CONSERVATION OF GEOLOGICAL MONUMENTS AS HERITAGE ITEMS

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INTRODUCTION

During recent years the Geological Society of Australia (GSA) has attempted to develop a method for conserving important geological sites located in the natural, that is the outdoor, environment. However, noting that the Institute for the Conservation of Cultural Material (ICCM) has expressed interest in the conservation of outdoor sites, for example in the discussion paper 'The Preservation of Outdoor Sites: Establishing an ICCM Sub-committee', it was decided to submit this paper in order to inform ICCM members of similar problems which have been experienced by the GSA and suggested ways of dealing with them.

The problems geologists encounter in attempting to conserve geological monuments are mainly those of remoteness and therefore inability to police any legal constraints which may theoretically protect a site. Thus geologists are not so much concerned with conservation of fabric and cultural material, but more with preventing people from physically damaging a site or from collecting specimens illegally, which would ultimately destroy the very feature which is supposed to be protected.

GEOLOGICAL MONUMENTS

Outcrops of rocks which have special significance for revealing fundamental aspects of geology and geological history are called geological monuments.

They are:

- rare;
- irreplaceable;
- of a value unappreciated by most non-geologists unless the site happens to be aesthetically appealing or well known;
- of particular value for teaching and for scientific research.
HISTORICAL BACKGROUND TO THE FORMATION OF THE GEOLOGICAL
MONUMENTS SUB-COMMITTEE

A good example of a geological monument is at Hallett Cove, about 20 km from the City of Adelaide. Here, there is evidence of a 270 million year old glaciation of Permian age. The bedrock surfaces are scratched and striated by the action of a glacier grinding across them many millions of years ago. Sediments comprising rock flour and boulders were deposited in lakes and distributed by streams when the ice retreated. Examples of these sediments are still there today even though much of what remains has been lost to development.

This geological site shows at a glance many of the significant events of the geological history of South Australia over the past 600 million years, including evidence of the separation of the Australian continent from Antarctica about 45 million years ago. The glacial pavements and sediments associated with this ancient glaciation at Hallett Cove are now famous throughout the world; they have been described in scientific literature and are much visited by students of geology.

They were first discovered by Professor Ralph Tate in 1877 and studied by Professor Walter Howchin in 1893. In 1956 Professor A.R. Alderman made the first moves to conserve the area by asking the Marion Council and the newly formed National Trust of South Australia to attempt to preserve the glacial pavements.

A generous bequest from the Sandison family in 1960 secured 1.2 hectares, which was increased to 4.0 hectares in 1965 and named the Sandison Reserve. It was soon realized that this area was too small to preserve the total story of the glacial rocks in relation to those younger and older. Indeed protection of the soft glacial sediments had been overlooked and only the striated pavement was protected.

In 1966 the GSA formed the Geological Monuments Sub-committee to promote the protection of Hallett Cove. Action by this Sub-committee resulted in the declaration by the State Planning Authority in 1969 of an additional 21 hectares as a Site of Scientific Interest (SSI).

In 1970 and 1971 the Sub-committee worked vigorously with other bodies including the National Trust, science teachers and local people when it became known that the owners of much
of the land had plans for subdivision of the reserved and adjoining unreserved land and for construction of a large private boat-harbour in the Cove. Tens of thousands of protests poured in from members of learned societies and citizens at large. As Maud McBrirr, who was Convenor of the sub-committee, describes:

Interest soared and there was an overwhelming demand on the Government to secure an even more extensive area, including the Cove, for permanent protection of the natural features. ²

The Government, under pressure, acquired 47 hectares of land (including the SSI), which became a Conservation Park under the control of the National Parks and Wildlife Service of the Department of Environment and Conservation, as it was then. All penalties and provisions covering Conservation Parks now apply to this area.

