



FriendsNET

Newsletter of the Victorian Environment Friends Network

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See our web site <https://www.friendsvic.org/> .

Best Friend Awards 2020

Over 60 people attended the first ever internet presentation of the Best Friend Awards (BFA) on October 3rd. It was the 29th year of the BFA, which celebrates individuals who contribute substantial effort over many decades, to making Victoria's special places even more so.

The storied history of the BFA was introduced by **Geoff Durham** (about whom more later) and commenced at the first Victorian National Parks Association network conference.

Ninety five Best Friends Awards have been made since then. Awards are given to individuals nominated by their colleagues for making an outstanding contribution through exceptional dedication as a Friend. Key criteria include length of service; how they support their Friends group's activities, form strong relationships and partnerships and/or advocate for their special place; gaining funding and support; personal dedication and leadership; planning for succession, including introducing young people to the group; and personal impact on the condition and quality of the area in which their Friends group works.

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In this edition

The very first Best Friend Award went to Don Marsh Friends of Organ Pipes in 1991. This inaugural award set in train a tradition of honouring environmental volunteers with Friends groups that has continued to this day. The 2020 Best Friend Awards included the Inaugural Lifetime

Achievement Award which went to bastion of environmental volunteering Geoff Durham.

Since the inception of the award the number and diversity of Friends groups has grown and this is reflected in their work to improve their "patch", whether it be a large or small park; waterways, coastal areas or selected species.

The diversity and persistence of Friends groups is reflected in this edition.

- Together with the City of Greater Shepparton and representatives from the Goulburn Valley Environment Group and Sheep Pen Creek Landcare group, The Midland Highway safety upgrade was designed in a manner that respected and retained the existing roadside environment without compromising safety measures. Over 200 important roadside trees were saved.
- Community groups fight for the future of Lake Knox.
- Victorian Environment Budget light on detail.
- WWF Nature-Australia counts the cost of 2019-20 bushfires on wildlife.
- Greater Gariwerd Draft Management Plan.
- International Volunteers Day 2020.
- Friends of Buchan Caves lights the way.

Suggestions for articles for FriendsNET are welcome. Please email to ecosystems@bigpond.com . If you want to include photos, please send as separate files in jpeg format, preferably in landscape.

Disclaimer: Content in this newsletter does not necessarily represent the views of the VEFN committee. Articles are the responsibility of authors as named. All other content is the responsibility of the editor, Stephen Derrick.

Janet Bolitho, Award Judging Panel Chair, noted in her introduction that it was Geoff who had initially imbued her with the Friends ethos.

She also noted with gratitude the care and thoughtfulness that had been put into the nominations, making the Panel's work much easier. She also thanked Judy Ingram for making the process smooth for the Panel. "Nominees are so often the first to arrive, last to leave, have all round involvement in all aspect of their groups, were welcoming, energising, knowledgeable communicators and all improved the ecological health of the area in which they work." she said.

Terry Hubbard, Chair of Landcare Victoria was then invited to present the Highly Commended Awards, and in doing so noted that VEFN had formed in the same year as Landcare in Victoria.

"Both organisations have similar aims, and their members also suffer from a lack of self-promotion," he said, "and this makes these awards so important."

He said he was honoured to be asked to be a part of the event and introduced the following Awardees:

HIGHLY COMMENDED AWARDS

Rob Beardsley, Geelong Field Naturalists Club



Rob Beardsley has been an active member of the Geelong Field Naturalists Club since 1988, and since 1990 has been the Team Leader of the long running program, Boneseed Control at the You Yangs Regional Park on a 16.7 hectare site. The work takes place on the rocky areas of the You Yangs, including weed removal by hand on steep, heavy terrain, requiring liaison with Parks Victoria in all areas. This is a weed of national significance, highly invasive, and with significant infestation at the You Yangs.

Over a 30 year period, Rob has demonstrated outstanding leadership in co-ordinating this program including Parks Victoria liaison, site assessment, safety requirements, equipment monitoring, volunteering recruitment, publicity/promotion and reporting. Rob's role in this important and long term activity has led to an increase in knowledge of the ecological environment and of the local flora, with some sites now free of boneseed.

Linda Roberts, Friends of Kororoit Creek



Linda Roberts has been an active member of the Friends of Kororoit Creek since 2009, including as President from 2009-2015, and in 2019 as Treasurer. She has also been involved in group sponsorship, and maintaining local and regional connections in the Brimbank Council area and with other Kororoit Creek stakeholders.

Linda's focus has been on the Kororoit Creek Strategy and networking with community groups, corporate groups, and region wide groups. Her special role is in logistics for group activities – trailers, water pumps and weed control equipment and management. Linda is 'always there for us and the creek', reflecting her commitment to the Friends of Kororoit Creek and her philosophy that the creek is 'her happy place'.

