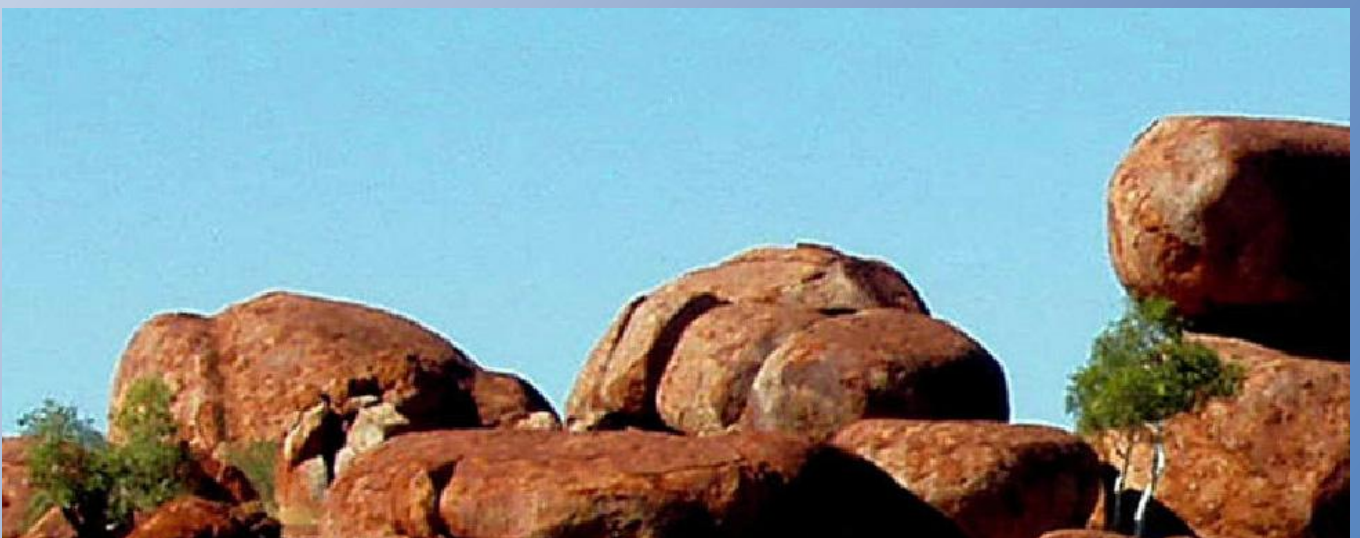


National Rock Garden

Celebrating the Geological Heritage of Australia

Newsletter No. 6

July 2013



www.nationalrockgarden.org.au

Recent developments

Brad Pillans, Chair of the NRG Steering Committee

It's official – the Australian National University (ANU) is an Education Partner of the NRG, after a memorandum of understanding was signed by ANU Vice Chancellor, Professor Ian Young and myself, on Tuesday 23rd April.



Meanwhile the NRG Steering Committee has been working with a team of landscape architects to develop a master plan for the garden (see below) which will be released at our Centenary of Canberra event on Sunday 13th October.

As I mentioned in our last Newsletter, a key element of the October event, will be the installation of a feature group of eight rocks, to be known as the 'Federation Rocks' – one from each state and territory, commemorating Federation and the foundation of Canberra. ACT Chief Minister, Katy Gallagher kindly wrote to each of the other state premiers and the Chief Minister of the Northern Territory, inviting them to contribute (and fund) an iconic rock to represent their State/Territory.

The ACT Chief Minister has also agreed to fund the acquisition of an appropriate ACT rock – probably limestone, since Canberra was known as the 'Limestone Plains' in the early years of European settlement. In the first half of the 19th century, limestone was keenly sought to make lime mortar for buildings, and there were abundant outcrops of limestone along the Molonglo River. Sadly, most of these are no longer visible, having been submerged under water when Lake Burley Griffin was filled in 1963/64.

