

ENVIRONMENTAL IMPACT ASSESSMENT
AND ORGANISATIONAL CHANGE

Volume II

Appendices
including the Project Case Studies

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Appendix 1: Examples of EIA System Evaluation Criteria (relates to EIA theory and not practice)

ANZECC (1991)

- Provision of clear guidance/criteria on types of proposals likely to attract EIA and on assessment levels
- should be opportunities for proponents, public and decision-making authorities to refer proposals for consideration (triggering)
- Minister or agency responsible for administering EIA should have power to initiate EIA process
- there should be a mechanism to formulate proposal specific guidelines, incorporating public concerns
- mechanism to report publicly on assessment of proposals
- provisions for monitoring
- government should provide policy and planning frameworks which set contexts for the environmental assessment of proposals
- the EIA system should be open and accountable to the public
- there should be different levels of assessment to take account of type and scale of proposal, environmental context and degree public interest
- Minister or decision-making authorities should have power to recommend environmental conditions, and should take environmental advice into account
- Enforceable auditable conditions should be set by decision-makers and made public
- Minister or decision-making authorities should give reasons for decisions publicly.

IAIA(1996) (rephrased as questions)

- does EIA have a legal base with accompanying regulations and guidelines?
- is there provision for stakeholder involvement (including the public)?
- is there formal review of EIA reports by a designated government agency?
- are there mechanisms to encourage accountability of decision-makers for their decisions on proposed development action?
- is there an appropriate role for an environmental agency in the procedures and decision-making?

CEPA (1994) (cited in Anderson 1994) (rephrased as questions)

- Participation: does it begin early in the process and through each stage until completion?
- Transparency: Is the EIA system defined and accessible?
- Certainty: Are procedures such that they cannot be changed arbitrarily?
- Accountability Does the system ensure accountability to all participants and stakeholders (eg decision makers should justify their decisions)?
- Integrity: Is the system open and transparent with clear objectives and processes?
- Flexibility: does it focus on outcomes of assessment rather than ensuring than process formalities have been completed?
- Practicality: Are the EIA requirements and outcomes achievable and designed to meet EIA objectives?

Devuyst (1994), Devuyst et al (1993), Valappil et al (1994)

- Are all harmful projects included in the list for projects requiring EIA?
- Is there a possibility for transboundary EIA, EIA for policies, plans, and programs, or EIA for projects abroad?
- Do decisions for major projects take into account the values, needs, and knowledge of the local populations?
- Are the documents, reports, and decisions of each step of the EIA process open to the public?



- Are there external inspection and control mechanisms in place to check compliance every step of the procedure?

Gibson (1993) (rephrased as questions)

- does the system serve sustainability objectives?
- does EIA apply to all environmentally significant undertakings?
- does EIA identify best options rather than merely "acceptable" proposals?
- is EIA clearly specified and mandatory?
- does EIA ensure openness and facilitate public participation?
- does EIA provide for enforceable approval conditions and monitoring of results?
- does EIA allow efficient implementation?
- Is EIA linked into coherent overall regimes that integrate planning and assessment with overall objective setting and specific regulatory action?

IAIA (1996)

Basic Principles (those not referring to practice)

- focused: EIA should concentrate on significant environmental effects and key issues
- participative: process should provide opportunities to inform and involved the public and concerns should be explicitly addressed
- integrated: the process should address interrelationships between social, economic and biophysical aspects
- transparent: the process should be clear and understandable, ensure public access to information, and identify factors taken into account in decision making

EIA Process should provide for:

- screening to determine whether proposal should be subject to EIA and at what level
- scoping to identify the issues and establish terms of reference for the EIA
- alternatives to identify the preferred or most environmental sound option
- impact analysis to identify and predict the effects of the proposal
- mitigation and management to establish measures to avoid, minimise impacts
- evaluation of significance to determine relative importance and acceptability of residual impacts
- preparation of EIS to document the impacts of the proposal, etc
- review of the EIS to determine if it meets its terms of reference and provides satisfactory assessment of proposal
- decision-making to approve or reject the proposal
- follow up to ensure terms and conditions of approval are met, to monitor the impacts and to undertake environmental audit and process evaluation where required

Sadler (1996)

Institutional controls: *is the EIA process based on or does it include:*

- clear legal provisions?
- explicit requirement to cover all environmentally significant proposals?
- broad definition of environment/coverage of factors?
- opportunities for public involvement (at specified stages or throughout the process)?
- procedures for independent, expert review of EAs?(inter-agency committee, commission, ad hoc panel, board or tribunal)?
- guidance on application of procedures? (proposal terms of reference, timelines)
- visible linkage to decision-making (approval, permitting etc, based on submission of report)?
- specification of terms and conditions for implementation (provision for follow-up such as monitoring, legally enforceable)?

Wood (1994; 1995)

- Is the EIA system based on clear and specific legal provisions?
- Must the relevant environmental impacts of all significant actions be assessed?

- Must evidence of the consideration, by the proponent, of the environmental impacts of reasonable alternative actions be demonstrated in the EIA process?
- Must screening of actions for environmental significance take place?
- Must scoping of the environmental impacts of actions take place and specific guidelines be produced?
- Must EIA reports meet prescribed content requirements and do checks to prevent the release of inadequate EIA reports exist
- Must EIA reports be publicly reviewed and the proponent respond to the points raised?
- Must the findings of the EIA report and the review be a central determinant of the decision on the action?
- Must monitoring of action impacts be undertaken and is it linked to the earlier stages of the EIA process?
- Must consultation and participation take place prior to, and following, EIA report publication?
- Must the EIA system be monitored and, if necessary, be amended to incorporate feedback from experience?
- Are the financial costs and time requirements of the EIA system acceptable to those involved and are they believed to be outweighed by discernible environmental benefits?
- Does the EIA system apply to significant programmes, plans and policies, as well as to projects?

Appendix 2: Examples of Evaluation Criteria relating to EIA in practice

(note that some criteria are relevant to both the evaluation of theory and of practice)

CEARC (1988)

- information contribution to decisions
- accurate predictions
- mitigation achieved objectives
- decisions are timely relative to economic and other factors
- EIA costs can be determined and are reasonable
- all stakeholders have equal opportunity to influence the decision
- affected people have equal access to compensation

Devuyst et al (1993) and Valappil et al (1994) (rephrased as questions)

- Were all important environmental effects discussed?
- Were all relevant alternatives evaluated and all possible mitigating measures considered?
- Are there guidelines concerning techniques and methodology to be used?
- Do decisions for major projects take into account the values, needs, and knowledge of the local populations?
- Are the documents, reports, and decisions of each step of the EIA process open to the public?
- Is the EIS prepared and/or reviewed by people who are experts in the field? Are they independent?
- Does internal inspection and control occur for determining whether the proponent adheres to the procedures, and to determine if the contexts of the EIS comply with quality criteria? Are checks made to determine if the EIA results are actually used in the decision making process?

Glasson (1999)

- centrality in decision-making (ie to what extent does EIA make a difference?)
- integration in the project cycle (ie to what extent is EIA easily bypassed?)
- consistency in application to development proposals
- fairness in application, providing opportunities for participation and influence in the process by all relevant stakeholders
- flexibility in terms of application to various stages in the EIA process (eg from consideration of alternatives to implementation of project modifications)
- scope in terms of considering a range of environmental factors, both bio-physical and socio-economic

Lee, Walsh and Reeder (1994)

- To what extent has the EA process contributed to project modifications which reduce significant negative environmental impacts and enhance positive environmental impacts?
- To what extent has the contribution of the EA process to environmental improvements been achieved at least cost?
- To what extent has the EA process contributed to the balanced evaluation of environmental and cost considerations, along with other relevant material considerations, in reaching decisions on the authorisation of projects

Leu, Williams and Bark (1993) (rephrased as questions)

- Are the relevant authorities aware of the Environmental Assessment Procedure?
- Have relevant authorities established their own handbooks and guidelines?

- Are scoping meetings and site visits undertaken?
- Are consultants employed to examine Environmental Statements?
- Do planning officers involved in EIA, undergo training courses?

Wood (1994; 1995)

- Are the financial costs and time requirements of the EIA system acceptable to those involved and are they believed to be outweighed by discernible environmental benefits?

Ortolano et al (1987), Hirji and Ortolano (1991), Ortolano (1993), Tu (1993)

- Compliance with rules, regulations, and other procedural requirements of a formal EIA program
- preparation of adequate EIA documents and technical completeness
- Utilisation of proper methods in assessing impacts
- influence of environmental information on planning and decision making, including formulation of alternative plans, selection of a proposed plan, and mitigation
- appropriate weight given to environment relative to economic and technical factors

DEP(WA) (1996)

- Has EIA minimised the adverse impacts of proposals?
- Has EIA maximised the benefits to the environment of proposals?
- Has EIA provided timely, sound and independent advice to Government before decisions were taken?
- Has EIA encouraged and provided opportunities for public participation in environmental aspects of proposals before decisions were taken?
- Has EIA ensured that proponents of proposals take primary responsibility for protection of the environment relating to their proposals?
- Has EIA promoted awareness and education in environmental values?

Criteria for individual case studies:

- how many appeals were there against the level of assessment? Were any upheld? In hindsight was the level appropriate?
- did scoping identify the appropriate issues?
- was the EIA document adequate?
- how many submissions were received? Did the process, including the public involvement period, detect deficiencies in the proponent's proposal?
- how many appeals were there against the EPA's report and recommendations? Were any upheld? In hindsight was the report appropriate?
- Were the conditions appropriate? (includes the proponent's environmental management commitments)
- were the conditions clear and understandable?
- were they necessary for environmental protection? Did they address issues effectively - would compliance with the conditions have ensured environmental protection in relation to the issues they addressed?
- were they able to be implemented?
- were they able to be audited?
- have any conditions become redundant or inappropriate? Do any need to be changed or deleted? Has the project significantly changed since the assessment phase?
- was there any evidence of conditions not being complied with? If so, what was the environmental significance and what action was taken?
- were there any significant environmental impacts from the proposal which were not predicted in the assessment, not covered by the conditions or caused by noncompliance?

Kobus and Lee (1993) (rephrased as questions)

- Is the EA process commenced sufficiently early in relation to the planning and design of new projects?
- Is EA integrated into, and does it contribute positively towards, the project planning and design process from the early stage of choosing between alternative forms of the project?
- Is the management of environmental assessment activities during pre-submission of the ES well executed, and does it make use of appropriate technical expertise and assessment methods, and of consultations with those with interests in, and knowledge of, the likely environmental impacts of the project concerned?
- Does the ES conform, in terms of its contents, with the EA requirements?
- Does the ES conform, in terms of the assessment methods used and form of presentation, with good EA practice?
- Has consultation and review activities, based upon the ES, been satisfactorily undertaken in both a procedural and substantive sense?
- have the contents of the ES, including any updated EA information, together with the findings of the consultations based on this, been satisfactorily integrated into the decision-making process and are they adequately reflected in the decision that is reached?
- is there satisfactory provision, where appropriate, for environmental monitoring of project implementation and for taking remedial action?
- were the outputs described above achieved within acceptable time limits and at acceptable cost?

Radcliff and Edwards-Jones (1995)

- Resource constraints
- importance of quantified data
- importance in planning decision
- monitoring

Sadler (1995) (rephrased as questions)

Based on 'Best Case' Performance

Has EIA:

- facilitated informed decision-making by providing clear, well structured, dispassionate analysis of the effects and consequences of proposed projects?
- assisted the selection of alternatives, including the selection of the best practicable or most environmentally friendly option?
- influenced both project selection and design by screening out environmentally unsound projects, as well as modifying feasible proposals?
- directed the content of formal approvals, including the establishment of terms and conditions for project implementation and follow up?
- resulted in the satisfactory prediction of the adverse effects of projects and their mitigation using conventional and customised techniques?
- served as an adaptive, organisational learning process in which the lessons of experience are fed back into policy, institutional, and project design?

Ridgway (1995)

- 1) the review of the EIS shows that the scoping process has identified, and ranked all of the issues of concern to the satisfaction of all parties;
- 2) once the project has been constructed, it is shown that the EIS has correctly identified the impacts. - 'requires the auditing of projects once they have been completed'
- Use of group processes, specific methods (eg checklists), site visits
- level of information given to the public sufficient for informed input
- consideration of alternatives at scoping stage
- type of impacts addressed
- Consideration of alternatives
- Length of EIS, who written by, presence of background reports, layout

- impact on decision-making
- effect of EIA on project design and planning - how significant were the changes, what types of changes (eg minor alterations, abandonment, changed preferred option)?
- nature of EIA team preparing document - requires integrated approach
- timing and staging of public consultation - best early
- Links between Engineering design process/team and EIA
- degree of proponent experience in EIA
- at what stage of design and planning was the project when the EIA process began?
- Organisational management of EIA: who involved (eg internal/external EIA teams)
- ethics and attitudes towards EIA

Factors to measure effectiveness:

- certainty of process
- expeditious approval or refusal
- prompt identification of major mitigation measures which might affect the project's viability
- early identification of generic and intra-generic alternatives which may be preferable solutions to the one originally envisaged
- viability of using EIA as a design tool to develop an initial concept into an acceptable proposal

Sippe (1996)

- scoping: did the guidelines for assessment accurately cover the environmental issues?
- were the right issues addressed adequately in the EIS?
- were the impacts predicted reasonably?
- were management commitments reasonable?
- was the evaluation properly carried out?
- were all the issues covered?
- did the conditions and commitments fully and properly cover all the issues?
- were they too detailed or not detailed enough?
- were they able to be implemented?
- were they necessary?
- Compliance: Level of compliance with legally enforced conditions?
- did the process result in the environment being protected and the development sustainable?
- was the proposal changed for the better environmentally as a result of EIA?
- Did the education role of EIA affect the proponent's attitude to environmental protection?

Appendix 3: Framework for evaluating EIA performance at the Project Level

EIA COMPLIANCE

- Criterion 1.1: Did the proponent comply with the EIA legislative-process requirements?
- Criterion 1.2: Did the proponent comply with the project guidelines?
- Criterion 1.3: Did the proponent comply with the final decision?
- Criterion 1.4: Was there evidence of going beyond compliance?

EIS QUALITY

The Proposal & Policy Framework

- Criterion 2.1.1 Was the project justified and was the rationale clearly outlined?
- Criterion 2.1.2 Was there a detailed description of the proposal?
- Criterion 2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision-making process for the proposal?

Description of the Environment

- Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment?
- Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment?
- Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment?
- Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified?

Impact Assessment

- Criterion 2.3.1: Have all the major direct impacts been addressed in the identification and description of impacts?
- Criterion 2.3.2 Does the description of impacts have an adequate level of detail?
- Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts?
- Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact?

Alternatives

- Criterion 2.4.1: Have alternatives been outlined, and the decision-making process for or against these alternatives been summarised and justified?
- Criterion 2.4.2: Have alternatives been compared and ranked in order of preference for each environmental impact?

Mitigation & Monitoring

- Criterion 2.5.1: Have mitigation measures been identified where appropriate?
- Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures?
- Criterion 2.6.1: Have monitoring arrangements been detailed for each impact category?
- Criterion 2.6.2: Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities?

Communication & Presentation

Criterion 2.7.1: Has the proponent undertaken original field work and clearly outlined the methods used?

Criterion 2.7.2: Has the proponent used a wide range of information sources?

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference?

Criterion 2.7.4 : Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index?

Criterion 2.7.5 : Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced?

Criterion 2.7.6 Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text?

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)?

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation?

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS?

Level of Controversy

Criterion 2.8.1 Was there low or no public controversy about EIS quality?

Criterion 2.8.2: Was there low or no government controversy about EIS quality?

OPENNESS

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent?

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process?

Timing of EIA

Criterion 3.2.1: Is environmental information integrated at the project conception stage?

Criterion 3.2.2: Is EIA integrated with the planning of alternatives stage?

Criterion 3.2.3? Did the EIA information inform the design stage?

Criterion 3.2.4: Did the EIA outcomes inform the construction stage?

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS?

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)?

Criterion 3.3.2: Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)?

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly?

Level of Controversy

Criterion 3.4.1 Was there low or no public controversy about openness?

Criterion 3.4.2: Was there low or no government controversy about openness?

RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted based on the available information and adequate rationale given for the selection of the preferred option?

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors?

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)?

Criterion 4.2.2: Was the proposal changed on environmental grounds where appropriate?

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes?

Level of Controversy

Criterion 4.3.1 Was there low or no public controversy about responsiveness?

Criterion 4.3.2: Was there low or no government controversy about responsiveness?

Appendix 4: Questionnaire

(submitted to Transport SA participants)

Survey

Environmental Impact Assessment

In Transport SA, environmental impact assessment (EIA) is undertaken for infrastructure projects with a potential impact on the environment. EIA may be documented in the form of an Environmental Impact Assessment Report (EIAR), a Planning Report and Concluding Report, or an Environmental Impact Statement. This survey aims to learn about your background, your attitudes, and experience in EIA within Transport SA, and forms one component of a PhD programme at the University of Adelaide. Any input you provide will be invaluable to the outcome of this project. For further information, please contact Megan McCarthy on (08) 8303 5899 or 0417 807 432.

Please return the survey to
Megan McCarthy
Mawson Graduate Centre for Environmental Studies,
University of Adelaide, SA 5005 or fax (08) 8303 4383

Thank you most kindly for your time

Please tick the box if you would like a copy of the results

Background Information

1. What is your Name? (optional)
2. What is your Gender? (please tick one box) Male Female
3. What is your Age? (please tick one box) <25 26-30 31-35 36-40 41-45 46-50 51-55 55+
4. Please state your official job title
5. Which year were you first employed within Transport SA?
6. Where were you previously employed?
7. What is your background discipline (eg planning, engineering) ?
8. What educational qualifications do you have? High School TAFE Undergrad. Postgrad. Other.....
9. Where are you located structurally within the organisation (ie. Which unit/Section)?
10. Could you please briefly describe your general role/function within Transport SA in the space provided below?

Your Awareness of Environmental goals and processes

11. What priority do you personally attach to the environment? *(please tick one box only. You may also wish to comment)*

- None
- Minor
- Moderate (equal to other technical, economic issues)
- Significant (overrides all other issues)
- Uncertain

12. How familiar are you with the following policies and procedures in Transport SA? *(please tick one box only for each group. You may also wish to comment)*

	<i>Not</i>	<i>Limited</i>	<i>Moderately</i>	<i>Very</i>	<i>Uncertain</i>	<i>Comments?</i>
• Corporate environmental goal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environment Strategic Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Internal EIA procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Instruction to Engineers Amendment No. 31 Removal of Vegetation or draft Vegetation Policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Road Traffic Noise Guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Contaminated site procedures in SAI 47 Initiation of Land Acquisition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environmental Code of Practice for Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environmental Code of Practice for Road Maintenance Works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environmental Audit Guidelines for Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environmental Management Plan Guidelines for Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Environmental Management Implementation Plan Guidelines for Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

13. How familiar are you with the following legislation and concepts? *(please tick one box only for each group)*

	<i>Not</i>	<i>Limited</i>	<i>Moderately</i>	<i>Very</i>	<i>Uncertain</i>
• Environment Protection Act (SA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Development Act (SA) - EIA requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Ecologically Sustainable Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• National EIA legislation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Greenhouse issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Do you believe that your knowledge about environmental procedures and issues is adequate for your role in EIA within Transport SA (see next section about your EIA experience) *(please tick one box only for each group. You may also wish to comment)*

- Inadequate
- Moderately adequate
- Adequate
- Uncertain

15. What factors have had the most influence on triggering and maintaining your current level of environmental awareness and commitment to environmental procedures within Transport SA?

16. Would you consider environmental issues in your job, even if you were not required to do so by Transport SA or legislation? (please tick one box only. You may also wish to comment briefly)

Comments?

- No
- Yes, I would, but am unable to in practice
- Yes, and I do consider the environment in practice
- Uncertain

Your Agency: Environmental Commitment

17. What priority do you think Transport SA attaches to the environment in theory and in practice?

(Please tick one box only for priorities in theory, and one box only for priorities in practice. You may also wish to comment)

- | | <i>In theory</i> | <i>In practice</i> |
|---|--------------------------|--------------------------|
| No priority | <input type="checkbox"/> | <input type="checkbox"/> |
| Minor priority | <input type="checkbox"/> | <input type="checkbox"/> |
| Moderate priority (equal to other issues) | <input type="checkbox"/> | <input type="checkbox"/> |
| Significant (overrides all other issues) | <input type="checkbox"/> | <input type="checkbox"/> |
| Uncertain | <input type="checkbox"/> | <input type="checkbox"/> |

18. How important do you think EIA is for achieving Transport SA's environmental goals? (Please tick one box only)

Comments?

- Not at all (please specify what is more important)
- Minor importance (please specify what is more important)
- Moderate importance (please specify what else is important)
- Major importance
- Uncertain

19. Could you please choose the top four factors that you think Transport SA sees as the main benefits of EIA and then rank them where 1 = most important and 4 = least important?

Comments?

- Ensuring legislative compliance
- Improving planning and decision making
- Ensuring environmental protection
- Achieving Transport SA's environmental goals
- Improving project design
- Enhancing Transport SA's image
- Reducing public controversy/addressing concerns
- Other

20. How integral do you think the 'environment' is in Transport SA's culture? (Please tick one box only)

Comments?

- Not at all
- Minor part of culture
- Moderate part of culture
- Yes, an integral part of the organisation's culture
- Uncertain

Your EIA Experience

This refers to either formal (under legislation) and/or informal internal EIA procedures

21. To what degree have you been involved in EIA processes within Transport SA? (Please tick one box only)

- Minor involvement
- Moderate involvement
- Major involvement

22. Could you please briefly specify your role in EIA in the space provided?

23. How satisfied are you with your role in EIA? (please tick one box and comment)

- Not Satisfied (please specify if & how you would like it changed)
- Limited satisfaction (please specify if & how you would like it changed)
- Moderately satisfied (please specify if & how you would like it changed)
- Very satisfied (please specify why you are satisfied)
- Uncertain

24. When does EIA actually begin in the overall planning process?

- During initial proposal development
- As the project is being planned & alternatives are investigated
- At the end of the investigation of project options

25. Has Transport SA's formal structure and physical layout been influential in any way on the effective communication of information during EIA and planning? (please tick one box only and comment where requested)

- No influence
- Disadvantage (please comment)
- Advantage (please comment)
- Uncertain

26. Are there any internal incentives or constraints which facilitate or inhibit the effective consideration of the environment in your job? (please list/comment)

27. In your experience, has communication between you and the following groups been effective during planning and EIA processes? (Tick one box only for each group)

	No Contact	Limited Effectiveness	Moderately Effective	Very Effective	Uncertain	Comments?
Planning Investigations staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Environment staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section Heads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Project Section -Project Managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Road Design staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Landscape staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Project 'implementers'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Conservation groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
General public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other Government agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Planning Consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

28. How much influence do the following groups have on the project planning and EIA process in practice? (Please tick one box only for each group)

	None	Limited	Moderate	Major	Uncertain	Comments?
Planning Investigations staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Environment staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Section Head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Project Section -Project Managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Road Design staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Landscape staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Project 'implementers' (ie construction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Conservation groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
General public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other Government agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Planning Consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

29. Do you believe that EIA as implemented in Transport SA is effective in: (please tick one box only for each item)

	<i>Ineffective</i>	<i>Limited</i>	<i>Moderately</i>	<i>Very</i>	<i>Uncertain</i>
• Preventing environmentally 'unfriendly' projects from being proposed to begin with	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Modifying & improving project design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Choosing appropriate alternatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Providing appropriate management measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Addressing public concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Addressing concerns of other govt. organisations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Increasing the level of environmental support & knowledge of staff in Transport SA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Reducing project costs in the long run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Utilising interdisciplinary skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Facilitating coordination & compromise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Triggering refinements in broader policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. How much support (ie positive attitudes) do you receive from other staff when incorporating the environment into project and planning processes? (please tick one box only. You may also wish to comment in the space provided)

- None
- Minor support
- Moderate support
- Major support
- Varies

31. Are the levels of resources, staff, and technical expertise sufficient to implement effective EIA in Transport SA? (Please tick one box only for each group)

	<i>Insufficient</i>	<i>Limited</i>	<i>Moderate</i>	<i>Sufficient</i>	<i>Uncertain</i>
Financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff numbers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. Do you think that Transport SA is learning from EIA experience, and utilising this knowledge for improving subsequent EIAs? (please tick one box only for each group. You may also wish to comment)

- No
- Limited evidence of learning
- Moderate learning
- Significant evidence of learning
- Uncertain

THANK YOU!

Appendix 5: The Lead-Up to EIA in South Australia

A Focus on Industrialisation: The Liberal Playford Era (1938-1965)

Prior to the introduction of EIA in 1974, environmental considerations were rarely considered in South Australia which was a similar scenario to the United States' context. This lack of consideration was due in part to the tenuous economic base experienced in South Australia following the depression years of the 1930s (Jaensch 1977; Kerr and Kerr 1979; Parkin 1981; Davis and McLean 1981). The State's economy was more vulnerable than eastern states at this time due to an over-reliance on primary industry (agriculture), and as a result, the need to diversify into secondary industries was identified during Butler's premiership from 1933-1938 (Kerr and Kerr 1979). This expansion into industry was accomplished during Premier Playford's leadership when economic considerations became the priority as South Australia's economy was transformed into an industrially-based one by 1966 (Jaensch 1977; Kerr and Kerr 1979; Parkin 1981; Davis and McLean 1981). Such a feat was achieved via a process of 'forced industrialisation' which was facilitated with incentives of low taxes, and cheap power, transport, raw materials, land and labour (Jaensch 1977). Playford's approach was, however, *ad hoc*, and rather than developing longer term planning initiatives, economic policy simply responded to short term advances from industry, resulting in an over-dependence on manufacturing industries (white goods and automobile), and ongoing minor recessions (Jaensch 1977: 1986).

Another consequence of this pursuit for economic independence but lack of planning was the neglect of social and environmental reform. Although Playford played a significant role in providing low-cost housing in the State (Parkin and Pugh 1981), he was considered by some as a '*philistine responsible for [South Australia's] social and cultural narrowness*' who governed by '*privilege and minority*' (Raftery 1996: p1). Historian Hugh Stretton asserted that:

'Playford could never see why the poor needed spending money...He wouldn't have them starve, but as long as he dared...he did starve their social services. ...Central economic planning ran half a century ahead of a central lack of compassion...' (Stretton 1975: p153).

These savings on compassion were '*...where the winning margins of investment in cheap land, water, power and housing came from*' (Stretton 1970: p153). The neglect of social factors during this era tends to reflect the lack of importance attached to the environment, and the majority of development was encouraged and proceeded without regard for its impacts (Lothian and Welsh 1978). Environmental impacts were considered 'the price of progress' (Lothian and Welsh 1978: p1). One general indicator of this assumption was the lack of explicit reference to the 'environment' or to 'pollution' within the contents of Hansard, Parliamentary Debates from 1960 to 1969, although there was some mention of 'flora and fauna'. The assumption should not be made however, that there was no action on the environmental front, and there were several pieces of legislation which were environmentally-related, and which reflected earlier environmental movements in the community (refer Hutton and Connors 1999; Conacher and Conacher 2000).

Like in the United States, the emphasis on the economy and the secondary attitude towards environmental issues began to change during the late 1960s and early 1970s when environmental problems associated with an increasing population¹ and cheaper resource use under Playford's incentives became increasingly apparent. These problems have been well summarised by Parkin and Pugh (1981) who referred to sprawling and 'disfiguring' growth into the foothills and vineyards, increasing car reliance and congestion, the construction of large multi-storey flats, the growth of Adelaide to 'super-metropolitan' size, the creation of

¹ There was a significant increase in South Australia's population from just over half a million in 1938 to one million in 1965 (Hugo 1996). This growth was in part due to the baby boom, post-war, and increased immigration trends which were '*fuelled by rapid growth of manufacturing industries in the states and the associated shortages of ... workers*' (Hugo 1996: p35).

neighbourhoods with 'blighted' appearance, the development of commerce or light industry in housing areas, and development which generally appeared 'unco-ordinated, garish or ugly' (Parkin and Pugh 1981: p92). Urban services such as highways and housing were fragmented, and because growth was essentially encouraged by local councils, there were few constraints on private developers (Parkin and Pugh 1981). Although a Metropolitan Development Plan had been completed in 1962 under the Playford government to ensure greater consistency in zoning and development controls, the Plan was shelved and was to be taken up later by the Labor government (Parkin and Pugh 1981).

'Orderly' Planning vs Public Outcry: Labor Premier Walsh (1965)

A political 'transformation' became evident from 1965-1973 which coincided with three changes of government (Jaensch 1977). Following the replacement of Liberal Premier Playford by Liberal Premier Hall in 1965, the Liberal party lost the election to the Labor Party under the leadership of Walsh (Parkin 1981; 1986). Unlike Playford, Premier Walsh was more concerned with policy reform and public health-related services (Parkin 1986). Planning was also formalised with the revival of the Liberal's Metropolitan Development Plan, an with the aim to 'promote *technological modernity, efficiency and orderliness in the metropolis*', this plan was given legislative authority under the *Planning and Development Act 1966* (Parkin and Pugh 1981: p97). Despite the planning initiatives, public criticism emerged about a lack of public consultation on several large redevelopment schemes which involved the compulsory relocation of residents (Parkin and Pugh 1981). Of significant concern to the public was the Metropolitan Adelaide Transport Strategy (MATS) plan which is referred to in Chapter Six, Volume I of this thesis.

First Conservation Portfolio: Liberal Premier Hall (1968)

The government's commitment to urban renewal and redevelopment programs continued to cause considerable controversy under the new Liberal government which was elected in 1968 and led by Premier Hall (Parkin and Pugh 1981). Hall continued the commitment to social reform (Donovan 1991) and with increasing conflict between environmental and economic values, environmental issues continued to be considered more seriously which was in part influenced by overseas experience (Shepherd 1980). Following a trip to Europe, Premier Hall stated:

'...when I was in Europe in 1968 I crossed the Rhine River and found that the mouth of that river was nothing more than a dirty sewer as far as water quality was concerned, and that fact struck me most about the care that we here must take and the need for us to profit from the mistakes that have been made in other countries' (Hansard April 29 1970: p93).

Premier Hall's second trip was to the United States in 1969 which coincided with the introduction of NEPA, and the outcomes of NEPA had created substantial interest across Australia (Fowler 1982; Hazell and Whyte 1985; Interview 70 1999). Also of significance in raising public and government awareness was the occurrence of a number of international environmental disasters in the late 1960s such as major oil spills in Santa Barbara and mercury poisoning in Japan; together with the flooding of Lake Pedder in Australia, and large freeway and urban developments (Lothian and Welsh 1978).

South Australia was one of the first Australian States to officially demonstrate its new commitment to environmental values with the establishment of the Committee of Enquiry into the State of the Environment in February 1969 (the 'Jordan Committee') (Inglis 1976; Jordan Committee Report 1972). Essentially, the Jordan Committee was required to:

'inquire into and report on all aspects of pollution in South Australia... and to submit recommendations...as to any action considered necessary to retain, restore or change the environment so that the life of the community is improved and not impaired' (Jordan Committee Report 1972: p1; Hazell and Whyte 1985).

During the inquiry process which ran over two years, the Committee observed an increasing environmental awareness in South Australia (Jordan Committee Report 1972). Although environmentally-related legislation had been in place for some years, the first Conservation

portfolio in South Australia was established by Premier Hall in 1970 (Inglis 1976 cited in Hazell and Whyte 1985). Despite such initiatives, Hall did not remain Liberal Premier for long, and one of the contributing factors to the government's fall was the Metropolitan Adelaide Transport Strategy (MATS plan) which proposed a series of freeways in the Adelaide metropolitan region (refer Chapter Six).

'Golden Age of Innovation': Labor Premier Dunstan (1970-1979)

During the Liberal party's short period of government and experience with the MATS plan, the Labor Party had re-assessed its policies (Stretton 1975). Premier Dunstan, although a previous supporter of freeways, now criticised the plan for being '*a Plan for the Fifties*' shortly after visiting the United States (Donovan 1991). According to Stretton:

'...two years in opposition allowed the leaders of the Labor Party to observe the popular response to the freeway plan, to read some of the new environmental writing, and to think twice about some of their own conventional approaches to modernization. They used those opportunities well enough to return to office in 1970 as authentic South Australian innovators, with 'conscious theoretical purposes' as original as any in the colony's history' (Stretton 1975: p173).

Playford's original push to diversify industrial development and to promote economic growth was continued under the Dunstan government, but the emphasis was decreased and '*in 1973 there was even a suggestion that the pursuit of such policies ought not to be accepted without question...*' (Jaensch 1977; Davis and McLean 1981: p37). In this respect, the re-entry of the Dunstan government in the 1970s has been referred to by later Labor supporters as a 'golden age of innovation' (Parkin and Pugh 1981). However, some similar trends were evident throughout Australia, and the prominent belief during the 1970s was that governments were 'providers and protectors' (Radbone 1992a).

Within this framework of change and increasing government intervention, there was ongoing and increasing commitment to environmental protection. This was achieved in the context of a relatively healthy economic climate in the early-mid 1970s, and the reduced economic pressures probably enabled a greater focus on a broader range of matters. One general indication of government commitment to the environment was the increasing and detailed reference to the 'environment' and 'pollution within the Parliamentary Debates of 1970-1972, particularly in relation to the establishment of an Environment Protection Council (see later discussion).

Another significant influence on government during the 1970s was escalating public awareness and dissatisfaction about the traditional realms of bureaucratic secrecy and power (Yeatman 1990). This was communicated with the formation of pressure groups during the 1970s which concentrated on a broader range of issues (Jaensch 1977). Many of the traditional and dominant pressure groups in South Australia originally revolved around economic issues, but Jaensch notes that there was a 'proliferation and intensification' of these new pressure groups which were concerned more with social, environmental and local government issues, and that this was partly a result of the increasing spread of development into the 'sacrosanct' foothills. The influence of these groups proved to be significant in influencing both government and the wider community:

'There is no doubt that ... Governmental action was taken in response to wide social and public concern which had been brought about by the warning of a relatively small minority of knowledgeable individuals and groups who expressed, often in extreme terms, the crucial importance of protecting the environment' (Inglis 1976: p8).

What was also unique to this era was the Dunstan government's greater receptivity to social issues when compared to previous governments (Davis and McLean 1981). The Dunstan government responded by establishing an Ombudsman² position in 1972 (Wiltshire 1975),

² A mechanism for community members to voice concerns about administrative actions by government, which has been 'popularized as the knight in shining armour who would defend the weak (the Australian public) against the tyranny of the strong (the executive)' (Wiltshire 1975: p93).

implementing more participatory decision-making, with 'increased flexibility, communal sensitivity', and an 'egalitarian thrust' (Parkin and Pugh 1981). Democratic reform was occurring throughout Australia (refer Yeatman 1990), and according to Oxenberry (1981: p64), '*community involvement, community control, participation, consultation and people power was all very much in-vogue expressions at this time ...*'.³ Although Oxenberry's account of community involvement in the early 1970s relates primarily to social welfare, it does reflect a more open and pluralistic approach to decision-making which in turn was conducive to, and reflected in, the EIA process which was established during this period (see Chapter Five).

Public pressure, together with recommendations made by the Jordan Committee and the increasing focus on government intervention, led to a substantial increase in public service staff by two thirds, and the introduction of a new environment department and environmental legislation (Davis and McLean 1981; Warhurst 1981; Parkin 1986). In the latter case, and in addition to the *Planning and Development Act*, the *Environment Protection Bill 1970* was debated in 1972 and despite some initial delays, was passed in October of that year (Hansard September 12: p1188 to September October 25 1972: p2418; Hansard October 26 1972: p2482). One of the main outcomes of this Act was the establishment of an Environment Protection Council (EPC) with wide advisory powers which was required to:

'investigate, advise and report on the overall condition of the environment...the efficiency or effectiveness of measures being taken or proposed to be taken to protect the environment, the possible dangers to the environment of any proposed development, to warn of potential environmental deterioration...and to recommend action to overcome or correct anything affecting the environment adversely' (Hansard, Parliamentary Debates 12 September 1972: p299).

According to the then Minister of Agriculture, the EPC '*provide[d] tangible evidence that the Government place[d] great importance on the need to protect and enhance, in all areas, the present and future quality and safety of the lives of the people of this State*' (Hansard 12 September 1972: p1188).

Recommendations of the Jordan Committee led to the establishment, in February 1972, of the first Department of Environment and Conservation (DEC).⁴ It was believed necessary to have a separate department, despite the fact that several government departments already had responsibility for the environment and legislation to achieve this (Inglis 1976). Similar environmental departments, although different in approach and structure, were also established Australia-wide in response to public pressure and social concerns (Inglis 1976). Some of these departments took on a limited view of the environment, restricting it to issues of pollution (*eg* Western Australia), whereas in South Australia a much broader approach was adopted (Inglis 1976). The 'environment' was defined under the Environmental Protection Council Act as '*...any matter or thing that determines or affects the conditions or influences under which any animate thing lives or exists in the State*'. Despite the flexibility inherent in such a broad definition, Inglis (1976) argues that it resulted in significant problems for the administration, organisation and protection of the environment which is also reflected in the delays associated with the enactment of legislation for EIA (see Chapter Five).

³ It is interesting to note that with the election of a new federal labour government headed by Whitlam, a sense of '*newness, change and excitement*' also prevailed at the national level similar to that found in South Australia. Social reforms and community involvement became an issue as reflected by funding support to State's welfare and involvement objectives (Oxenberry 1981). This support was, however, withdrawn in 1977 after the re-election of the Liberal Fraser government (Oxenberry 1981).

⁴ The Department of Environment and Conservation was headed by Minister Broomhill, and was essentially an amalgamation of the State Planning Office and the Museum Department (Jaensch 1977). In 1974, 248 people were employed (Jaensch 1977), but this was a relatively small staff compared to other departments. Non-departmental agencies associated with this portfolio and department included the Aboriginal and Historic Relics Advisory Board, Coast Protection Board, Environmental Protection Council, Museum Board, National Parks and Wildlife Advisory Council, Planning Appeal Board, and State Planning Authority (Jaensch 1977, p125).

Appendix 6: Recommendations from EIA Reviews in South Australia

Date	Key Recommendations	1	2	3
Triggering and Coverage				
1987 1989	<ul style="list-style-type: none"> • introduction of EIA of policies, plans and programmes • consideration of cumulative factors when determining the need for an EIS 	x x	x x	x x
Scoping				
1989	<ul style="list-style-type: none"> • legislative requirements for guidelines (EIS only) 	x	√	√
Levels of Assessment				
1983 and 1989	<ul style="list-style-type: none"> • second level of assessment formalised (PER) 	x	x	√
Public Involvement				
1983 1987 1987 1983	<ul style="list-style-type: none"> • <i>reduction of public exhibition of draft EIS to six weeks</i> • four weeks public display on PER • provision for a public hearing on EISs • provision for public inquiry on EIS 	√ x x x	√ x x x	√ √ x x
Government Assessment of EIA				
1987/1989 1987	<ul style="list-style-type: none"> • removal of 'official recognition' stage • status given to the assessment report prepared in practice (termed the Environmental Review Report by EIA Review Committee) 	x x	√ √	√ √
Decision-Making				
1983 1989	<ul style="list-style-type: none"> • removal of local councils as decision-making authorities • provision allowing planning authorities to set conditions based on the EIS • final decisions made by Governor (EIS) with no appeal rights • decision making reduced to two avenues 	√ ? x x	√ √ x	√ √ x
Administration				
1987 1989	<ul style="list-style-type: none"> • establishment of an Environmental Assessment and Review Committee with qualifications for membership • EIA of policies, plans and programmes overseen by co-ordinating Committee • parallel assessment of any proposed changes to the Development Plan by an Advisory Committee. Minister is able to amend Development Plan (reduces need to go through amendment of Plan later via Supplementary Development Plan) 	x x	x x	x x

Appendix 7: Legislated contents of EISs in South Australia

Planning Act 1982, Section 4(1)

- (a) the expected effects of the development or project upon the environment;
 - (b) the conditions (if any) that should be observed in order to avoid or satisfactorily manage and control any potentially adverse effects of the development or project upon the environment;
 - (c) the economic, social or other consequences of carrying the development or project into effect;
- and
- (d) any other particulars in relation to the development or project required-
 - (i) by regulation;
 - or
 - (ii) by the Minister

Development Act 1993, Section 46(1)

- (a) the expected social, economic and environmental effects of the development or project;
- (b) the extent to which the expected effects of the development or project are consistent with the provisions of -
 - (i) any relevant Development Plan; and
 - (ii) the Planning Strategy; and
 - (iii) any matters prescribed by the regulations;
- (ba) where the development or project involves, or is for the purposes of, a prescribed activity of environmental significance as defined by the *Environment Protection Act 1993*, the extent to which the expected effects of the development or project are consistent with -
 - (i) the objects of the *Environment Protection Act 1993*
 - (ii) the general environmental duty under that Act; and
 - (iii) any relevant environmental protection policies under that Act;
- (c) the conditions (if any) that should be observed in order to avoid or satisfactorily manage and control any potentially adverse effects of the development or project on the environment;
- (d) any other particulars in relation to the development or project required -
 - (i) by the regulations; or
 - (ii) by the Minister.

Development(Major Development Assessment) Amendment Act 1996 (Section 46)

EIS: as for Development Act

PER: as for EIS

DR: as for EIS

• **Definitions also included in Section 4 (Definitions)**

EIS

'A reference in this Act to an EIS is a reference to an environmental impact statement, being a document that includes a detailed description and analysis of a wide range of issues relevant to a development or project and incorporates significant information to assist in an assessment of environmental, social or economic effects associated with the development or project and the means by which those effects can be managed.'

PER

'A Reference in this Act to a PER is a reference to a public environmental report, being a report on a development or project that includes-

- (a) a detailed description and analysis of a limited number of issues and a description and analysis of other issues relevant to the development or project; or
- (b) a description and analysis of a wide range of issues relevant to the development or project where a considerable amount of relevant information is already generally available, and incorporates information to assist in an assessment of environmental, social or economic effects associated with the development or project and the means by which those effects can be managed.'

DR

'A reference in this Act to a DR is a reference to a development report, being a report that includes a description and analysis of general issues relevant to a development and the means by which those issues can be addressed.'

Appendix 8: Criteria for triggering the EIA process

ACT	CRITERIA
<p>Planning Act 1982</p> <p>Non-statutory guidelines (DEP 1987: p7-5)</p>	<p>The Minister may require an EIS where a proposal may have, or result in:</p> <ul style="list-style-type: none"> (a) a substantial effect on a community; (b) a beneficial or detrimental transformation of a substantial area; (c) a substantial impact on the ecosystem of an area; (d) a significant diminution of the aesthetic, recreational, scientific or other environmental quality, or value, of an area; (e) an effect upon an area, or structure, that has an aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance and whether the area or structure is of special value for present and future generations; (f) the endangering, or further endangering, of any species of fauna or flora or its habitat; (g) long-term effects on the environment; (h) the curtailing of the range of beneficial uses of the environment; (i) the pollution of the environment; (j) environmental problems associated with the disposal of waste; (k) increased demands on natural resources which are, or are likely to be, in finite supply; (l) cumulative environmental effects taken in conjunction with other existing or likely future activities; (m) significant monetary costs or economic consequences, including any transfer of costs and benefits between areas or sections of the community.
<p>Development Act</p> <p>Regulation 61(1)</p>	<ul style="list-style-type: none"> (a) the character of the receiving environment; (b) the potential social, economic and environmental impacts of the development or project; (c) the resilience of the environment to cope with change; (d) the degree of confidence in the prediction of impacts resulting from the development or project; (e) the extent to which undesirable impacts which may occur are likely to be irreversible; (f) the extent to which impacts, and requirements for monitoring and assessing impact will be ongoing; (g) the presence of other statutory assessment or policy frameworks which provide other procedures or processes to address any issues of concern.
<p>Development Act Amendment</p> <p>Regulation 63</p>	<ul style="list-style-type: none"> (1) as for the Development Act in addition to (2) For the purposes of taking into account the criteria prescribed by subregulation (1), consideration must be given to- <ul style="list-style-type: none"> (a) the extent of impacts by an analysis of their- <ul style="list-style-type: none"> (i) type; (ii) size; (iii) scope; (iv) intensity; (v) duration; and (b) the nature of impacts by an analysis of- <ul style="list-style-type: none"> (i) the degree to which the impacts are predictable; (ii) the resilience of the environment to cope with change; (iii) the degree to which the impacts can be reversed; (iv) the degree to which the impacts can be managed or mitigated; (v) the degree to which performance criteria can be applied in the circumstances of the case; and (c) the significance of impacts by an analysis of- <ul style="list-style-type: none"> (i) the degree to which the impacts adversely affect environmentally sensitive areas; (ii) the degree to which the impacts are acceptable considering the nature of the impacts; and (d) other factors determined to be relevant by the Major Developments Panel.

**Appendix 9: Terminology Relevant to the 'Funder-Owner-Purchaser-Provider'
Model in South Australia** (FOPP 1997; Charles and Rosser 1996; TSA 1997)

TERM	EXPLANATION	WHO
Funder	the agent who decides ' <i>what outcomes should be achieved</i> ' (FOPP 1997: p10). They must identify and evaluate overall community target outcomes; determine broad priorities and develop policies; manage long-term strategic planning for community outcomes; manage funds, monitor and review purchaser performance and hold them accountable; be accountable to the community (through Parliament); and ensure legislative/regulatory frameworks are in place (FOPP 1997: 10).	Cabinet Ministers, CEOs representing Cabinet as funder and owner
Owner	The owner (ie government) must ensure a return on assets/investments; effectively manage liabilities on behalf of the government; maintain interest as an employer; efficiently and effectively manage expenses and revenues; ensure long-term financial stability and viability; maintain optimal level of investment in the organisation (FOPP 1997: p11).	Cabinet Ministers, CEOs on behalf of owner (Cabinet) (although technically owned by the whole community)
Purchaser	' <i>[T]he agent who decides what will be produced</i> ' (Charles and Rosser (1998: p13). Consistent with funder requirements, the purchasers ' <i>determine the precise outputs to be purchased (...price, volume, quality) and nominate the providers who may be public, private or voluntary</i> ' (FOPP 1997; p5). They must outline the conditions, negotiate and contract with providers for ' <i>volume and quality at best price</i> ', and encourage competition between providers (FOPP 1997: p8).	Ministers CEOs (may be delegated to internal Departmental Sections)
Procurer	An agent which may purchase services on behalf of the purchaser (adopted in Transport SA)	may be delegated to Departmental Sections - eg project managers
Provider	' <i>[T]he agent who delivers the agreed outputs or outcomes</i> ' (Charles and Rosser (1998: p13) ' <i>Providers deliver the services they have been contracted to provide under specified conditions</i> ' (p5). They must manage resources effectively, develop and market (if appropriate) their services and maintain the financial and productive viability of their service organisation (FOPP 1997: p8)	CEOs Departments Sections within Departments (eg road design, planning investigations)
Customer	Defined by Transport SA as key stakeholders, communities, and individual transport system users (TSA 1997).	

Appendix 10: Environmental Policies and Guidelines in Transport SA and ETSA

(compiled from guidelines and information supplied by TSA's and ETSA's Environment Groups 1998; 1999)

TRANSPORT	ETSA
<p>Construction</p> <ul style="list-style-type: none"> • Environmental Code of Practice for Construction (DoT August 1997) • Environmental Management Plan Guidelines for Construction (TSA 1997a) • Environmental Management Implementation Plan Guidelines for Construction (TSA November 1997b) • Environmental Audit Guidelines for Construction (TSA November 1997c) <p>Maintenance</p> <ul style="list-style-type: none"> • Environmental Management Workbook for Roadside Maintenance Activities (DoT no date) (training course) • Environmental Code of Practice for Road Maintenance Workers (DoT no date) • Road Maintenance: Environmental Management Audit Guidelines <p>General</p> <ul style="list-style-type: none"> • Environmental Strategic Plan (TSA December 1997; June 1998) • Cultural Heritage Guidelines (TSA July 1999) • Vegetation Removal Policy (TSA February 1998) • Road Traffic Noise Interim Guidelines (DRT 1990) • Contaminated Land Guidelines • Environmental Legislation Summary (Cole 1997) • Phytophthora Control Policy • Residual Herbicides Operational Instructions • Waste Disposal Guidelines • Landscape guidelines in preparation 	<ul style="list-style-type: none"> • Environmental Policy (pocket size glossy for all employees) • Environmental Policies and Guidelines (ETSA 1997c) • Environmental Management System (ETSA 1997e) for ETSA Transmission (Draft) (now for Electranet SA) • Vegetation Clearance and Trimming Instructions • Environmental Review (Audit) Procedure (ETSA 1997d)

**Appendix 11: Checklist of environmental factors in the planning
and EIA process for transport projects (DRT 1992-1993)**

CATEGORY	CHECKLIST	CATEGORY	CHECKLIST
Earth	land form features, sources of raw material, soils (stability, productivity, salinity, erosion, settlement), flooding, stress (fault lines, earthquakes)	Sociological	accidents, accessibility, noise levels, population density, age groups, socio-economic groups, cultural patterns, health, public response, pedestrians, cyclists, public transport users
Water	quality and quantity of water (surface, underground, marine), siltation of waterways, sedimentation or erosion, eutrophication, salinity, flood prone areas	Fauna	existing fauna - birds, animals, aquatic, habitats, breeding areas, migratory species, rare and endangered species, barriers or corridors, pest species
Air	air quality, temperature, movement climate (rainfall, fog, inversions)	Land use	existing land uses including agriculture, commercial, mining, residential, parks, tourism-recreational use, wilderness, contaminated land, other transport systems, public utilities, communications
Flora	native vegetation, conservation value, rare and endangered species, extent, exotic species, amenity, visual impact, heritage value, aquatic flora - freshwater/marine (mangroves, aquatic reserves), corridors, remnants, weed species, root rot disease, dieback, bushfires	Aesthetic and Human Interest	views, open space, unique or rare physical features, Aboriginal and non-Aboriginal heritage, amenity

Appendix 12: Evaluation of Transport SA's EIA System

(Key: 0=not addressed; 0.5=partly addressed; 1=addressed)

1. LEGISLATIVE & ADMINISTRATIVE CONTROL	GRADE
1.1 Is the EIA system based on legislative provisions? (<i>Internal EIA is not required under the Highways Act 1926</i>)	0
1.2 Is there a central environmental/planning agency which oversees and co-ordinates the process? (<i>environmental group oversees and gives environmental clearance, but does not necessarily co-ordinate the process</i>)	0.5
1.3 If there is a central agency, is it independent of the proponent? (<i>environmental unit is set up within the department</i>)	0
1.4 If there is a central agency, is it set up to be independent from government?	0
1.5 Are there opportunities for the Minister for Environment or Planning to trigger or call in an EIA? (<i>as outlined in the Planning Procedures, the Environmental Unit is responsible as part of their environmental clearance role to keep the relevant government department for EIA informed of any projects being assessed, which provides the opportunity for that Department or Minister to trigger an EIS under the Development Act for major 'projects'</i>)	1
1.6 Is the EIA process/legislation co-ordinated with the land use planning system? (<i>indirectly via consideration of heritage and other issues relevant to the Development Act; project leader in planning also required to inform Planning Liaison section of any land affected by Preferred option for advice to Department Lands</i>)	0.5
1.7 Is the process co-ordinated with the environment protection system (eg pollution control)? (<i>indirectly via consideration of pollution factors in the EIAR and planning checklists</i>)	0.5
1.8 Does the process have clear environmental objectives outlined in legislation or guidelines? (<i>broadly defined in project management guidelines as part of planning objectives, and also in awareness training courses, but no specific objectives in Environmental Unit procedures - eg a tool to identify the most appropriate decision, a tool for compliance, etc</i>)	0.5
1.9 Is the 'environment' broadly defined to encapsulate social, biophysical, cultural and economic factors?	1
1.10 Does EIA apply equally to both private and public works? (<i>all works are technically public, but if initiated by a private consortium, works would be overseen by the department and EIA would apply</i>)	1
1.11 Does the EIA system apply to programmes, plans and policies, as well as to projects?	0
1.12 Is the process flexible enough to include different levels of formal assessment which consider variations in the scale of proposals? (<i>covers minor and major works</i>)	1
2. JUDICIAL CONTROL & APPEALS	
2.1 Are there mechanisms for court action regarding a breach of compliance to the EIA process (ie judicial review)?	0
2.2 Are there mechanisms for court action regarding the final decision (ie appeals)	0
2.3 Is there provision for third party judicial review (ie broad 'standing' rights)?	0

2.4 Is there provision for third party appeals?	0
2.5 If provisions for court action/appeals are present, are there clear guidelines available about when the action is appropriate and the process involved?	n/a
3. PROCEDURAL CONTROL	
3.1 Are clear steps of the EIA procedure outlined in legislation (or less mandatory guidelines)? <i>(outlined in planning procedures, road design procedures, project management guidelines, and guidance from Environmental Unit)</i>	0.5
3.2 Are there prescribed generic contents for the EIS? <i>(outlined in planning investigations for contents of Working Report, and in project management guidelines for content such as description of environment. Also explicit in EIAR forms)</i>	1
3.3 Must scoping occur resulting in project-specific guidelines? <i>(informally via identification of planning investigations approach and initial data collection stage as outlined in planning procedures)</i>	1
3.4 Must the proponent outline the need for the proposal? <i>(required in the project management guidelines)</i>	1
3.5 Must means of financing the project be detailed or guaranteed? <i>(no, although is assumed because internal approval must first be gained before project commences planning investigations)</i>	0.5
3.6 Must the existing environment be described? <i>(required in planning procedures for contents of Working Reports, and also required in project management guidelines)</i>	1
3.7 Must the proponent consider alternative actions in the EIA process? <i>(requirement in planning procedures, EIARs, and project management guidelines)</i>	1
3.8 Must the proponent outline the direct effects of the action?	1
3.9 Must the proponent consider cumulative effects? <i>(no explicit requirements)</i>	0
3.10 Must the proponent consider the irreversible nature of impacts? <i>(project management guidelines require consideration of impact manageability which implies reversibility, although this is not explicitly stated)</i>	0.5
3.11 Must the proponent consider indirect effects? <i>(may be considered in practice but not explicitly required in procedures or checklists)</i>	0
3.12 Must the proponent evaluate the relative 'significance' of impacts? <i>(required in project management guidelines, but not consistent requirement in all EIA-related guidelines throughout department)</i>	1
3.13 Must the proponent describe any public involvement in draft EIS preparation (or equivalent)? <i>(required to outline consultation process and outcomes in Concluding Report)</i>	1
3.14 Must the proponent outline mitigation and management measures? <i>(required in project management guidelines, and role of formal environmental clearance is to ensure conditions for management are identified during this process)</i>	1
3.15 Must the proponent define the effectiveness of any mitigation or management measures (ie note residual impacts)? <i>(project management guidelines require an outline of degree to which impacts are manageable, although do not require an explicit statement of mitigation effectiveness)</i>	0.5
3.16 Must the proponent stipulate monitoring measures, and details of implementation and contingencies? <i>(required in project management guidelines, and also requirement of EMPs, EMIPs and auditing guidelines)</i>	1

4. PUBLIC AND AGENCY CONTROL	
4.1 Are the requirements for public involvement transparent and certain (eg time frames, types of information available) <i>(requirement for consultation certain, but consultation processes are not consistent and are project dependent which means a lack of certainty for the community, process is also not outlined for the community)</i>	0.5
Are there mechanisms for public and government input into:	
4.2 referring proposals for the Minister to consider in triggering the EIA process?	0
4.3 determining the levels of assessment?	0
4.4 the scoping process when formulating guidelines (or equivalent)?	0
4.5 during draft EIS preparation (or equivalent)? <i>(stakeholder consultation during compilation of draft working report, but not inclusive of formal community consultation)</i>	0.5
4.6 upon release of the draft EIS (or equivalent)? <i>(community permitted input at the Working Report stage when preferred alternative identified)</i>	1
4.7 public meeting/hearing? <i>(possibility of public meeting noted in planning procedures, but not automatic requirement)</i>	0.5
4.8 the Government Assessment Report (where prepared) <i>(no provision for draft report on environmental clearance or provision for public input at this stage)</i>	0
4.9 Is there provision for the proponent to respond to public and government comments? <i>(department considers community submissions in Concluding Report and outlines responses to comments. Consultation used as one basis for selection of Recommended Option; project leader must assess community issues and ensure that issues raised have been addressed in liaison with Senior Environmental Officer and other groups)</i>	1
4.10 Are there provisions for the public to comment on the proponent's response if it is inadequate or misinterprets public submissions?	0
Is there a requirement for the following documents to be published?	
4.11 Guidelines for EIA process (or equivalent)?	0
4.12 Draft EIS (or equivalent) <i>(Working Reports are internal documents, although sometimes released. Also released via Councils. Environmental Reports have also been known to be released to the public such as for the Southern Expressway (refer case studies)</i>	0.5
4.13 Final EIS (where relevant)? <i>(as outlined in planning procedures, Concluding report is both an internal and external document, although not necessarily circulated to wider community)</i>	0.5
4.14 Government Assessment Report (or equivalent)? <i>(an internal document)</i>	0
4.15 Decision (including a justification of the decision and how the EIA influenced it relative to other factors)? <i>(planning procedures [DRT-PLI-PD802 require project leader in planning to advise external groups and respondents to community consultation of outcomes of planning investigations, and may organise media releases and public displays; no explicit requirement to justify decision in environmental terms) (planning procedures [DRD-PLI-PD601] require project leader to advise outside parties of reasons why changes were or were not incorporated into the Preferred Option, but this is prior to the formal community consultation process; no requirements for public explanation of how EIA influenced final decision)</i>	0.5
4.16 Monitoring and compliance reports (where prepared)? <i>(confidential to protect third parties)</i>	0

5. EVALUATIVE CONTROL	
5.1 Is there a list of actions which automatically trigger the EIA process? <i>(all projects with an impact trigger some form of EIA at the minor or major level)</i>	1
5.2 Are there clear criteria for determining the need for EIA (if the decision is discretionary)?	n/a
5.3 Is the triggering process controlled by an independent authority?	n/a
5.4 Is there an explicit mechanism which postpones the decision until the EIA process has been completed (unless criterion 5.4 applies)? <i>(as outlined in planning procedures, project cannot proceed without internal clearance from Directors, which is preceded by formal environmental clearance)</i>	1
5.5 Is there provision for an early refusal so that the EIA process is not undertaken unnecessarily? <i>(proposed action must first be internally approved before planning investigations commence)</i>	1
5.6 Is there provision for a reviewing unit and/or Minister to request further information and/or amendment of the EIS? <i>(environmental officers have input at several stages in the process and may request information)including as part of their clearance role)</i>	1
5.7 Are there mechanisms which enable a reviewing unit and/or Minister to prevent the use of inadequate EISs in the final decision? <i>(provision for input of environmental officers at several stages, including a number of hold points. Environmental clearance role requires that all issues have been addressed, thus implies provision that clearance will not be given if unsatisfactory [although this is rarely the case given early involvement of environmental officers which provide a check on documentation and EIA quality])</i>	1
5.8 If EISs are centrally reviewed, is there a clear outline of the criteria to be considered in the evaluation of the EIS quality (or equivalent document)? <i>(no clear list of criteria outlined by the environmental unit)</i>	0
5.9 Is there provision for the reviewing unit to make recommendations to the decision-maker regarding the decision and conditions? <i>(as part of environmental clearance role, environmental staff must ensure that all conditions have been identified, which suggests that recommendations are possible if these conditions have not been recorded early in the process)</i>	1
5.10 Is there clear guidance on the factors to be considered in the final environmental decision which identifies priority areas and outlines impact acceptability?	0
5.11 Must the findings of the EIA be central considerations in the final decision? <i>(only one component of the decision which also involves social, economic, technical and political factors)</i>	0.5
5.12 Can the final decision involve refusal and the attachment of conditions on the proposed action? <i>(Ministerial approval -refusal provided for under the Highways Act, Section 29A) (no provision for environmental unit in 'environmental clearance' role to refuse the project although this could be implied from the process)</i>	0.5
5.13 For private sector proposals, is the final decision resulting from the EIA process made externally and is it binding on the proponent (or advisory)?	n/a
5.14 For public sector proposals (ie crown development), is the final decision made externally and is it binding on the proponent (or advisory)? <i>(made by the Minister responsible for the portfolio and is binding; also recommendations to Cabinet from Parliamentary Works Committee, and Cabinet decisions are final) (smaller projects are probably made internally with standing approval from Minister)</i>	1
5.15 Can decisions and conditions be formally enforced by penalties/sanctions if the proponent fails to comply? <i>(indirectly through the Environmental Protection Act, Aboriginal Heritage Act and other legislation, and also through EMPs and auditing with the use of contractors - penalties in this respect are likely to be indirect - ie refusal to use the same contractors for future projects)</i>	0.5

6. FOLLOW-UP CONTROL

6.1 Are there mechanisms for EIA outcomes to be linked to construction with requirements for Environmental Management Plans (more detailed than mitigation outlined in EIS)? <i>(EMPS and EMIPS required in 1990s procedures)</i>	1
6.2 Are there mechanisms which allow the government to request monitoring or auditing? (government can request only if legislative EIA process has been triggered, but monitoring and auditing a standard part of the process in Transport in 1990s)	1
6.3 If monitoring provisions exist, are there provisions for monitoring be conducted by a party external to the proponent?	0.5
6.4 Are there requirements for the proponent to submit regular monitoring and compliance reports? (frequency outlined in EMPs and EMIPs)	1
6.5 Are there mechanisms for the government to impose contingency procedures on the proponent in the event of non-compliance? <i>(department as 'watchdog' over contractors can trigger corrective actions and processes which have been identified in the EMPs)</i>	1
6.6 Is there provision for the EIA system to be monitored and, if necessary, be amended to incorporate feedback from experience? <i>(quality management systems and EMS requires ongoing feedback and review, although this is not explicitly catered for in the EIA procedures and guidelines)</i>	0.5
6.7 Is there a central database of all EIAs undertaken and decisions made?	0

Appendix 13: Interview comments relating to knowledge levels about the EIA process in Transport SA

'...it [EIA] can happen all sorts of ways as I understand it. I don't understand the planning end of it' (Interview 38 1999)

'...there are times that you're not even confident that you've got the most up-to-date paperwork...we were busy working away on the one process and it turned out that there was another one that had been effectively worked by the environment groups, but [it] never reached us....I don't know if I can turn around and say to you that I've actually seen all the environmental impact procedures...' (Interview 38 1999).

