic gardens kindly provided me with their stories and images to create my presentation. My aim in sharing these stories was to encourage people involved with plant conservation to use our existing BGANZ networks to support or develop future conservation projects. The plant projects that I discussed were:

- the *Banksia* planting at the Australian National Botanic Gardens on the BGANZ open day in May 2017
- the state of the art, purpose built seed bank facility called PlantBank at Mt Annan Botanic Gardens
- how *ex situ* collections can save plants from extinction by being the world repository for material such as Wollemi Pine at Mt Annan
- the Landscape Succession Strategy Royal Botanic Gardens Victoria has implemented to increase wild collected species into the gardens
- the challenges and learnings of propagating a dwarf spider orchid with the aim of returning it to the wild, and
- the Uncommon Plants Gardens at Lismore Rainforest Botanic Garden, where they have collected and conserved the local flora of the Big Scrub in their nearby native area.

I thoroughly enjoyed researching the work other gardens have been doing and would like to acknowledge and thank the staff from Australian National Botanic Gardens, Mt Annan Botanic Gardens, Royal Botanic Gardens Victoria and Lismore Rainforest Botanic Gardens for contributing to my presentation. Thank you to BGANZ for providing me with the opportunity to attend the conference and expand my networks.



PlantBank at Mt Annan Botanic Gardens. Photo: Bec Stanley.

Connecting visitors with your plants and gardens: Botanic Gardens Engagement Network

Julia Watson, Education and Partnerships Co-ordinator,
Auckland Botanic Gardens

Need help with ideas for engaging with your visitors? Looking for inspiration for making your visitors' experience fun and interesting? The Botanic Gardens Engagement Network (BGEN) is here to help. We are a group of botanic gardens professionals who work in the engagement space, and love to share ideas and resources. Find out more about us in this edition, and in future magazine editions we'll share new tips, research and resources to help you engage with your visitors.

What is BGEN?

BGEN is a professional development network for botanic gardens staff and volunteers who work in all areas such as: engaging visitors with plant collections, garden signage and interpretation, events, education, volunteering, visitor services, community engagement and outreach, as well as layering of information to communicate key garden and collection messages. We support sharing and collaboration between botanic gardens and facilitate the exchange of innovative practices, research and evaluation.

How can I connect with BGEN?

Our primary platform is an online blog (**bgenanz.wordpress.com**) where we share resources, ideas and best practices. We also run workshops at BGANZ congresses and regionally. Check out the range of resources we currently have on the blog and follow the blog for regular updates.

Who can join BGEN?

Any members of BGANZ who work in the above areas and would like to be involved can join BGEN.

Who coordinates BGEN?

BGEN is coordinated by a convenor, a secretary, and up to six representatives from Australia and New Zealand. The current convenor is Julia Watson (Education and Partnerships Coordinator at the Auckland Botanic Gardens) and secretary is Michael Connor (Coordinator of Education at Wollongong Botanic Garden). Current representatives are Aaron Harrison (Education Coordinator at the Botanic Gardens of South Australia), Ngaire Gilligan (Education and Interpretation Coordinator, Brisbane Botanic Gardens Mt Coot-tha) and Vicki Lee-Bower (Visitor Experience Coordinator at

Brisbane Botanic Gardens, Mt Coot-tha). We invite you to get in touch with any of the current representatives to ask questions and to get involved.

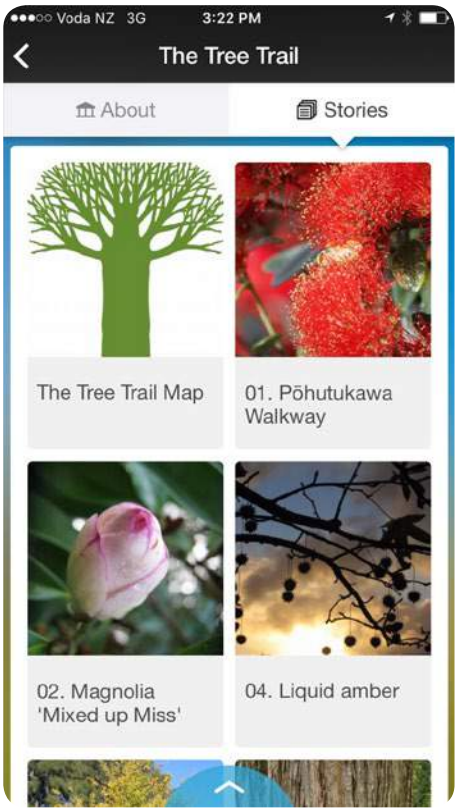
Meet the BGEN committee:



Left to right: Julia Watson, Michael Connor, Ngaire Gilligan, Vicki Lee-Bower and Aaron Harrison.

BGEN-recommended resource: using apps in your garden

Do you use mobile apps in your garden? While it's great for our visitors to enjoy the garden naturally and without filters, we know that a large proportion of our visitors enjoy engaging with plants and gardens using their mobile devices. One of the platforms we have experience using is STQRY (pronounced 'story'). This gps-based app is easy to use (anyone in your team can edit it), relatively affordable and can incorporate video, audio and text. For example, it has been used for tree trails around the garden where we have incorporated photos, information and videos about trees. It has also been used for sculpture trails, where we've included interviews with artists and audio descriptions for the blind and low vision community. Download STQRY onto your phone to get a feel for its capabilities, or contact Julia Watson to find out more about using it. https://www.stqry.com/



The gps-based STQRY app is easy to use and currently in use at Auckland Botanic Gardens on the Permanent Sculpture collection and the Tree trail.

Calendar of conferences and events

Gippsland Regional Park Managers Meeting

West Gippsland Arts Centre, Warragul

21 August 2018

The 10th International Congress on Education in Botanic Gardens

Warsaw, Poland

9 – 14 September 2018

Congress website: http://www.garden.uw.edu.pl/congress2018

9th BGANZ Congress

Wellington Botanic Gardens, New Zealand 2019

Dates to be confirmed



www.bganz.org.au