



National Rock Garden

Celebrating the Geological
Heritage of Australia

Newsletter No. 15
March 2018

National Rock Garden status report

Grants received for Mount Gibraltar Microsyenite

Invitation to the opening of the Mount Gibraltar Microsyenite Display at the NRG

Visit of summer school group to the Federation Rocks

Brad's home garden to feature on ABC TV's Gardening Australia program

A rock for an artist—Adelong Norite

Science meets Parliament 2018

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The National Rock Garden is proudly supported by the Geological Society of Australia and the Australian National University



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www.nationalrockgarden.org.au

National Rock Garden status report

Mike Smith, NRG Director

The land which was gazetted for the location of the National Rock Garden occurs within the Yarramundi Peninsula Precinct of the foreshore region of Lake Burley Griffin. Yarramundi Peninsula (see map below) is managed by the National Capital Authority (NCA) which is responsible for ensuring the full range of functions (to maintain, enhance and promote the national qualities of the National Capital) are performed for the Commonwealth on behalf of the Australian people (NCA 2017). The Authority's role of fostering awareness of Canberra as the National Capital is also developing as a major focus for the future, with the goal to build the National Capital in the hearts of all Australians. The NCA seeks to do this by creating an enduring capital which is relevant to all Australians and which is recognised as a place for important events and ceremonies.



Location map with Yarramundi Peninsula shown in red cross-hatching, adjacent to Lake Burley Griffin shown in green. Figure from Godden Mackay Logan, 2008

In addition to the site of the National Rock Garden, the Yarramundi precinct contains the Lindsay Pryor National Arboretum, Roman Cypress Hill, a declared Natural Grassland (critical lizard and grasshopper habitat), and the Australian Indigenous Leadership Centre.

In December 2016, the NCA called for tenders to develop a Structure Plan for the Yarramundi Peninsula, with the goal of generating “a long term strategy to address the spatial and infrastructure provisions and planning challenges for the Yarramundi Peninsula Precinct. Interventions need to be coordinated in a way that will inform the long term development and management of the Precinct” (AusTender 2016). To achieve this, the objectives of the Structure Plan are to:

- Identify the principles towards a precinct vision
- Develop a structure for site activation and engagement, including increased opportunities for ceremonial and cultural events, as well as tourism



National Rock Garden – Newsletter No. 15

- Improve pedestrian, cyclist and transport movement and accessibility which facilitates connections both within and external to the site, and
- Strengthen the natural and cultural heritage of the precinct.

The NCA contracted the Sydney-based consultancy, Jane Irwin Landscape Architects (JILA) to undertake the development of the Structure Plan. Representatives of 32 stakeholder organisations were invited to participate in 2 workshops held in Canberra. Key outcomes of the stakeholder workshops were a desire to retain a “naturalistic” theme for the peninsula (in terms of trees, grassed areas and the lake edge while avoiding commercial development), and an acceptance of educational opportunities on the peninsula through the National Rock Garden, the arboretum, the grasslands and the lakeside. An interest in improved pedestrian and cyclist access was also prominent.

The directors of the National Rock Garden actively participated in this process by:

- Attending and speaking at both public workshops
- Meeting privately with JILA staff in Canberra and Sydney
- Holding a meeting of the Steering Committee on site
- Corresponding directly with NCA about key issues, with the goal of retaining all or at least most of the highly valued elements of the NRG Masterplan.

The final version of the Structure Plan is particularly important for the National Rock Garden because we are very keen to finalise a Memorandum of Understanding (MOU) with the NCA, and because the current draft MOU binds the NCA to comply with the Yarramundi Peninsula Precinct Structure Plan. It is essential for us to know what implications the Structure Plan could have for our Masterplan.

The development of the Structure Plan is continuing into 2018, and the Directors will maintain a close watch on the evolving content.

