

AUSTRALIAN JEWELLERY AND GEMSTONE INDUSTRY
• COUNCIL INC •

29 August 2002

Committee Secretary
Standing Committee on Industry & Resources
House of Representatives
Parliament House
CANBERRA ACT 2600

Dear Sir or Madam,

INQUIRY INTO RESOURCES EXPLORATION IMPEDIMENTS

The Australian Jewellery Gemstone Industry Council formed an opal strategy group in response to the findings of the National Opal Symposium at Coober Pedy 10-12 April 2001.

We enclose a copy of a draft background paper, which is intended to be used as the basis for a National Opal Strategy for Australia. The issues referred to in the terms of reference of the inquiry are covered in the body of this draft report. This report is a collection of papers provided by the various associations who are members of the council but are not necessarily the views of the council itself as this document is only in draft form.

The individual opal mining organisations will forward submissions, which will give an in depth view into the particular impediments in their own regions.

In reply to your terms of reference the council supply the following:

- **An assessment of Australia's resource endowment and the rates at which it is being drawn down;**

Australia produces the majority of the world's opal, ranging between 90 – 95% of world production. Despite the fact that opal exports have ranged between \$200 – 400million Australian over the last twenty years, the value of mine production has fallen dramatically over recent years. Mining industry estimates as high as a 70% fall in production are being reported.

It is generally believed that the main cause is that traditional mining areas are being exhausted and that access to prospective opal bearing ground is a major impediment.

Opal genesis is poorly understood as there is no technology available to accurately determine the location of opal deposits. Most geologists believe that Australia has only scratched the surface of the potential opal source in this country.

- **The structure of the industry and role of small companies in resource exploration in Australia;**

Opal mining and opal prospecting is carried out almost exclusively by individuals or small partnerships. Public and larger companies have tried unsuccessfully to be involved in the opal industry. Because of the elusive nature of opal and the inability to assay the value of an opal mine it is likely this industry will remain in the domain of the small miner.

- **Impediments to accessing capital, particularly by small companies;**

Opal exploration mining is a high risk industry and financial facilitators will usually only lend against traditional collateral. Opal miners find it difficult to demonstrate consistent financial success due to the nature of opal exploration and mining, therefore banks are often unwilling to provide finance. The problem is also exacerbated by property prices, which are declining in rural areas.

- **Access to land including Native Title and Cultural heritage issues / Environmental and other approval processes, including across jurisdictions;**

Different states place different interpretations and requirements on the mining industry. Prospectors have found it increasingly difficult to comply with increasing number of bureaucratic requirements. In regard to native title New South Wales and South Australian Governments have proclaimed precious gem and mineral fields but Queensland has been severely affected. Queensland opal miners have had few titles issued within the last seven years.

The Queensland Government promoted the use of Indigenous Land Use Agreements (ILUA) process for miners to attain access. Following years of negotiation between the State, the Aboriginal representative groups and the Queensland Boulder Opal Association only one ILUA has been finalised with another seven to ten left to negotiate.

The opal fields of Queensland cover over 100,000 square kilometres. This has posed a major hurdle for the ILUA process, as there are many traditional land claimant groups whose claims frequently overlap each other. Under the Native Title Act each and every land claimant group have the right to cultural heritage inspections and compensation over these overlapping areas, which are frequently in areas of commercial interest to opal miners. Small miners cannot afford these additional inspections the Federal government has committed them to.

The traditional land claimants are opting for ILUAs to be current for periods of up to ten years, which will only provide temporary relief for miners. Resources for future funding of ILUAs once the term has expired needs to be assured.

Those States that have set aside areas under proclamation for precious stones mining are able to operate within those precincts however any attempt to open other areas for exploration have been met with inequitable delays particularly in the case of Queensland.

The State of Queensland also actively promoted Alternative State Procedures, which have been ruled invalid by the Federal Court and is currently awaiting appeal. It appears that native title, pastoralists and environmental issues have ascended in importance to the detriment of the miner's right to explore and mine. As exploration declines so does the future of the opal industry.

▪ **Public provision of geoscientific data;**

There is generally easy access to scientific data although its value to the opal miner is questionable. This is because although the data may hold considerable promise there is still no workable opal deposit model. The council is currently planning a centre for opal deposit studies within the Australian Museum's Geodiversity centre. Attached is a draft position paper for your information. It is hoped that the provision of the results of these studies over the next few years will help develop a clear model for opal deposition.

▪ **Relationships with indigenous communities and Contributions to regional development**

The opal mining industry is situated in a wide arc across rural Australia employing thousands of opal miners. The towns of Coober Pedy and Lightning Ridge are also tourists centre and provide infrastructure to a wide area surrounding the townships. The relationships with indigenous communities are seen as very important to the future of our industry. Long periods of negotiations with indigenous communities and governments are testament to the respectful stance taken by our industry. Members of indigenous communities are participants in our industry.

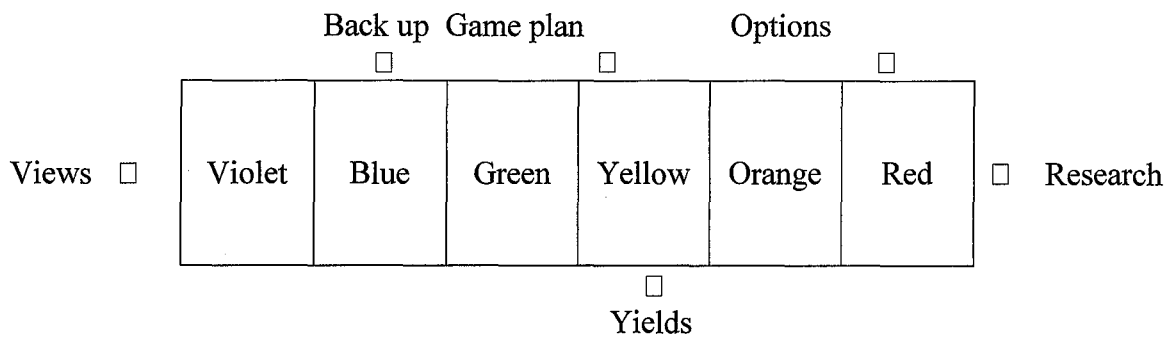
The Australian Jewellery Gemstone Industry Council is very concerned about the industry and the issues raised by the standing committee in this inquiry. Further information is available from the chairman Andrew Cody or any of the opal mining industry associations.

Yours faithfully

Andrew Cody
Chairman
Australian Jewellery & Gemstone Industry Council (AJGIC)

OPAL PROJECT

- Organisation: Australian Museum
(+ affiliated groups)
- Personnel: Opal researcher
(+ support people)
- Activities: Opal studies
(+ fund seeking)
- Liaison: Opal network
(+ publicity)



Position Paper for Opal Opportunities, Australian Museum

Prepared: F.L. Sutherland, Geodiversity Research Centre, Australian Museum

in consultation with: Andrew Cody, National Opal Centre, Sydney, N.S.W.
Simon Pecover, Pan Gem Resources (Aust) P.L., N.S.W.
John Watkins, NSW Mineral Resources, Sydney, N.S.W.

POSITIONING THE AUSTRALIAN MUSEUM WITHIN THE OPAL SPECTRUM

Background

The mineral opal (hydrated silica) in its precious varieties (colourplay opals) has proved a valuable resource for Australia since its first official finds in Queensland near Jundah in 1872. The infinite colour combinations and textures in precious opal and the human interactions involved in mining the stone in arduous outback conditions has led to a colourful history. This precious mineral has gained a premier world status for worked stone and official recognition as Australia's national gemstone in 1995. The opal fields lie in three main states, New South Wales, South Australia and Queensland. Between them they produced some Aus\$73 million value of opal in 2001 (ABS International Trade Report). The most valuable black opal (from Lightning Ridge, NSW) made up about \$39 million in value of this. However, the trend is to diminished returns, e.g. the value was \$79 million in 2000.

Beside the value of opal sales, both within and through export from Australia, the opal industry provides ancillary value in commercial activities such as jewellery setting and design, local trade and employment benefits, outback rural development and tourist trade spin offs. The total industry value is hard to pin down accurately, but is estimated at between \$200-\$400 million a year as an export industry. However, a decline from \$400 million in 1990 to \$200-\$250 in 2000 has been suggested from industry sources. The demand for natural precious opal remains strong, despite considerable advances in manufacturing synthetic opal products overseas. One problem for the Australian industry is to meet future demands for the natural stone against depletions of opal quality and quantity in its sources, while knowledge to promote successful new opal exploration remains piecemeal. Recognition of impending problems in sustaining the opal industry has led to recent industry initiatives. This includes moves to plan, organise and inform the industry on a more comprehensive basis. This plan involves co-operation between the Australian Jewellery and Gem Industry Council (AJGIC) and the Northern Regional Developmental Board (NRDB).

Some recent reports encapsulate the present parlous state of the opal industry and strategies and research needed to arrest further decline. One factor involves geological input into exploration for new opal deposits, including research on opal genesis. This gives the Australian Museum an opportunity, through the Geodiversity Research Centre, to engage the problem. The relevant reports include a 1999 Overview of Opal Research in Australia (Horton Geoscience Consultants). This recommends two major research projects, including post-graduate studies at the University of Queensland. A 2001 draft report (McKinna et al., P/L) on Strategic Assessment of the Australian Opal industry (NRDB) listed a research and development program in its key elements. This thrust was further developed in a 2001 Report on Opal Genesis and Opal Exploration (AJGIC). It explored models of opal genesis and suggested formation of a centre for Australian Opal Deposit Studies. It also suggested the Australian Museum and the Geodiversity Research Centre as a potential site. This Australian Museum Opal Site is designated as AMOS for convenience in this discussion paper.

Several research institutions have previously progressed research on the genesis of opal and its geological settings. Among them are State mines departments, Commonwealth agencies such as CSIRO and BMR (renamed AGSO), and now Geoscience Australia (GA), some Australian universities and State museums. These studies include palaeontological work on opalised faunas and floras, and the Australian Museum is a player in such research.

