National Rock Garden

Celebrating the Geological Heritage of Australia

Newsletter No. 17
April 2019

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The concept of an Interim Gallery Display for the National Rock Garden

Mike Smith, Matt Townsend and Brad Pillans, NRG Steering Committee

Introduction

The National Rock Garden (NRG) is a long running initiative to install a national-scale exhibition of the geological history and features of Australia. The NRG is being promoted and progressed by a Steering Committee of volunteers.

In 2013, a comprehensive Masterplan was prepared by Melbourne landscape architects Taylor Cullity and Lethlean (TCL), using a grant from our Education Partner, the Australian National University. This masterplan is available on the NRG website. In 2016, the Steering Committee commissioned Sydney architects Tonkin Zulaikha Greer (TZG) to design an Educational Pavilion and the associated Rock Gallery using a grant from the Australian Geoscience Council. TZG also undertook a cost estimate on these works. Together with our estimate of the cost of shipping Gallery specimens to site, a total figure of six million dollars is considered realistic. We do not have a full costing of the entire NRG project as envisaged in the TCL Masterplan, but we expect that the total will be 4 to 5 times the cost of the work specified by TZG. It is noteworthy that TCL and TZG were also the joint design team for the National Arboretum in Canberra.

Economic conditions in the foreseeable future suggest that the commercial world will not be flush with funds over the next 5–6 years. Therefore, the Steering Committee has developed the concept of an Interim Gallery Display, which would enable the National Rock Garden to open, but without the more expensive components of the Masterplan. Over the past 18 months, we have participated in workshops relating to the development of the Yarramundi Peninsula Precinct Structure Plan, as discussed 12 months ago in Newsletter Number 15.

The Concept for an Interim Gallery Design

Since the issue of the NRG Masterplan, the NCA's plans for the Lindsay Pryor National Arboretum precinct have evolved somewhat. Rather than embrace the entire scope of the NRG Masterplan, the NCA has indicated that an initial implementation of the National Rock Garden should be created in the south east corner of the NRG site to test the concept. The area available is suitable for an interim implementation of the Gallery feature of the Masterplan, so the NRG Steering Committee has developed the concept of an Interim Gallery Display, and associated support features.

The work necessary for implementation of the Interim Gallery Display has five components:

- creation of the Interim Gallery Display,
- formalisation of the existing temporary rock storage area,
- creation of a Landmark Feature in the SE corner of the NRG Precinct,
- landscaping in the affected areas, and
- retention of the existing Federation Rocks display.

Each of these components were elements of or implicit in the original Masterplan. The sites described here are shown in Figure 1.

The site for the Interim Gallery Display in the southeast quadrant of the NRG precinct is set on a gentle north to south slope of about 1 in 30. The Interim Gallery space is roughly triangular with north/south and east/west dimensions of about 110m. This area has relatively smooth surfaces either side of a slight ridge sloping down to left and right, which directs runoff water to lower areas either side.

The design of Interim Gallery has the rock exhibits grouped into Themes, as listed in the lower left portion of Figure 2, which unify and contextualise the rock exhibits in time and space. The themes are grouped in a logical order along a meandering, closed-loop pathway. A space in the centre of the feature both reinforces the loop aspect of the gallery design and allows for an explanatory node, which provides sense-making for the exhibit.

