

## **VICTORIA FOSSIL CAVE — MAKING IT A CAVE ONCE AGAIN**

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### **ABSTRACT**

Many show cave developments were undertaken in the 19th and early 20th century. Cave managers at times despair at what they perceive as inappropriate development and the damage that was caused. How much have we learnt since then though? What can we do to reverse some of these impacts and are the developments we carefully implement with all the latest in environmentally friendly products easily changed by the next manager?

This paper presents work that is ongoing in Victoria Fossil Cave, Naracoorte, as a case study. This cave is a sprawling giant of over five kilometres in length, with about 400 metres altered to allow presentation as a show cave. Initial enlargement of passage began in 1894 and the most recent completed 100 years later. We will look at each development and its impacts. The concept of reversible management will be introduced and we will examine what it means for show cave management and how we believe it is a philosophy that should be embraced by all cave managers.

### **INTRODUCTION**

The perception of environmental quality by visitors is crucial in defining environmental objectives and effective planning meaning visitor experience must be closely related to the sustainability of environmental quality (Hamilton-Smith 2000). Management attempts to achieve this at Naracoorte by integrating many factors including: fully developed show caves, undeveloped caves, significant bat habitat, scientific and research needs, variety of land uses (past & present), recreational caving, World Heritage fossil deposits, above and below ground infrastructure, interpretation and education. The Victoria Fossil Cave project has been designed to be sensitive to the cave while acknowledging previous presentations, visitor comfort, research requirements, “best practice” in terms of infrastructure and maximising opportunities for community involvement.

### **HISTORICAL CAVE DEVELOPMENT AT NARACOORTE**

William Reddan, caretaker of the Naracoorte Forestry Reserve, discovered Victoria Cave on or

about April 10th 1894 (Hamilton-Smith pers. comm.) and opened for visitors in 1897. It is interesting to note a piece from the Narracoorte Herald, May 14th, 1909, which states in reference to Victoria Cave (and Alexandra Cave) - “*which the Government have wisely sought to protect and preserve in their original beauty from ruthless acts of vandalism, which have been perpetrated by thoughtless persons in the older caves.*” It is some of this “protection” and modification that we now look upon as inappropriate development, but it is important that we learn from the early management.

Victoria Cave consists of low phreatic passages connecting roof collapse chambers and required substantial modifications to allow easy access for visitors. Further modifications took place after the discovery of the Fossil Chamber in 1969. Access was developed to present science to visitors, a concept that first required the manager, Ern Maddock, and palaeontologist, Rod Wells, to convince relevant authorities that people would pay to visit a fossil site (Maddock et al 1979). By 1971 the development was complete and the new extension opened. Further work opened Grant Hall with easy access in 1974 and then an exit tunnel was created to provide a through trip in 1978. With all of this work, most of the rubble was left in the cave.

The modification of the passages generally involved excavating the floor and stacking the rubble in open areas, thus having a double impact on the cave. The piles of rubble in the cave detracted from the overall cave experience, feeling more like a mine of excavated passages than a cave and once unkindly described by a visitor as a “glorified trench”. These rubble piles also posed a safety hazard, with some stacked over head height adjacent to the path. Some of these walls had been rendered to stabilise them, but was a cosmetic solution rather than addressing the real problem.

As there are relatively few places of truly pristine karst we must also focus on correcting the negative results of past and present management, this requires a holistic/total environmental approach for effective management (Gillieson 1996). At Naracoorte Caves several projects have been completed including the removal of a pine forest and re-establishment of native vegetation to restore the natural hydrology of the area and substantial corrective works undertaken

in Cathedral Cave (Bourne 2000). This project forms a part of the corrective management strategy of Naracoorte Caves (NPWS Naracoorte Caves Management Plan). All work is being undertaken considering the future and ease with which any infrastructure we install can be removed. We consider this “reversible management”, where infrastructure may be easily removed without further impacting the cave.

## **CONCEPTUAL FRAMEWORK**

People have always had a special relationship with karst and caves. Casteret (1947) describes this deep relationship and personal inner feelings created by the cave experience as;

*“We experience such varied sensations, look upon such strange sights, live through moments so thrilling, so full of poetry; where can the joys of inward satisfaction be so keenly felt as among the surprises and the perils that await us when we go down to the recesses hidden far below the surface”.*

Visitors seek this cave experience in a variety of ways. For some, a cave tour along a concrete path satisfies their sense of being ‘close to wildness’ while others seek to confront caves on their own terms (Ash 1985). A show cave should be developed so as to make it comfortable for the nervous, but in a way that retains as much of its naturalness as possible. With appropriate development, a cave may offer ease of access; yet not detract from the natural cave environment. However, some of the most altered landscapes are those we call show caves. The range of modifications some caves have undergone is extensive.