Margaret Sietsma, Friends of the Grampians/Gariweld



Margaret became an active member of the Friends of Grampians/Gariweld in 1984 and has been an executive/president and committee member for over 30 years. She regularly attends group activities and produces the current quarterly newsletter for the group. Margaret became a Life Member in 2013.

Since 2001, Margaret has been a member of the Parks Victoria Advisory Group for the Grampians National Park. She was Chair of that group from 2002-2018.

Margaret made regular trips from Melbourne to the Grampians until moving to Western Victoria around 2009 and is a prolific writer on the group's history. She assisted the VNPA recently with a project in the Grampians. Margaret was also involved also in the 1998 VEFN Weekend Camp at the Grampians, providing the

champagne to celebrate the 25th Anniversary of the group at that conference, and in 2000 at Wilsons Promontory Camp.

Stephen Lynch, Director, Environment and Community Programs at DELWP was then invited to present the Best Friends Awards. Steven noted how much of a privilege it was to be asked to join the event, a key means of recognising the extraordinary role volunteers play in caring for and safeguarding the environment.

BEST FRIEND AWARDS

Barry Lingham, Friends of Ocean Grove Nature Reserve

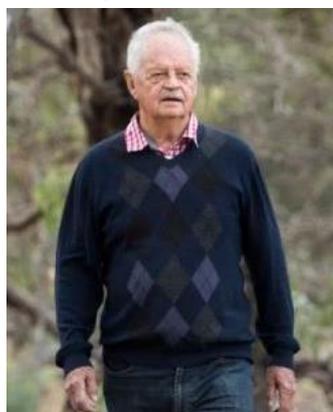


Barry Lingham, a member of the Committee of Management of the Ocean Grove Nature Reserve since 1989, was a founding member of the Friends of Ocean Grove Nature Reserve when it was established in 1994 (land transferred to Parks Victoria). Since 2000 Barry has held a number of officer roles for the group and was the Secretary in 2019. His involvement of 32 years "is still strong today" and "the connection has never wavered."

Barry's contribution includes weed eradication programs, planting and maintenance, nest boxes, fundraising, and publications on flora and fauna of the reserve of which he is widely considered an expert. Barry is a Life Member

of both Friends of Ocean Grove Nature Reserve and Geelong Field Naturalists Club. He is also a respected submitter to planning panels as a panel expert and a tour guide for visiting groups. As a team player, Barry is equally prepared to "roll up his sleeves for a manual task" or to "give expert evidence at a hearing panel on the future impacts of development on the Bellarine Peninsula."

Geoffrey Mitchelmore OAM, Friends of Lower Kororoit Creek



Geoff has been an active member of the Friends of Lower Kororoit Creek for over 20 years and was the founding President of the group from 2001 to 2020. His areas of involvement include group awards and recognition, website development, community support roles, event and tree planting, and regional, government and land agency connections and liaison.

Geoff has represented the Friends of Lower Kororoit Creek on groups including the Melbourne Water Healthy Waterways Strategy, Westgate Tunnel group, and Waterways of the West. He has secured sponsorships and funds for the group. Recently a section land has been planted with 50,000 trees turning wasteland into a community precinct. Geoffrey is recognised by the environment community as a resource. He is author of the book Friends of Lower Kororoit Creek, increasing

understanding and appreciation of its history as part of the Kororoit Creek ecosystem.

Janet Stephens, ANGAIR (Anglesea, Aireys Inlet Society for the Protection of Flora and Fauna)



Janet has been an active member of ANGAIR for at least 21 years and a long term committee member. She has been involved in the annual Wildflower and Art Show, camping trips to other environmental sites including aboriginal heritage sites, strategy for group advancement, and education tours and walks.

She is the current newsletter editor to a membership circulation of 600 members, not an easy role. Her further roles include propagation, seed collection and nursery involvement. Since 2013, Janet has been the Bushcare Team Leader for Angair, a weekly activity with Parks Victoria liaison.

Sally and Tony Walker, Friends of Scotchmans Creek and Valley Reserve



Sally and Tony Walker joined the Friends of Scotchmans Creek and Valley Reserve in 2004 and have been active committee members in a number of roles since 2005. For a period of 19 years they have actively complemented each other in these roles as



President, Secretary and Treasurer. This reflects their “passion for Melbourne’s flora” and the preservation of the Scotchmans Creek Valley and Reserve.

Sally and Tony’s involvement includes planning submissions and addressing threats to the reserve, with the the reserve formally declared as a Conservation area by Monash Council in 2020. Other activities include Melbourne Water Liaison and grant writing, Waterwatch activities, event planning and organisation, group promotion, community and regional links, and education programs. Their interest and promotion of school and tertiary support programs for students of conservation and land management reflects their ongoing passion for supporting environmental activities in the reserve, alongside their long term involvement with the group.