Approach

For the Australian Museum to contribute to new opal research, the Museum needs to harness its potential resources, with other key participants, viz. opal trade organisations, operating opal mines, state mineral resource departments and various research organisations (universities, CSIRO, GA, museums). The most effective approach from the museum would be a multi-pronged approach. This would involve building up:

1. **Organisation:** where the Museum (AMOS) acts as a co-ordinating hub, with affiliated groups and partners.
2. **Personnel:** where appointments of opal researchers and co-ordinators to AMOS provide critical mass to the activities.
3. **Activities:** where opal research (field and laboratory) is promoted.
4. **Liaisons:** where research support involves multidisciplinary liaisons.

1. **Organisation:** The tri-state opal fields encompass far-flung and diverse scenarios. The Australian Museum, on its own with restricted resources, clearly cannot effect a significant shift in opal prospectivity. However, by forming an active opal research unit that not only co-ordinates with but also acts as a co-ordinator within a network of opal interests, the Museum can play a catalytic role.

This role requires co-operation with relevant research institutions, mines departments, mining companies, active opal miners, gem trade organisations, and other supporting partners. Both core research and co-operative opal activities by the Museum will require adequate funds, which needs to tap various funding sources. Because of the plethora of potential research directions, organisational interactions and funding sources, an immediate priority is to organise a cell of opal workers to consider the best steps forward.

Such a cell can be quickly set up through the Geodiversity Research Centre, drawing on a nucleus of 'opal-aware' committee members and adding a few key activists. Present committee members who would be effective in an Opal Action Group include F.L. Sutherland (research scientist), R.E. Pogson (collection manager), G. Webb (gemmologist), S.R. Pecover (Pan Gem Resources) and B. Dent (hydrologist, University of Technology, Sydney). For extra opal expertise the group could enfold J. Watkins (Mineral Resources NSW, Sydney), A. Cody (National Opal Museum, Sydney) and a palaeontologist involved in opalised remains (Director, or other staff, fellow or associate?). This action group would suggest some initial strategic directions for opal research, funding and networking.

A more solid opal organisation can arise from this embryonic group, as more definitive links are made to specific research institutions, opal projects, opal fields, government bodies and trade interests.

2. **Personnel:** Appointment of an opal researcher and support for the position is a prerequisite to catalyse the Museum opal venture. Two types of researcher present as potential options. One is a field/structural based researcher to study emplacement of precious opal deposits in their geological setting. The other is a laboratory researcher to study internal properties of precious opal to elucidate its genesis. Ideally, both types of researcher are

needed for a significant study on opal genesis. With restricted resources however, a selected specialisation can be augmented by active links involving complementary research partnerships and outside institutions.

At present, joint funding for a research position seems the most feasible prospect. A joint position, funded by the Museum and a collaborating university, with possible trade support has advantages of access to university infrastructures including new technology and a range in equipment. Drawbacks in a joint museum-university position may involve time and duty conflicts in serving two 'masters'. Clearly, such a joint appointment needs detailed consideration of the duties, logistics, housing and institutional viewpoints for an effective research arrangement.

Providing appropriate funds and working conditions are established, a long term appointment of a senior research scientist, with a potential entourage of grant-funded students, would give flexibility to cover broad scale and detailed opal research. Alternatively, successive short term appointments (3 years?) involving different research specialities may provide flexible progress in tackling opal genesis. However, considering the known unpredictability inherent in finding opal deposits, long term research is a more likely to achieve fundamental progress.

Among Sydney universities to consider for a joint opal research position, the University of New South Wales and the University of Technology, Sydney, appear the most promising partners. UNSW has obvious links through the Director of the Museum and has appropriate analytical equipment and a range of potential support departments outside of geology (material sciences, etc.). The University of Technology, Sydney has strong links with Museum Mineralogy and also suitable equipment for opal studies. Professor Brian Low, A.M., a mathematician and educator and former President of the Australian Museum Trust, 1990-1995+ and a Pro-Vice Chancellor (Academic Support) at the University may prove a useful advisor and facilitator for high level contact. Although retired from the University in mid-2001, he still resides in Sydney.

Both these universities and the Australian Museum have relatively small geological fraternities, incorporated into other disciplines, so that a joint research appointment will provide a new mutual strength. University of Western Sydney, School of Science, Food & Horticulture, also has strong links with Mineralogy in the Museum through Professor Peter Williams, Chemistry Department. However, initial discussion suggested a joint opal appointment would prove difficult at present.

In appointing an opal researcher and related personnel, it is important the position be grafted into a Museum structure that has a strong support base in Mineralogy. A replacement in the vacant research scientist position in Mineralogy needs filling beforehand. This post-doc appointment will free up present pressures on Mineralogy collection management and research, and allow more viable support to an opal research position.

3. Activities: To initiate active opal research within AMOS requires selection of the most suitable research direction/s. These directions in turn will influence activities to fund, support and publicise these research. The genesis of precious opal remains poorly understood in comparison to other gemstones, such as diamonds and sapphires, and precious and basic metals, all of which have had extended research and modelling directed to their origin. At least three models for precious opal genesis currently vie for attention; the weathering, syntectonic and microbial models. Exploration methods for locating new opal deposits are

also under review with new technologies ranging from satellite imaging, geophysical prospecting and ultra high magnification microscopic techniques. More detailed expositions on different opal models and opal exploration methods are presented in Burton & Mason (1998) and in the AJGIC work party report (Watkins, Pecover & Townsend).

A range of research areas is listed here as potential fields for AMOS directions.

- a) Tectonic structural studies of opal deposits.
- b) Textural study of opal deposits, veins and replacements.
- c) Sedimentology of opal-bearing and bounding horizons.
- d) Palaeochannel influence on silica deposition.
- e) Geological mapping of opal facies.
- f) Opal dating, search for absolute methods.
- g) Microbial studies related to opal genesis.
- h) Biogenic opal formation.
- i) Fluid inclusion studies in opal.
- j) Mineralogy of precious opals, including laser Raman studies.
- k) Mineralogy and geochemistry of associated opal host rocks and secondary minerals.
- l) Geochemical techniques in opal exploration.
- m) Silcrete studies in relation to opal deposits.
- n) Geophysical techniques in opal exploration.
- o) Remote sensing characterisation of opal deposits.

Given the likely nature and resources involved in AMOS research directions b), f), g), i), j) form the more likely avenues for initial research, but all aspects need consideration in terms of partnerships and liaisons. Microbial studies of opal may form a field of opal study that has particular appeal for a natural history project.

A review of opal research in Australia, both scientific and exploration (Norton report, 1999) highlighted areas of needed research. It recommended two major university research projects for the University of Queensland. These were:

- Structure and geomorphology of the Central Australian Opal fields.
- Weathering geochemistry and geochronology of opal host rocks.

These projects would involve field and laboratory studies, several Honours' and Masters' projects and seeking of ARC grants to help fund post-graduate research. Clearly, in setting its research directions, AMOS would need to avoid duplication of, and link into, this research plan. The full plan remains confidential, but a NSW Minerals Department request to the University of Queensland for release of the report is underway through John Watkins.

Funding for establishing AMOS includes 'seed' funding to set up the project, funding for an opal research appointment and subsequent funding for research activities. Costs for setting up and prioritising opal research directions has been requested in an AJGIC-NRDB Regional Minerals Program for \$23,000. This represents a minimal amount, as a comprehensive appraisal program could involve scientific evaluation beyond the specified 2 months and also incorporate inspection visits to opal fields. This initial examination phase could be augmented by secondment of scientific expertise from interested parties, such as NSW Mineral Resources. Mechanisms involved in secondment arrangements need detailed scrutiny for best

effect. Another alternative is an application by an appropriate person through the Museum Visiting Fellowship scheme.

Salary costs for an opal researcher can be met through a shared appointment with an appropriate University. The Museum's share could come from the National Opal Museum annual contribution fund and possibly funds from salary savings from a post-doc position in Mineralogy. If the opal appointee brings no accompanying grant money then the opal research program could be seeded through the Museum Research Scheme, with the aim to secure further funding through other sources such as ARC and industry grant schemes. Responsibility for raising funds for opal research could be incorporated within the appointment brief. Some potential avenues for research funding can be outlined through the opal action group, but firmly based applications will require input from the new research appointment.

4. Liaisons: As opal deposits occupy large areas over three Australian States, extensive liaisons are needed to cover this situation. One aspect raised by Andrew Cody is that successful opal miners need interviewing for potential clues to opal genesis and further exploration. This will involve direct contacts on the fields, and require co-operation with miners' associations, perhaps facilitated through Andrew Cody. In regard to NSW fields, good liaison is available through NSW Mineral Resources and their contacts via John Watkins, who has a versatile expertise on both opal exploration and research sides. Another key contact is Simon Pecover, a sapphire miner, with a museum, NSW Mineral Department and academic research background (Univ. Technology Sydney; Sydney University). All three have wide networks to assist AMOS. Further potential research contacts, in Sydney include Professor Arbi Ray, Dept. Chemistry, Materials and Forensic Science, University of Technology, Sydney (has post-graduate students working on characterisation of Australian opal) and Tony Smallwood (Angus & Coote, Sydney with an M.Sc from Univ. Technology, Sydney in characterisation of volcanic and sedimentary opals).

For South Australian, Jack Townsend recently retired from the South Australian Mines Department has extensive knowledge of South Australian opal deposits and exploration and has contacts with Museum Mineralogy staff. The South Australian Museum, Adelaide, presents as a potential Museum research partner, with collection strengths in opal and opalised fossils in Earth Science. A recent joint appointment in the SA Museum and Geology & Geophysics, University of Adelaide, Dr. Joel Brugger (fluid inclusion studies) would provide a useful link for opal studies in that field.

For Queensland, Dr. Cec Murray, Natural Resources and Mines, Queensland, Brisbane is a known contact for geological survey research. Dr Paulo Vasconelos, Economic Geology and Geophysics, Dept. Earth Sciences, University of Queensland, is active in research on silica and opal deposition. Dr Phillipa, Uwins, Centre for Microscopy and Microanalysis is an expert in ultra-high resolution of Environmental Scanning Electron Microscopy techniques, specialities of particular use in liaisons involving bacterial studies in opal.

