

# The effect of public pressure during environmental impact assessment on environmental management outcomes

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## Abstract

*Environmental impact assessment (EIA) is a widely accepted tool for environmental management which typically involves some degree of public participation. However, little attention has been given to how the involvement of the public affects environmental management outcomes for development projects. A number of mechanisms for how public pressure influences EIA outcomes are identified. Examples of these are presented for six case studies in Western Australia. Environmental management outcomes for the case studies were found to be influenced by public pressure arising from the public review process and direct community or media attention on ongoing project performance. The study findings highlight the value of having transparent EIA procedures with opportunities for direct public input to the assessment process.*

Key Words: environmental impact assessment, environmental management, public participation

## Introduction

EIA has long been regarded as an important tool for environmental management, and public involvement has been recognised as an integral part of the process (e.g. Clark 1994). Since its beginnings in the United States in the early 1970s, EIA has spread to many countries and jurisdictions around the world. The significance of EIA is perhaps most evident from its inclusion in each of the major environmental initiatives arising from the 1992 Earth Summit in Rio de Janeiro. Despite its widespread acceptance and the abundant available literature on EIA, relatively little research has focussed on how the process actually works in practice. This paper presents the findings of an examination of six Western Australian case studies with respect to the influence of the public on EIA outcomes. The term 'public' is used here to denote any individual, group or government agency other than development proponents and EIA administrators or decision-makers. The findings should be of interest to EIA practitioners as the research confirms the value of public participation in the EIA process.

The research focussed on the environmental management activities and outcomes for projects that had undergone EIA. In particular, the question of: 'How does public involvement in the EIA process affect environmental management activities?' was addressed. The EIA process can be divided into two main stages based around the principal decision point: the pre-decision and post-decision stages (Morrison-Saunders 1996) and the influence of public pressures on EIA outcomes was explored in this context.

A number of ways in which the public can influence EIA outcomes were identified from the literature including:

- participation in reviews of environmental impact statements (EIS) during the pre-decision stage of the process;
- through legal action against a proponent either in the pre- or post-decision stages; and
- by providing comments during judicial review of EIA legislation and administrative procedures, which occurs separately to individual project-based EIA decisions.

Taylor (1984, p184) identified the public review component of EIA as one in which considerable external pressure is placed on proponents and assessment agencies through the process of criticism. Simply knowing that their projects will be criticised publicly during EIA leads proponents to try and anticipate the likely objections to their projects early in the planning process and to respond accordingly; i.e. improving project design prior to releasing EISs.

Public review of EISs provides a forum for outsiders to make known their objections to development proposals. Public comments may range from factual analyses to simple statements of values-based concerns. With respect to the latter, Taylor (1984, p184) suggests that while value statements may not provide useful information or debate on particular issues, this does not mean that the public review process is not useful, particularly for the relatively few decisions people really want to challenge. When these are combined with those submissions that are more focussed and detailed, they place additional pressure upon proponents and assessment agencies to respond to the substance of these criticisms. Part of this pressure may originate simply from the fear of negative publicity that may be generated by an unsatisfactorily presented and implemented project (Culhane *et al.* 1987, p17).

Proponents and assessment agencies may be pressured to comply with the requirements of EIA procedures by the real or perceived threat of litigation. Legal action may be taken by an appropriate government agency using its available powers to ensure that EIA is implemented correctly or by members of the public who pursue court action against a proponent or assessment agency. Legal action by both environmentalists (Wichelman 1976) and government agencies (Andrews 1976) was found to be a major influence on EIA in the United States during its formative years. The ability of citizens to sue agencies involved in EIA is considered by Ortolano (1993) to have resulted in a high rate of procedural compliance for EIA in the United States.

An additional opportunity for public influence on EIA outcomes may arise when EIA processes are subjected to judicial review, providing the opportunity to amend the underlying legislation and administrative procedures themselves. Examples of this in Australia in recent years include reviews of the national (Commonwealth Environment Protection Agency 1994) and Western Australian state (Government of Western Australia 1992) procedures; both of which encouraged public input to the review process. While providing an important opportunity for public influence on the overall EIA process, these reviews are beyond the scope of this study and will not be considered further here.

Before presenting the key findings of the research with respect to the ways in which the public has influenced EIA outcomes in Western Australia, a brief description of the methodology is presented.