Environment staff were invited to a section meeting to discuss environmental issues and policy requirements. '...there was a lot of people with a lot of questions to ask, examples to throw, and it became obvious that there's probably a fair bit of work still to be done talking between here and there' (Interview 38 1999).

[one regional engineer] didn't fully understand the system and as a result we lost a fair amount of vegetation...[on one job]...If they're not...given the right information at the start...then they're not going to use it properly, and we're going to make mistakes...my impression is that happens more in the regions...I mean there are still some people if you ask them, probably couldn't tell you what floor the environmental unit are on...' (Interview 38 1999).

'...I really don't know whether its defined enough...I think I've only become aware of it through stumbling along, having to fill out a form...I don't even know whether there's a formal brochure... I don't think any of us are really informed enough about it [EIA], filling out those forms. I think we could do with a bit more knowledge. ...maybe they should go through that form and expand on every point...run a half day course or something, and maybe just have a little brochure....if somebody could give me a booklet or something that I can refer to, I'm much better off...' (Interview 41 1999).

'...the process...its not clear in my mind...what I'm familiar with is knowing that we need to get environmental clearance...at certain hold points, but the process, I understand has changed a few times...and I'm not sure that everytime it changes that its well publicised...there's that sort of...uneasy feeling in the back of my mind that ...I don't fully understand what the current processes are...' (Interview 30 1999).

'I think its [EIA] reasonably well defined. ...the steps that we have to go through, there are certain hold points, and what documentation has to be prepared and who has to sign off on that. I think that's reasonably well known...I think there's probably a few areas I'm not sure about who's actually responsible for doing this piece and that needs to be sorted out as part of the project management...I think I'm aware of ...the steps we need to go through. I'm not quite so sure as to who will always do it. There seems to be a bit of uncertainty....there's a bit of cloudiness about how it all fits together...the structure's a bit loose' (Interview 20 1999).

I don't think that's [EIA] documented very well at all...and I still don't know that process very well...I don't think its actually been documented in an easy way where people can just basically pick up a sheet of paper and there's the process in front of them...sometimes I found it hard to figure out how the environmental unit fitted into the planning process..' (Interview 37 1999).

'I'd say that's very hazy [definition of EIA processes]...because we don't have a specific document...I think people feel happy when they can read something... I still find things...hmmm, do I have to get this signed now or later? Do I need to fill that out? Does someone else need to do it?there's no clear procedure ...saying...this is how it all works...it definitely can be improved...it falls back to training...people really don't know sometimes....and everyone will give you a different opinion...' (Interview 56 1999).

'I think there is a need to define it [EIA] better in the documentation. Also, I think it needs to be promoted better....Because there is so much written material that passes across everybody's desk, ...they don't read everything' (Interview 13 1999).

Appendix 14: Interview comments in Transport Relating to Financial resources and Time Constraints in EIA

'We're a dollar driven business these days, with business units and so on...and I can tell you, certainly in relation to vegetation surveys for instance, they'll [eg graduate regional engineers] front up and say 'look we need to do this'..., 'well you've got to get a vegetation survey'. 'How much is that going to cost'...'Oh I haven't budgeted for that...I would worry they're also ...shortcutting a bit on the environmental side of it ...I mean there's a whole pile of processes in place ...and if they're not aware that they've got to pay money to get a vegetation survey done..[this] can result [in mistakes] (Interview 38 1999).

'that dirty word money comes into it. How much money has been spent...how much extra its going to cost to change something..is it worthwhile changing it...is it really needed' (Interview 40 1999).

'Its mainly pressures of unrealistic times to do a job...when you're given a project at the start you undertake...a detailed project assessment of it...and you've got to estimate time...and what's involved...Its like a service agreement...once we work out the number of hours, the cost, and all the other stakeholders, then it goes to the project management...but during the course of a project, ...something unexpected might pop up and it means that there's longer time requirements...quite often the construction date's the same and you've got extra work to do, [but] you've still got to complete it within the target date, so it makes it difficult sometimes..' (Interview 48 1999).

'..its [EIA] usually left to the last minute, and....you get pushed to get it finished and get it through' (Interview 51 1999).

'There's always pressure to fast-track everything...but because there's procedures in place you have to adhere to those procedures. You can't bypass them and take short cuts....You'd probably put in the risks that this work hasn't been done that should be done, but the budget and time frames didn't allow for it...So you sort of pass on that responsibility...' (Interview 24 1999).

'...planning, was always criticised in the past for the length of time it took on jobs. But it was a very thorough job that was done, and then when you introduce these other issues that...you've got a time frame,...fine something's going to suffer...If you haven't got the dollars to proceed with it, or you haven't got the time to complete it, corners get cut' (Interview 29 1999).

'There are pressures to ...condense...the environmental impact consideration because of time pressures and sometimes low...resource availability, not enough people to look at things properly. Yes there are real pressures. Sometimes you wonder and hope that enough treatment is being given. We haven't come to grief to my knowledge...in recent times, but...its continually talked about. But there are still...safeguards...but the pressures are there to, even the technical parts of our work, to produce outputs in a shorter amount of time with less people. So yeah, I'm wondering...what effects organisational changes are going to have on our outputs...' (Interview 34 1999).

'...our new role is service provider and the emphasis on budget and timelines has been an issue...probably a negative influence on environmental concerns, whereas before we thought we had time and we...tried to promote discussion about environmental matters. These days, we feel we're being swept along by the times, that the government funds are declining, so that we just have to concentrate on more...functional aspects of our work...[some people] say 'oh you still have to cover these areas', but there are natural pressures to give them less consideration...' (Interview 34 1999).

'I think it [creation of business units and time-budge pressures] has affected every ...aspect of the project, to the detriment of the projects. I think ...we would all argue that in the past that...if you give planning a free hand, they'll take forever, they would take too long...I think we've gone a little bit the other way. We're not doing enough in any of the areas...that's clearly evident in some of the recent jobs we've done, that we've half done the job...we've ..sort of raised the issue but we haven't really sorted it out...its equally an issue by using consultants because again, consultants will do the job they're given...but no more, no less ...so...if they're brief doesn't allow them to fully resolve these issues, they won't,...if they haven't got time or money to do it, they won't...so...we're finding on a few of our jobs now that issues were known about ...but weren't fully resolved,

whereas in the past with ...people with more time, would be better resolved...the business unit..., the money,,...the time...we tend to be doing more jobs in a rush now...years ago we'd take years to design a job, to plan a job....' (Interview 16 1999).

'I think you could say that in some areas we've gone, whilst theoretically we should be a leap forwards, we've actually gone backwards, not because of our lack of awareness, but because we don't spend the time and money upfront... ' (Interview 16 1999).

'we're sort of the service provider now...because we're at the front end of the process we always seem to be squeezed out for time and costs...if you spend a bit more upfront, you're probably not going to get hit at the other end if something comes out of the woodworks, and nine times out of ten its probably an environmental issue... ' (Interview 33 1999).

'one of the challenges...all the initiatives that we now find ourselves ...required to consider, that always has the impact of time...the difficulty comes when pressures, be they from...political pressures to do something by a certain time...to other funding issues, having the money to spend on those sort of issues...that's where there's...a conflict...opposing needs, in that we're under pressure...in terms of managing the project...that is conflicting with the time required to make sure that everything gets due consideration... ' (Interview 19 1999).

'...that's a very common occurrence. ...by fast track. I don't know that I've ever had to exclude part of the process, but in terms of trying to fast track...to rush things through and get people to sign off on things...I think its very common. But its not limited to environmental issues and clearance. I think that that's across the whole gambit of things we do. So, yeah there's a lot of fast-tracking and often we're not in a position to just allow things to run their course, so we're always trying to push' (Interview 20 1999).

'The fast tracking of projects has had a very bad impact on environmental outcomes. And many times the projects are fast tracked because of some arbitrary political target, or procrastination in the project initiation stage. Worse than fast tracking is commitments to proceed are made prior to the project being assessed' (Questionnaire 35 1998).

'happens [fast-tracking] all the time because things have been forgotten and someone might think, oh...we need to do that EMP quick....or ..'oh,...we need an Aboriginal survey, can you quickly do one now'....things just happen so quickly around here...' (Interview 56 1999).

'The environment suffers when it comes to dollars' (Questionnaire 52 1998).

Appendix 15: Types of attitudinal response to the EIA requirement (1970s-1980s): Extracts from Interviews

'Whole-hearted supporters'

'I thought it was a good idea, absolutely' (Interview 41 1999).

'I was happy about it. I think most people were. I don't think anybody used to sit around and say 'bloody environment stuff' and throw it out. Not the people I worked with' (Interview 38 1999).

'I'm a bit of a greeny...so ...it was obvious to me that...environmental clearances had to take place' (Interview 30 1999).

'Ironically...a lot of us lived in the hills, so...we were aware of...we had a...personal feeling for it and didn't want to see it willy nilly. There was no resistance...not really. The group was very much with it...right down from John Barry who was the transmission engineering design, head of the department at that stage, [he] was very much with it...he had the foresight...It had had a lot bigger airplay in Northern America before it got here, so...we knew it was coming' (Interview 6 1999) (ETSA).

'Sympathetic, but ... '

'You could see the sense in it...it was just...more work that you had to do' (Interview 44 1999).

'A lot of people would have taken it as another bit of red tape to go through, but I think begrudgingly most people would have recognised it as a good idea' (Interview 41 1999).

'There was some acceptance of the fact that...it was necessary. The people around me at the time I think would have thought that this process was a bit long ...its more the time. I think that the notion of actually considering the environment. ...I think was reasonable and accepted. The question was really just the time frame. But again I suppose it depends ..on what your expectations were at the time. We'd gone from an environment where we had to do very little environmental assessment, to a point where you had to do some, and that change...you think 'oh, we never used to do this' (Interview 8 1999) (ETSA)

'From a technical point of view we see these things...are essential...people's quality of life depends on this...but on the other hand my feeling at the time was that it has to be a compromise between the environment and whatever development that needs to be done' (Interview 4 1999) (ETSA).

'It was an annoyance. ...I would have perceived it as something necessary, but not something you would have done as part of the study...It was something that you ...assumed wouldn't be a major obstacle to your investigation...so it was ... a little bit of a formality back then' (Interview 34 1999).

'Neutral Administrators'

'suited me fine...It was part of my job, part of a learning curve' (Interview 23 1999).

'I came from an administrative background...so it didn't bother me...I could see the value in it' (Interview 38 1999).

'I don't know whether I saw any resistance because I think there's ...generally in...public service organisations,...if there are certain administrative requirements that have to be met, most people will go along with those and they'll do whatever is required (Interview 20 1999).

'I think it was...just part and parcel of the project. You've just got to do it. I mightn't like doing it but I've got to do it' (Interview 40 1999).

'The Jokers'

'They probably joked about it, ...had their grizzle, but not to the extent that it was a real problem' (Interview 37 1999).

One interview participant noted support for EIA but also referred to jokes about environmental issues such as the Electromagnetic Radiation issue (EMF) (*ie* there were some jokes flying around about birds getting dizzy from EMF) (Interview 6 1999) (ETSA).

the EIAR by some in Transport was called the 'ee ii ee ii oo' form in reflection of the verse: 'Old McDonald Had a Farm'.

'Its a Nuisance'

'It was [a] pain in the shoulders...we've got so many things to do and this is one more thing' (Interview 46 1999).

'Why are we doing it...I found it hard to see why we had to fill out this form. ...It was only because it was an extra step...for us to fill out all this to get clearance. Why couldn't someone else do this...'
' (Interview 39 1999).

'If we wanted to be able to get to a position where we could build something...to a large degree it would have been a hurdle' (Interview 20 1999).

'It was something that was an imposition rather than...something that was grabbed wholeheartedly...a nuisance' (Interview 25 1999).

'My early impression was...it was a bit over the top. Bit too bureaucratic,...large documents, long periods of time' (Interview 8 1999) (ETSA).

'...coming from a background of getting out there and doing it, initially you think its an obstacle...and I think...my initial perception was that it was pitched high...that it was a little onerous...a little bit ambitious,...or optimistic' (Interview 19 1999).

'Not Valued, Waste of Time'

'I don't think people resisted in an obvious way, but I think there's always the sort of snide remarks around the place...what do we have to do this for, this is rubbish' (Interview 24 1999).

'Some people had a blaze attitude....They didn't ... giv[e] it proper attention...They were more concerned about road geometry, the technical aspects' (Interview 34 1999).

'Very early on...when we did a lot of the early stuff, the major stuff, ...they [engineers] felt it was just an impediment ...just impeding their progress' (Interview 2 1999) (ETSA).

'You get some groups of people who [say] .."*oh what's this...its unnecessary and a load of bull...*" There was definitely a band of people like that, but I would say the majority of people weren't like that' (Interview 44 1999).

'Certainly over the years, there were people who just thought "*if we knock it over, somebody will tell us off, but it won't hold us up*"' (Interview 38 1999).

'The old school [construction] wouldn't have a bar of it...just do it [construct the road]. They [think], "*oh we got around it*", and "*if we get an impact statement done that's great. What we have to do after it, forget what we have to do after it, just leave that. That's only a thing they just give to us. They're never going to check up on us*"' (Interview 2 1999) (ETSA)

Appendix 16: Attitudes Towards the Environment and EIA in Transport SA and ETSA During the 1990s: Extracts from Interviews

TRANSPORT SA

'I won't let construction start until we've got our EIARs done...I definitely see why we're doing it and how important it is now....its the push of the environment and the affect that it has on everyone, and its probably just changed me...within the organisation and I think just in the world in general the push is on...I wouldn't say its converted me but...I can definitely understand it more than years ago' (Interview 39 1999).

'People in general are a lot more aware of the issue. People that...had no understanding or appreciation of it now have got a lot better appreciation...everybody's moved up in awareness...even if you took the last five years its been a steady increase.....I've noticed design being even proactive in...flagging stuff outside...not just on our work...like ..when we've handed on the finished product to other people and the construction people have gone out...I've noticed people in here flagging things that they wouldn't have done before...as people have got more used to dealing with environmental issues that becomes part of the ownership of their design...they don't want to see somebody then waste all that work...so a bit of ownership...it becomes part of their job' (Interview 44 1999).

'The environment thing is important and ..I've go no problems with what we're trying to do. To me its smart business practice, and the ...right thing to do' (Interview 48 1999).

'Probably there's a greater awareness of a more diverse range of issues than there was before' (Interview 24 1999).

'Its almost just become ...second nature...as part of doing the business these days...its an unconscious aspect...Traditionally where its been a corridor...we want to put a road through here...we want to do some realignment...you know its just a second consciousness that, 'well, what's the impact of that'. How's that going to affect, what's it going to affect..' (Interview 29 1999).

'In more recent time I've become aware of the potential for things to go wrong...I think I'm more careful...when I'm making recommendations or thinking of schemes...to consider the environmental impact along the way rather than wait for that stage of the study to come along and then consider what impacts...so if you like I'm incorporating it more into the planning process, I hope....we're very conscious as an organisation these days that we need to get acceptance, ...from the community' (Interview 34 1999).

'I think the culture changed...if you look around this organisation I think we're probably a much younger organisation than we were. My feeling that younger people are much more aware of the environment than older people...' (Interview 20 1999).

'I think there was more and more an understanding...at the end of the day it actually doesn't look bad...and you feel better about it' (Interview 63 1999).

'There's certainly been a growing awareness that environment is not a tack on. It needs to be integrated into the way we do business, and ...transport is part of the broader environment, not...the other way around.... [It used to be] an add-on. It was something we had to do. We did it probably reluctantly and it has changed dramatically over the period since we started out with the one environmental officer' (Interview 65 1999)

'At the personal level I think there's a lot of people in the department who have quite a high degree of acceptance of the need to address environmental issues. Perhaps differing amounts of acceptance of what it might cost and whether we're prepared to pay the cost. Varying degrees of...the sense of responsibility... I see individuals right across the department who have a strong ... growing environmental ethic, and to some extent, they put that into action, or make some attempt to, and others who don't, or can't because of the system they're working in...' (Interview 12 1997).

ETSA

'The key to the whole business in ETSA is to produce electricity. Environmental management is a part of this business' (Interview 1 1997).

'A high level of acceptance [in the people I work with]. They understand the processes, the need to go through the process... Its just part of the normal way of doing business now. ...Its got to that point now if we're going to build a major transmission line, we know that we have to go through an EIS process...we factor it into our planning' (Interview 8 1999).

APPENDIX 17:

THE PROJECT CASE STUDIES

Transport SA:

- Case Study 1: Adelaide-Crafers Highway
- Case Study 2: Blanchetown Bridge
- Case Study 3: Southern Expressway
- Case Study 4: Runway Extension

ETSA

- Case Study 1: Cherry Gardens Transmission
- Case Study 2: Tailem Bend Transmission
- Case Study 3: Ardrossan Transmission
- Case Study 4: Hummocks Transmission

Transport Project Case Study 1
ADELAIDE-CRAFERS HIGHWAY

PROPOSAL CONTEXT & DESCRIPTION

The Adelaide-Crafers highway (A-C) forms part of what was once known as the Great Eastern Road (Stacy 1999). Today the highway provides a major gateway to the city of Adelaide, a commuter link between the Adelaide Hills and city, and connects with the South East Freeway which is a major interstate link to Victoria and New South Wales (Highways October 1987). The road has had a long and turbulent history, involving funding problems, major safety and technical issues, and six total reconstructions and realignments over 160 years (Stacy 1999). The road was originally a rough bullock track and, being designed for slow animal traffic (Stacy 1999), was narrow with sharp curves and steep gradients (Highways February 1987). Because the motor vehicle was able to navigate these sharp curves at greater speeds, particularly since the bitumenisation of the road in the 1920s, safety became an important issue (Stacy 1999).

Small improvements were made to the road such as softening sharp curves near 'Eagle on the Hill', and construction in the 1960s of duplicated two lane carriageways which reduced the number of curves, traffic congestion, and road accidents (Highways November 1986; Stacy 1999). Several major accidents in the area from Glen Osmond to Crafers also resulted in safety upgrades with the construction of median barriers and improvements to the road alignment (Stacy 1999). However, this was considered a short term solution which did not result in a decline in accident rates (PWC November 1996), and longer term planning for the safety problem resulted in the proposal to totally reconstruct the portion of the road between Adelaide and Crafers (Stacy 1999). This would also serve to upgrade the road to national road design standards (eg design speed, lane width, shoulder provisions, median protection, gradient) (Highways October 1987). It is this reconstruction which is assessed in this case study as the Adelaide-Crafers highway proposal (A-C). The road however, has also been known as the South Eastern Main Road, the Mount Barker Road, and more recently, the South East Highway (Stacy 1999).

The need for the A-C proposal was clear in much of the community's and the Highway Department's eyes, and community members had threatened to blockade the road if nothing was done to improve its safety. Despite the improvements made to the road, the accident rate was 6 times higher than the rest of the South Eastern Freeway, with approximately 200 accidents per year, and a 30% higher fatality rate (Highways November 1986; Public Works Committee 1999). It had also been projected that the safety issues would increase in line with an additional 85% of traffic during peak periods forecasted over the next 20 years (from 1987) (Highways November 1986). Not only was safety an issue, but so too were the delays for regular commuters resulting from poor traffic flow, truck and commercial vehicle use of the road, and accidents (Highways November 1986). Lobbyists such as the RAA (Royal Automobile Association) and freight movement also had a very strong influence in getting the proposal initiated. It has been suggested that without the influence of the latter two bodies, the proposal may not have been proposed (Interview 50).

The Highways Department was thus under some pressure to undertake the A-C proposal, unlike the ETSA projects where the community or other stakeholders did not appear to play a role in pushing for the projects. It was reported in the media by the then Member for Mayo that the upgrade to Mt Barker Road was '*years too late*', and that he was '*...delighted it [the government] has at last responded to public pressure*'. Although referring to minor upgrades and not the proposed reconstruction, this comment does serve to highlight the public pressure associated with this road. The proposed construction was a significant and large scale engineering project in South Australia. In Parliament it was also noted that the A-C proposal was '*one of the most important references to come before the PWC [Public Works Committee] for many years*', whilst Minister Oswald stated that it was a '*very important project for the State*'.

The proposal as outlined in the EIS aimed to improve the link between Adelaide and Crafers by:

- constructing a new highway corridor from the Devils Elbow which traverses east of the existing route through a short twin-tube tunnel beneath Eagle on the Hill, then west of, but approximately parallel to the existing route for about 2 km, and finally east of the existing alignment for about 1km finishing by connection with the South Eastern Freeway (Highways February 1987) (a figure of the proposal is presented in Volume I of this thesis);
- increase lanes of reconstructed road to six lanes, and reduce frontage access (Highways November 1986);

- enlarging the existing intersection at the city entry point onto the highway (Glen Osmond, Portrush, Cross and Mount Barker Roads) (Highways February 1987); and
- by upgrading the existing highway from Glen Osmond (city entry point) to Devil's Elbow which involves an interchange at Mount Osmond Road, additional traffic lanes, median barriers and reduced curves (Highways February 1987); and
- improvements to the existing Crafers interchange.

The length of the new freeway was approximately 8 kilometres (2 km shorter than the existing route), and the cost of the project was \$138 million (1997 dollars). Full funding was from the Commonwealth government. It was originally planned to have the project constructed by 1994, but due to funding delays, the project was planned for completion by December 1999.

EIA PROCESS SUMMARY

Screening and Triggering

The Highways Department had recognised early on in the proposal's planning process that an EIS was likely to be required for the A-C proposal, and had accordingly notified the Minister of Transport prior to the official EIS requirement. In April 1986, the Department appointed consultants - Maunsells Pty Ltd - to conduct an environmental and engineering evaluation of alternative options. The fees awarded for Maunsell's contract to evaluate alternatives (around \$500,000 reported in the media) appeared to be substantially higher than for the ETSA EIA investigations. This is not surprising given the greater economic value, complexity and size of this project relative to the ETSA transmission lines.

Soon after the appointment of Maunsells, a preliminary meeting was held between the Highways Department and the DEP in May 1986 where it was proposed to have close involvement with the DEP. It was noted that '*...close consultation with the DEP at this stage was desirable and would not pose any difficulties for the independence of DEP's position...*'. On 17 June 1986, the DEP recommended to the Minister for Environment and Planning that an EIS be required for the Adelaide-Crafers Highway proposal. Less than one month later and due to the '*...political, environmental and economic sensitivity of the project...*', the Minister of Environment and Planning officially required on 9 July 1986 that an EIS be prepared for the Adelaide-Crafers Highway proposal. Although the Highways Department was not formally subject to the Planning Act (and hence the formal EIA process), it was proposed that the EIA process follow guidelines prepared by the DEP and conform with the standard EIS procedures under the Act.

Because the project also involved Commonwealth funding, the *Environmental Protection (Impact of Proposals) 1974* was also triggered. Under these procedures, the Commonwealth Department of Transport designated the South Australian Highways Department as proponent of the proposal in July 1986 which effectively triggered the Commonwealth EIA process. Rather than conducting two separate processes, a joint EIA process was arranged between the then Commonwealth Department of Arts, Heritage and Environment (DAHE), and South Australia's Department of Environment and Planning (DEP). In this regard, the EIS was to be prepared under South Australian legislation, but was to be reviewed by both government departments.

EIS Guidelines

The guidelines for the EIA process were prepared by the DEP in July 1986 in the same month of the official EIS requirement (refer Table 1). Unlike experience in the ETSA case studies, local councils had the opportunity to comment on the draft guidelines for the proposal, and it was also proposed to release the guidelines for public viewing, but it is unclear whether or not this occurred. In a similar manner to the ETSA case studies, the final guidelines were quite short (4 A3 pages as presented in the Draft EIS) and were structured around a description of the EIA process, an outline of the EIS contents, and factors to be considered in the description of the environment and impact evaluation. Unlike the guidelines for ETSA projects, there was no requirement for a detailed description of the preferred option if identified, and mitigation measures were not as defined. However, the A-C guidelines were more detailed in their requirements with a short description of each environmental factor and impact area with several subrequirements. Issues requiring particular emphasis were also outlined comprising:

- impact on residential environments;

- noise impacts;
- impacts on the biophysical environment, particularly in the Hills Face Zone;
- changes to access and consequences;
- safety (vehicular and pedestrian); and
- implications for planning and future development (DEP July 1986)

Surprisingly, there was also a requirement for monitoring of impacts, which was not required for the ETSA case studies. It may be that the impacts associated with this type of development required longer term and ongoing monitoring, whereas the ETSA transmission lines only required monitoring at the construction stage. The operation of transmission lines, with the exception of ongoing maintenance, is relatively stable. Overall, the guidelines for this project compared to the guidelines for ETSA projects were more detailed and left little room for proponent discretion in interpreting what was required in the Draft EIS.

Table 1: Contents of the project guidelines for the Adelaide-Crafers Highway Draft EIS (summarised from DEP July 1986)

EIS CONTENTS	ENVIRONMENTAL DESCRIPTION	IMPACT EVALUATION
Summary Introduction Substantiation Description Alternatives Potential Impacts Mitigation Monitoring Public Participation Sources of Information Appendices	Climate and Air quality Geology Terrain and soils Hydrology Flora Fauna Land Use Demography Socio-Economic characteristics Transportation Economics Heritage Amenity Noise Infrastructure and utilities Bushfire hazard	as for environmental description in addition to traffic safety, and construction practices

Organisation and Management

A discrete team was formed with the Adelaide-Crafers Planning Study Team. As illustrated in Figure (1), the Department retained ultimate control of the planning process, but the influence of the internal project manager was indirect on the Maunsells project team, and there were two essentially layers of project management or control. In close liaison with the Department, Maunsell consultants were responsible for most of the EIA and planning-design work. The structure of the planning and design team is illustrated in Figure (1). The consultants were also responsible for coordinating specialist advisers, one of which had expertise in environmental issues, and sub-consultants (eg for the qualitative public consultation study in August 1986; Aboriginal survey by archaeologist T Gara). In the later stages of project, the internal client was Manager of Strategic Investment Planning. Maunsells was used consistently through the EIA process, and the design process which facilitates consistency and efficient transfer of information.

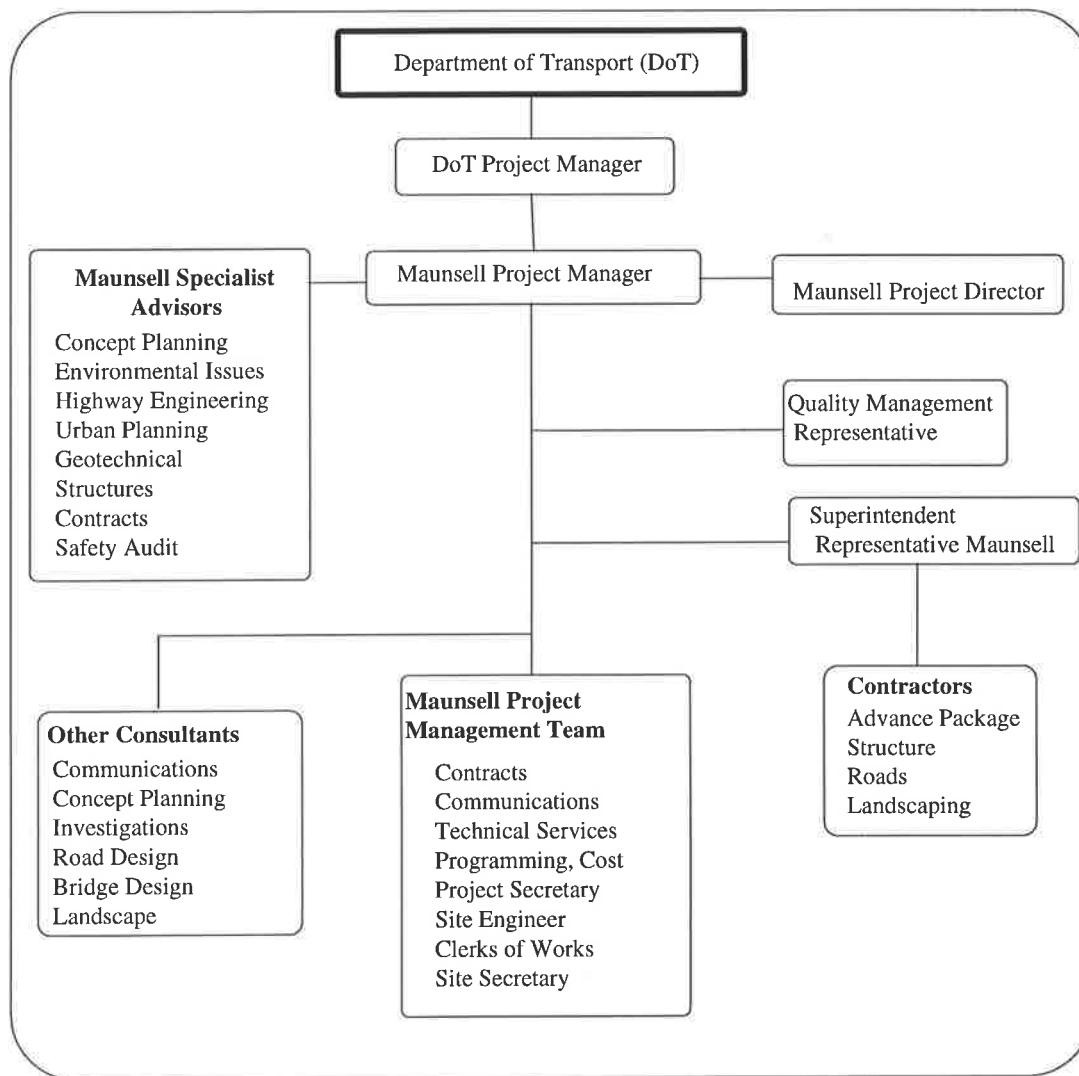


Figure 1: Structure of the EIA, planning and design team for the Adelaide-Crafers Highway proposal (source unknown: Departmental files)

The EIA process and environmental information was predominantly managed by the consultants Maunsells. There was insufficient information to determine how much input the internal environmental officers had given a lack of reference to them in the project files. Two environmental officers were involved in the vegetation removal requests, and environmental officers were also involved in the baseline air quality sampling, although the degree and nature of this involvement is unknown. Moreover, regular project meetings between DoT and Maunsells, which included discussion of environmental issues, did not indicate the presence of an internal environmental officer. They were, however, present at later *ad hoc* meetings which required discussion of specific issues such as outlining vegetation removal procedures (eg meeting held 5 February 1995), and one environmental officer was present at the Value Management Study workshop (see later) and a design meeting in April 1997. Again, much of the information in the EIA phase of the project was missing.

Public Exhibition: Stage One

In a similar manner to ETSA's Tungkillio-Cherry Gardens and Hummocks-Waterloo transmission line proposals, an early programme of public participation was instigated by the Transport Department and their consultant, Maunsells Pty Ltd, during the preparation of the Draft EIS. However, the programme initiated by the Highways Department was more extensive than ETSA's approach and involved:

- public review of three corridor options and an upgrade option with an information brochure and calls for public comment (140 letters);
- personal interviews for those directly affected;
- a telephone hotline (78 calls);
- press releases;
- correspondence;
- roadside user survey (1300 responses);
- public exhibition at five locations from October to November 1986; and
- six public meetings at sites potentially affected by the proposal from October 1986 to November 1986 (Highways January 1987).

A subconsultant was also employed to conduct a qualitative study which aimed to understand the issues and opinions of four groups comprising commuters, professional road users, potentially affected residents, and environmental concerned groups in the area). This qualitative approach, which involved discussions between invited participants, was used because it provided participants with a 'relaxed and friendly atmosphere', and facilitated a deeper exploration of the attitudes and reactions to the proposal. During the discussion participants were also asked for their suggestions, giving an impression of 'joint planning', or at least participation at the higher end of the Westman scale presented in the evaluation of openness and consultation (see later discussion).

The information brochure did not identify a preferred option, and briefly assessed four options with a comparison of structures required, gradient, landscape impact, properties affected, impacts on existing road users during construction, potential for staging of construction, cost, residential amenity and economic impact. The three corridor options presented in the later EIS is illustrated in Volume I of this thesis. Based on an analysis of the information in this brochure (refer Table 2), Corridor A appeared to be the better option in six of ten areas including gradient, landscape impact, lowest number of properties affected, impacts on road users, and economic impacts. It is difficult to distinguish between the other options, and performance would depend on the weighting of importance given to each issue which was not done in the brochure. However in terms of the number of categories as the 'best option', the upgrade was the best performer but in terms of number of categories with lowest performance, both the upgrade and Corridor B performed the worst. Corridor C appears to be the next best option relative to Corridor A, particularly if cost is important in the final selection.

Public Response

There was a substantial response to the Department's consultation programme, with 101 written submissions, although because some wrote more than once, there was a total of 140 letters in addition to 78 telephone calls to the hotline. Attendance at public meetings at Mount Barker, for instance, was also high with an attendance of 100 people. The majority of contact came from landowners or residents affected by the proposal. This is similar to the ETSA case studies, where public input was primarily locally-based as opposed to State-wide (refer also Harvey 1994). Although the consultants attempted to engage several special interest groups, only three responded.

As a result of the qualitative study, it was found that road professionals were concerned about safety; commuters about traffic flows; residents about road fatalities; whilst environmentalists were concerned about the 'Wide Road Syndrome' which encourage more traffic and more development. Interestingly, the professional road users believed that a road would not affect the environment, or would actually improve the environment with the roadside trees. Issues raised by the public as a result of the entire consultation programme are summarised in Table (3), and related to safety issues, public transport, alternatives, social and biophysical issues.

As illustrated in Figure (2), the majority supported Corridor A (121 submissions), including one local council, whilst 44 submissions opposed the corridor which was to become the Highway Department's preferred option (Corridor C1). Substantial concern was also evident about Corridor C2's impacts on the Crafers West area which had already suffered disruption and dislocation from the original construction of the freeway, and a number of alternatives were proposed for consideration by the Department. From the highest to lowest public support, performance was:

- Corridor A;
- Upgrade;

- Corridor C1;
- Corridor C2; and
- Corridor B.

Support was so great for option A that a lobby group named the 'A-Team' was formed comprising of hundreds of citizens, and supported by a local council. They were not, however, successful in getting their preference adopted (see next section).

Table 2: Analysis of the options presented in the public information brochure for the Adelaide-Crafrers Highway Proposal (dark shading represents best option, middle shading represents second best option)

	CORRIDOR A	CORRIDOR B	CORRIDOR C	UPGRADE
Structures	tunnel (535m) 3 bridges	tunnel (505m) 2 bridges	tunnel major cuts	major cuts and fills
gradient	1:18 lowest gradient of corridors	1:17 median gradient	1:16 steepest	1:14 Devils Elbow (steepest) 1:19 elsewhere (lowest)
Design speed	90km/h	90km/h	90km/h	50km/h Devils Elbow 90km/h elsewhere
Landscape impact	lowest impact	highest impact	moderate-high	cuts highly visible but low impact due to use of existing disturbed corridor
Properties affected	5 acquisitions 13 affected	13 acquisitions 15 affected	12 acquisitions 17 affected	18 acquisitions 10 affected
Impact on road users during construction	lowest impact	moderate impact	moderate	severe
Construction staging	moderate scope	limited	limited	as desired
Cost	highest cost	median cost	second lowest cost	least expensive
Residential amenity	Reduces impact of existing road on residents. Retains all properties on existing road between Union Quarry and Eagle on the Hill	Reduces impact of existing road on residents	Reduces impact of existing road on residents	increase visual impact for residents. continued impact on Eagle on the Hill residents. Loss of access to some properties
Economic impact	retains access to Eagle on the Hill commercial traders	restriction of quarry operations and bypass Eagle on the Hill Traders	By passes Eagle on the Hill traders	Retains access to Eagle on the Hill traders
Result	Best option=6 areas Second best=1 Lowest=1	Best option=2 Second best=3 Lowest=5	Best option=1 Second best=5 Lowest=3	Best option=3 Second best=2 Lowest=5

A minority of submissions also opposed the overall scheme either due to a belief that the existing road was adequate (with better policing, driver care), that other routes would suit regional needs, or because of the personal suffering associated with the proposal. Two submissions also referred to the potential for reducing road traffic demand.

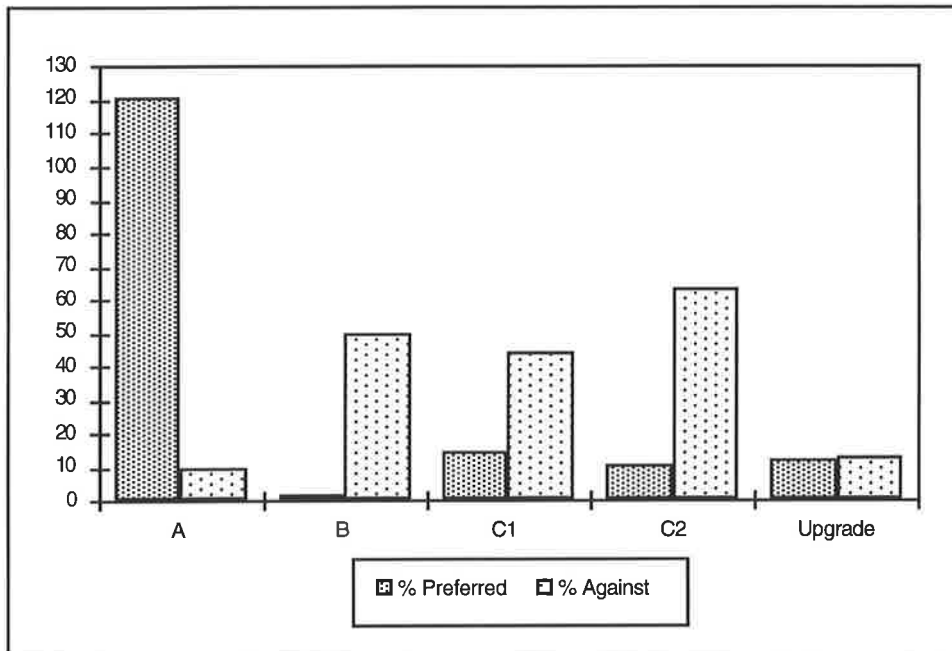


Figure 2: Preferences in public comments for alternative options for the Adelaide-Crafers Highway proposal (numbers sourced from the EIS, Highways February 1987: p1-3)

Table 3: Issues raised by the public in the first consultation phase for the Adelaide-Crafers Highway Proposal

CATEGORY	ISSUES
Highway	<ul style="list-style-type: none"> • safety (eg speed limits, driver attitudes and training, signage, poor truck loading, policing) • design (eg gradient safety barriers and ramps, tunnels services) • construction (traffic disruption, staging, noise, spoil handling, tunnelling impacts)
Route Alternatives	<ul style="list-style-type: none"> • connection to Northern Suburbs • Alternative routes further north and south • long toll tunnel • retain existing road • Fullarton Road/Brown Hill Creek Connection • Variations on options (2 for Corridor A, 1 for Corridor C, and 2 involving combination of Corridors A and C, and B and C)
Public Transport	<ul style="list-style-type: none"> • need for upgrading • non-road based alternatives • retention of bus stops • service for school children
Social	<ul style="list-style-type: none"> • residential amenity • property disturbance (eg access, compensation, subdivision potential, previous freeway construction impacts on Crafers) • non-residential land use (eg Cleland Conservation Park, Eagle on the Hill businesses) • heritage (eg tollhouse, Eagle on the Hill hotel, Crafers West) • tourism • provision for Mount Barker growth • effects on existing services
Biophysical	<ul style="list-style-type: none"> • flora • fauna • fire • meteorological influences (wind, fog, ice, sun glare)
Economic	<ul style="list-style-type: none"> • option cost differences subordinate to long-term environmental losses • indirect costs of environmental impacts • project costs beyond community resources • funding mechanisms
Other	<ul style="list-style-type: none"> • exhibition mapping outdated • perceived higher quality of Corridor A • inclusion of bicycle facilities

Evaluation of Corridors and Identification of a Preferred Option

Following the public exhibition of the options, Maunsell prepared an internal report in January 1987 which evaluated the alternatives based on public comments, a benefit-cost assessment, and other non-financial factors (engineering, social and environmental). The upgrade to the existing road was excluded because it failed to adequately meet the objectives of safety improvements. Of several public suggestions for route amendments, only two were briefly considered and one was eventually adopted as an Alternative Alignment in the Draft EIS. A new option was also considered by the consultants which related to 'couplets' whereby the new corridor is only used for downhill traffic, whilst the existing road is used for uphill traffic.

The evaluation of each option in this report was complicated and difficult to understand given the use of complex economic analyses, weightings and scoring for several non-financial evaluation criteria, and 'sensitivity testing' of these weightings. This approach was heavily criticised by other government departments (refer section on EIS Quality: Government Controversy). Based on the weighted evaluation criteria, Maunsells found that Line 3A (ie Corridor C1) with a couplet approach was the best performer, followed by Line 3B (ie Corridor C2), and then Line 3A without the couplet inclusion.

This conclusion was premised on the greater importance assigned to economic factors (ie 60% weighting). Yet Line 2 (ie Corridor A) actually performed better for most environmental and social categories in this evaluation, but these issues only had a combined weighting of 26% in Maunsell's evaluation which is of some concern. It is also not clear how or to what degree the public comments were incorporated into this evaluation approach given that the best option contrasted with public opinion. Nonetheless, Maunsell recommended that Line 3A be adopted (ie corridor C1) as the preferred option for assessment in the Draft EIS.

The Draft EIS

Following the analysis of alternatives, Maunsells prepared the Draft EIS, which was completed less than a year after their appointment, and 7 months after the official EIS requirement which was a relatively fast turnaround when compared to for instance, nearly 18 months for ETSA's Cherry Gardens proposal, and nearly 2 years for ETSA's Tailem Bend proposal. This is surprising given the less complex nature of the environmental investigations for the smaller scale transmission line proposals. The timing differences may be attributable to the level of experience of the consultants or proponent, or due to the tight timeframe required to get Commonwealth funding.

Prior to the public release of the A-C Draft EIS in February 1987, preprint copies were reviewed by both the DEP and the Commonwealth DAHE and several comments were made. The DAHE's comments required improvements to the rationale for the preferred option, and the readability of the document (eg too much jargon, difficulties for general readers to interpret some diagrams), and noted the inadequate assessment of fauna impacts and socio-economic effects, particularly property acquisition. This latter was also of concern to the DEP in addition to requiring additional information on seismicity, population capacities and the effects of the proposal on population growth. The DEP criticised the Draft EIS for failing to outline methodologies used to compare the alternatives based on economic benefit/cost ratios, and for failing to reflect public opinion about the preferred option despite the intentions throughout the EIS to do so. However, shortly after these comments, the EIS was determined by the DEP to be '*...generally adequate for public release*', although there were still some concerns about issues such as improving accessibility to the hills area.

Relative to the ETSA EISs, the A-C Draft EIS was quite long at 88 [A3 size] pages (including summary and excluding references and appendices) and with extensive use of figures. The contents of the Draft EIS are summarised in Table (4), whilst the proportion of focus on the main EIA tasks are presented in Table (5). The main focus was on the comparison of alternatives (34%), the description of the environment (28%) and the impact evaluation (28%). In a similar manner to ETSA's approach the environmental investigations focused on broader planning concerns by evaluating wide corridors, whilst the more detailed design and minor route alignments were to be undertaken after the environmental approval process was completed. While this approach makes it difficult for the community and government to make a fully informed decision about the proposal, it does facilitate greater flexibility in the overall decision-making process (ie assessment at the detailed design assumes preselection of a corridor which has had no formal environmental investigations or public input).

Table 4: Contents of the Draft EIS for the Adelaide-Crafers Highway Proposal

CONTENTS OF THE DRAFT EIS	
Summary	
Preamble (study and selection process, sieving route alternatives, selection of proposed route)	
1. Introduction (background, project timing, EIA process, public participation to date)	
2. Substantiation of Need	
• existing road situation, traffic situation, alternatives to new road: do nothing, bus, rail, upgrade	
3. Assessment of Options and Outline of Selected Proposal	
• Corridor A, Corridor B, Proposed Route, Corridor C2. Couplets, Corridor Evaluation, outline of the selected proposal (description and features, alternative alignment)	
4. Description of the environment	
• biophysical (landform, geology and soils, climate, air quality, hydrology and drainage, vegetation, vertebrate fauna, landscape, bushfire hazard)	
• social (current land use, demography, statutory controls, Aboriginal heritage, Heritage of the built environment, utilities and services)	
5. Environmental impacts and management	
• biophysical (landform, geology and soils, climate, air quality, hydrology and drainage, vegetation, vertebrate fauna, landscape, bushfire control)	
• social (property acquisition, impacts on non-residential land use, effects on residential amenity, effects on access to property and social dislocation, Aboriginal heritage, built environment heritage, noise, imposed development constraints, cable-car)	
• regional planning issues (implications for future development, urban area impacts)	
• construction effects (material movement, effects on residents, effects on road users)	
• responsibilities for mitigation	
• monitoring and review	

Table 5: Proportion of focus in the Draft EIS for the Adelaide-Crafers Highway Proposal (equivalent 132 A4 pages)

EIS TASK	% FOCUS*
Summary	9%
Introduction	3%
Proposal Description	13%
<i>Planning Policy Framework</i>	2
Proposal Need	5%
Alternatives Description and comparison (4 corridors)	34%
Description of environment	26%
Description of Preferred Concept (if identified)	28%
Impact Description & Evaluation	28%
Mitigation**	28%**
<i>Monitoring</i>	0.7%
Public consultation (approach)	1%
<i>Conclusion</i>	-

* does not total 100% because of overlaps of tasks on some pages (eg the comparison of alternatives and impact assessment, and mitigation all fell within the same chapter)

**likely to be substantially less given that integrated into impact assessment section

In a similar manner to the original information brochure, four alternative corridors located in a small area of the western Mount Lofty Ranges were presented in the Draft EIS comprising:

- Corridor A (\$150million) (1986 prices);
- Corridor B (\$130 million);

- Corridor C1 (\$100 million); and
- Corridor C2 (\$100 million).

As noted previously, the couplet scheme and Alternative Alignment which involved deviation around the Cleland Conservation Park were also presented. While the inclusion of this alternative was a result of a public submission during the first stage of public consultation, the source of this alternative was not adequately acknowledged in the Draft EIS.

The preferred option (C1) adopted by the Department was the shortest and least expensive route, and as noted previously, did not reflect public opinion, despite the fact that the Department indicated that public concerns were taken into account during the preparation of the Draft EIS. An attempt was made by the Highways Department to justify why the option preferred by the community was not the Department's preferred option:

'Response from the public showed that the strongest preference was for the most expensive option. However, that came largely from individuals who foresaw effects on their personal interests from other options which, while biased, is acknowledged as an important part of public opinion. The number of people affected by each option is, however, relatively low for the number of beneficiaries from the project. It is also believed that there was some confusion regarding Corridors C1 and C2, with the determinate impacts of C2 being mistakenly associated with C1 as well. A strong preference for Corridor A was expressed, seemingly because it was away from the more heavily populated and visible areas and had more manageable environmental impacts.'

However, it was noted that the costs of Corridor A were such that government funding may not be obtained.

Public Submissions

The draft EIS was publicly released for comment for two months from 9 March to 4 May 1987, which is slightly longer than the six weeks required for the EIS process under the Planning Act 1982 (as amended 1985). A much smaller response was received than the first stage of consultation, with a total of 38 formal public and government submissions on the Draft EIS (Harvey 1994). Twenty of the public submissions (excluding government submissions given that they were coordinated as one response) indicated a preference for a particular option, which demonstrated similar trends to the first stage of consultation with a dominant preference for Corridor A (32% of submissions voicing support). Only one submission voiced support for the Department's preferred C1 Corridor option.

The range of issues raised in public submissions was not as comprehensive as the first consultation stage. The issues raised most in the public and government submissions related to the quality of the EIS (refer controversy: EIS quality), followed by the impacts on the Cleland Conservation Park, heritage issues, and impacts on vegetation. There were also significant concerns about the substantiation for the project, and about the secondary effects of improved and easier access and the facilitation of further development in the Hills area. It was believed that population growth in the watershed areas and near hills townships should be restricted, and that broader regional planning issues and government policy were pre-empted by the project. It was noted in one submission for instance:

'The decision by a single agency to proceed with the road construction would pre-empt the development of other government policy As a result it can be seen that Adelaide will endeavour to grow inland away from other existing services and into the energetically inefficient and environmentally sensitive Hills area. An increased demand will be created for private transport fuel and for public transport services, when at present the Government is aiming to conserve fuel, and is reluctant to extend existing Hills public transport.'

As a result, there was increasing support for upgrading the road rather than reconstructing it. It was noted in the Supplement as a response: '*It was assumed [in the Draft EIS], as it now appears wrongly, that the case for its [an upgrade] dismissal had been sufficiently accepted so as not to warrant repetition of the documentation...*'. However, the Highways Department remained of the conclusion in the Supplement to the EIS that an upgrade rather than a reconstruction would not

realistically improve safety conditions, and would require a high degree of property acquisition (Highways July 1987).

The Supplement Report

The Department's response in the Supplement (Highways July 1987) to these public and government submissions was referred to government departments for comment, and some concerns were noted by the Commonwealth DAHE about the information on the alternatives and mitigation measures. Nonetheless, the Supplement was considered adequate for public release by the DEP in late July 1987, and was publicly released on 27 July 1987 (Harvey 1994).

The Supplement was shorter than the Draft EIS and was in A4 format which made reading easier. The main contents comprised:

- Introduction (eg nature of comments received, status of the proposal);
- Project Justification (eg accident statistics, traffic project reliability, public transport);
- Project funding, Programme and Implementation Matters (eg effects of funding limitations);
- Alternative Schemes (eg no construction, upgrade, Corridor A, weighting of economic factors);
- Regional Effects (eg development pressures in the Hills, visual intrusion);
- Local Effects (eg property values, acquisition, access, vegetation, heritage, noise);
- Design Details (eg run-off and pollution control, landscaping).

In a similar manner to the ETSA case studies, a summary of the submissions was presented in an appendix which facilitated transparency of process.

The Highways Department was clear about the concerns raised, and openly addressed many of the criticisms about the alternative adopted and some inadequacies of information. There was also some concerns raised in submissions about the practice of identifying a preferred option, which was a similar problem experienced in the ETSA case studies where it was found that the adoption of a preferred scheme tended to result in some public controversy. This was also a problem recognised by the DEP. However, in terms of the A-C proposal, the Highways Department noted:

'Some submissions contained the view that the Draft EIS should have provided an equal treatment to the various route alternatives without necessarily drawing conclusions about a preferred route, and the Government Department comments sought presentation of design detail for each route. Others sought more detailed information on the evaluation process, either explicitly or implicitly suggesting that the evaluation was faulty and that a different corridor should have emerged as preferred.

The Commission of Highways maintains that the proponent has a responsibility to propose a specific scheme after a detailed consideration of the options. ... That route has been selected as offering in the proponent's view, the best overall solution in terms of environmental, social, engineering, cost and user implications' (Highways July 1987: p2).

It was also acknowledged in the Draft EIS, that some would view the 'best' option differently, and while this was accepted, it was not considered to be advantageous to review the evaluation process leading to the preferred option. As for the Cherry Gardens proposal by ETSA, the Highways Department was adamant about their selection and refused to change their position despite opposing public opinion. For instance:

It is recognised, and accepted, that some interested members of the public and others may place a different emphasis on the issues involved and therefore believe that an alternative to the selected proposal has more merit. Nevertheless, in view of the compelling influence of economic considerations on the selection, it is considered that ongoing discussion of the evaluation process would not be worthwhile' (Highways July 1987: p2).

They also noted that environmental factors were a significant factor in the choice of the four corridors originally selected for assessment, and it was considered that environmental differences between these four options were not significant.

The Department was, however, more responsive to several concerns about the intrusion of the preferred Corridor C1 into Cleland Conservation Park near Crafers, and the impact on Crafers North. As a result, the Department modified their preferred alternative, and adopted the 'Alternative Alignment' presented in the Draft EIS. The new alignment, which was entitled Corridor C3, avoided the Conservation Park and the temporary diversion road during construction was able to be situated along the Park boundaries, although some vegetation would still be affected. While the impacts on vegetation were major in parts (eg removal of stand of candlebarks; removal of 1 hectare of good quality vegetation), they were considered unavoidable and considered on balance, to result in a less substantial impact than if the original Corridor C1 was constructed.

In response to opposition from heritage authorities about the relocation plan for a significant heritage item - the tollhouse - an internal report on alternatives was also prepared by Maunsells. Although it was noted in the draft EIS that the tollhouse could be relocated given that there was a belief it had already been moved once, it was since found that the tollhouse was in its original location. Four alternatives to relocation were assessed including the do-nothing option. Only one of the alternatives was considered to be viable which involved keeping the tollhouse in the median and spreading the carriageway further apart (alternative 2), but this entailed some impacts involving a need to acquire one private residence, intrusion effects on other private properties, additional earthworks, risk of collision and loss of access to the Tollhouse to visitors. Given these issues, the Department maintained in the Supplement that the tollhouse should be relocated a short distance.

The DEP Assessment Report

The DEP's 71 page Assessment Report (DEP November 1987) with input by the Commonwealth DASETT (replaced DAHE), was accepted by the MEP on 30 November 1987, and was publicly released on 15 December 1987 (Harvey 1994). The Assessment Report identified the major issues as:

- project substantiation;
- regional planning;
- social and economic;
- impacts on heritage;
- visual impact; and
- impacts on flora and fauna.

Issues addressed within these areas included property acquisition and compensation, impacts on local businesses, residential amenity, spread of disease, erosion, pollution, and the disposal of excavated materials. The most significant of the major issues in the selection of corridors were the social and economic impacts, and the impacts on flora and fauna (DEP November 1987: p65). However, although the issue of fauna was included in a subheading, there was no reference to the fauna impacts in the text which is surprising given the extensive impact of the project on habitat clearance.

On environmental grounds, the DEP noted its preference for the Corridor A option, followed by the Department's preferred C3 Corridor. However, costs were the deciding factor and it was noted in a similar manner to the Highways Department:

'This Department considers that the environmental (including social) benefits associated with the adoption of Corridor A, while considerable, are insufficient to justify the additional expenditure in the order of \$50 million and the possible delays and uncertainties in obtaining funding. (DEP November 1987: p67).

Thus, the Highway Department's preferred C3 option was considered the next best option, and the DEP stated:

'...this Assessment Report concurs with the Commission of Highways in recommending that Corridor C3 be selected as the preferred route for the new highway and that funding should be sought for the construction of this corridor.

It must nevertheless be recognised that significant adverse impacts on residential amenity, non-residential land use, and flora and fauna are associated with this corridor' (DEP November 1987: p68).

It was acknowledged that the clearance of vegetation was a 'severe but unavoidable consequence', and it was suggested that actions to benefit vegetation be arranged to offset the extensive vegetation clearance. A total of 15 more specific recommendations were made which related predominantly to mitigation measures, and which required for instance, that the heritage tollhouse and tollgate be retained in their existing location despite the Department's desire to relocate it.

Official Recognition of the EIS

Official recognition for the EIS documents was given on the same day that the Assessment Report was accepted. While official recognition did not form part of the Commonwealth EIA process, an equivalent acknowledgment that the requirements of Act are met is generally made. This acknowledgment took nearly a year until the Commissioner of Highways was informed on 8 September 1988 that:

'...subject to the implementation of the recommendations in Part B, sections R4-R5 of the SADEP report, the Department of the Arts, Sport, the Environment, Tourism and Territories have deemed the requirements of the Environment Protection (Impact of Proposals) Act 1974 to have been met.

Section 7 Notice and Crown Development Report

Although the formal EIS process was followed, the Department was not subject to the Planning Act, and hence were not required to submit a Section 7 Notice to Councils or to the SAPC as occurred for the ETSA transmission line projects. For the same reasons a Crown Development Report was not required for the A-C decision making process.

Planning Report & Request for Approval

It was generally standard practice in the Highways Department to prepare an internal Planning Report for large infrastructure projects. In this case, the Planning Report (31 pages plus figures) considered the EIA documents, and the DEP's assessment, and was to be used as the basis for application for Commonwealth funding (DEP November 1987). This Planning Report was prepared by Maunsells in October 1987, shortly after completion of the DEP's Assessment Report, but prior to its public release.

Essentially, the Report was a summary of the alternatives, the preferred proposal (Corridor C3), and the process of assessment including the Department's response (Table 6) to the DEP's recommendations. A preliminary landscaping design had also been completed which aimed *inter alia* to:

- integrate the highway with surrounding areas;
- reduce the effects of engineering works by stabilising fill batters and screening cut batters;
- prevent pockets of derelict isolated land;
- provide good views and variety of visual experiences;
- screen views of the highway from urban areas;
- protect areas of high ecological value;
- rejuvenate existing degraded land infested with exotic plants;
- facilitate fire fighting operations and minimise fire risk;
- minimise maintenance cost; and
- provide self-sustaining habitats.

The Highways Department appeared to be willing to comply with the main recommendations from the DEP, given that most were not 'onerous', too costly, or were standard practice for the practices of highway construction. This was also the case for ETSA projects where many, but not all, of the DEP recommendations simply reflected standard internal management practice. There is some concern, however, about the proposed need to remove vegetation for further Aboriginal heritage surveys, and it unclear whether or not the Highways Department liaised further with the DEP on this matter.

Table 6: Highway Department's response in the Planning Report to DEP recommendations arising from the EIA process for the Adelaide-Crafers Highway proposal

DEP RECOMMENDATION	RESPONSE
Retention of Tollhouse in existing location	'...the requirement can be met without prohibitive additional cost, and the Commissioner recognizes that it will be necessary to accede to the stipulation' (p27)
Resident relocation	will be addressed under the Highways Act and the Land Acquisition Act. '...sympathetic consideration is already being given to immediate acquisition in cases where property owners have requested this' (p28)
Effects on non-residential use	further means for mitigating impacts on local businesses considered, but limited by the Commissioner's powers under the Highways Act, and lack of site for relocation on the new highway alignment. 'It is proposed that the conventional service signs be provided at the interchange ramps serving Eagle on the Hill in order that motorists will be aware of the services available to them' (p28).
Further noise studies	'It is not expected that this requirement will generate any significant difficulties, either in the performance of the studies or in mitigatory measures if these are found necessary' (p28)
Air quality monitoring	'While there is no difficulty in complying with this requirement, it is apparent that mitigation of any problem detected in the future is unlikely to be achieved by measures involving the road itself' (p29)
Landscape issues (rehabilitate native vegetation in compensation for clearance)	'Only a small cost would be involved in complying with this requirement, but it will need to be determined whether the Commissioner's powers extend to work of this type.' Regarding design requirements in Assessment Report about earthworks and planting: 'Most of these were described as part of the proposal in the EIS documents, while the remainder relate to good design practices which would form a normal part of this or any other major highway development' (p29).
Spoil disposal (DEP wanted to be consulted on choice of spoil areas)	'This requirement is acceptable. The matter of spoil disposal requires further detailed consideration, and it is hoped that productive use can be identified for the material, such as for land reclamation or rehabilitation of quarries in the vicinity' (p29).
Spread of Phytophthora fungi precautions (annual monitoring during construction, ban on transport of infected soil, use of fungus-resistant species and mulches)	'The additional monitoring requirement is not onerous, and the second requirement is unlikely to disrupt construction work unless Phytophthora is widely encountered. It is probable that the pre-construction testing would warn of such a circumstance and allow appropriate pre-planning. If infection is found to be widespread, the ban may well be incompatible with the necessities of the project earthwork, which would dictate careful consideration of areas, such as other infected areas, where material could be placed. The third requirement is self-evident, and acceptable' (p29).
Erosion control (Waterfall Gully and bog near Eagle Quarry)	'The requirement accords with intentions expressed in the EIS Supplement, and is further noted' (p30).
Aboriginal heritage (further surveying)	'Surveys and assessments performed as part of the Study indicate that the likelihood of sites is low. However, this produces the paradox that any relic found would be of special importance because of the lack of previous finds. As explained in the Draft EIS, it is considered most unlikely that a site of sufficient significance as to jeopardize the project would be encountered in this locality. To achieve any more effective survey than those already performed, vegetation clearance will need to be undertaken. In advance of construction commencement this should be limited to the understorey, to avoid possible public reaction to the effects of tree felling' (p30).

Ministerial Directions

Detailed information on the final government approval and conditions for the project was not found in the project files. It is known however, that State Cabinet approval was given on 25 July 1988 for Corridor C3 and for the Department to seek Commonwealth funding. On 16 September 1988, nearly a year after the assessment process was completed, the Commissioner of Highways requested Commonwealth approval to adopt the C3 Corridor and to proceed with final design and documentation. Approval to commence the design work on the proposal was given by the Commonwealth Minister for Land Transport on 17 February 1989, and by the State Cabinet on 11 September 1989. Commonwealth funding approval was also given in 1990 of \$2 million for preconstruction works, but funding for the highway proposal was delayed.

Design Work and Funding

In January 1990, Maunsells were appointed to begin the design and documentation for the project, but in 1992 it was realised that Commonwealth funding would not be forthcoming. However, work continued and 53 reports were prepared from 1989 onwards by various consultants. Since 1986, this made a total of 109 reports produced by or for the Department which signals intense activity. In contrast, the less complex projects in ETSA resulted in substantially less documentation, and the focus was on the three environmental documents (Draft EIS, Supplement and Assessment Report). The impression given by Transport SA was that the EIA documents were only one part of a much larger and more complex planning and design process. Most of the reports produced for the A-C proposal were predominantly technical in nature and related to economic assessments, contract management, traffic forecasting, or detailed design (eg pavement design, noise levels, wind investigations and tunnel ventilation, drainage design, geometric standards, disposal of excavated materials).

Following an update in March 1993 of the original 1987 Planning Report, no reports were produced for two years. But when Commonwealth funding became available for the project on 16 May 1995 (Harvey 1994), activity quickly recommenced with further studies and land acquisition. The assessment of the project did not stop at the formal EIA process, and studies into the value, opportunities and risks of the project continued to be conducted internally. This was important given the large time lag between approval and the commencement of construction. Reports which are relevant to the environmental investigations include the Value Management Study, project update, the Risk Assessment, and the preparation of Environmental Management Plans (see below).