Further potential research liaison includes Dr. John Mavrogenis, Research School of Earth Sciences, Australian National University, who has interests in and students working on opal genesis. Publicity for the Opal project will require liaisons with the media and PR personnel in the opal industry. Besides Museum avenues, Dr. Paul Willis (ABC TV) is a Geodiversity Centre committee member and a link of media advantage.

Overseas liaisons may also assist AMOS. Mineralogy in the Museum has close contacts with researchers in the International Gemmological Conference network. These include researchers, such as Dr. Emmanuel Fritsch, Institut des Materiaux Jean Rouxel, Nantes, France, who studies opal including Australian materials.

Recommendations

1. Form an Opal Action Group within the Geodiversity Research Centre and include key outside participants (Cody, Watkins).
2. Use this group to suggest appropriate research and support avenues for opal research in the Museum (AMOS).
3. Organise a joint Museum/University research appointment funded from Museum and outside sources.
4. Build up an active network of liaisons to foster positive outcomes for the opal industry through research and partner links.
5. Publicise the opal project, perhaps through an explanatory booklet such as the Fate booklet, and through various media and opal trade outlets.

References (unpublished reports)

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Horton D., 1999. State of Opal Research in Australia. Horton Geoscience Consultants (confidential report), University of Queensland.

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Australian Jewellery and Gemstone Industry Council Inc.

National Opal Industry Strategy Background Paper

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Introduction

The intention of this paper is to identify the key issues confronting the development of the gemstone industry, as a foundation for the development of an industry strategy.

The report has been initiated by the Australian Jewellery and Gemstone Industry and the South Australian Northern Regional Development Board (responsible for the main opal mining areas in South Australia), who together with the Resources Development Division (within the SA Department of Industry and Trade), funded the project.

Essentially, the report is based on a collection of contributed papers covering what is judged by the industry to be the key strategic issues.

The report is to be widely circulated among participants and key stakeholders in the Australian opal industry to provide background information on, stimulate discussion and focus attention on advancing the industry.

The paper has been compiled and edited by David McKinna et al Pty Ltd. However, there has been no attempt to change the content of the original articles.

Please note that the views presented in this report are those of the authors and do not necessarily reflect the views of the Australian Jewellery and Gemstone Industry Council Inc, the Northern Regional Development Board, or David McKinna et al Pty Ltd.

Background

The Australian Jewellery and Gemstone Industry Council (AJGIC) was established in 1991 by resolution of the Australian Minerals and Energy Council (AMEC). The AJGIC is the industry forum representing all national associations of the jewellery and gemstone industry in Australia.

The opal is Australia's National Gemstone. The industry is a significant contributor to exports with revenue of \$200-\$400 million annually. With the removal of the major impediments to growth, current revenue is only a fraction of the true potential.

For a number of years the opal industry has been in decline. The industry has reached crisis point, as all opal fields are producing significantly less.

In April last year, the second opal symposium was held at Coober Pedy. At a gathering of 150 industry, government, scientists and miners from around Australia, the industry demonstrated a strong will to try and resolve the important issues. The same themes were reinforced by many of the speakers. Issues such as fragmentation, low production, taxation, and the uncertain theory of opal formation, were all identified as impediments to the growth of the opal industry. The symposium was enormously successful and inspired many to bring these issues to the Australian Jewellery and Gemstone Industry Council (AJGIC).

The council identified nine areas of concern and established working parties comprising those most qualified in their respective areas to study the issues and report back to the Council. The nine areas were as follows: production NSW, production SA, production Qld, opal genesis, opal cracking, taxation, marketing, national training and the formation of an industry peak body.

In October 2001, the AJGIC executive agreed to jointly fund the drafting of a report that consolidated the important findings of the working parties into a single document.

The Northern Region Development Board of South Australia (NRDB) recently completed a strategic assessment of the opal industry. A number of key elements recommended by the Board, are in line with the views of the Council. These bodies have decided to combine their efforts, in order to reinforce the achievement of their mutual goals.

Structure of the Report

The report is comprised of fourteen contributor papers as follows:

- Northern Regional Development Board Report
- Minutes of the Council's Strategic Planning Meetings
- Various correspondence
- Lightning Ridge Miners Assoc. reports (Jerry Lomax)
- SA Opal Miners Assoc. reports (Geoff Coote)
- Queensland Boulder Opal Assoc. reports (Kevin Phillips)
- Opal Genesis (John Watkins et al)
- Pam Gem Resources (Simon Pecover)
- Cracking of opal (Tony Smallwood)
- Taxation (Max Lane)
- Taxation Report (Australian Tax Office)
- Marketing Reports (Andrew Cody)
- Marketing Report (Nick King)
- TAFE Reports (Stuart Jackson)

Moreover, at the request of the NRDB and DIT, the report includes background papers on the formation of a peak body and Industry Funding and Value Adding in Australia. David McKinna has contributed these papers.

Also included is a summary of strategic assessment and recommended strategy development by David McKinna et al Pty Ltd, on behalf of the Northern Regional Development Board.

Contributors

- Jerry Lomax, Lightning Ridge Miners Association
- Geoff Coote, Mintabie Progress Association SA
- Kevin Phillips, Queensland Boulder Opal Association
- John Watkins et al, Geological Survey, DMR, NSW
- Simon Pecover, Pan Gem Resources
- Tony Smallwood, Gemmologist
- Maxwell Lane FGAA
- The Australian Tax Office
- Andrew Cody, Chairman, Australian Jewellery and Gemstone Industry Council, Director Cody Opal
- Nick King , Opal Pacific
- Stuart Jackson, Lecturer, Opal Studies TAFE, SA
- Dr. David McKinna, D.D.A., B.Ec.(HONS.), M.Ec., Ph.D.

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- Michelle Johnson, Secretariat
- Marilyn Healy, Gemmological Association of Australia
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- Deborah Hamid, National Council of Jewellery Valuers
- Ken Anania, Australian Opal and Gem Industry Association
- Graeme Varcoe, Department of State and Regional Development NSW
- Graeme Easy, Jewellery and Allied Trades Valuers Council NSW
- John Howie, Jewellers Association of Australia
- Garth Lockett, Pan Gem Resources
- Robert Sneyd, Gemmological Association of Australia
- David Horton, Department of Natural Resources and Mines QLD
- Jack Townsend, Department of Primary Industry and Resources SA
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- Jerry Lomax, Lightning Ridge Miners Association
- Kevin Phillips, Queensland Boulder Opal Miners Association
- Simon Pecover, Pangem Resources
- Max Lane, Australian Gem Industry Association
- Geoff Coote, South Australian Opal Miners Association

Production – Lightning Ridge

History

Lightning Ridge NSW is the home of the world famous black opal and has continued to supply the highest quality black and crystal opals since the early 1900's.

New discoveries in the 1980's saw the field's population soar to over 8000 residents. However, as the supply of opal dwindled, this figure decreased by approximately half.

Geology

Principal author: John Watkins

Most of the opal produced at Lightning Ridge was sourced from early Cretaceous sedimentary rocks. These rocks were deposited on a coastal plain adjacent to the Great Australian Basin about 100 million years ago. The sediments were deposited by meandering and braided river systems that developed billabongs and small flood basins. Approximately 30 million years ago, in the Mid to late Tertiary period, more sedimentary rocks, namely sandstone and conglomerate, were deposited on top of the Cretaceous rocks by meandering river systems.

In the Lightning Ridge area, the existence of evidence suggests two notable periods of weathering. Namely, a late Cretaceous to early Tertiary event produced the bleached kaolinitic profile that characterises the Cretaceous sediments throughout the region. This event also produced widespread but relatively thin and sporadic silicification. A second period of weathering followed deposition of Tertiary sandstone and conglomerate. These settlements are generally less than two metres thick, and have been variably silicified and ferruginised.

Current Position

Principal author: Jerry Lomax

It has been suggested that mining figures in the Lightning Ridge area have fallen between one quarter and one third in the past eight years.

The DMR and the LRMA had achieved a title system for the black opal areas.

Lightning Ridge presumably had access to ground that would result in a sustainable future for production and mining. However, prospecting in Queensland lacked a title system that was suitable for the industry. The current system is cumbersome, time consuming and inhibiting to opal mining.

Impediments to Growth

The taxation system is of great concern to the industry. Miners endure greater fluctuations in cash flow than farmers and consequently struggle to meet income tax payments.

Recommendations

The key ingredients for success in the opal industry are; the formulation of methods for assessing value; the creation of legislation so as to enable the appropriate titles to be issued for prospecting and mining; (Lightning Ridge) the formation of a department scheme with the taxation office; the formation of a national mining industry body, which looks particularly at access to land which is prospective; and the establishment of a satisfactory marketing system in the USA.

Production – South Australia

History

Principal author: Geoff Coote (represents SA Opal Miners Association)

Cooper Pedy background

Cooper Pedy once produced the bulk of the world's opal and is possibly the most famous opal mining town. However, in the last decade it has suffered considerable decline, due to the fact that no new mining areas have been found.

Opal can be found in mogul-type hills, where miners live underground to avoid summer temperatures exceeding 50 degrees Celsius.

It still produces the bulk of the world's light opal.

Mintabie background

A well sinker, named Larry O'Toole, is credited with finding the first opal in Mintabie in the 1920's.

Mintabie's harsh climate and lack of water discouraged mining until mid 1970. In 1976, explosives and large machinery were brought to the field.

In October 1981, the Pitjantjatjara Land Rights Act came into force and Mintabie became part of a large area of freehold Aboriginal land. This Act has continued to have an effect on the Mintabie way of life.

The big rains of the summer of 1988/89 flooded many mines and some residents decided not to return after their summer break. The continuing lack of progress in negotiations for an extension of the field, led to the further frustration of many miners.

These events precipitated the gradual decline in interest in opal mining in Mintabie.

Mining activity in Mintabie today would only be 30 per cent of what it was 10 years ago.

Lambina background

Old miners claim that opal was discovered at Lambina during the depression years of the early 1930's.

