

SOUTHERN TABLELANDS ECOSYSTEMS PARK

Strategic Plan for our second decade (2020–2030)



Acknowledgement of Country

STEP acknowledges the Traditional Custodians of the ACT. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

Acknowledgment of NAC

STEP acknowledges the support, assistance and guidance provided by all staff at the National Arboretum Canberra.

STEP volunteers

Care for the Southern Tablelands Regional Botanic Garden (Forest 20) in partnership with the National Arboretum Canberra.

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The photos used in this document have been selected from a large collection contributed by STEP volunteers, visitors, NAC staff and other sources.

Layout and design by Mariana Rollgejser





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Strategic Plan for our second decade (2020–2030)

@ Forest  NATIONAL ARBORETUM CANBERRA

Mission

Southern Tablelands Ecosystems Park – a regional botanic garden, education and ecosystem recovery centre for the Southern Tablelands



Early stages in establishing a regional botanic garden

STEP's journey to the National Arboretum Canberra

As an organisation the Southern Tablelands Ecosystems Park (STEP) was formed in 2003. STEP was the inspiration of the Australian Native Plants Association (ANPA) and Friends of Grasslands for demonstrating native plants from the region and to raise the profile for education about local flora, particularly in the context of ecological communities found throughout the Southern Tablelands.

The original plan was to diverge from the traditional concept of regional botanical gardens and to focus on growing native trees and understory plants together in communities as they are found in their natural ecosystems. STEP worked with Shirley Pipitone, who developed a landscape design concept called *STEP into Amaroo*, as part of her Master

of Landscape Architecture Course, University of Canberra. In addition to a possible site at Amaroo (Gungahlin), STEP looked at other locations to demonstrate its vision, including Birrigai (Tidbinbilla) and the Australian National Botanic Gardens.

In November 2005, the ACT Legislative Assembly's Standing Committee on Planning & Environment in its Report on Wildlife Corridors & Draft Variation to the Territory Plan No.23 recommended that:

"the Chief Minister request the *Shaping Our Territory Working Group* to assess the feasibility of incorporating key elements of the Southern Tablelands Ecosystems Park proposal into the Canberra International Arboretum and Gardens (CIAG)."

In August 2006 STEP entered into discussions with the Chief Minister's Department to locate STEP in the northern part of the Arboretum.

In 2007 John Nightingale developed several landscape sketches for the STEP project, which were presented to the CIAG Project Group. Lot 100 (later Forest 20) was then the favoured location. A key element of the sketch plans was a series of paths suitable for wheelchair access located along the contours, enabling a visit to each of the species to be planted. Representations to the Chief Minister were ultimately successful and STEP became part of what is now known as the National Arboretum Canberra (NAC).

Master Plan for Forest 20

In Forest 20's first ten years STEP has achieved a major goal: that is, to establish a regional botanic garden for the Southern Tablelands of NSW. We claimed this milestone in 2016 when the members of the Australian Native Plants Society annual meeting (Canberra 2016) included a visit as part of their field

excursions. Similarly, on several occasions during 2019 we celebrated ten years since planting our first trees. Major upgrading of our facilities, in the form of a multi-purpose shed completed in 2019 and the upgrading of our irrigation system, are part of our continuous improvement and development.

Concurrently with these celebrations, we have made some efforts to make Forest 20 available for educational activities. These include guided walks, CIT student visits, special walks for Wattle Day (and other special occasions), use of The Clearing for special events, links with NatureArtLab, and visits from special interest groups. Common themes of comment are surprise as to what Forest 20 presents and interest in its future.

The Master Plan adopted for Forest 20 was prepared by Barbara Payne of Quandong

Designs. It reflected the vision and ideas current in 2011 and has served us well over the ensuing years. The Master Plan built upon the initial (2008) planting pattern specified by the NAC Landscape Architects (Taylor Cullity Lethlean) for Forest 20 and the 16 species of eucalyptus that had been selected as agreed between the Arboretum and STEP. This recognised STEP's intention to develop a regional botanic garden for the Southern Tablelands (in contrast with the single species of tree for all other forests at the Arboretum). The Master Plan also identified STEP's Central Garden, a planting regime to display the variety of Southern Tablelands plants, and suggested locations for some significant developments, particularly a path system and education space.

The selection and location of each tree species planted in Forest 20 approximates the

landscape position of that species, such that dry sclerophyll species are located along the top rows, woodland species on the mid-slope rows, and snow-gum at the lowest part of the forest. All trees were planted in locations prepared by the NAC in bands across the contours of Forest 20, most in two rows for each species. Tree density specified by the Arboretum reflected a requirement to reduce potential fire fuel loads along the northern boundary of the Arboretum. This suited STEP, as the species chosen for the lowest plantings lend themselves to wider spacing, and the species in the top rows are more suited to a denser, forest character. Later, species of trees other than eucalypts were introduced in places where some of the original trees had died and an opportunity to diversify the tree plantings now presented itself.





The Master Plan also envisaged the introduction of eight elements that would enhance visitor experiences, and described them as:

- 1 **Direct paths** allow users to observe gradients in the understorey.
- 2 **Zig-zag path** follows the contours taking the visitor on a journey to each tree species and associated understoreys (originally proposed in an early concept plan by John Nightingale, 2007 and included with his agreement).
- 3 **Information nodes** here visitors can stop and read about the trees and their associations.
- 4 **Ephemeral drainage lines and wetland** create opportunities to grow plants tolerant of boggy conditions and sympathetic environments for insects and other animals.
- 5 **Environmental sculpture** sharp turns in the path provide opportunities to surprise the visitor with a sculpture glimpsed through the trees.
- 6 **The Clearing** a partly covered space with gabion seating where groups may gather to meet, hear lectures, have lunch and take in the sounds and sights.
- 7 **Storage space** on-site storage of STEP resources and a potential site for experimental roof garden using local species.
- 8 **Rocks** relocated from elsewhere in the Arboretum provide amenity for visitors and a micro-climate for plants, insects and other animals (Quandong Designs 2011).

For more detail about STEP's first Master Plan (2011) see pages 36–39

Over the following years, STEP used the Master Plan as a guide or template rather than a detailed plan that identifies the exact location or character indicated on the plans. This departure from the Master Plan was generously accepted by Barbara Payne who told STEP “it’s your plan to work with”. By 2020 many of the above eight elements had been introduced in a manner consistent with the Master Plan.

It is not practical to develop a new Master Plan for Forest 20 in the graphic form of the first plan. So much has happened and much also has been learned during our first 10 years. The 2020-2030 Strategic Plan is in a written form with the intention of documenting the 2020 view of the direction that STEP might take as both an organisation and a group of enthusiastic and dedicated volunteers working in Forest 20.

The Strategic Plan covers a broad range of objectives linked with issues about management and development of Forest 20 that need addressing, together with some ideas for activities that might be taken up over the next 10 years. The Strategy is again intended to be a guide and not prescriptive. A short historical account of some of the main features of Forest 20 has been included in order to ensure that future STEP volunteers have a record of the thinking and intentions of past volunteers as they implemented the first Master Plan.

The objectives, issues and directions that will guide STEP over the next 10 years are articulated across seven themes:

- 1 Building on the achievements so far
- 2 Supporting our volunteers (aka STEPpers)
- 3 A strong partnership with the Arboretum
- 4 Supporting an area focussed on traditional use of food and fibre plants by Indigenous Australians
- 5 Enhancing the visitor experience
- 6 Maintaining infrastructure and facilities
- 7 Promoting ecosystem recovery initiatives



OBJECTIVES AND ISSUES FOR 2020–2030

OBJECTIVE

1

Building on the achievements so far

To build on the achievements of STEP during its first decade at Forest 20 (2010–2020), primarily the establishment of a regional botanic garden for the Southern Tablelands and associated educational and visitor activities.

Key issues are to:

- Maintain the broad structure, tree and understorey plantings and educational themes established under the guidance of the first Master Plan for Forest 20.
- Develop, introduce and maintain practices that keep the focus of Forest 20 on native plants of the Southern Tablelands, and ensure maintenance, regeneration, and replacement of suitable plant species.
- Ensure that the “look and feel” of the living and non-living elements of Forest 20 are of high standard and consistent with practice elsewhere in the Arboretum.
- Recognise that changing climatic conditions may influence the suite of species suitable for the soil and predicted future moisture and temperature regimes experienced at Forest 20.
- Develop programs and partnerships with other groups and organisations that could promote the use of Forest 20 as a location for their interests and activities: i.e. Forest 20 is available as a ‘natural’ setting for others to use.
- Develop information and promotional materials suitable for on-site as well as off-site usage, including electronic and web-based use.



Supporting our volunteers (STEPpers)

To support volunteers (STEPpers) as they participate in, learn about and take responsibility for the organisation, development and presentation of Forest 20 as a regional botanic garden for the Southern Tablelands.



Key issues are to:

- Address the inevitable turnover of STEPpers, whether this is due to age, moving away from Canberra, or decline in interest or capacity for tasks, so that a continuing supply of energy, knowledge and commitment is maintained into the future.
- Maintain a welcoming and informative induction process for new STEPpers, including up-to-date information packs and notice of any formal matters required by NAC.
- Consider introducing a 'buddy' system to assist newcomers become familiar with Forest 20 and STEP practices.
- Maintain regular contact with STEPpers about working bees, tasks, safety and other relevant information.
- Conduct periodic walks around Forest 20 to enable STEPpers and NAC staff to review progress, new plantings and initiatives.
- Employ a person (part-time, e.g. a CIT horticulture student) to work with STEPpers on working bees and a few other hours per week, as funds permit.
- Encourage STEPpers to take a share of responsibility for educational and visitor activities (e.g. Wattle Day liaison and walks, STEP into Plein Air) and develop new opportunities for activities that take advantage of Forest 20's flora and settings.
- Organise opportunities for knowledge and skills development and to engender ongoing enthusiasm through periodic external field trips to like-minded botanic gardens/horticultural sites, and specialist talks.

A strong partnership with the NAC

To encourage, develop, and maintain sound working relationships with NAC staff such that a harmonious, productive and mutually supportive partnership is maintained.

Key issues are to:

- Maintain regular meetings between STEP and the NAC at all levels, especially with the Executive Branch Manager, Horticultural and Arboricultural staff, Events and Community Engagement staff, Landscape and Works staff and if appropriate, contracted staff.
- Promote and maintain regular exchange of ideas, expertise and experiences relevant to Forest 20 through regular skills, management and planning discussions between NAC staff and STEPpers.
- Ensure STEPpers are aware of and practise workplace, health and safety measures, including reporting of hazards, injuries and similar matters to appropriate NAC staff.
- Explore opportunities to share STEP's experience at Forest 20 with management of the Arboretum's Forest 2.



Gathering at The Clearing

STEP has a strong educational focus, providing a venue for school and community group programs. STEP is also a venue for guided walks by visitors to the Arboretum, with special interest events held during the year such as Eucalyptus Day, Wattle Walks and STEP into Spring. The Clearing and the She-oak Nook provide places for groups to meet and celebrate. To book, email: arboretum@act.gov.au

Bush Tucker Garden

In March 2018, STEP welcomed the first plantings in the Bush Tucker Garden. The garden was established by the Arboretum as part of the ACT Government's commitment to its Reconciliation Action Plan with the Indigenous caretakers of the region, the Ngunnawal people. Visitors can enjoy strolling through the garden to see local native plants used by Ngunnawal people for food and fibre. As the garden grows, it will be a place of learning for all. Lemon beautyheads, *Calceophalus citreus*

STEP Membership Form

Please tick appropriate box

<input type="checkbox"/> Individual or Family Membership	\$20
<input type="checkbox"/> Not for Profit Organisations	\$50
<input type="checkbox"/> Large Incorporated Organisations	\$100
<input type="checkbox"/> Corporate Membership	\$200

Name: _____
 Address: _____
 State: _____ P/Code: _____
 Phone: _____ Mobile: _____
 Email: _____
 Date: _____

Payment of \$ _____ is enclosed.
 Make cheque payable to STEP Inc. or pay directly to the STEP Account ESB 313-140 Account 12067564.
 Please send form to PO Box 440 Jamison Centre ACT 2614.

Southern Tablelands Ecosystems Park

www.step.asn.au
 A Regional Botanic Garden at Forest 20

NATIONAL ARBORETUM CANBERRA

Supporting an area focussed on Indigenous Australians' traditional use of local native plants

To maintain liaison and on-the-ground work with NAC to present an area within Forest 20 for examples of the region's native plants used by Indigenous Australians for food, fibre and other cultural practices. To support education about the use of the region's native plants by Indigenous Australians, including openness to new initiatives consistent within the overall STEP mission.