Inaugural Young Best Friend Award - Matilda Venn

Matilda first started taking an interest in the environment when she attended tree plantings for the Landcare network Project Platypus with her parents. She was only 3 years old when she attended her first plant out.



She has since attended many more, helping with tree planting, land care, lunches and working as part of a team. When walking from her home to her school in Pomonal, Matilda started to notice the native orchids that bloomed in the area and became really interested in finding out more about them. She discovered that there were about 12 varieties of orchids that came out each year in her immediate area. From there Matilda started taking her peers on orchid walks and telling them about her discoveries. By the time Matilda was 12, she started to take larger groups of people on tours to see the orchids as part of the Pomonal Native Flower Show.

Matilda's mother Barb said "Matilda has just always said yes, and put her hand up for things, then all of a sudden there is

a group of 20 flower-lovers in a hall waiting for her to take them on a walk."

Earlier this month, Matilda spoke to crowds on a virtual platform as part of the 23rd annual Wimmera Biodiversity Seminar, supported by Andrea Mitchell from Project Platypus. This was very well received by the people who saw her presentation. "I definitely like sharing my love of plants and orchids" says Matilda. Stawell had a 'Biggest Science Experiment' program under the banner of the Wildlife Arts Museum of Australia earlier this year and Matilda took part, creating a survey to collect information about native orchid species, including numbers and locations that could be used to identify the impacts of a changing climate on the plants. Matilda and her father Matt developed an app on her phone to support the information she collected. "I wanted to see if the number of species all together would go up or down each year and see how the climate was affecting them" said Matilda. This was featured in the Experiment.

"We are all so proud of Matilda in this community. She contributes so much, which is a joy to watch in such a young person" says Gilda McKechnie who nominated Matilda for this award.

Maelor Himbury, a Council Member of the VNPA and a former VEFN committee member was invited to present the inaugural Lifetime Achievement Award to Geoffrey Durham.

INAUGURAL LIFETIME ACHIEVEMENT AWARD

Geoffrey Durham, OAM



Geoff Durham has a lifetime connection with the Wanderslore Sanctuary and worked over many years with artist Constance Coleman (1903-1990) to save the area of land at Launching Place for future generations - initially saving it from expansion of the Warburton Highway by the Country Roads Board in 1973. It was gifted to the Trust for Nature and today is the home of an active group, Friends of Wanderslore. Geoff was a foundation member of the group in 1993, Convenor from 2007-2012 and on the Committee of Management of the Sanctuary area until retirement in 2019. He remains an active member of the Friends group and is a valued and esteemed mentor to the group.

Geoff has been a member of the Victorian National Parks Association (VNPA) since 1959 and remains active despite having retired from conducting Walk, Talk and Gawk in 2019. Maelor quoted from the VNPA history by Don Garden:

“Geoff Durham, a solicitor, brought legal skills and an immense commitment to the VNPA over many years in such areas as bushwalking, Friends Groups, and the administration of national parks. He was President of the VNPA in the difficult years of 1978-81.”

Geoff has been a member of many groups including the Friends of Wyperfield to which he has belonged for over 40 years and for which, in 2001, he authored a publication, Wyperfield Australia’s First Mallee National Park. Geoff was involved in the earliest days of the Friends movement, promoting the idea, organising conferences, and in due course writing the first VEFN constitution.

As Maelor Himbury said in his introduction: “And so it goes. Geoff continued for many years on the Friends Network Committee, many of those as editor of FriendsNET which had his many acolytes hanging out to discover who or what would be featured in the Groups Grapevine...And here I’ll terminate this historical badinage with the vision of Geoff at a Friends Conference handing round a bag of licorice allsorts because it takes all sorts to make a Friends Group to which we all say, “Fair enough”.

This article was prepared by Laura Mumaw and Paul Strickland

Ribbons of History – Saving roadside trees

The modern transport network was fashioned on traditional pathways.

Tracks through the landscape followed landmarks, and where there are no hills or monolithic boulders, large old trees would guide the route.

Trees would be recognised for their shape and stature or manipulated and scarred to mark the way through country; generation after generation.

Some of these trees still stand on roadsides in country Victoria.



Trees along the Midland Highway near Shepparton, Victoria

Just as roadsides are a network for human movement, they are also a network for animals and birds to traverse the land.

In many places across Victoria, roadsides are the sole remaining natural refuge in an otherwise cleared landscape. They offer some of the last remaining forms of connectivity from one island of remnant trees to another.