Since then much more extensive housing development has grown up around the Park. A later approach to the Federal Government only resulted in three house-sized blocks of land at the southern end of the Park being purchased for a ranger's residence and three blocks at the northern end to preserve an important glaciated pavement on the edge of the cliff which was outside the Park.

Considerable pressure is placed on the Park by the continually growing surrounding population. The GSA believes that the best way to try to protect the important geological features preserved in the Park is by educating people to know and to recognize their importance. The Society arranges an Open Day each year, with experienced guides on site and publicizes it widely, encouraging people to come and enjoy the features of the Park and learn about them at the same time. Apart from that, the only protection is given by the National Parks and Wildlife Service ranger who does not actually live on site at this stage. He has many other parks to look after and is actually based at Belair Recreation Park.

WORK OF THE SUB-COMMITTEE

The Hallett Cove example caused the GSA to realize that other valuable geological monuments should be documented and action taken for their protection.
From 1966, when the Sub-committee was formed, documentation was slow. Then in 1975 when the National Estate Grants Scheme began, the South Australian Sub-committee achieved one of the first grants. It was then able to employ a consultant and proceeded to document sites throughout the State, producing its first report of approximately 50 sites in January 1977. Since then four more reports have been produced describing 250 sites in all; a sixth report is almost completed.

Subsequently, funding from the National Estate Grants Scheme has also been given to Divisions of the GSA in other States and the project has taken on a national aspect.

Early National Estate grants stipulated that the geological sites should not be given publicity before protecting the area, hence only 16 copies of each report were made. They were only given to planners in Government Departments (e.g. the Department of Environment and Planning, the Coast Protection Branch, the Department of Mines and Energy and the Australian Heritage Commission in Canberra).

Today, this policy has changed because it has been realized that mineral and oil companies exploring in remote areas want and need to know what must be protected. Also, local Councils have more planning powers nowadays and benefit from knowledge of geological monuments in their districts. Thus the Sub-committee now circulates information to all local Councils as to what geological monuments are included in their area, in the hope that when supplementary development plans are prepared account will be taken of the need to protect these valuable sites. The data is also circulated to other bodies, especially for teaching purposes, on the principle that education should promote protection.

It is difficult to resolve the dilemma between publicizing the information and protection of the sites. The same sort of problems must also be present with respect to attempting to protect archaeological sites.

Is it better to inform authorities and the public about the sites and hope that they will therefore protect them? In doing so it must be realized that when more people know about such sites the risk of damage and destruction by collectors of minerals and fossils is heightened.

Or is it better to keep the sites secret and run the risk of
destruction through ignorance or accident?

TYPES OF FORMAL PROTECTION

Listing as a geological monument offers no protection in itself. However a number of sites have been included in the Register of the National Estate, a Commonwealth Government inventory of significant places in the cultural and natural environment of Australia.

Registration imposes some constraints on the actions of Commonwealth Ministers and authorities. The Australian Heritage Commission Act, which established the Register (RNE), provides that:

Commonwealth Ministers and agencies must not take any action which would adversely affect any place in the Register unless there is no feasible and prudent alternative, or unless all action is taken to minimize damage where there is no such alternative. The Commission must be informed of, and given time to comment on any Commonwealth action that might significantly affect a place in the Register.

The Commission has no power over the actions of State or local governments, or private owners that may affect a place in the Register of the National Estate. Nor does registration mean that the Commission can acquire property. The entry of a place in the Register has no effect on the status of a place regarding public access.4

Additionally, there are no financial penalties or penal clauses in the Act. Thus little legal protection is given to a geological monument on the Register, only moral protection.

The Sub-committee recently held discussions with the South Australian Heritage Committee of the Department of Environment and Planning and has been encouraged to nominate some sites for the Register of State Heritage Items under the South Australian Heritage Act. Quoting from the brochure Conserving South Australia's Heritage under the section South Australian Heritage Act 1978:
The inclusion of an item on the Register provides community recognition of the important status of a particular building, structure or place as part of our heritage. It also brings into action parts of the Planning Act 1982.