- Entrances enlarged to provide easy access and enlargement of natural passages.
- Illuminated with every conceivable light source.
- Modifications or “enhancements” to the cave’s natural assets.
- Playing of music, including the addition of special infrastructure.
- Provision of substantial infrastructure for cave protection and visitor access.

The problem with all of this development is that the real cave disappears behind the impression the current management feels it must convey (Chew 2000). As managers we should strive to present the cave and its values in as natural state as is possible. To achieve this, we must look at all the cave’s values and present them in such a way that the cave is not lost in infrastructure nor becomes secondary to the experience. Naracoorte Caves presents a number of economic, aesthetic, cultural and scientific values, as well as protecting global geodiversity. Hence, there is a diversity of demands that may conflict

with one another (Watson et al 1997) requiring a holistic and balanced approach when any development or upgrading is considered. The struggle is to provide the opportunity for all to experience what Casteret so eloquently describes while balancing this against conservation, economic, science and cultural values.

## **THE CONCEPT OF ECOTOURISM**

Ecotourism is the idea that nature based tourism could contribute social and environmental benefits, appeared in the 1980s and exploded in the 1990s (Wearing & Neil 1999). Many definitions exist for ecotourism. We shall ignore a specific definition, however, and look at the five fundamental elements that constitute ecotourism:

- Travel - travelling to relatively undisturbed or protected natural areas.
- Nature-based - the travel involves visiting natural areas for study, enjoyment or volunteer assistance with the flora, fauna, geology and ecosystems of that area.
- Conservation-led - minimum impact and the idea that ecotourism will contribute to a sustainable future.
- Educative role - ecotourism should place an emphasis on appreciation and education through interpretation.
- Benefit the local community

While cave tourism may not fit within many definitions of ecotourism as an activity, if we look upon ecotourism as a philosophy the five fundamental elements are common to the objectives of Naracoorte Caves. Ecotourism is still tourism however and brings the same range of positive and negative impacts as tourism generally. In the cave environment we may limit numbers in an effort to be eco-friendly, however these tours take place in environments that may be sensitive to the most minimal impacts. Our aim is to achieve an ecotourism experience in Victoria Fossil Cave; perhaps not in the strictest definition, but one which is an interesting, stimulating and satisfying experience for visitors in an environment as close to its original state as is practical and in a way that is sustainable.

## **GREEN CORPS – COMMITMENT AND PASSION MAKE THE DIFFERENCE.**

A critical reason for the success of the project to date is the involvement of Green Corps. The Green Corps – Young Australians For the Environment program is a youth initiative of the Commonwealth Government. It is a youth development and environmental training program that provides young people, aged between 17-20 years, with the opportunity to volunteer to participate in projects

that conserve, preserve and restore Australia's natural environment and cultural heritage.

We developed this project of cave restoration, and evaluated how best to undertake the project with a Green Corps team involvement, acknowledging the Green Corps team would have no cave and karst knowledge. The challenge was making it work, the workforce may be keen and willing but with no real understanding or appreciation of the karst environment. How could it be let loose on the unsuspecting cave environment? To overcome this lack of specific cave and karst knowledge a member of staff (one of the authors, GB) was employed to liaise with cave management and the Green Corp team leader to provide the necessary knowledge and guidance required for this type of restoration project.

The restoration of Victoria Fossil Cave, while very rewarding, was a very hard and physically demanding task requiring the removal of many tonnes of rock in a cave/work environment of 17°C and 95% humidity. It is not a job you could pay enough for people to do willingly unless participants had an appreciation for this special and unique environment and a commitment to its restoration and preservation. We believe this commitment from both Naracoorte Cave management and the Green Corps participants was the primary reason for the success of the Naracoorte Caves Green Corps projects.

In order to develop this personal appreciation of karst, in conjunction with other accredited training the team throughout the project were inducted into the world of karst and Naracoorte Caves. This involved regular cave tours, adventure caving in undeveloped caves, contact with visiting palaeontologists, bat researchers, interaction with cave guides and discussions with the park manager.

This training and development is what made the difference, it resulted in a team of young people committed to the restoration of the cave environment and passionate in the value of the work they were undertaking. It was also considered important that the Green Corps team develop an ownership of the project (with guidance), they were encouraged to plan and implement how the job was to be carried out and contribute to all aspects of the restoration project. They undertook, and exceeded all expectations in this project with a commitment and passion in the karst environment and a belief they were making a difference, and they did.