<b>Project Description and Proponent</b>	<b>Key Issues</b>	<b>Key EIA Events</b>
<i>Cape Peron Ocean Outfall (CP)</i> . Ocean disposal of primary treated wastewater by 4km offshore submarine pipeline. Managed by the Water Corporation of Western Australia.	Impacts on water quality, aquatic life and human use of marine environment	Assessed in 1982. Detailed marine monitoring programme required to confirm that water quality criteria were being met. Baseline monitoring commenced during EIS preparation, two years before ocean discharge commenced. Numerous modifications to monitoring programme since.
<i>Harding River Dam (HD)</i> . Water supply dam in arid-tropical area built to reduce draw on the Millstream groundwater aquifer which supports a pool and riverine system of high ecological significance. Managed by the Water Corporation of Western Australia.	Water quality and quantity in the dam, impacts on downstream ecology, water level in Millstream aquifer.	Assessed in 1982. Dual monitoring and management programme. Monitoring of dam impacts and performance as well as preparation of a detailed EMP for the Millstream aquifer. Flows in Harding River are irregular so dam operates in conjunction with Millstream borefield. Dam water is used whenever possible.
<i>Big Brook Dam (BB)</i> . Relatively small dam on a brook to provide an unrestricted water supply to the Pemberton Trout Hatchery and Pemberton townsite. Located upstream from the much smaller Pemberton Weir which did not provide a reliable source. Managed by the Water Corporation of Western Australia.	Impacts on migratory species of aquatic fauna.	Assessed in 1985. Proponent prepared an EMP to determine the effect of the dam on migratory aquatic fauna and to report on the effectiveness of the environmental management measures proposed.
<i>Narngulu Synthetic Rutile Plant (NG)</i> . Mineral sands processing plant located in an industrial area on the outskirts of the regional town of Geraldton. Managed by RGC Mineral Sands Limited.	Hydrogen sulphide emissions (odour), and liquid waste treatment, recovery and disposal (groundwater pollution risk).	Proceeded in stages. Stage 1 assessed in 1985. Odour emission problems led to the plant being closed down until new pollution control equipment installed. Stage 2 assessed in 1989. Doubling of plant capacity required further improvements to pollution control systems. Regular monitoring and reporting.
<i>Sodium Cyanide Plant (SO)</i> . Sodium cyanide solution manufacturing plant located in the Kwinana Industrial Area within the greater metropolitan area of Perth. Sodium cyanide is transported to gold mining areas in Western Australia (used in gold extraction process). Managed by Australian Gold Reagents Pty Ltd.	Hazard/risk with feedstocks and manufacturing products (eg. ammonia, hydrogen cyanide gas, sodium cyanide solution). Transportation of product.	Original plant assessed in 1987 and commenced production in 1988. Numerous expansion proposals undergone EIA but yet to be built. Each required refinements to risk quantification and management procedures. Initial proposal for road transport rejected (rail requirement instead) but amended in 1995 given proponent's successful safety record and closure of several rail routes.
<i>Saladin Oilfield Project (SA)</i> . Offshore oil and gas extraction with processing facilities based on Thevenard Island. The island is mostly a designated nature reserve for flora and fauna conservation. Managed by West Australian Petroleum Pty Limited (WAPET).	Oil spill risk, produced water disposal (oil and treatment chemical residues) and impacts on nature reserve (weed invasion, fire, habitat loss etc.)	Assessed in 1987. Requirement for Oil Spill Contingency Plan and an EMP prior to project commencement. Produced water disposal changed from ocean discharge to injection into disposal wells in response to marine monitoring findings.

Table 1. Summary of Case Studies.

## Methodology

Six case study projects that have undergone EIA in Western Australia were selected for examination (Table 1). These comprised two water supply dams, an offshore oil and gas production facility, an ocean wastewater outfall, a mineral sands processing plant and a

sodium cyanide manufacturing plant. No attempt was made to select project types or numbers that would be statistically representative of the overall experience with EIA in Western Australia. However, they were selected to ensure a mixture of urban and remote settings, and projects assessed under both first generation and second generation EIA legislation. (In 1986, the original EIA legislation, the *Environmental Protection Act 1971*, was repealed and replaced by the *Environmental Protection Act 1986* to provide statutory backing to the process and making decision-makers conditions of approval legally binding).

The EIA process in Western Australia has previously been described in detail by others (e.g. Wood and Bailey 1994) and will not be reiterated here. However some salient aspects with respect to the research methodology are as follows:

- the proponent of a development project likely to have a significant impact on the environment is required to prepare an EIS which is then subjected to public review;
- public submissions are received by the Environmental Protection Authority (EPA) who utilises these in the preparation of a 'Report and Recommendations' document for the project. This is directed to the Minister for the Environment, but is made freely available to the public. (Since 1986, it has been the practice of the EPA to provide the proponent with a list of public comments to which the proponent is expected to respond. Both the public comments and the proponents response are then included in the EPA's report as appendices); and
- final approval is made by the Minister for the Environment.