At the time of writing, we are in negotiation with all State and Territory governments for the acquisition of the 'Federation Rocks', and I am quietly confident that we will have all eight rocks on site at the NRG by 13th October. Indeed, I am writing this column from the Pilbara region of WA, where I have been in discussion with Rio Tinto geologists at Mt Tom Price, to obtain a suitable specimen of Banded Iron Formation to be the WA Federation Rock.

Landscape Design

The National Rock Garden Steering Committee has engaged the internationally renowned landscape architect company Taylor, Cullity, Lethlean (TCL) to prepare a concept design for the site at the western end of Lake Burley Griffin.

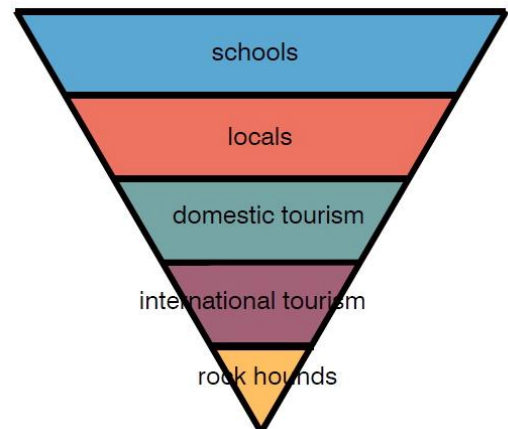
Among the many projects completed by TCL are the National Arboretum Canberra not far from the NRG site on the western side of Lake Burley Griffin , The Australian Garden (Cranbourne, Victoria), the Auckland Waterfront, and the Adelaide Botanic Gardens Masterplan.



***Rock feature at the Australian Garden, Cranbourne, Victoria
(photo- Sue Fletcher)***

On 11 April 2013 a one-day workshop was held at Geoscience Australia that enabled the TCL Director Perry Lethlean to discuss with stakeholders the background to the whole project and go through some of the important ideas that the Australian geosciences community were seeking to highlight in the National Rock Garden. A useful first step was to identify the main user groups of the NRG, the most numerous of which we expect will be school students (and their teachers).

User groups (TCL figure)



One issue that came up at the workshop was – we can't possibly incorporate all the ideas and rocks from around the whole of Australia into the space available at the NRG site. Some hard decisions will have to be made!

Project Themes

In the project brief to TCL, the following themes were identified as the significant threads of the National Rock Garden narrative. These themes were reconfirmed in the second workshop on the 31st May.

Rocks that built a continent - largest element and most of the largest specimens, organized to showcase rock type (igneous, sedimentary, and metamorphic), chronology, structures and processes

Landscapes – building an environment for life and human habitat (constructed elements) • Cliffs, coasts, streams, mountains, plains, deserts, vegetation and shelter

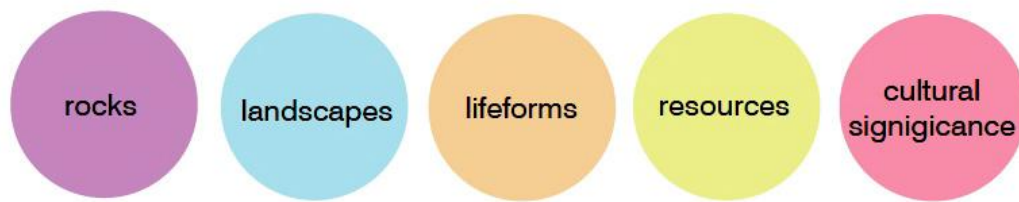
Life forms – evolving complexity and diversity (generally smaller specimens) • Single cell organisms to complex plants & invertebrates to dinosaurs & humans

Resources – the foundations of our industry, wealth & national identity (some v large specimens) • Energy – petroleum, coal and nuclear • Industrial – iron, base and precious metals, building materials, etc. • Agricultural – soils, trace elements, fertilisers, groundwater, terroir

Cultural Significance – our nation's treasure for more than 50,000yrs (signage important) •

Traditional – tools, art, spiritual & significant role in defining country & custodianship • Modern – settlement, buildings, infrastructure, wealth, federation & national identity • Future – connectivity between cultures,

environments, heritage, education & change • Scientific – discovery & education, understanding & predictive capability.