There are strong penalties under this Act for alteration, damage or destruction of a listed item. Thus it offers stronger legal protection than the Australian Heritage Commission Act. Also the South Australian legislation now offers protection against vandalism, etc. through 'conservation orders' which the Minister can impose at any time and which are valid for 60 days. When ratified they last indefinitely. If a site is under threat from development a conservation order can be placed on it very quickly while it is investigated further.

However, even though the South Australian heritage legislation, plus the Commonwealth legislation, sound effective, in practice they are not. No legislation is effective unless it can be policed. Consequently, sites located in remote areas are virtually unprotected even if they are listed on the Registers.

Nevertheless it is hoped that as people become more familiar with the importance of geological monuments and of listings on the Register of the National Estate or the Register of State Heritage Items, they will have more respect for and thus be able to give greater protection to, geological monuments wherever they are.

TWO CASE STUDIES

The following examples illustrate the dilemma faced by the Sub-committee in trying to protect geological monuments:

The Arckaringa Hills

This area is listed on the Register of the National Estate and is described in the Heritage of South Australia...

The Arckaringa Hills is an unusual area with fragile, scenically attractive and distinct features and has an important and finely balanced ecology. The geomorphological value is high because of the several
old land surfaces that can be distinguished in the landscape. The area is important as a habitat of the Perentje, interesting avifauna and rare plant species.\textsuperscript{6}

Submissions by the Geological Monuments Sub-committee based on the intrinsic value of the Arckaringa Hills, resulted in a considerable area being reserved from Part VII (Precious Stones) of the Mining Act. This reservation refuses permission to mine down to a depth of 50 metres.

Despite these two levels of protection a small hill within the listed site was damaged recently when a straight seismic line was run through it. If the company exploring for petroleum had understood the importance of the area the seismic line could have been plotted differently, sited to the north or south of the hill. Apparently the lines of communication between the authority granting the lease and the company, were not clear enough, resulting in considerable damage to the geological monument.

However, this case has resulted in a more active environmental care by the operating company. The hill has been 'repaired' as well as possible in the circumstances and progress will be monitored by the Department of Environment and Planning.

On our part, the Sub-committee is trying to make our sites better known to the companies.

Christmas Cove

Another controversial site has been Christmas Cove on Kangaroo Island, which is under considerable threat from tourist and recreational development.

This is an attractive small cove on the northern side of which is good evidence of Permian glaciation. The hard Kannantoo metamorphic rocks are striated in some places and they are overlain by soft, unconsolidated glacial till which contains an occasional erratic. The whole cove is a small valley which was gouged out of the landscape by a glacier approximately 270 million years ago: the same glacial period as Hallett Cove.

Plans for expansion of an existing marina, plus extensive car-parking were two years old before the Sub-committee heard about them. It was later found that the local Council had not
even heard about the plans either. We discovered that the best evidence of Permian glaciation on Kangaroo Island would have been obliterated by concrete for car parks if the plans went ahead in their present form.

Discussion with Recreational Boating officers and the Department of Marine and Harbours has fortunately led to promises of amended plans and protection of the important geological features.

CONCLUSION

It has been these last two examples which have prompted the Sub-committee to approach the State Heritage Committee to seek their view of our nominating geological sites for the State Register, which has more strength than any other type of listing.

I am sure that this discussion of our attempts to protect geological monuments will have contained many aspects which will be quite foreign to the majority of delegates at this conference, which is devoted to conserving cultural materials. But I venture to hope that enough similarities will exist, particularly in the case of archaeological sites.

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REFERENCES:


4. AUSTRALIAN HERITAGE COMMISSION brochure, prepared by the Australian Heritage Commission, Canberra, ACT, 1986.

5. CONSERVING SOUTH AUSTRALIA'S HERITAGE brochure, prepared by the Heritage Conservation Branch of the Department of Environment and Planning, Adelaide, South Australia.