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Professional practice

Practitioner perspectives on what influences EIA quality

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Two surveys were conducted recently of environmental impact assessment (EIA) practitioners in Western Australia. The first investigated the pressure on proponents to produce good quality environmental impact statements (EIS) and the second sought to understand what factors influence the level and quality of science during EIA. Available time and financial resources were found to be important determinants in both surveys. The two main influencing factors identified by EIA practitioners in both surveys, however, were public or community pressure and the expectations of EIA regulators. The latter are expressed in EIS guidelines, published EIA guidance documents, verbal and written communication between regulators and proponents during EIA, and in legally binding compliance requirements. The results highlight the value of public involvement in EIA and in having clear and accountable procedures.

Keywords: environmental impact assessment; Australia; public involvement

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THE QUALITY OF ENVIRONMENTAL impact statements (EIS) prepared by proponents and the integrity of the information they contain is often used as one indicator of the effectiveness of environmental impact assessment (EIA) (for instance, Lee *et al*, 1994; Thompson *et al*, 1997; Barker and Wood, 1999). This paper reports on primary research undertaken with EIA practitioners to investigate what 'drives' quality, and what role science plays in the production of quality EIS documentation. Two surveys of EIA practitioners in Western Australia were undertaken in 2000. In the first, the pressures to produce good EISs were targeted, while in the second the focus was on the role of science in EIA.

Survey content and methodology

The surveys were specifically targeted at currently practising EIA professionals. Four types of EIA practitioners were identified:

- Proponents. Proponents include either public agencies or private companies, typically represented by environmental officers or project managers.
- Consultants. Their normal role in EIA in Western Australia is to undertake monitoring studies (both baseline and impact monitoring), prepare EISs on behalf of proponents, and act as liaisons between proponents and EIA regulators.
- EIA regulators. In Western Australia administration and implementation of the EIA process is

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undertaken by the Department of Environmental Protection (DEP). The DEP acts on behalf of a small and independent Environmental Protection Authority (EPA) that retains key responsibility for the content and format of EIA procedures and makes recommendations to the Minister for the Environment concerning the environmental acceptability of proposals. The Minister is the ultimate decision-maker who is responsible for granting project approvals and setting legally binding approval conditions.
- Other Government agency regulators.

Both surveys were conducted in an interview format using a standardised list of questions. In the first survey, participants were asked how they would define a 'good' EIS, whether they believed that proponents are under pressure to produce good EISs, and to identify these pressures in order of their prevalence.

In the second survey, participants were asked to consider the role of science during six stages of the EIA process: baseline monitoring; impact prediction; mitigation design; decision-making; impact monitoring; and ongoing environmental management. Participants were then asked to identify what factors have determined the level of science utilised in EIA in Western Australia. All interviews were taped and subsequently transcribed to enable the participants' comments to be accurately recorded.

Findings of survey 1

For the first survey, 23 EIA practitioners in Western Australia were interviewed comprising six public proponent representatives, four private proponents, ten consultants, and three EIA regulators. In the second survey, 31 EIA practitioners were interviewed comprising six proponents (all private companies), ten consultants, seven EIA regulators, and eight other Government agency regulators. Some of the interviews in the second survey were conducted in remote parts of the state (some 500 and 1500 kilometres from the capital city in 'outback' mining communities) so a mixture of views from projects in remote and urbanised settings was obtained.

Characteristics of a good EIS

With respect to defining a good EIS, survey participants generated 84 responses, which were grouped into 24 criteria. The most commonly mentioned criteria are shown in Table 1. Many of these criteria are consistent with the factors that affect EIS quality developed by Glasson and Thérivel (1997).

In general, the responses shown in Table 1 reflect views from each of the EIA practitioner types. However, some issues were identified by different practitioner types. Private proponents did not mention that a good EIS resulted from following the EPA guidelines or EPA/DEP requests, whereas the other practitioner types did. This may reflect a reluctance on behalf of proponents to admit that following someone else's guidance on their own proposal may be beneficial to them; it is not uncommon for proponents familiar with their own proposals to believe that they have the requisite knowledge and experience to manage them without outside 'interference.'

Some additional comments relating to the speedy production of an EIS and how a good EIS moves through the rest of the EIA process were more commonly mentioned by the proponents, whereas the consultants addressed criteria related more to the format and style of the EIS. This finding probably reflects the primary concern of proponents in obtaining approvals in as short a time as possible, while the consultants' focus is on EIS production itself, which is what they are employed to prepare.