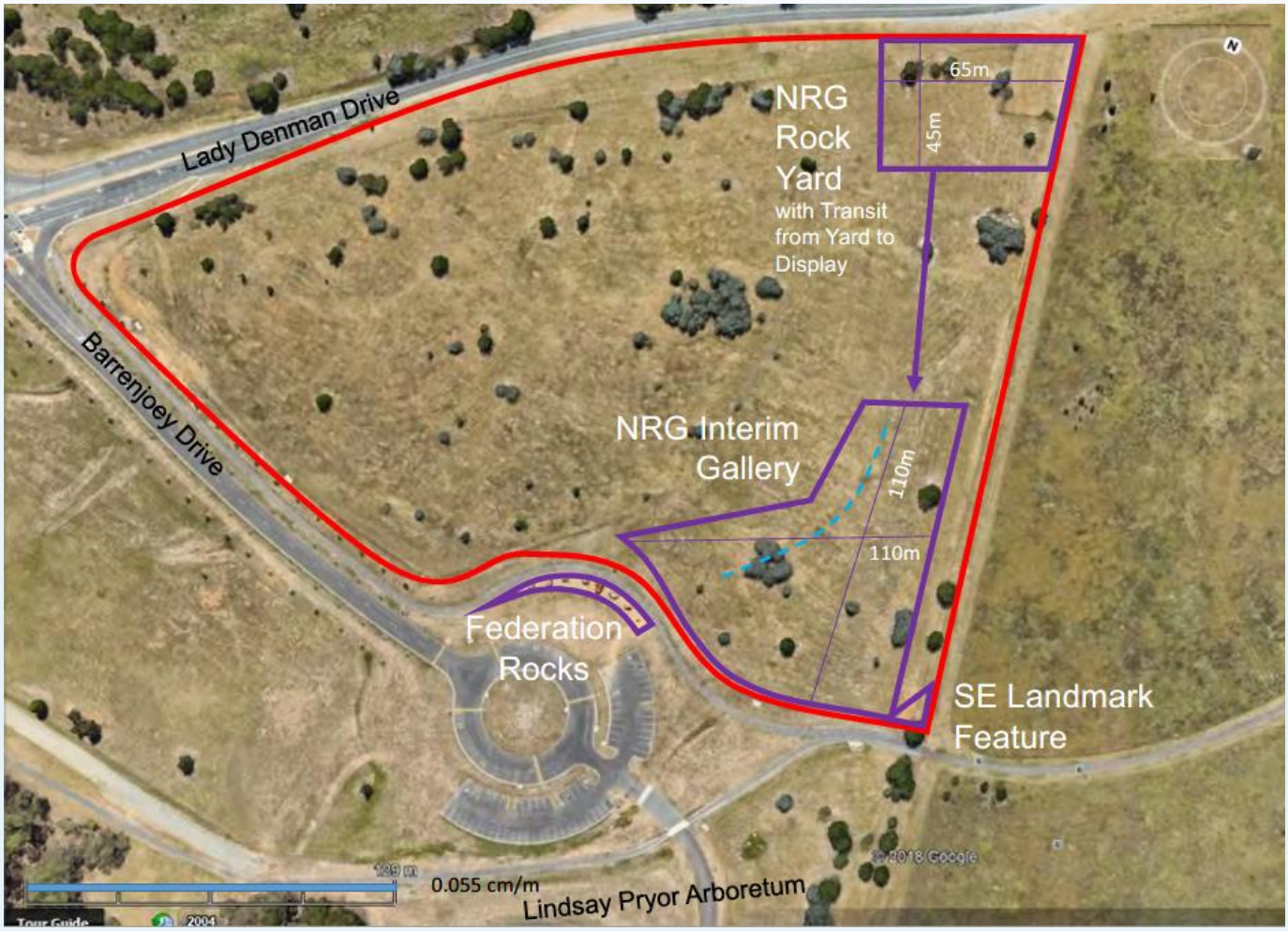


Figure 1. Proposed location of the Interim Gallery Display in the southeast corner of the NRG Precinct

The site is currently covered in patchy grass with small groups of shrubby acacias. Some of these shrubs may have to be removed to allow emplacement of rocks, though some clumps might be retained for shelter against prevailing winds whilst the more structured landscaping plants grow to maturity.

The plan for utilising the space in the southeast corner of the NRG Precinct is to emplace a compact representation of the eventual NRG gallery content, as shown in Figure 2.