The Value Management Study (1995-1996)

A relatively new approach used by the Department was a 'Value Management Study' which brought together a range of different perspectives to evaluate the proposal, its objectives, and to review the concept design and design criteria.. It was expected that:

'...members will use their professional perspective to challenge the current proposals, test assumptions, question their own and others traditional ideas and are expected to both generate and respond positively to innovative solutions in order that value is added',

Actions arising for environmental issues included:

- the creation of a community consultation strategy;
- a review of the environmental issues raised in the EIS to ensure relevancy, compliance and to address any deficiencies;
- liaison with government about any further EIA requirements;
- appointment of a construction manager to be involved in development of an Environmental Management Plan; and
- ensuring that the Endangered Species Protection Act is complied with involving the preparation of a Koala Management Plan.

There was a broad range of government participants in the study in addition to one local community group. In particular, participants included representatives from the Department of Transport (primarily senior staff), the Commonwealth Department of Transport, EIA Branch in the DHUD, Department of Environment and Natural Resources, Maunsell consultants, the Royal

Automobile Association (RAA), Commercial Transport Advisory Committee, Southern and Hills Local Government Association, Mitcham City Council, Economic Development Authority, Minister for Transport's office, and the Value Study Team which facilitated the study and workshops. There were also opportunities for written submissions by community groups such as the Mount Lofty Ranges Conservation Group, and from councils and local members of parliament.

Project Update (January 1996) and Further Investigations

Given the extensive time lag between environmental approval and the provision of funding, an update and reassessment of the project was prepared by Maunsell consultants for internal use within the Department. The project update, which was completed on 29 January 1996 involved consultation with both the EIA Branch of the DHUD and the Environment Protection Agency. Encapsulated within the 16 page update were further environmental investigations undertaken since the formal EIA process, and reviews of changes to the project scope adopted after the original environmental approval. Despite these changes, it was considered that the project had not been substantially modified, and that the initial endorsement for the project remained valid. For instance:

'...the form of the project proposal has not changed in any substantive way, other than in response to recommendations arising from the environmental assessment process, since it received endorsement from that process in 1987. This is in spite of the lengthy period that has since elapsed and the design effort that has been expended in developing the project detail. The previous endorsement given to the project can accordingly be seen to remain valid.

The possible inclusion of a cycle track in the project scope is capable of being assessed in its own right if it is shown to be worth pursuing. Relatively minor changes being contemplated to features within the previous extent of the scheme are of such a magnitude and nature that they would not invalidate the existing project endorsement if adopted, and are likewise amenable to assessment individually. It is intended that changes of any environmental significance could be referred to DHUD for their comment, if required, as and when their inclusion in the project is acknowledged to be otherwise appropriate'.

This conclusion of no substantive change to the proposal was supported by the Public Works Committee in their 1996 inquiry into the project (see below). The actions taken and changes reported in the project update included:

- acquisition of two properties to facilitate the retention of the tollhouse;
- addition of a detention dam to mitigate flood and stormwater runoff;
- inclusion of a pilot tunnel to improve information for design and construction tenders for the final tunnel (including an access track). Conditions of the contract were strict and included an EMP to avoid impacting on surrounding properties and natural features;
- possible addition of a bicycle track. This was not addressed in the previous EIS due to a lack of demand; and the
- possible use of Hillcrest Avenue as a temporary traffic diversion. Because this resulted in temporary changes to accessibility for Crafers West residents, consultation was undertaken with councils.

The pilot tunnel began in February 1996, and advance works at Devil's Elbow commenced in May of the same year (PWC November 1996). There was however, some hostility at a public meeting in February 1996 about the proposed temporary diversion road near Crafers (Hillcrest Avenue) with concerns of safety, access and loss of avenue for walking and riding. Thus a new proposal was put forward by the Department to maintain the road as local access, and to create a temporary two-lane road parallel to Hillcrest Avenue for diversion. At another meeting in April, 'The residents [were] satisfied' that their concerns had been addressed.

According to Maunsell consultants, the design process had sought to mitigate many of the environmental impacts identified in the EIA process including the reduction of earthworks and material surplus for disposal (and hence reduce the visual impacts), noise mitigation measures, and mitigation of impacts on traffic flow during construction. Further environmental investigations which supported these measures were extensive and included:

- **noise impact studies** in 1990 and 1991 in consultation with the Noise Abatement Branch of the DEP which resulted in noise barriers including mounding of up to 15-16 metres above the

road level near the tunnel (studies were required by *recommendation R6* in the Assessment Report);

- **survey of Aboriginal archaeology** in 1995 in consultation with Aboriginal people (required by *recommendation R8* of the Assessment Report);
- **Phytophera (fungal disease) surveys** which involved soil monitoring in 1990 and the detection of the disease in two isolated locations (*recommendation R12* of the Assessment Report);
- **hydrology and flooding studies** to further assess flooding in Glen Osmond Creek downstream of the project, resulting in the inclusion of a detention dam. It had been found that the road would marginally increase flood flows in the stream unless these actions were adopted (PWC November 1996);
- **geotechnical investigations;**
- **disposal of surplus materials** identified as a problem in the EIA documents. Surplus reduced significantly, and an investigation of possible disposal sites was undertaken in 1990 (no conclusions reached due to absence of construction time table and associated difficulties of negotiating with third parties). Options for productive use of the material (eg as fill) was also investigated;
- **study of gully winds** which were considered a traffic hazard in the environmental documents, with implications for the tunnel ventilation systems. It was found that winds were not abnormal to those allowed for in design ;
- **investigation of open-cut excavation in lieu of the tunnel** which was initiated because of criticisms that tunnel was extravagant and cost risk. It was found that the risks would be minor when compared to the '*severely adverse environmental consequences and traffic management implications of the open-cut scheme*' (p12);
- **development of Environmental Management Plan** to outline commitments made in the EIS documents and the recommendations of the Assessment Report (see later section).

As a result of resident concerns about existing traffic noises, the Department also undertook further baseline noise measures in three local areas (Urrbrae, Mount Osmond and Crafers West) (PWC November 1996). Another survey of phytophera was also undertaken when the project was recommenced, which found the fungi at several locations along the corridor (PWC November 1996).

Further community consultation was also undertaken involving briefings to councils and other stakeholders (parliamentary representatives, landowners and residents, government departments, and emergency services among others); media advertisement of the project status; local information meetings; and the publication of several information brochures. This approach was primarily for the provision of information as opposed to higher levels of two way consultation and interaction. This is not surprising given the extensive activities of consultation already undertaken in the EIA process. It is interesting to note, however, that one member of the Department stated that if the public had been given the same opportunities to comment today as they had in the 1980s, the project probably would not have gone ahead (Interview 63 1999).

Risk Management Report (April 1996)

A consultant was also employed to conduct a risk assessment workshop and prepare a report for the A-C project. Several risk areas were identified including design, programme and technical areas. Risk areas relevant to the environmental investigations related to *community risks* (eg adverse reaction, not adequately considered, damage to property), *environmental risks* (eg excessive construction noise, siltation, pollutants, inadequate management plan, groundwater impacts), *political risks* (eg change of government agenda, lobby group action), and *organisational risks* (eg personnel and resources inadequate). Priority risks which involved a high likelihood of occurrence and high impact on the project included:

- community feeling misinformed
- excessive construction impacts;
- inadequate management plan;
- construction requirements conflicting with environmental requirements;
- wetland damage; and
- erosion-sediment control.

However, non-compliance with environmental standards was considered to be of low likelihood.

Despite the extensive effort devoted to the environmental investigations, there was still some uncertainty about the outcomes of the project, particularly in adequately managing some environmental impacts. The value of this risk assessment process was transparency in that areas of uncertainty and probability of impact were identified which could then be communicated to those involved in the construction stage of the project. Simply through education and monitoring, this process may assist in alleviating the probability of some risks. Action plans arising from this process included distribution of community information, meetings, environmental management plans, auditing of construction, monitoring, surveys, and continued liaison with environmental agencies.

Government Assessment: DHUD Review of Project Update

The Department of Transport's project update was reviewed by the EIA Branch (DHUD) in April 1996 following the Department's request for information about further requirements under the Development Act (replaced the Planning Act) and the Commonwealth EIA process. Earlier in September 1995 at a meeting between DHUD and Maunsells, the possibility of a formal EIS amendment process had been raised, which caused some concern to the Department of Transport given that construction was scheduled to commence in 1996. However, a formal amendment was not required, despite some concerns indicated by the EIA Branch on 9 April 1996 relating to the:

- amount of time lapsed since the EIS process;
- lack of recent community involvement;
- possibility of project alterations;
- recent changes in relevant standards; and
- accumulation of additional data in response to Assessment Report recommendations.

The EIA Branch noted: *'whilst there is no sunset clause on the legislation, both the Commonwealth EPA and ourselves expressed concern that it has been 8 years since the EIS process was completed'*. However, given that only minor changes to the proposal were evident, the EIA Branch recommended that no further formal EIA be required. One week later, the CEO of DHUD informed the Department of Transport that given the lack of major alternatives to the project, and that EMIPs were being planned in addition to a community information programme:

'it is considered that there is no need for further formal environmental assessment of this project pursuant to the Development Act and the Environment Protection (Impact of Proposals) Act provided recommendations in the Project Update are adhered to and that:

- the investigations of noise impacts are extended to include Hillcrest Avenue; and
- concerns of the residents of Hillcrest Avenue are taken into account when determining the possible use of the route as a diversion road for highway traffic during construction..'

Commonwealth funding was also reconfirmed in August 1996 (PWC November 1996). The costs for the project was then estimated at \$138million (1996 prices).

Environmental Management Plan

A relatively new and innovative practice in the Department was the preparation of Environmental Management Plans (EMPs) for the construction of infrastructure projects (see also Chapter Seven in Volume I of this thesis). In this case, the EMP was prepared by Maunsells in September 1996. The aim of the EMP was to:

- produce a framework for control of construction and operational impacts including practicable and achievable performance requirements and a system of monitoring;
- provide evidence of compliance with legislation, policies, guidelines, and requirements to local, state and Commonwealth authorities; and
- provide the community with assurance of management of the project in an environmentally acceptable way.

The plan, which was essentially a checklist of actions for consideration by all parties involved during design, construction, operation and monitoring, was guided by principles of ecological sustainable development defined by the Council of Australian Governments. Included within was an outline of the Environmental Management System such as management strategy, management structure and responsibilities, legislative requirements, standards and codes of practice, monitoring requirements, corrective action and training among other things; followed by the specific EMPS for *inter alia*:

- erosion and stormwater management;
- flora and fauna;
- air quality (health risks, loss of amenity);
- noise;
- archaeology and heritage;
- mitigation of wastes from construction;
- bushfire prevention; and
- storage and handling of dangerous substances.

A total of 114 commitments in these areas was made in the EMP. Because Maunsell consultants were employed to prepare the EMP there was consistency in, and transfer of, knowledge between the EIA and the design and construction process. Monitoring of the project was to undertaken by the contractors and Contracts Manager during construction, by the Transport Department during operation, by the Office of the EPA, and by complaints from the public. Inspections and monitoring requirements were proposed in several areas including noise, air quality, water quality, sediment control, discharge from retention ponds and so on. Auditing of contractor performance was also planned to be conducted by the Contracts Manager bi-annually, although the results of environmental audits were not available for assessment.

Environmental Management Implementation Plan

Another relatively new but standard practice in the Department required construction contractors to outline how they will meet the EMP requirements in an Environmental Management Implementation Plan (EMIP), and this implementation is monitored by the contracts manager in the Department. Preparation of these EMIPs, requires that contractors have personnel with appropriate knowledge, which ideally, will transfer to others during construction. Construction contractors were also required to submit monthly status reports on the implementation of the EMIP. It is assumed that EMIPs were prepared, although they were not sighted in the project files.

Government Assessment: Public Works Committee

Despite not being subject to Section 7 of the Planning Act, and despite approval by government and endorsement of the environmental approval by the DHUD, the Department was also required to submit their proposal to the Parliamentary Public Works Committee which requires that all proposals over a certain amount be subject to Committee assessment, and that where proposals have been modified the Committee be notified at any stage of the project's life. The Committee was required among other things to inquire into the proposed work's purpose and necessity, the revenue produced, the public value of the work, the costs involved, the net effect on the Consolidated Account or the statutory authority's funds, and the efficiency and progress of construction (PWC November 1996).

In making their assessment of the proposal, a site inspection of the site was undertaken by the Committee on 30 October 1996, and a hearing was conducted in the same month. The PWC reported on the additional studies undertaken by the Department and was satisfied that the proposal would not impact on Aboriginal archaeological sites. It was concluded that the proposal would deliver '*significant benefits to road users and to the economy..*' (PWC November 1996: p10) with reduced accidents, travel times, and vehicle costs, and that the proposal was '*soundly based*' (PWC November 1996: p12). The proposal was considered to be the only option to solving the safety issues of the existing road, and the Committee officially recommended to Parliament that the proposal proceed. This recommendation was adopted. How much influence the PWC actually had in practice is questionable given that preconstruction works and the pilot tunnel had already commenced in early 1996, which seems to indicate that the project would proceed. Thus, the PWC's recommendation to proceed may have simply been a official reinstatement of approval, with no possibility to seriously consider the no-go option at such a late stage.

Construction

Construction of the highway was undertaken by contract and managed by a project manager from Transport SA. The process involved nearly three years of intensive work, 200 employees, and the movement of 2 million cubic metres of soil and rock (Stacy 1999). Land acquisition was completed in 1997, and breakthrough of the tunnel was achieved in September 1998. In accordance with the Department's vegetation removal policy, a request was also made on 18 June 1997 to the Chief Executive of the Department to remove 1,873 (of 3,500) trees between the Mount Osmond Interchange and Measday Hill. This was endorsed by one of the Department's internal environmental officers on 23 May 1997 subject to conditions including a requirement to save local seed for revegetation, and for a 3 year weed programme. The final route required clearance of 11 hectares of vegetation (4 hectares considered degraded).

Information about the project continued to be made available to the community with the establishment of a briefing centre near the tunnel site, talks by the project manager to local groups, and the display of a project model throughout the community. Unlike the traditional view of public employees as anonymous, the project manager for this project remained a very visible and public person throughout the construction process. A regular information brochure about the project, including photographs of construction, sedimentation protection, and extensive revegetation efforts, was also circulated with contacts for the project manager and local Members of Parliament. Transparency in this regard was excellent, and continued to maintain public relations which was important given the large scale of the project, and disruption to traffic.

Isolated attempts to highlight concerns about the project (eg increased traffic and development) continued to be made by local groups such as the Mount Lofty Ranges Conservation Association, as indicated in a media article '*Conservationists fears highway robbery*', but this did not appear to have any effect. The decision had been made, funding provided and construction begun, and there was little chance of changing the Department's approach to improving safety. General complaints were also evident from community members about the impacts of construction on lifestyle, safety, and the impacts on Brownhill Creek. One individual complained in May 1998 that the creek was being polluted by runoff due to inadequacy of the stormwater retention dam, bulldozing of fill material into the creek, and runoff from earth walls, with potential for landslides. They believed that the damage was serious and intended to lobby for improvement. It was also reported in the media that during a drive up the road one would '*gasp at the extent of carnage being inflicted on the environment.*' This is not surprising given that a large-scale project which cuts through the ranges will invariably inflict significant visual and other disturbance during construction. Safety was also an issue for the community when boulders fell on to the road being used by motorists which attracted some media attention.

Transport SA responded where it could by restricting traffic restricted to two lanes to avoid further problems from loose boulders; and by providing double window glazing and temporary accommodation in one case. Transport SA also responded to the complaints about Brownhill Creek by modifying the stormwater detention dam to maximise capacity, although this was constrained by significant space, vegetation and topographical constraints; by planting vegetation to prevent runoff from earth walls, and to ensure that minimum sediment entered the creek; and by employing an engineering geologist to ensure that no landslides occurred.

Revegetation of the area was also extensive with over 60,000 trees planted using local seeds collected prior to construction. The Department also aimed to remove 100,000 exotic olive trees which have threatened native species, and implement a large-scale weed control strategy. This revegetation programme was developed by Hassell's consultants in consultation with Transport SA. In addition, 400 rare native grasses (3 species) were saved from the edge of the existing road and replanted near the Union Quarry, and koalas found in the area were relocated to the Cleland Conservation Park, in addition to the establishment of 'koala ladders' over any barriers.

Problems of sedimentation were managed in two ways involving the reduction of erodable areas which were affected by stormwater runoff, and by trapping sediment before it discharged into watercourses. This included straw bale traps, silt fences, vegetation and mulches for soil protection, rock lining of batter slopes, erosion control blankets, detention basins, and structures for water transportation. Regular monitoring of these measures by both Transport SA and the EPA, including water quality in local creeks. During operation, an extensive storm water drainage system was also incorporated including eight dams for the control of siltation and pollution, redirection of runoff, and the large flood detention dam for reducing peak flows noted previously.

Thus, despite the project having significant impacts on both the biophysical and socio-economic environments, the efforts put into rectifying and compensating for those impacts was extensive. However, the effects of the improved access and the associated potential to increase and spread development into the hills has yet to be seen.

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the legislative requirements? This criterion was graded at A. The key phases of the EIA process as outlined in legislation were followed. There appear to be no problems with compliance with the Commonwealth legislation.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at C. Although the EIS was lengthy relative to the ETSA EISs and addressed several environmental issues, the level of compliance to the guidelines was 68% of requirements were met which is satisfactory but with some areas of concern. Performance in this regard was substantially lower than the ETSA Draft EISs. Factors such as corridor width, safety barriers, cut and fill and landscaping were only addressed for the preferred option, despite being required to incorporate these factors into all options. Other omissions included for instance, information on:

- noise attenuation mounds;
- extreme climatic events (flooding, snow);
- baseline air quality;
- existing degree of community cohesion and interaction;
- existing local access;
- property and land values;
- impacts on unique or scientific geological sites;
- pollution or depletion of groundwater ;
- changes in ecological characteristics due to alterations in sediments or water budgets;
- stability, regeneration capacity, and changes to heritage value of vegetation;
- effects on land ownership;
- effects of acquisition;
- effects on employment'
- costs of relocation/compensation;
- impacts on tourism;
- impacts on short term amenity;
- responsibilities for management and operation of impacts;
- detailed programme of monitoring;
- monitoring requirements for soil, water quality, effectiveness of landscaping, and air quality.

Criterion 1.3: Did the proponent comply with the final decision? This criterion was unable to be graded due to a lack of full information and more detailed and current maps. Nonetheless, the general pattern and location of the corridor under construction relative to the corridor C3 approved in the DEP's Assessment Report appears to be consistent. Moreover, as demonstrated in the project update, many of the DEP's recommendations were complied with.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at B-A. There was strong evidence that the Department went beyond compliance. First,, although not subject to the Planning Act, the Department agreed to work closely with the DEP and to fulfil the State EIA process (although they were required to comply with Commonwealth legislation). Second, community consultation was conducted much earlier than the EIA process required and utilised a wide range of techniques, which in turn involved a substantial level of effort and resources from the Department and its consultants. Third, further studies such as risk assessments, value management studies, EMPs, EMIPs and auditing were undertaken which also went far beyond compliance to the EIA process, and were probably undertaken to ensure compliance with other environmental regulations such as the Environment Protection Act 1993. Finally, transparency of information continued into the construction phase with public information brochures and exhibitions, which was also not required as part of the EIA process, or other environmental regulations. Thus, the Department was demonstrating considerable initiative in process.

EIS QUALITY

Proposal & Policy Framework

2.1.1 Was the rationale of the project clearly outlined? This criterion was graded at C. The problems of road safety, traffic congestion, and inconsistencies with national design standards were clearly described and provided justification for an improvement to existing conditions. Information in the A-C proposal compared to the substantiations for ETSA projects was relatively detailed and incorporated information on the status of the road (ie gateway to Adelaide, part of interstate links), inconsistencies with national road standards, existing traffic volumes, origin-destination statistics, traffic speeds, accident rates, and capacity for urban growth in the hills area, all of which pointed to the need for an upgrade. When considering the no-go option (which also illustrates rationale) it was argued by the Highways Department in the EIS that:

‘...it must be concluded that some form of upgrading of Mount Barker Road is necessary. Failure to provide improvement of the highway link...will not only lead to a serious deterioration in service quality and safety, which are already below desirable standards, but will also put increasing and unacceptable pressure on [other entry point roads to Adelaide] (Highways February 1987: p2-5).

Although detail was greater than the ETSA proposals, there were some concerns in public and government submissions about an upgrade versus total road construction (as was also apparent for ETSA’s Hummocks proposal), other alternatives, and the inadequacy of information used to justify the new road. For instance, one conservation agency was critical about information on the accident rate which was used to justify the proposal, and which was noted as *‘inappropriate and misleading’*. The DEP was also concerned about the information on accident rates, in addition to lack of information about how significant accident reductions would be as a result of the road (ie would the increased speeds from safer conditions and increased traffic volumes counteract the new highway’s safety benefits?). Given that accidents were a significant component of the rationale, this appears to be a substantial omission. The agency and a Commonwealth government organisation were also critical about the proposal rationale and the failures to consider alternative ways of reducing the accident rates (eg signage, policing minor works). It was noted by the conservation agency that *‘...the justification for a major and costly solution seems quite unsubstantiated’*. Other points of concern relating to proposal need included the dismissive treatment of public transport, and assumptions about traffic projections.

Nonetheless, performance was considered just satisfactory overall given that the rationale was accepted by the DEP which stated: *‘while recognising that uncertainties are associated with the proposal, this assessment accepts the substantiation for providing a new highway between Adelaide and Crafers..’* (DEP November 1987: p14). It was also noted that *‘this assessment considers that the Commissioner of Highways has made a responsible choice in the selection of a new highway option as the preferred course of action’* [as opposed to upgrade] (DEP November 1987: p13).

2.1.2 Was there a detailed description of the project? This criterion was graded at B. Given that the EIA process was instigated at a stage where the proposal was still conceptual (ie broad corridors), detail on design aspects were limited, which was also the case for ETSA projects. However, as noted for the other case studies, this is acknowledged as a better approach due to the greater flexibility in decision-making. Despite this, the detail on the proposal was good with consideration of most aspects required in Table (7) (81%), although it should be noted that this table allows for only a broad illustration of performance without reference to adequacy of detail. Information was good in terms of location and shape of the corridors, length and road width, major structural features such as bridges, lanes and tunnel, and reference to technical factors such as gradient, speed, lighting, safety barriers and ramps, siltation traps and so on. Several figures were used to illustrate aspects of the preferred option including landscaping proposals, gradient, and locations of major cuts and fills. Wastes in the form of excess earthworks and its movement were also referred to, but this lacked detail in terms of sites for disposal or reuse of the material. Other inadequacies included:

- lack of information about the status of the existing road and whether or not this would be ‘dismantled’, and if so, where the wastes would go;
- location of haul roads for transport of earthworks;

- lack of information on the ventilation design and exit points for air pollution which was a major point for instance, in the Sydney Harbour Tunnel project (although this was larger in scale);
- number and timing of truck movements to remove waste or bring in materials; and
- level of ease for construction under different weather conditions (eg wet weather conditions).

Table 7: Project Description performance in the Draft EIS for the Adelaide-Crafers Highway Proposal (shaded represents the requirement was addressed)

PROPOSAL	ADDRESSED?
Size	
Land use requirements	
Layout	
Design	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety (construction/operation)	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
<i>Score:</i>	<i>81%</i>

2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision making process for the proposal? This criterion was graded at C. Performance was better than for the ETSA case studies, with 9 of 13 possible requirements addressed (69%) (see Table 8). Details on the planning principles within the Development Plan, particularly for the Hills Face Zone was also good, as was detail on noise standards. However, more detail was need about the particular requirements of heritage agreements, the Parks and Wilderness legislation. Omissions included clean air regulation standards, animal and plant control Act (eg pest plants and diseases), land management legislation, Aboriginal heritage legislation, European heritage (built environment legislation), health standards (eg air pollution), and explosive policies, although some of these may not be directly relevant to the proposal.

Decription of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at A. As illustrated in Table (9), 100% of the environmental categories defined for this research were addressed in the EIS.

Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment? This criterion was graded at D. The description of the environment was described within just over 22 [A3] pages, which as noted previously, constituted 26% of the Draft EIS. As illustrated in Table (9), performance was as follows:

- level of detail was just satisfactory with 60% of categories being sufficiently addressed;
- reference to future environments was addressed in 15% of cases which is unsatisfactory;
- use of figures and tables were evident in 70% of cases which is satisfactory;
- reference to significance of the environment was addressed in 50% of cases which is unsatisfactory;
- reference to environmental sensitivity or capacity was made in 40% of cases which is unsatisfactory.

Table 8: Policy and legislative framework: Degree addressed for the Adelaide-Crafers Highway Proposal

	LEGISLATIVE OR POLICY FRAMEWORK	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	
	Development Act requirements 1993	n/a
	Development Plan	
General Environmental Protection	Environmental Protection Act 1993 (eg wastes, pollution policies)	n/a
	Coast Protection Act 1972	n/a
	Clean Air Regulations 1969	
	Environment Protection (Impact of Proposals) Act 1974 (Commonwealth (Cth))	
Flora, Fauna, Parks	Fauna (eg Endangered Species Protection Act 1992)	n/a
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks and Wilderness (National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	
	Animal and Plant Control Act 1986	
Land & Water	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a
	Soil (eg Soil Conservation and Land Care Act 1989)	n/a
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	n/a
	Land Acquisitions Act 1969	
	Fire (eg Supplementary Development Plan fire policies 1987; Country Fires Act 1989)	
Heritage	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth))	
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Agreement Act 1984; Heritage Act 1993; State Heritage Register)	
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	n/a
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements; DEP guidelines)	
	Explosives policies/legislation (eg Explosives Act 1930; SAA Explosives Code AS2187 1979)	
	Score	69% 9/13

Key points to noted are as follows:

- **geology and landforms** lacked information on any possible sites of scientific interest (as required by the guidelines);
- description of **topography** was good and related to rainfall, drainage and vegetation, and constraints on construction (although map provided was captioned 'landform' whereas it was in fact simply 'topography');
- a lack of existing data on **air quality** was used to justify a lack of detail, and no original studies were undertaken as a base line which is of some concern;
- information on the catchments and **water quality** affected by the proposal was lacking, and existing data on an adjacent catchment was used as a controlled comparison (ie dense native vegetation and minimal development). However, this approach, while indicating that water quality would be lesser in the catchments affected due to greater levels of development and vegetation clearance, did not provide any useful indicators of water quality (eg sedimentation rates) for a baseline which could be used in monitoring, and original surveys should have been conducted. Although not representative of overall trends over long periods of time, the new data could be used as a more accurate comparison with the adjacent control catchment at a particular point in time (or comparison with annual means);
- there was a lack of reference to extreme **climatic events** (as required by guidelines) and factors such as sun glare which may impact on road location;
- detail on **soils** was not extensive, but it was noted that soil erosion was not a major problem in the area;

Table 9: Performance in the description of the environment
in the Draft EIS for the Adelaide-Crafrers Highway Proposal

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality					
Hydrology					
Soils (and erosion)					
Native vegetation					
Pest plants-diseases					
Fauna					
Fire risk zones					
Residential land use					
Demographics (population, economy, etc)					
Conservation parks, etc landuse					
Business, industry, mining, etc landuse					
Agriculture landuse					
Recreation-tourism landuse					
Infrastructure-easements landuse					*
Non-Aboriginal Heritage			**		
Aboriginal Heritage		?			
Landscape Quality					
Existing Noise levels					
Score (of 20)	20 100%	12 60%	3 15%	10 50%	8 40%

Key: 1=environmental category addressed?; 2=adequate level of detail?; 3=brief description of future environment?; 4=reference to significance of environment?; 5=reference to sensitivity/ capacity of environment to absorb impacts?

- information on **pest plants** such as blackberries was not extensive, but considered sufficiently detailed to indicate that it was a problem area. There was also reference to the fungal disease *Phytophthora cinnamomi* which affects a number of species' capacity to survive harsh conditions (eg drought), and although there was a lack of hotspot zones identified due to a lack of original surveys, fieldwork was proposed to be conducted later in the year. Moreover, the potential for its existence was noted along all corridors, and management measures were proposed in the event it was found in soils along the route in the impacts assessments section. For this reason, the detail was considered sufficient to inform decision-making;
- description of **vegetation** species and conservation status was good, with reference to vulnerability of some species, and with excellent use of figures to illustration locations within the study area;
- detail on **fauna** was quite good with a list of species and their conservation status. However, better reference could have been made in the text to the status of particular species in the description of habitat characteristics and associated fauna. There was also a lack of information on existing rates of road kill and degree of territorialism of species which may have implications for dissection of the landscape (although this was briefly addressed in the impact assessment section, the existing status should have noted in the environmental description, and also related to the conservation status of any territorial species);
- **demographic** detail was quite good and illustrated that the region in question was an area of population. However, the relevance of information such as age structures or ethnicity was not clear given that it was not addressed in detail in the impact assessment section;
- **tourism** lacked detail on existing status (ie significance, frequency of visitation) which could be used as a baseline to measure potential increase as a result of improved access;
- although the location of **houses** which may have been acquired or suffer reduced amenity were marked in the impact assessment section, there was insufficient details on the locations of individual houses for each corridor in the description of the environment which made it difficult to gain an idea of overall performance for each corridor and within the context of the entire study area;
- **agriculture** was very brief, and needed information about access routes from the existing freeway, and potential for changed access which could be used as basis for assessment (ie any economic or nuisance impacts);

- no sites of **Aboriginal heritage** noted, and this is accepted given the difficulties of conducting detailed fieldwork for the entire study area (as for ETSA projects, further Aboriginal surveys were required of the final approved route);
- there was inadequate information on **local businesses** in terms of earning capacity, reliance on existing road for commerce, or level of uniqueness (ie importance of service to region, existence of similar services nearby) (although latter was noted in impact assessments section).

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. Insufficient information.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at C-B. Like ETSA's approach in the Cherry Gardens proposal, a broad study area was defined for the A-C proposal in circular form, although the scale of the maps was incorrect. When corrected, the study area was approximately 6.5 km by 7.5km, but it was noted that this boundary was flexible and '*...not immutable, because many issues have more widespread influence*' (Highways February 1987: p2). This is particularly the case for the secondary effects of increased development or tourism associated with improved access. Based on an analysis of the environment within this area, the broad study area was then reduced to a 'minimum impact area' which was just over 2km at its widest point, and just over 4km in length. This criterion was considered between 'just satisfactory' and 'satisfactory' given that the area went beyond the corridor boundaries; given that the boundaries were flexible; and given that they were selected based on environmental and social factors (ie minimum impact area); yet given that the boundary size was smaller than the area prescribed for the Cherry Gardens proposal despite having more complex issues; given that environmental descriptions and assessments did not go beyond these boundaries (eg improved access), and given some concerns from one government agency about the study boundary. It was noted in this latter case that: '*...the selection of the Study Area...reflects the proponent's emphasis on construction impacts, not accessibility impacts; the study area is meaningless when it comes to an examination of demographic trend*' (comment noted in Highways July 1987: p7: The Supplement).

Impact Assessment

Criterion 2.3.1: Have all the major direct impacts been addressed in the identification and description of impacts? As illustrated in Table (10), of 21 impact categories defined for this research,, 90% were addressed which is excellent (and a grade of B-A).

Criterion 2.3.2 Does the description of impacts have an adequate level of detail? Performance for this criterion was a C-B grade (refer Volume I and Appendix 19). Key points to note include:

- **climate:** there was no description of possible changes to microclimates at the preferred corridor location, and even if this was not significant it should at least should have been mentioned;
- **fauna:** although road kill was noted, there was no reference to the potential for increased short term rate of road kills as fauna adjust to changed conditions;
- **air quality:** although it was noted that vehicle emissions would improve (ie uniform speeds, less gear changes, and less engine labouring), there was no reference to the potential for increased emissions as a result of potentially greater levels of traffic due to easier access. It was noted that traffic volumes would remain stable, but this contradicts statements which indicate the potential for population increases (and hence traffic) as a result of improved access. It was also difficult to predict impacts in the absence of any hard monitoring and baseline data to determine whether or not the existing air quality was poor or good in the first place. Although there was good reference to air quality impacts at the tunnels and associated ventilation system, there was no reference to the potential impacts of concentrated discharge of pollutants from the ventilation system, or to the possible failure of the ventilation system with buildup of pollutants within the tunnel. Even if not considered significant, this should at least have been stated for a more informed decision about tunnel safety and air quality in surrounds;

Table 10: Performance in the identification of impacts in the Draft EIS for the Adelaide-Crafers Highway Proposal

Impact Category	Addressed?
Landforms	
Impacts on drivers (eg wind, sunglare, safety)	
Property acquisition	
Residential Amenity (quality of life)	
Land Values	
Production Values	
Hydrology (water quality)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Noise	
Air quality (dust, vehicle emissions)	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access (impacts on local traffic & dislocation))	
'Wide Road Syndrome' (increased access-dev.)	
Score: (/21)	90% 19/21

- **water quality:** assessment of minor impact relies on the assumption that there will be little change from the existing situation. However, although it was noted that runoff comprises only a small proportion in the whole catchment, it is difficult to assess the actual significance of this runoff due to a lack of monitoring and baseline data;
- **property acquisition and compensation:** while a good summary of numbers affected, there was no reference to *how* this will impact on individuals and their quality of life. What are the effects of acquisition and relocation? This can have dramatic impacts on some individuals. There was also no linkages to factors such as age, ethnicity, place of employment or length of residence which might influence the degree of impact, despite being referred to in the demographic analysis within the environmental description section. With the possible breakup of small local communities, with the presence of older people or long term residents, or less financially placed individuals, financial compensation may not be sufficient, and compensation may also require a more humanistic approach (eg counselling or social support, real estate guidance to meet needs). Such an approach can be coordinated with other government departments. This lack of reference to these factors in the impact assessment makes the data in the description of the environment (eg age, ethnicity) appear superfluous. There was also a lack of reference to the criteria for awarding compensation which are quite detailed in the legislation (eg as referred to by ETSA in their description of compensation);
- **residential amenity;** generally a good summary of trends, but a failure to define 'amenity', and one was required to wade through the detail to find the occasional reference to such things as noise or visual impact. Although a minor point, amenity should have been defined upfront;
- **local access:** there did not appear to be much detail on the impacts of changed local access to traffic, or dislocation of communities;

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts, and the interrelationships between factors? Overall performance was generally unsatisfactory. On the positive side, there was reference to indirect factors such as the

wide road syndrome and improved access, to secondary effects of traffic disruption (drivers decreasing speeds to observe construction works), and to the indirect effects on the bushfire hazard which may be exacerbated due to an increase in housing development within bushfire risk areas. However, weaknesses included:

- no reference to relationships between wet weather conditions, vegetation removal, potential erosion and run-off, and associated sedimentation of water bodies during construction;
- lack of reference to indirect and secondary effects of increased tourism;
- lack of acknowledgment of potential for increased traffic volumes as a result of the road; and
- lack of reference to potential cumulative impacts if both roads (ie the existing road and new road) remain in operation (eg air quality, water quality).
- inadequate detail on the wide road syndrome).

In this latter case, there was good reference to the fact that the road may act as a catalyst to both speed up developments in the hills area as a result of improved access, and also as a pressure to relax existing development restrictions, but, the indirect impacts of both of these factors were not explicitly stated, but simply implied, and the responsibility of this increased potential for development was simply transferred to other agencies responsible for zonings and development control. Statements should have been made about what this increased development would mean for the environment, whether or not it would be significant (see next evaluation category), and if so, whether this should influence the final decision, rather than being discarded as an area beyond the Department's responsibility. While there was an extensive focus on current and project population and dwelling projections in the description of the environment, the same level of detail was not extended to the impact assessment section, and there was no attempt to systematically identify or predict how the road might affect projected populations. Rather, a simple statement of 'minimal effect' was noted, but without a firm basis for support. An estimate should have been possible given that it was noted in the EIS that increased trends of hills living was partly attributable to previous access improvements beyond Crafers (reduced travelling time). The identification of population impacts associated with better access could have incorporated into a questionnaire as part of phase one of the consultation programme. The improved accessibility arising from the road was an area of some public and government controversy and it was noted that the significance of improved access was underestimated and inadequately addressed.

Despite mention of a proposed cable car development in the same area, there was also no assessment of the cumulative impacts resulting from two major developments in a sensitive area. Rather the discussion focused on how each development would impact on the other.

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? As demonstrated by Table (11):

- magnitude of impact was addressed in 80% of cases which is very good performance;
- direction of impact was addressed in 65% of cases which is satisfactory;
- geographical extent was addressed in 50% of cases which is just satisfactory;
- duration and frequency of impact was addressed in 20% of cases which is unsatisfactory;
- reversibility of impact was not even addressed;
- scope for mitigation was addressed in 65% of impacts which is satisfactory; and
- probability of impact was addressed in 50% of cases;
- public concerns were not referred to for any of the impact categories;
- thresholds or standards were referred to in 16% of cases which is unsatisfactory; and
- certainty of information was noted in only 5% of cases which is unsatisfactory.

While duration and frequency of impact can often be implied for many of the impacts associated with a road development, this should be explicitly stated for all impact categories. It should also be noted that magnitude may have been noted only for components of a particular impact category. For instance, the magnitude of fauna impact only referred to the impacts of noise on fauna which was considered to be minor. However, magnitude was not noted for other fauna impacts such as road kills, and the impacts of bisection of bushland and loss of habitat, which made an informed assessment difficult. Factors such as the significance of impacts on land values was not even addressed. It should also be noted that mitigation potential for noise referred only to construction effects, rather than to the attenuation of long term traffic noise.

Table 11: Performance in the evaluation of impact significance in the EIS for the Adelaide-Crafers Highway Proposal

	Spatial-Temporal				Alleviation-Probability			Thresholds-Certainty		
	1	2	3	4	5	6	7	8	9	10*
Landforms										
Driver safety										
Property Acquisition										
Land Values										
Production Values										
Hydrology										
Non Aborig. Heritage										
Aboriginal Heritage										
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts										
Air quality										
Noise										
Fire										
Wastes										
Pest Plants, etc										
Soil Erosion										
Access									n/a?	
Wide Road Syndr.									n/a?	
Score: (of 20)	16 80%	13 65	10 50%	4 20%	0	13 65%	10 50%	0	3/18 16%	1 5%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision making process for or against these alternatives been summarised and justified? The consideration of alternatives for this proposal was extensive and related to broader level alternatives such as upgrade to the existing road, improved bus and rail services, and the no go option, to more specific corridor alternatives which involved a four stage selection process. The broader alternatives were justified against because they failed to meet the safety objectives of the proposal, and due to increased travel times of public transport (unlikely to be attractive to commuters), and need for more extensive network of services which was unlikely given the wide dispersion of development and low patronage. The advantages of the upgrade were noted including lower project costs and impact on the environment, but was also justified against because it failed to adequately meet safety objectives, in addition to greater levels of property acquisition required and reduction in residential amenity.

In the first stage of the selection process for corridor alternatives, 30 'technically-feasible' route options for the road were considered prior to the formal EIA process. Not all possible corridor alternatives were assessed given that the range was 'virtually limitless' (Highways February 1987: p2). Prior to the Draft EIS, each of the 30 routes were broadly evaluated using engineering, environmental and cost factors for selection, and the number of feasible options was reduced to eight. The criteria used for this selection process were not specified in detail, nor was a summary given of each options performance. This is not a major concern however, given the difficulties of presenting a comparative assessment of 30 alternatives, and given that analyses were simultaneously being undertaken of the biophysical and social environment within a broad study area in order to measure the merits of each corridor option.

The next stage of the selection process involved analysis of the 8 alternatives within the study area. Selection was based on the nature of the existing environment, and it was found that a section of this area would have less effects associated with construction when compared to other areas. This was termed the 'Minimum Impact Area' based on social, land-use, ecological and visual factors. The selection process was simply a rejection of all those options which fell outside the minimum impact area. The justification for some of the routes outside this impact area were relatively clear.

The third stage of the process involved a more detailed assessment of the remaining four options which were encapsulated within the Minimum Impact Area (Corridors A, B, C1 and C2) (refer to Appendix 19 for alternative corridors evaluated in the EIS). While public opinion was considered to be an input into this selection process, the final option adopted did not reflect public attitude, and the main factor for selection was economic.

Overall, a broad range of alternatives was considered, and the decision making process and rationale for selection-rejection was clear and transparent, with the exception of the 30 original alternative corridors. The process leading to the selection of the final four options assessed appeared to be a logical one, based on environmental, technical and economic factors. There were no major concerns for this criterion, except that the upgrade option was not assessed further in the Draft EIS and compared equally with the four alternative corridor options. The overall grade was thus B-A (0.88) which is a very good performance.

Criterion 2.4.2: Have alternatives been compared and ranked in order of preference for each environmental impact? Although alternatives were compared in the impact assessment, and a summary statement was made for each, there was no attempt to systematically compare and rank the alternatives in a Table within the impact assessment section (hence a grade of D). However, a comparison was made prior to the impact assessment which used a numerical weighting process of environmental, economic and social issues (refer to EIA Process Summary). The result was as follows:

Corridor	Total Score
C1	78.8%
C2	78.1%
A	64.1%
B	58.9%

Unlike ETSA's Cherry Gardens proposal which avoided rating the importance of particular issues, this was undertaken for the A-C proposal. The approach highlighted the subjectivity of the process (ie focused on economics) and there are some major concerns about the methodology used. Given that the ranking process was based on a complex numerical weighting system which was not outlined, the ranking of results was difficult to accept or understand. The approach used was also the subject of significant government controversy (see later section).

Mitigation and Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? As demonstrated in Table (12), mitigation measures were addressed for 68% of cases). Although there were omissions, it should be noted that some impact areas were virtually impossible to mitigate (air quality from leaded petrol emissions; wide road syndrome). Mitigation measures were not provided for:

- residential amenity (although there was no reference to mitigation in this section, impact would be alleviated by mitigation of visual impact, and by improving local access);
- land value impacts (given that this was not even addressed as an impact);
- reduced production values for local businesses;
- Aboriginal heritage (although not considered to be a major issue in this area);
- fauna; and
- wide road syndrome in addition to impacts of greater tourism (however, this is virtually impossible to mitigate unless the road is not upgraded at all).

Most of the mitigation measures related to avoid (eg for residential amenity), confine (eg water runoff), screen (eg visual), transfer (eg wastes), and compensate (for property acquisition). Air quality mitigation referred to tunnel air quality, and to dust emissions rather than vehicular emissions which is a larger issue than road construction and outside of the project scope (ie use of

unleaded petrol) and not ambient air quality impacts. It should also be noted that there was no reference to active mitigation of noise by noise barriers, or even reference to whether or not these should be used or not.

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? Relative to the ETSA projects, the level of detail on mitigation measures was good, with a clear outline of steps to be taken for impacts such as spread of pest plants and diseases, protection of ecologically-significant bog from siltation, maintaining fire access and escape routes, and landscaping measures and maintenance. However, the level of detail in terms of effectiveness, costs and certainty of outcome was very poor. In particular:

- level of difficulty was addressed in 5% of cases;
- level of expense was not addressed;
- effectiveness of mitigation was explicitly addressed in 5% of cases; and
- certainty of outcome was not even referred to.

Table 12: Performance in mitigation and monitoring in the EIS for the Adelaide-Crafers project

	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Property Acquisition		Co							
Driver safety		A, S							
Land Values									
Productivity Values									
Hydrology		C							spill
Aboriginal Heritage									
Non-Aboriginal Heritage		T, R, E							
Vegetation		R							
Fauna									
Recreation-Tourism									
Visual Impacts		A, S, D, R							
Air quality		D, C							
Noise		A							
Fire		D							
Waste		T							
Pest Plants & Diseases		A, C							
Soil Erosion		A, C, D							
Access (local traffic)		Co, D							
Wide Road Syndrome									
Score (of 19)	13 68%	-	1 5%	0	1 5%	0	5 26%	0	1 5%

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Criteria 2.6.1 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? As demonstrated in Table (12), proposals to monitor was noted in 26% or cases which is unsatisfactory, but better performance than the ETSA case studies. It was also noted in the EIS that for construction, 'many of the matters requiring monitoring will be covered by the maintenance responsibilities outlined in the previous section' (Highways February 1987: p5-25). However, specific details about which impacts would be monitored was lacking. There was also no detail on monitoring (eg frequency, duration, responsibility), and contingency plans were only noted for oil spills and the impacts on water quality.

Communication and Presentation

Methods and Information Sources (Criteria 2.7.1; 2.7.2)

A grade of B was given for information sources, and a grade of D was given for field work and methods descriptions. In the former case, a large range of information sources were used and referenced, including for instance Australian Bureau of Statistics data, Development Plans, and heritage register data. In the latter case, original fieldwork was conducted in a variety of areas including a vegetation survey, road traffic survey (ie traffic volumes, origins, destinations), landscape inventory and assessment, and an archaeological and ethnographic assessment. Original field work should have also been conducted for fauna, air quality and water quality (eg sedimentation for comparison with control catchment - refer earlier point). Moreover, methods were generally not outlined for the vegetation survey, the road traffic survey, and archaeological survey. The method for subjectively weighting and ranking the corridors was also not explicitly detailed which is a major concern and the subject of substantial government criticism as already noted. Brief methodologies were however, outlined for the roadside interviews conducted (eg sample sizes, time frames, for calculations of noise predictions (ie used computer program STAMINA developed by US Federal Highway Administration which was also verified by field measurements, for assessment of visual absorptive capacity and landscape character, to method of calculation for journey to work statistics).

Criteria 2.7.3: *Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference?* With the exception of a concluding chapter, all relevant sections were included in the Draft EIS including a small section on monitoring which was not apparent for the ETSA EISs. The technical summary was also good and summarised the main points. This criterion was graded at B.

Criterion 2.7.4: *Arrangement: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index?* Generally the contents was logically arranged, and the layout was very similar to the ETSA EISs, which is probably partly attributable to the DEP's influence and guidelines. However, there was some inconsistencies between issues set out in the description of the environment, and issues addressed in the impact assessment section. For instance, residential amenity was referred to in the impact assessment section, yet there was no corresponding description of existing amenity in the description of the environment. There was detailed analysis of demographic details such as age, ethnicity, etc, but no corresponding link in the impact assessment section. Moreover, some mitigation measures were addressed in areas other than the relevant impact category (eg hydrology and mitigation of sedimentation was addressed in various parts including the impact assessment of vegetation) which made it difficult to get an overall picture of measures proposed in each area. Sometimes the information appeared fragmented.

Criterion 2.7.5: *Readability: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced?* This criterion was graded at C. Some of the visual aids such as figures illustrating routes, and the main issues and landscape management measures were excellent. Although they may not have been an exact representation, they provided easy access to the main points. Most of the information was generally comprehensible, except for the information on cost-benefit analysis and numerical weightings for the comparison of alternatives. The cost-benefit section was flawed by jargon and description difficult to understand by the layperson, which was also a criticism made in the government submissions. There was also no glossary as was the case in all ETSA EISs, which may have made understanding difficult for some people. Other problems included:

- poor referencing in parts where it was sometimes difficult to know where information was sourced from (ie original fieldwork or existing data);
- incorrect scales on some maps which made comparison difficult;
- inadequate definition of numbers presented in tables which made interpretation of impacts very difficult (eg changes in noise levels - did this refer to decibel levels of something else? Other tables was unclear whether it was % or number);
- excess detail in parts fragmented by several tables. It was easy to become lost in detail such as the demographic analysis without knowing exactly how the information fit into the overall assessment;

- ambiguities in some tables. For instance, the table on population, dwelling and employment projects had two figures for Mt Barker incorporating with and without growth inducement - but figures on each alternative were identical up until 1996, but substantially higher for predictions for year 2006, and no explanation for this sudden growth - 'growth inducement' was not defined which made assessment difficult;

A summary table of mitigation measures would also have been useful, given that it was difficult to wade through detail to immediately identify proposed measures.

Criterion 2.7.6: Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This is uncertain given that the DEP in their assessment considered both the EIS and supporting specialist working papers. Whether or not these were available to the public is unknown, and thus this criterion was unable to be graded.

Criterion 2.7.7 Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C, although appropriateness of length was difficult to judge because the EIS was longer than the ETSA EISs, but seemed to have a similar level of detail, despite having greater number of impacts. It was also difficult to tell given that the presentation was in [A3] format. It is likely that the Draft EIS was too short given the lack of detail for the impact assessment and evaluation of significance. It was also noted in one submission that: 'This is a large and complex project with major ramifications. The EIS seems surprisingly brief and succinct in the circumstances'. Thus, this criterion was graded at 64% which is just satisfactory.

Criterion 2.7.8: Was there an appropriate emphasis on the information in the EIS with a lack of bias in presentation? This criterion was graded at C. Aside from the lack of detail in some areas, most of the issues appeared to have an appropriate emphasis, although there did appear to be an overemphasis on demographic details (most of which were not used in the impact assessment section), and visual and landscape management. In contrast, major issues such as the impacts on fauna or water quality received much less emphasis. There was also a lack of emphasis on potential impacts on land values, which was a key consideration for the ETSA projects. However, as for Cherry Gardens proposal, the fact that some of the information presented did *not* reflect the conclusions made by the proponent, is indicative of fair and non-biased treatment of the issues (ie no manipulation of data to be consistent with conclusions).

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS (if the information itself lacked bias)? This criterion received a grade of D. Conclusions on individual impacts did not appear biased (see above). However, as for the Cherry Gardens proposal, the overall conclusions about the best option appeared biased in that they did not reflect the information and conclusions of the impact assessment, and were based on a highly subjective weighting scheme.

Level of Controversy about EIS Quality

Public controversy was quite high about the quality of the EIS. In addition to public concerns already noted, there was concern about the method of cost-benefit analysis, criticisms of the heritage survey, concerns about the rationale for the proposal, criticism of the overemphasis on economic factors and criticism of the subjective nature of the information. Some of the specific comments are summarised in Table (13). It should however, be noted that individuals supporting the proposal and the preferred option were supportive of the EIS quality. It was stated:

'The study team should, on balance, be commended for the complete and detailed nature of the Draft E.I.S. It's conclusions are considered to be reasonable in light of the considerable constraints existing to make a choice a difficult matter.' [originally supported A, but after draft EIS, supported C1 as best option, with alternative alignment]

'We are very impressed by the extremely detailed draft EIS document and the proposed steps to minimise the various environmental impacts'

Government controversy was also high. In the DEP's assessment there was no reference to the adequacy of information for the majority of issues, and it is thus assumed that these were

considered adequate. However, the DEP supported criticisms made in other submissions about the method of analysis for the corridors (refer Table 13), and noted that '*...the approach of attempting to quantify non-economic costs and values does not assist in the assessment of this project*' (DEP November 1987: p67). Other points made included uncertainties about future of road once it meets capacity; uncertainties about fate of existing road, criticisms of inadequacy of information on noise impacts and impacts of household relocation, and concerns about the effects of improved access. For instance: '*While it is accepted that the project at this stage of planning is conceptual, the general nature of the proponent's discussion tends to underemphasise the significance of the possible effects of a major improvement in road access..*' (DEP November 1987: p15)

Comments from other government organisations, most of which are summarised in the EIS Supplement (Highways July 1987), related to the lack of attention paid to the upgrade option, lack of equal treatment in assessment of options, inadequate treatment of all issues and safeguard measures, severe criticisms about the cost-benefit analysis method used and lack of detailed explanation, lack of regard to public concerns and interrelationships between impacts, criticisms of assumptions made for heritage impacts (eg relocation of tollhouse), inadequacy of details on employment, inadequate treatment of social adjustments required for those affected, inadequate information on vegetation (ie length and area of each vegetation association affected), inadequate details on weed infestation problem and on air quality, inadequate treatment of visual impact. Again, there was one submission which praised the EIS: '*I must say that the document is well presented an easy to follow description of the project,*' but this was insufficient to raise the overall grade.

OPENNESS AND COMMITMENT TO CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded B-A. Given the extensive effort made by the Department, public consultation appeared genuine, and as noted in the EIA Process Summary, consultation occurred both during and outside of the formal EIA process. Two phases of consultation were undertaken, the first of which was an informal undertaking (ie not required by legislation) and thus went beyond compliance. As noted in the Draft EIS:

'it was decided to give the public a chance to contribute to the Study before any conclusions had been reached. The project was made public through the media, specially convened meetings and public exhibitions, and by direct written contact with owners of potentially affected properties. The purpose of these presentations was to inform the public as to the options, to reveal gaps in the Study Team's available information, and to gauge public opinion on the various options as a further input into the process of selecting the preferred route' (Highways February 1987: p4).

As summarised previously, extensive effort went into public exhibitions, 2,698 roadside interviews to determine traffic origins and destinations, public meetings, and the qualitative study involving workshops. In fact, it was claimed that up until November 1986, 20 public meetings had been attended by consultants. Public meetings were also called in the 1990s when the project was reactivated. In addition, there were ongoing briefings to local councils about the project status, and personal provision of information by interview or by phone.

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at C. The Highways Department was certainly open to assessing alternatives, with 30 options initially assessed. Several options were also posed by public, but not all alternatives were considered feasible for further assessment, although one was adopted in the Draft EIS as an Alternative Alignment and was eventually adopted as the preferred option, thus signalling openness.

Table 13: Public and Government comments on the quality of the Draft EIS for the Adelaide-Crafers highway proposal

Public Comments

'Council is concerned both that the E.I.A. process should be a substantial one, effective in assisting good decision making, and that it should be seen so to be. It is therefore concerned that the processes purporting to assist in making decisions among alternatives should be as technically robust as possible, and adequately explained and justified in an E.I.S.. If this last is not achieved, the process will fall into public disrepute.

These remarks particularly apply to the section of the E.I.S. dealing with cost benefit assessment. [while the difficulties of the process were acknowledged in the EIS]In Section 3.2.2. its attempts at option comparison are so seriously flawed as to be worse than valueless. This section obscures rather than illuminates the difficulty of what is being attempted. ...

No explanation is given for the values given to travel time savings.....The values allocated to each of the criteria used in the aggregation process are not disclosed, and were arrived at by consultation only among the Study Team and Highways Department. A wider range of individuals might well have given different values...'

'The proposal is based on dubious predictions, misconceptions and a poor ordering of priorities. The Highways Department is responding to the acknowledged road accident problem with a premature and extravagant proposal reminiscent of the freeway mania of the 1960's and 70's.'

'The proponent's arguments...firstly disguise the impact of the road and secondly aim to discourage further consideration of regional planning effects that would result. ...This statement [on regional development capacity by the proponent] is blatantly devoid of any factual information'.

Government Comments

The impression that the Draft EIS gave to the DAHE was that costs were the 'overriding consideration in the choice of the preferred option'.

'...it is unlikely that the Commonwealth government will make a decision on funding for the project without evidence of a detailed comparison of all options, including the upgrading of the present road.

In addition, a number of issues associated with the proponent's preferred route have not been given sufficient consideration. A clear statement of safeguards and measure to be taken to educe adverse impacts would be useful, covering for example, arrangements for compensating property owners, and commitments to noise attenuation measures, rehabilitation of construction sites, etc.

'Evaluation is a necessary component of EIS methodology, but it is meaningless where the technique is not in common practice and it is not spelled out...the exercise does not really confirm the corridor rankings, does not reassure or educate the reader, and does not yield any information useful for project design or management. Its separation from community inputs is also a problem.'

'...using suspect cost/benefit calculations, the corridors are evaluated by the employment of a point-scoring system which is based on an acknowledged weighting in favour of economic components, the EIS arrives predictably at the cheapest solution. Furthermore, the values allocated to the criteria used in the aggregation process are not shown and there would be substantial differences of opinion within the community regarding these values. This is an unsatisfactory if not unsavoury, procedure and should be dispensed with except when the costs being examined are indisputable. If a decision is to be made because of large cost differences, then it should be clearly stated and recognised, not hidden behind artificially contrived calculations. Economic and non-economic values should be clearly separated so that decision-makers can make a clear assessment of alternatives.'

To summarise, the 'economic and financial' CBA in the EIS seems well done, as far as it goes. However, it should vary the cost parameters to allow road-related scenarios associated with environmental amenity, and its limited scope (both costs and benefits) renders the \$50m differential dubious indeed.'

The 'approach in the Draft EIS fails to adequately address the EIS Guidelines established by DEP which explicitly requires the EIS to identify "...the potential for affecting future population size by improving access to particular areas"' The reasons in the Draft EIS for not considering impacts of improved accessibility on future populations were considered to be 'superficial and inadequate' (State government coordinated submission).

When the process was reactivated in the 1990s, the Department was also open to considering alternatives such as:

- using an open-cut scheme which was suggested by individuals who were critical of the extravagance of a tunnel. This was later rejected by the Department due to greater environmental impacts (project update 1996);
- providing for bicycles, which was adopted;
- the upgrade option which was reassessed in response to public comments, but the same justification was used as to its unsuitability; and
- the inclusion of a rail line along the tunnel, but this was not adopted by the Department given the expense, the need for high patronage, and the need for a flatter grade.

Openness was also questionable with regard to the community's preferred option (Corridor A), and although this option was equally assessed with the other alternatives, the Department was clearly not willing to adopt this alternative due to prohibitive costs.

Timing of EIA

Criteria 3.2.1-3.2.4: Was EIA integrated at the project conception stage, planning of alternatives stage, design stage, and construction stage?

- **Integration with Conception (phase i):** This criterion was graded at E. Safety considerations and traffic volumes appeared to be the main factors considered at the conception phase of the project rather than environmental factors. Although depending on how one defines the 'environment' safety factors can be considered an element of the social environment, and thus environmental factors played a role. However, biophysical issues did not appear to be a factor until the assessment of eight corridors selected from 30 alternatives, which in turn were assessed using technical-feasibility criteria. Given the problems of defining the 'environment' this was a difficult criterion to assess. Nonetheless, it is considered that if the environment was the main factor (particularly biophysical) then other options such as the public transport would have been considered more seriously using a combined effort with other government departments, and initiation of longer-term education programmes to change road usage, and also reduce vehicle emissions. The road proposal was a much easier and short term solution which required little coordination, and would involve more immediate results. Indirect and longer-term methods may be considered in the 'too hard' basket.
- **Integration Planning (Alternatives; phase ii):** This criterion was graded at B. Like the ETSA case studies, integration at the alternatives planning phase was very good. There did not appear to be two separate processes (ie EIA alternatives; other planning alternatives), and environmental factors were a major consideration in the selection of the alternatives, although not in the selection of a preferred alternative (refer later criteria). However, there was some fragmentation of process with the preparation of several background reports to the planning study including for instance, a traffic survey, economic evaluations, demographic and socio-economic studies, review of metropolitan planning issues, road user survey, strategic analysis for 8 corridor options, detailed corridor appraisal, landscape and visual evaluation, property acquisition estimates, and assessments of water quality. Thus, the EIS was only one document of many in a broader planning study. In addition, an economic evaluation appeared to outweigh the environmental evaluation, and integration was thus weakened. Nonetheless, the fact that both environmental and economic evaluations were considered together, and given that the information from many of the background reports appear to have been incorporated into the Draft EIS, indicates that integration was high.
- **Integration Design (phase iii):** This criterion was graded at B-A. Unlike the ETSA projects, preliminary design work was carried out in conjunction with the broader planning process, and preliminary design of route C1 was presented in the Draft EIS, including such things as landscaping, gradients, and interchanges. Moreover, in the 1996 Project Update, Maunsells consultants noted that they had integrated many of the mitigation measures directly into the design of the proposal including reduction of earthworks, noise mitigation, detention dams, and other sedimentation measures (refer earlier EIA Process Summary). Integration with design appeared to be more explicit and transparent than for the ETSA projects, but design features for the ETSA projects were not as complex (eg less earthworks and potential runoff, wastes, etc). Given the funding delays, the Department had time to improve their knowledge, and this showed in the design of the project and mitigation measures adopted during construction. Some limitations were evident in that it was sometimes difficult to identify in design documents, actual and direct references to the 'environment'.

- **Integration Construction (phase iv):** This criterion was graded at D-C. If construction of the proposal had commenced in the late 1980s as planned, then it is highly likely that integration with construction would have been weaker than the planning and design phases due to problems with information transfer. However, with process improvements and the establishment of EMPS and EMIPs, transfer of information to contractors for construction was more efficient, effective and transparent. As noted in the earlier EIA process summary, many mitigation measures were implemented, and also recorded in the public information brochures. However, how effective they were in practice is another question, and auditing reports which would demonstrate this were confidential, although one audit report indicated no areas of major concern. Nonetheless, there were serious problems of wet weather, runoff and sedimentation which attracted media attention. Yet rather than indicating problems with integrating the EIA information with construction, this may be related more to the severe physical constraints on mitigation (ie steep topography, limited mitigation space), and to the nature of the proposal itself which would inevitably result in such large impacts. Thus, even a highly effective EIA process, design of mitigation measures and transfer of information, would not serve to alleviate all impacts, which is indicative of the significant nature of this project. Longer-term implications for the environment at this stage are unknown. It is also difficult to accurately assess this criterion without information on the degree of contractor compliance to the conditions set out in the EMP.

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at B. Public consultation was initiated early and prior to the formal requirement for consultation at the Draft EIS release stage. The project guidelines also appeared to be open to council comment, but it is unclear how much input the public had at this early stage. Timing was similar to the Cherry Gardens and Hummocks . Consultation could have been undertaken earlier about the initial need for an upgrade and at the guidelines stage with provision for comment. Otherwise, a very good performance.

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at B. The use of techniques for consultation was wide-ranging, many of which have already been noted. As demonstrated in Table (14), of 11 options, 8 were utilised, and included the use of structured workshops which is towards the higher end of the participation scale. However, other approaches such as a questionnaire (which would have useful to identify the wide road syndrome problem), and higher level review boards were not utilised. It is however, acknowledged that these latter are expensive and time-consuming approaches.

Criterion 3.3.2: Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)? This criterion was graded at C. Transparency of information did not appear to be a major problem, although there were some concerns. On the positive side:

- copies of EIS were circulated to key stakeholders and made available for purchase when the project was reactivated
- although Corridor A was not feasible at least it was openly presented to the public and the government for independent assessment which signals transparency;
- consultation brochures outlining options were clear, succinct and transparent, although lacking in detail;
- the Draft EIS was generally transparent about the main issues and conclusions about key impacts;
- the Supplement was also transparent with a summary of all submissions;
- regular information brochures and briefings were organised when the project was reactivated;

Table 14: Public participation techniques adopted by ETSA for the Adelaide-Crafers Highway Proposal (based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

Approach	Public Power	Participation Techniques	Adopted?
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA's case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

However, several internal reports do not appear to have been released to the public (eg Value Management Study, EMPs). Monitoring and auditing reports were confidential, and the methodology for weighting of corridors and cost-benefit analysis was not detailed and thus lacked transparency in the decision making process. Moreover, although there were several criticisms about the cost-benefit analysis methodology, this was not acknowledged in the proponent's response (ie the Supplement to the EIS) which also indicates a lack of transparency.