References

AusTender, 2016 *Tender Description Yarramundi Peninsula Precinct Structure Plan*, www.tenders.gov.au/?event=public.atm.showClosed&ATMUUID=D8DCDFCE-B3FC-CBC2-A0F016459B1A7877

Godden Mackay Logan, 2008 *Lake Burley Griffin and Adjacent Lands Heritage Management Plan Volume 3 – Yarramundi Peninsula Draft Report*. Report prepared for National Capital Authority January 2008 available at www.nca.gov.au/sites/g/files/net791/f/Volume%203%20Lake%20Burley%20Griffin%20-%20Yarramundi%20Peninsula%20Heritage%20Management%20Plan%20January%202008.Pdf

NCA, 2018 *Web site of the National Capital Authority* www.nca.gov.au/

Grants received for Mount Gibraltar Microsyenite

Brad Pillans and Mike Smith, NRG Directors

In November 2016, Wingecarribee Shire Council offered to donate a large specimen of Mount Gibraltar Microsyenite to the National Rock Garden. Known commercially as the Bowral Trachyte, the donated rock would be sourced from the Council-owned Mount Gibraltar Reserve, a popular tourist destination at Bowral, in the highlands of NSW.



Jane Lemann (Mount Gibraltar Landcare and Bushcare Volunteers) and Peter Byrne (Wingecarribee Shire Council) admiring the NRG's block of Mount Gibraltar Microsyenite. Photo courtesy Mike Smith.

The National Rock Garden Finance and Risk Sub-Committee was tasked with generating the funds to provide for the delivery of the designated rock specimen to Canberra, the preparation of an inscribed plaque, and the polishing of a surface of the rock. The Mount Gibraltar Landcare & Bushcare Volunteers offered to contribute \$2,000 and introduced the NRG to the Veolia Mulwaree Trust, from whom we were successful in obtaining a grant of \$1,000. The total funding of \$3,000 will meet the essential costs of preparing this rock for display at the NRG site.

National Rock Garden – Newsletter No. 15

The Mount Gibraltar Microsyenite is an alkaline igneous intrusive body which was emplaced into Triassic Hawkesbury Sandstone around 178 Ma. It is now exposed by erosion as an imposing mountain adjacent to the rural town of Bowral. It provides a rare example of a rock that contains siderite (FeCO_3) as a component of a magmatic mineral assemblage.

Bowral Trachyte is the commercial name given to the rock which was quarried at Mount Gibraltar, and used extensively as a decorative building stone in Sydney and the Southern Highlands of NSW, for the Canberra foundation stone and for Australia House in London.



*Canberra foundation stone, laid in 1913, with a view behind to old Parliament House.
Photo courtesy Brad Pillans.*

Sydney examples of this important building stone include the Queen Victoria Building in George St, Challis House in Martin Place and the ANZAC Memorial in Hyde Park. It was also quarried for ballast in construction of the Great Southern Railway line from Mittagong to Goulburn. The Mount Gibraltar quarries closed around 1987 and are now part of a heritage reserve.

National Rock Garden – Newsletter No. 15



Société Générale House on the corner of George Street and Martin Plaza in Sydney, built using Bowral trachyte, on completion in 1895 (image from <http://sydneyarchitecture.com/cbd/cbd5-13.htm>). This beautiful building can be visited today, but is difficult to photograph due to the current light rail installation along George Street.



Polished columns of Bowral Trachyte at the western entrance to the Queen Victoria Building in Sydney. There are 75 columns of Bowral Trachyte which support rows of arches around the building. See www.visitsydneyaustralia.com.au/queen-vic-bldg.html. Photo courtesy Mike Smith.

In November 2017, Rodney South of KraneworX Crane & Truck Hire in Moss Vale brought his crane truck into the Council-owned Mount Gibraltar Reserve, and commenced moving 2 large rocks. The first specimen of about 10 tonnes was relocated approximately 15 metres from the quarry floor to the site of a new wall planned for construction by Mount Gibraltar Landcare and Bushcare Volunteers. The second specimen of around 11 tonnes was carefully manoeuvred onto the crane truck for transportation to Canberra, where Brad Pillans was on hand to supervise its unloading.

National Rock Garden – Newsletter No. 15



Rodney South (KraneworX), Jane Lemann (Landcare), Geoff Allen (Landcare) and Mike Smith (NRG) happy to see the NRG's Mount Gibraltar specimen ready to travel to Canberra. Photo courtesy Mike Smith.



The Mount Gibraltar specimen is delivered to the NRG site in Canberra. Photo courtesy Brad Pillans.