Key issues are to:

- Integrate bush tucker and other plantings in Forest 20 and participate in their management such that a seamless experience is presented to visitors.
- Foster initiatives to produce information resources on bush tucker and Indigenous Australian use of plant materials, including demonstration of their use.
- Expand the diversity of Southern Tablelands plant species that fit the bush tucker theme and are suited to Forest 20.
- Initiate regular meetings with NAC staff, the tourism officer and others to ensure that Forest 20 reflects Indigenous Australian perspectives on Southern Tablelands flora.
- Promote and support Indigenous Australian-centred projects and demonstrations of native plant use and propagation particularly in partnership with Indigenous Australians, NAC staff and facilities.

Enhancing the visitor experience

Enhance the experience of visitors to Forest 20 by developing information, infrastructure and services for Forest 20 in cooperation with and consistent with NAC's plans for the Arboretum.




 Enjoy this seat donated by
 Sanya Ritchie OAM.
 Celebrating the families of
 Jim Ritchie, Eric Mawson
 and Kenneth Cooley.

Key issues are to:

- Ensure that planning and management of Forest 20 presents and maintains a tranquil and natural experience that is valued by visitors.
- Consider opportunities to provide high quality seating, shelter, access and information designed to enhance the experience of visitors and their use of Forest 20.
- Encourage visits from members of the public and special interest groups coming to the Arboretum and to enrich their experience through informative signage, guided walks and other services.
- Develop the educational role of Forest 20 through walks, courses, and publications that demonstrate Australian native plants and regional ecosystems.
- Consider new opportunities for demonstrating the use of Australian native plants in domestic or other locations.
- Ensure that the production of STEP materials is consistent with the NAC Information Strategy and design standards for leaflets and signage.
- Develop partnerships with other organisations that can use Forest 20 as a location for their activities, for example the arts community, education, conservation and native plant and other environment groups.
- Strengthen links with native plant growers and like-minded organisations in the ACT and surrounding region.

Maintaining infrastructure and facilities

Maintain the structures and facilities that support STEP's Mission and activities at Forest 20, including the current (and future) focus areas or places that attract visitor use and appreciation.



Key issues are to:

- Maintain, repair and where appropriate develop Forest 20 water reticulation, access paths and visitor focus areas.
- Maintain the multi-purpose Shed and surrounds, and the equipment and tools, in a functional and safe state of repair.
- Observe NAC Workplace Health and Safety requirements, maintain First Aid materials and ensure that equipment is serviced, repaired or disposed of as necessary.
- Keep plant identification signs and other signage up to date, in association with the NAC style and other standards.

Promoting ecosystem recovery initiatives

To foster links between stakeholders associated with Block GG, adjacent to Forest 20, with a view to supporting and, where feasible, participating in ecosystem recovery of the native vegetation and the endangered Yellow Box-Red Gum grassy woodland that grows there.



Key issues are to:

- Promote and support field trials for ecological recovery and management of Block GG to complement STEP's Mission for an ecosystem recovery centre.
- Maintain and develop links with the Molonglo Conservation Group, Park Care groups and ACT Parks and Conservation Service.
- Consider promoting and/or joining a Park Care group for Block GG.
- Promote walks into Block GG to enrich the educational role of Forest 20 and the relationship between the two areas and their link with Forest 2 (Yellow Box-Red Gum grassy woodland).

FOREST TREES, FOCAL POINTS AND KEY ASSETS

STEP's first Master Plan ("Telling the Understorey") was prepared by Quandong Designs within the context of an already planted forest with 500+ trees distributed according to a pattern determined by the Arboretum's Landscape Architects (Taylor Cullity Lethlean). The Master Plan skilfully integrated scientific and aesthetic principles to create a plan for displaying the diversity of the Southern Tablelands' shrubs, herbs and grasses. The Master Plan also identified a number of key elements that could enhance the area. In many cases these have been developed by STEPpers, often with the cooperation of NAC staff, including in-kind support in the form of labour to operate heavy machinery to deliver large feature rocks, mulch and gravel. In some cases the idea or location suggested in the first

Master Plan was not followed in detail, but it was not necessary to depart significantly from the initial design concept.

Over the period of implementing the first Master Plan the structure and patterns of the tree cover have become a dominating feature, together with the continuously developing understorey plantings and several key infrastructure elements. For the purpose of the 2020–2030 Strategic Plan, each of these elements is separately described with a short history of the thinking behind its development and the type of work undertaken to implement it. Following each element's description are some ideas and issues for future consideration, implementation or other development. They are not intended to be prescriptive but are designed to be a guide to the next actions.



The structure of the following parts of the Strategic Plan 2020–2030 is in three parts:

1 Forest 20

One of the Arboretum's Forests and the setting for a regional botanic garden

2 Seven Focal Points

- The Central Garden
- The Clearing
- The She-oak Nook
- The Ephemeral Wetland
- The Eucalypt Walk,
- The Wattle Walk
- The Bush Tucker Garden

3 Four Key Assets

- stile access between Forest 20 and Block GG
- the Shed and picnic table area
- the Water Reticulation system
- a system of gravel entries, access paths and rest points)



1 Forest 20

One of the Arboretum's Forests and the setting for a regional botanic garden

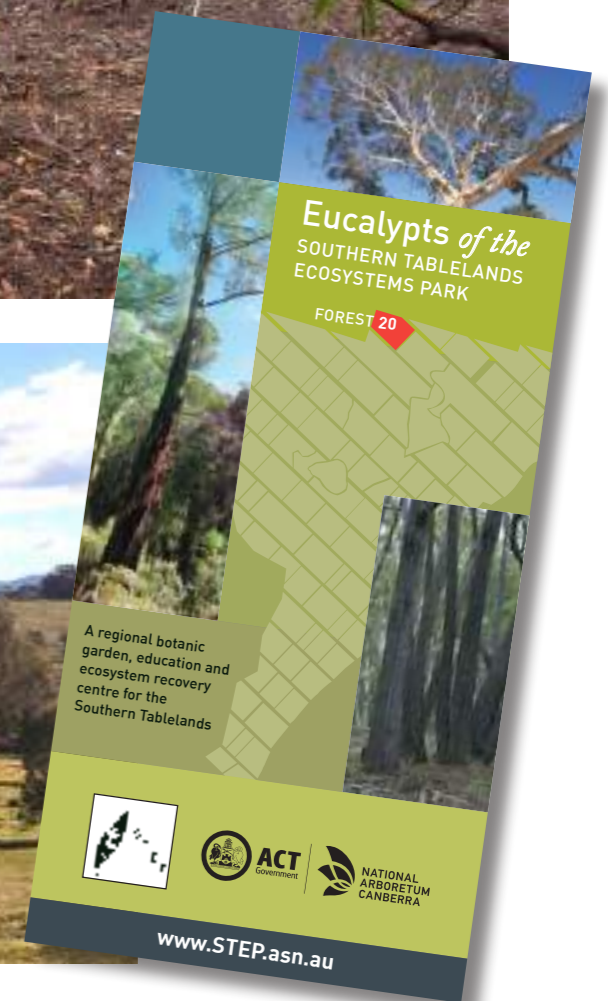
Tree diversity

As outlined in an earlier section, Forest 20 differs from all other forests at the Arboretum. Rather than containing one species of a tree (iconic, endangered), it contains 16 species of a single genus – *Eucalyptus*. This enabled STEP to develop its vision for a regional botanic garden by providing species typical of three main structural stands of trees: forest, woodlands and valley floor, open woodland. To demonstrate this, the eucalypt trees are planted in bands across the site (a pattern provided by the landscape architects (Taylor Cullity Lethlean) with the location of each species approximating the landscape position of that species, such that dry sclerophyll species are located in contours along the top rows, woodland species on the mid-slope rows, and snow-gum at the lowest part of the forest. Three species naturally found in wetter, montane locations were planted in the central part of Forest 20 where most of the run-off from other parts of the forest left a moister soil. Tree density specified by the Arboretum reflected a requirement to reduce potential fire fuel loads along the northern and western boundaries of Forest 20. This suited STEP, as the species chosen for the lowest plantings lend themselves to wider spacing, and the species in the top rows are more suited to a denser, forest character.

In another departure from the fundamental design of the Arboretum's forests, trees representing a genus other than *Eucalyptus* have been introduced to broaden and diversify the display of Southern Tablelands region trees.

Examples are the genera *Acacia*, *Allocasuarina*, *Banksia*, *Brachychiton* and *Callitris*.

Forest 20's first eucalypt trees were planted in 2009 and 2010. They grew rapidly over the initial 10-year period with the result that the appearance of Forest 20 has changed dramatically; by 2020 many branches touch those of adjacent trees. Some species are noticeably and measurably taller than others and this has been recorded since 2011 through the regular monitoring and measurement program organised by STEP volunteers. Over the next decade, and as the trees mature, they will increasingly display the unique character of the variety of trees and wooded environments found throughout the Southern Tablelands. Differences in tree height, trunk diameter, bark and branching patterns, leaf and flowering morphologies and canopy structure will continue to develop, demonstrating the unique characteristics of each species.



Forest 20



Maintaining the appearance of trees in Forest 20 consistent with other Forests in the Arboretum is important for both NAC management and STEP. The growing forest and woodland trees and their different features will offer a range of educational opportunities for botany, ecology, horticulture and forestry students, as well as being of more general interest to visitors. They provide a unique and easily accessible opportunity for comparative studies of the Southern Tablelands flora.

During the 2020–2030 Strategic Plan there is scope to:

- Allow the eucalyptus and other trees to express their natural form, rather than be managed to arboricultural (pruning) standards.
- Expand the scope of monitoring growth and health of trees in support of NAC objectives as well as STEP's management of tree canopy, presentation and replacement.
- Consider both the ecological and educational value of the trees for wildlife – particularly birds, insects, hollow-dependent wildlife.
- Manage the natural accumulation of litter and fallen branches in terms of both their habitat value and their potential to be fire fuels.
- Consider potential for new climate resilient species to be introduced to demonstrate the changing nature of the Southern Tablelands flora under climate change.
- Consider adding new eucalypt species to Forest 20 that demonstrate rare, unusual or threatened species from the Southern Tablelands region.



Grassy understorey

Another special feature of Forest 20 is the grassy understorey. When first set out, the Arboretum's forests were equipped with an irrigation system and the cleared ground was sown with nitrogen-fixing lucerne and some exotic grasses. STEP did not use the irrigation system, as it preferred to demonstrate how local species were adapted to local climatic conditions. Lucerne was also excluded in order to avoid unnecessary nutrient enrichment.

As a result of these decisions, the grassy understorey sown by the NAC to control erosion of the site is a mix of native and exotic grasses as well as many introduced weeds. STEP provided some native species seed to add to the mix sown by the NAC.

By 2020 the native species are well-established are predominantly *Bothriochloa macra* (Red-leg grass) and *Chloris truncata* (Windmill grass) *Poa labillardieri* (Tussock grass) with two species of Spear grass, *Stipa scabra* and *S. bigeniculata*. Some exotic grasses, however, have also become established and many weed species also occur. These weed species include the highly invasive *Hypericum perforatum* (St John's wort) and *Echium plantagineum* (Paterson's Curse). They are controlled with a combination of targeted herbicide treatment by STEP, mowing operations conducted by NAC staff and hand-removal by STEP volunteers. The combination of these actions and management practices has promoted a noticeable change to the grassy understorey such that the abundance and diversity of native species is increasing at the expense of exotic grass and weeds.

During the 2020–2030 Strategic Plan there is scope to:

- Continue active management of Forest 20's grassy understorey to change it from one dominated by introduced species to one that is primarily native grass, and including native herbs.
- Evolve mowing regimes for Forest 20 to allow for targeted weed control and to support the changing composition of the grassy understorey.
- Manage bare areas under trees to reduce potential for soil erosion
- Encourage diversification and abundance of native species across Forest 20 understorey and reduce presence of exotic grass and weeds.
- Consider trialling methods of replacing exotic grass cover with native understorey as an education tool and demonstration of ecosystem recovery, possibly in collaboration the ACT Parks and Conservation Service's similar work in Block GG.



2 The Focal Points

FOCAL POINT A The Central Garden

History

The Central Garden of Forest 20 was, for the first five years, the principal area for planting understorey species that distinguish Forest 20 from other forests at the Arboretum. The location reflects the early 'desire lines' of STEPPers as they started to use and traverse the slope of the site. The Master Plan recognised those lines and proposed making them permanent paths that also passed through or by the majority of eucalypts species being planted. The Plan also adopted some early thinking about paths along the contours and created the eight separate sections that became the main gardens.

To quote the Master Plan:

Where and how plants grow is affected by many factors including climate, elevation, slope, aspect, soil, interactions between species (plants and animals) and site disturbances such as fire, flood and human behaviour. The resulting physical structure (height, spread, etc.) of the vegetation and the species composition are features useful in classifying vegetation. Looking at where the trees on Lot 100 occur naturally in the landscapes of the Southern Tablelands provides the key to interpreting their ecosystems through understorey design.