Ongoing environmental management and monitoring of the project once it commences is the responsibility of the proponent who is usually required to report regularly on this to the EPA.

For each of the case studies, all environmental management activities proposed and undertaken for the case studies were recorded. These were classified according to whether they were originally proposed during the pre-decision or post-decision stages of EIA. The origin of these were then examined to determine those arising from public involvement in the EIA process.

Pre-decision management actions included the initial commitments made by proponents in EISs, management actions arising from other sources (e.g. other legislative requirements outside of the EIA process itself) and recommendations made by the EPA. The EPA recommendations frequently included issues of concern raised in public submissions on EISs and these were identified. These represent an important source of environmental management actions originating from the public.

In some cases, where proponents had made new environmental management commitments in response to the public review comments on an EIS, the EPA would not make specific recommendations on the particular issues raised (i.e. for projects assessed after 1986), but indicate that project approval should be subject to compliance with these commitments. Hence, these commitments represented a second source of pre-decision management actions initiated or influenced by involvement of the public in the EIA process.

Post-decision management actions were new actions (i.e. not previously identified up to the time of project decision-making) initiated during project construction and operation. Some of these were implemented in response to community concerns.

In addition to documenting and describing examples of public influences on EIA outcomes during both the pre- and post-decision stages, this factor was quantified for the case studies. Some key findings of the research are now presented.

## Research Findings

A number of ways in which the public influenced outcomes occurred during the EIA process for each of the case studies examined.

### Pre-Decision Stage

During the pre-decision stage of EIA, the most obvious source of public pressure arose from submissions made during the EIS review process and this was usually explicitly identified by the EPA as an important influence. For example in assessing the EIS and public submissions for the Sodium Cyanide plant, the EPA stated that:

Information and comments provided in [public] submissions have been used to assist in the evaluation of the sodium cyanide plant proposal (EPA 1987, p10);

and in the assessment of the Narngulu Synthetic Rutile plant it was stated that:

The [EPA] has assessed the potential environmental impacts of the proposal utilising the [EIS] and additional information supplied by the proponent and in the submissions from public and Government agencies (EPA 1989, p-i).

It might be expected that this form of public influence would be most significant for the most controversial projects (as was the experience of Culhane *et al.* 1987), where the level of controversy is represented by the number of public submissions received for a particular project, but this was not the case. For example, for the Cape Peron Ocean Outfall project, the EPA received 557 public submissions on the proponent's EIS (Department of Conservation and Environment 1982, p17) which was by far the highest number of submissions received for any of the case studies (Table 2). Of these, 544 were received from residents and conservation groups and 99% of these submissions were opposed to the project (Department of Conservation and Environment 1982, Appendix 1). Despite this high number of submissions, there is little evidence that these had much influence on project implementation and management. This point is illustrated in the following extract from the EPA's assessment report addressing the issue of water quality.

The disposal of large quantities of primary treated effluent into the sea is obviously an environmentally sensitive issue, and it is also a controversial one. This has been shown by the very large public response to the [EIS]... The EPA considers that the [proponent] has presented sufficient evidence to show that the overall concept of disposing of this large volume of waste in the [sea] is environmentally sound. (Department of Conservation and Environment 1982, p11-12)

Although there was considerable public concern about the water quality issue, the EPA did not require the proponent to change any part of the original proposal.

Number of EIS Submissions	Project					
	*CP	HD	BB	NG	SO	SA
544	6	5	8	35	11	

Table 2. Number of Public Submissions for the Case Studies.

\* Case studies denoted by their initials as established in Table 1.

In contrast, only five public submissions were received on the Big Brook Dam project but these had a major influence on project management outcomes. One of the submissions indicated that the EIS did not provide sufficient information to make an objective appraisal of the potential impacts of the dam on aquatic fauna migration in Big Brook. In response to this submission, the proponent prepared a supplement to the EIS addressing this issue which was appended to the EPA's report (EPA 1985, p6). During discussion of this issue, the EPA made a recommendation that the proponent establish an aquatic fauna monitoring programme. This was subsequently implemented and resulted in considerable amendments to management activities, particularly with respect to the modification of the structures provided in order to assist fish and lamprey migration over the dam wall.