Table 1. Criteria for a good EIS identified by 23 interviewees

Criteria for a good EIS	Number of responses
Develops mitigation and management measures for the identified impacts. (Two participants also stated that these should be auditable.)	12 (52%)
Scoping should be thorough and all the impacts should be identified and presented in the EIS. (Two participants specified the need to identify social and cultural impacts as well as potential impacts on the biophysical environment, while one stated the opposite position.)	10 (43%)
Identifies and addresses the most significant impacts. (Three participants believed that the process of arriving at the significant impacts should be shown in the EIS and two stated that a systematic risk assessment of identified impacts also was necessary.)	10 (43%)
Adheres to the guidelines provided by the EPA and the further requirements of other regulatory agencies.	7 (30%)
Presents a clear definition of the development proposal.	6 (26%)
Information presented backed by good science at the stages forwhich it is required. (Four participants also specified that the EIS should provide clear and adequate information on the baseline environment.)	6 (26%)
Written in a clear and concise manner. (One participant stated that the EIS content should be capable of being understood by a wide audience and two stated that an EIS should be comprehensive.)	6 (26%)
Informing and involving the public and community and good communication between stakeholders before, during and after EIS preparation.	6 (26%)

Pressures to produce good quality EISs

Of the 23 participants in the first survey, 19 (83%) felt that proponents are under pressure to produce a good quality EIS. All four of the informants who did not share this view were consultants: their feeling was that proponents are not under pressure to produce good EISs, they simply must. They indicated that the current EIA process in Western Australia is sufficiently 'ingrained' (that is, it is a streamlined process and there is enough direction provided by the DEP and EPA) to virtually guarantee that good EISs are produced.

There were 21 sources of pressure on proponents to produce good EISs identified by participants in the survey. The most commonly cited was from regulators (14 responses, 61%). All types of EIA practitioner identified this source. This finding supports recent research in the international minerals sector, where private companies point to the importance of regulator pressure as a determinant of company response to environmental approvals regulation (Annandale, 2000).

Pressure from the public and the community was the second most frequently mentioned factor (13 informants, 56%). Other factors mentioned by participants included media attention and the effects of interest groups on proposals, both of which are additional forms of public pressure. One participant mentioned the desire by proponents to 'keep a low profile,' which can be construed as the fear of public pressure. Over half the informants in each of the EIA practitioner types identified public and community pressure as a significant influence on EIS quality.

The next two most cited sources of pressure were the amount of time (12 responses, 52%) and money (10 responses, 43%) available for baseline studies and EIS preparation. These were not seen to be pressures that proponents believe produce good EISs, rather they affect the quality of the EIS.

Other frequently mentioned pressures were:

- internal pressure from managers/board of directors and shareholders of the proponent (7 responses, 30%): this was identified only by private proponents and consultants;
- other stakeholders (5 responses, 22%);
- peer pressure (5 responses, 22%); and
- desire to get an approval (4 responses, 17%): the implication here was that proponents are aware of what is expected of them by EIA regulators and the public and believe that producing a good quality EIS improves the chances of getting a project approved with little or no delay.

Other identified sources of pressure on proponents to produce a good EIS included competitors, personal/self-driven goals, proposal location (for instance, sensitivity of environmental setting), precedence, uncertainty, and statutory obligations. Only regulators identified statutory obligations as an influencing factor, which probably reflects their own role in administering EIA procedures.

In terms of assigning a priority to the pressures on proponents to produce good EISs, pressures from regulators were the greatest, followed by time and money and public/community pressure. The public/community as a source of pressure for proponents shared the most cited position with the regulators when the informants were asked to list the sources, but was ranked fourth when the informants were asked to give their two most significant pressures.

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Findings of survey 2

Role of science in EIA

All the 31 participants in the second survey indicated that science should play an important role in the EIA process. When asked to rate the extent to which the quality of science in EIA overall currently met their expectations, 21 respondents (68%) expressed satisfaction, three (10%) gave a neutral response and seven (22%) indicated dissatisfaction. This implies that most practitioners are reasonably satisfied with the EIA process in Western Australia in terms of its scientific content. There was no evidence that EIA practitioners in any one of the four roles (proponents, consultants, EIA regulators, and other Government agency regulators) were any more satisfied or dissatisfied than the others.

Participants in the second survey were presented with a seven-point Likert scale and asked to rate the current importance they believed was attached to the role of science in various stages of EIA in Western Australia. These stages are baseline monitoring, impact prediction, mitigation design, decision-making, impact monitoring and ongoing environmental management. Participants also were asked to rate how important they believed that role should be.

In all cases, a statistically significant relationship (using a Wilcoxon T-test) was evident for each stage of EIA whereby the participants indicated that the

role of science for each stage of EIA should be higher than it is currently ($P<0.001$ in each test). Clearly, practitioners believed that science could and should play a more important role during all stages of the EIA process.

Some respondents noted that many EIA activities could not be undertaken without a solid grounding in science. For example, it was often said that monitoring was not possible without science. On the other hand, it was also noted that there is a role for common sense in EIA and use of past experience, both of which may not be strictly scientific.

Overall, practitioners indicated that information and methodologies derived from scientific principles and procedures underlay most EIA activities. For example, impact assessment is based on deductive and inductive reasoning using information obtained in baseline monitoring (that is, scientific) studies. Similarly, mitigation design (particularly for large resource and infrastructure proposals) was considered closely related to engineering design studies and many mitigation requirements (such as pollution emission standards) were considered supported by scientific approaches and principles.

