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Guidelines for a Successful Environmental Impact Statement Process

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Over a period of 17 years I was employed in the South Australian environmental impact assessment regulatory authority. During this period I considered the potential environmental impact associated with 275 major development proposals for a variety of developments, including eight related to uranium mining. However, only 40 of these proposals actually became operational developments.

This is not a good completion rate, but I would like to make the point that it was not because of the Australian Environmental Impact Statement (EIS) legislative process. Out of these 275 proposals only one was refused on planning or environmental grounds. There are many reasons why the development completion rate is small. For example:

- the proponent tries to be too big too soon;
- the capital cost of the proposal had been underestimated;
- the cost of infrastructure is not competitive;
- the proposal was an ill conceived idea;
- the world demand (and therefore price) for the product had changed;
- there had been an over estimation of the raw materials;
- a larger company was ready to buy out the approval anyway.

These points highlight opportunities for the government to provide a proactive approach to the particular development, to put a regional development strategy in place, and ensure total across-government commitment.

Another major concern is that the EIS process highlights the potential window of opportunity. The writing of the EIS and the legislative approval processes take too long, and the window of opportunity is lost by changes in world demand or by a competitor using the delay to expand its operations.

It is the intention of this paper to address ways to overcome many of these issues during the EIS process, in relation to uranium mining and milling developments, and to highlighting issues that are important for any project to increase its chances to succeed.

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Benefits of the Legislative Guidelines for an EIS

It is first important that we consider the appropriate legislative requirements, which will require details of the expected environmental, social and economic effects of the development.

In South Australia, an EIS is required to consider the extent to which the expected effects of the development are consistent with the provisions of any relevant state or federal government legislation. This legislation includes the Federal Environmental Protection (Impact of Proposals) Act and the South Australian Development Act, and must take into consideration any environment protection act prescribed by legislation. The EIS should also state the proponent's commitments to meet conditions (if any) to avoid, mitigate or satisfactorily control and manage any potential adverse impacts of the development on the environment.

In preparing the EIS, the proponent should bear in mind the typical aims of the EIS and public review process to:

- Provide a framework in which decision-makers may consider the environmental aspects of the proposal in parallel with social, economic, technical and other factors.
- Provide a source of information from which interested individuals and groups may gain an understanding of the proposal, the need for the proposal, the alternatives, the environment which would be affected, the impacts that may occur and the measures to be taken to minimise these impacts.
- Provide a forum for public consultation and informed comment on the proposal.

The requirements may, at first, appear to be restrictive but in reality are beneficial in that the parameters are set from the onset in the form of a guidelines document issued for every development. The guidelines for the EIS are clear and proponents are fully aware of the parameters necessary to complete the EIS.

In particular, the guidelines for the EIS clearly state the issues which are the proponent's responsibility and those which are the government's. This is vitally important when the opponents of any development that includes the word "uranium" raise the issue of the nuclear fuel cycle. In Australia the nuclear fuel cycle is a federal government decision and is not considered in the EIS prepared by a proponent.

This certainty enables proponents to have confidence in the system and, if there are any environmental issues, they will be the first to know and therefore will have the ability to address mitigation measures before the issue becomes public. Understanding of the legislation is a powerful tool for developers, provided that they are prepared to allocate the time and resources to address issues as they arise. It is cost effective to address environmental issues as soon as possible, avoiding the need to address issues during the design or construction phases and also allowing for any associated costs to be included in the economic planning of the development.

Using the EIS Process to Focus on the Aims and Objectives

Let us accept that a development life cycle follows a regular pattern of four key phases (see Figure 1). The EIS process fits into the concept stage of Figure 1, and is best undertaken as a concept. The legislative EIS process is aimed at providing an approval for a development, but as such is binding on the outcome.

To overcome this problem, the Australian approach is to present a conceptual process in the EIS. For example if you need to concentrate the uranium from an in-situ leach stream you may prefer to use an ion exchange (IX) column, but you have an alternative solvent extraction (SX) process available. If you only address IX in your EIS then that is all that you can have approval to construct and operate. An alternative process would require a separate submission, which is costly and time consuming. It is far better to address the development as a concept in the EIS stage with all possible alternatives included. Once you have your development approval and have prepared your final design, then you supply these details to the appropriate government authority and complete the required approvals.

If you redraw Figure 1 for the EIS process and change the phases (see Figure 2) then you have a simple explanation of the EIS approval process.

In the first phase the proponent has seen an opportunity and is driven by the thought of fame and fortune. The second phase is triggered by the advice that an EIS is required and is the first critical time for every development. In the first phase an economic feasibility study may have been undertaken but the preparation of an EIS in Australia requires social, economic and environmental issues to be put together into one document. This is time consuming and leads to the majority of development proposals being withdrawn.