Interpreting this landscape and structural analysis resulted in the selection of 9 ecological communities commonly found in the Southern Tablelands of NSW and the ACT, which might be represented by understorey plantings. The first choice of plant species to be selected for planting were those listed as 'Indicative Species' by David Keith and selected from regional or local studies as characteristic, frequently occurring, visually prominent or otherwise noteworthy for those communities (Keith, D. A. 2004, *Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT* [Department of Environment and Conservation, NSW]).

It soon became apparent that while some of the indicative species are readily available from plant nurseries or local growers of native plants, many were not available. Therefore this ideal of focussing on indicative species for each ecological community has had to be somewhat compromised by including plant species that are available, but still found naturally in the Southern Tablelands.





The Master Plan's complete list of principles guiding plant selection is:

- Structural diversity (height, horizontal cover and vertical layering)
- Representation of indicative species in each vegetation class
- Representation of species indicative of more than one vegetation class to show vegetation gradients
- Key plantings of iconic, rare, threatened and less common species in keeping with the Arboretum theme
- Significance in Indigenous Australian culture
- Longevity and hardiness in this location (in the short term this will exclude some species such as orchids until the micro-climate is suitable)
- Representation of the range of plant families in each vegetation class
- Representation of species which support rare and threatened fauna in the area
- Availability of suitable plants.

The Central Garden

The other major feature of the Master Plan as it guides planting the understorey is that each planting was proposed to be in 3m x 3m squares or multiples, depending upon the characteristics of the species to be planted. The Plan envisaged that each square would be large enough to permit the plants to express their potential and allow visitors to see mature plants *in situ*. The Master Plan acknowledged that after a number of years the plants would merge across their planted boundaries and the patterns would be lost. It is of interest to note that the orientation of the 3m x 3m squares was initially the same as the orientation of all 100 forests at the Arboretum. In time, however, it has become impractical to adhere to these initial planting rules, and replacement and supplementary planting try to reflect the main principle of a mass planting of approximately 3m x 3m.

One departure from the Master Plan's proposed 'squares' design was that the physical size of some species at maturity is such that a 3m x 3m square was clearly inadequate; several squares were merged to accommodate them. Another departure from the square pattern accommodates those situations where the square is reduced in size and shape by the path system, resulting in small, triangular shapes. This was dealt with by either planting species that were small and suited to a small triangle, or the triangle was added to the adjacent square.

In 2019 almost all species represented in the Central Garden, and Ephemeral Wetland and Bush Tucker Garden (BTG), were identified with a name sign that is consistent with the standards required by the NAC. In recognition of the scientific basis for a botanic garden and

the fact that not all species have an agreed common name, these signs always reference the scientific name of genus and species first, with the generally accepted common name second. The inclusion of an Indigenous Australian name was started but abandoned on advice from NAC because insufficient and complete information was available.

In 2020 an inventory of each of the Central Garden areas was commenced, with the aim of making this an annual maintenance task. The inventory covered: the condition of each species' plantings (e.g. survival, deaths), maintenance requirements (e.g. pruning, supplementary of replacement plantings), the presence of plant name signage, and the general condition and 'look' of the area. This inventory will become more important over time so as to ensure that each area is properly maintained and to a standard that ensures plantings are refreshed, appropriate pruning care is undertaken, plant names and signage are up-to-date, and weeds are under control.

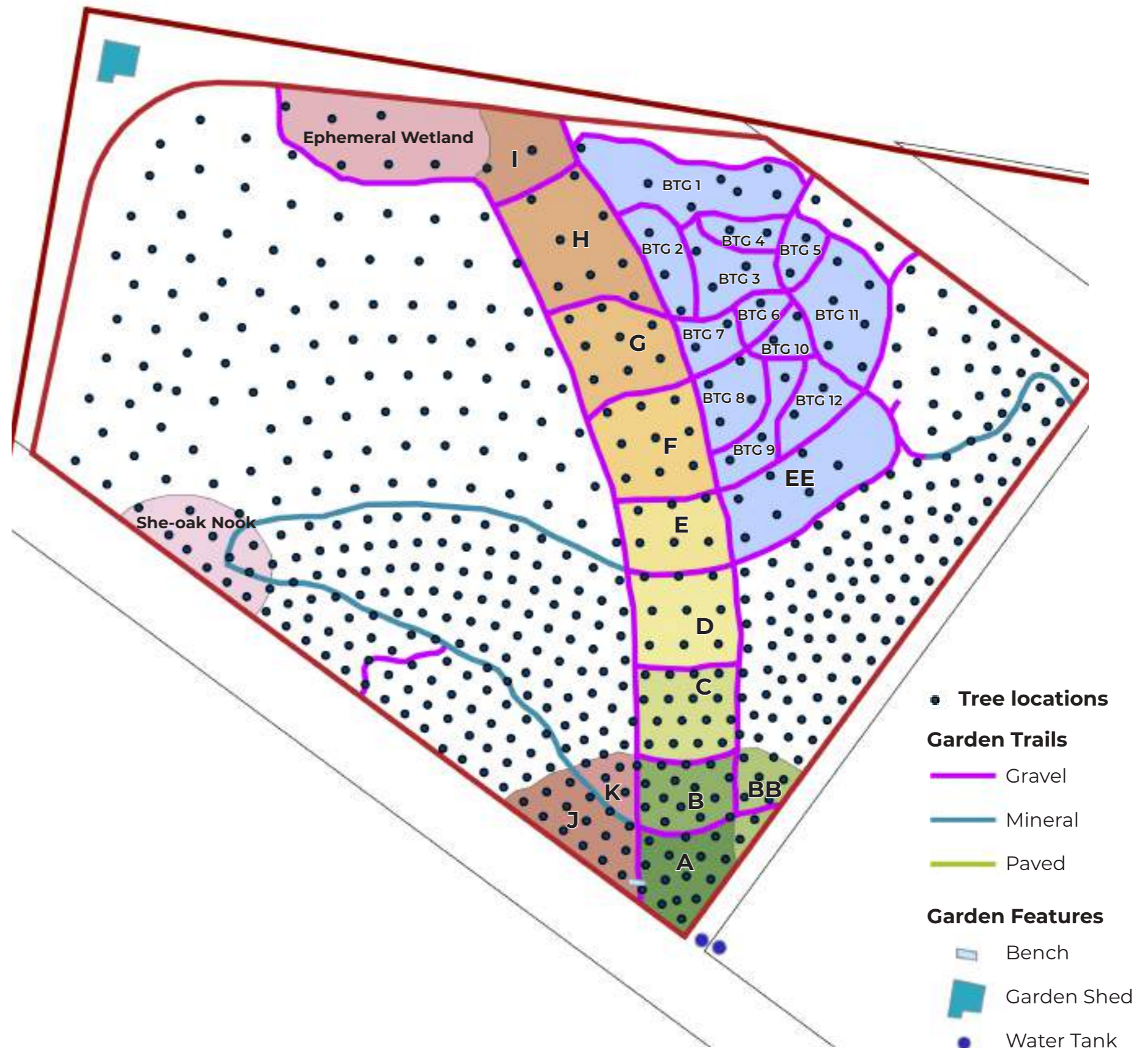
Maintaining the appearance of Forest 20 consistent with other Forests in the Arboretum is important for both NAC management and STEP. However there are special characteristics and objectives for a regional botanic garden that will result in differences. These include STEP's preference to:

- Allow the eucalyptus and other trees to express their natural form, rather than be managed to arboricultural (pruning) standards (excluding public and workplace safety requirements); and
- Allow the broad scale grassy understorey to change from being dominated by introduced species to a largely native grassy understorey.



During the 2020–2030 Strategic Plan there is scope to:

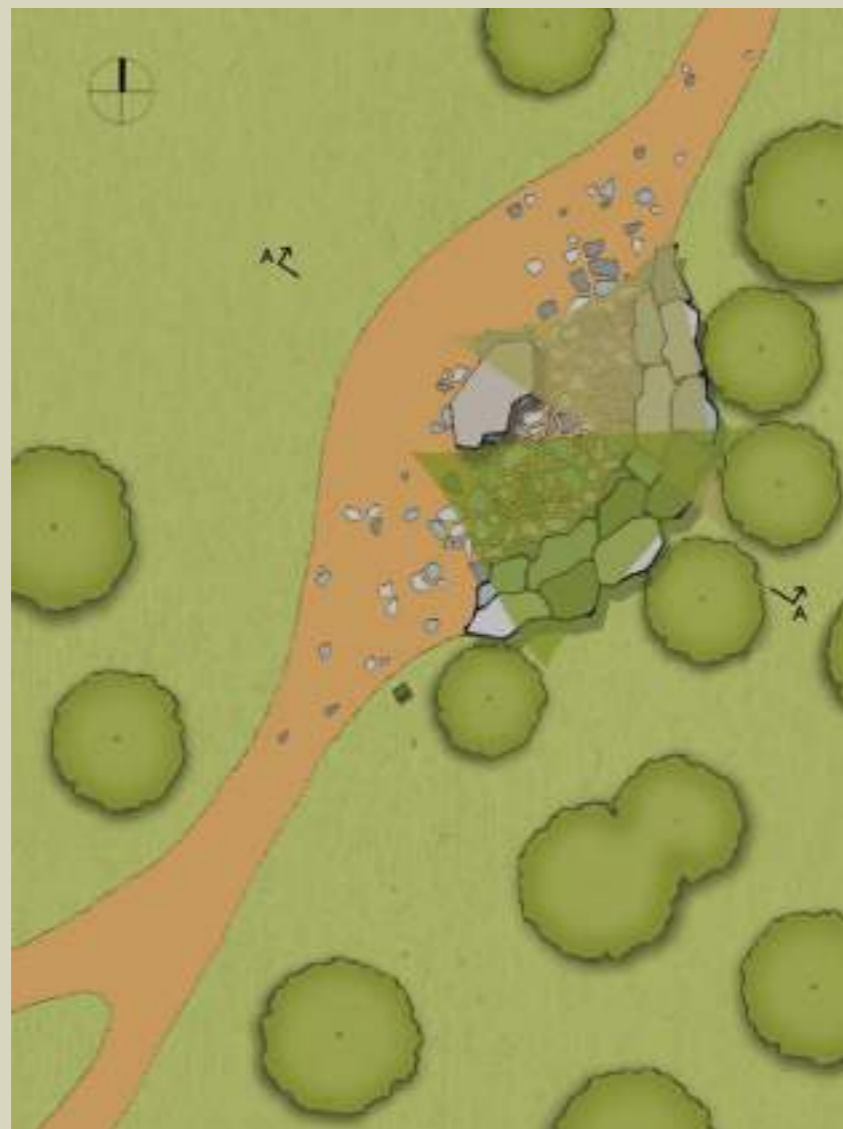
- Extend the main Central Garden area beyond the primary paths (such as has been achieved with areas EE, BB, J, and K).
- Blend one or more Central Garden area with a smaller adjacent area across the main path, in order that rocks, trees or small areas (e.g. between mineral paths) may be introduced.
- Provide information about the ecological communities (e.g. dry sclerophyll forest, montane wetlands) represented in each area of the Central Garden.
- Improve the watering system so that soil moisture content can be varied to accommodate the different requirements of groups of species, and to minimize loss of plantings due to dry periods.
- Maintain fertility, mulching, watering and other maintenance works.
- Replace species or plants to ensure the standard of presentation is as high as is determined, including replacing senescing or dead plants, and preventing one species over-running or dominating another.
- Consider how STEP should deal with a changing climate, in order to respond to rising temperatures and/or drying soils. There may be opportunities to introduce plants that may become characteristic of the Southern Tablelands flora owing to changes in their natural range in response to climate change.



FOCAL POINT B The Clearing

History

Forest 20's Open Education Space with rock seating and pleasant surrounding landscaping provides a focal point for group learning, presentations, major events and social activities. Although not created as a result of clearing trees, "The Clearing" is named thus as an allusion to spaces created by forest activities, and in time the growth of the surrounding trees will provide the appropriate ambience.



STEP education space – concept plan

The concept plan for this space was created by the NAC's landscape architect in collaboration with STEP and building on the ideas contained in 2011 Master Plan (Quandong Designs).

Work to construct The Clearing was undertaken by what STEPpers termed 'the engineering team', with the assistance of contracted machinery to carefully move and position the rock seating and to move gravel. The engineering team managed and controlled the operation, bringing the final arrangements to completion. STEPpers landscaped the area behind the seating, and the specimens of *Callitris endlicheri* were planted at the inauguration of the area (20 February 2015) by the (then) Minister for Territory and Municipal Services, Mr Shane Rattenbury (MLA), the (then) Presidents of the

Australian Native Plant Society, and the Friends of Grasslands.

After its completion, The Clearing was mainly used for STEP-based activities, school groups and NAC events. It is also available for the general public to use for private events through a bookings process managed by NAC. Ensuring that NAC and private events do not clash with STEP activities is important. Accordingly, the NAC personnel taking bookings for NAC or private events need to be cognisant of the times that STEP may require the site for its own activities – which can be in addition to STEP volunteer workdays. Consequently there will be a need for STEP and NAC to maintain a clear understanding of the respective priorities for use or booking of The Clearing and to manage any conflicting expectations.