(TCL figure)

Themes provide a challenging framework for conceptually organising a garden experience. This is because:

Each of the themes has a lot to say!

There are many potential narratives that underpin each theme that require a lot of interpretation for the rocks and their stories to come alive. This is both unusual and difficult in a garden context. The themes are well suited to a Museum context where the interpretation media is able to be more varied.

It was recognised in the workshop that the garden stories will have to be very concentrated and limited for the visitor to take home the key messages. The conceptual breadth and diversity of each theme limits a strong overarching narrative, other than an idea about the “Geological evolution of Australia and how it shapes a nation.”

Thematic Scenarios

Several thematic scenarios were presented by TCL at the first workshop and used to test ideas on the garden design. . These thematic scenarios were used to explore:

- How the five key themes might translate to a garden arrangement.
- How alternative narrative structures can be used to inform the garden arrangement and yet contain each of the five themes as a sub-narrative.
- How visitors might arrive and move around the garden.
- How the idea of 100 rocks can link to the five identified themes.
- How there might be (at times) a working section of the garden, where demonstrations could be held, artisans might work with the stones, etc.
- How the garden will need to allow for a “gallery” for the display of rocks that are donated or are procured over time.

Other comments

- An inspiring design will reflect the nature of the essential elements of Australian landscape & outcrop.
- All rocks will have unique stories so their locations may need to reflect that aspect.
- The design should facilitate the education role of a National Rock Garden.
- Related specimens should be grouped in nodes, otherwise scattered through the peripheral regions, but connected by paths.
- Nodes should be connected to each other and the central core by meandering pathways.

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- Design could incorporate elements inspired by Aboriginal desert art forms.
- Native vegetation (ground covers, shrubs & some trees) should be used to compliment & separate.

At the second workshop, held on 31 May, a single preferred thematic scenario was discussed in detail. Suffice to say, that members of the NRG Steering Committee were excited by the emerging NRG masterplan which will be fully fleshed out in time for release on 13th October, fittingly, the first day of International Earth Science Week.

Sponsorship. Where's the big end of town?

Comments by Doug Finlayson

The National Rock Garden will not come to fruition without financial support and sponsorship from the BIG miners, BIG energy companies, BIG transport companies that make Australia's economy the envy of the world. Having just returned from a visit to western Canada I have seen at first hand how industry sponsorship can make a spectacular enduring legacy for the nation and future generations of Canadians and how industry giants take pride in their achievements.



***UBC newly-opened Earth Sciences Building
(photo – Doug Finlayson)***

The University of British Columbia (UBC) campus in Vancouver has got to be one of the most beautiful in the world. Its new Earth Sciences Building cost over \$50M and was largely paid for by the mineral and energy resource industries. The acknowledgements read like a Who's Who of the Canadian resource industry companies.

The Archaeological and Heritage Museum on the same campus and with similar price tag was largely funded by the timber industry.

*Muttart Conservatory,
Edmonton, part of a much
larger under-cover facility
that illustrates plant species
from around the world,
including Australia. (photo
– Doug Finlayson)*



The stunning Butchart Gardens on Vancouver Island were totally funded by the quarrying industry and attract over 1,000,000 paying tourists a year. The Muttart Conservatory in Edmonton, Alberta, has got to be world class and was largely funded by benefactions and the agricultural grain industries.

In a similar vein, here in Australia millions of dollars are needed to build the National Rock Garden. There are golden opportunities for sponsorship arrangements within the National Rock Garden that celebrate Australian industrial and resource industry achievements.

Friends of the National Rock Garden, I ask that you become pro-active and talk to your connections in industry, government, professional associations, and private enterprise. Talk to those on the boards of companies in the big end of town. Spread the word. The National Rock Garden is envisaged as a national legacy that, surely, the BIG companies would be proud to be part of.