The EIS process requires an in-depth evaluation of the proposed development. It is no longer good enough to undertake an in-house evaluation of the development since the process requires an independent review of each aspect of the proposal. This is costly and time consuming and is often be too early in the project development. This is another issue which supports the preparation of a conceptual EIS.

The economic evaluation required for the EIS often highlights that the development feasibility is not as good as first thought. This is not necessarily because the idea was wrong but because the economic feasibility had not been extensive enough to highlight the full cost of the necessary infrastructure, actual development or environmental mitigation measures. These issues can affect the availability of capital: borrowing becomes more difficult and the financial risk may become unacceptable to the financiers.

I will give three simple examples to illustrate bad planning in the EIS process.

In the mid-north of South Australia there was a uranium processing plant, and there still is a tailings retention system (TRS). This TRS holds radioactive waste containing a valuable source of rare earth materials. The proposal was to extract the rare earths by water jet mining of the tailings followed by on-

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site extraction. The limitation was that the rare earths contained were within a narrow chemical range and to broaden the production base the proponent decided to import mineral sands, which had a low level of radioactivity. Despite the fact that the final outcome was the removal of the radioactive tailings from the TRS, the focus of the public response became the transportation of the mineral sands to the site via roads with some residential properties.

If one concept had been for an extraction plant outside the town and it had been proposed that the radioactive tailings were to be removed for the benefit of the residents, there may have been huge public support for the clean-up and the mineral sands would not have been an issue. The overall cost to the amended proposal would have been double handling of the tailings (about five small tanker loads per day), but this would have been compensated for by cheaper land and lower rateable value. The proposal failed for a number of reasons, but with public support the potential for a successful project would have been greatly increased and in my opinion could have been operational today.

A second example is a mining venture where the ore value was less than the cost of transportation to the nearest port. The only way to get this proposed project to proceed was to value add on-site. Here again, the conceptual EIS process is a valuable procedure to determine the most appropriate site for the value-adding. Clearly the cost-effective site would be as near the mine site as possible. To assist in the decision making, information from previous EISs was reviewed. These public documents provided information on water sources, energy sources, transport routes, labour sources, Aboriginal issues, regional flora and fauna, social issues and the regional climate. In this case, with the information available, we had the building blocks to enable a proponent to commence an EIS for a number of sites and different value-adding processes.

This raises another important issue. It is far better to match the project requirements and background data before you start to commit to a site and to an EIS, rather than try to get the EIS to meet the demands of the proposed site. This is particularly important for ISL uranium mining where you have the ability to have satellite developments feeding into one extraction plant.

The third example is a development proposal needing a very large evaporation pond, which needed to be shallow with a large surface area. From a desktop survey, the proponent selected a site that offered all of the other infrastructure requirements, except that they forgot that the evaporation pond needed to hold a dilute acid effluent. It needed to be made impervious to the acid to protect a nearby watercourse, and the cost of a suitable material to line the pond was so expensive as to put pressure on the financial support for the development. This was overcome by a rapid environmental evaluation of the adjoining area that located a clay pan, which had a base able to act as the pond liner and could replace the original evaporation area proposed. Luckily the problem was discovered before the EIS was released, since the site selected had not been included as an alternative originally. The story had a sad ending because the bottom fell out of the market price of the proposed product and the proposal did not proceed.

If these three proposals had commenced their preliminary EIS evaluation earlier, the potential for a successful development would have increased and the EIS process could have been faster.

Consultation as a Benefit

My first advice to proponents is to consult with the regulatory authority as early as possible. This is likely to provide relevant background information with respect to the approval process, and save time and money.

After some 20 years in the private sector earlier in my career, I had developed a strong dislike of public consultation. The normal attitude was: "What do they know about our industry, and anyway if we tell them too much they will find things wrong." Based on this approach I was forced to public meetings by the legislative requirements and found them very threatening.

After now spending over 20 years in the public sector, I consider that public consultation and open discussion are not only necessary but are vital to the success of any proposed development. The public may not fully understand a proposal but they generally know the local environment far better than the developer. Public meetings can save money by assisting in the prediction of potential problems that can be addressed in the design phase but, more importantly, provide the opportunity to present the facts. One of the most difficult problems to address in the environmental assessment process of any development is the misinformation or half-information released by the anti-development lobby. Proponents need to provide the full information to respond to an issue, but this information must not be in a form that raises secondary issues.

The media inevitably reacts to a scenario but is not interested in any data that puts doubt on their story. In the uranium field, the emission of radon gas is the typical example, with claims of resulting deaths in towns many miles away even though the levels are so low that we cannot detect them at the development boundary.

As we know, public information and discussion processes are not always good. This will never be so when the word "uranium" is used in the proposed development. There is a large body of the public which is opposed to any development that involves radiation. These people cannot be swayed by technical argument, nor could they be since they have a specific perception of risk associated with radiation.