Despite there being a role for science in all stages of EIA, practitioners considered the role of science to be less important during decision-making than at all other stages. The Likert scales recording the perceived importance of science in EIA decision-making were compared to those recording its importance in baseline monitoring, impact prediction, mitigation design, impact monitoring, and ongoing adaptive management. It was found to be significantly less important in all cases (ranging from $P=0.038$ to $P=0.001$).

It was frequently noted by survey respondents that science was only one of several factors that should be the basis of EIA decisions, whereas science alone should form the basis of the other stages of EIA. In Western Australia, the ultimate responsibility for decision-making and project approvals rests with the Minister for the Environment. Consequently, social, economic, and political considerations were frequently identified as major non-scientific factors influencing the decision-making process. Additionally, several participants suggested that other factors such as precedent, experience, intuition, common sense, anecdotal information, and emotions also influence EIA decision-making outcomes.

Factors determining level of science utilised in EIA

The most frequent factor identified by EIA practitioners as determining the level of science utilised in EIA in Western Australia was increased public knowledge or expectation for environmental performance (19 responses, 61%) and the subsequent pressure this placed on proponents, consultants, and regulators to improve accountability and the quality of information used to justify approval decisions. All four types of EIA practitioner identified this factor. This finding was almost identical to the first survey's finding related to the public pressure on proponents to produce good EISs.

The influence of public pressure on EIA practitioners may be less for projects in remote areas. Five of the respondents (16%) stated that there was generally less public pressure on projects in remote parts of the state, including offshore oil and gas projects. This results partially from the vast scale of the sparsely populated 'outback' regions of Western Australia.

Greater public scrutiny can be expected for projects in populated areas where there is a greater risk of social impacts. In addition, most of the population living near major resource development projects in remote areas are those that are employed in the industry themselves and they are likely to be advocates for that industry or operation.

Other frequently identified factors believed to help determine the level of science utilised in EIA by all four groups were:

- The requirements of EIA regulators (17 or 55%), including published guidelines and the leadership provided by key personnel within the EPA and DEP. These factors were generally seen to have had a favourable impact on the quality and level of scientific studies underpinning EIA studies.
- Political expectations (15 or 48%) were seen as *reducing* the importance placed on scientific factors. As discussed previously, decisions were seen as influenced largely by socio-economic and political considerations.
- Financial resources provided by proponents (14 or 45%). The cost of doing scientific studies during EIA was seen to be a major problem with insufficient funding being provided in many circumstances.

Company size also was frequently identified as a factor determining the level of science in EIA in Western Australia (12 or 39%). This was identified primarily by consultants and regulatory agencies. It also relates to the financial resources provided by proponents. Larger operators tend to have more resources available to undertake EIA studies, as well as more experience in the process. Several respondents did provide, however, examples of smaller companies with minimal financial resources engaging in high quality scientific investigations during EIA.

Several proponents and the non-EIA regulatory agencies involved in mining and resource developments were the only participants who identified the requirement to comply with regulations as a key factor determining the level of science used in EIA. This finding probably reflects the involvement each party has with specific regulations (that is, they are not the responsibility of the DEP and consultants are generally not affected by them).

Major influences on EIA quality

The two surveys revealed that pressures on proponents to produce good quality EISs and the factors that determine the level of science utilised in EIA arise from several sources.

The main pressure arises from public and community expectations. This is likely to be a result of public involvement opportunities in Western Australia, including appeal rights at several stages in the process and the requirement for public consultation and review of EISs (Wood and Bailey, 1994). Additional public pressure arises from media attention, interest groups, and the fear of public exposure itself. Morrison-Saunders (1998) also found that public pressure had a major effect on environmental management outcomes for six case-study projects in Western Australia.

The requirements and expectations of regulators also have a major bearing on the use of science in EIA and the quality of EISs. In Western Australia the expectations of regulators are communicated to proponents and consultants from a variety of sources including:

- administrative procedures for EIA established under the *Environmental Protection Act* of 1986 and other legal requirements established by other regulatory agencies;
- EPA guidelines for EIS preparation issued to proponents on a case-by-case basis: these guidelines must be published in the EIS document, which increases accountability for their application;
- EIA guidance documents published by the EPA: these cover a range of specific issues (for instance, land clearing, greenhouse gas emissions, how to conduct terrestrial biological surveys, management of biomedical waste incinerators, and so on) and are prepared by the EPA to educate and advise proponents on how to address these factors during EIA;
- expectations are also expressed orally and in written communication between regulators and proponents during the EIA process, thus individual assessment officers from regulators involved in EIA proposals make a difference here.

The availability of adequate time and financial resources to conduct EIA studies, particularly during the early stages of the process are also factors identified by practitioners as having bearing on the quality of EIS documents and the level of science they contain.

The main pressure is from public and community expectations: this is likely to be a result of opportunities for public involvement in Western Australia, including appeal rights at several stages and the requirement for public consultation and review of EISs

The results of the two surveys highlight the importance of providing opportunities for public involvement in EIA, clear procedures with regulatory backing, and a mechanism for accountability. Having public accountability and a legal basis for EIA procedures, including audit and compliance requirements was also identified as a hallmark of effective EIA (for instance, Wood and Bailey, 1994; Barker and Wood, 1999).

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