National Rock Garden – Newsletter No. 15

The National Rock Garden gratefully acknowledges the support of the Mount Gibraltar Landcare & Bushcare Volunteers and the Veolia Mulwaree Trust, who provided \$2,000 and \$1,000 respectively. In addition to the transportation costs, this funding has provided for the manufacture of two plaques, one for the NRG specimen in Canberra and one for the matching specimen in the new wall at the Heritage Reserve in Bowral. It will also cover the work by a stonemason in cleaning the entire NRG specimen and polishing a face to display the detailed texture of this rock.

The Bowral rock has been placed adjacent to the Moruya granite specimen at the NRG, with the two specimens on either side of the path leading from the carpark to the Federation rocks display. A celebration is planned at 2 pm 25th March to welcome this important rock to the NRG site in Canberra, as described in the Public Notice below.

Prior to the uplift of the NRG's specimen in the Mount Gibraltar Heritage Reserve, a second equally impressive block was moved to a site selected by members of the local Landcare & Bushcare Volunteers, where it will be incorporated into a wall. A second plaque was created for this block with wording referencing the National Rock Garden in Canberra, and this will be installed in the future.



Jane Lemann and Geoff Allen of the Mount Gibraltar Landcare & Bushcare Volunteers receive the plaque for their rock (behind the figures) from Mike Smith. Photo courtesy John Henderson.

References:

Andersen, T., Carr, P., Erambert, M., 2012. *Late-magmatic mineral assemblages with siderite and zirconian pyroxene and amphibole in the anorogenic Mt Gibraltar microsyenite, New South Wales, Australia, and their petrological implications.* Lithos 151, 46-56.



National Rock Garden – Newsletter No. 15

Lemann, J., Simons, J., Smith, E., Wright, C., Moffatt, J.-R. & Elphick, M. (Eds.) 2007. *The Gib. Mount Gibraltar, Southern Highlands.* Mt Gibraltar Landcare & Bushcare and Wingecarribee Shire Council, Bowral, 263 pp

A Visitors Guide for the Mt Gibraltar Reserve

<http://121.50.208.46/southernhighlands/Mt%20Gibraltar.pdf>

INVITATION TO JOIN US AT THE NRG

FRIENDS OF THE NATIONAL ROCK GARDEN ARE INVITED TO ATTEND THE OPENING OF THE MOUNT GIBRALTAR MICROSyenite DISPLAY AT THE NATIONAL ROCK GARDEN, BARRENJOEY PLACE, CANBERRA.

TIME: FROM 2.00 PM TO 2.30 PM ON SUNDAY 25 MARCH 2018.

THE CEREMONY WILL BEGIN WITH A WELCOME TO COUNTRY BY TYRONNE BELL, AN ELDER OF THE NGUNAWAL TRADITIONAL OWNERS, AND CULMINATE IN THE FORMAL UNVEILING OF THE DISPLAY BY THE MAYOR OF WINGECARRIBEE SHIRE COUNCIL.

PLEASE MAKE A NOTE IN YOUR CALENDAR AND ENJOY AN AUTUMN AFTERNOON IN CANBERRA WITH US.

Visit of summer school group to Federation Rocks

Greg McNamara, Program Director, Australian Earth and Environmental Science Olympiad

During January 2018, the Australian Science Olympiad Summer Schools for Biology, Chemistry, Earth & Environmental Science and Physics were held at the Australian National University (ANU) in Canberra.

The Earth and Environmental Science Olympiad (EESO) Summer School has based its operations on the ANU campus at the Research School of Earth Science (RSES) since its inaugural year in 2015 and has visited the National Rock Garden each year as part of the field trip component of the Summer School.



Panorama of Summer School students inspecting the Federation Rocks. Photo courtesy Kelly Sharrad.

The 24 High School students invited to attend the EESO Summer School all achieved High Distinctions in an extremely difficult and highly competitive national exam held in August 2017. These students came from the Australian Capital Territory, New South Wales, Queensland, Tasmania, Victoria and Western Australia and since its inception only the Northern Territory has not supplied a student to the program.