Figure 2. Initial Placement of Large Specimens in an Interim Display

Significant features of this plan for the Interim Gallery Display include:

- a main entrance facing the Federation Rocks and carpark at Barrenjoey Drive,
- a formed crossing to the present drainage ditch adjacent to the cycle path,
- a 2 m wide walking track winding through the rocks accommodating both walking and wheeled visitors,
- a space between rocks of about 3 metres,
- a site in the middle for explanatory material,
- a surrounding line of vehicle-excluding barrier rocks from local sources, including vehicle access gates,
- minor relocation of an existing wire fence,
- preservation of a 6 m wide access lane through the middle for the cranes and trailers required for emplacement of rocks, and
- avoidance of the excavation zone of the future Gallery indicated on the Masterplan.

The Steering Committee has developed a five-year plan for the implementation of the Interim Gallery Design and a detailed annual costing for the various stages, with a total cost of around $300,000 plus the rock shipping expenses. We are currently preparing a comprehensive Works Application for submission to the National Capital Authority. Subject to approval of our application by NCA, we hope to be able to install the first rocks in the Interim Gallery Display later this year.

The Mawson Charnockite: a small piece of Antarctica for the National Rock Garden

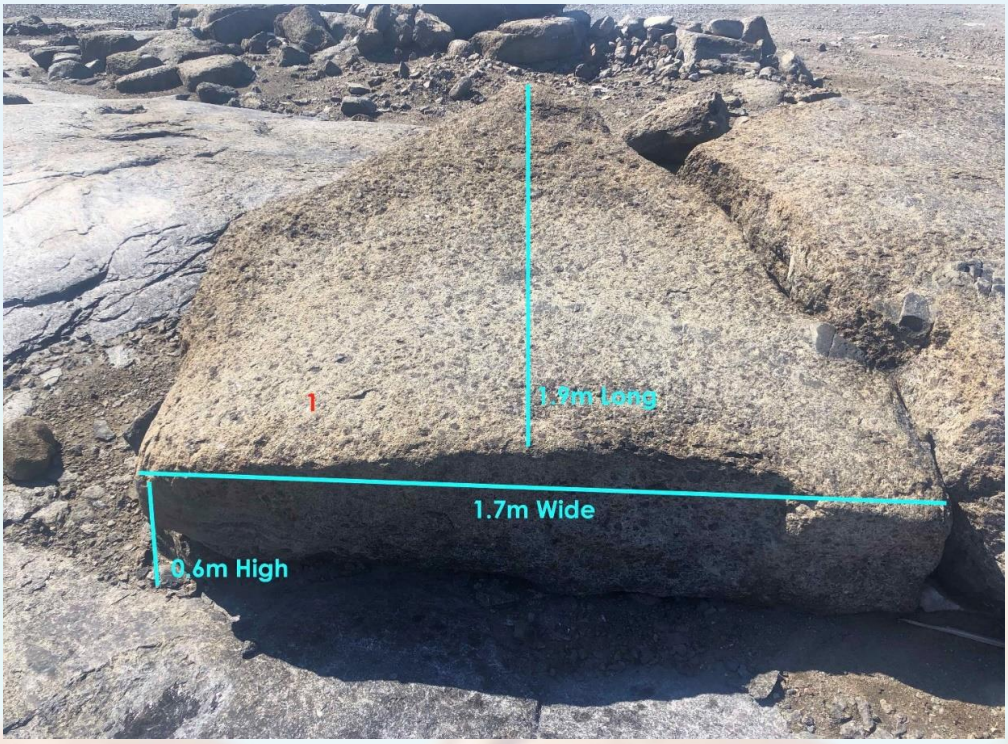
Ken McQueen, NRG Steering Committee member

The latest donations to the National Rock Garden are two magnificent samples of Mawson Charnockite from Antarctica.