Criterion 3.3.3 Were resources and timetables for EIA flexible? There was insufficient information to grade flexibility of resources and time tables. However, timetables were critical to the project in terms of both funding and construction. It was noted in January 1987 that the Highways Department was working to a rigorous timetable, and a target date was critical in getting funding. Time table for EIA process was noted to be very rigorous by the DEP, and the Draft EIS was produced over a very short time period. Nonetheless, flexibility was evident in that funding was delayed for several years, yet design and other environmental studies continued. This delay was probably beneficial in allowing the studies and workshops to proceed, some of which were relatively new to the Department and did not appear to be standard practice in the late 1980s (eg Value Management Study, Risk Assessment Workshop, EMPs). If funding was given earlier, time to conduct further environmental studies required by the DEP's Assessment would have been a luxury and restricted in meeting the construction time table.

Level of Controversy about Openness

Unlike the controversy for the EIS quality, both public and government controversy appeared low for the consultation process and the openness of the proponent. One submission noted that: *'The Team should...be commended for its publicity at an early stage,* and later during the construction process when community voiced concerns about the impacts of construction, the sympathetic attitudes of staff within Transport SA and the contractors was noted. However, a media report during the EIA process noted a widespread feeling in the community that the consultation process was *"little more than a joke"* This is not surprising given that the community's overwhelming preference was not considered by the Department, but that is assessed in the next section. There did not appear to be any government controversy.

PROPONENT RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1 Was the 'best' alternative adopted by the proponent of those presented in later stages of the EIA process (ie did it differ from that presented in the Draft EIS if one was presented)? Criterion 3.5.3: Was the 'best' alternative adopted in the PER based on the available information and adequate rationale given for the selection of the preferred option? This criterion was graded at D. What constitutes the 'best' option is a subjective judgement and depends on the relative importance of particular issues. Clearly, financial factors were the most important consideration for the Department, particularly given a \$50 million difference between options. Nonetheless, the objective of the EIA process is to ensure that environmental factors are considered in the decision-making process, and a well recognised principle of this process is that the environment receive at least equal weighting to economic and technical factors. To this extent, the 'best' alternative which was based on a complex weighting system (see previous criterion) was not adopted in the Draft EIS. The best option on environmental and social grounds appears to have been Corridor A given that:

- public comment supported this option;
- many of the public were opposed to the Department's preferred option;
- the Commonwealth DAHE noted in comments on preprint Draft EIS that Corridor A appeared to perform better in many respects, even though the Department identified Corridor C1 as the preferred option;
- given that the DEP recognised that Corridor A was the best option, although an amended preferred option (C3) was second best;
- an evaluation of information in the public brochure for stage one consultation indicated that Corridor A was the best option on social and environmental grounds (refer earlier Table); and
- the evaluation of corridors undertaken by Maunsells also indicated that Corridor A performed best in most social and environmental factors, but it was not recommended because these factors were given much less importance relative to economic factors (where the preferred option performed the best).

As demonstrated in Table (15) which was compiled from information in the Draft EIS, the best option on social and environmental grounds was Corridor A, although preferences for either corridor were not always clear in the EIS. Corridor A performed best in the more significant effects such as vegetation removal, property acquisition, impacts on fauna, and residential amenity. Even the Highways Department stated that Corridor A had the least environmental and social impacts and the best engineering features (Highways February 1987: p3-3), whilst the preferred option had moderate impacts, but least costs.

However, if option A had not been presented for assessment, then the Highway Departments' preferred option may have been the 'best' option. While the department was being adamant about costs in a similar manner to ETSA for the Cherry Gardens proposal, in this case, costs were an important factor, and the difference of \$50 million was substantial as also recognised by the DEP. One may wonder why this option was assessed in the first place if it was not economically feasible, thus giving the community and government the sense that the Department was being given a viable alternative for consideration. The Commonwealth DAHE was also concerned about the 'unconvincing' justification for the C1 corridor, and lack of detail on corridor evaluation and Cost-Benefit analysis.

Table 15: Assessment of corridor performance based on information in the Draft EIS for the Adelaide-Crafers Highway proposal

Impact Category	A	B	C1	C2
Landforms and geology (for tunnel construction)				
Property acquisition				
Residential Amenity (quality of life)				
Land Values				
Production Values (impacts on businesses, mining)				
Hydrology (water quality)		no preference		
Non-Aboriginal Heritage		unclear		
Aboriginal Heritage		no preference		
Vegetation				
Fauna				
Tourism-Recreation		no preference		
Visual Impacts (& landscape quality)				
Noise		unclear, but amenity better in A		
Air quality (dust, vehicle emissions)				
Fire		no preference		
Wastes		unclear		
Pest Plants & Diseases		no apparent preference		
Soil Erosion		no preference		
Access (impacts on local traffic & dislocation))		unclear		
'Wide Road Syndrome' (increased access-dev.)		no preference		

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at D. At critical stages in the EIA process, the environment was not an equal part of the decision equation. The process leading to the selection of the initial 30 options was based on technical-feasibility, but a broad engineering and environmental analysis was conducted to reduce these options. Factors in selection and rejection process for the 8 options comprised:

- traffic and civil engineering
- connection to the metropolitan area
- potential for social dislocation
- effects on residential amenity
- effects on property access
- effects on non-residential land use
- European and Aboriginal heritage
- wind and noise effects
- property acquisition and costs
- effects on recreation areas.

Thus, environment played a role at this early stage, with the exception of factors such as vegetation impacts which were significant. Factors in selection of the final four options were environmentally-based and premised upon a 'minimum impact area'. Environmental factors were also important in that a more intrusive option which was more consistent with national design standards could have been proposed. It was noted in the Draft EIS that: *'The terrain which the new highway must negotiate is such that horizontal alignment consistent with a design speed of 100km/h cannot be achieved without very significant environmental intrusion, or a number of extensive and costly structures, or both (While costs were important in this decision, so to were environmental factors, and the approach was not adopted. Environmental factors were also a consideration in a proposal for a temporary diversion road with substandard design to follow an earlier highway route, both to reduce construction costs, and the impact on vegetation. The route involved sharp curves and a speed of 40km/h, and it was noted that: 'Although this standard is substantially less that is available on adjacent sections, it is the same or better than will have been experienced in other sections of the road in the trip uphill from Adelaide...It is considered that a suitable signing effort will obviate the need for substantial temporary earthworks and possible intrusion into Cleland Conservation Park which would otherwise be involved'. Thus environmental factors were considered here also.*

However, factors in the election of preferred option, which was the critical decision, were economically-based and technically based, and it was noted by an employee within the Department that the road was essentially an engineering, geotechnical solution to the safety problem rather than the environmentally-best option (Interview 50 1999). In the evaluation of corridor options immediately prior to the Draft EIS the highest weighting of importance was given to the economic factors, which far outweighed environmental factors. For instance:

- economic and financial was given 60% weighting;
- engineering was given 14% weighting;
- social factors were given 15% weighting; and
- environmental factors were given 11% weighting).

It is no wonder then that the preferred option was Corridor C1, despite better environmental and social performance in Corridor A, and despite the fact that the preferred option required extensive removal of vegetation. Several attempts were made in the Draft EIS to justify the economic emphasis:

‘In the present economic climate, the cost issue must be a prime consideration. ...the choice between an apparently preferred option and alternatives up to \$50 million (ie one-third) cheaper in capital cost necessitated the most careful scrutiny of the relative merits of social/environmental issues by comparison with purely financial ones before the selection of an option could be made. The importance of economic factors became greater in the light of this considerable cost difference between the options.’ (Highways February 1987: p3-3).

With such a wide range of projects costs between the options, it is apparent that the weight assigned to economic factors in the comparison process is of paramount concern so as to avoid, on the one hand, the selection of the cheapest scheme irrespective of other considerations, and on the other, the disregard of cost in the quest for the ideal physical solution. This is especially so in view of the recognition, before the formal evaluation, that the most expensive option...has many attractive features and has gained wide support from respondents to the public consultation’.

It is interesting that the Highways Department made virtually identical conclusions as those made by ETSA for the Cherry Gardens proposal. In this case, ETSA found no overwhelming reason to adopt the more expensive option, despite public opinion to the contrary. Similarly, in the A-C proposal it was argued in the EIS

The final stage of selection from the four options had to face the difference of \$50 million between the cheapest and dearest options. No sufficient justification could be found for adopting the more popular, but most expensive, corridor in favour of the route now proposed’ (Highways February 1987: pvii).

While the Department ran the risk of criticism for emphasising economic factors, the presentation of all alternatives allows the evaluators to judge for themselves, which gives an opportunity for the EIA process to work, and for this the Department should be commended. Moreover, the emphasis on environmental factors in the initial selection and assessment of eight corridor alternatives was also good, as was the adoption of Corridor C3 in response to public concerns which entailed greater economic costs (\$3million).

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)? This criterion was graded at B. Generally, there was no need to substantially modify the process, except in response to requests for further information or responses to criticisms in public submissions. Many of the responses can be seen in Table (16) which summarises concerns in submissions and the Department’s response in the Supplement. This Supplement was quite superficial and short, and failed to adequately address some of the concerns. The response was commonly approached with a rejustification for the original proposal or methodology. Government criticisms about cost-benefit methodology were not even noted in the Supplement text, nor responded to, although

some minor detail was added about the method in response to requests for further information. The Department was also not responsive to requests by the DAHE for details on evaluation methods and values assigned in the process.

The value of the Supplement is questionable given that it was predominantly a reiteration and rejustification of the proponent's original stance in the Draft EIS, and thus appears to be a waste of time. However, the public concerns did result in a change to the proposal, which adds weight to the Supplement, and this is reviewed in the next criterion. Overall, most changes to the process were minor and generally involved the provision of further information in response to public or government requests, the consideration and rejection of suggested alternatives, and further examination of noise impacts in some areas. Changes to the consultation process were also minor, and when a mistake was found in the Supplement about passenger trips, additional information was circulated to all respondents who commented on the issue.

However, changes after the EIA process when the proposal was reactivated were more significance with further surveys in response to the DEP recommendations including noise impact studies, Aboriginal archaeology, hydrology, waste disposal, and the adoption of an Environmental Management Plan. This latter proposed in the 1990s was probably the result of improved knowledge about environmental management compared to when the proposal was assessed in the mid 1980s. In response to public concerns about pollution of a local creek and slope instability, the Department was also responsive in their management approach (ie employment of an engineering geologist) (refer EIA Process Summary section).

Criterion 4.2.2 Was the project changed on environmental grounds where appropriate? This criterion was graded at D-C. On the positive side, the proposal was changed where a need was identified with the adoption of the Corridor C3 Alignment which avoided the impacts on Cleland Conservation Park. A minor realignment was also made to avoid problems of slope instability in a small section of the road. When the proposal was reactivated in the 1990s, the project was changed to maintain the tollhouse in its original location, and to incorporate a large detention dam to mitigate flood and stormwater runoff. Minor changes were also made in response to public concerns about pollution of a local creek (ie modification of detention dam), and in response to public concerns about the use of a local road for temporary diversion (ie resulted in new proposal of temporary road for diversion to maintain local access).

Table 16: Issues raised in the Supplement and the Highway Department's response for the Adelaide-Crafrers Highway proposal

Issue	Actions
Alternative Alignment	<p>Action: adoption of the Alternative Alignment in the Draft EIS (Corridor C3) in response to major public concerns about intrusion into the Cleland Conservation Park</p> <p>Proposed Action: adoption of diversion route along existing local road for 2.5 years during construction, in addition to new section</p> <p>Comments: new section of diversion road impacts on vegetation, but overall impact on park reduced. Corridor C3 involved increased cost of \$3million</p>
Union Quarry and slope instability	<p>Action: realignment f curve and minor relocation of section of road to avoid exposure to potentially major costs for stabilisation of slopes and maintenance</p> <p>Proposed Action:</p> <p>Comments: this arose from further geotechnical analyses by the Department, and was not a result of public or government comment</p>
Access Control	<p>Action: None</p> <p>Proposed Action: Property acquisition (as suggested in Draft EIS), and removal of access to Union Quarry, acquisition and rehabilitation of the site.</p> <p>Comments: Further consideration given to issue of direct property access since Draft EIS which found that direct local access from the road would be hazardous. Confirms need for acquisition of properties who will lack direct access.</p>
Accident Statistics	<p>Action: Acknowledgment that figures may be misleading because figures show only discrete locations, and not incidence spread over road sections. Acknowledged disproportionate number of accidents between Glen Osmond and Eagle Road. Provided more recent statistics confirming unacceptable accident risks.</p> <p>Proposed Action:</p> <p>Comments: legitimacy of comparison process questioned and notes that Glen Osmond intersection is the problem area, which thus questions the need for the project.</p>

Reliability of Traffic Projections	<p>Action: Noted that data was from DEP, except for 20 year planning period for Department. Notes that forecasting is speculative anyway. Confirmed need for project.</p> <p>Proposed Action: None</p> <p>Comments: Population forecasts for modelling future traffic levels questioned.</p>
Validity of Employment Projections	<p>Action: Further detail provided. Consultation with State government regarding employment growth.</p> <p>Proposed Action: None</p> <p>Comments: query for more detail.</p>
Travel Modelling Methods	<p>Action: Noted that modelling is by its nature a speculative task. Noted that predictions were reasonable. Provided further information on methodology and summarised assumptions.</p> <p>Proposed Action: None</p> <p>Comments: method questioned, and approach criticised as speculative.</p>
Value of Fragmentary Time Savings	<p>Action: Justified their approach. Conducted further analysis by excluding benefits of time savings, which reduced the net value of all corridors, but the relative differences between corridors remained the same. Notes that assumption that time savings has no value is unrealistic.</p> <p>Proposed Action: None</p> <p>Comments: criticism that although 2/3 of highway benefits are from time-savings, individual benefits would be small or insignificant and benefits have been inflated.</p>
Energy Efficiency	<p>Action: Agreement that energy efficiencies could be attained via public transport and use of rail, but disagreed that promotion of public transport was universally appropriate strategy.</p> <p>Proposed Action: None</p> <p>Comments: criticism about encouraging use of private vehicles rather than comprehensive energy conservation policy and encouragement of public transport and freight movement by rail.</p>
Public Transport and Rail Freight	<p>Action: Commissioner agreed that may provide alternative to increased road capacity, but noted not realistically viable (as argued in Draft EIS).</p> <p>Proposed Action:</p> <p>Comments: several submissions emphasised that improved public transport with use incentives could reduce traffic levels, and may reduce need for the project.</p>
Funding Limitations	<p>Action: Information provided</p> <p>Proposed Action: None</p> <p>Comments: request for information on effects of limited or staged funding. <i>Other issues also raised, but not considered significant enough to include in this Table.</i></p>
No-Go	<p>Action: Disagreed and justified why this was not an option.</p> <p>Proposed Action: None</p> <p>Comments: some submissions suggested alternative ways of improvement to solve safety problems (eg better policing, slower speeds).</p>
Upgrade	<p>Action: Reiterated option and argument presented in initial consultation brochure and Draft EIS. Noted that it would involve almost identical impacts to preferred proposal along one section, whilst other sections would also involve severe impacts.</p> <p>Proposed Action: None</p> <p>Comments: support for this scheme in submissions.</p>
Cost-Benefit Analysis	<p>Action: Provision of further information, but only brief, and did not acknowledge the criticisms made of the process.</p> <p>Proposed Action: None</p> <p>Comments: more information sought</p>
Corridor A	<p>Action: 'Sentiment' noted, but justified against due to costs. Noted that supporters of Corridor A place less importance on economic factors.</p> <p>Proposed Action: None</p> <p>Comments: support for corridor in submissions.</p>
Tunnel near Crafers	<p>Action: Noted that this had already been considered, but no suitable and economically-realistic locations found.</p> <p>Proposed Action: None</p> <p>Comments: request for consideration of another tunnel near Crafers</p>
Couplet strategy	<p>Action: Noted already considered, and justified against. Noted recommendation not of sufficient length for satisfactory gradient, and if long enough would provide substandard conditions for traffic.</p> <p>Proposed Action: None</p> <p>Comments: recommendation for couplet to avoid area between Devils Elbow and Eagle on the Hill</p>
Parallel Facility	<p>Action: Justified against.</p> <p>Proposed Action: None</p> <p>Comments: recommended limited upgrading of present highway in addition to additional route to spread loads.</p>
Old Bullock Track	<p>Action: Justified against route</p> <p>Proposed Action: None</p> <p>Comments: why is track not suitable as route.</p>

Weighting to Economic Factors	<p>Action: Acknowledged that weighting is matter of perception, and noted that those supporting the alternative corridor did not weight economics as highly. Noted that higher weighting was given in original selection of corridors and difference between four corridors was not substantial.</p> <p>Proposed Action: none</p> <p>Comments: submissions questioned high weighting.</p>
Development Pressures in Adelaide Hills	<p>Action: Noted phenomenon as common to highway proposals. Provided information on ways of resolving conflict (ie no road improvements, or control development in Hills). Department supported stronger controls on development. Rejustified road.</p> <p>Proposed Action: None</p> <p>Comments: major emphasis in public submissions regarding road as catalyst for increasing development due to easier access.</p>
Regional Transport Strategy	<p>Action: Strategy supported by the Department, and recommended that it be part of existing Mount Lofty Ranges Strategy Review.</p> <p>Proposed Action: None</p> <p>Comments: Some submissions recommended a broader transport strategy for access to the hills.</p>
Visual Intrusion to Hills Face Zone	<p>Action: Acknowledged, but noted that mitigation measures will attempt to reduce impact</p> <p>Proposed Action: None</p> <p>Comments: concerns in submissions</p>
Property Values	<p>Action: Noted that quantitative assessment not possible given highly subjective nature or changing property prices, but qualitative noted possible increase in demand for properties in some areas which would boost values.</p> <p>Proposed Action: None</p> <p>Comments: request for information on impact on property values</p>
Acquisition-relocation effects	<p>Action: Noted that effects would be emotional and economic. Described the emotional stress in more detail than the Draft EIS, and noted difficulties of finding comparable properties</p> <p>Proposed Action: None</p> <p>Comments: requests for further information</p>
Business Impacts	<p>Action: Reiterated information in the Draft EIS</p> <p>Proposed Action: None</p> <p>Comments: concerns from owners about being bypassed with the new highway</p>
Social Adjustments	<p>Action: Noted that effects on individuals/families who have to relocate was a major impact of the proposal. Reiterated numbers of properties affected.</p> <p>Proposed Action: None</p> <p>Comments:</p>
Local Access	<p>Action: Noted that this was covered in Draft EIS and that little more could be added.</p> <p>Proposed Action:</p> <p>Comments: request for information on local travel patterns and access.</p>
Vegetation	<p>Action: Provision of further information on vegetation associations associated with corridors and hectares affected. Very brief.</p> <p>Proposed Action: None</p> <p>Comments: request for further information</p>
Weed Control	<p>Action: Reiterated Draft EIS</p> <p>Proposed Action:</p> <p>Comments:</p>
Air Pollution	<p>Action: Reiterated Draft EIS</p> <p>Proposed Action:</p> <p>Comments:</p>
Run-off	<p>Action: Further information on ecologically-significant bog and run-off management measures</p> <p>Proposed Action: None (except mitigation measures proposed, most of which were in Draft EIS)</p> <p>Comments: Highways noted that government department comments endorsed conclusions of Draft EIS that effects of hydrology and drainage effects will be minor.</p>
Heritage	<p>Action: Considered alternatives for maintaining tollhouse in existing location. Noted that impacts of retaining in location were too high. Continued the plan of relocation. Further refinement of proposal enabled greater spacing between traffic and heritage item.</p> <p>Proposed Action: None (except minimising disturbance to tollhouse during relocation)</p> <p>Comments: criticisms about relocation of tollhouse. criticisms about close proximity to one heritage item.</p>
Compensatory Rehabilitation	<p>Action: Suggestion noted</p> <p>Proposed Action: Potential for works to be considered during design phase.</p> <p>Comments: Suggested in submission that the Department rehabilitate existing disturbed land as a form of compensation for impacts</p>
Visual Impact	<p>Action: Reiterated information in Draft EIS. Noted difficulties of attaining all viewing angles (ie private property access).</p> <p>Proposed Action:</p> <p>Comments: Request for information on viewing audiences and extent of views.</p>
Noise	<p>Action: Further evaluations of noise impacts on houses below Eagle on the Hill and Hawk Hill Road</p> <p>Proposed Action: None</p> <p>Comments: request for further information</p>

Summary of Mitigation Measures	<p>Action: Not done in EIS because considered too long and cumbersome a table, and difficult to represent complexity and balance of issues.</p> <p>Proposed Action: None.</p> <p>Comments: Summary of effects and mitigation measures requested.</p>
	Information on design details was also incorporated, but minor issues, and no actions were proposed other than those specified in the Draft EIS

However, additional mitigation measures which may have alleviated the emotional stress associated with relocation of dwelling were not incorporated. As noted previously, factors such as the provision of real estate guidance, or counselling-social work support may have facilitated the transition, and these measures could be coordinated with other government departments. Such an approach may be justified given that it was acknowledged in the Supplement that the effect of relocation was considered a major effect of the proposal, yet nothing other than financial compensation for property acquisition was provided to mitigate this effect. Moreover, despite a need identified to adopt Corridor A, this was not pursued by the Department due to costs, as noted previously. It is highly likely that the best option would have been adopted by the Department if it was within their financial means, which is indicated in part by their extensive efforts towards public consultation and initial consideration and selection of alternatives. As it was, the Department was restricted in that it was reliant on Commonwealth funding, which was a decision essentially out of their control, as in practice, was substantially delayed until the 1990s.

Changes to the project were minor-medium in significance (refer Table 17). Although the adoption of the modified alternative (C3) was in response to public pressure, Departmental initiative was demonstrated given that they were quick to include this alternative which had been proposed by a resident and presented it in the Draft EIS. Initiative was also demonstrated for the changes presented after the EIA process (refer Table 17).

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? There was no information available in the project files to assess this criterion.

Table 17: Changes to the Adelaide-Crafers Highway Proposal

<i>Nature of Change</i>	<i>Details</i>
Number of Changes	~5
Type of Changes	<ul style="list-style-type: none"> • 2 realignments • retention of tollhouse location • incorporation of detention dam • new diversion road
Change Significance	<ul style="list-style-type: none"> • realignment (C3) - medium • realignment (slope stability) - minor • retention of tollhouse location - minor-medium • incorporation of detention dam - minor • new diversion road - minor
Timing of Change	<ul style="list-style-type: none"> • realignment (C3) - middle EIA process • realignment (slope stability) - middle EIA process • retention of tollhouse location - after EIA process • incorporation of detention dam - after EIA process • new diversion road - after EIA process
Initiator of Change	<ul style="list-style-type: none"> • realignment (C3) - local resident; adopted by Department in EIS • realignment (slope stability) - Department • retention of tollhouse location - Department • incorporation of detention dam - Department • new diversion road - Public Concerns; Departmental response

Level of Controversy about Responsiveness

The level of public controversy about proponent responsiveness was minor-medium in volume, with some concerns about the lack of proponent responsiveness and ability to influence the proposal. It was noted for instance, that *'...Hills people are becoming increasingly concerned at what they see as 'total disregard' for the people involved and the implications of the route'*. Although an EIS was prepared many believed that a decision would already have been made with little possibility for changing that decision. At the same time, however, the organisation which suggested the adopted alternative alignment was positive about the Departments' responsiveness, which is not surprising. For instance: *'It was pleasing to see that the option proposed by this office in our original submission...has been incorporated as the "Alternative Alignment".'*

Government controversy was similar to public controversy, with concerns about the Department's responsiveness. It was noted by the DEP for instance: *'...throughout the draft EIS, it is indicated that public opinion to date has been taken into consideration when evaluating the alternative corridors. The choice of corridor C1 certainly does not reflect this.'* Controversy was also evident at the Commonwealth level. For instance:

'We are concerned at the proponent's attitude towards public and government comments on the route selection process and the analysis on which this was based. Given the number of submissions which either sought further details of the cost-benefit analysis, or presented arguments for other options, we believe that the proponent's treatment of these issues in the draft Supplement is inadequate.'

Transport Project Case Study 2

BLANCHETOWN BRIDGE

THE PROPOSAL

The Blanchetown Bridge, which crosses the River Murray (South Australia's water 'life-line'), is located on the national Sturt Highway which connects Adelaide to Sydney. It was the third road bridge constructed over the River Murray in South Australia, and the largest bridge constructed by the Department at the time (440 metres extended; 13 metres wide). Following maintenance problems with the bridge, the then Department of Transport (DoT) investigated the capacity and condition of the bridge in January 1994 and found that it was in poor condition and unable to cater for heavy vehicles such as B-Double or Road Trains. These vehicles were required to detour an additional 25 kilometres (PWC June 1996). The possibility existed that the bridge could collapse if heavy vehicles simultaneously passed each other on the bridge (PWC June 1996). Thus, three solutions were proposed comprising:

- repair the bridge;
- partially replace the superstructure;
- full replacement of the bridge (PWC May 1996).

The most effective of these options was considered to be the full bridge replacement which removed all risks of collapse (PWC May 1996). Overall, the proposal was the smallest scale of all the transport case studies assessed. Key components comprised:

- a new bridge (407 metres length) (existing bridge was 442 metres);
- new approach roads with improved horizontal alignment; and
- upgrade of local access intersections to improve safety;

whilst minor components comprised:

- lighting of the intersections;
- footway/cycle path on the bridge separated from road by traffic barrier;
- link from the footway on the new bridge to existing step and ramp access to riverbanks;
- retention of west lookout;
- viewing platform under the bridge;
- rehabilitation of existing road cutting;
- rehabilitation of superfluous highway pavement;
- roadside landscaping;
- culvert through eastern embankment causeway;
- basins to intercept chemical spills and prevent entry into the River Murray.

Given that the bridge was on a National Highway, it was to be funded by the Commonwealth government, whilst the State DoT coordinated and managed project planning, design and construction through consultants. Initially, the estimated cost of the bridge was \$12 million and the roadworks was \$3 million, but the final expenditure totalled \$21 million.

Given that this project was much smaller in scale than the other case studies (but still more expensive than the ETSA transmission line projects), and did not require a full Environmental Impact Statement (EIS), the following evaluation is less detailed than the other case studies. However, broad trends in practice and indications of the Department's commitment to the EIA and environmental protection process are evident from the summary of the EIA process and evaluation dimensions.

EIA PROCESS SUMMARY

Permission to start preliminary design and planning investigation work was given to the Department by the Commonwealth government on 4 October 1994. In the following year, the State EIA Branch of DHUD were informed of the project on 11 January. However, no formal EIS was required given that:

- the proposed bridge was within 50-100 metres of the existing bridge;
- it was likely that the existing approaches to the bridge would be used with modification to meet standards and environmental concerns;
- the area had demonstrated a capacity to regenerate;
- the bulk of the existing bridge structure was to be removed to below water level when the new bridge became operational; and

- the DoT had proven procedures in relation to consultation and consideration of environmental matters.

DHUD's confidence about the Department's EIA procedures was clearly demonstrated in this statement, which was one of the reasons why the Department was able to retain responsibility for many of its own internal assessments in the late 1970s (refer Volume I). The project thus underwent the internal major EIA process encapsulated within the planning investigations process. Unlike the Southern Expressway project, a separate 'Environmental Report' was not prepared, which is likely due to the smaller scale nature of the bridge project. Rather the environmental investigations were incorporated into the Department's internal Working Report, and finalised in the Concluding Report.

Organisation and Management

There were several participants involved in the planning and design process, both within the Department and external to the Department. In December 1994 it was requested that a project manager from the Projects Section be given the responsibility for delivering the project, including the planning investigations phase which required a service agreement with planning investigations. As illustrated in Figure (1), the major project control group consisted of the project manager, the internal client (SIP?), and Manager of the Projects Section. A discrete planning team was formed, although the participants were not specified in Figure (1), and tended to vary in their presence at project meetings depending on the timing of their input. Internal participants included, for instance,

- Supervising Engineer from planning investigations section for the planning stage;
- Supervising Engineer from the Road Design section for the design stage;
- Supervising Engineer from structural services for the bridge design;
- Senior Environmental Officer from the Environmental Unit;
- representative from the Landscape Unit for landscape design concept;
- Contract Manager (late in the process for construction administration)

The consultants used for the planning and design phase also formed a discrete team which was coordinated by the Department.

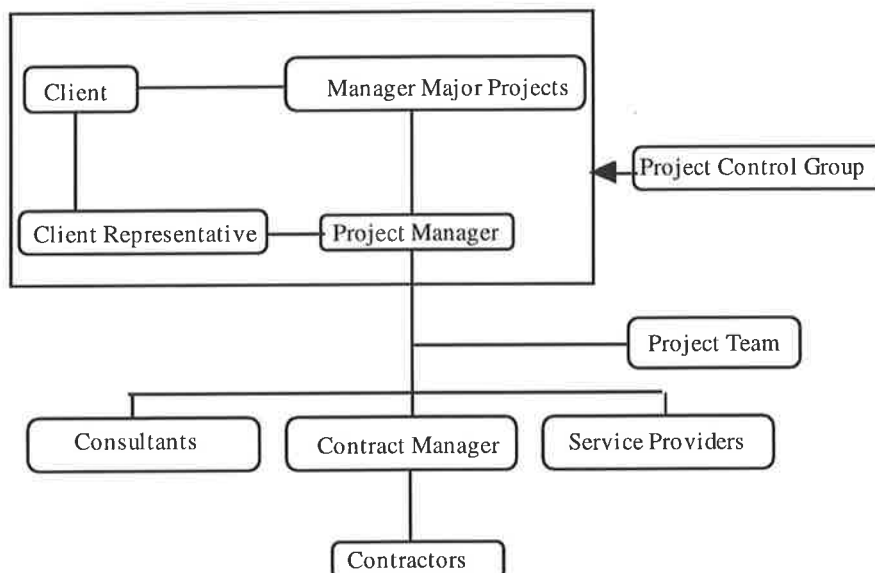


Figure 1: Representation of the Project Organisational Structure
(source unknown; Departmental files)

An internal Environmental Officer was also brought early in, and throughout, the planning process. This was indicated by their attendance at several project meetings. Extensive evaluative

control was also apparent by improving the quality of planning reports and requesting further details on environmental management throughout the process.

Appointment of Consultant & Planning Brief

Because the resources within the Department were considered inadequate to complete the full planning and road design on time, both aspects were outsourced. In May 1995 the Commissioner of Highways appointed consultants Maunsell Pty Ltd in association with Hassell Pty Ltd to conduct the planning investigations and road design for the project.

A brief for the planning investigations phase was prepared in January 1995, and stakeholders were identified early in the process. As outlined in this brief, the consultant was responsible for:

- data collection and analysis;
- initial community consultation;
- preparation of alternatives;
- initial environmental assessment of each scheme;
- selection of a Preferred Alternative;
- and review of the preferred alternative in response to community comments.

Reports required from the consultant comprised a Working Report and Concept Plan, Concluding Report, Project Definition Report, and EMP (although the EMP was suggested later in the process, and not included in the planning brief). The primary objectives of the planning investigations were to:

- expeditiously provide a replacement for the bridge and approach roads to meet current standards and guidelines for National Highways;
- minimise whole of life costs of the project;

whilst secondary objectives were to:

- provide capacity for future road transport;
- improve road safety;
- ensure adaptability with long term improvement options beyond the approaches;
- minimise adverse environmental impacts; and
- achieve community acceptance of the project.

These secondary objectives were expanded in the later Project Definition Report to include for instance, enhancement of the existing wetlands, revegetation of road corridor, and to raise the profile of the Department's public image.

The Department had overall control of the process with hold points and provisions to comment on all reports produced. It was expected in the preliminary planning investigation report that further investigations could take 6-12 months, followed by detailed design and land acquisition.

Native Title and Aboriginal Heritage Issues

Early on in the process, a preliminary and internal planning investigations report had also been prepared which identified the value of wetlands, in the area, opportunities to enhance the wetlands and hydrological regimes, and the possibility for Native Title claims. Advice was sought from the Crown Solicitor about Native Title claims, and was received on 15 February 1995 which stated that areas were extinguished from Native Title, but that there was a need for further research in some areas of the land given some uncertainties. The Department thus requested and funded the Department of Environment and Natural Resources (DENR) to conduct research into this issue, but it should be noted that the Transport Department had the right to compulsorily acquire any Native Title rights under the *Land Acquisition (Native Title) Amendment Act 1995*. Nonetheless, based on further advice it was found that Native Title was not a significant issue.

Aboriginal heritage was also identified as a potential issue early in the process, and given that it could take months to resolve, an archaeological survey was conducted early, and was coordinated by the Environmental Unit within the Transport Department. This survey identified a preference for the new bridge to be located on the upstream side to avoid Aboriginal middens and canoe trees. It was believed that this would avoid any significant impacts, but like the Southern Expressway, the Aboriginal heritage issue was to become significant later in the process which

threatened the project timetable, and resulted in extensive discussions and negotiations with Aboriginal communities (see later).

Public Consultation: First Phase

Consultation with the community and government was commenced as a two staged process, with the first commencing prior to the completion of the Working Report. Approval from the Minister for Transport was given for the first stage of the community consultation strategy in May 1995. This first stage involved stakeholder interviews, meetings with councils, media advertisements and letters, brochures, a public meeting in May 1995, and circulation of 600 questionnaires in July requesting comment on the project. The first information brochure circulated included information on the key environmental, social, and economic factors to be investigated, whilst the second information brochure outlined the preferred alignment and sought community views on this option.

The community consultation meeting which included small group workshops, was held on 19 May 1995, and attended by 100 people, most of which were local residents or business operators. Many of the issues raised were not unexpected, although some issues relating to local safety at junctions which had failed to be identified in the accident statistics were incorporated into the project (PWC May 1996). The main issues raised are illustrated in Figure (2) with the most important issues relating to intersections, safety, pedestrian and cycle access. The environment was the second to least important issue raised. The majority of people indicated support for a bridge upstream of the existing one (65%) (ie further from township, less noise) whilst 35% preferred a downstream location (ie many had an interest in businesses or residences upstream).

Of the 600 questionnaires, 142 responses were received, within which the most important issue raised was safety, although environmental issues were also considered a priority in terms of impacts on wetlands, trees and vegetation, water quality, and noise. Medium priority issues included local access, impacts on commercial operations, cost factors and cleaning up of existing road and bridge. Surprisingly, low priority issues included Aboriginal heritage, despite being considered a high risk area by the consultants and proponent. Other low priority issues included impacts on property values, and development of recreational facilities.

Government agency comment was also invited at a briefing in June 1995, including DENR, the EIA Branch of DHUD and other government agencies. Throughout the process, substantial comments were made in particular from the Department of Environment (DENR) about the impacts on wetlands, particularly in response to community concerns which had been brought to the attention of the Wetlands Management Committee. The potential for significant loss of dense reed beds, river red gums and river box trees was noted, and DENR was concerned that construction could destroy the majority of wetlands adjacent to the construction site. However, following the meeting in June 1995, DENR concluded that the overall impacts on the wetlands would be minimal, with the condition that a culvert to facilitate water flow through the new causeway be constructed as compensation for the impacts on the wetlands.

The Environment Department believed that the proposal provided an excellent opportunity to improve previous negative impacts which had interrupted these waterflows. The consequences of not doing this were considered to be an increased impact on Caravan Park wetland because it would be hydrologically isolated; loss of opportunity to reinstate natural water flows, and loss of opportunity to directly manage and enhance wetlands. The Wetlands Management Program of DENR also recommended that design and construction should avoid exacerbating saline water seepage on the floodplains which already resulted from irrigation; should minimise disturbance to western cliffs (scenic, bird nesting); and should minimise disturbance of river bed and banks to avoid turbidity.

The Murray Darling Basin Commission (MDBC) was also informed via DENR of the project on 22 August 1995 in line with Clause 46 of the *Murray Darling Basin Agreement 1992*. The MDBC evaluated the effects on water flow and quality and found that they were not significant. Thus, they did not require any further information on the project. However, the Commission had prepared general information on bridge proposals to provide consistency for each State jurisdiction. Issues within these guidelines related to flow patterns, pollution, protection of floodplains and wetlands, containment of wastes and pollutants, landscaping works to ensure vegetative buffer strips and inhibit erosion, and the need to undertake consultation with local Aboriginal land councils. The MDBC requested that these issues be considered in the environmental assessment process.

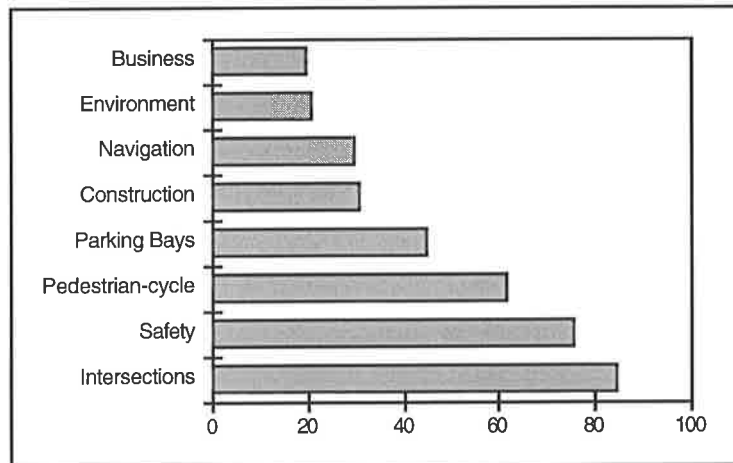


Figure 2: Issues raised at the May public meeting for the Blanchetown Bridge proposal

Working Report

The Working Report was prepared by Maunsell in association with Hassell consultants in August 1995, and was 65 pages in length (plus appendices), and was thus one of the shorter reports of all of the case studies. Close monitoring of the quality of reports produced by the consultants was undertaken by the Transport Department with comments from Planning Investigations, Road Design, Structural Services, Projects Section and the Environmental Unit. Contents of the Working Report are outlined in Table (1), and are similar in nature to the contents of standard EISs or equivalent documents, albeit with less focus on the actual impact assessment. There was however, extensive focus on the description of the existing environment. Table (2) outlines the proportion of focus for the main tasks in EIA.

Five alternative options for the bridge alignment and road approaches were presented in the Working Report and compromised:

- Option A bridge placed **upstream** (north) and parallel to existing bridge
600m radius curve on west approach east of Morgan Road intersection;
new cutting north of existing on west approach;
new eastern approach embankment;
600m radius curve onto existing alignment and west of Swan Reach Road intersection;
- Option B bridge placed **downstream** and parallel to existing bridge;
600m radius curve on west approach east of Morgan Road intersection;
new cutting south of existing road on western approach, except for final fifty metres before abutment when some filling is required;
new eastern approach embankment;
600 m radius curve onto existing alignment and west of Walkers Flat Road intersection;
- Option C 600 m radius curve on west approach east of Morgan Road intersection;
use of start of existing cutting on west approach;
reverse horizontal curves to shift alignment south;
3000m radius curve to new bridge **downstream** and parallel to existing bridge;
600 m radius curve on east bank which uses more of the existing road alignment than Option B;
- Option D 600m radius curve on west approach pushes highway slightly northwards;
tangent approach to and on the new bridge which is skewed to existing bridge and **downstream** of it;
west abutment as close as possible to south of existing bridge;
east abutment south of existing;
- Option E 600m radius curve on west approach pushes highway northwards;

tangent approach to & on the new bridge which is skewed to existing bridge & **upstream** of it west abutment 30 metres north of existing;
 east abutment as close as possible to existing bridge;
 600m radius curve from close to abutment back to existing alignment.

The alternative alignments are presented in Chapter Nine, Volume I.

Table 1: Contents of the Working Report for the Blanchetown Bridge Proposal

Executive Summary	
1. Introduction	(State and Regional Perspective, project background and objectives)
2. Description of Existing Locality	(Roads and Bridge, environmental conditions and landscape [vegetation, wetlands, fauna, topography, views, lighting, traffic noise], social criteria [ownership patterns, land use, heritage, social activity, movement patterns, community services, recreational resources, local amenity], economic considerations [commercial activities, agricultural production, tourist activities], utilities services, river traffic)
3. Future conditions	(road network development, future traffic, future traffic noise, future land use)
4. Development and consideration of options	(engineering factors, development of options, environmental impacts of operations, community consultation, cost comparisons)
5. Assessment of Options	(assessment process, project objectives, factor ranking analysis, risk assessment)
6. Summary and Recommendations	

Table 2: Proportion of focus of EIA Tasks in the Working Report for the Blanchetown Bridge Proposal

EIS Task	% Focus* (approximate)
Summary	6
Introduction	4
Proposal Description	12
Policy Framework	difficult to assess
Proposal Need	0.07
Alternatives Description (identification of options and ranking)	3
Description of environment (baseline)	35**
Description of Preferred Concept (if identified)	-
Impact Description & Evaluation	9
Mitigation (or EMP)	difficult to assess
Monitoring	difficult to assess
Public consultation (approach)	3
Conclusion	6

* does not total 100% because of overlaps on some pages, and inclusion of technical aspects not counted here;

** includes future conditions.

Two approaches were used to assess and compare the options comprising a factor ranking analysis and a risk assessment. The factor ranking analysis indicated a preference for option E which placed the bridge upstream of the existing bridge. However, differences between the options were considered minor. Acknowledgments were made of the subjectivity of the analysis and potential for manipulation. The risk assessment considered three factors which would have a high impact on the project comprising:

- adverse community reaction;
- lack of acceptance from the Aboriginal community; and
- potential for rivercraft navigation hazards.

The assessment indicated that the northern upstream alignments (options A and E) had a lower probability for these risks, whilst the downstream alignments had a medium-high risk, thus pointing again to option E as the preferred alternative. The benefits of option E were expected to be:

- reduced traffic noise or lesser increase to the township;
- no impact on Aboriginal heritage items;
- better construction staging;
- cut quantities greater than fill quantities;
- improved manoeuvring for Murray Princess;
- allows better balance of horizontal sight distance on curves west and east of bridge; and
- likely to achieve greater community acceptance.

Disadvantages included:

- greater construction cost due to increased bridge length;
- environmental impact on wetlands is greater than for southern options (but limited to loss of small area of caravan park wetlands and short-term construction disturbance; and
- minor impact during bridge construction on the houseboat hire operation on the west bank.

Public Consultation: Phase 2

The Working Report was approved for public consultation by both the Commonwealth and State Departments of Transport, which led the way for the second phase of the consultation strategy. Strategies of *information circulation* included letters, brochures, billboard display, media releases and advertisements, public information display and a telephone information service, whilst strategies for *consultation* comprised meeting with Members of Parliament and councils (7 December 1995), stakeholders, comment sheets and another public meeting. There was also extensive consultation with Aboriginal communities and authorities during this stage. The telephone service was available from 8 to 22 December 1995, which may be indicative of the total comment period on the Working Report.

Several personal meetings were held in early December with Members of Parliament, council officers, and local businesses. No significant environmental issues were raised, and the issues tended to be more technical or managerial in nature (eg sources of fill, responsibilities for maintaining sediment points, upgrade of boat ramp). Environmental and social issues related to:

- maintaining access to houses;
- need to maintain vegetation for two years; and
- the possible use of mature vegetation to replace areas removed.

The public meeting, which was held on 15 December 1995 and attended by 50 people, prioritised issues in a similar manner to the earlier public meeting in May in that top priority was given to road safety and access issues (eg intersections and speed zones). However, higher priority was given to the environment relative to the first meeting in terms of:

- protecting water quality from bridge demolition; and
- protection of Aboriginal sites.

A total of 17 comment sheets were also completed many of which made positive comments about the preferred alignment, and indicated similar concerns about safety raised in the public meeting. Environmental issues raised in the comment sheets related to:

- traffic noise;
- the impact on low-flying birds from fast and heavy vehicles crossing the bridge;
- protection of box trees; and
- control of the wetlands.

Aside from the frequently raised safety concerns, and concerns from two local businesses about impacts on their operations, there was general satisfaction about the proposal during the second consultation phase. However, on a ranking from 0 (start project again) to 10 (perfect, needs no improvement), workshop participants rated the project around the 5 increment (OK, but needs improving). Issues which needed further improvement included intersection design, speed restrictions and the cycle-pedestrian pathway, which were relatively minor in the overall context of

the project, and did not indicate opposition. According to the consultant, the conclusion that there was no major opposition to the project was also supported by the low response rate to the telephone information service, public meeting and comment sheets.

Given these outcomes, the consultant recommended that the recommended option presented to the community be reconfirmed as the preferred alternative. Unlike the formal EIS process, there was no requirement that the proponent respond to public comments or submissions in a Supplement, which reduces transparency somewhat. Nonetheless, response letters were sent directly to some of the local businesses and councils, and a Concluding Report was prepared based in part on the consultation programme (see later text).

Public Works Committee

Following community consultation, a submission was made by the Department to the Public Works Committee (PWC) in April 1996, and a hearing was held on the project on 15 May 1996. Witnesses presenting evidence were from the Department of Transport comprising the Manager Strategic Investment Planning, Project Manager, and an Engineer from Planning Investigations. There were no community groups present. The PWC stated that the project was 'soundly based', that appropriate consultation had been undertaken, and the proposal meets the criteria under the *Parliamentary Committees Act 1991*. The Committee recommended the proposal to Parliament, and also noted its high priority.

Concluding Report

In July 1996, a Design Development report was prepared which summarised the main design features of the project known to that point. A Concluding Report was also prepared around the same time which was essentially structured in the same way as the Working Report, and was a shorter, more succinct version outlining the main conclusions of the investigations and community consultation programme. The Environmental Unit in the Department had a strong evaluative role in the preparation of this Report, and several comments were made on drafts of the Concluding Report which involved requests for more details on some issues, and the inclusion of criteria for environmental protection during bridge demolition. Some suggestions were also made to minimise the impacts of the project, but design compromises had already been made in these areas (for instance, although steeper batters would minimise the intrusion into the wetlands, they had been designed at a softer slope to enable planting of vegetation). Some of the issues not raised in the Concluding Report were also planned to be incorporated into the EMP (eg noise from construction).

The main conclusions of the Concluding Report were that:

- northern upstream options would have a greater impact on **flora and fauna**, with 10% loss associated with the preferred option;
- impacts on fauna were considered minor for all options;
- all options may reduce **water quality** during construction, but impacts would be overcome after landscaping was established;
- wetland water quality would be improved with the construction of a culvert;
- all options would reduce the potential for pollution of the River Murray by capturing minor spills;
- **wetland drainage patterns** would not be adversely affected by any of the options;
- **visual impacts** on the Blanchetown township would be greater with southern downstream options;
- all options would increase obstruction to views along eastern river bank, but this could be softened by landscaping;
- road traffic **noise impacts** on the Blanchetown township would be greater with southern options, but with a slight increased impact on the caravan park;
- some **local businesses** would be impacted by the northern options during operations or construction (eg houseboat hire during construction; ambience of caravan park);
- **social interaction** would not be affected;
- there would be no impacts on **European heritage**;
- impacts on **Aboriginal sites** would be minor to negligible or nil for the northern alignment, whilst southern alignments would pass over or near to site;
- both southern and northern options crossed portions of land with potential to affect **Native Title**;

- **landscaping** using native vegetation species would be provided to offset some of the impacts on native vegetation.

Slight modifications had also been made to the preferred Option E in the concluding report, involving changes to the positions and skew of the bridge (adjustments of 1-2 metres), shallower design of the bridge depth, and increases in the length of the bridge (from 376 to 407 metres) which improved the eastern abutment arrangement (and hence maintained existing road access to a camping area). None of these appear to have been changed for environmental reasons, or at least none were specified. A number of mitigation measures were also included in the Report relating to the culvert between wetlands, protection of existing vegetation, erosion and siltation inhibition measures, and spill interception (eg stabilisation of disturbed areas, temporary protective fencing around vegetation, techniques to minimise the spread of weeds, drainage lines and batters, stable slopes in the design of cut and fill batters, temporary catch and diversion drains to control surface runoff, provision of detention basins to store and treat flows from roadside drains).

Around the time of the report's release, the need for monitoring of water quality before, during and after construction had also been identified during a project meeting in August 1996. This is a strength of the process given that monitoring is often a weak link in the EIA and planning process. Some concerns about the early landscape design concept were also apparent in August 1996, and it was planned to review and refine the concept until it reached the satisfaction of the Department. This too is indicative of commitment to doing the right thing in terms of environmental protection. Although there was limited detail on the environmental impacts of the demolition of the existing bridge at this time, input was gained from other government agencies such as the EPA, DENR, Councils and SA Water with the aim of avoiding water pollution, disturbance of river traffic and means for disposing of the concrete.

Approvals

Environmental Clearance

Environmental Clearance was given for the project by the Senior Environmental Officer of the Department's Environmental Unit on 26 September 1996. Reports used as the basis for assessment included the Working Report, Concluding Report, Vegetation Survey (August 1996), Site History Reports (contaminated land) and the Draft EMP (July 1996). The clearance report noted that although a lot of vegetation required removal, this would be partially offset by the construction of a culver to facilitate water flows between the wetland areas, and by landscaping of the old alignment. It was also noted that:

- drainage was to be collected and treated in detention ponds;
- there would no significant changes to flood water levels;
- traffic noise complied with the Department's Road Traffic Noise Guidelines;
- construction noise would be potentially disruptive and would be addressed in the EMP;
- the project did not impact on any heritage sites, and the EMP would outline protection measure for adjacent Aboriginal sites during construction;
- Native Title rights would not be affected by the project;
- demolition of the existing bridge needed care to protect water quality, minimise noise and adequately dispose of wastes, and an EMP will be prepared for the demolition process;
- no contaminated land was evident.

The project was given environmental clearance subject to the conditions summarised in Table (3).

Table 3: Conditions of Environmental Clearance for the Blanchetown Bridge Proposal

<i>Environmental Conditions</i>
<p>Vegetation:</p> <ul style="list-style-type: none"> • Care be taken to minimise disturbance to and damage to the trees on the eastern bank as fill is placed to form and surcharge the embankment. The footprint of the embankment during surcharging should be no wider than the extent of the final embankment. Vegetation adjacent to the base of the embankment should be protected from any spill during construction. • Care be taken to minimise disturbance to, and sedimentation of, the Caravan park wetland when the embankment is established, and the culvert is built. Movement of construction machinery should be limited to within the alignment. • Care be taken to avoid disturbance to the Eucalyptus camaldulensis regeneration on the south side of the eastern embankment when the old road pavement is ripped and the two embankments are merged. • A horticulturalist should be engaged to supervise any trimming of the large redgum on the western side adjacent to the new bridge. Care to be taken to avoid disturbance of the tree roots and any trimming supervised by the horticulturalist. Care should be taken to avoid disturbance to the other trees in this vicinity. • The canoe tree on the western bank should be protected by temporary fencing to protect it from construction damage. • Landscaping should use local provenance seed <p>Aboriginal Heritage</p> <ul style="list-style-type: none"> • The Aboriginal site should be protected from potential construction impacts. • The management strategy for the sites developed in conjunction with the Department of State Aboriginal Affairs should be incorporated into the EMP. <p>Environmental Management Plan</p> <ul style="list-style-type: none"> • The EMP (including the issue of construction noise) should be finalised. It will then require approval by the Senior Environmental Officer. <p>Demolition of the bridge</p> <ul style="list-style-type: none"> • A process for demolition of the existing bridge which minimises pollution and meets the requirements of the EPA should be developed. It should then be incorporated into an Environmental Management Plan for the bridge demolition which will require approval by the Senior Environmental Officer.

Tree Removals

The Department of Environment and Natural Resources (DENR) provided information to the DoT about the conservation significance of native vegetation planned for clearance, and the associated impacts on habitat for waterbirds. This input was important given that the DoT's Environmental Unit found that DENR had identified species of conservation significance which had not been observed in the earlier vegetation survey. This identified a need for a more focussed survey to avoid any damage to the region, particularly given that environmental clearance had already been received.

Overall, the project required the removal of 362 trees, and a request for approval was made on 21 November 1996 by the Design Manager. Approval for the removal of this vegetation was given by the Department's Environmental Unit in November 1996 on the same day which, although a fast turnaround, was simply the culmination of longer term planning and discussions (ie consultations with DENR, surveys). It was believed in the approval that removal was unavoidable for construction purposes, that the EMP would address issues relating to vegetation, and that landscaping would be consistent with the surrounding environs. Conditions comprised:

- restriction of construction traffic to existing roads and access roads, with avoidance of particular areas with vegetation;
- provision of temporary protective fencing;

- reinforcement plantings of particular species recommended in the Concluding Report should not be undertaken if the species naturally occurs within an intact plant community, and natural regeneration should be allowed;
- seed collection where plants are removed;
- use of local seed;
- landscaping and revegetation scheme with two year follow up weed control (then to be handed over to council).

Approval was also given by DENR and the Department of Primary Industry (Fisheries) for removal of trees by use of explosives. Provisional approval for the removal of three additional trees was given in April 1997 by the Environmental Unit, but it was noted that this should be only where 'absolutely necessary' for construction, and conditions required that disturbance to adjacent trees be minimised and that a replanting scheme be instigated. In the following year, approval by the Environmental Unit was given for the removal of a further 23 trees in November 1998. Given that there was some uncertainty about whether these trees had been included in the original vegetation survey, another survey was arranged by one of the Department's officers, and the survey was conducted by the Landscape Unit. This may be indicative of caution and commitment to environmental protection, particularly given that another survey could simply have been ignored which in turn would mean that the impacts of removing this vegetation would be unknown.

Government Approvals

Pursuant to the *Water Resources Act 1990*, an application was submitted in October 1996 for works to be conducted in a 'proclaimed water course' (ie the River Murray). A works permits was issued by the Water Resources Group of DENR on 28 August 1996 which required compliance to the *Native Vegetation Act 1985*, and required that works be completed by 31 January 1998. Any works after this time would require further approval by the Minister for Environment.

Following a request from the State Minister for Transport on 25 September 1996, final approval for the project was given by the Federal Minister for Transport on 3 December 1996. Councils had also given their support and agreed with the proposal in November 1996.

Project Definition Report

All aspects of the planning and design process were brought together into a final Project Definition Report which was completed in January 1997, and which outlined critical success factors to the project. Encapsulated within these factors was a very brief section on environmental issues (one paragraph) which required avoidance of impacts relating to noise, pollution and contamination of the wetlands and river. The critical success factors were later revised to also include Aboriginal issues and land acquisition. There was also a requirement to monitor and management these impacts to avoid any adverse reaction from the community, and for ongoing consultation. Also included within the report were the design objectives, an outline of the community consultation programme, and amendments arising from community comment. It was generally concluded that the community accepted the project. Comments also made by Environmental Unit on an earlier draft version in August 1996 which recommended the inclusion of environmental risks in the risk management such as river pollution, and floods during construction which appear to have been included.

EMPs and EMIPs

Originally, there was no reference in the consultant's agreement to an EMP, but the Environmental Unit recommended in early 1996 that an EMP be prepared as a contractual document outlining performance criteria for contractors. The EMP was prepared by Maunsell for the project in November 1996, and revised in February 1997. The goals of the EMP are the same as those outlined in the Adelaide-Crafers case study, and required the contractor to prepare an EMIP to demonstrate how the requirements would be met, and to ensure that adequate training was provided to employees on the requirements. The EMP did not cover the bridge demolition process, and it is unknown whether a separate EMP was prepared for this process. However, management plans were provided for:

- erosion, stormwater management and wetlands;
- flora and fauna;
- noise;



- archaeology/heritage;
- waste minimisation;
- storage and handling of dangerous and hazardous substances;
- storage, maintenance and refuelling of machinery and equipment on site;
- emergency response and incident plan.

Inspections and monitoring requirements were also outlined for drainage, sediments controls, diversion drains, vegetated areas (eg accidental clearance), fauna, dust generation, waste management, Aboriginal heritage sites, waste and litter controls, in addition to regular monitoring of air, surface water and noise. The contractor's draft EMIP which responded to the EMP had some problems identified by the Environmental Unit which led to a process of review and refinement and which resulted in a satisfactory document.

Transport SA's Contract Manager and Site Engineer were both responsible for overseeing and monitoring the environmental management process relating to weekly environmental reports prepared by the contractor, arrangement of independent environmental audits, reporting of environmental incidents, and community liaison among other things.

Construction

Design of the bridge was completed in September 1996, and following environmental clearance, construction commenced in April 1997. During construction, an independent audit involving site inspections was conducted which found that, while most conditions were complied with, some problems with environmental management were evident. This audit was another strength in the process because it resulted in ongoing liaison with the contractors and a process of review and improvement of the management process to reach a more satisfactory outcome. Without such an audit, these problems would not have been identified, and neither the contractor or the Department would have learned from the process.

It was also discovered during construction that the Aboriginal heritage issue was more significant than initially assessed, and a burial site with six skeletons (estimated 7,000 years old) was discovered by amateur fossickers. Although this finding threatened the work plan and work was immediately stopped, it also resulted in successful and cooperative negotiations with Aboriginal groups. The department was aware of the sensitivity of the issue and aimed to keep Aboriginal communities informed and to gain their acceptance of any investigations undertaken. It was noted by an Environmental officer in the Department:

'All parties were aware of the construction schedule and worked cooperatively to satisfy the needs of the Aboriginal communities while ensuring work was not delayed...We have seen this as a valuable illustration of how positive outcomes can be achieved by Aboriginal communities working directly with developers in the management of Aboriginal heritage sites unearthed during works.'

The Department offered to pay for the excavation process, and a joint application was made by two Aboriginal groups to the Minister for State Aboriginal Affairs for approval to excavate the sites. Two Aboriginal representatives monitored the excavation process, and construction continued shortly thereafter.

The Bridge was officially opened on 22 November 1998 by the State and Commonwealth Ministers for Transport, and the final cost expended was \$21 million. The opening was attended by 6,000 people, which indicates substantial interest in the project, although this tended not to be reflected in the earlier consultation process which was attended more by local people rather than on a regional or State basis.

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the EIA legislative requirements? This criterion was graded at A with full compliance to the Department's EIA procedures.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was not graded. Guidelines in the form of those prepared for the other case studies were not prepared for

this case study. Although guidelines were prepared in a planning investigations brief, they were less detailed than for the other case studies, and the only copy available was a draft version. Without the final version it was not appropriate to assess compliance.

Criterion 1.3: Did the proponent comply with the final decision? There was insufficient information to assess this criterion, but it is assumed that compliance was achieved.

Criterion 1.4:4 Did the proponent demonstrate evidence of going beyond compliance? This criterion was graded at C-B. The Department did not demonstrate strong evidence of going beyond compliance to its internal procedures, but the Department clearly went beyond compliance to the process normally required under EIA legislation in South Australia., particularly in the approach taken to consultation. For instance, there was two phases of consultation, it was early, and a wide range of techniques were used including personal interviews and small group workshops. Going beyond compliance was not demonstrated in terms of preparing a response to the consultation programme (eg as in the form of a Supplement under the formal EIA process), although as noted previously, direct response letters were written to some participants, and the Concluding Report partially formed this role. Moreover, a number of reports summarising the consultation process, community issues and the consultant's or Department's response were prepared, although these did not appear to be available for public release which is of some concern. Release of these documents would substantially improve transparency, although this did not appear to be a major issue in this project given the lack of public controversy.

EIS QUALITY

Given that this was the smallest of all the case studies and did not have a stand alone environmental assessment document, it was considered inappropriate to conduct a full evaluation using all of the evaluation criteria. However, an assessment was made using the second basic assessment of quality which omits several of the more stringent evaluation criteria. It is suggested that the Working Report should at least perform satisfactorily in this assessment in order that satisfactory information is provided to external readers such as the community. Criteria which are assessed for this more basic assessment include:

- project rationale;
- project description;
- reference to key environmental categories in the environmental description;
- reference to key environmental impacts;
- assessment of alternatives;
- ranking of alternatives;
- selection of 'best' alternative;
- reference to mitigation for key impacts;
- reference to monitoring for key impacts;
- layout;
- presentation; and
- level of controversy.

A key problem identified with the reports was the lack of reference to the demolition process for the existing bridge which could itself cause a number of environmental impacts (eg impacts on water quality). However, it was proposed to prepare a separate EMP for this process, although this was not sighted in the project files. In fact, there was very little information on the bridge demolition overall which is a major oversight in the early planning process given the significance of the River Murray as a water source for South Australia.

Proposal Framework

2.1.1 Was the rationale of the proposal clearly outlined? This criterion was graded at B. The need for the project was clear because of significant safety issues and the potential for bridge collapse under extreme conditions. In the Introduction of the Working Report, it was noted that the bridge needed replacement due to maintenance problems, structural deficiencies, and inability of the road to cater for large vehicles such as road trains. While this provided clear rationale, some detail was missing in the Report, and the Introduction did not portray the level of urgency which was evident in some other documents. However, further detail was provided in the description of the existing locality which noted ongoing concerns of the Department about the bridge due to corrosion in the anchorages, and splitting and cracks in the girders which indicated overstressing.

A full grade was not given due to lack of reference to actual capacity, potential for collapse, and the potential triggers for collapse (ie heavy vehicles simultaneously crossing the bridge). Thus, the sense of urgency indicated in some documents, was not completely apparent in the Working Report. Like the Ardrossan case study, however, the need was significant and urgent, and was unlike other case studies where the need for the project often appeared to be incremental and/or political. The need was also supported by the Public Works Committee.

2.1.2 Was there a detailed description of the project? This criterion was graded at E-D. Chapter Four outlined the development of options, but also provided details on the project and some underlying assumptions about speed and safety leading to the design of the road approaches. Some components were quite detailed and description of the project included:

- an outline of design parameters (design speeds, site distances, horizontal geometry cross sections, vertical geometry, grades);
- preliminary design of the approach roads and rearrangement of intersections;
- lookout points including location and access requirements;
- locations of the abutments (to minimise bridge length);
- an outline of assumptions for locating the bridge as near as possible to the existing one (ie minimise impacts on road approaches);
- length of the bridge;
- bridge level and headroom needed for rivercraft navigation;
- access to local business;
- steepness of cuts and fills (shallower cut slopes to facilitate improved landscape treatment; steeper fill batter slopes to minimise intrusion into the wetlands, but to also facilitate planting);
- reference to quantities of cut, fill and borrow material required;
- pedestrian-cycle access,
- costs of different options and bridge length.