They are often untouched fragments of pre-European Victoria and can represent eco-systems more diverse and intact than our Parks; many of which have been cleared, mined and grazed.

Unfortunately, little by little, these familiar lineal reserves are disappearing. Planning laws, public safety, infrastructure exemptions, fire risk, access and fear are all contributing to the disappearance of “the front gardens of the nation” (Edna Walling 1952). With their loss, we are witnessing the incremental decline of biodiversity and the erosion of our sense of pride in Victoria’s natural history.

But surely, if we can build space-ships, sky-scrappers, robots and driverless cars; if we can circumnavigate the globe through the air and on water, we can also circumnavigate the precious few ancient living remnants on our roadsides.

In a recent road safety improvement project on the Midland Highway east of Shepparton, four groups came together to negotiate a safer road design which would see the retention of over two hundred roadside trees. Many of these specimens were large, ancient eucalypts, recognisable as landmarks that give the area a sense of place.

Historically, a project of this type and scale would have resulted in a massive environmental and landscape-scale loss with repercussions felt at a social level as people come to terms with the change in the landscape they call home. The loss of their front garden. Every tree within the project envelope would have been removed, reduced to firewood and replaced with roadside barriers and bitumen and this would all have been done without any community consultation.

But in recent years, roadside trees have surfaced in society as an important issue and it seems that widespread community appeals to road managers for greater roadside protections have been taken seriously. Statewide forums were held and conversations between lobby groups and road managers focussed on vegetation protection and the importance of genuine community engagement. This work has created a cultural shift and a more balanced approach to infrastructure design is now emerging.

In the case of the Midland Highway, Regional Roads Victoria (formerly VicRoads) wanted to undertake a major road safety project which widened, re-surfaced and allowed for over-taking lanes along the road, complete with guard railing to prevent run-off road accidents.

Significant trees within the construction footprint had been identified and initial design solutions were applied to protect many of them, but the project manager was keen to work with the community to look at ways that more trees could be saved.



Special trees can be saved with effort and planning

Together with the City of Greater Shepparton and representatives from the Goulburn Valley Environment Group and Sheep Pen Creek Landcare group, a road was designed that respected and retained the existing roadside environment without compromising safety measures.

Over several meetings which included site visits, negotiations focused on the importance of finding ways to protect individual trees. One particularly huge and significant tree would have been lost without the application of a side road re-alignment which not only saved the tree but made entry to the highway safer.

The collaboration culminated in the protection of two hundred and forty nine trees out of a possible two hundred and fifty and is one of the most environmentally successful major road safety projects in the Goulburn Valley. The removed tree will be offset by reinstating its trunks and branches back into the landscape in local Landcare projects as woody debris for habitat and revegetation will take place.

It seems, at least with this project, that a new way of consultation has taken place. One that can certainly be replicated for other similar projects across the state.

The Midland Highway road safety project is an example of what can be achieved when people work together with a common goal to protect and enhance the roadside environment so that future generations can continue to enjoy Victoria's Ribbons of History.

We aim to continue to work closely with the government, agencies, academics and the community to raise awareness of the threats and values of the Victorian roadside.

Louise Costa
Goulburn Valley Environment Group

Under COVID cloud Lake Knox developers drag community groups into farcical “Community consultation”?

In the midst of the ongoing COVID crisis community members have been hung out to dry by the State Government’s development agency Development Victoria.

Locals are fighting to protect Lake Knox - a large deep water lake that hosts a number of rare and endangered plant and animal species including the Blue-billed Duck - at the former horticultural research facility in Knoxfield. The Development Victoria proposal would disturb and destroy the home of endangered species, for the mighty dollar once again.



Lake Knox



Teeming with wildlife. Photo by Nalini Scarfe

Lake Knox is a natural wetland in the heart of Knox, affectionately named by the many locals who value this large, deep-water body. For almost three years now, local community members have been advocating to protect the site after the State Government revealed its plan to convert the lake into a stormwater management system to support development across the site. Development Victoria's proposal will mean effective or functional loss of the well-established, existing aquatic ecosystem, alongside other losses in terrestrial native vegetation and potential habitat. It seeks to replace this vital asset with a relatively conventional complex of stormwater wetlands. Lake Knox holds a number of species that are now rare or endangered to the area, as they once occurred in the now destroyed surrounding bushland whilst the lake has enabled them to persist. The Lake also provides critical habitat for the Blue-billed Duck, a species listed as Endangered under state legislation due to loss of deep freshwater marshes and lakes.

The fight for Lake Knox has gained traction in the community with over 13,000 people signing an online petition. Find it here - <https://www.change.org/p/save-lake-knox-from-being-bulldozed>.