Australian landscapes

Otway Basin and the Shipwreck Coast, Vic.

(Adapted from Geoscience Australia and Parks Victoria information)

The limestone coastline of South Australia and south west Victoria is known as the Shipwreck Coast. This section of coastline is made up of spectacular cliffs, reefs, islands and outcrops of rocks. In combination with the winds of the 'roaring forties' and the often stormy seas, sailing these waters up until the middle of the 20th century could be very dangerous. Along a 130 kilometre stretch of the Victorian coast from Port Fairy to Cape Otway alone there are over 80 shipwrecks.

The Historic Shipwreck Trail along the Shipwreck Coast and the Discovery Coast of southwest Victoria shows some of the sites where gales, human error and, in some cases, foul play caused these vessels to be wrecked. A tourist car drive along Victoria's Great Ocean Road reveals some of this spectacular coastal cliff scenery including the Twelve Apostles, a group of sea stacks near Port Fairy.



*The Twelve Apostles
along the southwest
coastline of Victoria
(Photo – Doug
Finlayson)*

The coastal cliffs reveal something of the geology of the Otway Basin that stretches from South Australia to Cape Otway in Victoria.

The Otway Basin is a large, northwest trending sedimentary basin on Australia's southern margin with the Southern Ocean. The basin formed when the Australian continent began rifting away from the Antarctic continent during the Late Jurassic geological epoch (about 150 million years ago). The early continental rifting of the Gondwana super-continent resulted in the east-west trending onshore centres of sediment deposition that comprise the Inner Otway Basin.

Subsequently, renewed rifting during the Late Cretaceous geological epoch culminated in continental breakup of the Gondwana super-continent in the Maastrichtian geological age (about 72-66 million years ago). This produced northwest-southeast trending depocentres beneath the Australian offshore outer continental shelf and slope under the Southern Ocean. Multiple phases of compression in the Cretaceous, Neogene and Quaternary geological periods (since about 65 million years ago) resulted in inversion and wrenching of pre-existing geological structures. The Otway Basin has a maximum total sediment thickness of about 13,000 metres.

The Otway Basin is prospective for oil and gas both onshore and offshore. The most significant hydrocarbon occurrences in the Otway Basin are the gas fields (onshore / offshore) in Early and basal Late Cretaceous reservoirs in Victorian and South Australian parts of the basin. Most gas accumulations have a low condensate content, but some occurrences contain a high proportion of carbon dioxide.

Production of natural gas from the Victorian onshore fields supplies domestic and industrial users in western Victoria through a 200 kilometre (km) gas pipeline network. An additional 130 km of gas pipeline links the Otway Basin network back to Lara and hence to the Victorian and South East (SE) Australian gas network. Depleted onshore fields in the Port Campbell area are used for underground gas storage to supply gas during peak demand periods.

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What the tourists see along the Great Ocean Road and the Shipwreck Coast are the beautiful cliffs associated with the geologically quite young (less than 27 million years old) Heytesbury Group of rocks that include the Port Campbell Limestone (15 to 5.5 million years old). This rock group has been eroded by sea level rise since the last ice age maximum 21,000 years ago to form the diverse rock formations and cliffs we see today.