There were however, some assumptions made. As illustrated in Table (4), only 5 of 11 potential areas for a description of the proposal were referred to. There was no reference to the:

- process of bridge demolition process, staging, and transport of materials;
- design and location of the culvert;
- location and design of sedimentation basins;
- project life and capacity;
- details about construction staging;
- maintenance responsibilities and costs;
- any property access required during construction;
- transportation of materials and machinery etc;
- working hours during construction;
- traffic and residential-business safety provisions during construction;
- difficulties or problems associated with construction under different weather conditions, or potential for flooding;
- management of cut to spoil or disposal of bitumen from existing approach roads;
- the landscape concept.

Some of these features may have been left to the more detailed design phase, and are generally minor in nature with the exception of the lack of reference to the bridge demolition process.

Table 4: Project Description performance for the Blanchetown Bridge Proposal (shading represents addressed)

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design (preliminary road cross sections)	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	5/11

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at B. As demonstrated in Table (5), of 15 environmental categories, 12 were address which explains the grade for this criterion. Omissions comprised existing climate, air quality, soils and erosion problems. Detail for those areas addressed was however, considered adequate for a project of this scale, although apparently there were some problems with the vegetation assessment identified later in the process.

Table 5: Performance in the description of the environment for the Blanchetown Bridge Proposal (shading represents addressed)

Environment Category	Addressed?
Terrain-landforms-geology (<i>topography</i>)	
Climate	
Air quality	
Hydrology (drainage, water quality, wetlands)	
Soils	
Native vegetation	
Fauna	
Roads and Traffic patterns (including river traffic)	
Demographics (population, economy, etc) (<i>movements, services, economic environment</i>)	
Land use	
Recreation-Tourism	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Landscape Quality	
Existing Noise	
Score	80% 12/15

Impact Assessment

Criterion 2.3.1: Have all the major impacts been addressed in the identification and description of impacts? This criterion was graded at C. Overall, the impact assessment section was very brief, but generally considered adequate for a project of this scale (some impacts were also considered in the description of the environment section). As demonstrated in Table (6), of 19 possible impact areas, 13 were addressed (68%). Omissions related to impacts on:

- land values;
- air quality;
- wastes (impacts of);
- pest plants and diseases; and
- soil erosion.

It should however, be noted that some of these issues were not significant. For instance, air quality may not have been significant given that the project was simply an upgrade to an existing situation, although greater numbers of heavy vehicles may have had some impact on local air quality. As noted earlier, a key limitation in the impact assessment was the failure to refer to the impacts of bridge demolition, particularly on water quality. Moreover, the failure to refer to soil erosion as an impact was a major limitation given that environmental management problems were later identified in this area during construction. Nonetheless, mitigation measures were identified (see later criterion). However, this criterion does not assess the quality of the information provided in the impact assessment section, but simply assesses whether or not this information was addressed to begin with.

Table 6: Performance in the identification of impacts for the Blanchetown Bridge Proposal (shading represents addressed)

Impact Category	Addressed?
Landforms-geology (including hazards)	
Traffic Safety	
Property-Land Acquisition	
Land Values	
Production Values	
Land use	
Hydrology (water quality and drainage)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Recreation-Tourism	
Visual Impacts (& landscape quality)	
Noise	
Air quality	not significant
Fire	n/a?
Wastes	
Pest Plants & Diseases	not significant
Soil Erosion	
Access-social dislocation	
Wide Road Syndrome	n/a (upgrading existing situation)
Score:	68% 13/19

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision making process for or against these alternatives been summarised and justified? This criterion was graded at C-B. As noted in the earlier summary of the EIA process, five alternative options were outlined for comparison. The decision-making process for the choice of options was generally clear, although lacking in detail for each particular option. However, given that the project was an upgrade of an existing situation, the difference between alternatives was not extensive. Selection criteria were also outlined for the initial choice of the options comprising:

- the general alignment of the exiting highway;
- existing side road intersections;
- geographical constraints;
- environmental issues;
- heritage issues; and
- sociological issues.

The reasons for the bridge location were clear given that deviations further away from the existing bridge would require more extensive road reconstructions. It was also noted that a wide range of options were possible, but not all were practically feasible and thus not considered (eg using existing alignment would cause traffic problems during construction).

Criterion 2.4.2: Have alternatives been compared ranked in order of preference for each environmental impact? This criterion was graded at B. A systematic attempt to rank the alternatives was made in Chapter Five of the Working Report which, as noted earlier, incorporated a Factor Ranking Analysis which gives a value weighting to each factor, followed by a ranking of each factor's score, resulting in an overall weighted score for each option. Factors considered in this ranking related to in part to the project objectives and comprised:

- minimise cost (primary objective);
- minimise environmental impact (secondary objective)
- achieve community acceptance (secondary objective);
- ease of construction staging;
- availability of materials for earthworks construction; and
- ease of rivercraft navigation.

Scores were defined as follows:

- 5: Substantial improvement over current situation, or greatly exceeds a given minimum design standards;
- 4: Improvement over current situation, or exceeds a given minimum design standards;
- 3: No change to current situation, or meets but not exceeds a given minimum design standards;
- 2: Decline over current situation, or fails to meet a given minimum design standards;
- 1: Substantial decline over current situation, or fails by a substantial margin to met a given minimum design standard.

Weighted scores were compared in a matrix for each factor, and each factor was clearly described for each option, although the level of detail tended to be limited in some areas (eg for construction staging).

A risk assessment also ranked the northern and southern alignments in terms of adverse community reaction, lack of acceptance from the Aboriginal community, and impacts on rivercraft navigation. The results were presented in a Table which clearly highlighted the 'best' options. Performance was good given the explicit and transparent attempt to systematically rank the alternatives, although some limitations related to the subjective nature of the value weightings assigned to particular factors as was also the case for the Adelaide-Crafers project (which also used a weighted comparison of options). However, this subjectivity tends to be unavoidable in approaches such as this, and it is unclear about whether a ranking based on actual predicted impacts would have been better as opposed to assigning a value. Nonetheless, a much higher score was given for the Bridge project than the Adelaide-Crafers project given that the methodology of the ranking was clearly outlined, the factors considered were described for each option (although lacking in detail in some areas), and the definition of scores was clearly defined.

Mitigation and Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at D. As demonstrated in Table (7), mitigation measures were identified for 8 of 14 impact areas (57%). However, it should be noted that most of the impact areas not mitigated were only minor issues in the project context. Omissions related to mitigation of:

- impacts on land values;
- impacts on fauna;
- impacts on air quality;
- impacts of traffic noise;
- impacts of waste and waste management;
- impacts on local access.

Table 7: Performance in mitigation and monitoring for the Blanchetown Bridge Proposal (shading=addressed)

	Mitigation	Monitoring
Property Acquisition	compensation	
Traffic Safety	design	
Land-property Values	not significant	not significant
Hydrology (drainage, water pollution)		culvert
Aboriginal Heritage	avoid, protect	implied
Vegetation		
Fauna	not significant	not significant
Recreation-Tourism	lookouts	
Visual Impacts	landscape, lookouts	
Air quality	not significant?	not significant?
Traffic Noise	not significant	not significant
Waste (as for soil contamination)		
Soil Erosion		
Access (local traffic)		
Score	57% 8/14	14% 2/14

The overall noise impact was not considered significant enough to justify mitigation measures, and was expected to improve with the preferred alignment of the bridge. Although local access was closed in one areas, in the later Concluding Report, the access road was maintained near the eastern abutment following revisal of the bridge length. Soil erosion was not considered as a separate impact, but mitigation measures were provided in order to protect water quality from runoff. Mitigation of land acquisition entailed not only compensation, but also substantial negotiations with one local business so that the impacts on their operations would be minimised, with assistance for relocation upstream..

Criterion 2.6.1: Have monitoring arrangements been detailed for each impact category? This criterion was graded at E. As for all of the case studies evaluated, performance in reference to monitoring was poor, and was only addressed in two impact areas comprising water quality and Aboriginal heritage, although in the latter case monitoring was implied rather than explicitly stated (refer Table 7).

Communication and Presentation

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at B. Although there was no stand alone Environmental Assessment document, the Working Report still addressed the relevant areas including Introduction (and project need), description of the existing environment,

impact assessment, technical summary, assessment of options, and conclusion. There was however, no bibliography or separate section on environmental management.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at B. Arrangement of the report appeared logical, and key areas were highlighted in a table of contents. Some ambiguities were evident with management issues in the description of the environment section rather than the impact assessment section. Moreover, some impacts were also discussed in the description of the environment. But these were not major limitations.

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B. Readability of the document was generally clear, although sometimes difficult to interpret where technical design terminology was used, particularly given the absence of a glossary. This may have caused some problems for the community, but none were noted. A glossary was presented in the later Concluding Report. There was also some ambiguities with terminology in terms of defining the environment. In the Working Report, environmental issues were initially defined separate to heritage and other social issues, yet in the risk assessment, all of these factors were combined under the umbrella of 'environmental' impact. This was slightly confusing, but not an overly major concern.

Criterion 2.7.6: Was the statement presented as an integrated whole, and was reference made in the text where summaries of data were presented in separately bound appendices? This criterion was graded at B. The report was presented as an integrated whole, and although background surveys and reports had been prepared, these were not essential to the assessment, and were summarised in the report (eg Aboriginal survey).

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. Given that the document was not only an environmental assessment document, but also a planning and design report, the document appeared to be of adequate length. Overall, however, it was a short document relative to the other case studies, and the environmental assessment could have been slightly more detailed (eg numbers of trees requiring removal), and other aspects included (ie impacts of bridge demolition). Given the smaller scale nature of this project, the added length probably may not have added a significant amount for an informed assessment.

Level of Controversy

No public or government controversy appeared to be evident about the quality of the Working Report. Thus in the absence of information to the contrary, both criteria were graded at 100%.

OPENNESS AND COMMITMENT TO CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B. Like all the case studies evaluated, the proponent demonstrated a genuine desire to consult, although there were some indications that consultation was aimed at local groups rather than state or national lobby groups. Questions designed for the interviews appeared to reflect a genuine attempt to elicit the community's concerns by asking for identification of key issues, which was their preferred option, and for any comments on the road alignment. The internal notes for facilitators of small group workshops also indicated a genuine willingness to ascertain views. For instance, it was recommended that facilitators be open, not to evaluate or debate the opinions presented, or to discount ideas. The aim was to brainstorm issues, and to acknowledge that all contributions were valuable with recognition of diversity of opinion. Although the no-go option was not presented for evaluation, community acceptance was considered a major factor in the selection of the preferred alternative. Overall, the objectives of the community consultation process were to:

- inform the local and broader community;
- identify their needs and issues of concern;

- assess impacts of preferred alternative on community;
- resolve issues and gain acceptance.

Moreover, the consultation programme was expanded given the identification of a need for higher level of community consultation following early investigations. Because there was some significant criticism about the project need from some areas of the community (ie due to the short life of the existing bridge), it was proposed to engage marketing consultants to facilitate community acceptance via circulation of newsletters, media articles, press releases and progress updates.

An issue affecting the criticism of the project at the time was the highly controversial Hindmarsh Island bridge project which attracted heated debate and protests in the community about the Aboriginal heritage issue. This controversial project cost the developers, and the government millions of dollars in inquiries, delayed development, and resulted in the resignation of the then Commonwealth Shadow Minister for Environment. Like the Airport Runway Extension, controversial developments in other locations had an effect on the public perceptions of the proposal, and thus achieving community acceptance was important.

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at B. Although not all options were adopted, the Department demonstrated openness in terms of:

- providing a barrier between footway and roadway in response to community concerns (DoT August 1995)
- further investigation into ways of refining two intersections;
- further investigation into maintaining access to a local business (road house)
- investigation into options for demolition of existing bridge;
- investigation into use of open graded bitumen and noise barriers;
- investigation of visibility problems in transfer from local access to highway route.

There appeared to be no concerns for this criterion, and most options appear to have been considered by the Department where necessary and where feasible. Despite not being open to the no-go option, this was not a serious alternative given the urgent safety issues associated with the bridge's poor structural condition. Broader options such as re-establishing a ferry might also have been considered, but given that the bridge originally replaced a ferry service in the 1960s, this may have been seen as a step backwards. Moreover, a ferry service is unlikely to have been able to cater for the traffic volumes, and would interrupt high speed traffic flows associated with a National Highway of this type.

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration with Conception (phase i):** This criterion was graded at E. Environmental factors did not appear to be a factor in the project conception, unless of course you define human safety within the umbrella of 'environment'.
- **Integration Planning (Alternatives; phase ii):** This criterion was graded at A. Environmental factors were integrated from an early stage with the collection of data and early community consultation. Environmental issues were identified upfront in the preliminary planning investigations, and there did not appear to be a differentiation between planning and the EIA process. The fact that the planning report and the environment assessment were one and the same is indicative of close integration. This is also supported by the early and ongoing involvement of a Senior Environmental Officer within the Department.
- **Integration Design (phase iii):** This criterion was graded at B-A. Many of the design meetings and documents referred to technical issues rather than environmental ones. However, most of these environmental issues had been identified in the planning stage, and the design parameters set. For instance, criteria for design encapsulated environmental protection measures such as drainage systems which could contain stormwater and road spillages. Thus, there was a clear transfer and integration of environmental information.
- **Integration Construction (phase iv):** This criterion was graded at D-C. The EMPS provided a good means for the transfer of information to the construction stage which facilitates integration. However, given that some problems were evident with environmental management

at the construction stage, the level of integration appeared to be substantially less than previous phases of project development.

Criterion 3.2.5 *Has public consultation been undertaken as early as practically as possible prior to the release of the Draft EIS?* This criterion was graded at B-A. Permission for the project planning and design to proceed was given in October 1994, which was probably followed by the preliminary and internal planning investigations which identified potentially significant issues. It was not until May 1995 that consultants were appointed to conduct the formal planning studies, and it was in the same month that consultation began, which indicates early involvement in formal studies, but not in terms of the project conception stage. Nonetheless, the project may have been too underdeveloped to be presented to the community at this earlier stage. There were no major concerns with this criterion, although perhaps preliminary consultation could have been undertaken earlier in the internal investigations, but this is only a minor concern, particularly given that two phases of consultation were taken during the consultant's investigations. This criterion was graded at 90%.

Approach to Consultation

Criterion 3.3.1: *Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)?* This criterion was graded at B. The following techniques were used in the consultation process:

- public display
- telephone hotline;
- information brochures;
- comment sheets
- questionnaires;
- stakeholder interviews
- public meeting including small group workshops; and
- billboard.

Unlike the other case studies, no Value Management Workshop was undertaken, but this may have been before the practice was introduced. Of 11 techniques outlined in Table (8), 8 were utilised, although due to some uncertainties about formal submissions, this could actually be 9. The range of specific techniques was not as great as for the Southern Expressway for instance, but these were probably unnecessary given the smaller scale of the project. A higher grade was not given due to the lack of techniques used at the higher end of the participation scale, although it is acknowledged that these techniques are time consuming and difficult to implement.

Criterion 3.3.2: *Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)?* This criterion was graded at C. There did not appear to be any major concerns with transparency, although all community information and brochures required approval from Minister's office. Information in the Working Report appeared transparent, and in the Concluding Report, in addition to billboard displays and circulation of information brochures. The only concerns related to the fact that not all documents produced appeared to be publicly available, (eg Concluding Report?, design reports, EMPs). There are some indications that the Concluding Report was available at council officers, although this is uncertain.

Criterion 3.3.3: *Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays?* Insufficient information was available to assess this criterion, but it is assumed that resources were available for such things as the additional vegetation survey, and the excavation process for Aboriginal heritage sites, and so on. As the evaluation of all case studies progressed, it was found that this criterion was not particularly relevant to differentiating between organisational practice. Resources in all cases, were available where required for the EIA and planning process, and were upgraded where necessary. There was also insufficient information to assess time table flexibility, but it is known that there were substantial pressures to get the project constructed quickly given the dangers of the existing bridge. Timeframes were flexible in that Aboriginal heritage issues threatened the work plan, but there was substantial activity in the Department to try and reduce the impacts on the construction timetable, which indicates the flexibility was limited.

Table 8: Public participation techniques adopted by ETSA for the Blanchetown Bridge Proposal (based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

<i>Approach</i>	<i>Public Power</i>	<i>Participation Techniques</i>	<i>Adopted?</i>
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	?
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Level of Controversy about Openness

There appeared to be no negative comment about the consultation process. Rather, positive comments about the role of the facilitators at the public meetings were made, in addition to positive comments about the public meetings in general: *'Locals were able to have their say and to have their ideas recorded.'* There appeared to be no government controversy about the consultation process. The Public Works Committee was satisfied that adequate consultation had been undertaken (PWC June 1996).

PROPONENT RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted based on the available information and adequate rationale given for the selection of the preferred option? This criterion was graded at B. As for all the case studies, it depends on what value one places on different factors as to which option would be the 'best' alternative. The preferred Corridor E appears to be the best option in terms of:

- reducing impacts on Aboriginal heritage sites;
- materials for construction, given that this option required the smallest quantity fill, and had the smallest surplus of cut materials. No borrow pits were required for additional fill;
- reducing noise and visual impacts on the township;

However, the preferred option was not the best in terms of cost, although the differences between alternatives was minimal. The northern options (including the preferred option) also had a greater impact on the flora and fauna due to intrusion into the wetland areas, but this did not appear to be ranked as highly as Aboriginal heritage issues for instance, particularly given that landscaping and the culvert were considered adequate compensation. Moreover, the impacts on fauna were considered minor for all options. From this perspective, the preferred option appears to have been the better alternative.

The same conclusion can be made based on the factor analysis, although there are some ambiguities and there is not much to differentiate the alternatives. The results of the factor analysis

are presented in Table (9), and option E performs better in more categories (ie at the 3 range) than the other options, although not in terms of cost and environmental impact which indicated a decline in the existing environment (scores of 2 and 2.5 respectively). However, it depends on one defines the 'environment' which could include the impacts associated with fill material, and community acceptance, and rivercraft navigation could be considered social components of the environment. In all of these aspects, the preferred option was the better performer.

It should, however, be noted, that although the preferred option appears to be the 'best' option, of those presented none reached a score of 3 in the factor analysis (ie no change to current situation). All total scores remained near the 2.5 range which indicates no change or a decline in the current situation. Thus, no option was optimal in improving the existing situation. While it is difficult to differentiate the best environmental option, particularly given the issue of defining the 'environment', Option E appears to be the better one overall. That this was the 'best' option was also indicated by community support for the Department's preferred alignment.

Table 9: Factor Evaluation Matrix for the Blanchetown Bridge Proposal (shading represents best option)

	Weight	Option A		Option B		Option C		Option D		Option E**	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Cost	0.35	2	0.7	2.5	0.875	3	1.05	2.5	0.875	2	0.7
Environmental impact	0.20	2	0.4	3	0.6	3	0.6	3	0.6	2.5	0.5
Community acceptance	0.20	3	0.6	2	0.4	2	0.4	2	0.4	3	0.6
Construction staging	0.10	3	0.3	2	0.2	2	0.2	2	0.2	3	0.3
Materials availability	0.10	3	0.3	2.5	0.25	2.5	0.25	2	0.2	3.5	0.35
Rivercraft manoeuvrability	0.05*	3.5	0.175	2	0.1	2	0.1	2	0.1	3.5	0.175
Weighted Score			2.475		2.425		2.6		2.375		2.625
Option Ranking			3		4		2		5		1

*error in original table where this weighting was presented as 0.5 whereas in fact it was 0.05

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at C. Although environmental issues were given a relatively high weighting (the second highest and equal to community acceptance of the project), in the factor analysis weighting, costs were rated higher (refer back to Table 9). Thus, this criterion which requires *at least an equal weighting* did not perform well, as was also the case for the Adelaide-Crafers project. At the same time, however, the cheapest option was not chosen because it did not perform well in terms of community acceptance, materials availability and rivercraft navigation. The best option in terms of cost was also a southern option which would have had greater impacts on Aboriginal heritage. Moreover, despite costing more, the bridge length was extended which improved the arrangement for the eastern abutment, and by doing so, retained an access road to camping grounds, which reduced the impact on the social environment. Thus in theory, the weighting was not equal, but in practice, cost was not the highest priority when combined with other factors. However, the incorporation of a culvert was initially at risk given the additional costs involved. It should also be noted that the cost differences between the options were not as substantial as the differences for other transport case studies, which sometimes amounted to tens of millions. As such, it was easier to place less weighing on cost factors.

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)? This criterion was

graded at B. A higher level of community consultation was adopted following the identification of key issues and increased community awareness and response to the project. Apart from this, and consideration of further options (refer openness criterion) there did not appear to be any need to make other changes to the process, although some inaccuracies in the original vegetation assessment may have resulted in a further survey. Refinements also appear to have been suggested to the environmental management process when problems were identified during construction. It should be noted, however, that this criterion was difficult to assess without a document summarising the proponent's response to community submissions, as is prepared under the formal EIS process.

Criterion 4.2.2: Was the proposal changed on environmental grounds or in response to public consultation where appropriate? This criterion was graded at B-A. There did not appear to be a need to make any major changes given that the project was an upgrade to an existing situation, and given that the 'best' alignment of those presented was adopted. There were however, some minor changes made in response to the community's concerns (refer Table 10). Not all suggestions for improvements arising from the community were adopted, but this is not a major limitation given that the justification against adopt was usually clear and appropriate (eg technical problems of locating the cycle-pedestrian path under the bridge; introduction of speed restrictions). Changes to the project in the EIA, planning and design process comprised:

- extension of the bridge length which improved the arrangement for the eastern abutment, and by doing so, retained an access road to camping grounds;
- incorporation of a traffic barrier to separate the footway on the bridge from the roadway in response to community comments;
- minor refinement of two intersections in response to community comment.
- refinement of access to local business in response to business concerns;
- incorporation of a culvert through the eastern embankment causeway in response to government comments;

Other commitments in the project made during the community consultation phase included:

- rehabilitation with topsoil of disused sections of road;
- direct seeding of topsoil and areas of depleted vegetation;
- minimisation of dust and river pollution during demolition;
- crushing of concrete for later use as road base;
- improved signage for interim access to local caravan park
- rehabilitation of access road beneath bridge.

The Department did not, however, adopt a suggestion from the community to use mature native vegetation to replace removed trees (not cost effective), but this was not a major concern overall. Use of mature trees was evident in other projects such as the Cross Roads proposal, but was probably considered more significant in alleviating the visual impacts which were of community concern.

The significance of changes appeared to appropriate to the need, and were generally minor in nature. Many of the changes made to the proposal were a result of community or government suggestions, and thus, initiative was not demonstrated in this sense. However, this highlights the importance of the consultation phase, and the Department appeared to be quick in their response to adopt some recommendations.

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? This criterion was graded at B. Lessons were learned during the process. For instance, it was noted that Aboriginal monitors should have been present during construction as was the case for the Southern Expressway. However, this lesson may have not been transferred given that it does not appear to have been adopted for the runway extension despite the potential for Aboriginal sites (the consultant did not believe it was necessary). Lessons were also learned from the environmental audit of environmental management and quality of EMIPs which indicated a need for better education of contractors. However, it is not known if this lesson was transferred to other projects..

Table 10: Changes to the Blanchetown Bridge Proposal

<i>Nature of Change</i>	<i>Details</i>
Number of Changes	5 (plus a number of more minor changes)
Type of Changes	compensatory and enhancement of existing environment (eg culvert); traffic barriers; design of intersections; local access;
Change Significance	minor
Timing of Change	following the consultation process
Initiator of Change	community and government recommendations; and adopted by the Department

Level of Controversy about Responsiveness

Generally there appeared to be no controversy about the proponent's responsiveness, which is also indicated in part by the community's general satisfaction with the bridge alignment. Moreover, one positive comment was made:

'I would like to thank you for your positive contribution to the project which I believed reached a satisfactory conclusion. I found it personally encouraging to be involved in a project where Transport SA staff, Civil York and the Aboriginal representatives worked hard to co-operate and ensure that each could achieve individual goals without compromise.'

However, there were several concerns about the design of the intersections, and there was no correspondence to indicate community levels of satisfaction with the final design and its responsiveness to community concerns about safety and speed issues. Moreover, there was some dissatisfaction from one local business. There appeared to be no government controversy about the proponent's responsiveness.

Transport Project Case Study 3
SOUTHERN EXPRESSWAY

PROPOSAL CONTEXT & DESCRIPTION

The Southern Expressway has been in planning since the late 1960s when provision was made for a new north-south transport corridor (DoT November 1995). It also appears to stem in part from the MATS plan which contained provisions for additional traffic capacity to southern areas (DPW July 1995), and land was acquired for the corridor since the 1960s (DoT November 1995). Although the corridor was created, it was not until the mid 1980s that planning and design commenced for what was then known as the Third Arterial Road proposal (DoT November 1995). Due to economic constraints the project was deferred, to be revived in the mid 1990s as the Southern Expressway which was divided into two stages, the first of which is the subject of this case study (previously known as Phase 2 of the Third Arterial proposal). Provision for the Southern Expressway Stage 1 (or Third Arterial Road) was incorporated into the Government's Planning Strategy in 1994 (DoT November 1995).

The proposal involved a single carriageway (just over 7 km) with two lanes from Bedford Park to Reynella which were reversible to facilitate the movement of peak traffic flows. Originally four lanes had been proposed with opportunity to expand to six lanes, but this was later altered to the reversible alternative. The proposal was justified due to increasing traffic volumes on the existing north-south road (DoT November 1995). Populations were expanding to the south, yet employment was concentrated in the Adelaide metropolitan area to the north, and it was believed that the existing capacity was insufficient to cater for increasing pressures (DoT November 1995). It was also believed that the proposal would result in improved safety and a reduction in road accidents; would result in reduced travelling times, and thus provide an incentive for the development of industry and commerce in the south; and would also increase accessibility and hence promote further tourism on the Fleurieu Peninsula (DoT November 1995). It was also predicted that the increasing pressure on the existing road would result in increased noise, decreased air quality and increased use of local roads as bypasses to avoid traffic congestion (DoT November 1995).

Originally it was planned to commence construction in 1990, but due to deferment of funding by the government, construction of phase one was planned to commence in December 1995 for completion in 1997. The expected cost of Stage 1 of the Southern Expressway proposal was \$57 million, and was thus smaller in scale than the Adelaide-Crafers proposal, but substantially larger than the ETSA case studies. When combined with phase two of the project, the overall cost was approximately \$112 million, making it more comparable to the Adelaide-Crafers proposal. Like the Tungkillo-Cherry Gardens transmission line proposal, this is an example of fragmented decision-making, whereby the impacts of the two phases combined may have been more significant overall when compared to the assessment of separate components. However, this did not appear to be addressed as an issue in the EIA process.

EIA PROCESS SUMMARY

EIS Requirement & Guidelines

The proposed construction of the Third Arterial proposal was announced by the government under Premier John Bannon in August 1984, although it is not known when the then Highways Department formally contacted the DEP about the Third Arterial proposal. On 29 January 1986, the Assessments Branch of the DEP wrote to the Minister for Environment and Planning to seek advice on the level of EIA required. Several issues had become apparent at the early planning and design phase including a potential impact on Sturt Triangle (vegetation removal, effect on Sturt Creek, heritage farmhouse), the need for overpasses or intersections at major roads, acquisition and relocation of remaining residential properties and commercial businesses, potential impact on adjoining land uses (eg residential development), visual impact on the Hills Face Zone, and effects on the O'Halloran Hill Reserve and future land uses.

Both the DEP and the Highways Department agreed that the scale and sensitivity of the project necessitated public involvement. Although it was recognised by the DEP that the Highways Department had their own formal and explicit EIA process, it was also noted in the Highways Department criteria that projects which had a 'major' environmental impact would require an EIS. Moreover, while not technically subject to the Planning Act, the 1979 Cabinet requirement for EISs still held force. In considering the most appropriate approach to EIA, three options for assessment levels were considered by the DEP comprising:

- **option 1:** which left most of the responsibility of EIA and consultation to the Highways Department with the preparation of a Planning Report which was to be submitted formally to the DEP for assessment;
- **option 2:** which followed the formal EIS process under the Planning Act which gave control of consultation and EIA to the DEP; and
- **option 3:** which combined options (1) and (2), involving consultation and EIA managed formally by the DEP through the EIS process in addition to consultation undertaken by the Highways Department.

The Highways Department preferred option (1), probably because they retained greater control over the process, but the DEP recommended option (3) to the MEP. This was based on an assessment of the relative merits and disadvantages of each option which is summarised in Table (1).

Table 1: Advantages and Disadvantages of approaches to the EIA process for the Southern Expressway Proposal as assessed by the DEP in 1986

<i>Option</i>	<i>Advantages</i>	<i>Disadvantages</i>
1	<ul style="list-style-type: none"> • Department's consultation programme comprehensive; • less administrative load for DEP which would allow commitment of resources to actual assessment of project; • Highways involvement would facilitate greater familiarity with consultation process; • previous reports by Highways on major projects not subject to an EIS have been very thorough. 	<ul style="list-style-type: none"> • accountability of the Highways Department and credibility of public participation process and EIA may be questioned by the public if the proponent is seen as managing the process and not an independent authority; • the Highways Department would not legally have to respond to public submissions if an EIS is not required; • level of documentation would not be as great as that provided in an EIS; and • the DEP's Assessment Report would not be published.
2	<ul style="list-style-type: none"> • proponent would be perceived as being more accountable and greater credibility given to the participation and EIA process compared to option 1; • proponent would have to respond publicly to the submissions received during exhibition of the Draft EIS; • more information would be made available for public comment; • the DEP Assessment Report would be published; • an EIS on a project of this size and sensitivity is more consistent with past decisions to require other Government agencies to prepare EISs; and • the proponent would benefit by becoming more familiar with the EIS process. 	<ul style="list-style-type: none"> • DEP would have an additional administrative workload associated with the EIS process; • an EIS requirement may damage the present good working relationships between the departments, if inappropriate guidelines are prepared; • requiring an EIS on a project which has already been given approval by Government may damage the credibility of the EIA process; and • the Highways Department would not manage public involvement and therefore would not benefit from this experience.
3	<ul style="list-style-type: none"> • would entail the most comprehensive public participation programme; • would share all of the advantages of Option 2 as well as providing the proponent with educational benefits of involvement; and • would still allow the proponent to use the participation programme it has devised. 	<ul style="list-style-type: none"> • it would share all of the disadvantages of Option 2 (apart from the last disadvantage)

Option (3) was recommended due to:

- the potential of the proposal to trigger substantial public interest and debate. *'...it will be essential that the public perceives the proponent as being accountable and the public participation and EIA process has credibility'*;
- the fact that the project ranked as 'major' on at least two of the Highways Department's criteria (ie major roadworks, substantial change in environmentally sensitive location);
- previous experience with the Highway Department's internal EIA process on one proposal which indicated some deficiencies that would be overcome by the more formal EIS process and give greater control to the DEP over documentation adequacy (ie planning reports not publicly released, whilst EIS is stand alone document and publicly available);
- the opportunity for the Highways Department to become more familiar with the formal EIS process, and to strengthen relations between the DEP and the Highways Department; and
- the merits of the Highways Department's consultation programme which would complement the formal EIS process.

An EIS was subsequently required in February 1986 by the MEP, and draft guidelines for the EIS were prepared by the DEP in December 1986 and revised in July 1987. The guidelines were similar in structure to guidelines prepared for the Adelaide-Crafers proposal and the ETSA case studies, although more detailed in terms of proposal description, management requirements (ie responsibilities), monitoring requirements, and with requirements to outline the policy and legislative framework which required compliance.

Preliminary Planning & Public Consultation

Internal planning reports at this early stage were not available in the files examined, but a series of public information brochures indicated that alternatives were being assessed and presented to the public early in the process and prior to the formal EIS. While this demonstrated transparency, it should be noted that the level of detail on the surrounding environment and impacts of the proposal was limited at this stage.

In January 1986, prior to the formal EIS requirement, a public information brochure was prepared by the Planning Investigations Section of the Highways Department which outlined the need for the Third Arterial proposal, a description of the study process, and the alternatives examined. It was noted in this latter case, that preliminary routes within a study area were being assessed in terms of their impacts on land acquisition, traffic noise, appearance and local access. At this early stage, a traffic survey had been conducted, photographs of the study area had been taken, and drillings had also been undertaken to identify soil types.

In October 1986, a second public information brochure was produced which reported on the progress of the study (eg traffic survey, aerial survey, soil and rock investigations), the environmental assessment process, public responses to the first brochure, and the consideration of alternatives. Because the transport corridor was quite narrow, the number of major alternatives were restricted so that the effects on houses would be minimised. In addition to alternatives such as potential connection sites to existing roads, three route alternatives were proposed comprising Alternatives A, B and C, of which alternative A was the original Transportation Corridor.

Public issues at this stage related to noise impacts, landscaping, community impact, visual impacts, alternatives considered, suggestions for alternatives, property acquisition and the decision making process. Support for improvements were noted due to increasing traffic congestion, but some individuals affected by the proposal supported the possibility for a different approach to upgrade, which is a similar trend to the Adelaide-Crafers proposal.

The Project is Deferred & Divided

One month after the final project guidelines were prepared in July 1987, the same government announced that construction of the project would be deferred until 1993 because of a tight economic climate. The announcement is not surprising given that, in addition to economic

problems, the Labor government was not overly supportive of large road projects, and was responsible for removing one of the last major components of the MATS plan in the early 1980s (Interview 71 1999). Thus, the State government was unresponsive to council and industry lobby groups which pushed for the proposal to proceed. The proposal was also divided into two phases involving (i) upgrades and widening of existing roads (Main South Road and Marion Road); and (ii) the new Third Arterial road (now called phase 1 of the Southern Expressway).

Phase (i)

Phase (i) of the Third Arterial project is not assessed in this case study, but it is worth noting that assessment was completed by the then Department of Road Transport in 1992 with the preparation of an internal environmental report and completion of a Departmental IEF form (Identification of Environmental Factors) (DRT September 1992). Extensive public consultation was also undertaken in 1991, with a major public display in Sturt Triangle for four weeks which received about 900 visitors (highest response the Department had ever received), and 100 written comments. Overall 500 written comments were received on the proposal which is substantial (DRT September 1992). Based on this environmental assessment, which also involved consultation with local Aboriginal communities and landscaping to mitigate impacts, the Planning Investigations section of the Department concluded that phase (i) would have little or no significant impact, and the project was completed in 1994 (DoT November 1995).

Phase (ii)

Despite deferment of the proposal, and in order to reduce public uncertainty and concerns, a route was selected for phase (ii) which avoided disturbance to residential areas. The Highway Department's preferred route, which was presented in a third information bulletin, was a combination of Alternatives B and C. In August 1987, discussions between the Highways Department and the DEP, indicated DEP support for Alternative A because it involved least disruption to the proposed Reserve (O'Halloran Hill Recreation Park). Nonetheless, the DEP did not rule out the Highway Department's preferred option as long as access across the highway could be provided, which resulted in investigations by the Highways Department into an underpass.

In the absence of funding, it was planned to continue preliminary design, to acquire properties, and to prepare an EIS in preparation for future government commitment. Prior to 1989, for instance:

- a vegetation survey was conducted in July 1987;
- heritage lists were reviewed including the State Heritage List, Register of National Estate, Register of Significant Trees, and Local Council Heritage lists;
- in September 1987, a policy of 'owner-approach' acquisition was adopted by the Minister of Transport which gave compensation for individuals voluntarily approaching the Department for acquisition of their properties. Compensation involved the same entitlements received under compulsory acquisition. This resulted in a number of owner-approach acquisitions of the 145 properties to be acquired, and thus reduced the social-economic impact to be assessed in the Draft EIS.

EIS Requirement Withdrawn & Aboriginal Survey Requirement

Despite extensive planning investigations, the Draft EIS for phase (ii) of the Third Arterial proposal was not forthcoming in 1987 as predicted in the second information bulletin. In February 1989 the status of the EIS requirement was reviewed by the DEP which stated that a number of changes to the proposal had reduced its overall impact. These changes, some of which were noted previously, included:

- deferment of the proposal and selection of a preliminary route (Alternative B-C);
- completion of the majority of property acquisition due to voluntary owner-approach policy;
- approval of a proposal to develop a Science Park in Sturt Triangle. The Highways Department realigned part of the corridor to avoid this development which resulted in less bisection of the Sturt Triangle; and
- as part of the process of dedicating O'Halloran Hill park as a reserve, a draft management plan had been prepared which catered for the Third Arterial Road.

Overall, it was stated by the DEP that:

'The Third Arterial Road project is still a major urban road proposal which will arouse considerable public interest and debate. However, the changes to the project since 1986 have reduced the number of areas where options exist and therefore in which the public could play a major role in determining the road alignment. The number of major issues yet to be resolved has also been reduced.'

The same three options for the level and approach to EIA proposed in 1986 were reassessed, and option (1) was recommended by the DEP which gave control of the EIA and consultation process to the Highways Department, and which required the preparation of a Planning Report. On this advice, the Minister withdrew the original EIS requirement in March 1989.

Although no formal EIS was required, in 1991 the Aboriginal Heritage Branch of the DEP required the Highways Department to conduct an archaeological survey, which was undertaken in the same year, and which found no sites of significance.

Planning of Phase 2 of the Third Arterial Road Continued

Although much of the earlier planning work was conducted or managed by the Planning Investigations Section, work in the 1990s was dominated by large consultants such as Rust PPK, Maunsells Pty Ltd and Acer Wargon Chapman, the latter of which prepared the Environment Report.

Assessment of Route Options

As for the Adelaide-Crafers proposal, an internal assessment of route options was undertaken prior to public assessment in the EIS (or in this case the Environment Report). In 1994 two reports were prepared by Rust PPK which involved the identification and assessment of options for Phase 2 of the Third Arterial proposal. Within these reports, factors such as option costs, connections, cross-sections, alignments and engineering considerations were addressed, in addition to the social and environmental assessment. Strangely, the report was reproduced in August 1996 as a summary report after the environmental assessment had been conducted. Despite the fact that alternative B-C had previously been identified for the route, the 1994 reports by Rust PPK assessed a number of other alternative alignments within three sections of the proposed road comprising:

- the northern Darlington section - Alignment 1, 2(a) and 2(b) (*alignment 1 was based on past planning of the project, whilst alignment 2(b) involved an elevated structure called a viaduct for 1,200 metres*);
- the Central section - Alignments 1 and 2; and
- the southern Reynella section - two termination points P and R.

A preliminary comparative assessment for the northern routes was conducted using evaluation criteria such as:

- impacts on business;
- noise effects;
- fumes and lead levels;
- vibration;
- light overspill;
- visual amenity;
- vegetation loss;
- water course impact and erosion potential;
- loss of housing;
- reduced access to services and facilities;
- community isolation;
- loss of open space; and
- construction impacts.

Unlike the Adelaide-Crafers highway proposal no attempt was made to weight the importance of social and environmental factors relative to economic ones.

It was found in the assessment that the northern Darlington Section would have the greater impacts in terms of business disruptions, loss of housing, construction effects and ongoing effects of traffic movement. Within this section, the originally publicised alignment 1 had the greater impacts,

whilst alignment 2(b) appeared to be the better option on environmental and social grounds. However, other factors went against this option such as high visual impact of the viaduct, substantial traffic impacts during construction (ie elevated along the line of Main South Road), and a greater cost of approximately \$25 million compared to the other two options. Although this cost differential was not as large as between options in the Adelaide-Crafers proposal, it was still substantial overall, particularly when compared to the much smaller costs of the ETSA case studies.

Funding Announced & Review of EIS Requirement

In March 1995 the new Liberal government which was elected in December 1993 announced that the project would proceed and made funding available for design and construction. This was a welcome decision for many of the lobbyists which had been pushing for the project over several years. Major earthmoving and contracting agencies also welcomed the magnitude of the proposal given concerns at the lack of construction activity in the State. The project was now called the 'Southern Expressway' which was divided into two phases, the first of which comprised a new road from Darlington to Reynella which was equivalent to Stage 2 of the original Third Arterial proposal (the subject of this case study).

Given that the Development Act 1993 had replaced the Planning Act 1982, two officers from the Department of Transport (comprising an environmental officer and planning investigations officer) contacted the DHUD to determine whether an EIS would be required under the new Act. Although the proposal was not defined as 'development', it could trigger the EIA process as a 'project' under Section 46. However, the Minister of Housing and Urban Development informed the Department of Transport in March 1995 that an EIS would not be required, whilst the requirement would be reviewed for Stage 2. This decision was the cause of controversy, and there were calls for a full EIS by public transport lobby groups such as the Southern Transport Community Coalition, and People for Public Transport, so that full consultation could be undertaken. It was noted by one of these groups that *'the State government [was] attempting to stifle debate and dissent on this issue, and nobody else has been given a chance to put forward any opposing views.* The Australian Democrats also argued that a full EIS should have been required, but these requests had no influence on the government.

Aboriginal Surveys and Negotiations

Only one day after the government's revival of the project it was announced to the Department by a local council that which had commissioned its own archaeological survey in 1994, that an Aboriginal site had been discovered in Sturt Triangle. From this point, Aboriginal heritage became a significant issue for the Department by threatening part of the project's alignment, and resulting in extensive consultation and negotiation with the local Aboriginal community during 1995. The finding made newspaper headlines where it was noted that the Expressway traversed *'one of the most important archaeological and mythological sites of the Kurna people...'*

A site visit was conducted, and a meeting was held in May 1995 between the Senior Environmental Officer of the Department and the Chairperson of the Kurna Heritage Committee and others, which resulted in further archaeological surveys conducted in liaison with the Kurna Committee to identify any other sites. The Warraparinga area in the Sturt Triangle was noted by the Department as highly significant to the Kurna people given that it was proposed to establish an interpretative centre to interpret the heritage of the area, and given that Aboriginal scarred trees were present in addition to Aboriginal burial sites and connections with local mythology. The Department recognised the delicate nature of this issue, and dealt with it cautiously and as sensitively as possible.

Extensive negotiations with the Aboriginal Kurna Heritage Association were conducted from October 1995, which indicated that the Heritage Committee either wanted the Expressway to avoid any impact on sites in the Triangle, or alternatively a major compensation package if the sites were to be destroyed. It was decided to negotiate a package for compensation, and in principle agreement was made about site treatments, provision of Aboriginal Access over Sturt Creek and Aboriginal art and interpretation, and Aboriginal employment and training on the project. Greater demands made in early February 1996 by the Association such as land for an administration centre, office equipment and permanent employment were refused by the Department. An Agreement for compensation which allowed destruction of Aboriginal sites was subsequently made between DoT and the Committee on 23 August 1996 (see later section on Environmental Clearance).

Organisation and Management

Shortly after the government's decision to build the road, a study team was established within the then Highways Department to commence planning and preliminary design work. The internal focus was later replaced with a more complicated approach involving multi-level vertical integration and the coordination of several consultants and subconsultants. Figure (1) provides a simplistic illustration of the departmental and consultant involvement (although not all participants are known). Maunsell Pty Ltd coordinated the entire process, including planning, EIA, design and construction, which was overseen by an internal Departmental coordinator. Although consultants are not fully independent of their employers, the twice removal of consultants for the preparation of the Environmental Report may facilitate greater independence.

In addition, a Strategic Assessment reference group was formed including members from Planning Investigations, Infrastructure Planning Section, Major Projects Section, Transport Policy Unit, and a representative from the Office of Public Transport Board (DoT April 1995a). With additional input from environmental officers, this tends to resemble the matrix approach to project management, although in this case, these participants were not the primary contributors of information and were not present for the life of the project.

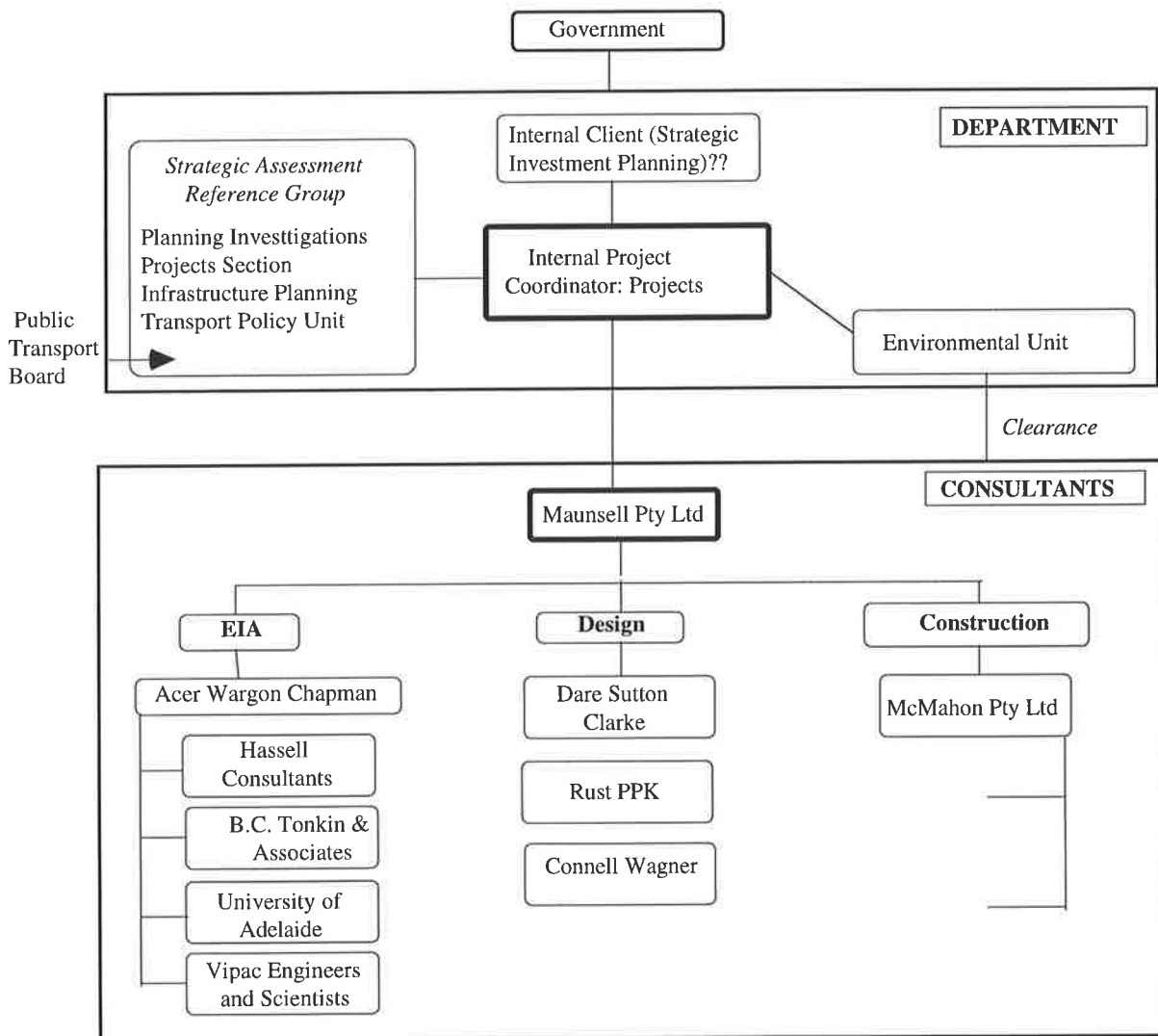


Figure 1: Simplistic representation of management structure for the Southern Expressway proposal for planning, EIA, design and construction. There were also a number of other external participants such as the community, DHUD, DENR, RAA, Kaurna Heritage Association, and the Public Works Committee among others

The use of one coordinating team ensures an element of consistency in the planning, design and construction processes. Given that the team was dominated by an external consultant, there appeared to be no role for a permanent internal environmental officer. The consultant appeared to have sufficient expertise, or employed subconsultants. However, internal and extensive environmental officer involvement was apparent, particularly for the Aboriginal heritage negotiations and the environmental clearance. The input of the internal environmental officer in this case was more substantial than other case studies given their critical role of providing environmental clearance for the proposal.

Strategic Assessment Study & Project Proposal

While the Aboriginal issue was being addressed, the Infrastructure Planning Section of the Department of Transport completed two reports entitled: 'Strategic Assessment Study' and 'Project Proposal'. The Strategic study, rather than being a broader study of regional environmental implications (ie as for Strategic Environmental Assessment), was an outline of the major issues that required resolution in the planning stages. By this time, the proposal had been modified from a four lane road to a two lane reversible carriageway. Issues to be resolved were predominantly technical and comprised the nature of connections at Reynella and Darlington, and provision for public transport to ensure protection of a public transport corridor.

Outlined within the subsequent Project Proposal was a list of environmental issues which needed to be encapsulated within the planning investigations' environmental impact study. Although the MEP only required a Planning Report which traditionally incorporates environmental issues, it was determined in the Project Proposal to prepare a separate stand alone Environment report which would be released for public consultation. This demonstrates initiative and enhanced transparency and accountability. It was intended at this stage to address and make every effort to mitigate the effects on:

- landform features
- native vegetation, conservation value, rare and endangered species;
- exotic species;
- trees with heritage value;
- existing land use including agriculture, commercial, mining, residential, parks, tourism;
- Aboriginal and non-Aboriginal heritage;
- environmental amenity;
- unique or rare physical features
- water; including stormwater runoff;
- marine areas;
- wetlands;
- flood prone areas;
- air quality (local, greenhouse);
- flora and fauna;
- contaminated land; and
- aesthetic and human interest (amenity).

Appointment of Consultant & Value Management Study

In May 1995, Maunsells consultants were appointed by the Department of Transport to manage the design and construction of the expressway, thus removing much of the direct day-to-day responsibility from the Department (although an internal project coordinator had been appointed to oversee the process). As part of this role, Maunsells commissioned a Value Management Study for the Southern Expressway which comprised a multi-disciplinary discussion group facilitated by an independent body (in this case the New South Wales Department of Public Works and Services, Product Evaluation Unit). In addition to representatives from the Department of Transport, participants included local councils, the RAA, DHUD, Department of Environment and Natural Resources, and planning consultants among others. The study involved a two day workshop and aimed to assess the project and concept design including operational factors, environmental issues and a linear park concept. The study essentially amounted to a brainstorming of issues, and it is unclear to what extent the outcomes contributed to the environmental assessment and planning process. What did emerge however, was the need for an Environmental Management Plan, a linear park to absorb impacts, and community consultation to ensure needs were taken into account, which indicates genuineness to the consultation approach.

EIA Scope

In early September 1995, Maunsells prepared a summary of the environmental assessment approach to be submitted to the Minister for Housing, Urban Development and Local Government Relations for endorsement. It was noted that the scope and reporting process would involve similar conduct to the EIA process under the Development Act 1993. Specific guidelines for the contents of the Environmental Report were also included and discussed with the DEP and internal Environmental Unit. The level of detail and content of these guidelines was similar in nature to the earlier guidelines produced when the EIS was required, and to the Adelaide-Crafrers EIS.

The Environment Report

The Environment Report (ER) was finally prepared and released in early November 1995 (DoT November 1995), nearly ten years after the original EIS requirement, and approximately nine months after the government's revival of the project. Although Maunsells was responsible for the overall management of the project, consultants Acer Wargon Chapman (SA) Pty Ltd were appointed to prepare the Environmental Report (ER) in early September 1995 (DoT August 1996). The ER was completed in a very short period of time (under three months), which is substantially shorter than the other case studies. However, given the efforts already devoted to planning and environmental investigations by the Department since 1986, this may not be a significant concern. Several background reports to the ER were also prepared relating to hydrology, land use, flora and fauna.

Like the Adelaide-Crafrers project, the environmental document was formatted in A3 pages, and was approximately 92 pages. A substantially large portion of the report was dedicated to graphic illustrations of the environment, the proposal, and factors such as noise contours. The contents of the Environment Report are summarised in Table (2), whilst the proportion of focus for each task is presented in Table (3). The greatest focus in the Expressway Environmental Report was on the description of the environment (37%) followed by the impact assessment (22%) and description of the proposal (21%). Attention to mitigation and management in the text was limited (1%), but a very brief Environmental Management Plan was incorporated into the appendices.

Table 2: Contents of the Environment Report for the Southern Expressway Proposal

Executive Summary
1.0 Introduction (the project, study area, objectives)
2.0 Background and Need for the Project (need, statutory requirements, consultation)
3.0 Existing and project traffic patterns
4.0 Existing environment (topography, geology, soils, hydrology, water quality, climate, flora, fauna, land use, land tenure, social profiles, economic outlook, air quality, Aboriginal heritage, European heritage, landscape and scenic values, bushfire hazard, land contamination, utility services, noise and vibration)
5.0 Project Development (options considered, do nothing, public transport, upgrade, new road corridor, alignments considered, selection of proposed alignment)
6.0 Project Description (design criteria, operational features, traffic management, pedestrians, bicycles, lighting, earthworks and drainage, rehabilitation and landscaping, construction)
7.0 Environmental interactions, proposed safeguards and ameliorative measures (drainage, erosion and sedimentation, geotechnical, water quality, vegetation, fauna, traffic, accessibility, social considerations, economic considerations, air quality, visual amenity, land tenure, land use, heritage, hazard assessment bushfire, contamination, waste disposal, noise, construction, etc)
8.0 Environmental Management (stormwater monitoring, ecology, pedestrians, cyclists, air quality, heritage, land contamination, noise)
9.0 Conclusions
10.0 References
11.0 Glossary

Table 3: Proportion of focus in the Environment Report for the Southern Expressway Proposal

EIS Task	% Focus*
Summary	3
Introduction	1
Proposal Description	see preferred concept
Policy Framework	0.5
Proposal Need**	2
Alternatives Description	6
Description of environment (baseline)	37
Description of Preferred Concept or proposal	21
Impact Description & Evaluation	22
Mitigation	1
Monitoring	0
Public consultation (approach)	1
Conclusion	0.5

* does not total 100% because of overlaps on some pages and between tasks
 ** includes parts of chapter on traffic patterns
 *** as above

In addition to broader alternatives such as the do-nothing option, six alternative alignments were presented and compared in the ER. It was difficult to identify their relationships with previous alternative alignments assessed given the use of different terminology, but an estimate of equivalent routes is made. The options in the Environmental Report comprised northern options:

- N1 (equivalent alignment 1);
- N2 (equivalent alignment 2a), and
- N3 (equivalent 2b);

and southern options:

- S1 (equivalent central alignment 1);
- S2 (equivalent central alignment 2); and
- S3 (no equivalent).

Refer Appendix (19) for an illustration of these options. These alternatives were briefly compared in a table in terms of cost, traffic implications, ecology, land use, visual impacts, amenity/social impacts, air quality, house, heritage and economic factors. The preferred option was N2 and S3, the former of which was a similar finding to the earlier 1994 assessment of options by Rust PPK. It was concluded in the Environmental Report that:

‘For the northern options it can be seen that Option N3 performs best in terms of environmental and social impacts due to the confining of most impacts within the Main South corridor. However, Option N3 is the most expensive option being \$23 million and \$25 million more than Options N1 and N2 respectively, which is a substantial cost penalty. Option N1 is marginally more expensive...than Option N2 and performs worst with regard to environmental and social impacts due to severance impacts through Darlington. Therefore Option N2 is preferred for the northern alignment...

For the southern options the costs are similar for all alignments because of trade off between various elements...Option S2 is not preferred due to severance impacts on the CSIRO land. Choosing between Options S1 and S3 involves closer examination of visual impacts and noise impacts...

On balance it is considered that route S3 is preferred due to reduced visual impacts. Noise impacts...would be mitigated by the use of barriers and thus any difference between the options neutralised...

The above discussion summarises the principle arguments which led to the preferred route alignment for the Expressway being determined to be a combination of N2 for the northern

alignment and S3 for the southern alignment. This provides an acceptable level of environmental impact with the lowest cost' (DoT November 1995: Section 5, page 3).

This preferred route was the focus of the impact assessment, which contrasted with practice in the Adelaide-Crafers EIS which assessed all alternatives equally in the impact assessment section. The Adelaide-Crafers example allowed greater flexibility and gave the impression that a decision had not yet been made, and hence was open to public and government influence (although in reality a decision had been made). As noted in the ETSA case studies, focusing the impact assessment on one alternative can be a cause for substantial controversy. Nonetheless, the Environment Report concluded by arguing that despite several environmental costs associated with the project, '*...the proposal is the best of the available transport options for the Southern region and that the environmental, social and economic benefits to the community will considerably outweigh the corresponding costs.*' (DoT November 1995: Section 9, page 1). These benefits comprised:

- reduced traffic volumes and improvements in environmental amenity;
- reduced travel times;
- improved accessibility for commercial and tourist traffic;
- reduction in transport costs for business;
- reduced accident frequency and costs;
- decreased noise levels for some areas;
- improved air quality due to increased road efficiency;
- improvement landscape amenity along the route and adjacent locations;
- provision of recreational and commuter cycling facilities; and
- creation of passive recreation opportunities by the development of adjacent open space (DoT November 1995).

The Environment Report also suggested that improvements would be made to habitats with additional shelter and food for fauna via the landscaping proposal and rehabilitation of a previously highly modified area. Rehabilitation and provisions of understorey for instance, was proposed to cater for specific species in the area. Thus, the proposal not only had its impacts, but also aimed to improve a partially degraded landscape and habitat.

Public Exhibition and Response

During preparation of the Environment report, councils were consulted, the Value Management Workshop was held, and two focus group workshops were held with local stakeholders (including community groups), in addition to a consultation workshop, but only four residents attended the latter. Moreover, 590 calls were made to the information telephone line from 21 March to 4 September 1995.

Following comments on quality by the Department's Environmental Unit and the DHUD, the ER was released for public exhibition for a period of four weeks from 11 November to 8 December 1995 which is shorter than the usual period required for EIA under the Development Act (six weeks). During this time 21 public submissions were received, in addition to enquires from a group of school children (19 submissions), and 3 government submissions (EIA Branch DHUD, Housing Trust, and Environment Protection Authority). Over 150 individuals also attended the public display of the proposal when attended by the consultants. Some of the issues raised included:

- alignment and proximity to individuals;
- details of design in Sturt Triangle;
- entrance and exit arrangements for the Bedford Park area;
- noise and visual impacts;
- severances of access in the Sturt area;
- impact on O'Lalloran Hill Recreation Park;
- security issues in the Sturt/Darlington area;
- general philosophical views that the Expressway will not solve the traffic problems and that public transport should be provided instead;
- recreational impacts;
- air and water quality;
- environmental management (DoT August 1996).

It was noted in a later information bulletin in 1996 that no new topics had been raised, and it is interesting that criticisms of proposal need and suggestions of alternatives such as public transport were considered by the Department as philosophical issues rather than realistic options. Some of the key issues raised in the submissions on the ER and proposal are summarised in Figure (2), although it should be noted that these issues may not be representative of all concerns given the previous provisions for consultation. The main concerns were visual impacts, noise impacts, provisions for public transport, land values or property acquisition. Issues raised in the free telephone information line are illustrated in Figure (3).

Although not required by law, each written submission was directly responded to, and the public and government comments were summarised five months after the exhibition period by Maunsells in a draft Public Exhibition Summary Report (revised in August 1996). This too demonstrated initiative, but the report was not comparable to the Supplement prepared under normal EIS procedures given that the actual text was not comprehensive (only 7 pages). Rather, appendices contained the submissions and letters of response. Nonetheless, the original letters were all included, and a table which summarised issues and responses by Maunsells was useful for identifying concerns and public influence on the project, and thus provided transparency and accountability in the process. However, it is unclear whether this report was publicly available. It was concluded by Maunsell in a response to one submission that:

'The environmental assessment for Stage 1 of the Southern expressway from Bedford Park to Reynella which is now complete has indicated that the environmental impact is relatively minor with the impacts able to be managed within required limits.'

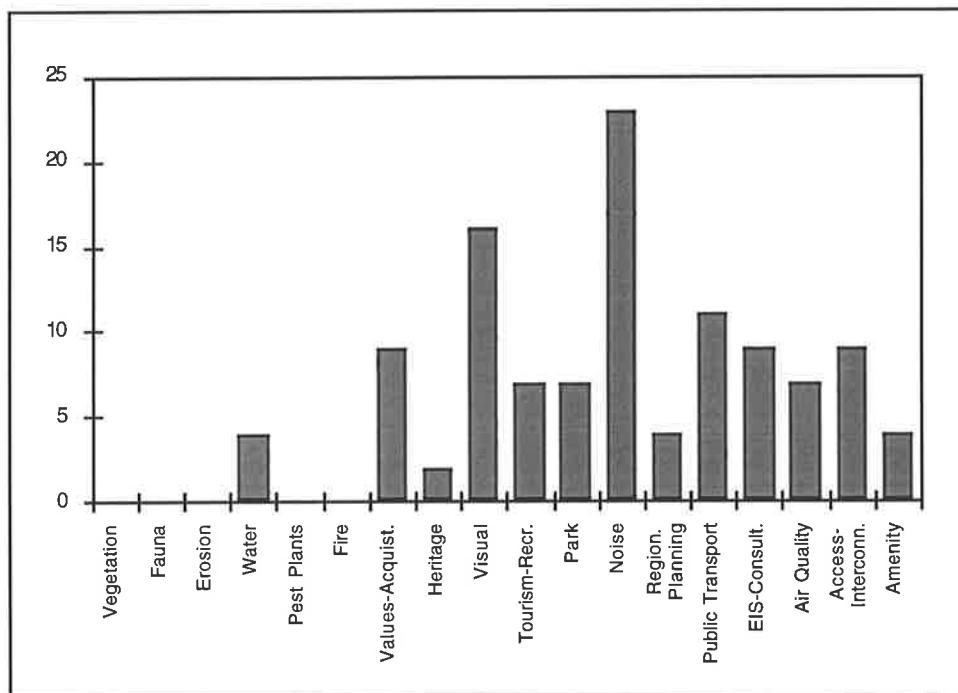


Figure 2: Issues raised in formal public and government submissions on the Environment Report for the Southern Expressway proposal (% of submissions raised) (compiled from DoT August 1996)

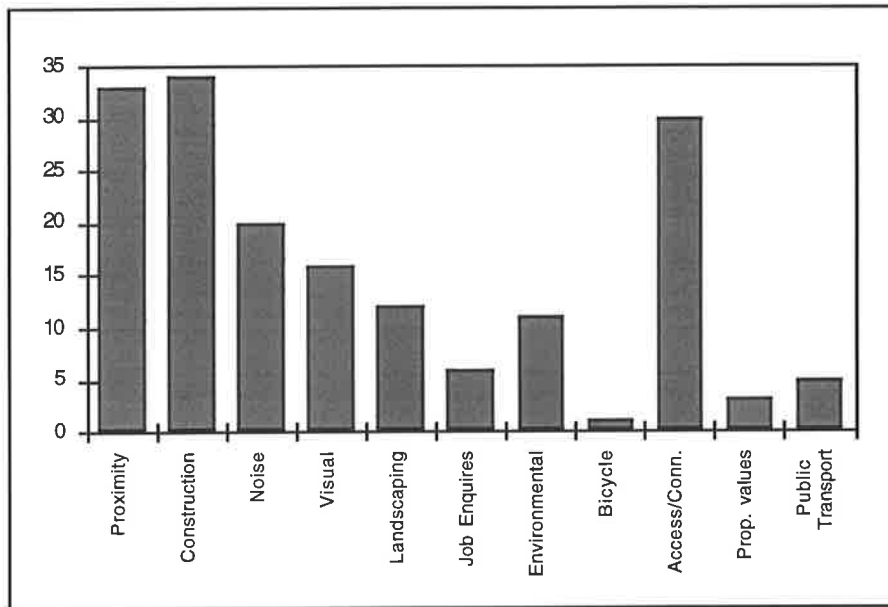


Figure 3: Issues raised in information calls to the free telephone line for the Southern Expressway (% of calls)

Public Works Committee & Preliminary Environmental Clearance

Prior to the release of the ER, a Parliamentary Public Works Committee hearing was held for the project on 1 November 1995. Departmental attendants comprised the Chief Executive, the Manager of Planning Investigations, and the Supervising Engineer in Network Planning, in addition to the project manager from Maunsells Pty Ltd. Only four public submissions were made for the Committee hearing, three of which strongly opposed the project on social and environment grounds. Criticisms related for instance, to a lack of serious consideration of public transport, health and air quality issues, and conflicts of the road with policies preventing urban sprawl. The low number of submissions was of interest to Maunsell and was explained as a possible reflection of:

- community apathy;
- acceptance of the project inevitability; and/or
- lack of understanding of process.