Amid rising tension around the Lake’s protection the site’s developers, Development Victoria, invited community groups to partake in community consultations. As part of this process, Development Victoria attempted to force participants to sign confidentiality agreements to prevent them from speaking out, which was strongly rejected by the community. See more here - <https://www.theage.com.au/national/victoria/we-will-not-be-gagged-locals-speak-up-over-loss-of-lake-knox-20191205-p53hbq.html>

Despite this, in goodwill, community groups sought to engage with Development Victoria to seek the best outcomes for Lake Knox. Yet participants discovered recently that they were to be consulted on very specific and benign matters such as street names and signage. When questioned if community consultation would lead to discussions about the Lake’s future as they were led to believe, Development Victoria’s representatives stated in no uncertain terms that they would have no say in the Lake’s future.

Spokesperson, Anthony Bigelow lamented, “Community members entered this conversation with Development Victoria believing that they might even contribute to a possible exemplary model of future development that truly values a site’s existing and vital natural assets. They entered believing they were privileged to speak on behalf of the Knox community for this gem in the heart of Knox City.”
“With so much loss, everywhere, it is heart-breaking to realise that our State Government’s consultation process is insincere, manipulative and ultimately destructive to the future of its own people.”

First Friends of Dandenong Creek, on behalf of the Knox community, has recently been fortunate to engage a well –respected wetland ecologist to perform a review of the Development Victoria stormwater and ecological reports. Professor Paul Boon’s report can be found here: <http://t.ly/ProfessorPaulBoonReport> .This report reviews the ecological values of Lake Knox and the likelihood that the new lake/wetland complex will adequately replace the foregone biodiversity and ecological values if Lake Knox were to be destroyed. Over 132 people contributed to a crowd funding campaign in order to pay for this report. Given the current economic climate, and the severe recession we are now in, I would suggest that community support for retaining Lake Knox is very high. (Crowd funding <https://www.pozible.com/project/save-lake-knox-wetland-ecologist>)

Two expert reports now state that the Development Victoria proposal essentially seeks to ‘engineer’ away a problem through off the shelf design options that do not stand up under even limited scrutiny from an ecological/biodiversity/urban design point of view. All of the above shows the immense value of an engaged, well-informed and organised community.

Further information is available on the Knox Environment Society website:
<https://www.kes.org.au/home/campaigns/lakeknox>

Anthony Bigelow
President for First Friends of Dandenong Creek

Victorian Environment Budget 2020-21

Victoria's COVID-delayed budget was released on 24 November. Environment portfolio initiatives were announced by Minister D'Ambrosio the week before on 18 November in a media release. Both the media release and the subsequent budget papers are short on detail and it is not clear what funding opportunities there will be for environmental volunteer groups.

Some of the highlights from the Minister's media release are:

- \$29 million will continue the critical work of the Bushfire Biodiversity Response and Recovery program, which is restoring and protecting vast areas of wilderness impacted by the summers' fires – controlling invasive weeds and feral animals, protecting threatened species and creating jobs in fire affected communities.
- The Budget invests \$48 million to deliver environmental programs including community action to protect Victorian plants and animals, the ongoing management of Port Philip Bay and the vital work of Landcare.
- The Budget will deliver \$92.3 million to restore land and plant four million trees across more than 6,000 hectares to store carbon in our landscape.
- The Labor Government will also invest \$16 million prepare and protect our coast from climate change through research, policy and on the ground action, including local planting and erosion prevention.
- Funding of \$52 million will also go to Parks Victoria to upgrade sites at Albert Park, Braeside Park, Brimbank Park, Dandenong Ranges, Mornington Peninsula, Organ Pipes, Plenty Gorge, Point Cook, and other locations around the state – delivering new walking trails, new picnic tables and new barbecues.

FriendsNET will provide more details as they emerge. The Minister's media release is [here](#) and the relevant Budget Paper [here](#) – see pp49-62.

Black Summer devastates wildlife

Black Summer cause of wildlife disaster says WWF Australia

World Wildlife Fund for Nature - Australia and their team of scientists have undertaken further research to quantify the loss of fauna in the 2019-20 bushfires. The report finds that:

50 million native rats and mice; nearly 40 million possums and gliders; more than 36 million antechinuses, dunnarts, and other insectivorous marsupials; 5.5 million bettongs, bandicoots, quokkas, and potoroos; 5 million kangaroos and wallabies; 5 million bats; 1.1 million wombats; 114,000 echidnas; 61,000 koalas; 19,000 quolls and Tasmanian devils; and 5,000 dingoes were in the path of the flames.

The fires impacted more than 41,000 koalas on South Australia's Kangaroo Island, more than 11,000 in Victoria, nearly 8,000 in NSW, and nearly 900 in Queensland.