A minor rush in the late 1980's occurred following discoveries by some miners at Seven Waterholes diggings. Consequently, concern was expressed by the pastoral lessees who complained many of the claim holders. The lessees sought compensation and more control of mining activities.

Mining continued at varying levels until mid 1990. However, the discovery of high quality stones in 1996, led to a rush of claims being pegged. Nevertheless, before many of these claims could be processed, the Wik native title decision halted any new mining. In December 1997, miners were informed that a native title claim would be lodged over the entire Mintabie area.

SAOMAI negotiators concluded the historic Lambina Native Title Mining Agreement with the native title claimant parties. The process was greatly facilitated by officers of the Department of Mines and Energy and the native title claimants.

Current Position

There is still a chance of becoming an overnight millionaire at Lambina. This attraction has lured many miners from both Coober Pedy and Mintabie.

However, there is a minor obstacle involving the Lambina Native Title agreement. In particular, the issuing of some unreasonable demands from a few dissatisfied Native Title Claimants. SAOMAI are currently dealing with this problem.

However, Mintabie paints a bleaker picture. The field is quiet with only 4 dozers and an excavator working in open cuts. There are also approximately six bobcats working underground. Nevertheless, there is some renewed interest in claims on the old airstrip following a recent high-quality discovery. Yet, there are still many unprocessed claims in the area.

Our Progress Association is attempting to generate more interest in Mintabie and in opal mining, with a view to attracting industry investment. The Association is encouraging tourism in the area, promoting the opal mine lottery and using its website to generate a positive impact.

Impediments to Growth

Land Access

The overwhelming impediment to the future of opal mining in the Mintabie and Lambina areas is the restriction of access to Aboriginal freehold and native title land. The north of South Australia and the Anangu Pitjantjatjara (AP) Lands in particular, probably are Australia's largest untapped mining resource. However, these lands are subject to severe access restrictions.

The Mintabie Miners' Progress Association has been trying to gain access to AP lands since April 1988. One of the main Anangu objections to granting miners access to their lands has been the perception that Mintabie has had a detrimental effect on the Pitjantjatjara people.¹

Some Anangu regard Mintabie as the drug and alcohol distribution centre of the Lands. However, this perception is incorrect and the subject that frequently clouds the issues in any negotiations.

In spite of these viewpoints, Mintabie is an important service centre for the far north of the state. Its four stores, hotel and Post Office service the surrounding AP Lands as well as local and Lambina miners. The school has an enrolment of 38 students from reception to year 9, and the Frontier Services clinic and visiting RFDS provide an excellent health service.

At present Mintabie's population is estimated to range between 300 and 400. Many miners are over 40 years of age and there very few below 30. Fourteen different nationalities are represented with approximately 30 per cent of these residents possessing European backgrounds.

Industry fragmentation

The other main impediment in the opal mining industry stems from the independent nature of the opal miner himself. For many years an opal miner was able to be independent of the "system". He had access to country no one else desired, he could dig a hole to look for opal, and when he was finished he could just walk away.

¹ An agreement has since been signed, following 14 years of negotiations. The result was due largely to the appointment of Mr. Bob Larkins as mediator.

It is a vastly different story today. The independent opal miner has no chance of working outside a Proclaimed Precious Stones Field without first negotiating environmental and native title agreements. This is a costly and lengthy process, beyond the reach of the average opal miner.

The majority of opal miners today would not be working if it were not for the formation and influence of opal mining associations. Without their input, the draconian legislation suggested by a succession of government departments, coupled with the introduction of native title legislation, would have stifled the industry.

Today's opal miner, or his representatives, need to assume a more professional demeanour so as to be able to deal with the issues of native title, taxation, the environment, National Competition Policy, occupational health and safety regulations, rising expenses, and advances in geological research.

The mining associations should be leading the development of this professionalism. Concurrently, they need to protect the integrity and autonomy of the individual miner.

Unfortunately, opal miners often support poorly such associations. Unjustified criticism is levelled frequently at the few who work to keep the association functioning. Most of these people give dedicated service for little or no reward.

This is exemplified by SAOMAI members and the Lambina native title agreement. SAOMAI President, Neville Hyatt, Secretary, Barry Lindner, and the author were the principal negotiators in this historic agreement. However, rather than receiving expressions of gratitude from the hundreds of miners who were able to start work upon the signing of this agreement, the three committee members were abused at a succession of SAOMAI general meetings for their alleged failure to deliver for the industry.

This is also the case for other associations. Opal miners need to support their associations. In fact, the more support an association has, the more effective it can become. Furthermore, those who benefit most from an association's existence and activities should take an active role in its management.

Ostensibly, SAOMAI has grown to the extent that it is unreasonable to expect a few committee members working part time to effectively manage its affairs.

Opal miners and opal mining associations may need to affiliate with other sectors of the industry to develop an effective and representative body for the Australian opal industry.

Recommendations

If the profile of opal mining was lifted by the formation of a national opal body, more Bob Larkins' may be appointed by the respective mines departments to help resolve native title issues².

Furthermore, a national organization is also recommended to lobby for more prospecting, both by government and by encouraging individual miners in SA.

The release of GIS software for Coober Pedy and Mintabie has generated more interest in prospecting both on the field and in the department. This interest needs to be fostered and encouraged to continue.

A national body may also be able to retain the services of a law firm to handle native title and other land access agreements in the 3 states. This would reduce greatly the workload of the SAOMAI committee in South Australia and would help other mining associations additionally.

Some other initiatives that may assist Mintabie miners would be a study of mining techniques with a view to cutting costs, and the introduction of a simple accounting system to acquaint the small miner with the GST and ABN concepts.

² Mr Bob Larkins is a very successful mediator, particularly in negotiations relating to native title.

National Strategy for the Opal Industry

- a. **Form a Land Access Group.** This group could be restricted to representatives of the opal industry or it could include the general mining industry. The group would develop policies and negotiate agreements for access to land for future mining.
- b. **Encourage opal miners to join and support their local mining organization** and work towards the formation of a national opal mining body.
- c. **Commission a study** to determine the positive and negative effects that Mintabie has on Anangu Pitjantjatjara.
- d. **Develop a positive image of opal and opal miners.** Convey this image to Aboriginal groups, Government and the public. This positive image of the opal industry will help in attracting new miners to the industry.
- e. **Employ an executive secretary/manager.** This person would oversee the daily management of the South Australian opal mining industry as well as implementing policy decisions made by a Board of Management.

SAOMAI would be an ideal body to employ such a person, although the board of management may have representatives from other sectors of the industry, for example mines departments, AJGIC etc.

Production – Queensland

Principal author: Kevin Phillips

History

Current Position

The opal industry in Queensland involves predominantly the mining and processing of Queensland boulder opal. The deposits in Outback Queensland are vast, extending from the southern New South Wales border to Kynuna in the North - approximately four hundred kilometres wide.

The Queensland Boulder Opal plays a significant role in the Australian supply of opal to local and export markets. Furthermore, with such a vast deposit the future would seem guaranteed. However, there are major impediments to the industry that have to be overcome before the full potential of this unique product can be realised.

Impediments to Growth

Native Title

Undoubtedly, the protracted, and as yet unresolved, Native Title process has caused the opal mining industry in Queensland to flounder.

The current impediments pertain to the incomplete nature of the Indigenous Land Use Agreements (ILUA) in the respective Winton and Quilpie areas. Once signed, these agreements will give the miner the ability to pursue new areas to mine within the Native Title Claimants area³.

Presently, the Q.B.O.A. Winton Native Title Committee have been assured that their ILUA for one main area will be signed imminently. Hence, allowing applications to mine to be processed in time for the mining season's commencement in 2002.

The Q.B.O.A. Quilpie Native Title Committee is active in pursuing their ILUA with the Native Title Claimants in this area and it is hoped a resolution is forthcoming.

Department of Natural Resources and Mines (DNRM)

Presently, the Q.B.O.A is drafting a mandate for changes that are essential for opal mining to progress within this Department.

These include the following:

- Review of the Codes of Compliance of all tenement types.
- Review of Exploration Permit tenement sizes, the quantity of Permits an applicant can hold and the Restricted Areas.
- Simplification of documentation and procedures.
- Evaluation and Justification of rents and fees.
- The abolishing of Royalty for small scale miners.
- Review of Financial assurances.

³ The ILUA is believed to have been signed since this report's publication

Environmental Protection Agency (EPA)

Early last year, the EPA was established in Queensland and since has taken on the role once held by the Department of Mines and Energy with respect to the environment. The QBOA would like to discuss the following issues with both the Department and EPA:

- Review of environmental codes of compliance.
- Simplification of Documentation and procedures.
- Review of Financial Assurances and Category Types.
- Commitment from EPA to covert all Opal mining Activities to the new
- Authority before 31.12.01, in order to avoid the \$ 4900.00 penalty to miners.

Recommendations

Native Title

All is being done that can be with this problem. Furthermore, the non-mandatory nature of the negotiations has to be respected.

Department of Natural Resources and Mines (DNRM)

Below are only a few of the proposed changes that shall be endorsed by the QBOA. A forum for discussion on these topics will be arranged with the DMRM as soon as the QBOA reaches consensus on the agendas involved.

Environmental Protection Agency (EPA)

That the QBOA actively pursues these changes once consensus is reached, utilising the EPA Implementation Working Group procedure.

The QBOA is currently reviewing its own inadequacies in handling all aspects of its interests to benefit its members.

The QBOA will strive to achieve a consolidated stand and will illustrate this renewed vigour in its pursuance of the aforementioned problems.

Opal Genesis

Principal author: John Watkins et al

History

Serious scientific studies on the genesis of opal were commenced by the CSIRO in the late 1960's and early 1970's. Nevertheless, models for opal genesis in the Great Australian Basin are, relatively speaking, in their infancy.

Up until about 1987, sinking a shaft to intersect the claystone carried out most of the exploration on the opal fields, then developing drives horizontally to test the value of the opal dirt. The shafts were traditionally sunk by hand and later by Calweld drills. Such drills are able to bore one metre (3 foot) diameter holes. However, this method of prospecting is both slow and costly.