It was generally believed however, that the low numbers indicated a lack of opposition to the proposal, and it was predicted that they would have little influence on the PWC. This prediction was correct given that, despite opposition in the submissions, the Public Works Committee gave 'in principle' support to the proposal and recommended that earthworks be commenced to remove unstable soils and prepare for the road (as requested by the DoT). The Committee also requested that evidence be presented prior to further works being instigated (PWC July 1996).

Internal environmental clearance for the preliminary earthworks, which was considered to have little environmental impact, was given by the Department's Environment Unit on 11 December 1995. Full environmental clearance was to be given after Maunsell's response to the public submissions was completed and submitted to the DHUD and Environment Protection Authority for comment. Approval to proceed was given subject to:

- implementation of mitigation measures in the ER;
- implementation of an Environmental Management Plan;
- monitoring of the area for Aboriginal artefacts (to be conducted by the Kaurna Aboriginal community).

Moreover, if Aboriginal artefacts or sites were found, work was to cease and consultation undertaken with the Department of State Aboriginal Affairs and the Environment Unit in the

Department of Transport. Given this approval, there was little chance for the public to prevent the proposal from proceeding, although approval was perhaps a foregone conclusion given the government's support.

Environmental Assessment and Concept Development Report

Following preliminary environmental clearance for the earthworks and the completion of the public exhibition period, Acer Wargon Chapman consultants prepared an 'Environment Assessment and Concept Development Report' in February 1996 (an earlier version had been prepared in 1995). A number of mitigation measures were included, some of which are summarised in Table (4). Like the Adelaide-Crafers proposal, the Department demonstrated a clear and strong commitment to managing and minimising any potential impact as far as practicable. This is also indicated by the proposed rehabilitation of previously disturbed areas. Prior to the EIA requirement, it is highly unlikely that these measures would have been required or incorporated.

Table 4: Mitigation measures proposed for the Southern Expressway proposal in the Environmental Assessment and Concept Development report

Category	Mitigation Measures
Landscaping and access	<ul style="list-style-type: none"> • mitigate structural impacts • stabilising cut and fill batters • integrating road with landscape • screening of views • development of mounding and planting to reduce visual and noise impacts • fencing of the corridor • provision of access to fire tracks • rehabilitating disturbed areas • incorporating wetlands and stormwater detention areas to minimise runoff and erosion • creek stabilisation • development of footpaths • incorporation of native species using local seed stock • creation of a dry land native grass habitat • provision of pedestrian access • control of runoff during construction • early planting of earthwork areas to prevent erosion and reduce establishment of weed species
Noise	<ul style="list-style-type: none"> • inclusion of tighter noise standard levels to minimise public annoyance (target of 63 dBA L₁₀ (18 hour, or no greater rise of 10 dBA in quiet areas) (approximately equivalent to existing quiet residential area with no significant traffic noise); • assessments using worst-case scenarios until year 2021; • provision of noise barriers (eg earth mound 650m long barrier, 2-3 metres high at the southern end) • barriers ensure compliance with statutory regulations and guidelines during operation (design to be undertaken at more detailed design phase)

Risk Assessment

In July 1996, a Risk Management workshop was held for the project and attended by representatives from the Department of Transport (eg projects section), Maunsells consultants, Southern Expressway Design Consortium and Evens & Peck Management. No environment officers appear to have been present which is surprising given that a large proportion of the risk assessment was dedicated to the risks of environment non-compliance. The final report of the assessment was produced in October 1996, and in a similar manner to the risk assessment for the Adelaide-Crafers proposal, the report covered *inter alia* political issues (eg change of government), community issues (eg feels misinformed or not adequately considered), and environment and planning issues. Factors considered to be high risk (ie high likelihood and impact) included damage to houses or property (actual or perceived, vibration, etc), excessive

impacts during construction such as noise, dust, siltation and pollutants, impacts on Aboriginal artefacts (resulting in community action, publicity and injunction), and hazardous materials being discovered during construction. There was also considered to be a high likelihood for lobby group action and adverse community reaction, but this was considered to have a low impact on the project overall, which suggests low public influence at this late stage.

In an attempt to counter these risks, a risk action and management plan was formulated. For instance, to counter a possibly inadequate Environmental Management Plan, it was proposed to submit the EMP to the Environmental Protection Authority, DHUD, and Water Catchment authorities for comment. This clearly facilitates more informed management and a greater degree of accountability. To counter adverse community reaction and lobby groups action, it was proposed to adopt proactive community relations, and to monitor community reaction. To reduce the risk of non-compliance to environment controls, it was planned to incorporate the contractor's EMIP (Environmental Management Implementation Plan) into a Project Quality Plan, with monitoring of conformance by the contractor and the conduct of independent environmental audits. Compliance was clearly an important factor to the Department in the construction process, with multiple safeguards for the environment including the environmental assessment, EMPS, EMIPS, and the risk assessment and management process in an attempt to cover all possible angles.

Public Works Committee & Aboriginal Heritage Clearance

In the same month as the risk management workshop, the Public Works Committee reported on further evidence given by the Department of Transport, noting that approval had been given by the Minister for Aboriginal Affairs for the Department to disturb Aboriginal sites in the Sturt Triangle area pursuant to the Aboriginal Heritage Act. The PWC also reported on the agreement signed with the local Kurna Aboriginal community in August 1996 which allowed construction of the Expressway to proceed between Bedford Park to Old Noarlunga. Conditions of compensation, other than those already noted in the preliminary environment clearance required that damage be to the minimum extent necessary for construction; that salvage be undertaken prior to construction; that any artefacts remain under the management of the local Kurna community; that the artefacts be stored according to appropriate scientific standards for preservation; that sites were clearly marked; and that the local Aboriginal community be involved in the project with landscaping and provision of Aboriginal art (PWC July 1996). Subject to monitoring of the project, the Committee endorsed its original support, and recommended to Parliament that the project proceed (PWC July 1996).

Final Environmental Clearance

Final environmental clearance was given by the Department's Environmental Unit at the end of October 1996. Unlike the independent assessment report by DHUD under the formal EIA process, the clearance report was quite brief at nine pages, and much of it reiterated conclusions already made in the earlier Environment Report. The influence this clearance had on the project is questionable given that major construction works commenced in mid October, shortly prior to clearance. Moreover, some of the environmental recommendations related to the detailed design phase (eg noise barriers, pedestrian access), yet the design stage had already been undertaken by consultants in early 1996. Thus, it is not clear to what degree the recommendations influenced this design process at such a late stage.

Nonetheless, the environmental clearance, which was based on the Environment Report, the Public Exhibition Summary Report, and roadworks and structures drawings, outlined clear and succinct recommendations. Overall, the Environment Unit concluded that *'the environment impacts of the project have been identified and appropriate mitigation measures proposed'* In addition to a requirement to comply with all mitigation measures contained within the Environmental Report, a number of other conditions were outlined which related to the EMP, water quality, access, contaminated land, air quality, heritage, and noise. These recommendations are summarised in Table (5). One strength of these conditions was that they provided the means to learn broader lessons for future projects (eg monitoring of effectiveness of wetlands) which demonstrates initiative and a desire to learn and improve on environmental knowledge and management. However, whether or not this data was fed back into the system is not clear.

Table 5: Conditions of Environmental Clearance for the Southern Expressway proposal

Category	Recommendation
EMP	<ul style="list-style-type: none"> approval of the EMP prior to commencement of construction
Water quality	<ul style="list-style-type: none"> monitoring should be undertaken to determine the effectiveness of proposed wetlands and sedimentation basin for feedback into the design of future projects; suitable vegetative cover should be established in the watercourses downstream from the drainage points on the road to prevent erosion; the overflow channels from the sedimentation basin outlets and the wetlands should be monitored and prompt action undertaken to mitigate any scour. Suitable vegetation cover should be established to prevent erosion the need for reshaping of the Sturt Creek under the Expressway should be reviewed
Access	<ul style="list-style-type: none"> provision be made for pedestrian access on both sides of the Sturt Creek in the Sturt Triangle under the Expressway. Provision should also be made for pedestrian access as well as the velorway access under the roadway in the vicinity of the Field River
Contaminated land	<ul style="list-style-type: none"> documentation for each site including the Site History Report, Site Remediation report where relevant, and the final Contamination Report should be forwarded to the Environment Unit
Air quality	<ul style="list-style-type: none"> an air quality monitoring program should be implemented as part of the on-going management of the road to confirm the predictions in the Environmental Report
Aboriginal heritage	<ul style="list-style-type: none"> ensure the ongoing implementation of the provisions in the Section 23 authorisation and the agreement with the Kaurna Aboriginal Heritage and Community Association. This should include three monthly reporting on progress to the Kaurna community; the wetland area in the Sturt Triangle should be contained within the area between the archaeological site and the Sturt River; landscaping design details in the Sturt Triangle area should be subject to discussions with the Kaurna Community, Warriparinga Incorporated and Marion Council
European heritage	<ul style="list-style-type: none"> ensure implementation of the mitigation measures in relation to the area adjoining Fairford House
Noise	<ul style="list-style-type: none"> ensure that noise monitoring be undertaken at intervals during the life of the project to determine the effectiveness of the mitigation measures, particularly in relation to the use of open graded asphalt surfacing; consideration be given to incorporation of flexibility in the design of noise barriers for possible retrofitting if noise goals are exceeded; considerations of aesthetics, ease of maintenance, graffiti management and opportunities for public art should be taken into account in selection of the materials used for the noise barriers and retaining walls. This matter should be reviewed prior to implementation.

EMP and EMIP

Shortly after the environmental clearance was given, a final Environmental Management Plan was produced by Maunsells in December 1996 to be used as a checklist of issues to be considered during design, construction and road operation (based on a draft produced in July). The aim of the EMP, which was guided by principles of ecologically sustainable development (ESD), was to:

- create a framework for the control of construction and operational impacts;
- to provide a system of monitoring;
- to provide evidence of compliance to legislation, policies, and other requirements; and
- to provide assurance to the community that the project was being managed in an environmentally acceptable manner.

In addition to detailed monitoring requirements, 114 management commitments were made in relation to erosion and stormwater management, flora and fauna, air quality, noise, heritage,

bushfire prevention, waste minimisation, dangerous substances, storage and refuelling of machinery on site, and an emergency response and incident management plan. Also encapsulated were provisions to ensure that the contractor[s] for construction had adequate experience and training for environment management, in addition to the requirement for an environmental induction to be attended by contractor employees.

It was also standard practice in the Department at this time to require construction contractors to prepare an Environmental Management Implementation Plan (EMIP) which was good communication practice because it provided a systematic means for the contractor to understand their responsibilities and to explicitly state how they will be implemented, which in turns gives greater control to the Department of Transport about what occurs on the ground. The contractors employed also had an existing environment policy and Environmental Management System, and employed a project quality and management representative. Within the EMIP, the contractor proposed both community relations plans and environmental control plans to ensure compliance with the Department's requirements. DoT required monthly status reports of compliance, and it was planned to conduct independent audits of construction by the project manager every three months (DoT December 1996), although it is not know how frequently this was done in practice.

Both the EMP and EMIP are good additions to the EIA process because they facilitate the transfer of information from planning and design into construction. This is a strength given that information transfer is often a problem in EIA, and sometimes renders the EIA process superfluous to outcomes on the ground.

Design & Construction

The detailed design process was underway in early 1996 and undertaken by consultants such as Dare Sutton Clarke, Rust PPK and Connell Wagner. Design was completed and tendered by December 1996. The preliminary earthworks which commenced in December 1995 involved the removal of 200,00 cubic metres of clay material over 2 kilometres to form mounds for landscaping, and were completed in April 1996. Public consultation continued during construction with public meetings, public exhibitions of environment and landscaping plans, Expressway Newspaper and information bulletin, radio broadcasts, and the free call phone line. During major construction works, a greening committee with local and conservation groups was also formed, and it was planned to plant 80,000 trees and shrubs.

Quarterly reports on environmental management and monitoring were submitted by the contractors to ensure that conditions established at the planning and EIA stage were carried through to the construction phase. For instance, a report for November 1996 to January 1997 outlined mitigation and monitoring measures adopted for the main environment issues which reflected the EMP and EMIP (eg erosion, water quality, stormwater management, flora and fauna, air quality, heritage), and noted that the most significant issue was dust control at this stage of the construction process.

Media reports indicate that public controversy was still evident about the proposal with protests by lobby groups about environmental impact, noise pollution and health hazards. However, their level of activity was not a major media attraction, and it was stated in one article that public anger was alleviated due in part to the consultation programme. The project manager noted: *'There are a number of people who don't want the road, but by and large the community acceptance has been high'*. The contractors for construction were also involved in monthly community meetings, and it was noted that while *'...there have been strong complaints from a few residents in Darlington, there has also been some positive feedback from other residents who appreciate the difficulties associated with construction and acknowledge our concerted efforts to minimise any discomfort or inconvenience'*. From these reports, it appears that a conscientious effort was made by the contractors to minimise impacts as far as possible, even going beyond measures outlined where a need was identified (eg a need for additional protection for scour was identified in the February 1997 Report; use of alternative water supplies given limited rainfall to Sturt River and Field River; and relocation of rockbreakers away from residences following complaints).

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the EIA legislative requirements? All procedures were complied with, and this criterion was graded at A.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at B. Compliance was generally good but it should be noted that some of the requirements in the guidelines were slightly repetitive (eg those relating to traffic analyses, economic/business impacts).

Criterion 1.3: Did the proponent comply with the final decision? This criterion was unable to be graded due to a lack of information.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at B-A. Evidence of going beyond compliance was clearly demonstrated given that an EIA process similar to the legislative requirement was conducted internally and voluntarily with EIA guidelines, a stand alone environmental assessment document, public exhibition (although lesser time than legislation), and a response to and summary of the public submissions. The approach to public consultation also extended far beyond normal legislative requirements with a wide range of techniques used and early, personal and direct liaison with affected residents, and continued consultation after planning and EIA had been completed (refer evaluation dimension 4). In addition, landscaping design and attempts to 'improve' the environment went beyond efforts indicated by ETSA which often related to simply allowing natural regeneration rather than actively rehabilitating the affected land, although this did occur in practice after the EIA process.

EIS QUALITY

Proposal & Policy Framework

Criterion 2.1.1 Was the rationale of the proposal clearly outlined, and was the project adequately justified? This criterion was graded at D. Unlike the ETSA case studies, which dedicated substantial detail to project need, the rationale for the Expressway was quite brief. The need as outlined in the ER was summarised earlier in the first section (refer proposal description). The need did not seem as urgent as for instance, the Ardrossan-Dalrymple transmission line in which case the Yorke Peninsula was reliant on only one corroding transmission line. In the case of the Expressway it was an option which virtually duplicated existing road access to overcome increasing traffic congestion resulting from population growth in the south. By improved access, a number of indirect benefits were expected to arise such as facilitating economic and tourist development. Unlike the ETSA case studies, statistics were provided on traffic forecasts and accident rates to support the need. However, there was some ambiguity about accident statistics..

Reasons for the need for the proposal such as congestion and safety were clearly outlined. However, overall there are some reservations. First, the corridor had been created several years previously, and thus gave the Department an opportunity to construct a road where in other areas it was virtually impossible to do so due to the build up of housing. Thus, it was an area providing a unique opportunity for the department and for the government to display evidence of action. Second, it was essentially a short term and immediate solution to the problem which duplicated an existing road system, without addressing broader factors such as reducing car demand, or improving public transport over the longer term, and this was the subject of strong criticism in some public submissions. It is, however, acknowledged that the latter was difficult given that it was longer term, costly, resulted in less immediate impacts, and would require a change in behaviour of the population without solving the immediate congestion problems. Nonetheless, there were also arguments from the public that public transport may be a better option, but this was discounted later by a departmental member as too costly by only providing a public transport system to meet a small percentage of travel needs for southern residents..

Overall, within the scope of the project level, and the need for immediate solutions to a long term problem, the project rationale appeared demonstrated, despite requiring substantial resources for what appears to be only a subtle increase in travel time and reduced congestion. It was however, essentially a political decision (see Volume 1; Chapter Nine).

Criterion 2.1.2: Was there a detailed description of the project? This criterion was graded at C. As noted previously 21% of the ER was dedicated to description of the proposal, with a separate chapter devoted to details on the project. Most of the Chapter included figures with a total of 16 diagrams in A3 format which illustrated the alignment, cut and fill locations, landscaping, access points, preliminary locations of noise barriers, and cycle paths among other things. Features addressed in the text included a clear description of:

- the proposed alignment;
- design factors (eg speed, design, underpasses, gradient, number of lanes, lane width, surfacing, cut and fill locations);
- operational features (eg reversible according to peak flow direction, cameras, signage, clearance of road);
- traffic management and entry/exit points (eg traffic signals, emergency access, street closures and diversions);
- provisions for pedestrians and bicycles;
- street lighting (eg locations, type, standards, design);
- earthworks (eg volumes of cuts and surplus fill, minimisation of haulage distance);
- drainage (eg concrete side drains within cuts, kerb and gutter system and longitudinal pipe system in fill areas, culverts, bridges, sediment basins and wetlands); and
- rehabilitation and landscape treatment.

Design and details of drainage (eg culverts, sedimentation basin) were not clear in the figures, but it is likely that this was a task for the later and more detailed design phase. Sites of drainage discharged, although not described in this section, were referred to in the impact assessment section with a figure illustrating possible locations.

Of the 11 areas of proposal description presented in Table (6), 8 were addressed (72%). Areas omitted included construction processes, materials required and their transport, safety during construction, and property access required. Waste was briefly implied with regard to surplus fill, but there was no reference to nature and quality of this fill, possible uses, and possibility of contamination. Although construction details were not incorporated, it was noted in the ER that this would be divided into several separate contracts, and it was not possible to provide information on specific locations for compounds, storage areas, and traffic movements. However, some issues were addressed such as working time limits, blasting processes, machinery used, and estimated number of construction compounds.

Table 6: Proposal Description performance in the Draft EIS for the Southern Expressway Proposal

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design	*
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	8 72%

* preliminary design only

Other inadequacies included:

- lack of information on services to be relocated such as an existing police station which was moved to make way for the Expressway, and which had its own impacts;
- no information on operating costs for traffic management;
- no information on maintenance requirements or costs;
- no information on the project life or capacity;
- lack of design for wetlands, or least an idea of what they might look like;
- lack of information on size and design of sedimentation basins. Some details should have been available given that it was known what the capacity of these basins was.

Criterion 2.1.3: Was there an outline of the policy framework and legislation which was relevant to the planning and decision making process for the proposal? This criterion was graded at B-A. Performance in this criterion was higher than all other case studies. Of the 18 legislative-policy areas presented in Table (7), 14 were addressed (77%). A list of legislation to be complied was summarised upfront, and included additional requirements such as the Highways Act 1926, the Local Government Act 1934, Dangerous Substances Act 1979, and Pollution of Water by Oils and Noxious Substances Act 1987. Omissions in this list related to noise and fauna protection, and although legislation was outlined upfront, there was a lack of detail about which aspects required compliance.

Table 7: Policy and legislative framework addressed for the Southern Expressway Proposal

	Legislative or Policy Framework	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	
	Development Act requirements 1993	
	Development Plan	
General Environmental Protection	Environmental Protection Act 1993 (eg wastes, pollution policies)	
	Coast Protection Act 1972	n/a
	Clean Air Regulations 1969	
Fauna, Parks, Veget.	Environment Protection (Impact of Proposals) Act 1974 (Cth)	n/a
	Fauna (eg Endangered Species Protection Act 1992)	
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
Land & Water	Parks and Wilderness (Public Parks Act 1943, National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	
	Animal and Plant Control Act 1986	
	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a?
	Soil (eg Soil Conservation and Land Care Act 1989) (EIS in prep. prior to this Act)	
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	
Heritage	Land Acquisitions Act 1969	
	Fire (eg Country Fires Act 1989) (EIS in prep. prior to this Act)	
	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth)	
Health-Safety	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	
	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements)	
	Explosives policies/legislation (eg Explosives Act 1939, SAA Explosives Code AS2187 1979)	
	Score	77% 14/18

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at A. As demonstrated in Table (8), of 20 possible environmental categories, all were addressed (100%). One factor not included in the table, but which was addressed in the ER was the existing traffic situation which was also good, and later in the impact assessment section, reference was made to future traffic volumes with and without the Expressway. There was also reference to land contamination which is not included in Table (8).

Criterion 2.2.2: Is the level of detail about the environment adequate for an informed assessment? This criterion was graded at B. As demonstrated in Table (8), 75% of the environmental categories had adequate detail. Some points to note included:

- climatic data appeared superfluous and better reference to its relevance to the proposal and its impacts should have been made. There was also a lack of reference to problems of cross winds of sunglare for drivers, and lack of reference to potential floodings;
- it may have been useful to portray potential soil erosion hotspots in an illustration
- there was no reference to significance of geology and soils of the area;
- statistics on nutrient and heavy metal concentrations was good, but there was no reference to how significant they were and what their implications were.

Table 8: Performance in the Description of the Environment in the Southern Expressway Environment Report

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality					
Hydrology					
Soils (and erosion)					
Native vegetation					
Pest plants-diseases spread					
Fauna					
Fire risk zones					
Residential land use					
Demographics (population, economy, etc)					
Conservation parks, Reserves land use					
Business, industry, mining, etc land use					
Agricultural land use					
Recreation-tourism landuse					
Infrastructure, services landuse					
Non-Aboriginal Heritage					
Aboriginal Heritage					
Landscape Quality					
Noise					
Score (/20)	20 100%	15 75%	4 20%	8 40%	2 10%

Key: 1=environment category addressed; 2=adequate level of detail; 3=reference to future environments (without the project); 4=reference to significance of environment; 5=reference to sensitivity/capacity of environment to absorb impacts.

On the positive side, detail was generally good and to the point. For instance:

- the acknowledgment of uncertainty about identifying native grasses was good;
- good use of photographs to illustrate existing visual environment;
- there was a good description of rivers and drainage depression locations; in addition to information on base flows and yields from catchment for the Sturt river. Again, reference to uncertainty for other rivers due to lack of base line data was good;

- the discussion on fauna was not restricted to land-based fauna, and included reference to aquatic ecosystems;
- there was good reference to air quality goals and standards
- the description of vegetation appeared to be good with a division into zones and description of vegetation and status within each which made visualisation of impacts easier;
- good acknowledgement of uncertainty for identification of bird species
- demographic information was succinct and to the point, which contrasts with the A-C which was fragmented by too many tables. However, the information lacked statements about the implications of the information for the impact assessment (ie so what if the population is of a relatively low age group).

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. As indicated in Table (8),

- reference to future environments (without the project) was addressed in 20% of cases which is unsatisfactory;
- reference to the significance of the environment was made in 40% of cases; and
- reference to the sensitivity or capacity of the environment was made in 10% of cases.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at E-D. The study area was defined only so far as it affected adjacent suburbs, and no boundary was given nor an approximate area for assessment on a map as was the case for the other case studies. This boundary is considered insufficient given that impacts would transgress these boundaries through rivers and through air quality. Nonetheless, it was recognised in the ER that broader impacts and benefits were assessed in a regional context.

Impact Assessment

Criterion 2.3.1: Have all the major direct impacts been addressed in the identification and description of impacts, and was the level of detail sufficient for an informed assessment? This criterion was graded at A. As demonstrated in Table (9), performance was excellent in terms of reference to the major impact categories with 95% addressed.

Criterion 2.3.2: Does the description of impacts have an adequate level of detail? This criterion was graded at C-B. The impact assessment was succinct and clearly stated where impacts were apparent and significant for most cases. There were some limitations as follows:

- **vegetation:** despite a good outline of existing vegetation in the environmental description, it was not clear in the impact assessment section exactly how many trees, shrubs or grasses would be removed as a result of the Expressway. Moreover, a letter from a local conservation group in April 1995 to the Shadow Minister for the Environment indicated a stand of rare and significant woodland adjacent to the route (*Euc. porosa*, *Euc. microcarpa*, *Pittosporum phylliraeoides*) which was not referred to in the impact section. There also appeared to be inadequate reference to grasses and shrubs, which was a concern of the Department's Environmental Unit. In addition, requirements in the guidelines were not complied with such as impacts of increased vehicle emissions, changes to sunlight exposure, etc, impacts of new species, impacts on population stability or regeneration capability and so on;
- **land values:** there was a lack of detail about the potential reduction in land values for properties immediately adjacent to the route, including the potential amount devalued. This was also a concern of the DHUD;
- **water quality:** although there was a good summary of studies which illustrated pollutants from road runoff, there was a lack of studies directly relevant to the South Australian situation, and there should perhaps have been some monitoring conducted to identify a base line in order to predict the potential impact more accurately;
- **social impacts:** The ER noted that they were an issue, but there was no attempt to assess the significance of the impact to those directly affected, including the impacts of dislocation and relocation. Overall, the social impact assessment was very brief and lacked sufficient detail for an informed assessment;
- **access:** this appeared to be simply a description of provisions for access in the proposal rather than an assessment of reduced access per se.

- **bridge construction:** there was no reference to the particular impacts associated with bridge construction, although were implied with the reference to sedimentation problems;
- **demography:** as for the Adelaide-Crafers proposal, much of the demographic information indicating which population groups might be affected was not utilised in the impact assessment section, and the data thus appeared to be superfluous.

Table 9: Performance in the identification of impacts in the Environmental Report for the Southern Expressway Proposal

Impact Category	Addressed?
Landforms-geology (including hazards)	
safety	
Property acquisition	
Residential Amenity (quality of life)	
Land Values	
Production Values	
Hydrology (water quality and drainage)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Noise	
Air quality (dust, vehicle emissions)	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access (impacts on local traffic & dislocation))	
'Wide Road Syndrome' (increased access-dev.)	
Score: (/21)	95% 20

Apart from these concerns, performance was generally good, with good detail on hydrology in terms of both drainage and water quality, use of a community workshop to identify social concerns, and good use of standards and guidelines for impacts such as air quality, and noise. Assumptions of worst-case scenarios and use of conservative estimates was also good.

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts, in addition to interrelationships between impacts? This criterion was graded at E. There were some strong points. For example, with reference to:

- broader factors such as the wide road syndrome and improved access;
- secondary effects of traffic displacement and impacts on business trade which relies on traffic;
- cumulative impacts of water pollution;
- constraints on future urban development due to noise impacts; and
- the greenhouse phenomenon which was not addressed in the earlier Adelaide-Crafers proposal EIS. However, greenhouse did not become a significant issue until the 1990s with the launch of the Australian National Greenhouse Response Strategy in 1992 which was a response to the United Nations Framework Convention on Climate Change which became operational in 1994 (Commonwealth of Australia 1998).

But these were not sufficient to raise the grade because of several limitations. For example, there was:

- lack of detail on greenhouse impacts. The assessment was restricted to a statement that the road would improve greenhouse gas emissions due to more efficient speeds and less stopping,

yet did not consider the potential for the road acting as a catalyst for greater numbers of vehicle used - and hence greater emissions;

- lack of reference to indirect and secondary effects of increased tourism. Although the road was stated to improve tourism access, and was thus a beneficial impact, there was no reference to the broader impacts of increased tourism on a sensitive environment;
- no assessment of broader impacts of facilitating industrial development by improving access;
- lack of acknowledgement of potential for increased traffic volumes as a result of the road;
- lack of reference to cumulative impacts of new road combined with existing road network.
- lack of reference to services which required relocation and the indirect impacts associated with new sites. For instance, rare grasses were lost in Laffers Triangle due to site preparations for a new police station which was planned to replace the existing station removed for the Expressway. This was an indirect impact of the proposal, and was an impact which occurred prior to the completion of the Environment Report. There was no reference to these indirect impacts in the ER.

A significant omission related to the 'wide road syndrome' phenomenon which was a cause of major public and government controversy for the Adelaide-Crafers proposal (ie improved access facilitates increased development pressures). The improved access and increased development potential was in fact noted as a benefit and objective of the Expressway proposal (ie to encourage new developments, and to facilitate greater flow of tourists to the Fleurieu Peninsula). A public newsletter on the proposal stated that '*people who have previously not considered living down south will re-consider because the commuting distance and time will be reduced with the expressway*'. While this was considered a positive effect of the development, for the Adelaide-Crafers proposal it was a negative effect, and the contradiction is some cause for concern. Moreover, any reference to the potential for increased development pressures was limited, and like the Adelaide-Crafers proposal was simply transferred to other government agencies responsible for zoning and development controls.

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. As demonstrated in Table (10):

- magnitude of impact was addressed in 55% of cases;
- direction of impact was addressed in 70% of cases;
- geographical extent of impact was addressed in 15% of cases;
- duration and frequency of impact was addressed in 20% of cases;
- reversibility of impacts was not addressed, although implied in some cases;
- potential for mitigation was addressed in 80% of cases;
- probability of impact was addressed in 25% of cases.
- public controversy-concerns were addressed in 25% of cases;
- thresholds, guidelines or standards were addressed in 27% of cases; and
- level of certainty about current knowledge was addressed in 10% of cases.

This made a combined grade of 32% which is unsatisfactory.

Alternatives

Criterion 2.4.1 Have alternatives been outlined, and the decision-making process for or against these alternatives been summarised and justified? This criterion was graded at B. Alternatives at the broader level were outlined in Chapter Five of the ER in the Chapter on 'Project Development' which noted that a number of options had already been considered by the Department. These broader options included:

- do nothing;
- public transport facility such as light rail or busway in the corridor;
- upgrade/widen Main South Road; and
- development of a new road corridor.

The fifth option which was the preferred option was considered the most flexible and attractive alternative to commuters.

The rationale against each of the remaining options was transparent, clearly presented and argued, but based primarily on whether or not the project goals were accomplished rather than environmental factors (ie which had the least environment impact). Moreover, the rationale for

each was not necessarily agreed to by all participants in the process (eg public submissions supporting public transport).

Table 10: Performance in the evaluation of impact significance in the Environmental Report for the Southern Expressway Proposal

	<i>Spatial-Temporal</i>				<i>Alleviation-Probability</i>			<i>Thresholds-Certainty</i>		
	1	2	3	4	5	6	7	8	9	10
Landforms										
Driver safety										
Property acquisition	implied									
Land Values										
Production Values										
Hydrology										
Non-Aborig. Heritage										
Aboriginal Heritage										
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts										
Air quality				dust		dust				
Noise		implied								
Fire										
Wastes										
Pest Plants, etc										
Soil eros. contamin.		implied								
Access (local traffic)									n/a?	
Wide Road Syndr.									n/a?	
Score: of 20	11 55%	14 70%	3 15%	4 20%	0	16 80%	5 25%	5 25%	5/18 27%	2 10%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Like the other case studies, the do nothing option was justified against using the proposal's original rationale which related to problems of traffic congestion, delays during peak periods, loss of business, decrease in air and noise quality, safety issues, and a future exacerbation of the problem due to a growing population in the south. The rationale against public transport was also strong and it was argued that public transport would not solve the congestion problem given that for instance, the majority of people chose private vehicles over public transport, and that a new system would compete with an existing rail line. It was also argued that although public transport was more energy efficient, the low level of patronage indicated that savings in energy consumption would be minimal. Perhaps if the entire Adelaide public transport system was improved substantially, patronage would be higher, but this was beyond the scope of the project, and is a subject of broader decision-making. In fact, with the part privatisation of public transport, and responsibility for policy at the Ministerial level, the Department of Transport today has little influence over these broader options, and can only make incremental changes which may have little overall effect. Thus, public transport was not considered a realistic option to reduce the immediate problems as noted previously, but provisions for a future public transport facility in the road corridor were planned for.

The fourth option (upgrade) was noted to have reduced environment impacts because it was situated in an existing corridor, but was justified against for a number of technical reasons (ie 2 lanes each way would be required by 2001, requirement for grade separation at intersections, reduced safety and less efficiency due to greater cross traffic and connections, and failure to address peak periods adequately). It was argued that this was only a short-term option, and total

upgrade required may be greater than the cost of a new road, with substantial disruption to existing traffic during construction. While this latter may be significant, the arguments against this option did not appear to be substantial, particularly given that the environment impacts were less than the preferred Expressway, and given that traffic flow would be substantially improved with greater numbers of lanes. Nonetheless, this may require property acquisition which may be a significant impact, but which was not referred to in the ER.

In addition to the broader alternatives, six more specific route alternatives were presented, but as noted previously, other alternatives were also assessed by the Department prior to the preparation of the Environment Report. Like the broader alternatives, the decision-making process which identified the best of these options was transparent and clear, and was based on both environmental factors and cost factors. Factors in the assessment comprised:

- cost;
- traffic;
- ecology;
- land use;
- visual;
- amenity/social issues;
- air quality;
- noise;
- heritage;
- economic; and
- constructability.

There was however, no reference to the earlier decision-making process and factors leading to the choice of these six options, although a figure in the ER illustrating land owned by the DoT clearly indicated that the Department was restricted in the alternatives it could seriously consider. Flexibility was apparent with intrusion into the O'Halloran Hill Recreation Park and into part of the CSIRO Research Station, but other areas were restricted to land already owned by the Department. Otherwise the impacts of property acquisition would be substantially greater.

Criterion 2.4.2: Have alternatives been compared ranked in order of preference for each environmental impact? This criterion was graded at C. No attempt was made to compare and rank the broader alternatives in terms of environment impact, but this was also the case for most of the other case studies. However, for the most specific route alternatives, a table was presented which compared each option based on the factors listed in the previous criterion such as cost, traffic, ecology and land use, and attempts were made to rank options in the text.

Mitigation & Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at B-A. Mitigation was a strong emphasis in the Environmental Report, and was integrated with the impact assessment section, in addition to a brief section on environmental management in Chapter Eight. As demonstrated in Table (11), of 18 categories, 15 were addressed. Most mitigation measures related to avoidance, screening, and design factors. Noise criteria used and mitigated for were considered to be the lowest of any arterial road in the State, and it was generally believed that much of the area would be improved environmentally due to extensive landscaping along the road with associated improvements in visual amenity, fauna habitats, more native vegetation, and noise reduction.

Criterion 2.5.2 Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? This criterion was graded at E. As demonstrated in Table (11), detail was lacking on mitigation measures in terms of level of difficulty, expense, effectiveness, and certainty of outcome.

Table 11: Performance in mitigation and monitoring in the Environmental Report for the Southern Expressway Proposal (shading=addressed)

Mitigation Category	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Property Acquisition		C							
Driver safety									
Land Values		R							
Productivity Values									
Hydrology		A, D, C							
Aboriginal Heritage		Negot.							
Vegetation		T, R, S, A							
Fauna		A, R							
Recreation-Tourism		S, D							
Visual Impacts		A, S, D							
Air quality		A, C							
Noise		A, S, D, N							
Fire		A, D							
Waste		T							
Pest Plants & Diseases									
Soil Erosion		A, C, D							
Access (local traffic)		D							
Wide Road Syndrome		T							
Score (of 18)	15 83%	-	0	0	1 6%	0	3 20%	0	0

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Criteria 2.6.1 and 2.6.2: *Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities?* Both criteria were graded at E (refer also Table 11). While monitoring was noted as a requirement in the Environmental Management Plan outlined in an appendix, the details on which aspects were to be monitored was lacking (although this was addressed in the later and more comprehensive EMP). Only 20% of impact categories were proposed to be monitored including driver safety, vegetation and noise impacts, which is unsatisfactory. Similarly, although the EMP referred to responsibilities and feedback requirements, the level of detail for particular impact categories was lacking.

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Criterion 2.7.1 was graded at C and information sources were graded at B. Original field work and outline of methods performed better in this proposal than the other case studies. Original work was undertaken for a vegetation survey, archaeological survey, visual impact assessment, land contamination survey, aquatic ecosystem survey, noise survey, and fauna survey, although generally limited in nature (ie fauna survey conducted over only 2 days). Surveys should perhaps have been conducted for water quality and air quality, although DENR had already conducted representative air quality samples in 1994 and 1995. The methods used in these surveys were briefly outlined for air quality, noise impact, fauna, archaeology, assessment of aquatic ecosystems, and the vegetation survey. There could have been a better outline of methods for the visual impact assessment, and no methods or techniques were outlined for the identification and comparison of impacts. Other areas were notably brief, making replication difficult, but at least they were outlined unlike the other case studies. The use of information sources was also good with a wide range of references used in the ER including ABS data, local management plans,

Planning Strategy, and existing information on water quality, vegetation, and vehicle emissions, and air quality.

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at B. All sections were incorporated including a technical summary, terms of reference, introduction, description of the environment, impact assessment, alternatives, project description, impact assessment, environmental management section, and a conclusion.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at C. Although the sections were logically arranged (ie environment description followed by impact assessment), the document was not consistently presented throughout and the structure was slightly convoluted and disjointed in parts which made reading difficult, and there was some repetition. For instance, some of the information on air quality such as the effects of particular air pollutants should perhaps have gone in the impact assessment section. Moreover, the section outlining management measures for road operation may have been better outlined in the description of the proposal. Similarly, forecast traffic predictions with and without the Expressway should have been presented earlier to support the rationale for the proposal, rather than presented in the impact assessment section.

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B. Both a glossary and list of abbreviations were included which made reading easier, but in parts, technical terminology may have been confusing to the 'layperson'. This also included presentations of statistics on air quality for instance, and lack of reference to their implications on the ground (ie how it affects human or ecological health in practice; how significant the numbers were). Like the Adelaide-Crafers proposal, the use of visual aids was very good with photographs to illustrate the visual environment, and an extensive number of diagrams illustrating the proposal, landscape design and noise contours for instance. Referencing was generally good, particularly when a number of studies were referred to (eg for stormwater runoff studies). However, in other parts, it was not always clear where the information came from, but this was only a minor problem.

Criterion 2.7.6: Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This criterion was graded at B. The ER itself was presented as an integrated whole, but there were several other background reports which do not appear to have been referred to or included as appendices (eg the archaeological survey, vegetation survey). Nonetheless, summaries of these reports were evident in the ER.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. The document was not voluminous despite being one of the longest of all the case studies. However, given the lack of detail in some areas, the document could perhaps have been longer (or other areas made more succinct, and information summarised in tables - eg mitigation measures). Nonetheless, it should not be forgotten that this was not a full EIS, but simply an internal Environment Report which was not perhaps as comprehensive.

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation? This criterion was graded at C-B. The emphasis on impacts appeared to be appropriate to the task, although there was a lack of focus on social impacts relative to for instance, economic impacts. Nonetheless, many of the social impacts were also considered elsewhere under noise impacts, visual impacts and access provisions. There was a greater focus on noise, visuals, air quality and water quality, but this was not a major issue given that these were considered to be potentially significant impacts associated with road development. There was however, an underemphasis on land value depreciation or improvement which was of some cause for concern, in addition to the broader impacts associated with the 'wide road syndrome' and effects of increased tourism, commercial activity and residential development.

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS (if the information itself lacked bias)? This criterion was graded at B. There appeared to be no major bias in the conclusions made on the impacts, or about the route options. The only problems related to the assumptions that the road was the only solution, and the bias against an upgrade or public

transport (although as noted previously this latter was outside the project scope - to improve overall patronage). Moreover, a preferred option was identified which itself indicates bias.

Levels of Controversy

Public controversy about the EIS quality was evident but it was not high like the Cherry Gardens or Adelaide-Crafers proposals. Two comments were highly critical of the ER, whilst the Southern Transport Community Coalition (STCC) was concerned about the inadequate arguments for the need for the proposal and treatment of the public transport issue. Also of concern was the lack of requirement for a full EIS rather than a lesser Environmental Report. Individual comments were as follows:

'As a resident of Trott Park my comment of the Expressway Plan and Environment Report is that is an illconceived and deceptive report... The credibility of the claims and indeed the whole project raises serious concerns when it is noted firstly that the Government of today refuses to carry out a full and independent Environment Impact Study on the project'. (The claim that the report was 'ill conceived and deceptive' was vehemently opposed by Maunsells).

'The STCC is concerned about the ready admission and acceptance of the impacts of the Southern Expressway, for example, on the trade of small businesses along Main South Road; the increase in noise pollution in some areas; and the disruption and damage to the cultural heritage of the Kurna people specifically in relation to the Sturt Triangle (or Laffer's Triangle).'

'I believe this report to be a cynical and completely inadequate response to quite justifiable requests by many people in the community for a properly conducted and fully independent E.I.S.'

Government controversy was similar to public controversy, although less emotive. Prior to the public release of the ER, a draft was commented on by the DHUD, and most concerns were addressed in the final version. Some of the concerns related to insufficient detail on construction impacts (duration/extent), and inadequate treatment of land value impacts. A draft version was also commented on by the Transport Department's Environmental Unit which noted that the vegetation assessment was well documented, with the exception of grasses and herbs. Later concerns by the EIA Branch of DHUD related to the insufficient treatment of Aboriginal heritage issues, limited attention paid to public transport, lack of description of noise barriers, and limited treatment of environment management. Another government agency also noted problems with the noise assessment. It was stated that the '*...sections and diagrams dealing with existing and predicted noise levels and impacts are difficult to interpret as they are not well written or presented.*' This agency was also concerned about the lack of information about plans for stormwater after the sedimentation basin, and the inadequate treatment of the greenhouse issue:

'While air quality along the proposed Expressway may meet most current legislative requirements, it would appear that the global impact of additional greenhouse gas emissions resulting from increased vehicle use has not been considered. The Environmental Report suggests that current traffic will be shared between the existing roads and the proposed Expressway. International experience, however, has demonstrated that the provision of new roads leads to increased vehicle use, with commuters abandoning public transport in favour of private vehicles. Overall, the Report does not adequately consider the role and importance of public transport as a viable, long-term alternative to private commuter transport.'

OPENNESS AND COMMITMENT TO CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B-A. The public consultation programme had been argued by the proponent to be one of the largest yet undertaken given that it spanned over ten years since the original announcement of the proposal in 1986. The Commissioner of Highways argued for instance, that the consultation programme was 'amongst the most extensive of any conducted for a

single road project in South Australia'. However, it would perhaps be best to be described as one of the 'longest' periods of consultation rather than the most extensive given that much of the focus was on affected individuals and small design workshops rather than broader-scale community consultation (ie direct mailing and approaches were made to those directly affected, and broader public meetings were not held).

In addition to information releases for the proposal in the mid 1980s through information bulletins, information on the broader southern region transport plan was also distributed in 1985 to give the broader picture to the development, including public transport improvements. Genuineness of consultation is reflected in part by the extensive use of techniques, early initiation of consultation, and direct contact with affected landowners. Some community members were also paid money by the Department to attend over 20 consultation meetings on critical issues in the project, and Maunsell Pty Ltd project manager has been reported to have attended approximately 100 community meetings. The consultation programme also received a major national award - Gold Serif Award for 'Community Communication' by the National Society of Business Communicators, and was described by the judging panel as '*innovative, refreshing, well-researched and planned*'. The community was assured in the media that '*... that the concerns of ...residents are being taken seriously into consideration*', and that any preferred alignments outlined were subject to review.

However, consultation was genuine only insofar as improving the project and mitigating impacts as opposed to consultation to determine whether or not the project should proceed. Although extensions for public submissions were also provided to 2 January 1996 for conservation organisations who were unaware of the ER, it was noted in the letter providing this extension that '*...as you are no doubt aware construction of the road has commenced*'. This leaves little room for public influence given that this statement was made only days after the end of the public exhibition period (letter in DoT August 1996).

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at D-C. The proponent appeared open to considering different options posed during the process. Maunsells noted that although a preferred route was presented in the ER, it was not considered final due to the public exhibition stage. Examples of openness to considering options included:

- the alignment in Trott Park-O'Halloran Hill suburbs which was re-evaluated during public exhibition of the ER due to concerns about proximity of the road to residences;
- the consideration of contraflow lanes similar to the existing road, but this justified against given Main South Road could cater for opposite direction traffic to peak flow;
- openness to providing cycling facilities with design in consultation with cyclists;
- willingness to bypass any sensitive Aboriginal heritage locations;
- consideration of six options for Sturt Triangle which were proposed to be discussed with the Aboriginal Kurna Heritage Committee;
- as a result of liaison with EPA, the department considered incorporating flexibility into the design of noise barriers so that they could be retrofitted in the event that noise criteria were exceeded.

The Department was not, however open to considering the no-go, upgrade or public transport options, and were probably restricted in this by the government's strong public commitment to the project. Openness was also not evident for considering recommendations by the Bedford park Residents Association to move the northern entrance to the Expressway out of Bedford Park.

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration with Conception (phase i):** This criterion was graded at E. There appears to have been no integration of environmental factors with the conception of the proposal which began in part with the MATS plan in the 1960s. A corridor was provided and a decision made to build a road to alleviate congestion and associated problems. It does, however, depend on how

one defines the environment, and this congestion itself can be considered an 'environmental' issue (ie associated air and noise pollution, driver stress and safety).

- **Integration Planning (Alternatives; phase ii):** This criterion was graded at C-B. The degree of integration with planning was more complex to assess when compared to the ETSA case studies, given the myriad of tasks being conducted simultaneously. Nonetheless, the formal internal environmental investigations (ie the Environment Report) appear to be an add-on as demonstrated by the sequence of investigations for the project comprising:
 - finalisation of planning in August 1995;
 - site investigations
 - environmental studies in August to October 1995
 - ER exhibition
 - commence construction.

In this case, the environmental assessment came *after* the planning phase which indicates that planning and EIA were not fully integrated. It is however, difficult to judge this accurately given the isolated efforts over ten years while the proposal was deferred, and given that many of the issues identified during planning were indistinguishable from less formal environmental investigations. In short, early and informal environment investigations occurred as an integral component of planning, whilst the more formal environment investigations leading to the preparation of an Environment Report appeared to be an add-on and less integrated process (also given that it was prepared by a separate group not involved in earlier planning).

- **Integration Design (phase iii):** This criterion was graded at B-A. Integration with design was also difficult to assess, and the evaluation must rely on statements by consultants in the Environmental Assessment and Concept Development report that environmental factors were taken into account in the design process. Features such as sedimentation basins, noise barriers and landscaping were all identified in the EIA process, and were all part of the design process (as also indicated by their presence at the construction stage) which indicates that EIA was being integrated with the design phase. However, recommendations from the Environmental Clearance relating to design were made *after* design had already commenced which raises some question about integration at this final stage of the process. Nonetheless, based on available information, this criterion appeared to perform well.
- **Integration Construction:** This criterion was graded at C. As for the Adelaide-Crafers proposal, with the relatively new practice of EMPs, EMIPS, there is a much greater chance of integrating the environment information arising from the EIA process with the construction phase, in addition to the identification of improved mitigation measures which relate to actual field conditions. Unlike the Adelaide-Crafers proposal, there did not appear to be any major environmental accidents or problems during construction with the exception of complaints about dust and noise during construction, and as indicated by the reports prepared by the contractor, the information stemming from the EIA process appeared to be well integrated into construction. Performance would be better if additional resources were given to the Environment group within the Department for auditing performance, and for following up the effectiveness of the EIA information and of management during construction and operation. This information could then be fed into future projects. Much of the information about environment management gained during construction can be lost as the project is completed and the contractor moves on (unless the contractor is used frequently on different projects).

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at B-A. Consultation was early, and undertaken even before the official EIS requirement with the first public information bulletin published in January 1986.

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at B. A wide range of techniques was used for consultation, and in addition to meetings, the approach was generally 'one-on one'. Maunsells stated that the project team had '*...steered away from calling traditional public meetings having*

found them to be an outdated, and often counter productive, approach to identifying key issues of community concern' Techniques used included:

- information bulletins and newsletters distributed through direct letterboxing, government agencies, police stations and politician's offices;
- a free hotline with interpretative services for 14 different languages, and computer database to record issues;
- information signs along the route;
- video of computer simulation of road;
- local radio signal for proposal (Roadside 88FM)
- a mobile bus display which was taken to shopping centres with access to staff to discuss the proposal.
- small focus and design workshops for invited community members;
- meetings with local councils;
- personal visits to groups (eg Bedford Park Residents Association);
- briefings to conservation organisations and Aboriginal communities;
- media contact;
- Value Management workshop;
- workshops on bicycle and pedestrian issues;
- formal public submissions; and
- informal correspondence.

Of the 11 approaches to participation presented in Table (12), 7 were used, which is less than for the Adelaide-Crafers proposal, and is probably a result of the 'one-on-one' approach. Public meetings, although not supported by the proponent, may have been useful to include the broader public if an interest was demonstrated, rather than restricting more intensive consultation to those directly affected. Nonetheless, over 65 organisations were included in the consultation programme including for instance, State government agencies, RAA, emergency services, local councils, resident and community groups (eg Friends of Sturt Triangle, Bedford Park Residents Association, Marion Riding Club, Friends of O'Halloran Hill Recreation Park, walking groups), conservation groups (eg Greenpeace, Friends of the Earth, People for Public Transport, Australian Conservation Foundation), and State and Federal Members of Parliament.

Table 12: Public participation techniques adopted by ETSA for the Adelaide-Crafers Highway Proposal (based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

<i>Approach</i>	<i>Public Power</i>	<i>Participation Techniques</i>	<i>Adopted?</i>
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA's case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)? This criterion was graded at C. Transparency during the project was generally very good with public Information Bulletins and newsletters produced regularly.

Information in the ER and Public Exhibition Summary Report was also transparent, although there was a lack of equally detailed information for all alternatives in the ER. It was noted in one media release that *'Since the early 1980s' it's likely that as many kilometres of paper has been used on what the road could become.....than the actual distance the road will cover..'*

There were also some concerns that documents such as the risk assessment, EMPs, and audits were not publicly released to facilitate greater accountability in the construction processes, in addition to the biased nature of the information in the newsletters towards the positive effects of the project, and the successful nature of planning and consultation. There was no room for dissent in this information, despite the fact that controversy was evident earlier about the process, but this is not surprising given that maintenance of good public relations was important. Criticisms were also apparent from the government opposition which noted that this was a Government sponsored newspaper *'promoting the Liberal Party, rather than an Southern Expressway information newspaper'*.

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly? This criterion was unable to be graded. Resource flexibility to cater for unforeseen circumstance is unknown given a lack of information, but given the substantial delays in the process, and additional negotiations with local Aboriginal groups which were addressed, flexibility seems to be present. Flexibility did not appear to be evident to adopt the more expensive N3 route option given the Department's reluctance to spend the extra \$25 million which was considered a 'substantial cost penalty' (DoT November 1995: Section 5, p3). Timeframes were flexible given the delay of 10 years on the project resulting from government decision-making. Flexibility was not apparent when preliminary earthworks were pushed to commence during the dry season prior to full environmental clearance.

Level of Controversy about Openness

Public comments about the consultation process were varied ranging from those appreciative of the efforts devoted to participation, and those critical of the process. However, it should be noted that much of the positive comments were reported in the Department's own information brochures and as noted previously, it is unlikely that there would be room for dissent in these pamphlets. Specific comments were as follows for those supporting the process:

The Highways Department believed that most people 'appreciated being informed about the project' at the early public information brochure stage in mid to late 1980s.

'What amazes me is that we in the local community know so much about what is about to happen on the road - sometimes I know more than the people working on the road because of the letters and newspapers I receive from the project people'

The DoT noted that the communication approach was 'applauded by the Sheidow Park and Trott Park Residents Association'. In this regard the Residents Association stated '...from the very beginning the meetings have been conducted in as open a manner as possible. ... This type of public consultation is a giant step in the right direction - it's certainly new age and I would hope to see this communications approach adopted more broadly in all community issues.'

Comments for those critical of the process were as follows:

'...the community consultation process has been an exercise in public relations rather than consultation. Most people I know or have spoken to don't see any point in participating in a consultation process when the inevitable conclusion is that the people in control of the project will proceed irrespective.

'The allowance of approximately 3 weeks public review of the Environmental Report is grossly insufficient for the community to examine the implications of a project which is as important as this one.'

'Instead of proper and respectful community consultation we have a small group of ultra conservatives pandering to lobby groups who will irrevocably harm the built environment of our city.'

'The STCC are concerned that the community has not participated in the decision to construct the Southern Expressway. The STCC dispute that the consultation process conducted so far has been true and proper participation in decision-making'

A 5UV radio broadcast also indicated some controversy about consultation including a community protest meeting:

MURCH...Well, have the local residents been consulted on this?

KANCK...I don't know if local residents have been consulted at all. Certainly the people north of Darlington haven't, and the people in both...both Marion Rd and South Rd are going to get enormous problems. And we've already entitled it the "Darlington chokeway", because anything north of ...Darlington is going to become worse once these extra cars get on the road.

MURCCH...And also it's going to go across waterways and possibly Aboriginal sites.

KANCK...Well, that's of great concern, and that's in the Laffer's ...Triangle area, and that's what the local people...why the local people are organising that protest rally on Sunday for that particular site, because they have spent, I don't know five years or so bringing that site much more back to its original value. They've cleaned it up...

MURCH...But have the Aboriginal people actually been consulted about going through...

KANCK..My understanding is that they were not consulted at all. It was simply a Government decision and it's being imposed on everyone...'

It should be noted however, that this report was partly inaccurate given that the Aboriginal community was consulted about the project in 1991. Government controversy appeared to be non-existing about the consultation process (or at least not documented).

PROPONENT RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted in the EIS based on the available information and adequate rationale given for the selection of the preferred option? This criterion was graded at C-B. Like the other case studies, this is a difficult criterion to assess. In the broader and longer term context, the 'best' option would be travel demand management and the creation of an extensive and efficient public transport system which would attract greater number of commuters, and hence reduce traffic congestion associated with private vehicle use. Yet as noted previously, this was outside the scope of the project, which makes it difficult to know whether or not such an option should be included in the assessment of this criterion. Moreover, like the Adelaide-Crafers proposal, and the ETSA case studies (ie Hummocks-Waterloo), the upgrade option, although not meeting the project objectives as effectively, may have been the better option in terms of environmental impact. This too, is difficult to assess without full details on the degree in which this option would actually reduce traffic congestion and travel delays.

In terms of the more specific route alternatives, the 'best' option appears to have been adopted with Routes N2 and S3 which partly reflects the 'best' options presented in Table (13) which is based on information presented in the ER. At first glance, it may appear that the second best option was adopted for the northern routes because of substantial cost differences. However, the 'best' Route N3 option on environmental grounds (ie less property acquisitions, less severance impacts, less air quality impacts, less noise impacts in some areas), also had some substantially greater impacts in other areas of the environment such as visual impacts from the raised viaduct along Main South Road. As noted in one of the interviews conducted in Transport SA, visual impact and amenity was becoming a significant issue, and there was substantial pressure on the Department to improve this aspect of infrastructure proposals, as opposed to environment issues such as air and water quality (Interview 65 1999). Moreover, in addition to a substantial cost difference, the traffic problems associated with constructing the viaduct over Main South Road were considered to be significant. Thus, the next best option Route N2 was chosen because it had

lesser severance impacts than Option N1. Noise and air quality impacts were also slightly better for N2 than N1. Similarly, of the three southern route options, the best option appears to have been chosen as reflected in Table (13), although differences between Routes S2 and S3 were not substantial.

Table 13: Assessment of corridor performance based on information in the Environmental Report for the Southern Expressway proposal (shading represents 'best' option)

	N1	N2	N3*	S1	S2	S3*
cost						
traffic						
ecology		unclear preference				
land use						
visual						
amenity/social					unclear preference	
air quality						
noise					no clear preference	
heritage						
economic		unclear preference				

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at B. In terms of the broader options considered, the environment did not appear to be a major factor, and technical issues were more important with regard to how effectively the options met project objectives. In terms of the more specific route alignments, there appeared to be equal weighting between economic, environmental and technical factors given that the initial route alignments were assessed using environmental criteria and given that the best options on environment grounds were adopted (which also happened to be the best option in terms of cost factors).

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)? This criterion was graded at B. Unlike the other case studies, a Table summarising public issues and proponent response was not prepared given the different nature of the response to public submissions (ie not as comprehensive). Procedural changes which were apparent included for instance:

- further Aboriginal heritage surveys were conducted in consultation with local aboriginal communities and the Aboriginal Affairs Minister in response to information provided to the Department about an Aboriginal site along the corridor which had not been found in the 1991 survey;
- invitation of Bedford Park Resident's Association to attend design workshops in response to their comments on the ER and proposal. This influenced design of the Sturt River bridge, batter design and landscaping (DoT August 1996);
- further investigation of road alignment in Trott Park which was accepted by the adjacent communities (DoT August 1996);
- further noise models established during public exhibition;
- appointment by Maunsell of acoustic consultant to undertake assessment of probable construction noise, establishment of new construction noise criteria and longer term monitoring of noise, following consultation with the EPA about noise issues.

Extensions were also given for public comment on the ER, and where requested, individuals and groups were included on the mailing list for the provision of information which demonstrates flexibility and responsiveness.

Criterion 4.2.2: Was the project changed on environmental grounds where appropriate? This criterion was graded at B-A. Responsiveness was difficult to assess, and it should be acknowledged that the Department was constrained in what it could do given the government's firm commitment to building an Expressway. There is some uncertainty about changes to the proposal during the early stages in the 1980s, although public concerns appear to have been taken into account in the selection of the original Route B-C. The most significant change for the Expressway appears to be the modified alignment near Lander Road, which was altered twice during the planning process (refer Table 14). Firstly, in December 1995 it was announced that where previously the Expressway traversed the middle of the corridor between suburbs with the road going *over* Lander Road, it was proposed to have a marginal shift east of alignment, with the Expressway going *under* Lander Road in order 'to minimise the visual and noise impacts on the residents in the area'. However, in July 1996, a change was announced following community consultation and an evaluation of all options. It was subsequently decided that the road would go *over* Lander rather than under, and the road became similar to the original alignment announced March 1995 to lessen the proximity to residences. Reasons for the change included:

- reduced volume of hard rock excavation and hence less disruption to community during construction;
- provides for possible future duplication of the road and bridges;
- reduces pollution and noise from traffic by minimising vertical grades;
- minimises depth of cut and hence width of Expressway;
- reduces the width of the Expressway earthworks and maximises available open space;
- provides a 'solution which is cost effective to the community at large.'

Table 14: Changes to the Southern Expressway proposal

Nature of Change	Details
Number of Changes	<ul style="list-style-type: none"> • 3?
Type of Changes	<ul style="list-style-type: none"> • minor realignment near Lander Road • provision of Aboriginal access, training and monitoring, etc • longer term monitoring of noise • <i>plus other minor design changes such as bicycle provisions, bridge and landscaping design which were not documented</i>
Change Significance	<ul style="list-style-type: none"> • minor
Timing of Change	<ul style="list-style-type: none"> • after Environmental Report and community consultation
Initiator of Change	<ul style="list-style-type: none"> • Department in response to community consultation

Thus, changes were apparent based on environment grounds where appropriate. Other changes appeared to include the adoption of longer term noise monitoring noted previously, and the compensation package for the Aboriginal Kurna Heritage Committee including provisions for a road and car park to facilitate Kurna Aboriginal's access to an area of significance. There may have been other minor changes to design as a result of community workshops, but they were not documented, and hence were unable to be assessed.

The changes made did not appear significant in the overall context of the project. Nonetheless, apart from perhaps adopting an alternative broader solution such as no-go, public transport or an upgrade to the existing system as noted above, there did not appear to be a need to make any significant changes. In terms of initiative, the Department was reluctant to adopt suggestions for public transport options, but appeared quick in their response to community issues for minor design changes (eg Sturt River Bridge design, landscaping requirements).

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? There was insufficient information to grade this criterion.

Level of Controversy about Responsiveness

Although there was strong criticism of the proposal itself by some individuals and organisations such as the Southern Transport Community Coalition, there was virtually no explicit reference to the actual responsiveness of the proponent, although this was implied in these criticisms. For instance, strong criticism from the STCC noted previously related to the proposal need and its impacts, and lack of consideration of public transport benefits. Similarly, the Democrat Party were highly critical of works for the Expressway which resulted in loss of rare grasses in Laffers Triangle, and which were commenced prior to completion of the EIA. It was noted by the Democrats that the loss was “*environmental vandalism*”, and that the ‘*...Government was in too much of a hurry to build the Southern Expressway, and local environmentalists had not had time to raise the alarm.*’

Nonetheless, it was noted in the EIA Process Summary earlier that public submissions were low, particularly for the Public Works Committee, which in turn was indicative of low opposition to the project overall. Moreover, local residents appeared satisfied with the arrangements, and many of their public submissions, rather than opposing the project, were concerned about specific issues such as access or noise impacts which could be mitigated. It was also noted by the Department in one of its newsletters that there ‘*...are a lot of houses and land close to the Expressway - but people we speak with have indicated that planning has been sympathetic to nearby housing and they are satisfied with the very reasonable landscaping buffer zones aligning the road.*’ Thus, despite the presence of isolated controversy about the proposal, overall controversy was not high about the proponent’s responsiveness.