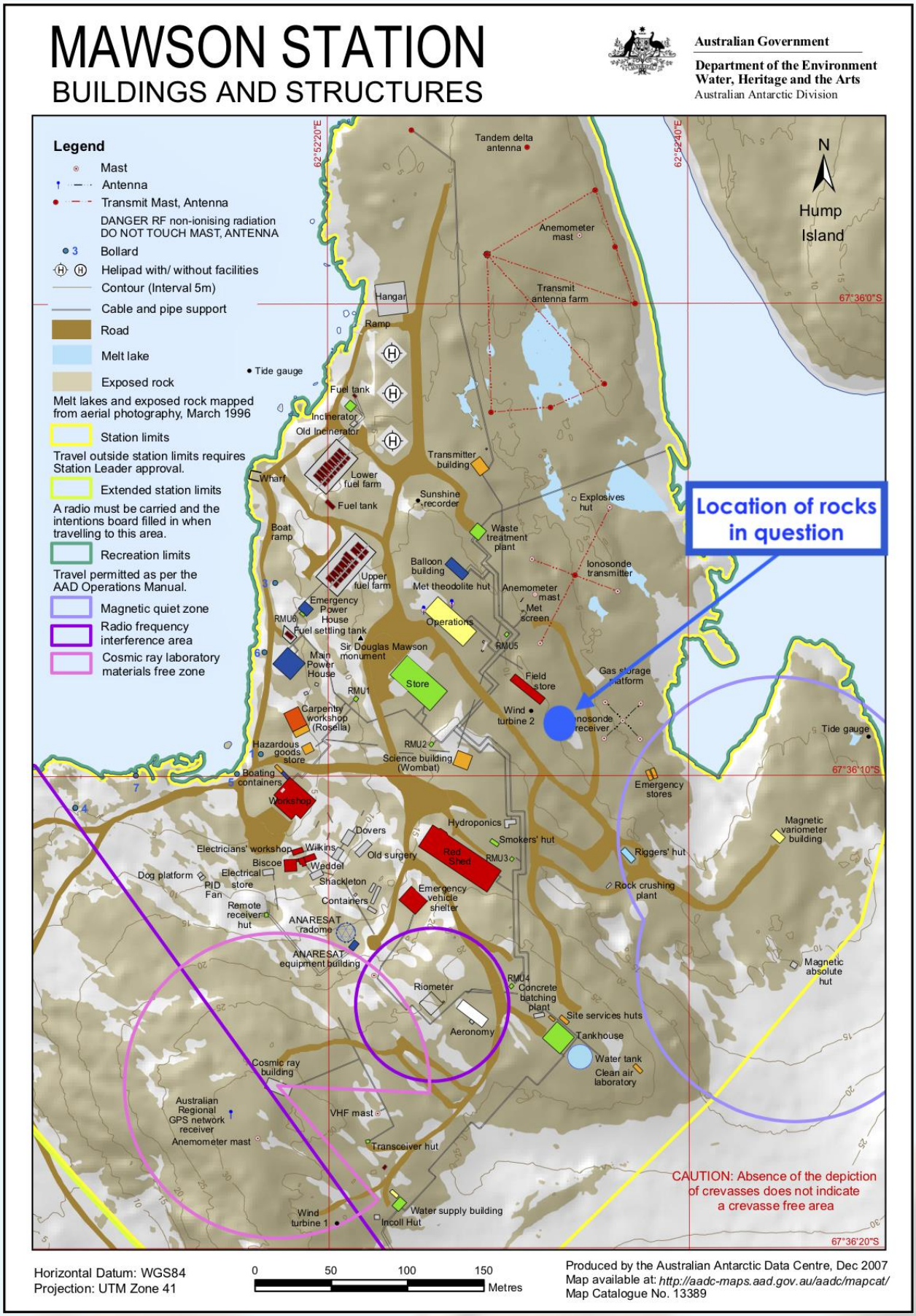
Charnockites are granite-like rocks typically composed of quartz, K-feldspar, plagioclase and orthopyroxene. They are found in high temperature-high pressure metamorphic areas of the Earth's crust, but ideas on their origin have been controversial. Once thought to be igneous rocks crystallised from magmas, because of their granular texture, they are now generally considered metamorphic rocks formed by deep crustal, high-temperature and high-pressure metamorphism, or possibly igneous rocks subsequently subjected to such metamorphism. Charnockites are distributed throughout the Precambrian shield areas of the southern continents (formerly making up Gondwana). In Australia, they are found near Cape Leeuwin and Cape Naturaliste near Albany, Esperance Bay, Eyre Peninsula, and the Musgrave Ranges.