The only broad approach to such opposition is to follow the legislation. The politicians state their policies with respect to this issue and are elected to power by the people. Government agencies and proponents are obliged to follow the legislation, and their personal opinions should not even be considered in a public meeting (although they may be put in the media).

The establishment of interest group committees has proven to be very effective in this area. Such groups must include anti-development representatives. At first this may appear negative but it does give proponents the opportunity to correct the information provided from these negative sources to the interest groups. The uranium industry has always been, and

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still is, reluctant to address the misinformation presented to the media. This is understandable, but the ability to provide the information to interest groups should be sought and taken at every opportunity.

It is my opinion that the same approach should be used with respect to Aboriginal issues in Australia. Aboriginal heritage and beliefs should be protected in the same way as Europeans would protect their churches. However, native title issues are a government problem and we are obliged to follow legislation.

Commercial Risk in the EIS Process

Freedom of Information Acts in Australia offer protection of commercially sensitive information. However, the most dangerous commercial aspect of the EIS process is not the EIS itself, but the public notification of a "window of opportunity". There is no need for industrial espionage when an EIS is involved: the secret is there for competitors to try to match. Not all countries have the same environmental requirements as Australia, and unless the developer has a good mineral deposit, or has long term contracts for the product, it may be heading for trouble.

In South Australia, the guidelines for an EIS are released for public comment at an early stage of the process. This immediately highlights the "window of opportunity" for any astute competitor. The developer is immediately at risk of lower commodity prices and increased production from competitors. It is therefore essential that the EIS process be cut to a minimum. To achieve this, my advice to most proponents is to assume the worst case scenario and to commence work on the EIS preparation as soon as funding can be obtained. Preparation of the EIS in a draft format means that you only have to address issues raised by the public before release of the final document.

In South Australia each proposal is evaluated on its merits, and provided the correct procedures are followed and timely information supplied, then the process could be completed within six to nine months following the public release of the EIS. To achieve this it is normal to work through a Regional Development Board and to establish an appropriate development strategy. The steps of this process are:

- Establish a local community consultative group with the brief to prioritise regional development strategies.
- Through government agency consultation, prepare the issues relevant to each strategy and require the consultative group to prioritise the issues raised.
- Develop the regional strategy to correspond to these issues.
- Obtain Cabinet endorsement for the strategy.
- Obtain agreement of the consultative group for the strategy.
- Release the strategy for public comment.
- Review public comments and amend the strategy if appropriate.

Although this process highlights the developer's intentions, it does not necessitate the release of the details of the proposal. However, if it is intended to construct a nuclear waste repository it would be difficult to avoid detail.

Use of a Project Concept for Flexibility

There are two potential problems with the conceptual approach previously discussed. Firstly, under the legislation, the final development must not be significantly different to the proposal presented in the EIS. The definition of significance can offer a problem in interpretation.

Secondly, the developer will need to prove that the actual development did meet the environmental protection proposed in the EIS. This is normally achieved through an ongoing Environmental Monitoring and Management Plan (EMMP). It is to the developer's own benefit to utilise an EMMP since this will provide baseline data should it be accused of environmental malpractice, or indeed have an incident which requires remediation.

The concept approach has been used successfully in South Australia, with the Olympic Dam operations of WMC being the most important.

Following an agreement between the state government and WMC (the "Roxby Downs Indenture Agreement") the development proceeded as a number of staged expansions. The original EIS, of October 1982, considered a production facility for 150 000t/yr of copper and associated products, which included 3000t/yr of uranium oxide. This capacity was eventually reached and a second EIS, of May 1997, considered a production of 350 000t/yr of copper and associated products, which included 7730t/yr of uranium oxide.

The first EIS presented alternatives for almost every stage of the process to the extent that the anti-uranium lobby launched a legal challenge against the process. To respond to the challenge, WMC published an Environmental Review (November 1995). This public document reviewed the 1982 EIS and the actual operations at the plant. The Environmental Review received an endorsement from state and federal governments for the environmental and production processes. The second EIS was also for a conceptual development, but, being based on the knowledge obtained from the commercial operations, could be more specific in its approach.

The Beverley uranium mine, owned and operated by Heathgate Resources, followed a similar conceptual process in its EIS of June 1998. This process was also approved and the commercial plant is currently being developed into a full-scale production facility, which is expected to be in full operation by mid 2000.

The Honeymoon Uranium Mine, owned and operated by Southern Cross Resources Australia Pty Ltd, obtained its environmental approvals in 1981 following a conceptual EIS of March 1981. This proposal was not developed at that time, due to the then federal government's three uranium mine policy. It is currently being evaluated through a new EIS process, with the EIS currently due for release. The proponent is currently operating a trial plant,

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which is allowing for the conceptual mining and processing plant to be evaluated, with the preparation of the EIS to be completed.