The students, enrolled in Years 9 to 11 when sitting the exam, all live on ANU campus during Summer School and participate in an intense 16-day program that sees them engage in learnings equivalent to or higher than a first year university course. Daily assessments and end of program exams determine which of the 24 students will be invited to represent Australia at the International Earth Science Olympiad (IESO).

The National Rock Garden provides the EESO students with an excellent opportunity to engage with a variety of rock types otherwise inaccessible to the program. It also provides the teaching staff with an ideal opportunity to combine this fabulous teaching resource with assessment tasks that embrace geoscience, team work, research and presentation skills!

Each group of three students, chosen by the teacher-mentors, is assigned an NRG rock and challenged to identify as much about the rock as they can on site in the 30–45 minutes assigned to this part of the fieldtrip. Afterwards, back at ANU, they have time allocated to research their rock and ultimately give a 5-minute oral presentation to their peers and teachers about it. The presentations are formally assessed by the teaching team using the criteria of scientific accuracy, research depth, team work in the field and in the presentation, originality, creativity and humour.



*Abundant marine fossils in the Chinaman Creek Limestone from Queensland attract the EESO students.
Photo courtesy Leslie Almborg.*

This year a new and rather perplexing rock at the eastern end of the display was assigned to one team that the teachers judged might be able to rise to the challenge. It was a large very lichen covered rock that could have been a micro-dacite but without an information plaque or nicely cut and polished surface they were certainly put to the test. A quick telephone call to Brad Pillans clarified that this was a block of Mount Gibraltar Microsyenite because at that time, in early January, there had been no NRG information published about the specimen.

Despite the sparse information available, the group in question went on to give a creditable presentation about the Mount Gibraltar Microsyenite and in fact achieved the highest mark out of all groups for their efforts.



EESO students study quartz veins from the Victorian Goldfields. Photo courtesy Leslie Almberg.

Brad's home garden to feature on ABC TV's Gardening Australia program



Brad & Sue Pillans have a large (4500 m²) native garden at their home in Queanbeyan, just across the NSW border from Canberra. In 2017, their garden was opened to the public to raise money for the NRG as part of the Open Gardens Canberra program.

Last year, the Gardening Australia crew, headed by well-known presenter, Costa Georgiadis (he's the one with the bushy beard), spent a day and half filming in Brad & Sue's garden.

That segment will go to air on Friday 23rd March, on ABC TV, starting at 7.30 pm. As well as more than 1000 species of Australian native plants, the garden also features rock sculptures by Andreas Buisman.