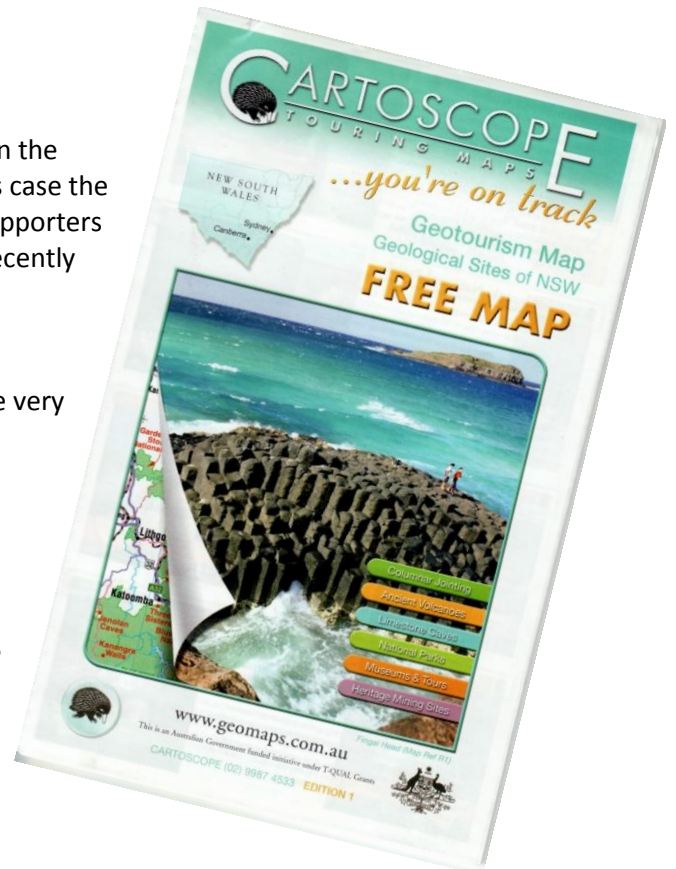
*Sea cliffs of the Port Campbell National Park, Victoria.
(Photo – Doug Finlayson)*

Useful NSW Geotourism Map -

The National Rock Garden Newsletter is not generally in the business of promoting commercial products, but in this case the Geological Society of Australia is one of a number of supporters of the ***“Geotourism Map – Geological Sites of NSW”*** recently published by Cartoscope in their Touring Maps series.

It’s free at tourist outlets and information centres. This publication is by the same company that puts out these very useful, free touring maps for a large number of regions around NSW.

About ninety-six geotourism sites are identified on the map ranging from Fingal Head Giant’s Causeway near Tweed Heads in the north to Perry Sand Hills near Mildura in the west and The Pinnacles near Eden in the south. The whole focus of all the sites on the map is on the natural geological features. Pick one up at your nearest Tourist Information Centre.



Feedback and further information

The Geological Society welcomes feedback and suggestions on the development of the National Rock Garden. See the feedback boxes on the National Rock Garden web site – www.nationalrockgarden.org.au

Tax deductible

The National Rock Garden is a registered Charity and all donations are tax deductible. Making a donation to the National Rock Garden is a great way to reduce your tax and feel good too! To make a donation, please visit the NRG website or phone (02) 9290 2194.

Sponsoring the National Rock Garden

Building the National Rock Garden will take the participation of many volunteers, involve different tiers of government, provide work for contractors, designers and builders and ultimately involve many organisations and people. As highlighted above, we need major donors and sponsors to work with us as we build this national monument in the nation's capital. If you or your organisation would like to be financially involved, please contact Prof. Brad Pillans, brad.pillans@anu.edu.au or Sue Fletcher, sue@gsa.org.au

Late News

A new sign has gone up at the National Rock Garden site at the western end of Lake Burley Griffin off Lady Denman Drive.



Newsletter – compiled by:

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The newsletter is circulated twice a year, Dec/Jan and June/Jul. New “friends” are welcome and can be added to the email circulation list by contacting the editor. You don’t have to be an earth scientist. Members of the public, students and educators with an interest in the evolution of the Australian continent are all welcome. Newsletters are also posted on the National Rock Garden web site –

www.nationalrockgarden.org.au



National Rock Garden

Celebrating the Geological Heritage of Australia

To recognise, acknowledge and celebrate Australia’s rich geological heritage in a parkland setting within the nation’s capital, and demonstrate to present and future generations of Australians the diversity of the rocks and minerals that contribute so significantly to the nation’s landscapes, heritage and prosperity.

www.nationalrockgarden.org.au