Transport Project Case Study 4

RUNWAY EXTENSION

THE PROPOSAL & ITS CONTEXT

The Project's History

Adelaide's Airport, which is 759 hectares and located on the east shores of St Vincent Gulf five kilometres from the Central Business District, became publicly operational in 1955 (Department of Aviation 1983). With the introduction of larger aircraft such as the Boeing B747, extensions were made to the runway in 1969, and today it is an airport which caters for interstate and international air traffic (regular international services commenced in 1982) (Department of Aviation 1983). In the early 1980s, the possibility for a new major airport in Adelaide was being explored (Department of Aviation 1983), but never eventuated. At the same time, a Commonwealth Environmental Impact Statement was prepared for a Master Plan which focused on the current Adelaide airport and its ability to meet future requirements. Within this report, the limited nature of the airport's capacity to expand was noted, due in part to the constraints on its location which was surrounded by residential areas and recreational land (Department of Aviation 1983).

Acquisition of adjacent land for extension of the airport within the West Beach Recreation Reserve Trust and golf course was considered to be '*...politically and socially complex and costly*' (Department of Aviation 1983: p47). However, it was also stated that intrusion into West Beach Trust land may need consideration in the 1990s if a need was identified to extend the existing runway (Department of Aviation 1983). As argued by the Department of Aviation:

'It is feasible that social and economic pressures to have the airport's main runway extended...might arise from unforeseen demand or aircraft requirements and that these might outweigh, in the public's opinion, social and economic demands to maintain Tapleys Hill Road in its present alignment and the West Beach Trust Reserve in its present form and also outweigh the social and economic costs of their relocation' (Department of Aviation 1983: p82).

If the need was identified, options proposed in the early 1980s for Tapleys Hill Road which was in the way of an extension included either a tunnel or a realignment of the road to meet with Military Road (Department of Aviation 1983).

In March 1990 a report instigated by the Director-General of Transport indicated that international air traffic had been rapidly increasing in Australia since the 1970s, due in part to increased tourism and volumes in air cargo (DG Transport March 1990). In the case of South Australia, however, air traffic, including freight, was considered relatively low, and it was indicated that the runway length was adequate at that time for '*most fully laden international take-offs*' and '*as new engine technologies develop it will be adequate for all routes*' (DG Transport March 1990: p61). Nonetheless, the State raised concerns to the Commonwealth about the airport's limited export capacity and associated constraints on the State's development, and as a result, a working group was created in 1993 which identified the need for an extension of the main runway (MHUD February 1997).

The existing airport utilised the shortest runway of all capital cities in Australia, and was considered insufficient for fully-laden freighters, and some passenger flights at full capacity plus freight to any destination beyond Singapore (DoT May 1996). Most of the State's exports moved through other Australian airports which resulted in higher costs for transport, uncertainties in delivery timings, and reduced quality of perishable goods which formed the majority of exports from South Australia. An extension to the runway would aim to overcome these problems and improve competitiveness in international markets in addition to providing a greater capacity for international passenger numbers. It was found later in an economic analysis of the proposal that:

'In terms of the efficient use of available resources, economic benefits to the South Australian community will exceed costs, and it will be better off if the development proceeds. In addition, the increase in operating expenditure at the airport, and the activity generated by the expected increase in tourism expenditure and increased commodity production (exports) have substantial flow-on impacts on the State economy in terms of increases in Gross State product, household incomes and employment. The potential increase in State Government tax revenues is also substantial... Including the costs of the proposed road underpass reduces the overall economic benefit, but insufficient to affect the positive outcome' (cited in DoT May 1996: p3:3).

In February 1994, 'in-principle' approval was given by State Cabinet to assess development options for the runway (DoT May 1996).

FAC Concept Study and Project Announcement

Prior to public announcement of the project, the Federal Airports Commission (FAC) conducted a preliminary concept design study outlining various options to the proposal. The ideal runway length was 3,600 metres (existing was 2,528 metres) but due to constraints such as the Glenelg Sewage Treatment Plant, a compromise 3,100 metres was able to be achieved which was considered adequate. Three alternatives for the runway extension were proposed comprising extension of the north-east end, extension of both ends, and extension to the south-west end. The first two were considered unacceptable due to the high social and environmental effects on residential areas to the north-east of the airport. For the preferred south-west extension, four suboptions for roadworks were proposed to cater for the extension comprising:

- diversion of Tapleys Hill Road;
- diversion of Tapleys Hill Road in addition to extension of taxiway to new runway end;
- construction of underpass for Tapleys Hill Road;
- construction of underpass for Tapleys Hill Road in addition to extension of taxiway to new runway end.

The underpass for Tapleys Hill Road was considered a permanent solution which would allow further expansion of the runway in the future in addition to savings in road travelling time and vehicle operating costs. It was also believed that the underpass would alleviate public reaction because it demonstrated that all efforts were being devoted to minimising impacts. Thus the State government favoured the last and more expensive option. Clearly, the intention was good, and it was noted by the DoT that *'...any change to the operation of the Adelaide Airport should both minimise the potential physical disruption and amenity impacts...and should minimise the loss and disruption of important club and sporting facilities...'*. However, despite attempts by the Transport Policy Unit in the State Department of Transport (DoT) to strengthen the argument for the underpass option in June 1995, it was realised that the underpass option would have to be rejected due to a lack of Commonwealth and State funding for this alternative (ie required an additional \$30 million). The underpass would also have added 12 months to the completion date.

Following the FAC study, the project was officially announced on 15 August 1995 (refer to main thesis text, Chapter Nine, for an illustration of the proposal). Around the same time, the Commonwealth government announced that they would instigate prior to the runway extension, a noise abatement scheme in Adelaide (eg double glazing of windows, insulation) for houses around the airport to avoid the political outcry which was evident in Sydney with the construction of the third runway. It was noted by the Commonwealth Transport Minister that: *"I like to learn by the mistakes that have been made and there were plenty made in Sydney. ...I think it will improve the worst affected properties and it will certainly, if done successfully, lessen the impact of the decision to extend the runway."* However, this promise was not forthcoming and the commitment was withdrawn despite substantial opposition to the proposal during the EIA process as a result of noise impacts (see later discussion).

The Proposal

Major elements of the proposal entailed:

- extension of the main runway by 572 metres to the south-west (extend 200m beyond existing boundary);
- extension of airport boundary 450 metres beyond the runway extension (navigational and security reasons);
- extension of existing taxiway;
- deviation of Tapleys Hill Road (the preferred option) or construction of underpass;

in addition to:

- replacement of Africaine Road (although originally not planned for);
- construction of new Tapleys Hill Road intersection;
- construction of bridge over Patawalonga Lagoon for Tapleys Hill Road;

- relocation of Patawalonga Creek and filling of present Creek course;
- construction of a blast fence to protect Tapleys Hill Road users (for deviation option);
- installation of new lights and relocation of navigational aids,
- construction of new drains, access roads and boundary fences;
- relocation of services (eg gas mains, water mains);
- reduction of the height of obstacles at the end of the runway;
- relocation of Baseball Diamonds, Anderson Reserve;
- relocation of German Shepherd Dog Club;
- undergrounding of some transmission lines;
- modifications to South Patawalonga golf Course (initiated as separate project by Urban Projects Authority) (DoT May 1996).

The proposal, including off and on-airport works was expected to cost approximately \$48 million with the road deviation option, or over \$76 million for an underpass option (1995 dollars) (DoT May 1996). State funding was to be committed for off-airport works and the EIA process, and on 16 May 1995 Commonwealth funding was announced by the Prime Minister to supplement State funding (MHUD February 1997). There were however, some problems getting funding and an agreement on financing was delayed due in part to a Federal election and lack of willingness to act by the new Government. Nonetheless, Commonwealth funding was eventually confirmed in August 1996 (MHUD February 1997). Initially, however, the State provided \$20 million to quickly instigate the process which was to be later refunded by the Commonwealth after the airport was leased.

Decision-making was planned for completion in late 1996 and the construction of roadworks was proposed to commence in early 1997, with project completion in mid 1998. Three key organisations were involved in the planning process comprising the State Department of Transport, the State Urban Projects Authority (for complementary works to cater for the proposal), and the Commonwealth Federal Airports Commission (FAC), in addition to the administrative authorities for the EIA process at both State and Commonwealth levels. The State DoT was responsible for the EIA process and the 'off-airport' works such as the road realignment, whilst the FAC was responsible for the 'on-airport' work such as the runway extension (MHUD February 1997). The proposal also involved close coordination with a concurrent project on the Patawalonga Basin, and the Glenelg Foreshore and Environs EIS Amendment. Decision-making was also fragmented given that modifications to the Patawalonga Creek and Golf Course were being made by a separate authority (Urban Projects Authority) to cater for the runway extension proposal.

SUMMARY OF THE EIA & DECISION-MAKING PROCESS

Triggering EIA

The State Cabinet decided on 13 March 1995 that an EIS would probably be required for the project. The proposal was subsequently evaluated by the EIA Branch of the DHUD against criteria under Regulation 61 for requiring an EIA. These criteria under the Development Act, which were based on ANZECC guidelines, were more comprehensive than those outlined in guidelines for the previous Planning Act. Based on these criteria, an EIS was recommended because of:

- potential changes in aircraft noise...;
- potential changes to air quality....;
- potential changes to risk hazard....;
- potential impacts on groundwater;
- potential alteration of watercourses and impacts on natural drainage patterns.
- potential impact on the community as a result of the extension and diversion of Tapleys Hill Road including;
 - potential disruption to existing communities as a result of any altered community concern, in particular change to personal vulnerability, safety and amenity;
 - potential impact on the local community as a result of possible odour, dust and noise;
 - potential impact on scenic amenity by land disturbance and changes in lighting of the runway and alterations to Tapleys Hill Road;

- potential impacts from changes of land use;
- impacts of changes to vehicular traffic;
- potential changes to traffic noise; and
- potential impacts on avifauna and the risk of aircraft bird strikes...'

Pursuant to the State *Development Act 1993*, an EIS was officially required on 2 June 1995 by the then Minister for Housing, Urban Development and Local Government Relations.

Given that both Commonwealth land and funding were involved, the EIA process under the Commonwealth *Environment Protection (Impact of Proposals) Act 1974* (EPIP) was also triggered (MHUD February 1997), and on 26 August 1995 an EIS was required by the Commonwealth Minister for the Environment (DEST 1997). Prior to this, on 18 July 1995 the State Department of Transport was designated as proponent by the Commonwealth Department of Transport and Regional Development which effectively triggered the EPIP Act, although there were initially some delays in the designation of proponent due to some uncertainties about Commonwealth involvement and funding commitment in the process.

In order to reduce duplication, a joint assessment process was agreed to in September 1995 between the State and Commonwealth with the requirement for one Commonwealth/South Australian EIS, joint guidelines and separate Assessment Reports. Prior to the completion of the EIA process, it was planned to conduct preliminary works such as realignment and filling of Patawalonga Creek and modifications to the Golf Course, although the DoT was concerned that this may trigger some public criticism. Approval to conduct this work was given by State Cabinet on 11 March 1996.

Proposal Guidelines

The DHUD had a close liaison role with the State DoT in the early stages, particularly in setting the guidelines for the process and project. This role declined as the project progressed, which was probably so that an 'arm's length' from the proposal could be maintained and hence independence. Unlike the other case studies, the guidelines were prepared by both the Commonwealth EPA and the DHUD, and released for public comment for four weeks from 25 September 1995 to 27 October 1995 (DEST 1997). Government agency comment had already been called for prior to public release of the guidelines. The introduction of public input at this early stage was a new requirement under the State's *Development Act 1993* (although not an official requirement under the Commonwealth legislation). Following public comment, which was apparently limited, the guidelines were revised and then given to the DoT for preparation of the Draft EIS.

Unlike the other case studies, a scoping workshop was also conducted with government agencies and key community and recreation groups, but the range of representatives was restricted at this early stage. Participants included the DoT, the consultants, the Economic Development Authority (EDA), the Urban Projects Authority (UPA), local councils, business representatives, FAC, West Beach Trust and community and recreational groups (ie Anti-Airport Noise Association, golf clubs, baseball club, Dunecare). At this stage, community support for the tunnel option was predicted which was a correct assumption. Some of the issues raised which related to recreational impacts and road options informed the preparation of the Draft EIS and were outlined in the community consultation section.

Organisation & Management

A discrete planning team[s] was formed for the proposal, which was headed by the project coordinator within the State DoT. A two tiered structure of management was also created comprising a Master Project Coordination Group, and two separate on and off-airport works 'Project Coordination Groups' which reported to the Master group. However, the on-airport works group was not formally realised because the FAC determined it a relatively straightforward process which did not require extensive coordination between agencies. A discrete team of consultants was also established for the planning process and preparation of the Draft EIS. The structure of these teams are illustrated in Figure (1) and (2).

Several participants required coordination by the project coordinator including the FAC, DoT, UPA and separate project managers for the runway, the road and the golf course. Internal service

providers within the DoT were also utilised included Structural Services, the Landscaping Unit, Stormwater Services, and Materials. The project coordinator had the final authority on making decisions with little other intervention at the detailed level (eg to incorporate a mitigation measure), but links to practices on the ground were diluted given that the project coordinator oversaw a project manager who oversaw a contract administrator, who oversaw the contractor, and information did not always travel all the way up the line.

There was also extensive involvement of internal environmental officers, and in fact, the environmental officer was considered to be the project coordinator’s ‘right hand person’ from the beginning of the process, and attended the majority of project meetings. The environmental officer was also officially a member of the Off Airport Control Group, and had input into the quality of the environmental documents,. The Department’s Environmental Unit also conducted an audit on an element of the project. Thus, they had close involvement throughout the process in an official manner, and in this sense performance was better than for all other case studies.

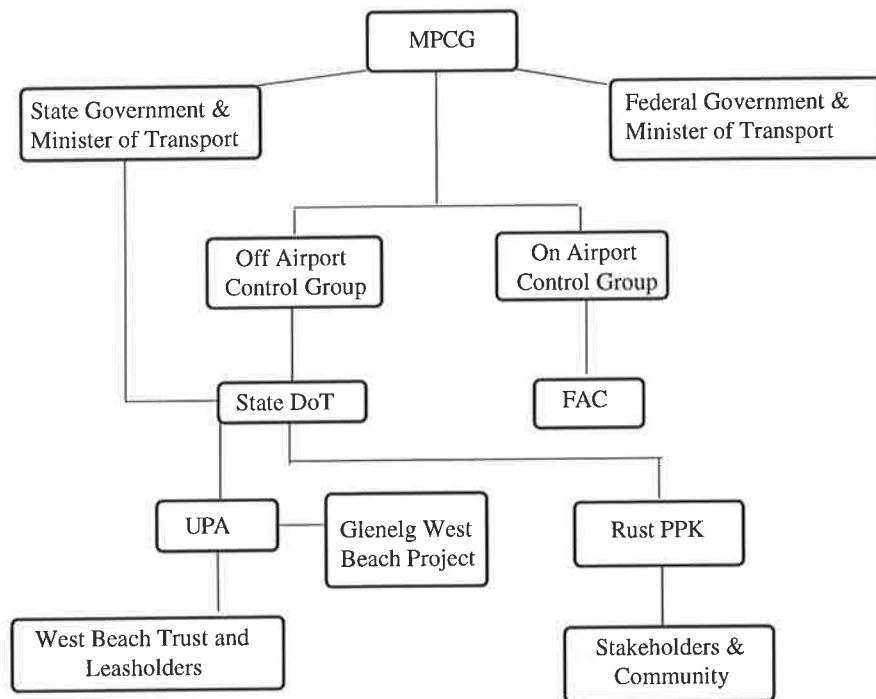


Figure 1: Communication Structure for the Adelaide Airport Runway Extension proposal

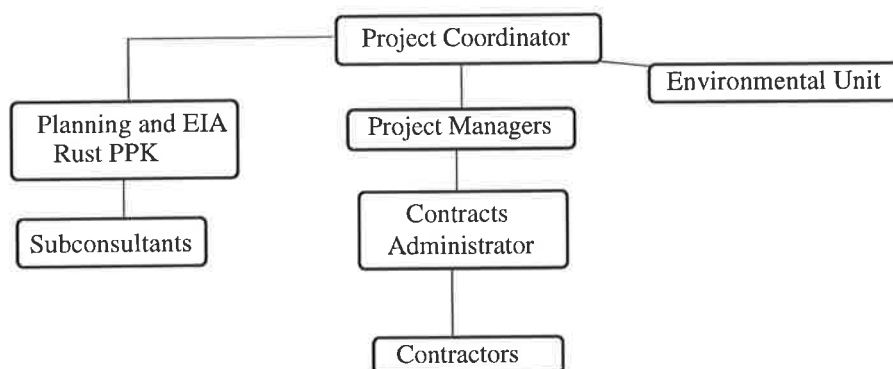


Figure 2: Simplistic representation of structure for EIA, planning, construction and oversight role of project coordinator

The Consultant

Close to time of public announcement of the project, Ministerial approval was given in August 1995 to appoint a consultant for the planning process. Departmental resources at the time were lacking and government policy required outsourcing of work in this area. In October of that year, Rust PPK were engaged, and were responsible for the planning investigations, identifying the most appropriate alternative for the road alignment, developing the community consultation strategy, preparing the Supplement report and the Project Definition Report. Activities such as the aircraft noise consultancy, road and bridge design, geotechnical investigations, drainage design, design of golfcourse, and water quality studies for Patawalonga catchment were to be conducted by other parties. In particular, the Commonwealth Department of Transport conducted a separate investigation into a noise amelioration programme, but as noted earlier, there was no funding available to put this into practice.

Preliminary Consultation, Value Management Study & Risk Assessment

In addition to the earlier scoping workshop, preliminary consultation workshops were also conducted in December 1995 with key government agencies, residents associations, business communities, recreational groups, and councils. At these meetings, brainstorming was conducted to resolve issues such as traffic management, noise attenuation, road options among other things. Priority issues were also rated by some of the participant and related to (in order of importance):

- impacts on recreational areas;
- assessment of road options;
- socio-economic benefits of the project;
- noise issues;
- safety issues;
- closure of Africaine Road, and
- air quality.

Prior to the release of the Draft EIS, and as an important component of the EIA and design process, a Value Management Study (VMS) was also conducted and chaired by an independent facilitator on 18-19 January 1996 to question the proposal, and to assess the road diversion versus the tunnel option (DoT May 1996). Participants included government agencies, recreational clubs, local councils, resident groups and the air transport industry (DoT May 1996). Six options were considered during the workshop comprising:

- long tunnel;
- short tunnel;
- Tapleys Hill Road deviation;
- new link road between Tapleys Hill Road and Military Road;
- depressed road;
- south-west and north-east runway extension.

Like the original long tunnel option, the proposed shortened tunnel option was also considered too costly. The FAC recommended a reassessment of a shortened road deviation option, and although technical constraints were evident, support was given to the revised road deviation option by all participants, with the exception of community members who supported the tunnel option. No new issues were identified in the Study, but the assumption that there would be a net reduction in noise was challenged, and it was acknowledged that bureaucratic and public perception of noise may differ. In the following month, a risk assessment workshop was held in February 1996 which also identified that the greatest risks were associated with noise and the public perception of noise (DoT 1996).

The Draft EIS

The findings of both the VMS and risk assessment workshop appear to have informed the preparation of the Draft EIS in terms of alternatives considered and treatment of the noise issue. Portraying the issue of noise impact in an understandable way for the public was considered a challenge, resulting in ongoing refinement to the manner in which it was presented. The key point

to portray was that the overall noise scenario was predicted to improve both with and without the project by the year 2010, which is likely to be the result of the removal of older and noisy aircraft (Boeing 727s). Nonetheless, difficulties with the noise issue contributed to the delay of the Draft EIS, but the document was finally approved by Cabinet on 27 May 1996, following comments by the Master Project Control Group, the State DoT, FAC, CEPA and DHUD. Some of their concerns related to the complexity of the noise section, requirement for a fuller description of environmental effects and mitigation measures, and ambiguity about the relative roles of both the DHUD and DoT.

The Draft EIS was 182 pages in text and figures (including summary; excluding references and appendices) which was the longest EIS of all the case studies. The contents are summarised in Table (1), whilst the proportion of focus on each main task for an EIS is presented in Table (2). However, given the different structure to all other Draft EISs assessed in the case studies, the focus was difficult to assess given the fragmentation of tasks. Rather than having separate chapters on a description of the environment followed by the impact assessment, the EIS was structured around issues such as air quality or noise, and within each of these chapters was included the existing environment, legislative requirements, impacts and safeguards. This made it easier to directly link existing conditions with proposed changes, unlike previous EISs which separated these factors, but at the same time gave a fragmented picture of the overall proposal's environment. Also encapsulated within the Draft EIS was an EMP, unlike other case studies which lacked detail on the environmental management phase in the EIS (although the Southern Expressway contained a brief EMP in an appendix).

Table 1: Contents of the Draft EIS for the Adelaide Runway Extension Proposal

<i>Contents of the Draft EIS</i>
PART A: Background
1. Introduction (Background, project objectives, EIA process, purpose and structure of the EIS, project EIS, other activities)
2. Adelaide International Airport (existing situation, airport operations, passenger and freight movements, physical and operational constraints)
3. Project needs and justification (current airport limitations, desired runway length, economic benefits)
4. Options and Alternatives (Runway options, Tapleys Hill Road options, the preferred option)
5. Community Consultation (formal requirements, consultation strategy and process, community responses)
PART B: The Project
6. Project Description (design process, airport works, road works, drainage works, landscaping, other works, construction program, funding and costs)
PART C: Environmental issues, Impacts and Safeguards
7. Airport Operations (Existing conditions, legislative requirements and policies, potential construction and operational impacts, safeguards, conclusions)
8. Roads and Traffic (as for Chapter 7 contents)
9. Infrastructure and Utilities
10. Airport Noise
11. Road Noise
12. Air Quality
13. Geology
14. Ground and Surface Water
15. Flora and Fauna
16. Contaminated Soil and Wastes
17. Airport Hazard and Risk
18. Road Hazard and Risk
19. Land Use and Controls
20. Land Ownership and Occupancy
21. Landscape and Visual
22. Archaeology and Heritage
23. Socio-Demographic Environment
24. Property Values
PART D: Environmental Management Plan
25. Environmental Management Plan

Table 2: Proportion of focus in the Draft EIS for the Adelaide Runway Extension Proposal

EIS Task	% Focus* (approximate)
Summary	3
Introduction	3
Proposal Description	8
Policy Framework	difficult to assess
Proposal Need	3
Alternatives Description	4
Description of environment (baseline)	21
Description of Preferred Concept (if identified)	as for project desc.
Impact Description & Evaluation	23
Mitigation (or EMP)	7**
Monitoring	difficult to assess
Public consultation (approach)	3
Conclusion	0

* does not total 100% because of overlaps on some pages, and fragmentation of tasks which made proportion of focus difficult to assess; ** includes safeguards integrated into impact assessment section

The three runway extension options proposed in the earlier FAC concept study were presented in the Draft EIS, in addition to alternatives identified during preparation of the EIS (some of which may have been the result of public submissions) comprising:

- use of the east-west cross runway;
- construction of a new runway;
- relocation of the airport;
- do nothing (DoT May 1996).

Like the FAC concept study, the preferred option remained the extension of the main runway 05/23 to the south-west. Given that this option would impact on Tapleys Hill Road (and require closure of Africaine Road), six alternative options were proposed for the Tapleys Hill Road comprising:

- a short deviation of the road;
- a long deviation (the original alternative proposed earlier);
- a long tunnel (the original alternative proposed earlier)
- a short tunnel;
- a controlled crossing; and
- closure of the road (DoT May 1996).

The long road deviation option was considered the best because it minimised the impacts on aircraft operations during construction, but it also had the highest cost of the road deviations and greater impacts on recreational facilities such as Anderson Reserve. Thus, the preferred option was identified as the short road deviation given that it had no impact on Anderson Reserve and the Glenelg Baseball Club, and given that it was the cheapest option. The long tunnel was also considered a practical alternative despite its substantially higher costs, and was further assessed in the EIS, whilst the other options were justified against early on in the document. It is unclear in the EIS why the cheaper short tunnel option (\$17.7 million) was not considered viable for further assessment given that its impacts and benefits were similar to the more expensive long tunnel option. The only difference appeared to be that the short tunnel option did not allow for future expansion of the airport, but neither did the preferred long road deviation.

Public concerns & Supplement report

Shortly after the announcement of the proposal, public controversy was reported in the media with articles entitled '*Clubs lash out at runway plan*', and '*Axed tunnel rage grows: Groups vow airport fight*.' Protests were primarily from residents and recreational groups about the plans to discard the tunnel option, and the West Beach Trust was critical of a '*total lack of communication*'. Prior to the release of the Draft EIS, the main concerns from councils, community and resident groups related to:

- the impact on the recreational facilities due to the road diversion into the West Beach Trust's public open space reserve,
- impacts on traffic and diversion into other areas,
- issues of noise,
- concerns about the need for the proposal,
- demands for the tunnel option,
- suggestions that the airport should be relocated.

At the same time, others pushed for the project, and it was reported in an article, '*Air freight rates 'threat' to SA*', that producers of export goods were pushing for the proposal because it was costing money to transport goods via other airports. Many of the calls made to the telephone service were also supportive of the proposal (there were over 103 calls and 45% indicated support). Issues raised during telephone contact were similar to those noted above in addition to concerns about the project's economic benefit, and the possibility that the EIS would be manipulated for political purposes.

Provision for formal submissions on the draft EIS was available for eight weeks from 3 June 1996 until 29 July 1996, which is a greater period than that required by law under both State and Commonwealth EIA processes (6 weeks for State; 28 days for Commonwealth). During the public review period, 15 meetings-workshops were held by the consultant, in addition to a public meeting instigated on 26 June 1996 by the DHUD which was attended by 40 people (DoT November 1996), and one by local council on 23 September 1996 which was attended by 250 people. Key issues raised in meetings included noise, aircraft curfews, drainage, house values, and replacement of Africaine Road. Attendance at public meetings and workshops was considered 'surprisingly low' by the Off-Airport Works Control Group, even though extensive efforts had been made with letter drops and invitations. Nonetheless, controversy may have lessened significantly as a result of an agreement reached with the West Beach Trust over the modifications to the golf course which, although affecting 100,000 golfers, resulted in minimal protest and the Trust appeared satisfied with the plans, despite their earlier criticisms.

A total of 61 formal submissions on the Draft EIS were received, 42 of which were from the public, whilst the remainder were from government agencies including local councils. Most of the issues raised are illustrated in Figure (3) which illustrates that a number of alternatives to the proposal were recommended (eg relocate the airport), and that the most frequently raised issues related to water quality, noise impacts, traffic impacts and effects on recreation. Support for the tunnel option also outweighed support for the road deviation, although a preference for a particular option was not always given in submissions. A petition supporting the tunnel option had also been submitted to Parliament with 1,000 signatories.

At the time of EIS completion, the then State Minister for Housing and Urban Development (J Oswald) who was responsible for administering the EIA process, supported the tunnel option without the extended taxiway to reduce costs, whilst the Department of Treasury and Finance supported the short road deviation because it addressed environmental concerns and was the lowest cost option.

Overall, it was noted by the project coordinator that:

The submissions address all the key topics that have been expected from earlier communication processes. The project is being supported very positively by key community groups.... The pre-existing issues of noise, road traffic and drainage are, as expected, given significant attention.'

Concerns and awareness about the noise issue appear to have been exacerbated by the New South Wales Third Runway proposal which attracted significant public outrage and media attention

across Australia near the time of the Adelaide Runway extension proposal. Yet, although there would be an increase in noise from the runway extension, the actual noise levels were predicted to be lower than the existing noise levels due to the future removal of Boeing 727 aircraft. It was thus not considered a significant issue, which was a point agreed to by the State EPA, but public perception of the noise increase was a substantial factor in the project development. The project coordinator worked hard to alleviate these issues (ie adoption of a noise monitoring programme to alleviate community uncertainty and concern), but there were also some concerns that the project ran the risk of being used by groups to improve the existing environment beyond the impacts of the actual project itself. In other words, some of the issues involved existing problems (eg aircraft noise, traffic congestion), and the proposal itself was not altering these factors materially. The question arises in these circumstances, how much responsibility for environmental protection or enhancement should be placed upon proponents? Should they be responsible solely for the impacts of their project, or work beyond this?

The proponent's response to public and government submissions in the Supplement was released on 25 November 1996, nearly six months after the release of the Draft EIS. Prior to the Supplement's public release, comments on the document were made by EIA Branch, CEPA, EPA and the State DoT's Environmental Unit, some of which related to the inadequate treatment of the noise assessment. Amendments were made and the document was subsequently considered satisfactory by the DHUD.

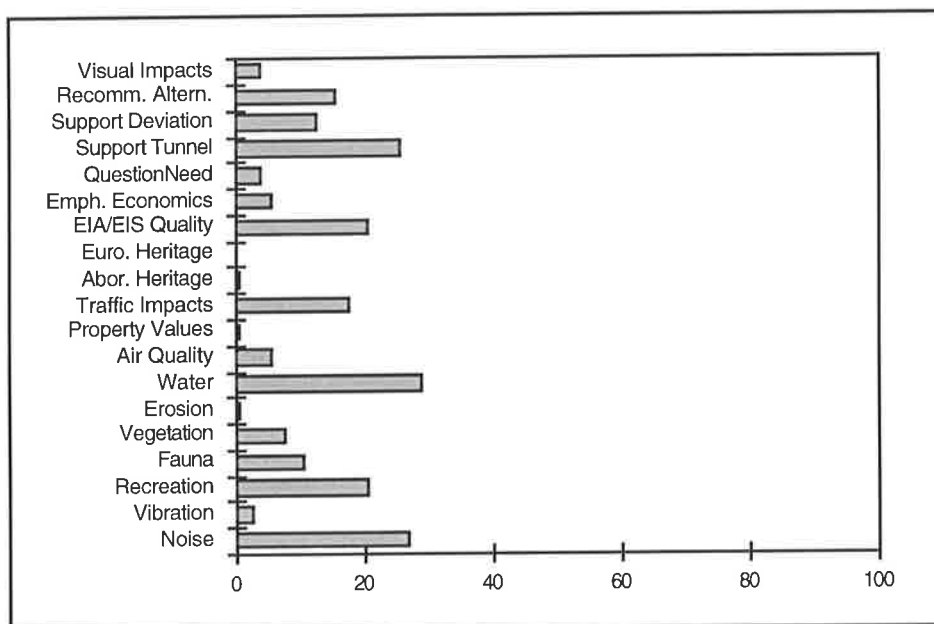


Figure 3: Relative importance of issues raised in public submissions on the Draft EIS for the Adelaide Airport Runway Extension proposal

State Public Works Committee

Pursuant to the *Parliamentary Committees Act 1994*, in December 1996 the State DoT made a submission to the Public Works Committee (PWC), within which the short road deviation was stated as the preferred option given that its impacts were considered similar to the tunnel alternative, but its costs were substantially lower. This was clearly a change from the original opinion in 1995 which preferred the underpass for a number of reasons in addition to its lower impacts. The PWC's public hearing was conducted on 11 December 1996, and witnesses included the project coordinator (DOT), senior advisor aviation (DoT), consultant project manager, and FAC. There were no community groups present.

Several questions were asked by the Ministers of the Committee about the economic justification, rationale for the runway length and future air traffic. The PWC reported its finding in January 1997, where it was concluded that the project was 'soundly based', and that the Committee was

satisfied that adequate consultation had occurred. The project was thus recommended by the Committee, and the PWC planned to monitor the project as it progressed. It should be noted that although the public works committee hearing is a mandatory part of the decision-making process, the recommendations of the Committee are advisory only, and are only one factor of many which are taken into consideration when the Cabinet makes its final decision on a project. Nonetheless, the recommendation was adopted (see later section).

Assessment Report

The State Cabinet requested that the DHUD's Assessment Report of the proposal and the EIS take top priority in the Department's assessment programme, but due to resource problems there were still delays in the assessment which had ramifications for the whole project timetable. The report was also delayed until advice from the Commonwealth Minister was received on their assessment. The State's Assessment Report was endorsed by the Minister for Housing and Urban Development in mid January 1997, and was publicly released in February of that year. Unlike earlier Assessment Reports (eg for the transmission lines), much of the Assessment Report was dedicated to reiterating statements made in the Draft EIS or response document, either noting support or opposition, and there was less evaluation about quality of the EIS or process. The Assessment concluded that:

- the proposal was consistent with the State's Planning Strategy;
- it was an essential part of a strategy to increase tourism;
- the biological impacts would be minimal and manageable,;
- stormwater runoff and other surface water issues would be manageable;
- air quality effects and traffic effects would be minimal;
- heritage impacts were minimal or non-existent and would require compliance with relevant legislation;
- noise would involve only a slight increase;
- visual impacts during construction were temporary, and longer term impacts would be managed by landscaping (but noted that visual impact of blast fence was not considered in the Draft EIS); and
- the short road deviation alternative was the best on economic grounds (also noted that the tunnel had impacts associated with ground subsidence as a result of dewatering, and loss of a local access road: Africaine Road).

Although there were no recommendations about whether or not the proposal should proceed, two recommendation's were made which related to compliance to legislation, and mitigation measures.

The Commonwealth's Assessment Report prepared by the CEPA on behalf of the Commonwealth Minister for the Environment, Sport and Territories, was released shortly after the State's Assessment, and concluded that the objective of the EPIP Act had been met (DEST 1997). There did not appear to be any major disparities between the State and Commonwealth Assessments which is not surprising given that there was close liaison between the State EIA Branch and the Commonwealth EPA in preparing the Assessment Reports to ensure recommendations were consistent. The first component of the Commonwealth's Report was dedicated to a reiteration of the proposal as outlined in the Draft EIS, followed by an evaluation of the key issues particularly noise impacts. In this case, it was noted that overall impacts would see a reduction in noise, due also to the removal of older aircraft, but that some dwellings would fall within a higher noise contour. The Assessment also concluded that:

- air quality impacts would be minimal as a result of aircraft movements and the extension project;
- loss of habitats for birds would be insignificant because of nearby habitats available;
- the issue of hazards and risks of birds were addressed;
- concerns about flora and fauna had been adequately addressed;
- impacts on geology and water quality, recreational issues were manageable and adequately addressed;
- no long term impacts were believed to be associated with changes to infrastructure and services;
- heritage issues had been adequately addressed, although the possibility for discovery of Aboriginal sites was noted;
- long term aesthetic improvement could be gained with the landscape plan; and
- the economic justification was sound.

Overall, the project was considered by the Commonwealth government to be 'environmentally acceptable' but subject to three recommendations comprising:

- monitoring of noise impacts for surrounding residential areas, to be coordinated by the FAC including taxiing and take-off noise, and reported to the Adelaide Airport Environment Committee;
- review of the Adelaide International Airport's aircraft Noise Abatement Procedures following results of the noise monitoring, and amendments to these procedures to minimise overall community noise exposure; and
- implementation of the proposal in a manner consistent with the commitment in the EIS and information provided to the Commonwealth DEST.

The Commonwealth Assessment Report was approved on 24 January 1997.

None of the recommendations in the Assessment Reports were considered by the project coordinator to be of concern to the project, and were not considered to introduce any new aspects. Following the government assessment's, internal clearance was given on 4 March 1997 by the Environmental Unit in the Department of Transport for Vegetation Removal Clearance for the deviation of Tapleys Hill Road which involved the removal of 29 trees and which left 80% of vegetation remaining.

Commonwealth Parliamentary Steering Committee

The process did not end with the Assessment Reports, given that on 3 December 1996 the Commonwealth Minister for Administrative Services had required the project to be referred to the Commonwealth Parliamentary Steering Committee on Public Works pursuant to the *Public Works Committee Act 1969*. The State DoT made a submission to the Committee in January 1997, and a hearing was conducted in the State Parliament House on 7 February 1997. Unlike the State Public Works hearing which only had four individuals-groups providing evidence, evidence and/or submissions were received from a range of groups representing airlines (ie FAC, Ansett Airlines, Singapore Airlines Limited), economic development groups (ie EDA, South Australian Farmers Federation, South Australian Employer's Chamber of Commerce and Industry, South Australian exporters Association), and residential or recreational interests (ie Glenelg Residents Association, Australian Resident's Association, Westward Ho Golf Club). All were supportive of the proposal with the exception of the Australian resident's association, and two other groups supported the tunnel option rather than the preferred road deviation. The Glenelg resident's association, whilst supporting the proposal, also reiterated concerns expressed at the Draft EIS stage about the validity of the measures used to predict and assess noise.

Although the Chair of the Commonwealth Committee initially expressed support for the tunnel option, following the presentation of evidence, the Committee expressed preference for the short road deviation, and it was recommended that noise amelioration for houses in Glenelg North be considered after the results of monitoring had been completed. Questions during both State and Commonwealth Public Works Committee hearings were very rigorous and detailed, requiring the proponents and coordinators to clearly justify the project, and to ensure that there had been adequate consultation. This clearly provided another level of accountability in the process of decision-making.

Ministerial Directions

The documents providing actual approval for the project were not available in the project files examined, but the project was obviously approved given that it has since been constructed. It is also known that in-principle approval for works was given by State Cabinet on 5 December 1996 as long as the provisions of the assessments could be accommodated, and the EIS process under the State's Development Act was considered completed by the Minister for Housing and Urban Development in January 1997. Similarly on 23 January 1997, the Commonwealth Minister for Environment informed the Commonwealth Minister for Transport and Regional Development that the EIA process objects had been met, and reiterated the three recommendations pertaining to noise outlined in the earlier Assessment Report.

Environmental Management Plans

Following completion and approval of the EIA process, Environmental Management Plans (EMP) were released by Rust PPK for the Patawalonga Creek works and the Tapleys Hill Road deviation, which were commented on by the Department's Environmental Unit. The FAC also produced an EMP for the runway extension. Although the layout was slightly different, the aims of the EMPs were the same as those outlined within EMPS for the Southern Expressway and Adelaide-Crafers proposals, and outlined all legislative requirements, standards and codes of practice (eg noise and air quality), and roles and responsibilities of the various participants during design, construction and operation. The use of the EMP is illustrated in Figure (4).

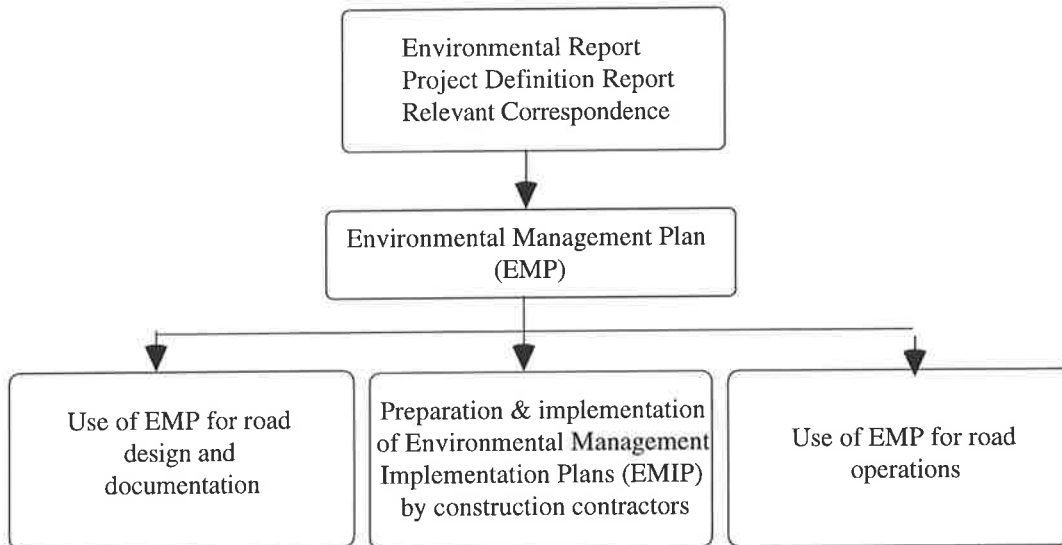


Figure 4: Environmental Strategy outlined within the EMPs for the Adelaide Airport Runway Extension (sourced from Department of Transport)

Issues for the Tapleys Hill Road EMP at the design stage related to:

- managing stormwater runoff (eg swales, oil traps);
- road traffic noise (eg pavement materials);
- flora and fauna (avoid birdstrikes via design of drains to prohibit bird attraction) (DoT February 1997).

The design work was undertaken by Maunsell Pty Ltd, whilst structural design was undertaken internally by the Department (eg bridge, drain culvert). By January 1997, 85% of the design work had been completed.

Issues at the construction stage related to:

- stormwater management (eg sediment traps, diversion drains, hay bales);
- erosion control (eg mulch/revegetation);
- water quality in the Patawalonga Basin (eg prevent spillage of construction materials);
- air quality (eg water to inhibit dust, minimise cleared areas, revegetation);
- flora and fauna (eg restrict clearing, confine access to nominated areas, use indigenous species in landscaping, relocate turtles);
- noise and vibration (eg use of appropriate machines, restrict hours);
- archaeology and heritage (eg stop work if site discovered);
- contaminated land (eg stop work if identified, remediate or dispose of contaminated materials);
- waste minimisation (eg collection and removal of wastes);
- storage and handling of dangerous substances and equipment,

- emergency response and incident management plan (DoT February 1997).

Issues at the operational stage related to:

- stormwater management (eg maintain and monitor swales and sediment controls);
- erosion control (eg monitoring, ensure revegetation of swale drains);
- flora and fauna (eg implement weed control program, encourage frogs to migrate, breed and reside in new wetland areas, monitor);
- noise (eg monitor);
- emergency response and incident management plan (eg plan for spills of hazardous materials).

Apparently EMIPs had also been prepared by the contractor in response to the EMPs (refer case study 5), but there were not sighted.

While the use of EMPs are an excellent means for transferring information from the planning stage to the construction stage, there was an assumption that the EMPs would solve any problems and that all impacts would be manageable. However, some of the management action requirements were very broad or ambiguous. For instance, reducing impacts on vegetation involved an action to 'restrict clearing to the minimum required for construction activities'. This could mean anything, and did not specify exact or detailed limits for the contractor. Similarly, reducing the potential for contamination of water in the Patawalonga Basin from pumping of water from excavated areas in Patawalonga Creek, required an action to 'ensure the minimum amount of groundwater is disposed of in the Patawalonga Basin.' Again, 'minimum' could mean anything without a definition of limits, and the only other action required was monitoring of pollutant levels associated with dewatering. Neither of these actions are reassuring that impacts would be minimised (what did 'minimal' impact mean anyway), and there was no reference to standards in the EMP, nor to contingencies or remediation if impacts were considered higher than expected. Thus, detail is clearly lacking in the EMPS, despite their good intentions. Problems with some of the EMPs have also been noted by one officer in the department who describes EMPS as 'vague', full of 'motherhood statements' which are difficult to adhere to on the ground, and are written by consultants who do not fully understand the realities of the construction process (Interview 62 1999).

EMPs are a relatively new practice and problems such as these highlight the importance of creating feedback mechanism to determine their effectiveness. Currently inadequate resources need to be improved for auditing of project construction and operation, and learning from lessons on the ground. What difficulties do contractors experience in adhering to the EMPs? Is the information sufficient? Are the contractors adequately following the requirements, and how effective are these requirements? How can the process be improved?

CONSTRUCTION

The Runway Extension project was opened in July 1998 (TSA 1998a). Construction of the project involved three stages comprising:

- filling of Patawalonga Creek;
- roadworks from northern connection with Tapleys Hill Road to Warren Avenue (including causeway and bridge over Patawalonga Basin); and
- construction of Strut River Bridge and remainder of roadworks to southern connection with Tapleys Hill Road.

Prior to approval of the full project, the Patawalonga Creek realignment was completed and opened on 29 January 1997, but delays to golf course construction caused delays in roadworks.

During construction there were some residential complaints about noise and dust from construction reported in the media, and a minor incident occurred where fresh concrete was accidentally dumped into the Patawalonga Creek. One participant noted the problems of foreseeing and monitoring such events and highlighted the importance of experience and review of management plans:

'I think if we went back over the EMP which is probably something we ought to do... you'll probably find you might define your model...for environmental observation in a slightly different way based on experience...I [think] that the

techniques or the rules are more attuned to continuing scenarios rather than *ad hoc* scenarios [ie the one-off concrete spill]...I think the contractor did the right thing....I think his attitude was good, but whether we gave him the best set of guidelines or rules, I think its something we might find if we were to review it...'

Review of EMPS and projects was generally not a common event in the Department due to a lack of resources and time. Although not all aspects of the project construction could be audited, no incidents were picked up in an environmental audit conducted for the bridge construction over Sturt River on Tapleys Hills Road in 1998. It was found that environmental management issues were being addressed, and that awareness of environmental issues by engineering staff was good, although a number of areas for improvement were identified (but not able to be specified here). However, monthly reporting conducted by environmental officers of the contractors for construction identified a need for improved training of on-site staff, and for more comprehensive reporting which was more consistent with the performance measures identified in EMPs.

The noise assessment was continued, and the results of the noise monitoring programme found good agreement between the earlier EIS modelling and actual monitoring data, although there were some minor disparities. The results indicated that residential areas would receive an increase from 1 to 4 dBA which does not appear significant (although this may be 'perceived' to be significant by individuals which is also an important consideration in quality of life issues). Although noise amelioration barriers were not incorporated into project design given that they would need to be 30 feet high to be effective, a small barrier ended up being constructed as a byproduct using surplus fill which was stored on the airport site. This mound was later transformed into a bunding wall and landscaped which may have had a psychological effect of reducing perceived noise impacts.

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the EIA legislative requirements? This criterion was graded at A given that there was full compliance to the legislative stages of the EIA process.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at C-B. Compliance to the guidelines was generally satisfactory with 74% of requirements met, but clearly could have been higher given the checks on quality by both the CEPA and the EIA Branch of the DHUD. Omissions were at the very detailed level, and broad requirements were all met (eg description of the noise environment). Omissions included for instance:

- outline of capacity of runway extension;
- life of project;
- details of project such as parking, electricity supply, communications, etc (although not as relevant);
- supply, transport, quantities and sources of materials, water and energy;
- seasonal variations of runway usage;
- consequences of aircraft accidents (simply assumed);
- options for mitigating air quality such as enhanced sinks;
- proposals for future uses of land in area;
- relative significance of economic activity associated with the airport at local, regional, state and national levels;
- geomorphology (focus was on geology and soils);
- changes to community personal vulnerability, safety and amenity (although generally covered in separate sections on noise, etc);
- possibility that proposal may curtail alternative beneficial uses of an area;
- effects on usage of the area by Aboriginal people;
- sources of materials required for site preparation, construction and operations;
- transportation of materials;
- size of vegetation clearance;
- cost of mitigation measures;
- monitoring programmes for all impacts.

It should be noted that some of the requirements, although addressed, were also not included in the section dictated by the guidelines (for instance requirements relating to the project description

were discussed in the impact assessment section such as land acquisition requirements). Nonetheless, they were still counted as being addressed.

Criterion 1.3: Did the proponent comply with the final decision? There was Insufficient information to grade this criterion.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at B-A. There was evidence of going beyond compliance particularly in terms of the community consultation programme. This trend appears to be apparent for most of the case studies, and is most extensive for the Transport case studies. In addition, attempts at landscaping aimed to also enhance the existing environment which signals effort beyond that normally required, and also surpasses efforts by ETSA which relied on natural regeneration rather than active rehabilitation of sites. However, there were some concerns about noise mitigation, and if measures had been committed to despite the Commonwealth's actions, then the evidence of going beyond compliance would be stronger.

EIS QUALITY

Proposal & Policy Framework

2.1.1 Was the project justified, and the rationale clearly outlined? This criterion was graded at D-C. The need for the project has already been addressed in the Proposal Description. In the Draft EIS, project need was specified in terms of comparison of the runway length to other Australian airports, runway lengths needed for different destinations and types of aircraft, economic benefits of the project to the State, and improved export and tourism opportunities. Specific airlines which noted the problems of runway length were also referred to in the Draft EIS such as Singapore Airlines and Cathay Pacific.

An earlier economic analysis conducted by the State's Economic Development Authority (EDA) was also referred to in the Draft EIS which focused on low, medium and high growth scenarios resulting from the proposal. In all cases it was concluded that the benefits of the project outweighed the costs. It was suggested for instance that under a medium growth scenario, increased tourism would result in an additional \$42 million for the State, whilst savings on exports would be \$81 million, and the net value was expected to be \$112 million overall (on the assumption that the road deviation would be adopted). However, the low growth scenario with a net value of \$15.5 million was considered the most realistic. In a later study by the DoT and the EDA, the benefit cost ratios were reviewed, finding a net value for the low growth scenario at \$70 million which is a substantial difference over the earlier \$15 million and it is not know how these figures were arrived at.

There were some major limitations in the discussion of project need. First, some questions arise about the adequacy of the runway given the earlier report in 1990 which found that the runway length was adequate to meet most fully loaded aircraft (see proposal history). Second, the full details of the economic analysis were not provided to the public in the Draft EIS. As a result, several details were lacking about the method of calculating the benefit cost ratios, and there were assumptions about the timeframes over which these benefits operated, and why such a difference in figures for the low growth scenario was evident in the later analysis. There was also no reference to any potentially confounding factors such as the fact that changes to tourism result from several factors, many of which are unrelated to the airport runway extension (eg increased tourism could be a result of *inter alia* advertising and promotions, seasonal factors, accommodation-touring infrastructure, trends in other States). The predicted benefits associated with increased tourism were also difficult to accept given the lack of predictions on potential increases to tourist numbers as a result of the project. In other words, very detailed monetary benefits managed to be calculated for rather nebulous and indirect benefits to the State. *How* was this achieved? This was not outlined in the Draft EIS, and the earlier economic analysis on which it was based was confidential.

Third, there was no reference to airlines which would support the project by making greater use of the airport as a result of the extension project. If the need was to be fully demonstrated, then there should at least have been some proof that airlines would change their operations. The justification for aircraft operations was in fact considered non-viable by the FAC, which argued that the airlines would not increase schedules unless profitable. Yet there was no reference in the Draft EIS about how or whether or not the proposal would be profitable to the airlines (as opposed to overall State

development). One airline noted that they had no need for the runway extension and would not be extending their international network to Adelaide. If not profitable to the airlines, then the broader profits to the State which rely on these airline operations would be a moot point. One submission even noted that the proposal may be a 'white elephant' given that it was reported in the EDA's analysis that the project did not guarantee an increase in the international airtraffic and resulting economic activity. The fact that the proposal did not guarantee additional flights was also acknowledged in the Draft EIS (page 3:6)

Overall, the need for the project was clearly demonstrated in the Draft EIS in that:

- runway length needed to be upgraded to become more comparable to other Australian airports;
- the runway provided constraints on freight capacity, and airlines had noted that they did not utilise the Adelaide Airport because of these constraints;
- these constraints had implications for the export industry as noted previously.

Yet the manner in which this need was presented highlights some limitations particularly in terms of the benefit cost ratio analysis and the limited information available to readers. Comments from some areas of the community presented in the Draft EIS also noted the major constraints on economic development in South Australia due to the runway length. The social and economic costs involved with the project may have been a risky venture, and the government may simply have been pushing to get Commonwealth funding for the project before the airport was leased. In other words, there was no guarantee that the future leasee would upgrade the extension for the State's benefit due to the high costs involved. Overall, the benefits of the project appeared to be clear, but nebulous, incremental and political.

2.1.2 Was there a detailed description of the project? This criterion was graded at D-C. As demonstrated in Table (3), of 11 areas which should be addressed in a proposal description, 7 were addressed. Chapter Six of the Draft EIS was dedicated to a description of the project which covered the design process, the airport works (runway extension, taxiway, new lights, navigational aids, new drains, access roads), roadworks (short road deviation, long tunnel), drainage works (eg Patawalonga Creek works), landscape concept, other works (eg reducing heights of some structures and trees), and the construction programme. Cross sections of the runway, tunnel and road deviation options were provided, in addition to figures illustrating the alignment of alternatives, runway details (eg blast fences, localisers, drains, graded areas, access tracks), vertical alignment of the tunnel option, and the landscape concept. Details were generally considered adequate, although there were some limitations. For instance, there was:

- passing reference to an extended Brownhill Creek, and minor realignment of Sturt River channel, but details were lacking and there was no illustration on figures;
- no reference to width dimensions of the Patawalonga Creek diversion, or to how it would compare to the existing creek in terms of bank slopes, depth, etc. The realignment looked narrower than the original waterway, but no reasons were given for this;
- no reference to possible changes to airport drain capacity given the additional runoff potential as a result of the extension (ie downward slope, greater area). It may not have been significant, but comparison of existing and future drain should have at least been made;
- no reference to source of fill for raising the runway and taxiway, although some possible alternatives were noted;
- no reference to means and impacts of transporting the fill;
- no reference to location of trees and extent of tree trimming required to reduce heights;
- no reference to project life or potential increase in numbers of aircraft (although not expected to increase materially, no time frame was specified for this);
- no reference to length of Tapleys Hill Road deviation in the projects descriptions section (although it was mentioned in the impact assessment section: roads and traffic);
- no reference in proposal description to facilities which required relocation. Although this was referred to in the impact assessment, this should have been incorporated into the proposal description section (a minor point). Moreover, although the closure of Africaine Road was briefly discussed in the alternatives section, there was no reference to its closure as part of the project in the section outlining the project.

Construction duration of 18 months was noted, but actual details on staging and time were not able to be specified until design was undertaken and the approval process completed. Waste was not referred to in the project description, but brief reference was made to wastes from tunnel cuts in the impact assessment section on 'contaminated land and wastes'. However, any potential wastes

associated with diversion of the Patawalonga Creek were not specified. Moreover, some of the details about the project such as proposed drainage works were not incorporated into the section on proposal description but rather were encapsulated into the impact assessment section. This made the Draft EIS appear fragmented and difficult to get a full idea of the project without reading the entire EIS.

Table 3: Project Description performance in the Draft EIS for the Adelaide Runway Extension Proposal

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design (preliminary road cross sections)	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	63% (7/11)

2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision making process for the proposal? This criterion was graded at D. Although legislative and policy requirements were explicitly outlined for each major issue associated with the project (eg air quality, noise quality), performance was only just satisfactory. As demonstrated in Table (4), of 17 policy-legislative areas, 10 were addressed. There appeared to be no reference to water quality standards or catchment management policies, the Environment Protection Act, or the Coast Protection Act among others. However, additional legislation-policies-guidelines referred to which are not included in Table (4) comprised the:

- Federal Airports Corporation Act 1986;
- Road Traffic Act 1961;
- Passenger Transport Act 1994;
- Guidelines for Traffic Engineering Practice
- Rural Road Design Guide to the Geometric Design of Rural Roads (by Austroads);
- South Australian Health Commission guidelines on land contamination;
- West Beach Reserve Act 1987;
- Crown Lands Act 1929

Detail was generally lacking about specific requirements of these pieces of legislation or guidelines.

Table 4: Policy and legislative framework addressed in the Draft EIS for the Adelaide Runway Extension Proposal

	Legislative or Policy Framework	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	n/a
	Development Act requirements 1993	
	Development Plan/Planning Strategy	
General Environmental Protection	Environmental Protection Act 1993 (eg wastes, pollution policies)	
	Coast Protection Act 1972	
	Air Quality (eg Clean Air Regulations 1969, EPA standards, WHO standards, NH&MRC standards)	
	Environment Protection (Impact of Proposals) Act 1974 (Commonwealth)	
Fauna, Parks, Veget.	Fauna (eg Endangered Species Protection Act 1992)	
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks and Wilderness (Public Parks Act 1943, National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	
	Animal and Plant Control Act 1986	
Land & Water	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a
	Soil (eg Soil Conservation and Land Care Act 1989)	
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	
	Land Acquisitions Act 1969	
	Fire (eg Country Fires Act 1989)	n/a?
Heritage	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Commonwealth))	
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987; Soil contamination standards)	
	Noise Standards (eg Noise Control Act 1976-1977 and subsequent replacements; Australian Standard AS2021 Acoustics-Aircraft Noise Intrusion)	
	Explosives policies/legislation (eg Explosives Act 1939, SAA Explosives Code AS2187 1979)	n/a?
	Score	58% (10/17)

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at A. As demonstrated in Table (5), of 16 environmental categories which could be addressed, all were covered (100%). Unlike the other case studies which are rural or hills-based in nature, some of the environmental categories were not as relevant given the urban nature of this project (eg fire risk, spread of pest plants and diseases). A number of additional categories were also addressed which illustrates some deficiencies in the evaluation Table (5) including:

- existing road and traffic provisions (including public transport)
- airport hazards and risks
- road hazards and risks

Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment? This criterion was graded at D. Whilst reference to all the main environmental categories was excellent, the actual level of detail for most categories was poor. As demonstrated in Table (5), the level of detail was adequate for 62% of categories. Points to note, both positive and negative are as follows:

- **air quality:** without statements of how the climate related to the proposal and its impacts, much of the information appeared superfluous. Details on the existing air quality environment was inadequate given a lack of monitoring data. Some older studies were referred to but there was inadequate information on carbon monoxide, particulate matter, sulphur dioxide, and lead. One of the studies referred to was also outdated being conducted in 1982/83. Nonetheless, monitoring for the purposes of the Draft EIS would have been a time-consuming exercise and simply a snap shot in time. It is unclear whether or not this would be justified given the incremental effects of the project. It highlights the lack of environmental monitoring in South Australia conducted by government;
- **geology:** discussed types of soils, but no reference to potential for erosion or land subsidence (but addressed in impact section) (ie previously a swampy area). No reference to significance of the environment or nature of terrain and topography (although not technical encapsulated within 'geology', there was no other reference in the EIS to geomorphology-topography);
- **airport and hazards:** detail was considered adequate with good reference to aircraft, passenger and freight movements, the existing layout of the airport and existing accident records;
- **roads and traffic:** good coverage of existing roads, traffic capacity and safety, in addition to locations of bicycle paths and public transport;
- **aircraft noise:** the description of the ANEF, ANEC, and ANEI approach used was clear, and a forecast using actual aircraft movements was provided for a 12 month period which provided some sort of baseline, albeit based on calculated rather than actual noise levels. There was also good reference to the limitations of the forecasting system used. However, detail was inadequate in some areas, and like the description of project need, assumptions were made about the methodology used to calculate noise figures. Individual take-off events also failed to be singled out, and although incorporated into the ANEFs, this tends to dilute the extreme sound because it assumes that an infrequent loud noise is equivalent to frequent moderate noise (refer Draft EIS). There were some more specific dBA measurements which measured actual noise levels for take-off events at some roads and recreational areas, but there were no specific dBA measurements for the existing environment in different suburbs (the events were simply diluted into the ANEF figure). Other concerns related to the ANEF contour maps which were difficult to compare visually, particularly given that they were on separate pages, and given that they were not superimposed onto residential areas. In addition, the table summarising noise trends by suburb was complex to read (comparative graphs for each suburbs affected would have made it easier to visualise the results), and there was no reference to how affected people *perceived* the existing noise environment (adapted? disrupted?) which would have had a bearing on the significance of any further noise impacts;
- **road noise:** generally good. However, although monitoring had been undertaken to ascertain the noise levels for existing road traffic, the data needed to be superimposed onto residential areas to assess the existing impacts on residents, and to also understand the combined effects of traffic and aircraft noise (even if not a significant combination);
- **ground and surface water:** good reference to drainage, and capacity to cope with flows, and monitoring of some common pollutants (lead, copper and zinc) at five locations, but concerns related to the snapshot nature of water quality data (ie only relevant to 1996) and lack of longer term trends. This data was also collected at a time of abnormal operations (ie dredging had been undertaken in the area). Like air quality there was a lack of background monitoring data which made it difficult to conduct a quality assessment of the existing environment in the Draft EIS. Moreover, there was no reference in the text to the fact that the 1996 data exceeded guidelines for maintaining aquatic ecosystems, or to the significance of these pollution levels. There was also no reference to the height of the groundwater table which would have implications for the tunnel option, and for predicting groundwater pollution;
- **flora and fauna:** good reference to general environment and modifications as a result of urbanisation. Also good reference to significance, regeneration capacity and locations of vegetation species-communities and fauna habitats on an illustration. The only concerns related to lack of reference to vegetation densities, , and sensitivity of remaining vegetation. Moreover, although several species were identified, not all were rated in terms of their rarity or significance (although the consultants noted only two species of significance). Thus, detail on

flora was considered slightly inadequate. Fauna detail was generally adequate, although again, a rating of each species' significance was not presented;

- **contaminated soil and wastes:** Although sites of contamination were identified, details for this category were considered inadequate given that only potential contaminants were noted and not actual contaminants, and given that there was no reference to the significance of these contaminants nor to their implications for the existing environment if released during construction;
- **land use and controls:** good reference to residential, industrial, recreational, coastal, public purpose and commercial land uses. Key land use areas were residential and recreational. This category was considered adequate, although reference could have been made in an illustration to individual housing blocks (indicating density) and interactions with noise contours;
- **landscape and visual environment:** considered adequate, although local perceptions of visual amenity were not referred to;
- **archaeology and heritage:** detail was considered adequate, particularly given that this was not considered a significant issue;
- **socio-demographic environment:** summary of data was good and succinct, but it was not clear how the data related to the proposal's impacts (ie type of housing, employment trends, etc). Like some of the other case studies, without direct links or reference to the sensitivity or the populations, then the data appears superfluous at times.

Property values were also included in the description of the environment which is not included in Table (5), and was considered adequate. An omission in the description of recreation-tourism was lack of reference to the existing tourism trends and potential without the runway extension.