You can read more about the impacts of the bushfires and download the report here

<https://www.wwf.org.au/news/news/2020/wwf-60000-koalas-impacted-by-bushfire-crisis> .

Greater Gariwerd draft plan

Greater Gariwerd Draft Landscape Management Plan available for public comment until 24 January 2021

Developed by Parks Victoria, Barengi Gadjin Land Council, Eastern Maar Aboriginal Corporation, and the Gunditj Mirring Traditional Owners Aboriginal Corporations following community consultation, the draft plan outlines proposed initiatives for the Grampians (Gariwerd) National Park and some other nearby parks and reserves. These include for environmental conservation, cultural heritage protection, fire and emergency management, public safety, recreation, visitation, and tourism.

The *Greater Gariwerd Draft Landscape Management Plan*, a recent webinar, surveys and background documents are available at Engage Victoria at www.engage.vic.gov.au/gariwerd-management-plan

International Volunteer Day 2020

Every year, International Volunteer Day (IVD) is held on 5 December. IVD is mandated by the United Nations General Assembly and provides an opportunity for volunteers and organizations to celebrate their efforts, to share their values, and to promote their work among their communities, non-governmental organizations (NGOs), United Nations agencies, government authorities and the private sector.

DELWP prepared a short video as their contribution which you can view here

https://www.environment.vic.gov.au/volunteering#oc_id_0_international.

Friends of Buchan Caves lights the way

Friends of Buchan Caves (FoBC) worked with Parks Victoria to renovate a long-closed tourist cave at Buchan Caves Reserve (Federal cave) and then re lit with solar power & LED lighting and electronic controls of the lighting and power charging. Most of the lights & controls were initially designed & manufactured by the FOBC.



Buchan Caves Reserve is one of the jointly managed parks within Gippsland. The Joint Management agreement with Parks Victoria recognises the fact that the Gunaikurnai people hold Aboriginal Title and maintain a strong connection to Country. As custodians of the land, they are the rightful people who speak for their Country. These parks and reserves are cultural landscapes that continue to be part of Gunaikurnai living culture.

Buchan Caves are a honeycomb of spectacular limestone formations carved by an underground river almost 400 million years ago and are the largest cave system in Victoria.

This cave was possibly the first in Australia to be fully solar powered & use of low energy lighting throughout.

FoBC undertook this project in conjunction with Parks Victoria and the following article originally published in the ACKMA Journal describes the project. Article reproduced with permission of the authors.

This article and photos submitted by Daryl Carr of FoBC.

RELIGHTING FEDERAL CAVE, BUCHAN, VICTORIA, USING the SUN'S RAYS

Miles Pierce and Peter Robertson

Background

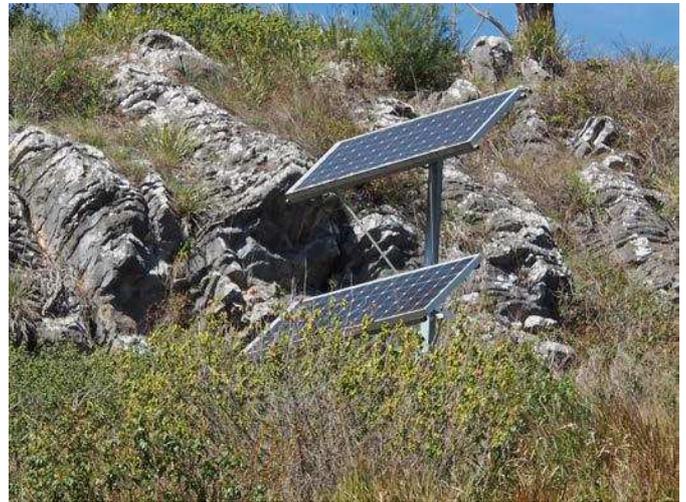
In March 1915, the then superintendent of the Buchan Caves Reserve, F J Wilson, in company with an employee, W H Bonwick, discovered a 'new cave' by following the low level ongoing stream passage from Royal Cave and then climbing upwards from near where the stream passage drops into a tight and normally closed sump (later linked to Dukes Cave). Wilson, in a letter to the Secretary for Lands, dated 27/3/1915, described it as 'a nice open passage with a few grottoes', 'extending about 400 yards back into the hill' and noting that it had a 'very fine chamber of rich formation near the end'. Wilson further opined that 'if an entrance could be got at the northern end it (the cave) would be very easy to improve'.