Conclusion

To increase the level of certainty in the EIS process we must firstly get total across-government commitment. Within South Australia this is not too difficult to obtain, and could be expected nationwide in Australia. The Australian legislation is such that the individual states have been granted autonomy for all developments, except for uranium developments. This, however, does not pose too much of a problem provided that the legislative requirements are fully understood.

The most effective approach for total government commitment has been to establish an inter-agency committee with the brief "to assist the proponent to become established in South Australia". It is not intended that the agencies work for or on behalf of proponents, but that they guide proponents through the maze of legislation. To get any proposal to become an operational development you need to know the requirements for the necessary legislative applications, and the order and timing for placing the various applications.

Time is vitally important for the establishment of all developments. The process itself takes, in reality, more than one year to complete due mainly to the necessity for the proponent to undertake the necessary investigations and documentation for the EIS and response documents. However, the South Australian EIS process for a major development proposal results in a final Governor's decision, a decision that cannot be appealed. We must therefore get the EIS right first time.

The Australian government has always had the opportunity to be involved in state development approvals. A close liaison with the federal government enabled us to predict its interest and any potential issues, and therefore to establish appropriate strategies.

It is my opinion that a major opportunity to improve the project success rate is through a regional development strategy approach endorsed by the federal and South Australian governments, as with many other countries and regions. The ability to get local community support for a development will greatly help to reduce the public opposition to projects and encourage the sense of local achievement and ownership.

In the current political environment the development of mining and milling operations for uranium is possible in Australia. However, consultation with state and federal agencies is vital and will be beneficial to all parties.

SOURCES

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Figure 1. Development life cycle.

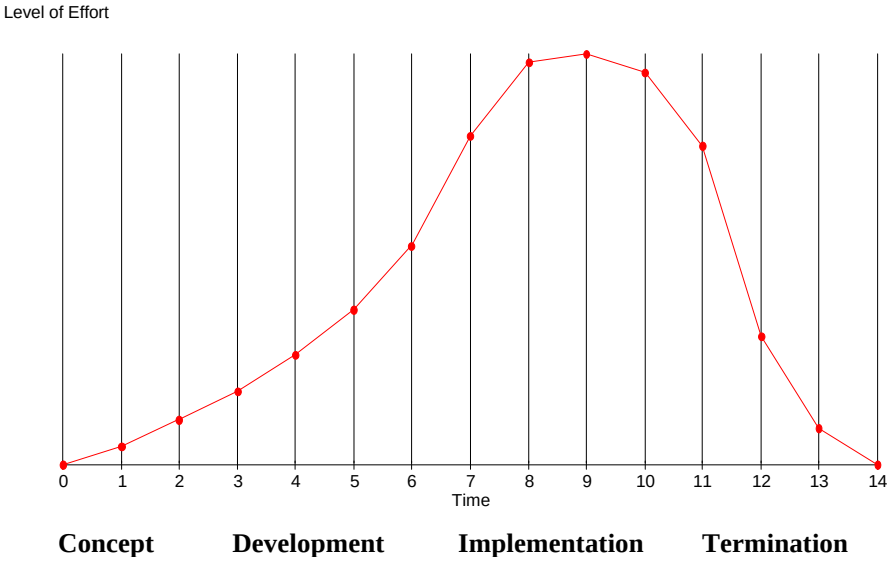
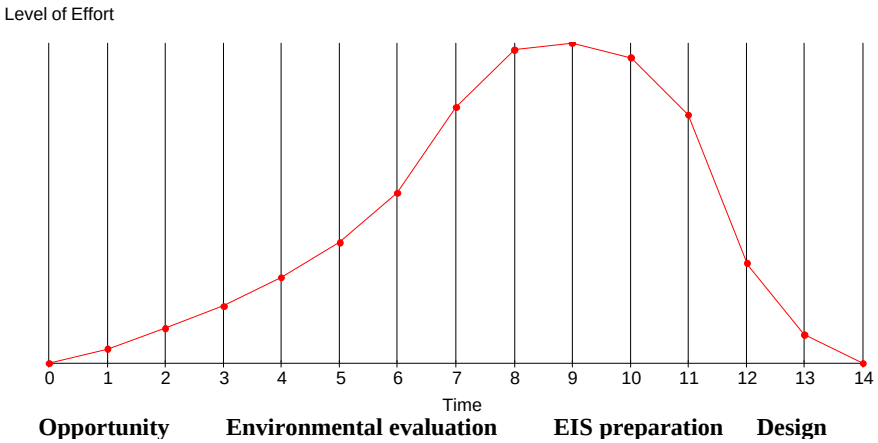
Figure 2. EIS life cycle.