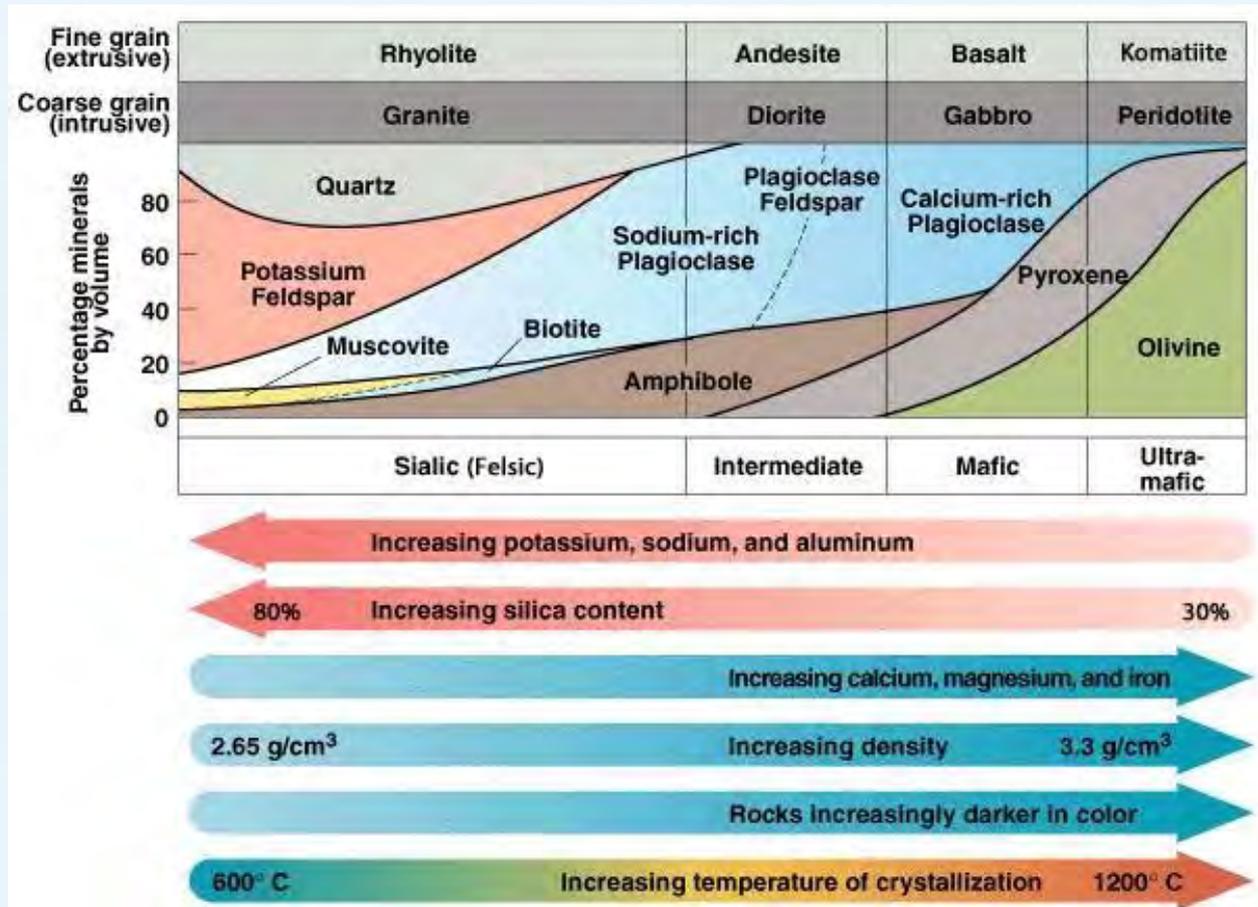
Costa and Sue. Photo courtesy Brad Pillans

Friday 23rd March, on ABC TV, starting at 7.30 pm

A Rock for an Artist—Adelong Norite

Brad Pillans, NRG Director

Norite is a dark coloured intrusive igneous rock, sometimes called black granite, which is something of a misnomer, because it is more like a gabbro than a granite. Nevertheless, like granite, norite forms from slowly cooled magma deep below the earth's surface and the resulting rock is very similar in grainsize to granite. The principal difference is in the types of minerals that norite and gabbro contain – dominantly plagioclase feldspar and a dark mineral called pyroxene but no quartz, whereas granite contains quartz. Below is a useful diagram that summarises the mineral content of the common igneous rocks.



Classification of igneous rocks based on mineral content, chemistry and physical properties. Source: http://onlinelibrary.wiley.com/higheredbcs/legacy/college/levin/0471697435/chap_tut/chaps/chapter04-05.html

Norite is an uncommon rock in Australia, so when we were offered a large specimen by the Adelong community, I was very keen to accept their offer. As it happens, the small town of Adelong, near Tumut, in the Snowy Mountains, has norite rocks outcropping right in town and, not surprisingly, on regional geological maps, it is named Adelong Norite.

Norite is most often used as a decorative stone, particularly as polished slabs for buildings and for memorials in cemeteries. I have been told that Adelong Norite was quarried for use in both old and new parliament houses in Canberra. Most recently, it has been used by well-known Austrian sculptor Andreas Buisman to create beautiful works of art. For example, a large specimen (about 9 tonnes), sculpted by Andreas, sits on the grave of the famous eye surgeon, Fred Hollows, in Bourke in northwestern NSW. Further images of Andreas' work can be viewed at:

http://www.andreas-buisman.com/andreas_buisman/pages/index.php



*Adelong Norite rock, sculpted by Andreas Buisman, at Fred Hollows grave in Bourke, NSW.
Photo courtesy: Andreas Buisman.*

In February, I visited Adelong, to meet with Adelong community members and view the specimen that they wish to donate to the NRG. Joining me was Andreas Buisman, who had offered to sculpt the rock which weighs about 11 tonnes. Although Andreas has not completed his work, I have no doubt that the rock will be a beautiful addition to the NRG – see photo. We plan to hold an inauguration ceremony for the Adelong Norite later this year, probably during Earth Science Week in October