## **DEVELOPMENTS AND REDEVELOPMENTS**

Once a cave has been developed as a show cave, it can never be returned to its natural state. We can however, undertake restoration work and minimise the impacts of visitors. Consideration should be

given to IUCN Guidelines for Cave and Karst Protection, The Burra Charter and Australian National Heritage Charter. The challenge in adopting such principles for developed caves such as Naracoorte is that there is already a long history of development (infrastructure) that does not comply with the spirit of such charters. Spate et al (1997) suggest that there are five major factors that must be considered in tourist cave engineering, incorporating the concept of "best practice". These are:

- Public and worker safety considerations
- Removability of structures
- Aesthetics of structures
- Avoidance of toxins/pollutants
- Durability of structures

Other factors such as cave microclimate, cave cleaning, cave hydrology, cave biota, palaeontological and archaeological values for example, must also be considered when undertaking development or redevelopment of a cave. We cannot hope to reverse all previous developments, but we should learn from them and implement corrective strategies (Watson et al 1997). It would be arrogant, however, to think that the best management practices of today will not be usurped in the future, hence we should consider the reversibility of our management.

It was the removal of rubble that instigated the project, but as it has progressed the opportunity to address several areas of infrastructure has arisen. The enlargement of the access into the Fossil Chamber itself in 1970 involved the installation of a short ladder. This ladder was constructed of red gum *Eucalyptus camaldulesis*, a hardwood timber that in the course of just over 30 years in the humid cave environment had degraded to a condition that required it be replaced. Unfortunately, the ladder was concreted into the floor and required substantial work to remove it from the cave. The replacement we have installed has a steel frame (double galvanised) with steps of recycled plastic. While some more cave-friendly products may be available, the replacement ladder is held in position with just four bolts into the concrete floor making removal very simple when the need arises.

Recycled plastic has proved to be a useful and workable material for cave infrastructure. A one metre bridge spans a wet area where a pump is installed, replacing a rusty steel structure that had lasted less than ten years, introducing significant pollutants to the cave. A timber and rope barrier has also been replaced with a short fence constructed of recycled plastic posts and plastic rails. It is proving secure, is aesthetically pleasing and is extremely durable and non-toxic to the cave. Both of these installations may be easily reversed if better products become available.

Lighting is an area of cave development where a multitude of systems and types of lights are used. Victoria Fossil Cave is no exception, with the evidence of old lighting systems visible although most has been removed. Many light fittings were fixed to rocks and the back of flowstones away from view, but we feel this type of installation is unnecessary and destructive. New lighting has been installed so it is easily moved. The advantage of this is two-fold, there is no damage to the cave and it is possible to vary the scenes and effects the lights create.

The revamped area of Victoria Fossil Cave has lighting that highlights the roof collapse and slabs revealed under the rubble, lights that show the low phreatic passage typical of the cave and not just the speleothem development. A small area of fossiliferous sediment has been uncovered and while not scientifically significant, provides another interpretive opportunity.

A handrail that had been installed to protect an area of quite attractive speleothems has been removed. Protection is afforded to the speleothems by the natural rocks that form a barrier but more importantly, by restricting group sizes to what will comfortably fit in any given location of the cave. In the quest to deliver a better product and for the guide to retain control of the group, group sizes have been reduced from 40 to 30 and then down to 25 over the past few years. The Victoria Fossil cave tour is now NEAP (Nature and Ecotourism Accreditation Program) accredited. Accreditation of this type is an acknowledgement of wise and sustainable use of the cave, but we must stress that such a program will only be successful in cave tourism if all operators strictly adhere to the program's standards.

## CONCLUSION

Each cave has its own identity, but too often we hear, "seen one cave, seen them all." Surely this has come about through the way caves have been

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developed and presented, uniform and predictable. A cave system should aim to present as many of its values as possible providing a variety of visitor experiences. Naracoorte has for some time been presenting values other than the speleothems of its caves. Reddan planted gardens in Blanche Caves; a reflection of the Victorian era, with the gardens regarded as much a feature as the caves themselves. Naracoorte brought palaeontology to visitors in 1971 and then took visitors into the secret world of bats via infrared technology in 1995. The Wonambi Fossil Centre then brought extinct animals to life; a combination of science and art set a new standard in interpretation for caves in Australia.

Cathedral Cave has been restored and developed to offer a different experience by torchlight. Problems of past management practices such as placing concrete collars around its entrances have been removed and natural water flow re-established, with algae and ferns now flourishing. Much of the unsightly candle smoke graffiti has been removed as has rubbish left by early visitors. The site interpreter does not hide these issues, but rather uses them to highlight how we are better learning to manage and present our karst resources. Attitudes towards the environment are changing, with the wider population becoming more aware of environmental issues. The Victoria Fossil Cave project is correcting past developments but doing it in a readily reversible manner, incorporating presentation, interpretation, preservation, restoration and scientific opportunities and the integrating all of these factors into the management of the jewel of Naracoorte Caves.

A cave is not a classroom, but you can learn there; it is not a museum, but it holds artefacts; it is not a theatre, but is entertaining; it is both robust and fragile; ever changing but seemingly static; isolated but interacting with all around it. By considering all of these factors, we can present the "real" cave, immersing visitors in a total experience, not observing from a distance.

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