During the 2020–2030 Strategic Plan there is scope to:

- Repair and maintain gravel surfaces.
- Enhance plantings in gardens surrounding The Clearing.
- Develop a shelter or similar structure that acts as a focal point for catering, information and the general management of events and activities in The Clearing.



FOCAL POINT C The She-oak Nook

History

Work to create a seating area in STEP commenced in November 2012 after STEP consulted with the NAC's first arboriculturist. The north-facing site was chosen for its distance from other developments in Forest 20 and the space was partly created with the death (2012) of one tree (*Eucalyptus nortonii*). As happened with The Clearing, large rocks were available from the NAC and, thanks to the surrounding trees, an enclosed feeling was created.

In 2014 the NAC constructed the system of bike/walking paths throughout the Arboretum. This included a path that connected the Mesa Oak forest and the entry/exit adjacent to the temporary overflow carpark. The NAC provided a 'Welcome to STEP' sign at that entry/exit as part of a series of 'Welcome' signs at other access points. This prompted STEP to purchase a bright yellow flag for the entrance, so that it could be seen by visitors from a distance. In 2015, the STEP engineering team started to enhance the Nook by laying a crushed granite base. Subsequently, additional plantings with *Allocasuarina verticillata* and *A. nana* and some associated understorey species commenced. The Nook became known as the 'She-oak Nook'; this name was formalised in May 2017 with the installation of a corten steel sign.

In subsequent years additional species of *Allocasuarina* and understorey plants were added, and a deficit of water supply was rectified by the installation of a water cube and acquisition of a pump. From 2018 the She-oak theme was further enhanced by planting

with *Allocasuarina distyla* (Shrubby She-oak) and *A. littoralis* (Black She-oak) (March 2019), *A. luehmannii* (Buloke/Bull-oak) (May 2020) and *A. diminuta* (Broombush She-oak) (July 2020). The she-oak Nook area will thus become a place where the trees demonstrate the distinctive foliage (cladodes) of their genus, which are finely furrowed branchlets that act as leaves.

Consistent with STEP's intention that the area around the She-oak Nook be planted with representatives of Southern Tablelands She-oaks, STEP obtained NAC's agreement in early 2020 that plantings around the new enlarged dam would include River She-oak (*Casuarina cunninghamiana*), as this species will be too large and water-demanding to plant within the She-oak Nook. *Acacia paludosa* (Scrub/Swamp She-oak) is also a She-oak species of the Southern Tablelands and if available can be included in our collection so that all eight of the Southern Tableland region's she-oak species are represented at Forest 20.





During the 2020–2030 Strategic Plan there is scope to:

- Link with the Wattle Walk that extends on both sides.
- Consider whether the linking path that connected with the temporary car park and dam has become redundant after the new entrance from the car park is established and whether to rehabilitate or re-purpose it.
- Add the remaining species of *Casuarina* and *Allocasuarina* typical of the Southern Tablelands region.
- Present interpretive information about She-oaks, in both signage and other forms.



FOCAL POINT D The Ephemeral Wetland

History

In February 2009 and before any trees were planted in Forest 20, the ACT Government provided access to machinery already on site to create a depression that, it was anticipated, would be the location for an ephemeral wetland. Subsequent rains confirmed this was a practical initiative which allowed for demonstration of native plants adapted to wet and dry periods.

The wetter conditions that can be found around the ephemeral wetland provide an environment for some plants that need more moist soil conditions but which are not normally recognised as wetland plants.

Gravel, rocks and logs have been introduced to provide diversity in wetland environments. A small creek line is identified by gravel and by plantings suitable for this type of 'stream' environment.

The ephemeral wetland is recognised as a site for the ACT's Frogwatch program. Species of frogs recorded here include: *Limnodynastes tasmaniensis* (Spotted grass frog), *Crinia signifera* (Common eastern froglet), *Crinia parinsignifera* (Plains froglet), *Litoria peroni* (Peron's tree frog) and *Uperoleia laevigata* (Smooth toadlet).

Frogwatch has recorded occurrence of these frog species over the ten years since observations were first made in March 2010. The first two species occur regularly while the other 3 are less frequently recorded.

The wetland is not large and could become overgrown with aggressive wetland plants such as *Phragmites australis* (Common Reed) and *Typha latifolia* (Cumbungi or Bulrush). Examples of these species can be managed by planting them in large pots that will constrain root growth and allow removal if necessary, but growth and development needs to be carefully monitored and seeds prevented from maturing.

As the Ephemeral Wetland was not part of the initial design of the Central Garden, planting here can be more informal and not in groups approximating the 3m x 3m design elsewhere. In August 2020 some landscape work to emphasise a 'creek-like' entry to the wetland was undertaken.





During the 2020–2030 Strategic Plan there is scope to:

- Enhance access to natural rainfall by diverting drainage from the Boundary Road. This can be from the north by using the natural slope and minor roadside drain or by diverting major overflows from the car park dam to the Shed and the Arboretum boundary.
- Provide interpretive signage and other information.
- Reinforce the presentation of the 'creek-like' entrance to the wetland with plantings.
- Use additional plantings to increase plant and structural diversity and to improve the habitat for frog species and provide protection for small bird species when they access the water.

Depending on availability, the following species could be usefully added to the wetland:

Schoenoplectus sp. (River club rush), as a replacement for the original planting, *Eleocharis sp.* (Common spike rush) in the water and on the water's edge, *Juncus subsecundus*, *Crassula helmsii* (Water stonecrop), *Gahnia sp.* (Saw sedge) and *Lycopus australis* (Australian gipsywort) in ephemeral areas.

Wahlenbergia sp. *Dianella sp.* *Calytrix tetragona*, *Hardenbergia violacea* and *Grevillea lanigera* can also provide protection and habitat for frogs and small birds in areas surrounding the wetland.

FOCAL POINT E The Eucalypt Walk

History

The planting pattern of trees adapted from the original layout specified by Taylor Cullity Lethlean lends itself to a self-guided or guided tour of all 16 species of *Eucalyptus* at Forest 20. The major plantings are located according to their natural landscape position, with dry sclerophyll species at the top, the woodland species on the mid-slopes, and the cold-air drainage species at the lowest part of Forest 20.

Eucalyptus albens (White Box), although recorded only occasionally in the ACT and nearby, was included in the original plantings because it is an example of a species that is likely to become more common in the Southern Tablelands region owing to climate change and its influence on the distribution of species.

Eucalyptus stellulata (Black Sallee) was planted amongst the *E. pauciflora* (Snow Gum) because it also is a 'fringing' species of cold valleys as well as of wetter environments (such as the ephemeral wetland).

Twelve *E. delegatensis* (Alpine Ash) were part of the initial planting of 16 species of Eucalypt tree. However, in spite of early promise, all failed during dry periods. STEP decided to replace this species with *E. radiata ssp. robertsonii* (Narrow-leaved peppermint) although these have not grown uniformly. *E. dalrympleana* (Mountain Gum) has also responded to drier conditions with variable survival, but losses have generally been replaced with new trees.

STEP's first 4-colour leaflet contained a picture and brief description of all eucalypt species in Forest 20. This leaflet could be enriched by a more detailed map showing a possible walk through Forest 20, complementary to that proposed for the Acacia plantings.

During the 2020–2030 Strategic Plan there is scope for:

- Careful consideration of adding new eucalypt species, particularly if these illustrate climate change, features of the Southern Tablelands or perhaps are uncommon or threatened.
- An informative leaflet with map (or web-based material) that can be used as a self-guided tour of the all 16 species of eucalypt growing at Forest 20.



History

In 2019 consideration of additional themed plantings was considered by STEP and, with the agreement of the Arboretum's Landscape Architect, it was decided to introduce an 'Acacia Walk' along two edges of Forest 20. Acacia plantings commenced in September 2019, along the south-eastern sides of Forest 20, adjacent to the lower car park and management road. The plantings will mature during the period 2020-2030 and form a distinctive and continuous edge to two sides of Forest 20, particularly when flowering. A previous planting of Australia's national floral emblem (*Acacia pycnantha*) is linked to these plantings.



The Wattle Walk will provide an excellent opportunity to develop informative walks for visitors. Species with similar leaf morphologies have been planted side by side. This will assist with visual comparisons and provide an identification tool for students, volunteers and visitors.

A group of three rocks located mid-way along the car park boundary may be a suitable place for sitting and for interpretive signage. It is close to the entrance from the car park proposed for construction in mid-2020.

As at 2020 the following species of the Genus *Acacia* had been planted:

<i>A. acinacea</i>	<i>A. buxifolia</i>	<i>A. cultriformis</i>
<i>A. dawsonii</i>	<i>A. dealbata</i>	<i>A. decurrens</i>
<i>A. doratoxylon</i>	<i>A. genistifolia</i>	<i>A. gunnii</i>
<i>A. implexa</i>	<i>A. kybeanensis</i>	<i>A. lanigera</i>
<i>A. mearnsii</i>	<i>A. melanoxylon</i>	<i>A. pravissima</i>
<i>A. rubida</i>	<i>A. siculiformis</i>	<i>A. terminalis</i>

Plantings of several specimens of *A. pycnantha*, *A. paradoxa*, *A. ulicifolia* and *A. verniciflua* are close to the Wattle Walk and can be integrated into information materials.

During the 2020–2030 Strategic Plan there is scope to:

- Develop an interpretive sign and information brochure focussed on the Acacia plantings. These will require a planting map plus some illustrations of flower types, leaves, phyllodes and fruits.
- Promote the Forest 20 Wattle Walk as part of national and local Wattle Day celebrations, including partnership with the National Wattle Day Committee.
- Invite interested groups to use the Forest 20 Wattle Walk for educational activities. These include students and staff from CIT, local colleges, bush care groups and other botanic gardens.
- Continue care of Acacia species by actions such as surrounding the plantings with mulched areas, shifting plant labels as the trees mature, and removing tree guards as needed.
- Source missing species if required. For example, *Acacia aureocrinita*, *A. brownii*, *A. kettlewelliae* and *A. obtusata* are still needed.

FOCAL POINT G The Bush Tucker Garden

History

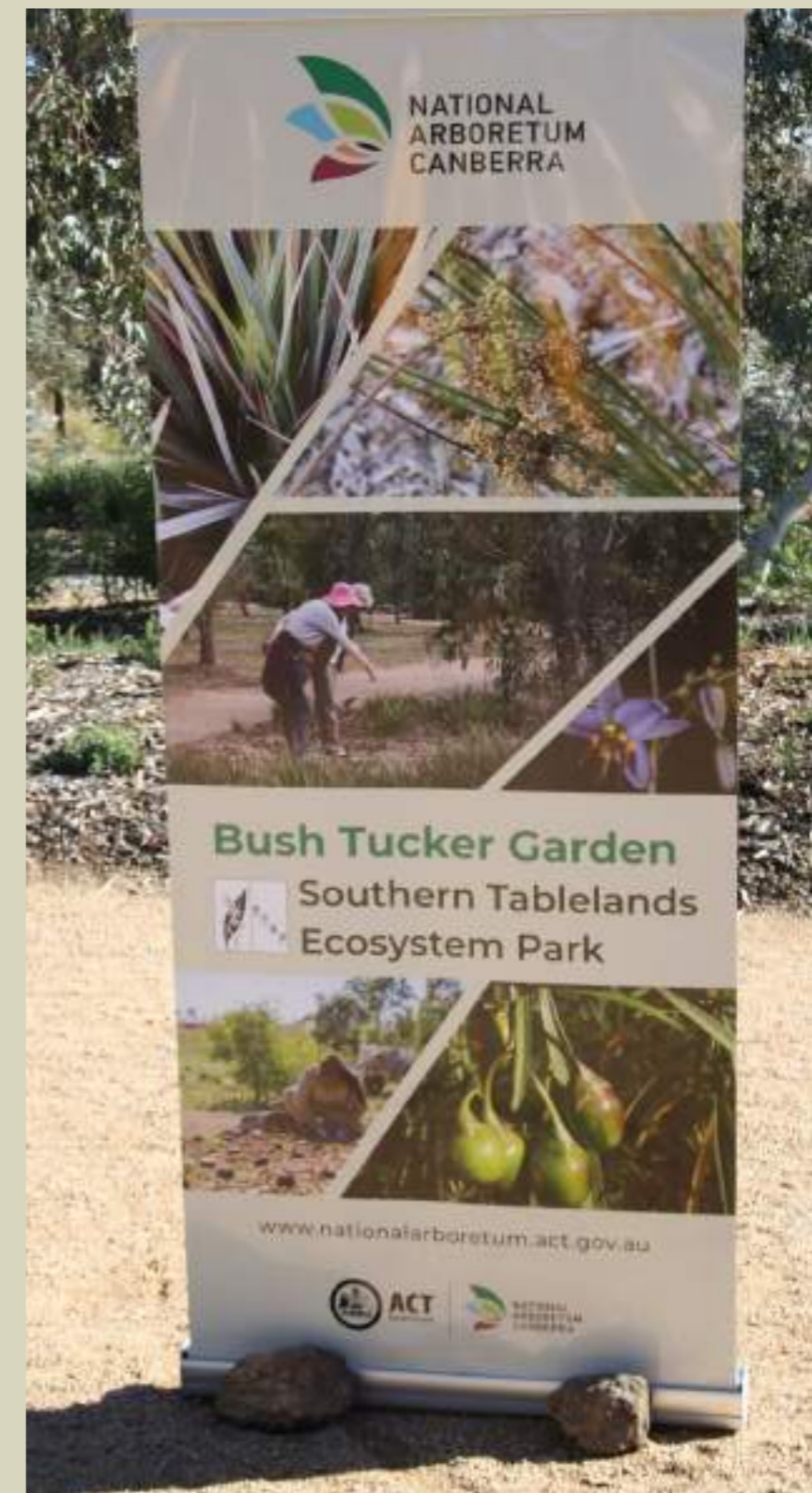
The Bush Tucker Garden comprises plants of the Southern Tablelands that were valuable as food and fibre to traditional Indigenous Australians. Initially STEP introduced the idea following construction of The Clearing, as this left a garden area (Area EE) without a theme. Subsequently the NAC proposed to STEP that an adjacent part of Forest 20 be developed as a Bush Tucker Garden. This initiative was one element of the NAC's contribution to the ACT Government's Reconciliation Plan. Raised beds, gravel paths representing river systems, and a selection of food and fibre plants associated with local Indigenous Australians were planted.