Following work by the New South Wales Department of Mineral Resources in the early 1980's, the interpretation of lineaments from Landsat and other remotely sensed data sets was used to select areas for exploration. An area with a high density of lineament intersections was thought to be a favoured site for opal formation.

The end of the 1980's saw the rapid field introduction of the 230mm (9") diameter auger drill. This technology redirected the emphasis in prospecting from shaft sinking and gaining direct access to the opal clays, toward testing for the existence of the essential overlying sandstone. All the while seeking 'colour' in the small clay samples that the auger drills uncovered.

In most cases, the use of auger drills to assess the opal bearing potential of an area is quicker and more cost effective than shaft sinking.

However, the thick layers of silcrete that are common on "plateau" areas, slow the rate of auger drilling considerably. In a recent attempt to overcome this problem, smaller diameter (± 120 mm) percussion drilling rigs were employed – a marginally successful venture. Although they produce smaller holes and smaller samples than auger drills, they are expeditious and can readily penetrate silcrete.

In 1986, the New South Wales Department of Mineral Resources trialed the geophysical method, 'Sirotem,' on the opal fields. This technique uses electrical current to measure the varying resistance of the underlying rock, and subsequently provides information that indicates the existence of sandstone and claystone. The benefits of this method lie predominantly in its ability to swiftly test large areas of ground for faults and the detection of future "levels" for drilling.

In more recent times, ground-penetrating radar has been trialed as a further approach to indicating the potential existence of opal-bearing clays and levels.

However, the aforementioned geophysical techniques require a considerable amount of additional testing and evaluation, as they are in seminal form. Nevertheless, they have the potential to become important tools for the future.

The use of high-resolution, multi-spectral image mapping of prospective opal-bearing areas, is another exploration method that has been trialed recently. This mapping technique holds considerable promise, but needs to be undertaken in conjunction with a workable opal deposit model.

Furthermore, in the past 12 years a considerable amount of geological research work into the genesis of opal deposits of the Great Australian Basin has been carried out. This work has underpinned the development of a new and vastly different interpretation of the nature and importance of specific geological features. These characteristics are an integral part of all the major opal fields in Australia. Moreover, this work has provided Opal

Ventures with a solid scientific framework in which to direct and advance cost effective, large-scale opal exploration.

Current Position

Current Models of Opal Genesis

The geological factors controlling the genesis of opal are still poorly understood. Models for the formation of other gemstones such as diamonds and sapphires and metallic commodities such as gold, copper, silver, lead and zinc have been comprehensively studied and researched for well over two centuries. Models for the genesis of these commodities have been proposed, tested and refined, and now have a relatively high degree of reliability and predicability.

Currently, there are three main models proposed for opal genesis in rocks of the Great Australian Basin .

1. Weathering Model

Virtually all opal mined in Australia is recovered from the top 30 metres of highly fractured, deeply weathered and altered Cretaceous sedimentary units. In the weathering model, opal is thought to have formed by the remobilisation of silica, following its release as a product of extensive chemical weathering.

The model suggests that rock units overlying the opal deposits were the source of the silica that formed the opal. Silica is thought to have permeated the ground waters and been trapped by an impervious barrier. Namely, claystone, clayey sandstone, or quartzite boulders. At that time, the silica is thought to have instigated the formation of opal within voids in the claystone and sandstone at sites near or at the permeability barrier.

Many opal deposits throughout Australia have been associated with fault systems. The weathering model was later enhanced and refined to include structures such as faults, joints and 'blows' (breccia pipes and zones), as passive passageways that controlled initial ground water movement and therefore the sites of opal deposition. Collectively, these features are thought to have created permeability zones that assisted the passage of ground water down from the surface.

The fundamental concepts associated with the Weathering Model include:

- Opal occurring in the Great Australian Basin rocks has been produced from silica released by weathering, some time after the formation of the host rocks.
- The source of silica that forms opal is the overlying weathered sedimentary units.
- Permeability barriers trap the downward flowing, silica-charged ground water.
- Faults, joints and 'blows' improve the permeability of rock units to ground water penetration, thus increasing the potential for opal formation.
- Many small-scale faults observed in opal workings are thought to have developed in response to ground water-charged, swelling clays. Resulting in the movement and faulting of overlying rock units. They are syn-opal formation???

2. Syntectonic Model

A new geological model developed in the late 1990's to explain opal genesis in the Cretaceous sandstone and claystone of the Great Australian Basin has been proposed from research work carried out during extensive opal

exploration in the Lightning Ridge area. This new structural theory of fault controlled opalisation is known as the "Syntectonic Model".

In contrast to the 'passive' weathering model, the syntectonic model proposes a more dynamic process of opal formation. This model advocates a process involving the generation of fault-controlled, cyclic, fluid pressurised systems that form opal vein arrays linked to nearby extensional and thrust faults. In this model, opal is believed to be deposited rapidly in fault-generated hydraulic extension fractures, by fluids supersaturated with amorphous silica and under hydrothermal conditions (ie at temperatures $>50^{\circ}\text{C}$).

In this model, faults and associated breccia pipes ("blows") are considered to be formed by tectonic processes coincident with opal vein formation, and to act as dynamic pathways for silica-laden fluids that move through the rock mass under hydraulic pressure. In the syntectonic model, small scale fault structures hosting opal depositional sites are not considered to have resulted from the swelling of clays, but rather, are directly related to larger nearby faults. Furthermore, the latter are related to regional-scale tectonic structures.

Fundamental concepts associated with the Syntectonic Model include;

- Opal veins, faults and breccia pipes ("blows"), occurring in the Cretaceous rocks of the Great Australian Basin, indicate that high fluid pressures, coincidental with fault-controlled brittle fracture deformation, were active during opal depositional processes.
- Vein opal deposits were formed after the sedimentation of Cretaceous claystone and sandstone.
- Potch opal was formed rapidly from fluids supersaturated with opaline silica.
- Precious opal was formed more slowly than potch, by pseudo-crystallisation processes involving the growth of fibres grouped in bundles. When these bundles were viewed at right angles to the long axis of the fibres, the distinctive mosaic pattern of colour in precious opal was evident.
- Areas of intense fault clustering are important exploration targets for the citing of drill holes and other geological evaluation techniques.
- Areas of silcrete formation on the surface are considered to have formed as a result of pressurised fluids escaping from depth during faulting and opal formation. Consequently, these areas are considered to be important exploration sites for targeting drill holes.

3. Microbe Model

Recent work on seam and nobby opal from Lightning Ridge and Coober Pedy has shown that microbe communities exist within both the host rock and opal. The presence of microbes provides important information on the formation of opal. The microbes may have also played a role in the formation process.

Rich communities of well preserved aerobic soil bacteria and other microbes have been found in potch and precious opal. The opal and the microbes are of the same Early Cretaceous age.

The ecology of the microbes suggests that opal was formed near the surface in muddy clay/silt-lenses with a high content of plant debris. The optimal growth temperature for the bacteria is $20-35^{\circ}\text{C}$, but the climate must have been colder at the time of opal formation. Lower temperatures imply slow processes. Under these conditions, the bacteria produced higher amounts of organic acids, which stimulated the dissolution and leaching of aluminosilicates from the host rock.

In the lenses with a high content of organic matter, the temperature may rise up to $>50^{\circ}\text{C}$, as a result of strong degradation and intensive composting. The lenses function as 'bioreactors,' which generate strong bioweathering of aluminosilicates by the production of carbonic acid. By this process, the diagenetic reaction

smectite → illite + silica hydrosol is initiated. Opalization of the host rock, crystallization of opal C-T, the forming of secondary illite, and the enrichment of organic carbon are associated processes.

The microbe model suggests that opal forms during short-time events, which are controlled by biochemical processes with soil solution and seasonal water flow. The generation of silica-hydrosol, sedimentation of silica-hydrosol and coagulation of sol-gel are the result.

Fundamental concepts associated with the Microbe Model include;

- Opal develops at the same time as the host rocks.
- Microbes tend to be most abundant where there is an abundance of organic matter.
- The biological activity of microbes create a biochemical environment that promotes the weathering of clay minerals and feldspar to produce opaline silica.

Impediments to Growth

Principal author: Andrew Cody

It is difficult to believe that after a century of opal mining in Australia, the genesis of opal process is not clearly understood. Mining will continue to be a highly speculative business until this process is understood. Consequently, there is absolutely no way geologists can assay the potential value of a mine. The implication is that larger companies will not invest in the industry, until the genesis of opal is thoroughly researched. By taking out some of the guesswork, mining will flourish.

A more thorough knowledge of the process will lead to the discovery of new fields, greater productivity, improved mining and prospecting techniques.

Recently, microbes have been discovered in all types of opal. This breakthrough may lead to the discovery of the cause of opalisation and deposition. Most scientists agree that there is enormous prospective opal bearing areas lying undiscovered in Australia.

Finding the key could unlock untold wealth for Australia.

Recommendations

There is a real need to encourage postgraduate research into the important and largely unknown aspects of the geology of opal. This research would utilise the tremendous analytical facilities that exist in many universities in Australia.

Opal Cracking

Principal author: Tony Smallwood

History

Current Position

Opal gemstones are one species that do not suffer from the gemstone treatment techniques applied to other gemstones. Gemmological experience suggests that these opal treatments are just as common as with any other gemstone species.