The name charnockite was proposed by T.H. Holland in 1893 to honour Job Charnock who was an employee and administrator of the English East India Company. Controversially considered the founder of Calcutta (modern day Kolkata in India), Job died in 1693 and was buried in a simple grave at St John's Church, Calcutta. In 1695 Job's son-in-law, Sir Charles Eyre, erected a mausoleum over his tomb. The polished and engraved tombstone is made from dark greenish rock mined from St Thomas Mount near Chennai and subsequently named charnockite.

The Mawson Charnockite occurs around Mawson Station, one of Australia's three research bases in Antarctica. Both the station and the rock are named after Sir Douglas Mawson, Australia's most famous Antarctic explorer and a prominent geologist. Originally informally named the Mawson Granite by Chron (1959), it was later formally defined as Mawson Charnockite by Trail (1970). The rock is described as a brown, gneissic charnockite with a slight to moderate foliation and numerous xenoliths. Where its contacts with other rocks are exposed, it appears to be intrusive into these rocks. The Mawson Charnockite has been dated at around 954 million years (Australian Stratigraphic Units Data Base, 2019).



One of the Mawson rocks in its original location in Antarctica. Image courtesy the Australian Antarctic Division.



Location map showing Mawson Station and the original site of NRG specimens

The inspiration for including a sample of the Mawson Charnockite in the National Rock Garden came from the late Professor Patrick Quilty. Professor Quilty was a palaeontologist and geologist who was passionate about Antarctic geoscience and its promotion internationally. He made many research trips to Antarctica and rose to the position of Chief Scientist with the Australian Antarctic Division from 1981 to 1999. He also had a long association with the international Scientific Committee on Antarctic Research, including as Vice President. Patrick believed that a piece of Antarctica from Australia's Antarctic Territory would be a fitting memorial to the work of Sir Douglas Mawson and other Australian geologists and scientists who have contributed to understanding the frozen continent. The rock also provides a reminder of the geological connections of Australia to the other southern continents as part of Gondwana.

The National Rock Garden has arranged with the Australian Antarctic Division to receive two large blocks Mawson Charnockite. These will be the first specimens organised for the NRG that come from the Australian Territories.

The specimens designated for shipment on the research vessel Aurora Australia (see image below) were selected by senior staff of the Australian Antarctic Division. The location of the samples at Mawson Research Station is shown on the map above.

After receiving customs and quarantine clearance, the two large rocks were transported to the Mineral Resources Tasmania (MRT) Core Storage Facility at Mornington on the 22nd of March. The rocks were placed carefully up against the inside of the security fence, as directed by senior MRT staff (see image). They will be securely stored on the wooden pallets at the Core Storage Facility until sufficient funding is raised to provide for the shipment of the rocks to Canberra and preparation of the specimens for display.

The National Rock Garden acknowledges the Australian Antarctic Division for the donation of these samples and their assistance in transporting them from Antarctica to Tasmania. The NRG Steering Committee also thanks Mineral resources Tasmania for agreeing to safely store the rocks until they can be transported to Canberra.

Mawson rocks in containers on barge ready for loading onto the Aurora Australis. Image courtesy the Australian Antarctic Division.

Photograph of the Australian Antarctic Division vessel "AURORA AUSTRALIS" in Fremantle. Image courtesy R.N. England.

The two Mawson Charnockite specimens securely stored at the MRT Core Storage Facility in Hobart. Image courtesy Steve Newett.

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Space rocks reveal Earth!