Particular features of the enlarged Bush Tucker Garden are a basket weaving area (designed to support women weaving from grass and strappy leaved plants), and a rock sitting area designed for a small group of men to meet. Plants selected for the Bush Tucker Area include *Dianella longifolia*, *D. revoluta*, *Lomandra longifolia*, *Phragmites australis* (removed in August 2020) and *Poa labillardieri* for weaving, and the tubers, stems and leaves of bulbine and chocolate lilies were used as food, while *Hardenbergia violacea* leaves and bottlebrush flowers were used as infusions in drinks. Potential new species could include yam daisies and other tuberous species.

The location of the Bush Tucker Garden as an integral part of Forest 20, and its construction (raised beds), requires a special approach to its management and appearance. The objective of both STEP and the NAC is to

present to visitors to Forest 20 a seamless series of understorey plantings and paths within the dominant pattern of the eucalypt trees, together with interpretive material relevant to the different elements and areas. Accordingly, the appearance and maintenance of the BTG will reflect on both the partners, as the more subtle organisational responsibilities are largely irrelevant to a visitor.

In early 2020 NAC agreed that STEP would assist with the on-going maintenance of both the garden beds and gravel paths, with in-kind support from NAC for materials, signage and related items. In the light of this, it is appropriate that STEP consider how it can work closely with NAC in the maintenance of the BTG and other Forest 20 plants of similar nature. In this regard, STEP could take a more active role in maintaining paths, weeding and watering new plantings so as to ensure the integrity of the overall site





During the 2020–2030 Strategic Plan there is scope to:

- Diversify the examples of bush tucker and other Southern Tablelands plants used by Indigenous Australians.
- Add mid-storey trees and shrubs in a way that complements structural diversity in the Central Garden.
- Enhance the information provided to visitors.
- Integrate the plantings and themes of the Bush Tucker Garden with the rest of Forest 20 particularly through plantings and trees that have significance to Indigenous Australians' traditional use of Southern Tablelands plants.



3 The Key Assets

A A system of gravel entrances, access paths and rest points

History

Gravel paths, rock placements and rock seating areas have been developed over several years. Rocks have been made available from the NAC's store, and this element of the partnership between STEP and NAC is gratefully acknowledged. As well, in February 2016 the Friends of the Arboretum located a park bench donated by a frequent visitor to Forest 20 under the Friends' Seat Sponsorship Program.

The gravel paths were installed in 2014 replacing the initial mulch over geotextile paths that were subject to erosion during heavy rains. Subsequently, in late 2014/early 2015 the NAC developed a mineral walking/cycling trail system which connected with the STEP path system.

Gravel paths include a number of structures (variously called roll-overs, diversion banks or cross banks) designed to direct overland water flow during heavy rainfall events (that have caused erosion of gravel) into adjacent mulch beds. It is necessary to periodically repair the paths and ensure they are kept at a high standard consistent with the Arboretum's responsibility to offer safe surfaces for pedestrian (including for less-mobile people) and wheel-chair access.

In 2020, after prolonged use of the gravel paths by cyclists, the NAC and STEP came to an agreement that would see cyclists re-routed around Forest 20, and thus eliminate the damage to paths that was a pre-cursor

to erosion and an on-going maintenance requirement. Cycling at speed through Forest 20 conflicted also with the quiet enjoyment of the area by visitors and potentially with STEPpers during working bees.

Major placements of rocks occurred when constructing the She-oak Nook and The Clearing. Some rocks were placed at other strategic locations during these operations. In part they responded to the Master Plan's concept of Information Nodes at the crossroads of key paths.

An opportunity for additional rocks to be located in Forest 20 arose when the temporary car park was re-formed and sealed in the first half of 2020. STEP volunteers identified over 50 rocks from the temporary car park and arranged for their re-location to strategic places within Forest 20.

These locations were selected to enhance entry points, view-fields or Central Garden features, to provide sitting places, to guide visitors, and to mark key points. They also serve landscaping and other site management purposes. Some of the rock placements are enhanced with mulch or gravel, depending upon their primary purpose and their potential to provide micro-climates suitable for particular plant species to grow.





During the 2020–2030 Strategic Plan there is scope to:

- Maintain the settings of rock placements so they deliver their utility, habitat, landscape or other purpose.
- Maintain, on a continuing basis, gravel surfaces to ensure visitor safety, control of water flow and repair erosion.
- Introduce new plantings that take advantage of micro-climatic conditions.
- Identify new locations for park benches of the type available through the Friends' Seat Sponsorship Program.
- Monitor observance by cyclists and horse riders of signage at Forest 20's entry points which advises that paths in Forest 20 are for walking only. An alternative route suitable for cyclists and horse riders is by keeping to the adjacent Boundary Road.



B The Shed and picnic table area

History

Early in STEP's work at Forest 20, the then Chief Minister organised for a sturdy metal picnic table excess to municipal needs to be delivered to Forest 20. A second table came later and these have become a highly valued sitting area for morning teas and other small gatherings. STEP volunteers use this facility on a weekly basis as a place to meet, discuss and exchange ideas. It also serves as an inviting location for NAC staff and other visitors to communicate with STEP volunteers on an informal basis.

In further support for STEP's work in Forest 20 the Chief Minister in 2011 instructed the Arboretum to provide funding (\$2000) for a small metal shed (approximately 3m x 3m) and our first tools. This very adequately served STEP in the early years, but over time and with the gradual growth of our equipment and the number of volunteers its capacity became insufficient for safe and proper storage.

In 2018 STEP approached the Arboretum's management with a proposal to replace the shed with a new shed built to the Arboretum's standards. The new shed would be aesthetically pleasing and provide substantially increased and secure capacity. Importantly, it would also provide a sheltered outdoor propagation area where a large number of volunteers could work, a hand-washing facility utilising rain water captured from the roof, and a refuge for volunteers and visitors during cold, wet and windy weather.

In a clear demonstration of the partnership between the two organisations, the Arboretum agreed to provide labour and materials for a

concrete pad and gravelled surrounds, while STEP volunteers sourced a suitable design and purchased the shed and its construction. The final design chosen was locally available, was consistent with existing shed design at the Arboretum and included Shed Safe accreditation, which is the industry standard for Australian manufactured steel sheds. STEP volunteers collaborated with NAC staff to successfully construct the large (10m³) concrete pad upon which the new shed stands.

In March 2019 the shed was opened. It has been vermin proofed, lined and fitted out with an impressive array of hooks, shelves and other fixings that support STEP's need to care properly for its tools, barrows and other items. Soon after construction of the shed, Arboretum staff and STEP volunteers built a substantial retaining wall nearby from boulders and smaller rocks. To complete the landscaping around the shed, a range of suitable plants were grown and planted by STEPpers.

During the 2020–2030 Strategic Plan there is scope to:

- Use the shed and surrounds for plant propagation projects.
- Keep the shed and picnic area tidy.
- Conduct an annual workplace, health and safety check of tools, storage, chemicals and related matters.
- Maintain the area around the picnic tables in a manner suitable for STEP and visitor use.



c Water reticulation in Forest 20

History

Development of the watering system at Forest 20 has been spasmodic, largely responding to the expansion of plantings of species each with its own varying water requirements. There is great potential for the system to be consolidated and more fit for purpose.

Early in our development of Forest 20 the irrigation system installed by the Arboretum was abandoned as it delivered water only to each planted tree. STEP made the early decision that it wanted to allow trees to grow according to their potential on-site, and not be artificially supported by irrigation.

Also early in the development of the Arboretum's forests, water tanks (10,000L) were installed strategically and filled by water-tanker. One such tank was installed at the top of Forest 20, adjacent to the Mesa oak forest. A second tank was later added at this location and both were connected to the main water supply grid around the Arboretum.

STEP installed a system of water supply pipes. Initially a pipe followed the southern path beside the Central Garden. Later, this pipe was replaced by a similar one that runs beside the Central Garden's northern path. Several standpipes are installed along this pipe.

A 1000 litre water cube and a water pump were acquired to help water the She-oak Nook plantings, which were otherwise being poorly watered. Subsequently, a second pipeline was installed running from the tanks along the top edge of Forest 20 towards the She-oak Nook. Two take-offs allow watering of plantings along

this upper edge and beyond with the assistance of connecting hoses.

Security of piped water to all parts of Forest 20 will be a long-term challenge to STEP, particularly as the rainfall changes with climate change. Therefore in 2020 STEP commenced discussion with the Executive Branch Manager of the Arboretum about accessing water from the small dam that serves as part of the water management of the overflow car park. This might include a solar-powered floating pump and a small pipe from this to supply water to the lower parts of the Central Garden. This would allow the supply of water from the two tanks to have more pressure and be more reliable for use in the upper parts of the Central Garden. A mutually beneficial cost-sharing partnership between STEP and the Arboretum was part of the early discussions of this proposal.

During the 2020–2030 Strategic Plan there is scope to:

- Pursue access to water available from the car park, to provide additional water supply reliable water pressure and increased flow rates in the Central Garden.
- Maintain and up-grade water reticulation on a continuing basis.
- Explore opportunities to vary soil moisture conditions within the Central Garden to support the different requirements of the understorey species planted there.



D Stile access between Forest 20 and Block GG

History

In 2018 the Arboretum provided STEP with an unused metal stile that could be used to connect Forest 20 with the adjacent Block GG. This facility was installed to a safe standard by STEP in a location that related easily with the existing location of gravel paths.

STEP envisages that in due course the stile will link into walking trails within Block GG as provided and managed by the ACT Parks and Conservation Service. This will facilitate educational opportunities that link the more ordered regional botanic garden of Forest 20 with the more 'natural' yellow box red gum grassy woodland represented in Block GG. In time there may be opportunities for STEP to assist with regeneration projects there and also with NAC management of Forest 2.



During the 2020–2030 Strategic Plan there is scope to:

- Liaise with Molonglo Conservation Group in recovery management of Block GG
- Support the formation of a Park Care group for Block GG
- Organise STEP-led walks in Block GG
- Assist in recovery planting and projects in Block GG
- Explore with NAC potential for STEP involvement in recovery works in Forest 2.