1. Carbonising or "making black"
 - a) Andamooka Matrix opal is commonly treated by a carbonising process and has been for a long period of time.
 - b) Some Mexican opal has been treated similarly – no information available.
2. Crack/crazing repair.
 - a) Cracking and crazing has been repaired by various applications of resins and polymers. The treatment process is available for Queensland boulder opal in Sydney.
 - b) Opticon treatment has been available in Sydney for some time
 - c) Germany has reported some similar types of "fracture filling – details unknown.
3. Opal Inlay
 - a) Most opal inlay jewellery is merely opal cut and cemented into jewellery. Technically, however, this opal is treated, as the opals (often crystal opal) are cemented into the jewellery mount with the use of a black glue. This enhances the play-of-colour in the otherwise light body coloured / toned opal.
4. Composite stones.
 - a) Doublet and triplet opals have often been considered as a "Treatment" by miners and sellers of so called "solid" opal. In fact, the term "solid" has been used in marketing so that a distinction can be made.
 - b) Queensland type Boulder opal has been made with resin/plastic based Ironstone, as well as the reported use of Synthetic/imitation opal (instead of the natural opal Laminate).
5. Other reported treatments.
 - a) A report from the "Tuscon Show" this year suggested some crazed opal had been treated with "Armour All"

Impediments to Growth

Principal author: Andrew Cody

While only a small percentage of opal is likely to crack, the resulting damage to its reputation has been devastating. There is an enormous amount of derogatory and often-erroneous information published, even by highly regarded sources. Opals are said to be soft, brittle and prone to cracking. However, the majority of Australian opal will easily scratch glass and is perfectly suited to normal jewellery use.

National Strategy for the Opal Industry

Most opal dealers have quantities of cracked opal, which if donated, could be used partially to finance research into the cracking phenomenon. It is possible that cracked opal may be permanently repaired. A company in Idar Oberstein Germany, claims to have developed a highly viscous liquid that cures with ultra violet light.

Recommendations

There needs to be research into the cause of cracking. Namely, how to identify unstable material, how to stabilise it and how to permanently repair cracked material. Presently, a number of institutions have conducted some research and are eager to continue, pending funding.

Taxation Issues

Principal author: Max Lane

Current Position

GST

The GST affects all areas of the industry. Particularly, the sale of rough, semi finished and finished gemstone material from miners in small two to three man partnerships. Most opal miners would fall into this category and are mining either full time or part time as "hobby" miners.

The opal mining industry has embraced largely the provisions of GST, as it relates to the purchase of rough, semi finished mine material. Moreover, in discussions with many members of the industry, no major problems have surfaced.

Overseas buyers may have an advantage over local buyers, as they often pay cash for goods on the field, whereas local buyers are obliged to pay GST, or obtain an exemption statement.

The industry does not want any restrictions placed on overseas gemstone buyers who arrive in Australia with cash or access to cash to purchase goods, provided of course, they comply with existing legislation.

TRS (Tourist Refund System)

The retail tourist industry has had very few problems with the TRS, either with tourists leaving from international airports, or on cruise ships.

The only reported problems experienced have been with North American Naval ships. However, in this instance it has been extremely difficult, if not impossible, to organise a refund of the GST. It has also been infeasible to organise for dockets to be plucked from a sealed bag on the North American Naval ships.

Subsection 38-185(1), Item 1 of the GST Act, provides for a supply of goods to be GST free, if the supplier exports the goods within 60 days of receiving payment of issuing the invoice.

- If the supplier takes the goods to the naval vessel and obtains a signed statement from a responsible officer (eg Chief Petty Officer), the goods may be considered as exported.
- The statement must:
 - Describe the goods,
 - Acknowledge that the responsible officer has received the goods,
 - Declare that the vessel's destination is a port outside Australia, and
 - State that the goods will not be handed to the sailor until the vessel is outside Australia

This procedure is not available for the sealed bag scheme, or the Tourist Refund Scheme (TRS).

Subsection 38-185(1), Item 7 of the GST Act, provides for the sealed bag scheme (see GST Regulations in Schedule 5). A representative of the Duty Free Security Co Ltd, collects invoices at major international airports and cruise liner ports.

- If the master of a ship contacts the Duty Free Security Co Ltd, the company may be prepared to go to another ship for a period of one hour, for example, to collect invoices.
- Alternatively, the Duty Free Security Co Ltd may authorise the Chief Petty Officer to collect invoices and forward them to the Company.
- The telephone number for the Duty Free Security Co Ltd is 021 9669 2044.

Division 168 of the GST Act and Regulations, provides for the Tourist Refund Scheme (TRS). The Australian Customs Service administers this part of the Act. Customs have established TRS Verification Centres at major international airports and cruise-liner ports.

- If Customs visit another vessel to clear it for departure, the Customs Officer will be prepared to authorise the refund of GST, according to the TRS.

- If the master of a ship contacts Customs, they may be prepared to go to another ship for a short period to authorise the refund of GST, according to the TRS.
 - The hotline for Customs is 1300 363 263, or email information@customs.gov.au
- Masters of naval vessels (especially US) may not allow civilians near their vessels. Alternatively, they may not accept parcels from civilians.

Fuel Tax investigation

The Jewellery and Gemstone Industry Council has made a submission to the recent fuel tax inquiry, which stressed the importance of diesel fuel rebates in the opal mining industry.

Income Tax

The opal mining industry comprises largely of individuals mining alone or in small partnerships. To date, no large company has been successful in its involvement with opal mining.

Primarily, the reason for this is the indiscriminate occurrence of precious opal in a typical mining lease. Precious opal is generally found in "unpredictable pockets" and many miners mine for months, or years, without finding consistent supplies of sellable opal.

It is easy to note the similarities between opal mining and primary production. Namely, their susceptibility to atmospheric conditions, pests and the unpredictable nature of the pockets of precious opals.

The new taxation measures introduce a new set of criteria, which an activity must satisfy before losses produced can be offset against other income. They are aimed at limiting the ways in which high income earners can reduce their taxable income.

An activity must satisfy one of the following tests in order for losses from that activity to be deducted from other income:

- The activity has assessable (gross) income of at least \$20,000.
- The value of real property used for the activity exceeds \$500,000.
- The value of other assets, excluding passenger motor vehicles, exceeds \$100,000 (using the same valuation method as that used for taxation purposes).
- The activity results in a profit in three out the last five years (including the current year in which the loss has occurred).
- Commissioner exercises discretion.

Discretion may be exercised if the Commissioner is satisfied that it would be unreasonable not to allow the losses because:

- Special circumstances exist for the business (including drought, flood, bushfire, or some other natural disaster), or
- The business has started to be carried on and because of its nature has not passed one of the tests but is expected to do so, or produce a profit within a reasonable time.

What happens if an activity does not satisfy one of these tests?

Any losses that are produced will be carried forward and offset against any profits from the activity in future years, or other income of the taxpayer, if the activity satisfies one of the above tests.

The new Taxation increases introduced primary producers, whose income from non-primary production sources is less than \$40,000 (excluding net capital gains), will not be subject to the new measures. Losses from the primary production activity can then be claimed in the year in which they are incurred.

The gemstone mining industry wants to be included in the exemption given to the Primary Producers.

Impediments to Growth

The industry needs to prove itself, for example, in terms of dollar production. However, a stumbling block, in the form of the secrecy factor, seems to be a problem for the ATO. On field buyers are the problem; the industry concern is that local buyers are on a level playing field. If they want to be taken seriously, miners must participate in the formation of required legislation and comply with these measures. A simplified tax system could be applied – precedents exist.

Recommendations

The LRMA has suggested that the opal mining industry needs to have access to a management deposit scheme, similar to farm management deposits (FMD), which commenced on the 2nd January 1999.

Broadly the scheme operates as follows:

Primary producers (with a limited amount of non primary production income) claim deduction for FMDs in the year of deposit, earn accessible interest in a fee-free account, have tax deducted from FMD repayments (generally at the rate of 20%) and include those FMD repayments in accessible income in the repayment year to the extent that a deduction was previously claimed.

A similar opal mining management deposit scheme would be ideally suited to the miners in Coober Pedy, Lightning Ridge and Queensland, as often they have a large find one year and then several years without much income.

Additionally, it is recommended that the industry lobby government to ensure the maintenance of fuel rebates. Furthermore, the industry is urged to monitor the situation at the opal fields.

Marketing

Principal author: Andrew Cody

History

Despite almost 120 years of opal production in Australia, the opal industry has never had any significant marketing at an International level.

The export value of the industry has been in the order of A\$200-\$400 million annually. Over the last two decades the majority of players have been small, owner operated businesses, without any individual companies large enough to effectively market a brand internationally.

Strangely, when opal supplies reached their peak just over a decade ago, prices soared! In total conflict with the usual supply and demand theory, prices climbed with the greater supply. This was caused by the increase in interest, as the supply of opal grew. The world will buy all the material Australia can produce, provided it is effectively marketed.

The opal industry does have some significant marketing advantages. The stone is unique virtually to Australia, producing 95% of the world's precious opal both by weight and value.

The industry is surrounded by intrigue, as the opal fields and its residents inspire a sense of fascination.

In the 1880's, opal was discovered at White Cliffs. The world had never seen before such large deposits of extraordinarily fine quality. The supply had previously been scarce, with only sporadic deposits.

Current Position of Other Gemstones

Tahitian Black Pearl

- 1965 Production = 1,000 value US\$10,000
- 1999 Production = 8 tonne value A\$260,000,000

This increase was achieved via a very successful campaign that boosted its sales. Apparently, a well-known marketing consultant with all the right fashion contacts was paid US\$1,000,000 to give high profile exposure to Tahitian pearls. The industry comprised a significant large player, who controlled 40%. The promotion budget was derived from a tax on exports. The levy amounted to US\$1.66 per gram. Only 45 dealers are licensed to export. The promotion budget has now jumped to US\$7,000,000 (2001).

Mr. Martin Coeroli CEO of Perles de Tahiti reported the following:

- Pearl prices are dropping due to over-production. (China)
- Farmers are starting to sell more downstream
- Poorer quality in production
- Price decreases will put some farmers out of business

South Sea Pearl Consortium

The consortium was established in 1995 to coordinate the promotion of South Sea Pearls. It now has offices in Sydney, Kobe, Tokyo, Hong Kong, Geneva, and New York. Wholesalers can purchase from only three recognised exporters; there are no ex-farm sales and almost no leakage.

Sixteen licences run under a quota on wild shell collection and hatchery shells. However, these produce only 700,000 pearls per year, half of which are sold as strands. The SSPC state that the lack of a quota system overseas has led to an emphasis on quantity not quality. Sales by the Consortium in 2000 were A\$320,000,000, and they are said to control 60% of the larger pearl (10mm) world market.