*LED track lights mounted on existing wrought iron stanchions with LED feature light at base of left stanchion. Concrete steps illuminated by LED strip lights secured to guard wire below hand railing.
Photo: Daryl Carr*

During the following month, Wilson surveyed the interconnection to 'fix the position' of the northern end of the new discovery. In a further letter to the Secretary of Lands, 8 June, Wilson advises that work on opening the new tunnel had started and asked that the explosives already applied for be sent as soon as possible. A tunnel was driven by day labour and with funding constraints imposed by the Lands Department, took until May 1916 to break through to the northern end of the new cave. In Wilson's 2 May letter to the Secretary, he advised that the tunnel was 230 links (46 m) long and that 'it struck the cave exactly where I intended'.

Duly named 'Federal Cave', the new cave was soon added to the guided caves menu for visitors to the Buchan Caves Reserve. Fixed electric lighting was installed in Federal Cave, together with Fairy and Royal Caves, c1920. Electricity supply was from an internal combustion engine driven, DC generating plant. The underground wiring was lead sheathed, rubber insulated, cotton braided, two-core cable. Light fittings were simple reflectors, sometimes of the jeweller's shop silvered glass variety, with general service incandescent lamps in porcelain base Edison screw holders.



*Solar panels installed 2012 near cave entrance.
Photo: Daryl Carr*

Federal Cave lacked the extensive speleothem 'decoration' of the Fairy and Royal show caves, with its main attraction in that respect being the 'King Solomon's Temple' formation that marked the end of the electrically lit extent. It also required visitors to retrace their steps in order to leave the cave when both Fairy and Royal caves had one-way 'through tours' by virtue of separate entrance and exit tunnels. As a consequence, its use as a show cave declined. By the late 1960s when its sister show caves were rewired for operation from the SECV mains electricity supply – using enclosed transformers in the caves to supply 32 V light fittings – the lighting in Federal Cave was not upgraded and was then no longer operational.



*Control Box No. 10 with 12V sealed battery and supply from solar PV panel teed off from the 'bus' cable.
Photo: Daryl Carr*



*LED feature light and 'Techno' cable tee-off fitting.
Photo: Daryl Carr*

During the 1970s the then Caves Reserve manager encased the metal gate on the Federal Cave tunnel entrance with concrete to thwart occasional break-ins. This was removed in the late 1980s with a new steel door being fitted and the cave then used for occasional guided 'adventure tours' with participants fitted out with helmets and lights. These tours were commonly offered during the busy school holiday periods and gave a different experience of the 'standard' tours in the lit Fairy and Royal Caves.

By 1983 management of the Buchan Caves Reserve had passed from the Lands Dept to various newly formed departments and ultimately to Parks Victoria. Graham Parkes, as Parks Victoria's first Buchan Caves Ranger-in-Charge instigated the establishment in 1991 of the Friends of Buchan Caves (FOBC) as volunteer group to assist Parks Victoria in maintaining the caves and karst under its management at Buchan. This was one of the early Parks Victoria 'Friends Groups' and has over the succeeding years undertaken many useful projects ranging from surface track marking, tree planting and arranging interpretative signage to cleanup work in the show caves.

A proposed solar cell based lighting system

In 2001, FOBC member, Peter Robertson, proposed a project to relight Federal Cave based on distributed sealed secondary batteries maintained by a photovoltaic panel. It was contended that such a system would be well suited to the occasional guided tours conducted in the cave. After obtaining Parks Victoria's in-principle agreement, via Dale Calnin, the then Buchan Caves Ranger in Charge, the first part of the Federal Cave main passage was fitted with LED (light emitting diode) track lights powered from sealed 12 V lead-acid batteries placed at strategic intervals. The batteries were charged from a common 'bus' cable that was initially supplied from a 24 V DC transformer - rectifier located at the Caves Reserve administration offices. With the assistance of a grant successfully applied for by the FOBC, a 170 watt 24V DC photovoltaic panel was purchased in 2005 to takeover from the mains-operated transformer rectifier. The solar panel was mounted on a pole above the tunnel entrance to the cave and was commissioned in July 2005. Although the artificial lighting was then limited to only part of Federal Cave it is believed to have been the first solely solar cell powered cave lighting installation in Australia. Light emitting diodes (LEDs) - single and in small cluster assemblies - were also still evolving as commercial products and their use for cave lighting was novel.

The 'key' to the distributed battery system was in the associated control boxes where a printed-circuit-board, designed and built by Peter Robertson, regulated charging of its sealed cell battery, switched 'on' track lights, and subsequently also feature lights, in response to a signal from motion detection devices. These responded to the movement of persons heading either inwards or outwards in each passage section, and switched 'on' track lights and any feature lights set up in that section for a preset time interval. Persons remaining in or coming back in range of a motion sensor would reset the time delay so that the lights in the section remained 'on'. The moulded plastic control boxes included silicon rubber cover seals and all cable entries were made via cable glands.