*Adelong Norite rock, sculpted by Andreas Buisman, to be donated to the NRG.
From left to right: Kris Piper (Adelong Alive Museum), Andreas Buisman (artist),
Stephanie Smyth (Bendigo Bank, Adelong), Brad Pillans (NRG) and Gary Newnham
(Adelong Progress Association).
Photo courtesy Andreas Buisman.*



Adelong Norite specimen for the NRG, viewed from above. The parallel series of drill holes were drilled to split the rock when it was quarried. Photo courtesy Brad Pillans.

References

Adamson, C.L., Loudon, A.G., 1966, Wagga Wagga, New South Wales, 1:250 000 Sheet SI55-15, First edition, Geological Survey of New South Wales, Department of Mines, 1v, Map

Pickett, J. 1982 The Silurian System in New South Wales. Geological Survey of New South Wales. Bulletin 29

Basden, H. 1990 Geology of the Tumut 1:100 000 sheet 8527. Geological Survey of New South Wales. 1:100,000 geological sheet series Tumut, 275pp

Science meets Parliament 2018

Brad Pillans, NRG Director

Once again, I had the opportunity to participate in the annual Science meets Parliament (SmP) event, held over two days in February. This popular event gives scientists and Federal parliamentarians the opportunity to get together to discuss a broad range of scientific topics. SmP is organised by Science & Technology Australia (STA) which is Australia's peak body representing more than 60,000 scientists and technologists across all scientific disciplines. This year, I attended SmP as a representative of the Australian Geoscience Council (AGC), an organisation that represents Australian geoscience societies, including the Geological Society of Australia.

SmP is a mixture of knowns and unknowns in terms of which politicians you are likely to meet, all of whom choose to attend – they are not forced to do so – in the midst of their busy parliamentary schedules. Scientists know in advance which politician(s) they will meet formally – usually in the politician's parliamentary office. However, there are other opportunities that are less formal, including a gala dinner in the Great Hall of Parliament House.

The gala dinner, for about 300 people, was laid out with tables of 8, with at least one politician at each table. Keynote speakers included Senator Michaelia Cash (Minister for Jobs and Innovation), representing the Prime Minister, and Opposition Leader, the Hon Bill Shorten MP. To my surprise, I found myself sitting next to well-known Queensland senator, Pauline Hanson, who turned out to be a charming host – Senator Hanson chatted to each person at our table, remembering our names as she went. Topics of discussion were wide ranging from genetic engineering, to elephant ivory and, of course, I mentioned the National Rock Garden.

[Elephant ivory? One of the scientists at our table was a mathematician who was making mathematical models of the illegal trade in elephant ivory, with a view to understanding how it might be regulated. When I mentioned fossil mammoth ivory, which can be legally bought and sold, he admitted he did not know about that trade, so I agreed to send him some more information!]



Brad Pillans with a fossil mammoth tusk over his shoulder, Yukon Territory, Canada, in 2006. Yes, it was heavy! Fossils such as this are recovered from the frozen tundra, where they have been preserved for thousands of years.

Photo courtesy Brad Pillans

National Rock Garden – Newsletter No. 15

The next day, I met with another Queensland senator, Chris Ketter (Labor), who lives in Brisbane. Also meeting Senator Ketter, with me, were Leanne Armand (representing the International Ocean Drilling Program) and Karen Taylor-Brown (CEO and co-founder of Refraction Media). Like many politicians who participate in SmP, Senator Ketter had no specific topics he wanted to discuss—he was quite content to hear about our scientific activities and let the conversation go where it would. The meeting was scheduled to be 30 minutes, but Senator Ketter was happy for us to keep talking (for almost an hour) to the point where his next appointment was postponed. I left him with some rock garden brochures and agreed to keep in touch.



Meeting with Senator Chris Ketter at SmP 2018. From left, Karen Taylor Brown (Refraction Media), Brad Pillans (NRG), Senator Ketter and Leanne Armand (IODP). Photo courtesy Karen Taylor-Brown.



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 Moruya granite in October 2016 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.