The goal of the consortium is to raise quality, status and price. However, both the Tahitian and Australian industries have suffered price drops of late, due to the intense competition from Chinese fresh water pearls.

Diamonds-De Beers

De Beers control about 40% of the rough diamond trade with sales in 2000 of US\$5.5billion. Retail diamond sales are US\$50 billion annually. Their marketing budget was US\$1.7 billion or 30% of rough sales revenue. De Beers has embarked on it's own branding exercise with LVMH (Louis Vuitton Hennessy), the largest luxury brand owner, to create long term value.

In 1938, Harry Oppenheimer opened De Beers first promotional campaign with the now famous slogan, "a diamond is forever."

Diamonds- Argyle

The majority of Argyle production is of low grade or industrial grade quality. By weight, Australia is the largest producer of rough. Argyle also produces "coloured" diamonds in yellow, cape and brown. These were cleverly marketed as "vivid yellow, champagne and cognac". Perhaps even more ingenious was the campaign for Australian pink diamonds. Marketed as exceptionally rare and beautiful, these can command prices in excess of US\$100,000/carat. There is a lesson here for the opal industry.

Impediments to Growth

Today, the largest problem facing our industry is the decline in production. The industry at the fields is probably half the size it was 10 years ago.

Because of the fragmentation and structure of the Industry, it is unlikely in the foreseeable future that sufficient funds can be raised to mount any effective international campaign.

Both industry and government would be unwilling to support any tax, or levy system, which would create a marketing fund. Unlike the Australian diamond or pearl industries, the opal industry has too many sharing the same pie. Therefore, few are willing to voluntarily commit funds to marketing.

Recommendation

Strategic Alliances

Probably the most efficient and feasible way to promote opal internationally is through strategic alliances.

There are almost no speciality opal stores overseas and the vast majority of retailers do not stock opal, which means potential opal consumers are rarely exposed to opal product. Traditional marketing methods are beyond the resources available to this industry. However, by working closely with important manufacturers and retailers, the industry could have a narrowly focused campaign that would target not only to the bigger jewellery spenders in the world but also those most likely to buy opal jewellery.

National Training (TAFE)

Principal author: Stuart Jackson

History

The re-accreditation of the current opal certificates offered in South Australia has provided an opportunity to satisfy the state training requirements, and in so doing written a draft-training package for the opal industry. At the beginning of 2001, I commenced work on the re-accreditation and draft-training package. During this year, support for the training package grew, and is supported currently by the Aust. Jewellery and Gem Industry Council and is a priority of the National Opal Industry Training working party.

Let me give you the position so far on how this draft training package is progressing:

Background

The training package

- reflects the developments that have taken place, including: changes in technology, marketing, communications within the industry, and the emphasis on the end product.
- is designed with an opal manufacturing, retail and wholesale focus. These streams are commensurate with employment patterns in the industry.
- aims to provide sufficient knowledge and skills for a person with the qualification to be an attractive prospective employee.
- is a draft document for industry to develop further in working towards a National Training Package.

Development of a National Training Package for the Opal Industry is an involved process for industry to pursue, which must comply with requirements of the Australian National Training Authority, and will take at least 12 – 18 months for finalising. Training packages are developed by industry in conjunction with national Industry Training Advisory Bodies (ITABs). The training package referred to here in this report is a draft package providing a good starting point for further development by industry and the ITAB.

Current Position

A second draft of the package has been circulated to industry and some feedback has been received (see attached industry list in Appendix 1). This draft appears to be a lot clearer, with the feedback being positive and constructive. The additional material is being supplied and dually documented in the package. The package contains a series of units and suggested certificate structures.

The package consists of a series of units: those that are generic, others reflect the streams – opal manufacturing, retail and wholesale, and electives. The units are tabled below:

Table 1.

Unit of competency Title	State Code	Nominal Hours
GENERIC CORE		
OIG1A Identify and describe opal		20
OIG2A Safely Store and handle opal		10
OIG3A Use technology		20
OIG4A Access resources relevant to the opal industry		10
OIG5A Communicate with clients from a variety of cultural groups		10
OIG6A Operate in accordance with accepted opal industry practices, legal and ethical responsibilities		10
OPAL CUTTING STREAM		

OIOC1A	Collect information on establishing an opal-cutting workshop	20
		20
OIOC2A	Safely operate and maintain opal-cutting machinery	30
		80
		80
OIOC3A	Prepare to cut opal	80
OIOC4A	Cut an opal solid	
OIOC5A	Cut an opal doublet or triplet	
OIOC6A	Carve opal (Free Form)	
RETAIL STREAM		
OIR1A	Deliver service to clients	10
		20
		20
OIR2A	Sell products (use WRRS.1A)	10
OIR3A	Present opal products (use/base on WRRM.1A – Merchandise Products)	
OIR4A	Apply point of sale handling procedures (use WRRCS.2A)	
WHOLESALE STREAM		
OIW1A	Develop a marketing strategy	20
		10
		20
OIW2A	Control stock (check WRR1.1A & WRR1.2A)	10
OIW3A	Import & export opal	
OIW4A	<i>Identify issues related to the establishment of an opal business</i>	
OPAL CUTTING ELECTIVES		
OIOC7A	Production cut opal	40
		40
		30
OIOC8A	Facet opal	10
OIOC9A	Cut opal spheres and beads	
OIOC10A	Obtain opal	

Each unit follows a set proforma, and consisting of:

- Unit Title – the title of a general area of competency
- Elements – describe actions or outcomes which are demonstrable and assessable,
- Performance Criteria – specified what is to be assessed and the required level of performance,
- Range of variables – defining the boundaries of the standards, provide a link to knowledge and assist in providing a focus for assessment,

- Evidence guide – to guide assessment of the unit.

Find an example of a unit titled **OIG1A Identify and Describe Opal** in Appendix 2.

The proposed certificate structure is as follows:

1. Certificate IV in Opal Industry (Stream)

The three certificates available would be

- Certificate IV in Opal Industry (Opal Cutting)
- Certificate IV in Opal Industry (Retail)
- Certificate IV in Opal Industry (Wholesale)

The Certificate IV in Opal Industry (Opal Cutting/Retail/Wholesale) is designed to equip graduates to operate competently in the employment areas related to the stream studied, within the Opal Industry. All graduates will have the ability to advise others on the characteristics of cut and uncut opal, how to safely store and handle the opal. Graduates will have the knowledge of opal industry practices, and legal and ethical responsibilities, be able to communicate with a variety of cultural groups, and access relevant resources. The stream chosen will provide the graduate with skills and knowledge for employment, or self-employment in that respective area.

The model outlining the certificate level 4 structure is:

Table 2

Generic Core
+
Stream Core (Opal Cutting / Retail / Wholesale)
+
Electives 2 units (Electives can be chosen from the elective list or other stream core units)

Units making up the certificates are outlined in Table 2.

2. Certificates at level 2

The two certificates are:

- Certificate II in Opal Cutting (Solids)
- Certificate II in Opal Carving

The Certificate II in Opal Cutting (Solids) and Certificate II in Opal Carving are designed to equip graduates with the ability to cut or carve opal, and operate at a basic skill level. These introductory certificates are aimed at the opal miner or serious hobbyist wanting hands on skills with either opal cutting or carving, and they provide a direct pathway for building on. Graduates will gain status for the units completed within the Certificate 4.

These certificates are structured with a set of core units only.

Certificate II in Opal Cutting (Solids)

Table 3

Unit of competency Title	State Code	Nominal Hours
Prerequisite Nil		
OIG1A Identify and describe opal		20 10

OIG2A	Safely Store and handle opal		20
OIOC2A	Safely operate and maintain opal-cutting machinery		30 80 10
OIOC3A	Prepare to cut opal		
OIOC4A	Cut an opal solid		
OIOC10A	Obtain opal		

Certificate II in Carving

Table 4

Unit of competency Title	State Code	Nominal Hours
<i>Prerequisite Nil</i>		20 10
OIG1A Identify and describe opal		80 10
OIG2A Safely Store and handle opal		
OIOC6A Carve opal (Free Form)		
OIOC10A Obtain opal		

Impediments to Growth

Recommendations

1. These certificates:

Certificate IV in Opal Industry (Opal Cutting)

Certificate IV in Opal Industry (Retail)

Certificate IV in Opal Industry (Wholesale)

Certificate II in Opal Cutting (Solids)

Certificate II in Opal Carving⁴

Will be offered at the Coober Pedy campus, Spencer Institute of TAFE in 2002. I would recommend other states to organise for these certificates to be offered. Trailing of these certificates in 2002 in a range of locations will provide useful data for the development of the National Training Package.

2. For the development of the National Training Package a workshop at the Coober Pedy campus be held, and involving members of the working party, personnel involved in the delivery of the certificates, and other relevant industry representatives. Workshop to be undertaken midway through 2002 and be facilitated by an independent consultant who is familiar with ANTA requirements. Purpose of this workshop is to;

- Look through the package content and review,
- Identify the minimum requirements for a facility in which the certificates are delivered,
- Delivery of the certificates across locations to ensure maintenance of standards,
- Move on from the scoping project towards the next stage as required by ANTA.

Funding is required to support this workshop.

⁴ The Certificates have since been approved by TAFE SA

National Strategy for the Opal Industry

1. The proposed National Opal Industry Training Package be fully supported by all in the opal and gem industry, as it is a huge stepping-stone to assist in the process to harmonise a fragmented industry.

The Opal Mining Industry Peak Body

Background

To date, the National Opal Industry has suffered as a result of its fragmentation, which is to a large extent due to the isolated and essentially private nature of the industry.

As a consequence, the industry has lacked a cohesive view and more importantly has been disadvantaged in its ability to present its case and deal with the various tiers of government.

Recognising this as a significant constraint to the industry's future development, one of the key recommendations of the David McKinna et al strategy report is the formation of a peak body representing the interests of the mining sector and the key mine fields. Following the opal symposium at Coober Pedy, a proposal to form a national opal mining body was approved, in principal, by the mining industry association.

Proposed Structure

The intentions are that the peak body would represent the interests of miners and through them key stakeholders, including local government, key suppliers, etc.