A second example of public influence for the Big Brook Dam project concerned the possibility of recreation on and adjacent to the dam. The EPA noted that several public submissions on the EIS discussed this issue. The EPA also made reference to a report by the Western Australian Water Resources Council concerning public access to reservoirs and catchments. The EPA indicated support for the view expressed in this report that carefully prepared individual management plans was the key to successful introduction of recreational activities on water supply reservoirs (EPA 1985, p8). The EPA subsequently recommended that the proponent prepare a recreation management plan for the dam.

It is clear from these examples that pressures arising from public submissions influenced environmental management activities, but this was not related to the volume of submissions received. Additional examples of public submissions on EISs that ultimately translated into environmental management activities were evident for each of the other case studies. Overall, the number of environmental activities attributed to public influence during the pre-decision stage of EIA ranged from one to 20 for individual case studies (Table 3).

	Project					
	CP	HD	BB	NG	SO	SA
<b>Management Action Proposed In...</b>						
Proponent Commitments	28	37	10	51	52	45
EPA Recommendations	4	8	4	9	8	8
Other Legislation	0	1	0	1	1	2
<b>Total</b>	<u>32</u>	<u>46</u>	<u>14</u>	<u>61</u>	<u>61</u>	<u>55</u>
<i>Public Contribution</i>	1	2	3	6	20	5

Table 3. Origin of Proposed Environmental Management Actions During the Pre-Decision Stage of EIA.

The number of environmental management actions originating from public influences was particularly high for the Sodium Cyanide plant (i.e. 20) compared to the other case studies. This was due to 16 environmental management commitments made by the proponent in response to concerns raised by the public following release of the EIS. These commitments were listed in the EPA report on this project and were stated to form part of the approval for the project as follows :

The EPA recommends that should the proposal proceed, it should do so subject to :

- the proponent's commitments in the PER and its responses to public and Government agency comments; and
- the EPA's conclusions and additional recommendations in this Assessment Report (EPA 1987, p3).

### Post-Decision Stage

Far fewer environmental management actions were proposed during the post-decision stage of EIA compared to the pre-decision stage. However, some important management did take place here for each of the six case studies and public pressure was found to have been an important influence on these activities for three of the case studies. Some of this pressure arose from direct or explicit public involvement and some was more subtle.

The influence of explicit public pressure was particularly evident for the Narngulu Synthetic Rutile plant with respect to the issue of gaseous and odour emissions. Established emission criteria for particulates and sulphur dioxide were adopted by the proponent for the plant but compliance with these did not prevent problems with odour emissions. Soon after commissioning, problems with odorous emissions of hydrogen sulphide developed unexpectedly, resulting in a series of public complaints from nearby residents (AMC Mineral Sands Ltd 1989, p3). These included letters of complaint to the

EPA, a petition of over 300 signatures and a series of hostile local newspaper reports over a period of several months. Using its pollution control powers, the EPA issued the proponent with a pollution abatement notice requiring the operation to be closed down until new pollution control equipment was installed (EPA 1989, p-i). Clearly public opposition to the project was highly influential here.

More subtle or implicit public pressure (e.g. the fear of negative publicity - Culhane *et al.* 1987) was also evident for one of the case studies. The sodium cyanide manufacturing plant operates continuously, but is shut down for maintenance several times each year. During plant start-ups, a visible plume of nitrous oxides is produced for approximately 10 minutes. There have been no complaints concerning these emissions. However, the plant is situated in a large industrial complex relatively near to urban areas and public complaints about health and environmental concerns related to industries within this complex are not uncommon. In order to avoid potential impacts on workers within neighbouring industries and the general public amenity (and also to maximise opportunities when the wind is from a suitable direction), start-ups at the sodium cyanide plant are conducted at night time when the plume is less visible (Pers. comm. S. Fitzpatrick, Environmental Manager, Wesfarmers CSBP Ltd. 4/5/95). Hence an implicit form of public pressure has partially influenced project management practices in this instance.

## Conclusion

By recording the environmental management activities for projects that have undergone EIA and examining the origin of these, it was possible to determine the contribution of public involvement in EIA. Overall, the qualitative and quantitative examples presented here demonstrate that public influences made an important contribution to the identification and implementation of environmental management activities during EIA for the six case studies. This was evident during both the pre-decision and post-decision stages of EIA.

The results of this research reinforce the importance of two fundamental aspects of EIA; namely:

- having a publicly accountable process including opportunities for public review of EIS documents; and
- being responsive to community concerns during both project assessment and ongoing operations.

For the six case studies investigated, public involvement was found to be an important mechanism for ensuring that the environment was protected and managed as intended by the EIA process.

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