2009



2010



2011



2012



2013



2014



2015



2017



2018



2019



2020

WETLANDS



2009



2013



2015



2020

A REGIONAL BOTANIC GARDEN

CONTEXT

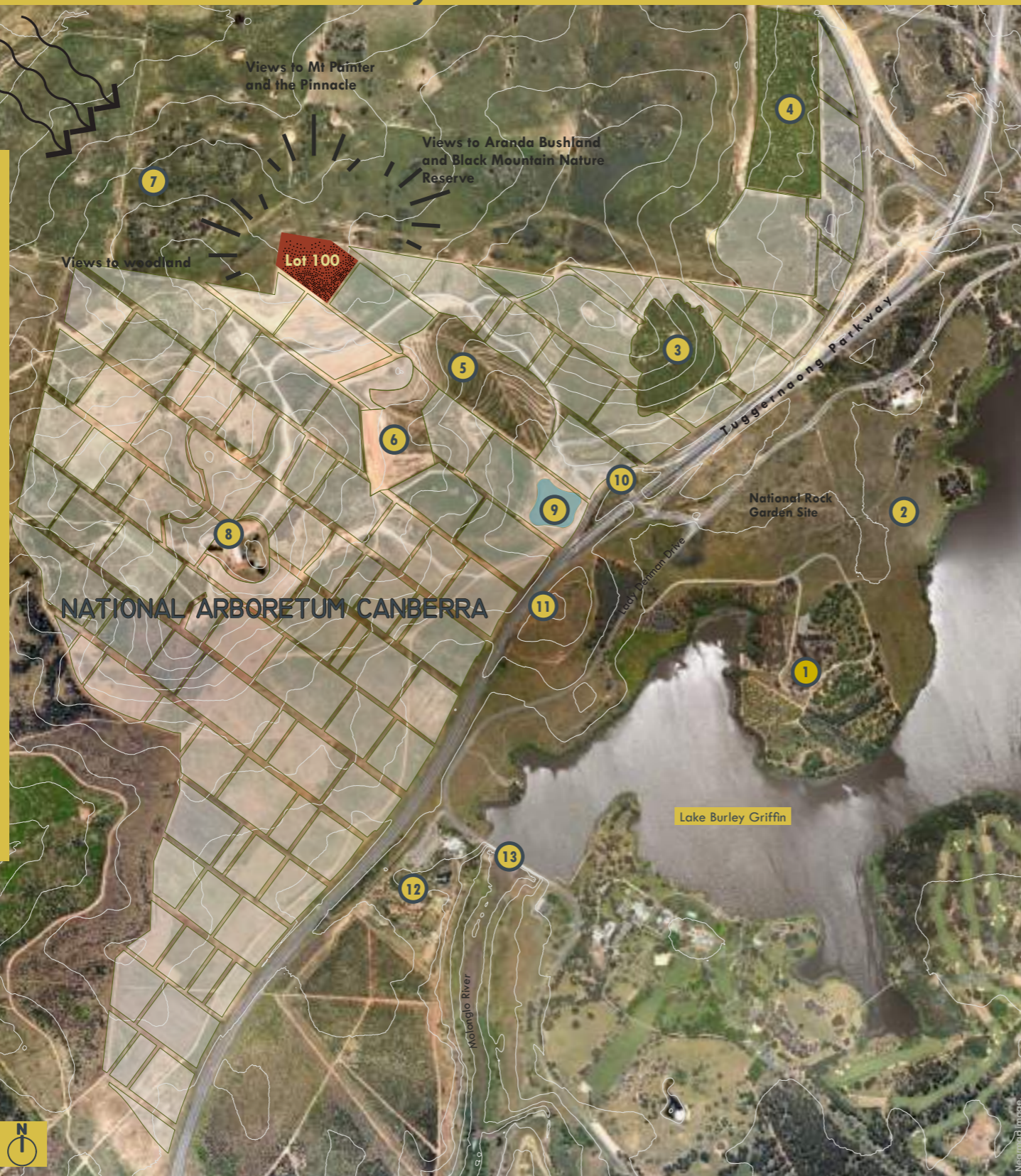
Telling the understorey

What's in an understorey?

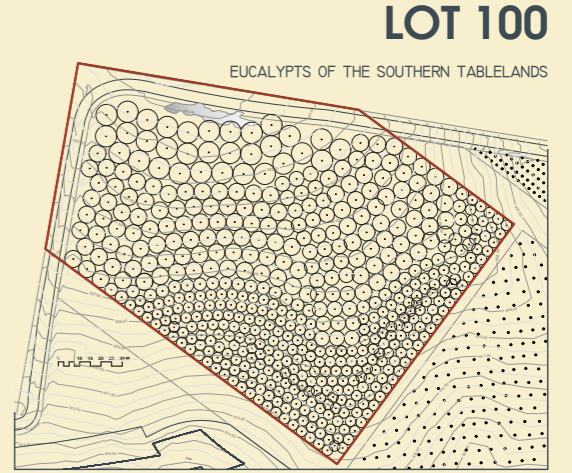
Quite a lot actually. The trees are only part of a forest and woodland story. To understand and appreciate the biodiversity of the Southern Tablelands we need some knowledge of what is happening beneath the canopy.

Knowledge of the understorey gives us some insight into the complex relationships between plants and more broadly, between flora, fauna and the landscape. It also opens our eyes to the beauty of understorey plants and may encourage us to grow them in our own gardens and perhaps contribute to regional biodiversity.

Learning to recognise understorey plants and their association with the various forest and woodland trees planted on Lot 100 gives us the opportunity to become aware of natural systems without actually being in one. When we visit national parks and other natural landscapes, this knowledge can enrich our experience.



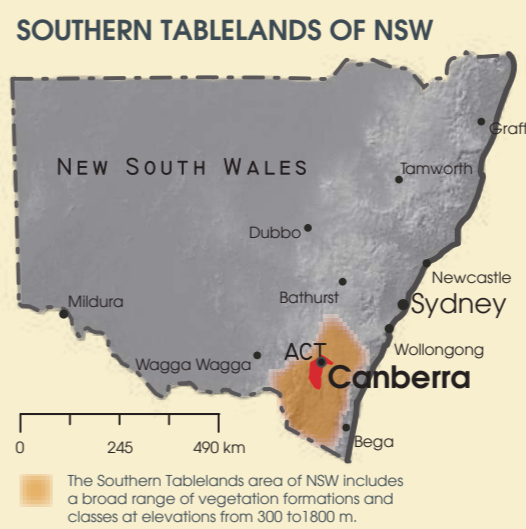
- 1 LINDSAY PRYOR NATIONAL ARBORETUM
- 2 YARRAMUNDI NATURAL TEMPERATE GRASSLANDS
- 3 HIMALAYAN CEDAR FOREST
- 4 CORK OAK FOREST
- 5 CENTRAL VALLEY
- 6 VISITORS' CENTRE
- 7 REMNANT YELLOW BOX-RED GUM WOODLAND, AN ENDANGERED ECOLOGICAL COMMUNITY
- 8 DAIRY FARMERS HILL
- 9 DAM
- 10 ENTRANCE TO NATIONAL ARBORETUM
- 11 ROMAN CYPRESS HILL
- 12 NATIONAL ZOO & AQUARIUM
- 13 SCRIVENER DAM



Lot 100 in the National Arboretum Canberra, is planted with a selection of native forest and woodland trees from the Southern Tablelands of New South Wales.

The National Arboretum Canberra is part of the National Capital Open Space System and connected to the Belconnen Hills, Mount Painter, the Pinnacle, the Aranda Bushland, Black Mountain Nature Reserve, the Yarramundi Grasslands and the riparian zone of the Molonglo River downstream of Scrivener Dam.

THE VISION -
to create a regional botanic garden where visitors will be captivated by the biodiversity and landscapes of the Southern Tablelands.



LOT 100 AT A GLANCE
Tree Species: First planted in 2009, with 16 eucalypt species from the Southern Tablelands of NSW.
Area: 2.4 hectares approx.
Elevation: 600 - 612 m.
Position in the landscape: mid-slope.
Aspect: N - NW. Good cold air drainage.
Terrain: Gentle slope (<20%).
Geology: Alluvial sediments from hillslope erosion. Underlying geology - Mt Painter Volcanics.
Soil: Bleached mottled yellow chromosols, silty clay loam topsoil. Soil depth 1.2-1.5 m.
Drainage: drainage lines traverse the site where runoff converges. Excess water flows to a small ephemeral wetland at the bottom of Lot 100. Mottled soil indicates some areas are prone to waterlogging.

CLIMATE
 Rainfall: average 617 mm.
 Temperature: average Max ~20°C and Min ~-7°C. In winter temperatures can reach -7°C.
 Sunshine: average of 7.7 hrs/day.
 Frosts: average of 100/annum.
 Fogs: average of 44/annum. Foggiest month is July.
 Snow is rare.

A REGIONAL BOTANIC GARDEN

STAGE 1

2011 Masterplan

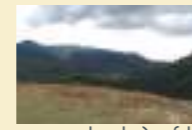
Telling the understorey

STAGE I: EUCALYPT SPECIES PLANTED ON LOT 100 IN 2009

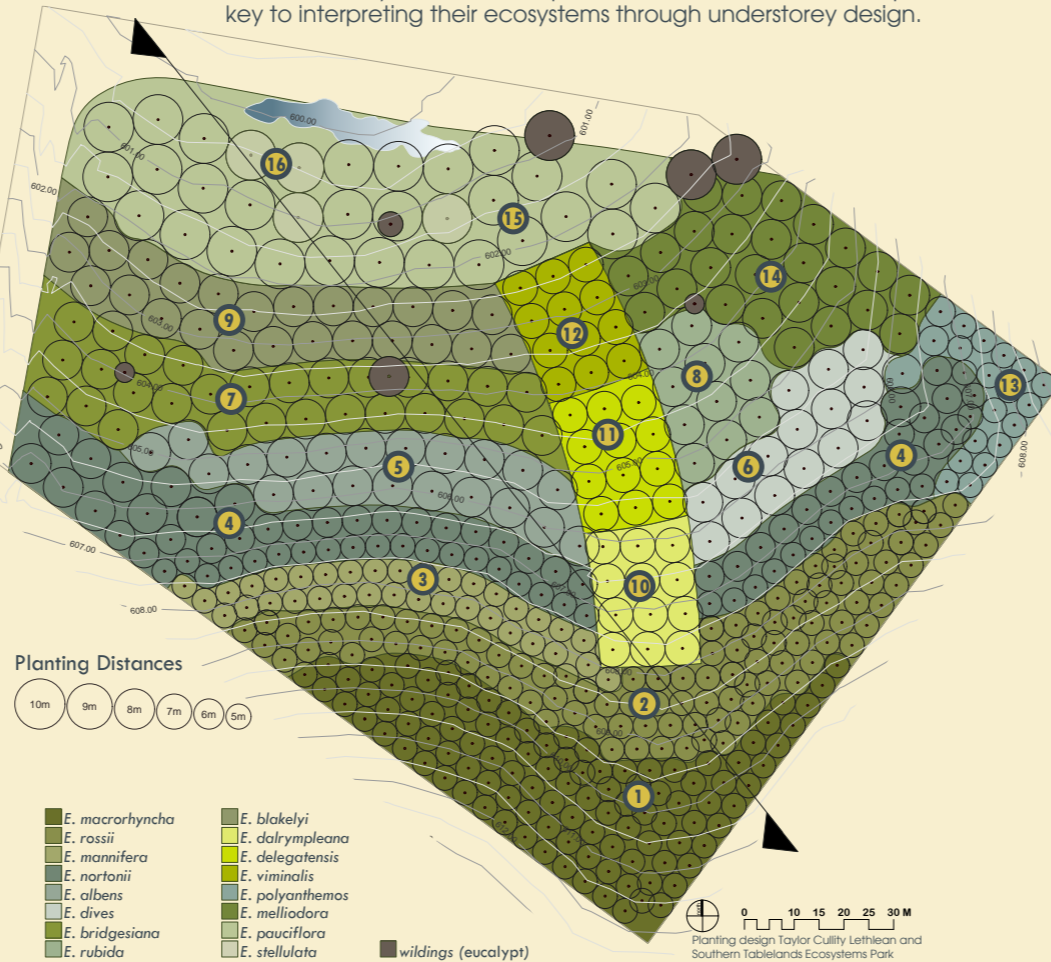
- 1 *E. MACRORHYNCHA* - RED STRINGYBARK. On dry well-drained hilly sites to 1000 m. Medium-size, compact rounded crown, less so on poor sites.
- 2 *E. ROSSII* - SCRIBBLY GUM. Usually on dry skeletal soils of sedimentary or granite origin on hillslopes or ridges at 250-900 m. Moderate size, with irregular branching habit on harsh sites; taller on better soils.
- 3 *E. MANNIFERA* - BRITTLE GUM. Mainly on relatively poor soils derived from granite and sedimentary rocks. Small to medium-size tree. Considerable variation in leaf and growth habit.
- 4 *E. NORTONII* - LARGE FLOWERED BUNDY. Occurs on poor skeletal soils mainly in foothills but also up to 1000 m in the tablelands. Small to medium-size, often poorly formed with crooked trunk and large crown.
- 5 *E. ALBENS* - WHITE BOX. Favours fairly fertile soils on gentle slopes and plains; also on steeper, dry slopes. Small to medium-size with large, branching crown.
- 6 *E. DIVES* - BROAD-LEAVED PEPPERMINT. Usually in relatively dry hill country on poor shallow soils. Small (rarely moderately tall - 25 m), low branching and spreading habit with large crown.
- 7 *E. BRIDGESIANA* - APPLE BOX. Found on gentle slopes at moderate altitudes; favours relatively heavy alluvial soils. Medium-size, with relatively short trunk, large spreading crown with pendulous branchlets.
- 8 *E. RUBIDA* - CANDLEBARK. Mainly on dry and shallow soils of foothills and tablelands, up to 1400 m in mountain areas. Usually of moderate size varying from small and poorly formed to tall and straight with dense crown.
- 9 *E. BLAKELYI* - RED GUM. Favours compact loams on gently undulating sedimentary terrain or exposed granite. Medium-size with short trunk and large crown.
- 10 *E. DALRYMPLEANA* - MOUNTAIN GUM. Frequent in lower montane-subalpine forests at 700-1500 m. Medium-size tall tree, with a straight trunk and large crown.
- 11 *E. DELEGATENSIS* - ALPINE ASH. On well-drained rocky slopes and in deep valleys at 900-1400 m. Often confined to mountains with snow. Tall and straight with a fairly open crown.
- 12 *E. VIMINALIS* - RIBBON GUM/MANNA GUM. Widespread. On moist well drained alluvial soils near watercourses but also on drier sites at higher elevations and tablelands. Variable in size and growth, with narrow, pendulous leaves.
- 13 *E. POLYANTHEMOS* - RED BOX. Mostly on shallow soils of sedimentary origin on hillsides and gullies or open flats (deep loamy soils) up to 650 m in foothills. Small to medium-size, often with crooked form and distinctly greyish crown of ovate leaves.
- 14 *E. MELLIODORA* - YELLOW BOX. Usually in the foothills to tableland country, favouring better quality loam on relatively low slopes. Medium-size with a large, rounded, fine-textured crown.
- 15 *E. PAUCIFLORA* - SNOW GUM. Mainly in pure stands in low open forest formation at subalpine elevations, mixed stands on the tablelands. Varies in size and growth from stunted shrub to medium-size tree, usually with acrooked low-branching trunk.
- 16 *E. STELLULATA* - BLACK SALLEE. Mostly in low subalpine woodlands, high plains and tablelands at 800-1700 m; rarely lower; localised on poorly drained flats and depressions. Small tree, with trunk usually dividing near the ground, spreading branches and a fairly dense crown.