As a peak body, it will be comprised of the three key miner associations:

- Lightning Ridge Miners Association
- SA Opal Miners Association
- Queensland Boulder Opal Miners Association

The intention is for each of the three associations to nominate two directors.

The body would have to discretion to form sub-committee's from members, perhaps representing specific mining areas. E.g. Coober Pedy or specific subject areas

The body would seek to represent the miners on the Australian Jewellery and Gemstone Industry Council Inc. It would be the recognised voice of the opal miners' interests.

Similarly, the body must seek to represent miners and other relevant industry bodies. It is further proposed that the body would have its own secretariat, which would be a part-time funded position.

Functions

The peak body would become the prime voice for miners on all relevant issues, in all relationships including;

- Federal, State and local government
- Relevant governmental and semi governmental agencies
- Major suppliers. E.g. equipment, fuel , explosives , telecommunications
- Educational bodies, such as TAFE

The key functions of the peak body would include:

1. Overseeing the development of an opal industry mining strategy
2. The development and management of programs.
3. Pro-active and responsive representation to appropriate government agencies on specific issues. E.g. taxation, land rights
4. Applying for funding on behalf of the mining industry to suitable funding sources.
5. Identifying and prioritising research and development and initiating projects and funding.

6. Representing miners on other issues deemed to be important by the member association.

Location

The inaugural board would make the choice of location.

It is desirable that it is conveniently located for its member organisations to minimise travel costs, but also accessible to the main, relevant government agencies.

Legal Entity

Advice will be needed to determine the most appropriate structure and legal entity. For example, if it is to be the entity that collects an industry levy, (discussed later), it will need to have a structure that will be eligible to collect money and apply for government concessions and marketing grants. A non profit trust would seem to have advantages

Formation

A steering committee representing each of the mining areas would be formed to facilitate the establishment of the body.

Industry levies

In order for the industry to operate effectively, it will need to have an ongoing source of funds. While there are various sources of government funds, almost invariably these need to be matched by industry contributions.

One of the pivotal initiatives of the industry strategy plan is the establishment of a peak body. This will require an operational budget to cover the secretariat, office expenses, travel, etc.

Funding Mechanisms

Ultimately, it will be up to the industry to decide what is the best funding mechanism. The most equitable and simple means of collecting funds is an annual levy imposed on miners. The simplest way to collect this is to add the levy to the annual mining licence. This would need to be done by agreement with the respective government departments. This could either be covered by legislation, making it compulsory, or alternatively by a voluntary levy.

Legal opinion will be required to determine the most effective structural basis. For example, the levy may be divided into components with one component designated for research and development, whereby, it may attract matched grants from government. Advice will also be needed as to the process of introducing the levy and whether it needs to be subject to an industry referendum. The level of the levy will need to be determined by the industry.

Opal Industry Journal

Background

The Australian opal industry has been highly fragmented. Industry associations have struggled to gain representative membership. This Council believes this is due to misconceptions and the inability for many to comprehend the importance of the issues which associations are regularly tackling. Poor communication across all levels of the opal industry has been the main culprit.

The opal mining associations tended to work in isolation without communicating with their counterparts in other regions despite the fact that there were important issues common to all.

There has been little vertical communication. The issues of the mining industry are not well understood by many at a wholesale and retail level. The miners are generally ignorant of the important matters crucial to the orderly development in the marketing of opal. Overseas-based traders regularly dealing with opal have virtually no access to topical information about the industry.

An opal industry journal is vital to industry development, it will inform and promote the industry in Australia and internationally.

The Journal

The AOGIA has agreed in principal to host this journal.

This publication should be produced quarterly to ensure the content is topical. Separate sections could include mining industry, association and market reports. Sections could contain updates about opal deposit geology, exploration methods, mining practices and technology, mining safety, and government regulations.

Other news might include cutting techniques, opal jewellery design, opal nomenclature, grading and pricing, marketing in Australia and overseas, and tourism market.

Information such as industry specific training, positions available, service directories, as well as industry and government contact details should all be incorporated in the journal.

Distribution

The publication will be circulated free to all on an opal industry mailing list. Circulation is expected to be around 5,000 copies initially with distribution direct to Post office boxes at the mining fields. Additional copies could be available from newsagent's government offices etc. Copies would be mailed direct to all association members, and opal businesses. A database of overseas opal businesses will be established utilizing existing databases and the services of Austrade.

Publication

Phoenix magazines are the publishers of the Jewellery industry Association journal.

They have agreed to look at an arrangement where industry guarantees a certain amount of sponsorship in lieu of advertising. Phoenix has estimated cost of production and distribution at approximately \$16,000 per edition.

Grahame Brown is an experienced industry editor and has agreed in principal to edit the opal journal for a "small fee". Grahame currently edits the GAA and JATVC journals.

Centre for Opal Deposit Studies

The opal genesis and exploration working party strongly recommended the formation of a research centre to evaluate current research, and determine what subjects most urgently require research. Currently 16 areas for research have been identified.

The focus of future research work into the geology and genesis of opal deposits in the Great Australian Basin may be able to be achieved by the formation of a centre for Australian opal deposit studies. Such a centre would be ideally located in an institution that has a demonstrated history of excellence in geological, mineralogical and palaeontological research work, and is very well connected with a wide cross-section of Australian and International researchers across a range of geological institutions. Furthermore, such an institution could act in a coordinating role, bringing together researchers from many different internally and externally funded organisations that have as a common goal the unravelling of the mysteries of opal geology and genesis in the Great Australian Basin.

One such organisation, may be the Geodiversity Centre in the Australian Museum, run by Dr Lin Sutherland. Dr Sutherland is a noted and accomplished researcher of Australian gemstone deposits, and has published numerous books and papers on the subject. Furthermore, he is very widely respected and connected in the research world. Moreover, the Australian Museum is now run by Professor Mike Archer, who is a well known and accomplished palaeontologist who incidentally has a particular interest in opal since the museum's involvement with the National Opal Collection museum in the Pitt Street Mall, Sydney.

Late last year a meeting was held with Professor Archer (Director, Australian Museum) John Watkins (Principal geologist, NSW Department of Mineral Resources), Simon Pecover, (Pan Gem Resources) and Andrew Cody (Chairman, AJGIC).

Agreement was reached in principal to set up the "Centre for Opal Deposit Studies" within the Geo-diversity Group of the Australian Museum.

The National Opal Collection Trust has Pledged \$30,000, and the Australian Museum felt that services to the value of \$70,000 could be contributed in the form of a research Scientist and facilities.

Initially a working party will be created to determine the structure, suitable research bodies, funding and management of outcomes.

Value Adding in Australia

Many of the fields, particularly Lambina and Mintabie are providing high quality gemstones, most of which are going off shore for value adding and marketing. It is understandable, given the labour-intensity involved with low value stones, that they be processed in the low labour cost countries of Asia.

There is no reason, however, why more of the higher-grade stones are not locally processed. The David McKinna et al marketing strategy report suggests a number of elements that collectively and indirectly address this issue.

These include:

- A scheme of accreditation at all levels of the supply chain underpinned by a TAFE qualification.
- The adoption of a uniform trading language
- The establishment of an assessment panel.
- The establishment of a trading clearing house.
- The establishment of an e-commerce trading platform.
- The establishment of a finance facility.
- The introduction of a uniform national TAFE program.

Collectively, these mechanisms will create a greater opportunity to value add and market gemstone quality product in Australia.

One of the options which would be enabled by the above initiatives is for a miner to be paid an advance payment for a gemstone-quality opal based on an agreed evaluation, with a further option to have the value added on sold on his/her behalf.

One of the keys to successfully marketing opal in the future is to attract talented, young designers who will craft contemporary fashion items that will appeal to young, affluent buyers. At present, opal tends to be viewed by younger people as an old fashioned stone.

It is envisaged that the above initiatives will provide greater opportunities to attract the young, talented designers.

The multiplier effects on the economy of value added opal in Australia are very large, particularly in relation the impact on small mining towns.

Key Challenges

While many key players in the opal industry voice their opinions and recommendations for the industry, a number of industry-wide factors prove to be of prime concern. They are as follows:

- **Industry fragmentation**

Fragmentation, both horizontally across mine fields and vertically along the supply chain, is a fundamental barrier to industry development, manifesting itself at several levels;

- Its lack of a cohesive industry strategy
- Its ability to deal with and influence the various levels of government
- Lack of a mechanism for industry funding
- Lack of a cohesive research and development program
- Lack of a coordinated marketing program

- **The relative lack of knowledge of opal genesis**

There is a strong call for an integrated research and development program. Part of this program will involve who is going to do the research, what research needs to be done and how to fund such research.

- **The taxation system**

Miners endure greater fluctuations in cash flow than farmers, as a result of the arbitrary nature of their discoveries. Consequently, they struggle to meet income tax payments. The opal industry needs to influence the government to develop a taxation policy that recognises the highly volatile nature of revenue, the high speculative costs of mining and the impact of GST on the viability of local traders.

- **Native Title**

Arguably, the greatest constraints to the expansion of opal mining are the restrictions of access to Aboriginal freehold and native title land.

- **Lack of a competitive, South Australian, value-adding industry**

It is understandable, that the low-grade stones be processed in the low labour cost countries of Asia, given the labour-intensity. However, according to David McKinna's SA report, there is no reason why more of the higher-grade stones are not processed locally. While this may be true for the SA industry, 75% of Australia's opal is processed locally in NSW and Qld.

- **Need for a co-ordinated marketing program**

The need for an integrated marketing strategy is paramount, as are the associated funding considerations.

Key Recommendations of the draft report.

1. A Strategic Plan.

Develop a strategic plan by circulating background document throughout the industry, symposiums in mining towns and cities will raise awareness and inspire contributions.

2. Opal Mining Industry Peak Body

Create a national body, which can effectively deal with important issues in a unified and professional way.

3. Opal Industry Journal

Lack of communication has fuelled fragmentation of this Industry

4. A Centre for Opal Deposit Studies

A breakthrough in the understanding of opal deposition will have enormous impact on the long-term success of the opal industry.