LED track lights were mounted inside downward facing black finished plastic housings and typically mounted on short PVC conduit posts or secured to existing hand railing stanchions. Most initial feature lights were 20 or 50 watt, 12V tungsten-halogen 'dichroic' lamps mounted in 'sealed' outdoor garden light fittings. The initial cabling consisted of flat 'figure-eight' 0.75 or 1 mm² plastic insulated cable.

With the first several sections of the cave lighting having 'proven the concept', the installation was progressively extended further into the cave. Many members of the Friends of Buchan Caves volunteer group assisted with the installation of the lighting system over successive working bees.

As time progressed the lighting system served its intended purpose, however, cable faults increased in frequency along with failure of some of the early LED track light assemblies. The adverse high humidity environment likewise took its toll on the 12 V incandescent lamps in the enclosed 'garden' fittings. Many lengths of the single insulated 'figure-eight' cable succumbed to the cave atmosphere with internal corrosion of the stranded copper conductors, indicating that the plastic insulation was not impervious. Inferior copper quality in these cables may also have been a factor in their deterioration. In singular contrast, the domestic type movement sensors - commonly used to switch 'on' outside home security lights - continued to function reliably.

Upgrading the Installation

With the solar powered distributed secondary battery based lighting system having been successfully proven in-principle and found useful in practice for irregular cave tours, a further FOBC proposal was put to Parks Victoria via Dale Calnin to upgrade the installation. This included replacing most of the cabling and, where needed, light fittings and lamps, with more durable products. Investigations into cabling canvassed tinned copper conductor cables as used for mining and marine applications. Sources of suitably sized cables of this description were not located and instead an elastomer insulated and sheathed cable with plain copper conductors commonly employed for connection to submersible motors on deep well pumps was chosen, having a wide temperature tolerance and resistant to water penetration to depths of 100 m.

In 2012 another grant for materials purchase was successfully applied for by FOBC through Dale Calnin and orders placed for the new cable along with moulded plastic 'Techno' (Italian) waterproof (IP65) tee-off connection fittings. A 6 mm² conductor cross-section was chosen for the trunk or 'bus' cable to run from the external solar photovoltaic panel through the cave from which tee-offs would service each successive control box and its associated rechargeable sealed battery. Two-core 1.0 mm² cable was ordered for wiring to LED track lights and two-core 1.5 mm² for display lights and sub-trunk cables from which the track lights would tee-off.

Another series of working bees attended by FOBC members during 2012 stripped out the earlier figure-eight cables, placed and where practicable, concealed the new black sheathed trunk cabling and installed replacement light fittings, etc., under the



Dale Calnin (Parks Victoria), Peter Robertson and Daryl Carr (Friends of Buchan Caves) marking the commissioning of the solar powered Federal Cave lighting system, July 2005. Post mounted PV panel behind.
 Photo: Daryl Carr

favourable with comparatively few lamp failures and almost no cable or cable termination faults.

Concluding Comments

Federal Cave continues to operate with its totally solar cell powered lighting system comprising LED track lights and limited, separately circuited, multi-LED feature lights extending from its tunnel entrance through to the impressive flowstone and stalactite / stalagmite ‘King Solomon’s Temple’ speleothem – the ‘rich formation near the end’ first observed by F W Wilson in 1915. The lighting is deliberately ‘low key’ to sustain the ‘being in a cave feel’ and recognising that for the most part, in contrast to the Fairy and Royal Caves, speleothem ‘decoration’ is not a dominant factor. Instead, the distinctive former stream passage evolution, prominent display of the dipping limestone strata and cross-sectional exposure of sediment beds in what is a predominately a simple straight passage offers a different kind of cave experience and opportunity for interpretation.

Since 2012, various other Australian ‘show caves’ have utilised solar cells in conjunction with battery banks to support mains backed-up cave lighting systems or have plans to do so. The now extensive range of proven LED lights, including high output multiple LED assemblies and their low power demand has greatly facilitated potential for solar powered cave lighting systems with mains supply being available as backup.

The distributed sealed battery system described above and totally reliant on locally generated solar energy has shown itself to be viable for intermittent and ‘special’ cave tours, as applies for Federal Cave at Buchan.

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supervision of Peter Robertson. FOBC and VSA member, Rudy Frank, devised a rig for pre-assembling and terminating pre-measured branch cables in the comfort of the Guides Room, and thereby reduced work that had to be performed within the cave. Peter experimented with homemade enclosures for 3 and 5 watt LED replacements of former ‘dichroic’ incandescent feature lights based on PVC plumbing fittings, coming up with a superior sealed fitting to the previously employed cast alloy ‘garden light’ fittings.

As a part of the upgrade, a second 170 watt photovoltaic panel was mounted beside the original panel to increase the battery charging capacity. The upgraded installation was practically complete by early 2013. The experience since then has been