SOURCE: LEON COSTERMANS NATIVE TREES AND SHRUBS ... 2009

Interactions with the landscape



Where and how plants grow is affected by many factors including climate, elevation, slope, aspect, soil, interactions between species (plants and animals) and site disturbances such as fire, flood and human behaviour. The resulting physical structure (height, spread, etc) of the vegetation and the species composition are features useful in classifying vegetation. Looking at where the trees on Lot 100 occur naturally in the landscapes of the Southern Tablelands provides the key to interpreting their ecosystems through understorey design.

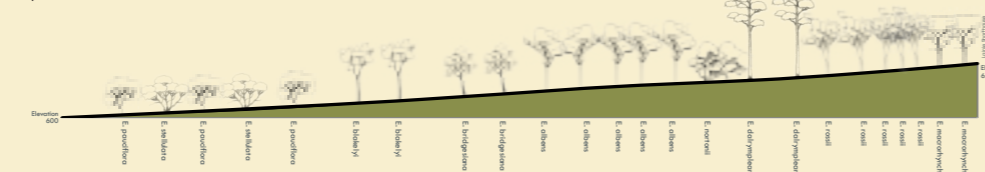


Planting Distances



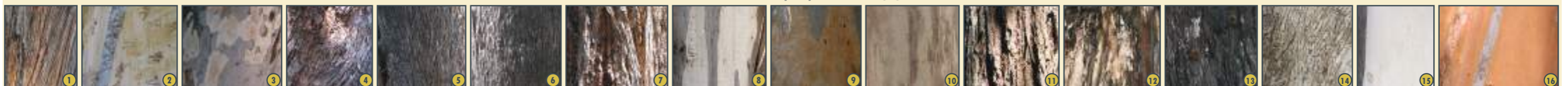
- E. macrorhyncha*
- E. rossii*
- E. mannifera*
- E. nortonii*
- E. albens*
- E. dives*
- E. bridgesiana*
- E. rubida*
- E. blakelyi*
- E. dalrypleana*
- E. delegatensis*
- E. viminalis*
- E. polyanthemus*
- E. melliodora*
- E. pauciflora*
- E. stellulata*
- wildings (eucalypt)

Trees species along section shown at half typical mature height



WHERE THESE EUCALYPTS MAY BE FOUND AS INDICATIVE SPECIES IN THE LANDSCAPES OF THE SOUTHERN TABLELANDS

<p>Montane Wet Sclerophyll Forests Elevation 800-1400 m. Mist, frost and occasional snowfalls in winter. Characterised by steep, moist terrain, rocky loams of moderate fertility. Trees typically 20-35 m tall with sclerophyllous and mesophyllous shrubs beneath and open herbaceous groundcover.</p>	WET SCLEROPHYLL FORESTS
<p>Southern Tablelands Wet Sclerophyll Forests Elevation 600-1000 m. Rainfall 750-1300 mm. Moderately sloping hills and valleys, occasional steep slopes and gorges. Soils are clay-loams derived from shales or basalts, sometimes heavier soils from limestone. Eucalypts 20-35 m dominate open forests with understorey of variable density of shrubs and continuous diverse herbaceous groundcover.</p>	
<p>Montane Bogs and Fens Elevation 600-1500 m. Rainfall 850-1500 mm. Few trees. Bogs, dominated by sclerophyllous shrubs and rhizomatous sedges, are found on very acidic poor peaty soils. Fens, dominated by dense soft-leaved tussocks and grasses, some semi-aquatic herbs but few shrubs, occur in alkaline to slightly acidic, rich peats.</p>	FRESH-WATER WETLANDS
<p>Southern Montane Heaths Elevation 600-1200 m. Characterised by cold conditions tolerated only by heath vegetation on skeletal stony soils derived from hard quartzites, slates and schists. Dominant species is <i>Allocasuarina nana</i> (~1 m tall), with occasional lone trees. Beneath the dense casuarina canopy is a sparse ground cover of grasses, sedges and forbs.</p>	HEATH-LANDS
<p>Southern Tablelands Dry Sclerophyll Forests Elevation 600-1100 m. Undulating terrain, stony ridges, gorges and ranges characterised by dry eucalypt forests with open, species-poor sclerophyll shrub understorey interspersed with open groundcover of tussock grasses. Trees typically 15-20 m tall on shallow rocky infertile soils derived from sandstone, mudstones, granites and porphyry volcanics.</p>	DRY SCLEROPHYLL FORESTS
<p>Upper Riverina Dry Sclerophyll Forests Elevation 300-700 m. Steep to flat terrain, with soils of moderate fertility derived from granite and metamorphosed siltstones, supporting dry eucalypt forests with trees up to 20 m tall, an open sclerophyllous shrub understorey and patchy groundcover of grasses.</p>	DRY SCLEROPHYLL FORESTS
<p>Subalpine Woodlands Elevation 1000-1800m. Occasional winter snowfalls, more frequent at higher altitudes. Dominated by one or two species of eucalypts 5-15 m in height in frost hollows on mountain slopes and summits exposed to cold winds. Variable understorey of sclerophyllous shrubs, tussock grasses and various herbs.</p>	GRASSY WOODLANDS
<p>Tableland Clay Grassy Woodlands Elevation 700-1300 m. Rainfall 550-900 mm. On rich alluvial creek flats or fertile clay-loam soils derived from basalt. Trees grow to 30 m on favourable sites, or to half this on exposed sites and frost hollows. Open canopy permits dense and diverse ground cover dominated by tussock grasses and herbs. Few shrubs.</p>	
<p>Southern Tablelands Grassy Woodlands Elevation > 600 m. Rainfall 550-900 mm, occasional snowfalls. Hilly undulating terrain, loamy soils moderate fertility derived from fine-grained sediments and granites. Trees typically 15-30 m tall, sparse layer of shrubs with continuous grassy groundcover with herbs.</p>	

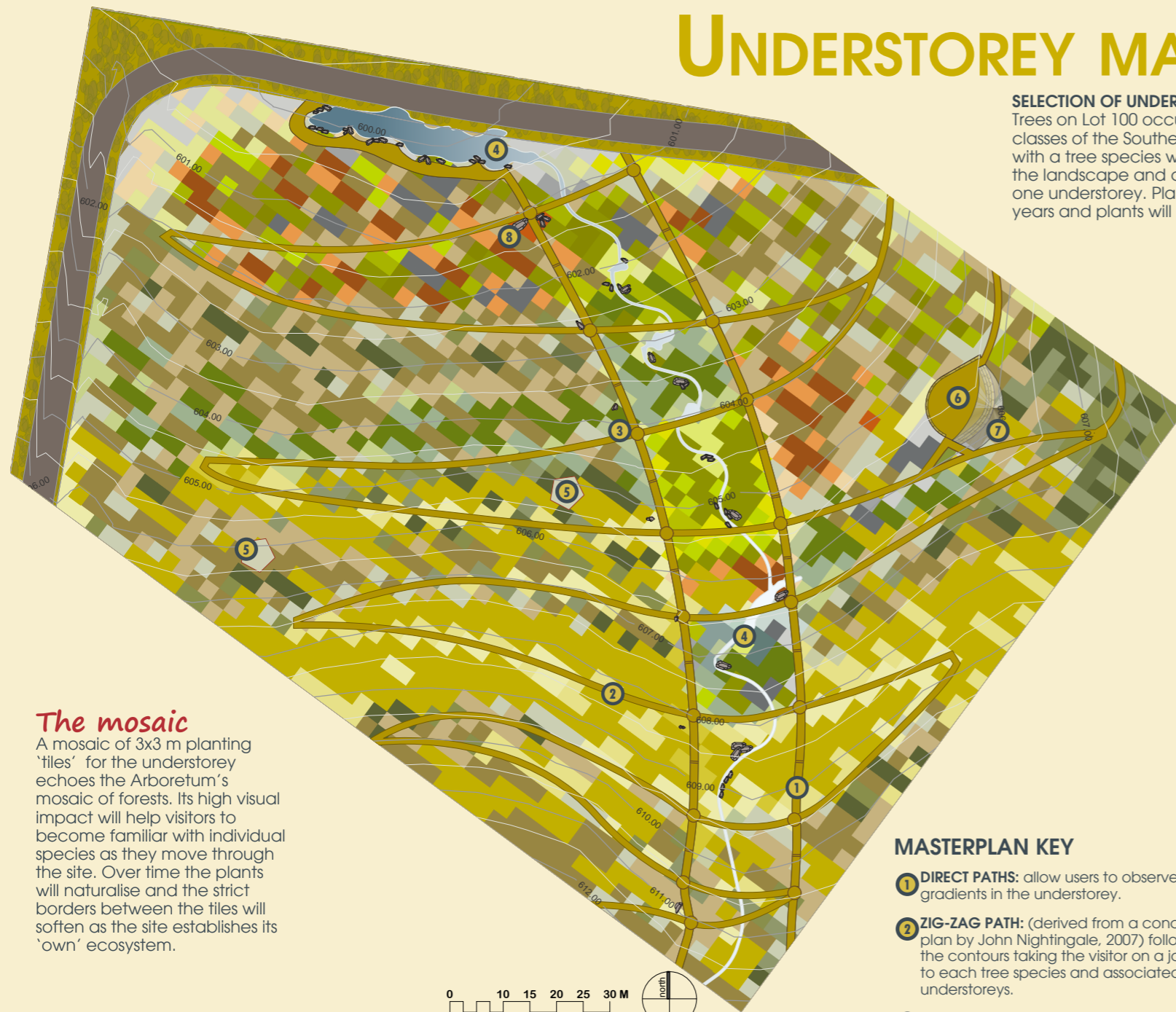


A REGIONAL BOTANIC GARDEN

STAGE 2

Telling the understorey

UNDERSTOREY MASTERPLAN



SELECTION OF UNDERSTOREY PLANTS

Trees on Lot 100 occur naturally in a range of vegetation formations and classes of the Southern Tablelands. The understorey plants associated with a tree species will differ depending on where the tree is found in the landscape and a tree species can be associated with more than one understorey. Planting of the understorey on Lot 100 will take several years and plants will be selected with the following in mind:

- Structural diversity (height, horizontal cover and vertical layering)
- Representation of indicative species in each vegetation class
- Representation of species indicative¹ of more than one vegetation class to show vegetation gradients
- Key plantings of iconic, rare, threatened and less common species in keeping with the arboretum's theme
- Significance in Aboriginal culture
- Longevity and hardiness in this location (in the short term this will exclude some species such as orchids until the micro-climate is suitable)
- Representation of the range of plant families in each vegetation class
- Representation of species which support rare and threatened fauna in the area
- Availability of suitable plants.