The National Rock Garden will be participating in three events during the Canberra and Region Heritage Festival.

See meteorites, tektites, volcanic bombs & other exciting rocks that reveal the internal structure of our earth and the links to other parts of the solar system.

Saturday 13 April
10.00 am – 3.00 pm
In the grounds of Gungahlin Homestead, at the
National Trust ACT Open Day
80 Bellenden Rd, Crace

Sunday 28 April
10.00 am – 4.00 pm
At the National Dinosaur Museum
Gold Creek Rd, Nicholls

Saturday 4 May
10.00 am – 4.00 pm
In the Namadgi Visitors Centre,
ACT Parks and Conservation Service
(Along with their display
Photographing the Milky Way in Namadgi)
Naas Rd, Tharwa

The festival runs from 13 April to 5 May and you can find out more at: www.act.gov.au/heritagefestival

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NRG Steering Committee member named as National Champion

By Mike Smith, NRG Director

Dr Marita Bradshaw joined the Steering Committee of the National Rock Garden in 2018 and has been an enthusiastic contributor to our planning and communication activities.

Dr Marita Bradshaw, National Geoscience Champion

The author thanks the Australian Geoscience Council for the accompanying photograph and the following citation (in italics), both of which are available at http://www.agc.org.au/geoscience-in-australia/national-geoscience-champion/.

"In recognition of her contribution to Geoscience in Australia, Marita Bradshaw has been selected as a National Champion by the Australian Geoscience Council.

Marita Bradshaw is a leading petroleum geologist who has worked tirelessly in developing and providing relevant, high-quality data and analysis for the oil and gas industry. She has made significant contributions to Australian geology by developing the Australian petroleum systems framework and by building new understanding of the petroleum geology of the southern margin, North West Shelf and Lord Howe Rise.

Marita is an effective and engaging communicator, as well as a highly-regarded mentor and educator. She is an outstanding role model for industry -government cooperation for the betterment of Australia. Her enthusiasm, passion, and commitment have helped promote Australia's oil and gas potential both nationally and internationally, and have especially helped in the search for new petroleum provinces in the country's offshore sedimentary basins".

Marita completed her high school education at Hornsby Girls High School, where she developed a keen interest in chemistry. Like many others, she discovered geology in first year at university, as it was not available at Hornsby High. She completed a double Bachelors degree in geology and geography at the University of Sydney. She undertook her PhD research at the University of Western Australia on carbonate and evaporite geology of Lake McLeod.

Her professional experience includes Geologist at the Bureau of Mineral Resources, Minerals Geologist for Carpentaria Exploration, Petroloeum Geologist at both Esso Australia and at Western Mining Corporation, and Senior Science Advisor at Geoscience Australia occupying a series of technical, managerial and executive roles with a focus on revealing and promoting the petroleum prospectivity of Australia. While on staff exchange with WMC Resources she was involved in a global basin screening program and contributed detailed assessments for China and Argentina. She is now a Consulting Petroleum Geologist based in Canberra.

In 2007, the Australian Petroleum Production & Exploration Association (APPEA) presented Dr Bradshaw with the prestigious Lewis G Weeks Gold Medal, which recognises outstanding contributions to the development of the petroleum exploration and production industry in Australia. She is a Distinguished Member of the Petroleum Exploration Society of Australia and delivered a series of eminent lectures for that group in 2014.

A very interesting interview with Dr Bradshaw speaking with Fiona Rothchilds for the Oral History and Folklore Collection at the National Library of Australia may be accessed at http://nla.gov.au/nla.obj-220514083/listen.

Left: Marita Bradshaw receives the National Champion award at the AGCC 2018 convention dinner from Sandra Menpes, Team Leader NT Onshore Exploration at Santos Ltd, representing PESA. Image courtesy of Mike Smith.