¹ 'Indicative species' selected by David Keith from regional or local studies as characteristic, frequently occurring, visually prominent or otherwise noteworthy. SOURCE: DAVID KEITH OCEAN SHORES TO DESERT DUNES 2004



MASTERPLAN KEY

- DIRECT PATHS:** allow users to observe gradients in the understorey.
- ZIG-ZAG PATH:** (derived from a concept plan by John Nightingale, 2007) follows the contours taking the visitor on a journey to each tree species and associated understoreys.
- INFORMATION NODES:** here visitors can stop and read about the trees and their associations.
- EPHEMERAL DRAINAGE LINES AND WETLAND:** create opportunities to grow plants tolerant of boggy conditions and sympathetic environments for insects and other animals.
- ENVIRONMENTAL SCULPTURE:** sharp turns in the path provide opportunities to surprise the visitor with a sculpture glimpsed through the trees.
- THE CLEARING:** a partly covered space with gabion seating where groups may gather to meet, hear lectures, have lunch and take in the sounds and sights.
- STORAGE SPACE:** on-site storage of STEP resources and a potential site for experimental roof garden using local species.
- ROCKS** relocated from elsewhere in the arboretum provide amenity for visitors and a micro-climate for plants, insects and other animals.

UNDERSTOREY KEY



The mosaic

A mosaic of 3x3 m planting 'tiles' for the understorey echoes the Arboretum's mosaic of forests. Its high visual impact will help visitors to become familiar with individual species as they move through the site. Over time the plants will naturalise and the strict borders between the tiles will soften as the site establishes its 'own' ecosystem.



A REGIONAL BOTANIC GARDEN

Telling the understorey

PLANTS

2011 Masterplan

TREES AND UNDERSTOREY PLANTS

VEGETATION FORMATION CLASS

VEGETATION FORMATION	CLASS	TREES	SHRUBS	VINES AND CREEPERS	HERBS	FERNS	GRASSES AND GRASS-LIKE PLANTS
WET SCLEROPHYLL FORESTS	Montane Wet Sclerophyll Forests	<i>Eucalyptus dalrympleana</i> , <i>E. delegatensis</i> , <i>E. pauciflora</i>	<i>Acacia dealbata</i> , <i>Bossiaea foliosa</i> , <i>Coprosma hirtella</i> , <i>Daviesia latifolia</i> , <i>Leucopogon gelidius</i> , <i>L. lanceolatus</i>	<i>Clematis aristata</i>	<i>Acaena novae-zelandiae</i> , <i>Asperula conferta</i> , <i>Dianella tasmanica</i> , <i>Stellaria pungens</i> , <i>Stylidium graminifolium</i>	<i>Polystichum proliferum</i> , <i>Pteridium esculentum</i>	<i>Elymus scaber</i> var. <i>scaber</i> , <i>Poa ensiformis</i> , <i>P. helmsii</i>
	Southern Tablelands Wet Sclerophyll Forests	<i>Eucalyptus dalrympleana</i> , <i>E. viminalis</i> , <i>E. dives</i> , <i>E. bridgesiana</i>	<i>Acacia dealbata</i> , <i>A. melanoxylon</i> , <i>Bossiaea foliosa</i> , <i>Bursaria spinosa</i> , <i>Cassinia longifolia</i> , <i>Hibbertia obtusifolia</i> , <i>Leptospermum myrtifolium</i> , <i>L. obovatum</i> , <i>Leucopogon gelidius</i> , <i>L. lanceolatus</i> , <i>Pomaderris cotoneaster</i>	<i>Clematis aristata</i>	<i>Acaena novae-zelandiae</i> , <i>Ammobium craspedioides</i> , <i>Calotis glandulosa</i> , <i>Geranium solanderi</i> var. <i>solanderi</i> , <i>Glycine clandestina</i> , <i>Gonocarpus tetragynus</i> , <i>Hydrocotyle laxiflora</i> , <i>Stellaria pungens</i> , <i>Swainsona sericea</i> , <i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	<i>Asplenium flabellifolium</i> , <i>Pellaea falcata</i> var. <i>falcata</i> , <i>Pteridium esculentum</i>	<i>Carex appressa</i> , <i>Elymus scaber</i> var. <i>scaber</i> , <i>Lomandra longifolia</i> , <i>Microlaena stipoides</i> var. <i>stipoides</i> , <i>Poa ensiformis</i> , <i>P. helmsii</i> , <i>P. sieberiana</i> var. <i>sieberiana</i>
FRESH-WATER WETLANDS	Montane Bogs and Fens	<i>Eucalyptus dalrympleana</i> , <i>E. stellulata</i>	<i>Bossiaea foliosa</i> , <i>Epacris breviflora</i> , <i>E. microphylla</i> var. <i>rhombofolia</i> , <i>Leptospermum continentale</i> , <i>L. myrtifolium</i> , <i>L. obovatum</i>	<i>Euphrasia scabra</i> , <i>Patersonia fragilis</i> , <i>Pratia surrepens</i> , <i>Stylidium graminifolium</i>			<i>Carex appressa</i> , <i>C. gaudichaudiana</i> , <i>Gymnoschoenus sphaerocephalus</i> , <i>Juncus falcatus</i> , <i>J. planifolius</i> , <i>J. usiatus</i> , <i>Phragmites australis</i> , <i>Poa induta</i> , <i>P. labillardieri</i> , <i>P. sieberiana</i> var. <i>sieberiana</i> , <i>Schoenus apogon</i>
HEATH-LANDS	Southern Montane Heaths	<i>Eucalyptus dalrympleana</i> , <i>E. dives</i> , <i>E. pauciflora</i>	<i>Hibbertia pedunculata</i> , <i>Indigofera australis</i>		<i>Stylidium graminifolium</i>		<i>Joycea pallida</i> , <i>Schoenus apogon</i>
DRY SCLEROPHYLL FORESTS	Southern Tablelands Dry Sclerophyll Forests	<i>Eucalyptus dalrympleana</i> , <i>E. macrorhyncha</i> , <i>E. rossii</i> , <i>E. dives</i> , <i>E. mannifera</i> , <i>E. albens</i> , <i>E. nortonii</i>	<i>Acacia dealbata</i> , <i>A. genistifolia</i> , <i>A. rubida</i> , <i>Cassinia longifolia</i> , <i>Daviesia latifolia</i> , <i>D. mimosoides</i> subsp. <i>mimosoides</i> , <i>Dillwynia glauca</i> , <i>Dodonaea procumbens</i> , <i>D. viscosa</i> , <i>Exocarpus strictus</i> , <i>Grevillea iaspicula</i> , <i>Hibbertia obtusifolia</i> , <i>Indigofera australis</i> , <i>Leptospermum continentale</i> , <i>Melichrus urceolatus</i> , <i>Pomaderris pallida</i>	<i>Hardenbergia violacea</i>	<i>Ammobium craspedioides</i> , <i>Dianella revoluta</i> var. <i>revoluta</i> , <i>Dichopogon strictus</i> , <i>Diuris aequalis</i> , <i>Geranium solanderi</i> var. <i>solanderi</i> , <i>Gonocarpus tetragynus</i> , <i>Microseris lanceolata</i> , <i>Stylidium graminifolium</i> , <i>Stypantra glauca</i> , <i>Wurmbea dioica</i>	<i>Pteridium esculentum</i>	<i>Joycea pallida</i> , <i>Lomandra filiformis</i> subsp. <i>filiformis</i> , <i>L. longifolia</i> , <i>Poa sieberiana</i> var. <i>sieberiana</i>
	Upper Riverina Dry Sclerophyll Forests	<i>Eucalyptus macrorhyncha</i> , <i>E. blakelyi</i> , <i>E. albens</i> , <i>E. nortonii</i> , <i>E. polyanthemus</i>	<i>Acacia dealbata</i> , <i>Dodonaea viscosa</i> , <i>Hibbertia obtusifolia</i> , <i>Indigofera australis</i> , <i>Leptospermum continentale</i>		<i>Dichopogon strictus</i> , <i>Geranium solanderi</i> var. <i>solanderi</i> , <i>Gonocarpus tetragynus</i> , <i>Hydrocotyle laxiflora</i> , <i>Stypantra glauca</i> , <i>Wurmbea dioica</i>	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	<i>Austrodanthonia pilosa</i> var. <i>pilosa</i> , <i>Austrostipa scabra</i> subsp. <i>falcata</i> , <i>Elymus scaber</i> var. <i>scaber</i> , <i>Lomandra filiformis</i> subsp. <i>filiformis</i> , <i>Poa sieberiana</i> var. <i>sieberiana</i> , <i>Xanthorrhoea australis</i>
GRASSY WOODLANDS	Subalpine Woodlands	<i>Eucalyptus dalrympleana</i> , <i>E. rubida</i> , <i>E. pauciflora</i> , <i>E. stellulata</i>	<i>Acacia dealbata</i> , <i>Discaria nitida</i> , <i>Daviesia mimosoides</i> subsp. <i>mimosoides</i> , <i>Hibbertia obtusifolia</i> , <i>Monotoca rotundifolia</i> , <i>Pomaderris cotoneaster</i> , <i>Rulingia prostrata</i>	<i>Clematis aristata</i>	<i>Acaena novae-zelandiae</i> , <i>Calotis glandulosa</i> , <i>Euphrasia scabra</i> , <i>Gentiana baeuerlenii</i> , <i>Geranium solanderi</i> var. <i>solanderi</i> , <i>Glycine clandestina</i> , <i>Gonocarpus tetragynus</i> , <i>Helichrysum scorpiodes</i> , <i>Stellaria pungens</i> , <i>Stylidium graminifolium</i> , <i>Swainsona sericea</i> , <i>Thesium australe</i> , <i>Viola betonicifolia</i> subsp. <i>betonicifolia</i> , <i>Wahlenbergia stricta</i> subsp. <i>stricta</i>		<i>Elymus scaber</i> var. <i>scaber</i> , <i>Lomandra longifolia</i> , <i>Poa induta</i> , <i>P. labillardieri</i> , <i>P. sieberiana</i> var. <i>sieberiana</i> , <i>Themeda australis</i>
	Tableland Clay Grassy Woodlands	<i>Eucalyptus viminalis</i> , <i>E. melliodora</i> , <i>E. pauciflora</i> , <i>E. stellulata</i>	<i>Acacia dealbata</i> , <i>A. melanoxylon</i> , <i>Dodonaea procumbens</i>		<i>Acaena novae-zelandiae</i> , <i>Asperula conferta</i> , <i>Calotis glandulosa</i> , <i>Chrysocephalum apiculatum</i> , <i>Geranium solanderi</i> , <i>Glycine clandestina</i> , <i>Hydrocotyle laxiflora</i> , <i>Muehlenbeckia tuggeranong</i> , <i>Pratia pedunculata</i> , <i>Swainsona sericea</i> , <i>Thesium australe</i> , <i>Viola betonicifolia</i> subsp. <i>betonicifolia</i> , <i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	<i>Pteridium esculentum</i>	<i>Bothriochloa macra</i> , <i>Carex gaudichaudiana</i> , <i>Elymus scaber</i> var. <i>scaber</i> , <i>Poa labillardieri</i> , <i>P. sieberiana</i> , <i>Sorghum leiocladum</i> , <i>Themeda australis</i>
	Southern Tablelands Grassy Woodlands	<i>Eucalyptus dives</i> *, <i>E. rubida</i> *, <i>E. melliodora</i> , <i>E. blakelyi</i> , <i>E. bridgesiana</i> , <i>E. nortonii</i> , <i>E. pauciflora</i> *	<i>Acacia melanoxylon</i> , <i>A. rubida</i> , <i>Bossiaea foliosa</i> , <i>Bursaria spinosa</i> , <i>Cassinia longifolia</i> , <i>Dodonaea procumbens</i> , <i>D. viscosa</i> , <i>Grevillea iaspicula</i> , <i>Hibbertia obtusifolia</i>		<i>Ammobium craspedioides</i> , <i>Asperula conferta</i> , <i>Bulbine bulbosa</i> , <i>Chrysocephalum apiculatum</i> , <i>Dianella longifolia</i> , <i>Eryngium ovinum</i> , <i>Geranium solanderi</i> var. <i>solanderi</i> , <i>Glycine clandestina</i> , <i>Gonocarpus tetragynus</i> , <i>Hydrocotyle laxiflora</i> , <i>Lepidium ginninderrense</i> , <i>L. hyssopifolium</i> , <i>Lotus australis</i> , <i>Plantago varia</i> , <i>Rutidosia leptorrhynchoides</i> , <i>Stellaria pungens</i> , <i>Swainsona recta</i> , <i>S. sericea</i> , <i>Thesium australe</i>		<i>Austrodanthonia pilosa</i> var. <i>pilosa</i> , <i>A. racemosa</i> var. <i>racemosa</i> , <i>Austrostipa bigeniculata</i> , <i>Bothriochloa macra</i> , <i>Elymus scaber</i> var. <i>scaber</i> , <i>Lomandra longifolia</i> , <i>Microlaena stipoides</i> var. <i>stipoides</i> , <i>Poa sieberiana</i> var. <i>sieberiana</i> , <i>Schoenus apogon</i> , <i>Themeda australis</i>

KEY
 TREES T
 SHRUBS S
 VINES AND CREEPERS V
 HERBS H
 FERNS F
 GRASSES AND GRASS-LIKE PLANTS G
 Aboriginal plant use
 Threatened species
 at high elevations = *