Lucky winner of Mookaite specimen prize draw at AGCC 2018

The NRG Steering Committee promoted the National Rock Garden at the Exhibition accompanying the Australian Geoscience Council Convention held in Adelaide in October last year. The figure on the right shows Brad Pillans and Mike Smith, NRG Directors, in the NRG Booth. Brad is holding a rather remarkable specimen of a rock known as Mookaite, which we offered as a prize for dropping a business card into a collection bowl.

Mookaite is a visually striking gemstone found close to the Kennedy Ranges near Gascoyne Junction, a small town east of Carnarvon in WA. The name Mookaite is derived from its location at Mooka Creek, on Mooka Station, which was once a large sheep grazing property.

Brad Pillans (left) and Mike Smith, NRG Directors, at the NRG booth at the AGCC.

Jessica Keast, Prospectors Supplies Pty Ltd, conducting the prize draw at the NRG booth.

Mookaite is a type of chert or chalcedony, a fossiliferous sedimentary rock that is found in a formation called the Windalia Radiolarite.

This specimen was kindly donated by Tom Kapitany of the National Dinosaur Museum in Canberra, we thank him for that support.

The prize was drawn by Jessica Keast of Prospectors Supplies Pty Ltd, who occupied the exhibition booth adjacent to the NRG Booth. Jessica is shown fulfilling her duties together with Brad in the image to the left.

The winner of the wonderful specimen was Karen Webster, Senior Staff Geologist with Beach Energy Limited in Adelaide.

Karen was not available to receive the prize before the Convention Exhibition area was packed up, so Rowena Duckworth of the NRG Steering Committee, organised delivery of the rock to Karen, and Karen sent us the very happy selfie (image right) holding the Mookaite rock.

Karen Webster, winner of the Mookaite specimen prize draw at the AGCC 2018. (All pictures courtesy Mike Smith)

The Federation Rocks display at the National Rock Garden

National Rock Garden

Celebrating the Geological Heritage of Australia

Although work by committee members and friends of the National Rock Garden is voluntary, we nevertheless incur the regular costs of an incorporated entity. There are also costs for transport and delivery of rock specimens, preparation of specimens for display, creation of descriptive plaques for the rocks, and maintenance of the NRG site.

The acquisition and display of the Mount Gibraltar Microsyenite in March 2018 was a great success, with good local, regional and national publicity. We are currently documenting proposed new rock garden display specimens and planning a major fund-raising campaign to construct an education pavilion and outdoor rock display gallery. We are also building our contacts with the ACT and Federal Governments for critical co-funding opportunities.

While the committee pursues major funding from corporate and government sources, the ongoing costs must be met. We therefore seek donations from individual geoscientists who recognise the importance of geoscience and geoscience education to the future of Australia.

WE WOULD REALLY APPRECIATE YOUR FINANCIAL SUPPORT

Please Make a Donation (tax deductible):

NAME: .....

ADDRESS: .....

CREDIT CARD: Visa ..... Mastercard..... (Please tick one)

CREDIT CARD NUMBER: .....

NAME ON CARD: ..... EXPIRY DATE: .....

EMAIL ADDRESS: .....

PHONE NUMBER: ..... DONATION AMOUNT: $ .....

SIGNATURE: .....

Please mail/email this information to National Rock Garden Trust Inc. c/- Geological Society of Australia, Level 2, 141 Peats Ferry Road, Hornsby, NSW 2077 Email: nationalrockgarden@gsa.org.au

A cheque made out to the National Rock Garden Trust would also be fine.

Feedback and further information

We welcome feedback and suggestions on the development of the National Rock Garden. See the feedback boxes on the National Rock Garden website:
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.

Join our mailing list

The newsletter is circulated twice a year, ordinarily March and September. New "friends" are welcome and can be added to the email circulation list by contacting the editor.

Keep up with the latest NRG news, rock movements, rocks of the month and a whole lot more. Like us on Facebook:
https://www.facebook.com/pages/National-Rock-Garden

Newsletter compiled by Mike Smith and Michelle Cooper. Edited by Brad Pillans and Mike Smith.