Table 5: Performance in the Description of the Environment in the Runway Extension EIS

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality					
Hydrology (drainage, water quality)					
Soils (<i>in this case refers to contamination</i>)					
Native vegetation					
Pest plants and diseases	not applicable				
Fauna					
Fire Risk Zones	not applicable				
Residential land use					
Demographics (population, economy, etc)					
Conservation Parks etc landuse	not applicable				
Industry, mining, airfields landuse					
Agriculture landuse	not applicable				
Recreation-tourism landuse					
infrastructure-easements landuse					
Non-Aboriginal Heritage					
Aboriginal Heritage					
Landscape Quality					
Existing Noise					
Score (of 16)	16 100%	10 62%	2 12%	5 31%	1 6%

Key: 1=environment category addressed; 2=adequate level of detail; 3=reference to future environments (without the project); 4=reference to significance of environment; 5=reference to sensitivity/capacity of environment to absorb impacts.

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. As demonstrated in Table (5),

- reference to future environments was made in only 12% of cases which is unsatisfactory;
- reference to the significance of the environment was addressed in 31% of cases;
- reference to the sensitivity or absorptive capacity of the environment was made in 6% of cases;

This made a combined grade of 16% for this criterion which is unsatisfactory.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at E. Although boundaries for specific impacts (eg noise) appeared quite broad, there was no explicit definition of a study area.

Impact Assessment

Criterion 2.3.1: Have all the major direct impacts been addressed in the identification and description of impacts? This criterion was graded at A. As demonstrated in Table (6), 17 of 18 impact areas were addressed making a percentage of 94%.

Table 6: Performance in the identification of impacts in the Draft EIS for the Adelaide Runway Extension Proposal

Impact Category	Addressed?
Landforms-geology (including hazards)	
Traffic and Aircraft Safety	
Property Acquisition	
Land Values	
Production Values	n/a
Land use: Agriculture	n/a
Land use (eg airfields, industry) (<i>airport operations</i>)	
Hydrology (water quality and drainage)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Recreation	
Visual Impacts (& landscape quality)	
Noise	
Air quality	
Fire	n/a
Wastes	
Pest Plants & Diseases	n/a
Soil Erosion	
Access	
Wide Road Syndrome (<i>increased traffic to airports; increased tourism</i>)	
Score:	94% (17/18)

Criterion 2.3.2: Is the level of detail adequate in the assessment of key and direct impacts for an informed assessment? This criterion was graded at C. Key points to note are as follows:

- **impacts on airport operations:** description was very general and failed to refer to, or predict potential costs involved with a reduced runway length and constrained usage, and who would

actually bear these costs (the airlines? exporters? passengers?) (although some costs were noted for the loss of the navigational locator). There was also no mention of the timeframe the runway would be prevented from operating at full capacity;

- **impacts on road traffic:** there was reference to the expected timeframe for impacts (ie 6 months) which was good, and also good reference to uncertainties noted with predicting delays. Also good reference to reduced access as a result of closing Africaine Road, but there was no description of the impacts or inconvenience for locals which would be associated with this loss of access. Possible replacement of Africaine Road was noted, but this was stated to have an increase in noise and vehicle fumes for residents on Military Road. There was no attempt to balance the potential significance of the loss of access compared to the additional noise and emissions impacts which would have made it easier for the community to make an informed decision;
- **infrastructure and utilities:** assessment was clear and straightforward, although it lacked reference to responsibilities for relocation of some services. It was also noted that the existing and already limited stormwater storage capacity of the Patawalonga Basin would be reduced slightly due to the construction of a causeway/embankment to support deviation of Tapleys Hill Road. However, there was no reference to what the implications of this further reduction of an already limited storage capacity would entail;
- **airport noise:** as noted earlier, methods and assumptions were not clearly outlined for the prediction of noise contours (although phasing out of Boeing 727s, and future increase in aircraft traffic were noted for the calculations). Again, the table illustrating figures for each suburb, by year, and with and without the extension was complex, and there should have been a summary graph of overall impacts, and for each suburb.

Without details on methodology for calculating the noise figures, one can easily become sceptical about conclusions which indicate that numbers of people within certain noise contours above 25 would *reduce* with the runway as compared to without it. One would expect the noise situation to worsen slightly with the runway, and the results are unclear without further explanation. Although it was noted in the EIS that the reduction of affected numbers associated with the runway would be a result of minor changes to take-off and landing profiles with the extension, these changes were not actually detailed. The conclusions in the Draft EIS may be accurate, but without full details, it is difficult for readers to judge and they must rely in faith on the proponent's information. Understandably, those directly affected would want more information, as was the case with some vocal groups pushing for further details. Some elaboration on these issues was later presented in the Supplement document. There was however, good reference to assessment of isolated and louder take-off events using decibel ratings rather than ANEF contours;

- **road traffic noise:** good reference to worst affected suburbs and comparison of predicted noise with noise level standards (all below maximum standards), but again no details on methods for calculating noise figures for construction (in this case an acoustic model SounPLAN was used) or for operation (in this case the UK CORTN method was used). There is also some ambiguity about the comparison of *existing* background levels and *expected* levels given that at some road intersections, predicted noise levels during construction were actually lower than existing background levels, and it was unclear how this was possible given the lack of explanation for these figures;
- **air quality:** good reference to assumptions and uncertainties given lack of detail about machinery to be used. Detailed predictions of dust emissions provided as a result of different machinery over a certain time period was good, but difficult to visualise what this would actually mean in practice, and what the implications of such widespread dust movement would mean for the environment and for residents-traffic. Good reference to assumptions for calculating vehicle emissions, and also that the project would have minimal effects given natural traffic growth anyway (although predictions lacked monitoring data and relied on information from vehicles in the US). As a result of aircraft emissions it was noted that all emissions, although greater at ground level, would be within air quality standards, and hence acceptable, but there was no attempt to provide exact, or predicted figures for comparison with standards in a table;
- **ground and surface water:** although the potential for increased turbidity was noted during construction, there was no reference to the possible implications of this increased turbidity for

the aquatic environment. Detail on operational impacts on water quality was also limited, and simply noted that there would be an increase in runoff and hence pollution, which in turn would have toxic effects on aquatic habitats. No mention of extent of runoff increase, or where the impacts on aquatic impacts would be concentrated, what these effects actually entailed, or the degree in which the runoff and pollution could be expected to exacerbate these effects (if at all). Significant efforts had been devoted to predicting noise levels, air quality levels, yet no attempts were made for water quality changes. There were also concerns that the drain exits would be relocated downstream of silt traps, and there was no mention of the implications of this on the Patawalonga Creek and marine environments into which it discharges;

- **flora and fauna:** the assessment was very brief for flora, but this was not considered a significant issue. However, there was no reference to extent of tree trimming required to reduce their heights, the location or the effects of these trimming on the plants; nor to the extent of vegetation removal required for the road deviation or tunnel; nor was there any detail on the nature of the grasses which would be disturbed (native? extent of clearance?). Discussion of fauna impacts was also brief and general, but also not considered a significant impact;
- **aircraft and road traffic hazards:** discussion was considered adequate, although impact of bird strikes on an aircraft was not explicitly stated, but simply assumed;
- **land use:** discussion was clear but brief, and although relocation and redesign was noted as an impact of the runway extension (ie redesign of the Patawalonga golf course; relocation of the German Shepherd Dog Club), there was a lack of detail about how long these facilities would be out of action; about the responsibilities for relocating and redesigning the dog club (where? how close? how much input from the club? who ensures standard equivalent to existing club? this was simply assumed), and a definition of what the actual impacts would be on participants in these recreations (ie lost access, lost-refunded fees; potential loss of customers; additional travel required). The impact was simply referred to as loss of use, in addition to potentially long term effects if the alternative location was away from the vicinity of the existing location. Because no site was identified for the relocated Dog Club, the impacts associated with a new construction also could not be assessed (although likely to be minor in the overall context of the project);
- **socio-demographic impacts:** although not considered significant, there was no reference to whether long-term residents would reside in the area given their perceptions of noise increase, or to whether new people would move into the area, thus changing the nature of the suburbs. However, this is not considered a minor point, given that the changes associated with the extension are incremental relative to the initial establishment of the entire airport.

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts? This criterion was graded at E. Reference to indirect, secondary and cumulative impacts was limited, although some of the issues may only be minor in nature. Even so, minor impacts accumulate. For instance, there was no reference to:

- the potential indirect and secondary impacts of increased tourism which will be associated with the potentially greater number of international tourists into Adelaide as a result of the improved runway capacity;
- secondary effects of potentially decreased export revenue in other States which move Adelaide's freight due to Adelaide's lack of runway capacity, or loss of business to trucking companies which move freight between states (although this may be considered minor, and of less relevance to South Australia's economic development, it could at least have been referred to);
- to combinations of road traffic and air traffic noise impacts as opposed to one or the other (are the combined impacts greater in some suburbs?);
- the secondary effects, albeit minor, of relocating the dog club (construction, visual, traffic access, parking facilities);
- indirect or secondary effects such as increased traffic flow to and from the airport due to greater airport capacity (eg air pollution, road noise, commercial development pressure);

- cumulative impacts of air emissions and the greenhouse effect. Although there was reference to greenhouse as a result of carbon dioxide, it was noted as ‘little effect’. However, in this respect no road project would be ever considered to have a major impact, and thus nothing will be done to reduce the impacts. Nonetheless, it is recognised that such factors are often outside the project’s scope and relate more to decision-making at the strategic level (eg improving public transport, use of fuels, manufacture of vehicles), but the cumulative problems should at least have been noted;
- no reference to actual extent of cumulative effects of increased runoff and stormwater pollution on the waterways when added to existing pollutants.

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. As demonstrated in Table (7):

- magnitude of impact was addressed in 81% of cases;
- direction of impact was addressed in 78% of cases (although it was often simply implied or assumed rather than explicitly stated);
- geographical extent was addressed in 28% of cases;
- duration or frequency was addressed in 35% of cases;
- reversibility of impact was addressed in 28% of cases;
- mitigation potential for impacts was addressed in 73% of cases;
- probability of impact was addressed in 21% of cases;
- level of public concern was addressed for 28% of cases;
- standards of thresholds were used for 25% of cases;
- level of uncertainty was noted in only 14% of cases.

This made a combined grade of 42% which is unsatisfactory.

Table 7: Performance in the evaluation of impact significance in the Draft EIS for the Adelaide Runway Extension Proposal

	Spatial-Temporal				Alleviation-Probability			Thresholds-Certainty		
	1	2	3	4	5	6	7	8	9	10
Landforms										
Driver safety										
Property acquisition										
Land Values										implied
Production values	not applicable									
Hydrology										
Non-Aborig. Heritage	none	not applicable								
Aboriginal Heritage	none	not applicable						not applicable		
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts										
Air quality		implied				dust				
Noise										
Fire	not applicable									
Wastes	addressed in soil section (see below)									
Pest plants, etc	not applicable									
Soil contamination		implied								
Access (local traffic)	implied								n/a?	
Wide Road Synd.									n/a?	
Score:	13/16 81%	11/14 78%	4/14 28%	5/14 35%	4/14 28%	11/15 73%	3/14 21%	4/14 28%	3/12 25%	2/14 14%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision-making process for or against these alternatives been summarised and justified? This criterion was graded at B. As for the other case studies, several alternatives to the project were outlined in the Draft EIS, but it was decided to present only two options for detailed assessment to keep it simple. No alternatives were presented at the broader level given that, unlike the road and transmission developments, there did not appear to be any, which lends further support to the project need. However, the potential for no-go or relocating the airport were included. Overall a total of 11 more specific alternatives were presented. As already noted, these related to the runway extension (5 options), and Tapleys Hill Road (6 options). The rationale for and against each option was generally clear and related to social and environmental concerns in addition to cost factors or failure to achieve project objectives. These reasons are outlined in Table (8).

Table 8: Alternatives presented in the Draft EIS for the Adelaide Airport Runway Extension Proposal 1 (shaded represents proponent's preferred options)

Alternative	For	Against
Runway Options S-W Extension	<ul style="list-style-type: none"> meets project objectives (3,100 runway length) no significant impact on airport operations 	<ul style="list-style-type: none"> requires deviation of Tapleys Hill Road or tunnel requires redesign of golf course relocation of German Shepherd Dog Club
Extension both directions	<ul style="list-style-type: none"> no significant impact on aircraft operations minimises offsite construction impacts by remaining in existing boundaries 	<ul style="list-style-type: none"> runway closer to houses in n-e and increased noise impacts fails to meet project objectives
N-E Extension	<ul style="list-style-type: none"> meets project objectives no significant impact on airport operations 	<ul style="list-style-type: none"> requires acquisition of residential properties increase noise and health risks greatest economic and social costs
Use of east-west runway		<ul style="list-style-type: none"> insufficient space to lengthen the runway for international aircraft fails to meet project objectives
New runway	<ul style="list-style-type: none"> provided for in Draft Airport Master Plan 	<ul style="list-style-type: none"> insufficient demand for third runway fails to meet project objectives (too short)
Relocate airport	<ul style="list-style-type: none"> can meet objectives of project removes conflicts with surrounding residential areas land exists for an airport site 	<ul style="list-style-type: none"> required upgrade and provision of road access to alternative site requires duplication of airport related industries found current airport, and new terminals, etc considered impractical due to costs and significant changes to airport operations estimated losses of billions to the community predicted
Do nothing	<ul style="list-style-type: none"> no changes to surrounding environment or community savings in construction costs 	<ul style="list-style-type: none"> ails to achieve project objectives result in constrained economic growth opportunities for the State
Road options: Short Deviation	<ul style="list-style-type: none"> Africaine Road could be replaced no impact on Anderson Reserve or Glenelg Baseball Club cheapest option 	<ul style="list-style-type: none"> requires relocation of German Shepherd Dog Club modification to golf course changes to traffic patterns impedes potential for further runway extension
Long Deviation	<ul style="list-style-type: none"> no major impacts on existing traffic operations minimises constraints on runway construction and aircraft operations 	<ul style="list-style-type: none"> significant impact on Anderson Reserve including relocation of baseball diamonds may affect viability of baseball club facilities noise level increases along Anderson Avenue may be problems with flooding if affects Strut Creek channel impedes potential for further runway extension higher costs than short deviation

Long Tunnel	<ul style="list-style-type: none"> • meets project objectives • limits effects on adjacent land uses • no impact on Anderson Reserve • road noise levels remain the same • allows for future expansion of the runway 	<ul style="list-style-type: none"> • relocation of German Shepherd Dog Club • redesign of golf course • no possibility for replacing Africaine Road • impacts on water quality (saline ground water requires pumping out during construction) • highest cost of all options
Short Tunnel	<ul style="list-style-type: none"> • meets project objectives • limits effects on adjacent land uses • no effect on Anderson Reserve and Glenelg Baseball Club • cheaper than long tunnel 	<ul style="list-style-type: none"> • no replacement for Africaine Road • changes to traffic patterns • relocation of Dog Club • impacts on water quality (as for long tunnel) • more costly than deviation options • impedes potential for further runway extension
Controlled Crossing	<ul style="list-style-type: none"> • minimises roadwork costs 	<ul style="list-style-type: none"> • does not necessarily reduce social or environmental impacts • relocation of Dog Club • modification of golf course • significant impact on airport operations, security, traffic flow and road accessibility • high safety risks
Closure Tapleys Hill Road	<ul style="list-style-type: none"> • minimal expenditure 	<ul style="list-style-type: none"> • significant impact on local community and environment • involves rerouting 40,00 vehicles per day to other roads • requires upgrade of other roads • fails to meet project objective of maintaining current level of road access

Overall performance was good in that:

- despite significant land use constraints, substantial effort was devoted to presenting a broad range of options to minimise impacts and achieve project objectives;
- these options went beyond those originally assessment for the project prior to the EIA process (ie originally only two road options were assessed: long tunnel and long road deviation);
- some of the options appear to have been recommended by community which indicates openness;
- the rationale for and against these options was succinct and clear;
- the criteria for decision-making were also clear in broad terms (social, economic and achievement of objectives)

Limitations related to the fact that:

- the options for further assessment in the EIS were restricted to two (thus readers had to rely in faith on the proponent’s decision-making process leading to these options);
- it was unclear why the cheaper short tunnel option was not further assessed given that the long tunnel option would never have been adopted due to the high costs involved (refer EIA Process Summary), thus its presentation in the EIS was almost superfluous;
- more specific criteria for decision-making and their importance were not outlined (eg how did traffic compare in importance to impacts on recreation, or costs)

Criterion 2.4.2: Have alternatives been compared ranked in order of preference for each environmental impact? This criterion was graded at D. Although the reasoning for and against the alternatives was presented, there was no attempt to systematically rank the options in terms of performance, with the exception of a brief benefit cost comparison of the road option versus the tunnel option under different growth scenarios. Within this analysis, the road deviation option was the better performer, but the assumptions and methodology leading to this conclusion were not presented. Thus the ranking was unclear to the reader, particularly given that the report upon which this was based was unavailable to the public. For the other options, there was not even an attempt to compare the options and their issues in a table, which was undertaken in some of the other case studies.

Mitigation & Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at A. As for the other case studies, mitigation measures were presented for most of the key impact areas, which tends to highlight the use of EIA as a management tool as opposed to a decision-making tool. Frequently, the assumption is made that all impacts are manageable. As demonstrated in Table (9), mitigation measures were addressed for 93% of key impacts which is an excellent performance.

Table 9: Performance in mitigation and monitoring in the Draft EIS for the Adelaide Airport Runway Extension Proposal (shading=addressed)

Mitigation Category	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Traffic Safety-delays		A, D							
Airport Operations		C, D					bird strike		
Land-property Values	noise	S							
Hydrology		D, C							
Aboriginal Heritage		Negot.							
Vegetation		A, C, R							
Fauna		A, C, R							
Recreation		A, T, D							
Visual Impacts		D, R, S			enhance				
Air quality	dust only	A, C							
Airport Noise		S			noise barriers				
Traffic Noise		D, S							
Waste	(outlined in soil contamination section)								
Soil Erosion-Contamination		C, T, R							
Access (local traffic)		Co							
Wide Road Syndrome									
Score (of 15)	14 93%	-	1 6%	0	6 40%	1 6%	6 40%	0	1 6%

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? This criterion was graded at E. The level of detail for mitigation measures was limited, and as demonstrated in Table (9):

- level of difficulty was addressed for 6% of cases which is unsatisfactory;
- level of expense was not addressed;
- level of effectiveness was addressed for 40% of cases; and
- level of certainty about the measure was addressed in 6% of cases.

This made a combined grade of 13% which is unsatisfactory. Reference to the level of mitigation effectiveness was higher than the other case studies, but this may be a result of the guidelines for the EIS which explicitly required the proponent to address the effectiveness of mitigation measures. This requirement was not apparent in guidelines for the other case studies which indicates the importance of establishing good quality, comprehensive and detailed guidelines upfront. This does not however, always guarantee compliance given the imperfect scores in the case studies for guidelines compliance.

Some of the mitigation measures were not guaranteed such as the Commonwealth's noise amelioration programme, particularly given that it was instigated separately from the extension project. Despite the strong push from the community and some councils to get noise mitigation measures in place, there was a reluctance to fund this process. Knowledge was not as high about some mitigation measures at this time, and knowledge improvements became evident for the Adelaide-Crafers project which had a major pump out storage basin (eg for fuel spillage). Such a measure may be good for the Runway Extension proposal which and result in better protection for the Patawalonga water quality. Mitigation measures were limited for air quality despite the relatively detailed reference to air pollutants. The only safeguards proposed related to dust control, whilst other factors were considered within standards. Moreover, they are difficult to mitigate within the scope of the project (ie vehicle pollution also relates to design of vehicles, types of fuels used).

Criteria 2.6.1 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? These criteria were graded at E. As demonstrated in Table (9), monitoring was referred to in 40% of cases which is unsatisfactory. The level of detail was also unsatisfactory. Factors such as contingency plans and reporting mechanisms were also referred to, but no detail was specified, only that they would be addressed in EMPS to be finalised.

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Methods were graded at D, whilst information sources was graded at B. There was evidence of original field work to support the EIA including vegetation and fauna surveys, archaeological survey, water quality sampling, road traffic noise monitoring, in addition to use of primary bird monitoring data as a result of airport operations. However, there was a lack of soil sampling for contaminated soils (left until later in the project's development), and there was no air quality baseline data, no water quality background trends, and no actual noise level base line (only calculated ANEFs). Some of these such as the air quality data is difficult to compile for a one-off project, particularly when no background data is available over a longer term to indicate broader trends.

Descriptions in the Draft EIS of the methods used for assessment of the existing environment and impacts was poor. While several different methods were used for the benefit cost ratio, noise assessment and air quality assessment, there was no reference to the steps used in the calculation process, although some assumptions were noted. Methods were also not specified for fauna, vegetation and archaeological surveys, nor were methods outlined for the remediation process of contaminated soils. While outlining methods for all aspects may result in a bulky document, summaries could be provided in appendices which may help to alleviate suspicions generated in the community. They would also assist the production of EMPs, and result in more informed decision-making for experts in the field. However, the use of information sources was extensive and outlined for each major issue.

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at B. All key sections were incorporated with the exception of a conclusion chapter, or monitoring sections. However, a separate section containing a preliminary EMP was included.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at C. Although structured differently to the other case studies, the layout appeared to be logical and was consistent between Chapters. Each chapter in the impact assessment section included a description of the existing environment, legislative and policy requirements, construction impacts, operational impacts, safeguards and a conclusion. A table of contents was included. Generally no major limitations except for some overlap in information in some areas, and reference to for instance, dust suppression in a number of chapters including safeguards for the socio-demographic environment. This sometimes made it difficult to locate all information pertaining to that particular issue. In this sense, the information was fragmented, but unlike the other case studies, it was easier to make direct links with the description of the environment and the impact assessment given that the document was structured around issues (rather than a description of the entire environment followed by an impact assessment).

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B. The Draft EIS was generally well written and understandable, although at times technical terminology and models used became complex. The document also lacked a glossary which made some of the technical terms assumed as common knowledge difficult to interpret. Use of visual aids was very good, including photographs of the existing environment. Sourcing of references was also good in terms of existing standards and information in tables for instance, but referencing was sometimes lacking for the impact assessment and it was unclear where the information came from, despite an extensive bibliography.

Criterion 2.7.6: Was the statement presented as an integrated whole, and was reference made in the text where summaries of data were presented in separately bound appendices? This criterion was graded at B. The draft EIS was presented as a whole with no separate appendices. However, some reports such as an important economic analysis which supported the need for and benefits of the proposal were not publicly available, which was the subject of some criticisms. Moreover, there were several background reports prepared for the Draft EIS, and whilst the information was incorporated, it may have been useful to incorporate them as separately bound appendices as has been done for other EISs (eg the eastern pipeline EIS). This may however, have been an expensive undertaking, and not justified.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. There appeared to be no major problems with this criterion, except for the fact that detail was sometimes limited for the impact assessment and mitigation measures, which would have made the document substantially longer. It was however, already the longest EIS of all the case studies, but some of the detail may have been superfluous.

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation? This criterion was graded at C. All key issues appear to have been adequately emphasised, and there was slightly greater emphasis on the noise issue. Nonetheless, this was a major area of community concern, and was thus appropriately emphasised. No bias appeared evident overall, although the main emphasis was on direct as opposed to indirect or secondary impacts.

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS (if the information itself lacked bias)? This criterion was graded at C. Bias was evident in that preferred options were selected for assessment. Nonetheless, the reasons for these options were clear, and most of the conclusions made appeared to reflect the information in the Draft EIS. However, bias may have been evident given the several assumptions made in the economic analysis and the assessment of noise, but this was difficult to assess given the lack of methodologies specified. Moreover, there was bias in the assumption that all impacts could be manageable to an acceptable degree despite lack of reference to information certainty and despite adequate baseline studies, but this was the case for all of the case studies.

Level of Controversy about EIS Quality

The level of public controversy about the EIS quality was high, and primarily related to the noise assessment, failure to refer to increased road traffic resulting from increased airport operations, lack of reference to stormwater management initiatives if high nutrient levels found, failure to address existing problems in one suburb, lack of management for threatened butterfly species, failure to release economic analysis report by the EDA, and lack of information on future airport operations. Some of these comments are presented in Table (10). The DoT responded to some of the criticisms about the noise assessment by arguing that substantial effort was made to explain the assessment, and the failure of the community to accept this did not mean that the data was flawed. The Department also noted in response the omission of some information (eg alternative steps for noise management) that the assessment was a very scientific and technical process and that there was too much information to be included into the EIS which needed to be readable for the general public. Some positive comments were also made about the quality of the Draft EIS including reference to the thoroughness of the threatened species survey, and good documentation. One submission also congratulated the department on their proposed protection of flora and fauna.

Table 10: Public criticisms of the quality of the Draft EIS for the Adelaide Airport Runway Extension Proposal (sourced in part from DoT November 1996; and correspondence)

<i>Public Criticisms</i>
<ul style="list-style-type: none"> • lack of reference to degree of error in the noise modelling • 'The EIS is clearly deficient...in its aims (ie to ensure adequate information for decision-making and for undertaking alternatives). • invalid conclusions in the noise assessment • 'We believe that the ANEC measure [for noise] is used in the EIS in a way that conceals the direct effects of extending the runway, by confusing these effects with changes due to an upgrade in the aircraft fleet. • 'The EIS ..fails to acknowledge the increase in road traffic to and from the airport complex which is required to supply the increased pay loads and passenger numbers. Hence where there is more road traffic there will be an increase in emissions resulting from these vehicles. Yet there is no proposal in the EIS which will ameliorate this impact.' • EIS did not address possible impacts on shoreline or beach erosion...additional runoff and contamination. • lack of reference to details on design for managing construction-related pollution from the causeway. • impacts of higher road traffic not addressed • 'The EIS does not given sufficient recognition to current problems already experienced in Glenelg North that would be accentuated by the proposal.' • EIS does not address noise impacts associated with varying weather conditions and lack of adherence of aircraft to designated flight paths. • 'The EIS does not provide the information the residents are looking for, ie information on those areas that will be severely affected by noise; alternative steps to manage aircraft noise, and the cost and effectiveness of those steps. As the EIS does not provide this information, an informed decision cannot be made.' • The EIS fails to specify separate houses on contour maps that are and are not affected by noise. • The EIS was 'guarded' with respect to actual increases in air traffic. • failure to include actual noise monitoring levels • inadequate assessment of impacts of closure of Africaine Road. • lack of reference to how water would be drained away from golfcourse. • failure to note that larger cargos and passenger numbers will result in more road traffic, and hence air pollution. • unsubstantiated opinions about effects on property values. • does not address management plan for conservation of threatened butterflies • criticisms about report on economic analysis not released to the public. '<i>The public is therefore denied any opportunity to review the assumptions ion which its conclusions are based, or indeed to confirm that the conclusions are correctly stated in the EIS.</i>' • omission of information on future operations of the airport.. • EIS has 'glossed' over water control.

The level of government controversy was substantially lower than public controversy, although some criticisms were again made about the noise assessment. For instance, the Commonwealth's Assessment Report noted that the EIS failed to refer to increased overflight noise resulting from the project (ie a lower altitude with higher take-off weights), and to the impact of aircraft which utilised the full runway length even if it was not necessary for them to use the extension (DEST 1997). One local council was also critical of the reliability of the noise assessment due to the use of the ANEF system and lack of actual noise data. However, some positive comments were made about the adequate description of flora, fauna and bird hazards. It was also noted that the '*... EIS...seems to have comprehensively covered all the possible relevant issues in a very focused manner*'

OPENNESS AND COMMITMENT TO CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B. Based on the available information, substantial efforts were devoted to making the consultation process work, both for the benefit of the community and for getting the project through. Genuineness for this programme was clear. It was noted that an effective community consultation was considered a key element of this project' given '*its complexity, the*

environmental issues to be addressed and the level of local as well as metropolitan wide interest. Genuineness is also indicated in that research was carried out to determine the best practice methods for consultation for large projects. The structure of the programme is illustrated in Figure (5).

The consultation strategy was prepared by Rust PPK for the Department in December 1995. Consultation was undertaken with several government departments (eg Department of Treasury and Finance; FAC, DHUD, EPA, UPA, Patawalonga Catchment Authority, Health Commission, councils), and several community groups including for instance:

- City of Henley and Grange Residents Association
- Country baseball Teams
- Conservation Council of SA
- SA Baseball League
- Thebarton Residents Association
- User Groups of the Airport
- West Beach Residents Association
- Aboriginal community
- German Shepherd Dog Club
- Glenelg Residents Association
- Scouts
- Service Clubs
- Rowing Club
- Anti-Noise Group
- West Torrens Ratepayers Association
- Airport Noise Association
- Glenelg Baseball Club
- Westward Ho Golf Club
- Kerry Ellis Driving Range
- Dune Care

it was stated in an internal document that the message the department was aiming to get through was that every effort would be made 'to keep the public openly and honestly informed' and that the 'views of the community will be listened to and given serious consideration'

At the Commonwealth PWC hearing, the project coordinator highlighted the importance attributed to identifying all potential stakeholders early in the project. There was also a letter drop to 8,000 residents, and the Department considered making payment to some residential groups for attending the 2 day Value Management Workshop which is a good indicator of genuineness to consultation. The importance of maintaining public relations was also highlighted by the issue of frog relocation. No resources had been allocated for their relocation given the difficulties of finding them and given that they were not endangered, but it was proposed to bring in schools to collect them so that the department was seen to be doing something for the environment.

Genuineness was also indicated by plans in an internal strategy to attain an '*...improved quality and effectiveness of the planning and decision making process by ensuring that outcomes are better attuned to community views and needs*'. Community involvement was, however, restricted to a distance, however, and the involvement of communities on management groups as official members was refused by the DoT because it was not considered a practical avenue for community consultation, and had the potential to make planning more complex.

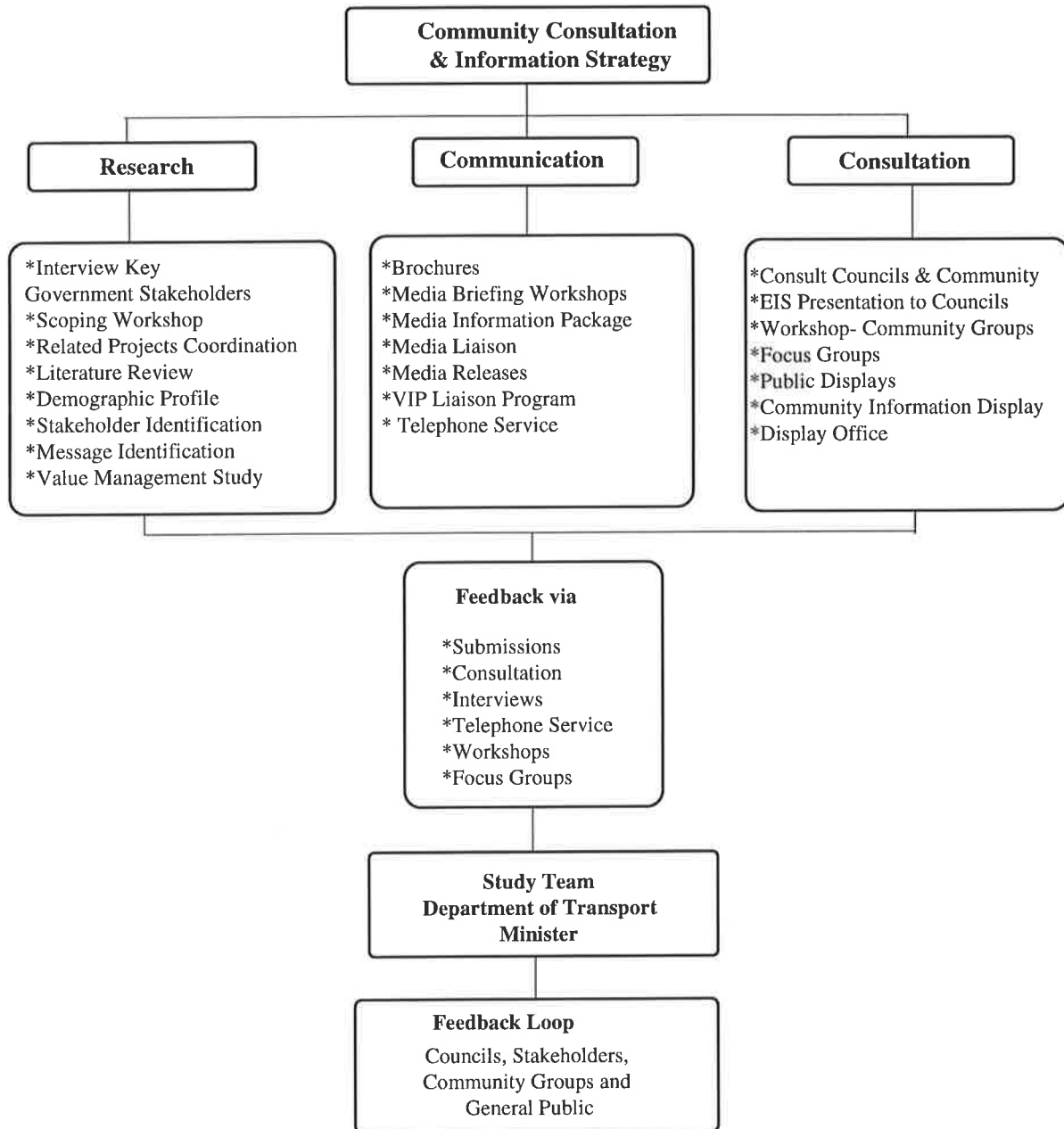


Figure 5: Consultation and Information Strategy for the Adelaide Runway Extension proposal

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at D-C. Openness was demonstrated in that some of the recommendations posed in informal community submissions were presented in the Draft EIS (eg relocation of the airport), although were not supported. Openness to considering alternatives was also demonstrated by the assessment of additional alternatives to minimise impacts as far as possible including the shortened tunnel option and shortened road deviation. The Department was open to suggestions to incorporate actual noise monitoring to overcome community concerns about the noise assessment process, and to include local Aboriginal representatives to monitor the construction process. The Department also appeared open by presenting the tunnel option for assessment. However, this latter is questionable given the foreknowledge that it would never be funded and that detailed design of the project

commenced prior to the completion of the EIA process, which assumes knowledge about which alternative would be selected.

Although consultation was genuine, the level of openness was restricted and only went so far as selling and gaining support for a proposal which had already been given firm support by the government. The emphasis was on minor changes as opposed to allowing for the no-go option. Thus, flexibility in the consultation process in terms of changing the project was not evident. Apparently, one of the challenges of the consultation process was communicating a project already decided upon in terms of tunnel versus road deviation options, achieving support for the project, and facilitating the delivery of the project on time and within budget. It was also noted in a public information Bulletin that:

‘...consultation involves the community in planning and decision making for their local area. It involves sharing information with the community and listening and responding to their concerns. However, consultation does not imply explicit power or influence over the decision making process but rather that the government’s final decision making process will be open and responsive to the views of the people consulted.’

As was the case for the Southern Expressway proposal, the department was restricted in considering the no-go option because of the government’s strong commitment to the project.

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration with Conception (phase i):** This criterion was graded at E. The environment was not a key factor in the inception of the project, and the driver for the project was State economic needs.
- **Integration Planning (Alternatives; phase ii):** This criterion was graded at C-B. Integration with planning can be determined in part by the degree of planning already achieved prior to the formal EIA process. In this case, project planning was well advanced with studies undertaken in 1994, nearly 2 years before the release of the Draft EIS, and 1 year before the appointment of a consultant to undertake official planning and the EIA process. The main conclusions about all of the case studies appears to be that the EIS (or equivalent document) was simply a snapshot and stand alone document which does not appear to be integrated into the overall planning. It is however, the culmination of a long and complex period of planning. Integration with planning can be seen in a number of ways: integration of informal EIA; integration of the formal EIA process (ie legislative requirement), and integration of the formal EIS document. In most of the case studies, integration of informal EIA investigations was very good, and was generally followed by the formal EIA investigations which built upon the informal and preliminary assessments, and were then reported in the snapshot EIS. In other words, while planning was sometimes well advanced prior to the instigation of formal EIA, this does not mean that EIA was not integrated in an informal sense, so it depends on which aspects of EIA one is evaluating.

In the case of the Runway Extension, if only assessing the *formal process*, then EIA was an add-on to an already advanced planning process and project concept. Although the project was not well designed when the formal EIA process was triggered (which allowed the EIA process to influence the proposal), it was conceptually clear about what was required to achieve the project. This does not allow much flexibility for the community in the formal EIA process to influence the broad concept of the project, and thus planning was not well integrated with planning of alternatives (although alternative options were presented in the Draft EIS, only one was viable). Planning was also completed in November 1996, prior to the completion of EIA process which indicates some separation. If also looking at *informal EIA*, however, EIA was a part of the process right from the beginning of planning of alternatives in the earlier FAC concept study. The only concern with this is the lack of ability for the public to influence the earlier informal stage.

- **Integration Design (phase iii):** This criterion was graded at B-A. To facilitate fast-tracking, design of the road was done in parallel with planning which indicates that there was some integration with formal EIA. Given that it was already known that the tunnel option would be refused, the formal EIA process was more of a detailed design tool and for accommodating or fine tuning the project to accommodate public concerns. It is not known exactly how much interaction there was between planning-EIA outcomes and the design process due to a lack of documentation in the files, but it was pointed out during a project meeting that information in the public response document should be considered in the design process.
- **Integration Construction:** This criterion could not be graded due to a lack of information. Given the use of EMPs and EMIPS, integration of environmental information raised during the informal and formal EIA processes was transferred and integrated into the construction phase, although the effectiveness of outcomes on the ground is unclear given the ambiguities of some of the action requirements (see earlier discussion on EMPs). Moreover, there were insufficient resources in the Department to audit all aspects of the project which would give greater indications of the degree of integration into construction.

Criterion 3.2.5: Has public consultation been undertaken as early as practically as possible prior to the release of the Draft EIS? This criterion was graded at B. Consultation was undertaken early, prior to the Draft EIS, and commenced at the guidelines stage when they were formally released for public consultation in September 1995. However, it may be that the guidelines were not well advertised given the low public input but given the high level of input later at the EIS stage. Moreover, one public submission was concerned about the late provision for consultation after the EIS rather than earlier in the process, and no mention was made that they were aware of the provisions for input at the guidelines stage.

Scoping workshops and preliminary consultation workshops were also held with a range of groups in December 1995, and in January 1996, more extensive advertisement of the project was made with the circulation of 8,000 information brochures to households. Thus, consultation was clearly early in the context of the EIA process. However, consultation was not taken early in terms of previous concept studies, and planning had commenced years before the project was brought to the public for formal comment. It was noted that:

'Detailed discussion on runway details was not possible until early in 1996 but as soon as the project advanced to a point of planning when its effects on the various stakeholders could start to be defined, a more comprehensive consultation process was implemented'

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at B. A wide range of techniques was used for the consultation process, and as demonstrated in Table (11), of 11 consultation approaches, 9 were utilised, although none were used at the higher end of participation. As already noted, community membership on management groups was refused due to the potential complexity which this may generate in planning. More specifically, techniques included:

- letter drops
- public information brochures;
- The 'Bulletin' (greater detail than brochure);
- Fact Sheets;
- Mailing List;
- media advertisements;
- telephone information service;
- separate consultation and focus group workshops with councils, resident groups, recreation groups (eg baseball club, golf club, German Shepherd dog club), conservation groups (eg dunecare, Conservation Council, Anti-Airport noise association), government agencies, and business community representatives;
- questionnaire to country Recreation Groups;
- briefings to local councils;

- Value Management workshop;
- open community information day held in conjunction with Patawalonga project (attended by 1,000 people);
- mobile public displays.

Table 11: Public participation techniques adopted by ETSA for the Adelaide Extension Runway Proposal (based in part on Westman’s 1985 five-scale participation model and Glasson et al 1994)

<i>Approach</i>	<i>Public Power</i>	<i>Participation Techniques</i>	<i>Adopted?</i>
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: *Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)?* This criterion was graded at C. Information in both the Draft EIS and Supplement was clear and transparent with the exception of methodologies in the EIS as noted previously. All public concerns appeared to be clearly summarised in the Supplement report. There were also information bulletins released to the public which outlined the status of the planning process, the nature of the project, and the construction process. There did not appear to any release of monitoring or auditing reports which is of some concern but which is not surprising given that third parties are involved which may have implications for their commercial operations (ie the contractors). Although the EMPS were also prepared to reassure communities that the impacts were being managed, it is uncertain as to whether or not these were public documents.

The main limitation in this criterion was the failure to release the economic evaluation because it was deemed confidential for Cabinet purposes, despite the fact that it formed the primary basis for the project’s justification. An initial request for the document by a residents association was refused by the Minister of Transport, which again highlights that, like the no-go option, some factors about a project are beyond the control of the department particularly when its a political decision. Thus, the decision to release information to the public appears to have been constrained. However, given some public criticism, the EDA announced in June 1996 that further detail of the economic analysis would be made available to inquirers to reduce controversy. Another indication of lack of transparency were requests by local council for information on plans and details of the proposal in 1995 which were refused by the Minister for Transport on the argument that the plans were still being refined.

Criterion 3.3.3: *Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly?* As for the other project case studies, these criteria were unable to be graded. Adequacy of resources was difficult to assess, but there was evidence that they were flexible given that the contract for EIS preparation and consultation was increased in January 1996 to cater for an improved consultation programme, and to assess shorter tunnel option. The time frames for the planning and approval process appeared to be quite tight, and there may have been a rush to get Commonwealth funding, and also to get the works in place before the airport was privately leased.

However, delays were evident due to complexities in the EIS (ie noise assessment) which was weeks behind schedule, and due to issues of getting agreement on Commonwealth funding. These delays resulted in attempts to find shortcuts in the process which indicates that flexibility of the construction date was limited.

Level of Controversy about Openness

There was some public controversy about the consultation process, although not as significant as criticisms about the EIS quality. Some individuals were concerned that they were not consulted earlier in the process, whilst others criticised the failure to release the economic analysis. Consultation was also considered in one submission as a *'useless public relations exercise, with a lack of real opportunities for public debate'*. There were also concerns that the requests for community information were irrelevant given that the government had already determined its preferred option. However, although one of the airlines also noted that consultation prior to 1996 was ineffective, they were also full of praise for the EIS and consultation process. There was no evidence of government controversy about the consultation process, and the Public Works Committee was satisfied that adequate consultation had taken place in their report in January 1997.

PROPONENT RESPONSIVENESS

Alternatives-Weighting of Issues

Criterion 4.1.1: Was the 'best' alternative adopted in the EIS based on the available information and adequate rationale given for the selection of the preferred option? This criterion was graded at C-B. For some, perhaps those directly affected by noise or loss of recreation, the no go option was the better one, although some residents affected by noise impacts were still supportive of the proposal's economic benefits to the State. Given the airports substantial constraints, it was apparent that it would require upgrade at some stage in the future, and the no-go option was not really an option if the runway was to be brought closer to Australian and international standards. Thus consideration of the 'best' option comes down to the more specific alternatives. This too was difficult to determine given that the Draft EIS only focused the detailed assessment on two options.

In terms of the runway extension direction, the best option appears to have been adopted given the residential constraints to the north-east of the runway which were considered more substantial than the issues of open space and recreation to the south-west. Criteria for this decision were predominantly social and technical ones (ie increase noise impacts, safety issues, building heights in the north-east). Relocation of the airport was clearly not justified given the large expenses and infrastructure required.

The best option for the road alternatives was very difficult to assess, but alternatives such as the controlled crossing or closure to Tapleys Hill Road were not considered as viable ones due to safety issues and major disruptions to a high use road. Those considered most viable were the short and long deviations, and short and long tunnels. As noted earlier in the Proposal Description, the government initially favoured the tunnel option (based on long tunnel) given that it had lesser impacts on recreation than the road deviation, and also allowed for the future possibility of further runway extension. Thus, this could be considered the 'best' option. Based on information in the Draft EIS, the main benefits of the original long tunnel option was that it had the least intrusion into recreational areas, it had high community support, it allowed for future expansion of the runway, and it seems to have less visual impact. Noise levels would also likely remain the same given that it was located closest to the original road alignment (although amplified at the tunnel portals). It was however, of substantial cost which could (would) not be met by both State and Commonwealth government. Moreover, the tunnel option failed to allow for the replacement of Africaine Road which was of community concern.

However, the government's earlier assessment which supported the tunnel was based on comparison with a long road deviation and not the short deviation which had lesser impacts. The short road deviation appears to be a compromise, and also appeared to perform better than the tunnel options in other areas (ie water quality, and Aboriginal archaeology risks). As can be seen

from Table (12) which assesses the performance of options based on information in the Draft EIS, the short road deviation appeared to be the better performer in some areas:

- it was the cheapest option;
- it allowed for the replacement of Africaine Road which would cater for significant community and council concerns about traffic and access disruption;
- there were lesser impacts on recreation than the original long deviation (although the tunnels were also high performers, with the long tunnel being the best option);
- there was less chance to disturb potentially buried Aboriginal sites compared to the tunnel option;
- noise issues were less for the short versus the long deviation;
- the tunnel options required a lowering of the groundwater table and pumping facilities to remove any potential flooding,.

The best option depends on how one values the recreational areas (ie the golf course). Although it was a close decision, it appears that the best option was adopted in the Draft EIS as a compromise between earlier alternatives. Indications that the ‘best’ option was adopted are also evident with support for the preferred alternative from both the State and Commonwealth Public Works Committees. In response to public concern it was noted by the Minister for Transport: *‘We must all recognise that this project cannot be completed without some social impacts. Our job is to ensure that they are minimised’*, and it appears that the options decided upon attempted to do this.

Table 12: Performance of road options presented in the Draft EIS for the Adelaide Airport Runway Extension Proposal

	Short deviation	Long deviation	Short tunnel	Long tunnel
Cost	best	second best	third best	
Access (Africaine Road)	allows replacement of Africaine Road	allows replacement of Africaine Road	no replacement	no replacement
Traffic Delays (during construction)				
Water quality		may affect Sturt Creek channel with problems of flooding during construction	requires pumping of saline groundwater into Patawalonga	requires pumping of saline groundwater into Patawalonga
Flora and Fauna	no preference identifiable between short deviation and long tunnel option			
Land use (recreation)		impacts on Anderson Reserve and Baseball Club, although lesser impacts on golf course		best
Visual			hidden from view	hidden from view
Air quality	no preference identifiable			
Noise			?	?
Heritage	less chance of digging into buried archaeological sites	less chance of digging into buried archaeological sites		

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at C. Early in the process, the environment including community concerns were a major factor given that the more expensive tunnel option was originally preferred by government (other factors were also important including the ability of this option to allow for future expansion of the airport). However, costs then became the most important factor in the decision-making process when it was realised that the cost difference between deviation and tunnel options was substantial, and that funding would not be available for the tunnel option. From this point, compromises were reached, and although the cheapest option was adopted with the short deviation, it was also an option which minimised environmental impacts, which suggests an equal weighting. Impacts associated with the tunnel options also became more

evident throughout the process such as the inability to replace local access (ie Africaine Road), and impacts on groundwater. If costs were the only factor, then it is possible that Tapleys Hill Road was simply closed and traffic rerouted, despite its disruptions. Moreover, it was proposed to replace Africaine Road because of impacts on local access despite its additional cost of nearly half a million dollars. However, cost factors outweighed the community's need for noise amelioration measures, and the State and project manager were restricted in part by the availability of Commonwealth funding.

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)? This criterion was graded at B. Not many changes were made to the process, although there did not appear to be a need to make anyway, and where changes were required, they were made. For instance:

- modifications to noise contours were made in the Supplement allowing for increased overflight noise in Response document (DEST 1997)
- further survey of turtles and frogs was conducted in January 1997.
- Given public controversy, noise monitoring was proposed in liaison with community groups so that actual noise levels could be ascertained to supplement predicted noise levels. This was to be done before and after the project construction. (noise monitoring found that previous EIS conclusions were found to be valid);
- assessment of additional alternatives some of which were recommended by the community;
- further discussions were held with resident groups following high concerns about noise impacts which indicates responsiveness to public concern;
- temporary closure of Africaine Road to construct culvert allowed an assessment of the possible impacts if the road was not replaced;
- further details and assessment on options for Africaine Road and impacts of replacement versus non-replacement (DoT November 1996);
- further detail on assessment of air quality impacts, although this discussion was complex and highly technical;

Much of the Supplement also provided additional information in some areas and clarified misinterpretations or uncertainties (eg noise assessment). In other areas, the document simply reiterated information in the Draft EIS in response to criticisms, or rejustified why certain decisions had been made.

Criterion 4.2.2: Was the proposal changed on environmental grounds or in response to public consultation where appropriate? This criterion was graded at B. Project changes are summarised in Table (13). Like the Southern Expressway, the Department was constrained in the changes it could make by the decisions already made by government. It was noted by one participant:

‘I can't actually remember any changes to the project in a physical sense of any material nature from where we through we would be going anyhow, and that's not because we were determined to build what we were determined to build. It was because there was common sense probably in what was being thought should be done anyhow. Things like how we would handle runoff from the road, the notion of how many swales and so on were just filled into place.... the best practice elements of the works naturally just flowed into the EIS process.’

Prior to the EIA process, however, the proposal had been changed from an option with major impacts (ie the long deviation) to one which had lesser impacts (ie the short deviation), and was a compromise between the long deviation and more expensive long tunnel. This was considered a relatively major change. Other minor changes to the project were also made during the EIA process:

- incorporation of indigenous butterfly protection into the EMP involving the provision of food plants in landscape design and monitoring of any impacts (in response to public submission;
- increased buffer zone around stand of *Wilsonia rotundifolia* and other field grasses in response to government submission;
- length of taxiway extension reduced due to technical problems and high costs (savings of \$1.2 million);
- proposal to replace Africaine Road was made despite earlier decisions not to replace the road. This decision was made in response to community and council concern because of loss in accessibility to existing suburbs, and reduced connectivity of road network;

Again, limitations related predominantly to the lack of noise mitigation in the project design. Although there was a push by the project coordinator to consider noise mitigation measures, in February 1997 it was reported in the media that the Commonwealth had backed down from providing noise mitigation measures because it had run out of funding, whilst the State government proposed nothing and argued that it was a Federal issue. It was also noted in the Supplement that a commitment to noise mitigation measures not justified given the forecast noise impacts and overall reduction in noise, although it was noted that mitigation would be considered after monitoring programme completed (DoT November 1996). It is acknowledged that extensive noise mitigation may not necessarily have been within the scope of the project, but like the enhancement of the visual-landscape environment in the project, commitments could have been made to those seriously affected by noise effects given the slight worsening in some areas to an already affected area (ie to those in unacceptable contours greater than 30). This was an example where the project could (should) have been changed but was not.

Table 13: Changes to the Adelaide Extension Runway Proposal prior to and during the EIA process

<i>Nature of Change</i>	<i>Details</i>
Number of Changes	<ul style="list-style-type: none"> • approximately 4
Type of Changes	<ul style="list-style-type: none"> • adoption of short deviation rather than long deviation • indigenous butterfly protection • increased buffer zone around stand of <i>Wilsonia rotundifolia</i> and other field grasses; • replacement of Africaine Road
Change Significance	<ul style="list-style-type: none"> • adoption of short deviation rather than long deviation - major • indigenous butterfly protection - minor • increased buffer zone around stand of <i>Wilsonia rotundifolia</i> and other field grasses - minor • replacement of Africaine Road - minor-medium
Timing of Change	<ul style="list-style-type: none"> • adoption of short deviation rather than long deviation - prior formal EIA • indigenous butterfly protection - after formal public exhibition • increased buffer zone around stand of <i>Wilsonia rotundifolia</i> and other field grasses - after formal public exhibition • replacement of Africaine Road - after formal public exhibition
Initiator of Change	<ul style="list-style-type: none"> • adoption of short deviation rather than long deviation - government and other participants (eg FAC) • indigenous butterfly protection - public submission • increased buffer zone around stand of <i>Wilsonia rotundifolia</i> and other field grasses - public submission • replacement of Africaine Road - public submissions

While some people may perceive that the project should have been changed to incorporate the tunnel option, it is believed that in addition to prohibitive costs, the potential impacts on water

quality and Aboriginal heritage were also problematic, and the impacts of the short deviation were apparently similar to those of the tunnel anyway. The need for this change is difficult to assess, but it is considered that the short deviation provided an adequate compromise given that the tunnel option would never have been incorporated due to its high costs.

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? There was insufficient information to assess this criterion.

Level of Controversy about Responsiveness

Public comments were mixed about the proponent's and other participants responsiveness. On the positive side, community leaders *'praised the Government's decision to retain the Glenelg Baseball Club, which was threatened under previous plans.'* Similarly, the diversion of Tapleys Hill Road was *'welcomed by community leaders, despite concerns over noise and traffic.'* One of the airlines praised the responsiveness of the project team by noted that: *'[w]e welcomed and appreciated the involvement and responsiveness.'* In contrast, others were critical:

- the Mayor of one local council warned of community anger about the lack of noise control measures and stated that *'Its not acceptable to have the project go ahead and then assess the situation. The reality of that is that there's no guarantee ...even if the situation is assessed, the residents will be given any noise modifications.'*
- two community members argued that support for diversion was based on cost factors only given that it did not have any other merits. For instance: *'The EIS provides much detail on alternate costs associated with the proposed road deviation and short and long tunnel option costs. The recommendations appear to be based solely upon financial considerations and has ignored the associated environmental and social issues;'*
- another community member argued: *'...I could only conclude that the terminology used [in a media article] gave a clear indication that a decision has already been taken that the runway has to be extended and that the EIS is simply an exercise in the preparation of a document to justify it.'*

No government controversy about proponent responsiveness appeared evident which is not all that surprising given the government's firm commitment to build the project. After consultation with the CEPA and SA EPA, the Minister for Housing and Urban Development was satisfied that public concerns had been addressed in the Supplement which is an indicator of proponent responsiveness.

ETSA Project Case Study 1
TUNGKILLO TO CHERRY GARDENS

PROPOSAL CONTEXT AND DESCRIPTION

During the late 1970s and 1980s, the demand for electricity supplies was rapidly increasing within South Australia, particularly in the Adelaide metropolitan area (ETSA November 1979). These demands were expected to be catered for via the construction of the Northern power station at Port Augusta, high voltage transmission lines (275 kilovolts) and associated substations. In July 1977 during preparation of the Northern Power Station EIS, ETSA's foresaw the need for an additional transmission line (275kV) to transport electricity south from Port Augusta to Adelaide (ETSA November 1979). Although there were two existing 275 kV transmission lines (plus two 132kV lines), they were unable to cope reliably with the additional energy supplied by the new power station, and there was potential for overload and constraints (ETSA November 1979). In 1979, a draft EIS (ETSA November 1979) was prepared in which it was determined that the transmission connection should be divided into two stages. The first stage involved a line from Davenport to Tungkillo, whilst the second stage, which is the subject of this case study, completed the connection from Tungkillo to Cherry Gardens (T-C), and was evaluated several years later in 1986 (ETSA April 1986).

Rationale for the Tungkillo-Cherry Gardens Transmission Line proposal included:

- increase in energy capacity in response to increasing demand for power in southern areas (predicted to exceed full capacity in the area within 15 years);
- ensure security, reliability and flexibility of supply (eg via physical separation of lines and different termination points);
- cater for fluctuating seasonal and daily demands;
- prevent potential for overloading at Para substation (takes power from Playford, Northern and Torrens power stations);
- facilitate second stage of Port Augusta to Adelaide connection;
- facilitate the proposed Victorian interconnection (see below);
- provide for the connection of the next new power station proposed for north of Adelaide around 1995 (ETSA April 1986).

Key characteristics of the development included:

- a double circuit twin conductor transmission line (steel lattice towers 37-50 metres tall);
- line easements (up to 50 metres for 275kV lines);
- alterations to the existing Cherry Gardens Substation;
- the purchase of land for future construction of a new Substation at Tungkillo (5 hectares required) (height of structures at the Substation estimated around 20 metres; plus possibility of taller radio communication tower); and
- an access road (2 kilometres) (ETSA April 1986).

In addition to completing the line from Port Augusta to Adelaide, the Tungkillo to Cherry Gardens transmission line formed part of a broader interconnection system between South Australia, Victoria and New South Wales. This interconnection was addressed by the 'Future Energy Action Committee' and announced in February 1985 (late in the planning process) (ETSA April 1986). Interconnection provided the potential for 'opportunity exchanges' of cheaper and/or excess power between South Australia and the eastern States (DEP June 1987: p18).

EIA PROCESS SUMMARY

Screening and Triggering

In June 1979, ETSA's Economic Planning Committee agreed that a double circuit 275kV line be constructed between Davenport and Cherry Gardens, but it was not until February 1982 that a report officially recommending the Tungkillo-Cherry Gardens and Tungkillo-Tailem Bend lines was produced by ETSA's Systems Planning Engineer. Perhaps due to experience with the Northern Power Station and the Davenport-Tungkillo EISs, ETSA pre-empted the EIA process by liaising with the then Department of Environment and Planning (DEP) in June 1982 about the planning process. Shortly afterwards in July 1982, ETSA notified the DEP of their intention to prepare an EIS for the proposal to construct the 275kV transmission line between Tungkillo to Cherry Gardens.

ETSA requested that the DEP prepare draft guidelines for the EIS, and these were prepared in the same month and revised nearly two years later in August 1984. Discussions were also held with DEP officers about proposed routes in December 1983, with field inspections in January 1984. It was not until 16 November 1984 that the official requirement for an EIS was made by the then Minister for Environment and Planning (Don Hopgood) in accordance with Section 49 of the Planning Act. Although the criteria for requiring an EIS in South Australia were highly ambiguous, some justification was given by the DEP including the:

- nature and length of the project (>45km);
- sensitivity of the physical environment;
- expected high public interest; and
- expected political sensitivity.

Proposal Guidelines

Shortly after the official EIS requirement, the final guidelines for the EIS were released by the DEP in November 1984, following input by ETSA (DEP November 1984). The guidelines, which are summarised in Table (1), were succinct (3.5 pages) and required the proponent to outline the objectives, nature and timing of the project, a substantiation for the proposal, the consideration of alternatives, impact mitigation measures, and public participation (DEP November 1984). It is interesting that the alternatives required detail not only on broad schemes and alternative corridors, but also for a preferred alternative. This approach of identifying a preferred alternative was some cause for contention in future EISs and is likely to have caused public controversy. Although most issues associated with transmission lines were incorporated into the guidelines, they lacked detail in areas such as monitoring and follow-up, and secondary or cumulative effects. This is not surprising given that the importance of these issues did not appear to be as well recognised relative to recent years.

Table 1: Key Requirements within the Guidelines for the Tungkillo to Cherry Gardens EIS (compiled from DEP November 1984)

<i>Proposal & Substantiation</i>	<i>Alternative Corridors</i>	<i>Mitigation Measures</i>	<i>Environmental Factors</i>
<ul style="list-style-type: none"> • proposal nature • objectives • timing • proposal need • proposal costs and benefits • broader alternatives 	<ul style="list-style-type: none"> • description of each corridor • constraints on corridors • comparison of corridors (environmental, economic, technical) • description of preferred corridor • assessment of preferred corridor's impacts • outline of mitigation measures 	<ul style="list-style-type: none"> • tower design/treatment • tower positioning • control of disease/pest plants • fire precautions • soil erosion • vegetation clearance • waste disposal • electrical interference • heritage protection • rehabilitation • screening (limited) • compensation (general) 	<ul style="list-style-type: none"> • climate • topography • drainage • soils (incl. erosion) • vegetation • fauna and avifauna • fire risk • land use • heritage • visual impact/amenity • settlement proximity • impacts on airfield, aerial agriculture • agricultural impacts • tv/radio reception • spread of pest plants and diseases • electrical effects • noise • disposal of waste

Section 7 Notice

Unlike the EIA process for private proponents, ETSA was bound by Section 7 of the Planning Act (for Crown Development). Under this Section, ETSA was required to forward a notice of intent to both the South Australian Planning Commission (SAPC) and to relevant councils for a comment period of two months; which was then followed by a report and recommendations from the SAPC to the Minister of Environment and Planning. The timing of this notice was of some concern to both ETSA and the DEP. Given that a period of two months comment was provided for councils, it was clearly in ETSA's interests to submit the notice as soon as possible due to pressures to complete the proposal for the interconnection with Victoria. Despite these concerns, DEP required that the notice be delayed until the assessment process was complete, and a proper judgement of the proposal could be made by councils and the SAPC. This was particularly important in light of DEP's presupposition that ETSA's preferred alternative would not be supported in the Assessment Report because of public and government comments.

Organisation and Management

A discrete planning team was established for the Tungkillo-Cherry Gardens project via a 'task force', in addition to subteams for the environmental investigations comprising of consultants and subconsultants (see below). It was difficult to identify the presence of other internal subteams or the team leader or project manager. The main coordinator for the EIA process was identifiable (Design Engineer Transmission), but for some reason did not appear to be part of the initial task force. A project manager and project management team including the Manager Transmission Engineering was also formally established for the first time in ETSA, but this was for the entire interconnection project and not just the Tungkillo-Cherry Gardens project. High turnover of staff in the Transmission Branch and the Survey Branch was an issue given the long lead times for project planning, but there was a 'hard core' of people involved throughout all of the interconnection projects who were acknowledged as a 'very important resource' to ETSA.

Environmental officers were involved in the process but were not on a planning team, and their involvement was late rather than from the beginning of the corridor selection process. A survey of vegetation in August 1987 and 1988 through the Mount Bold region was carried out by ETSA's environmental scientists, and in a post-implementation review by ETSA's Survey Branch it was stated: *'tribute must ...be paid to Senior Environmental Scientist (SES) for his advice and assistance during the environmental studies and also for the monitoring work that he carried out during and after construction'*. However, the lateness of their involvement was of concern to the environmental branch. In the post-implementation review they noted:

'...the Branch's involvement did not start until the EIS had been prepared and issued. Given the post EIS requirements to carry out quite detailed and sensitive environmental work, and given the capacity of the Branch to do this with success...it would seem that ETSA in-house environmental personnel should be aware of such exercises before EIS preparation, and have the opportunity to participate in discussions with SADEP, consultants, earlier in the project than after the EIS has been prepared. This is not a claim to usurp the proprietary role of Transmission Department for the Environmental Clearance Procedure for Transmission lines. It is, rather, a proposal that in long-running projects in-house environmental staff can (and do) supply services which cannot cost-effectively be supplied by the main Environmental Consultant...It is also a proposal for efficient use of ETSA in-house skills.'

Draft EIS

Consultants 'Social and Ecological Assessment' (SEA) were employed by ETSA on 5 November 1984 (shortly before the EIS requirement) to commence the preparation of the Draft EIS. Two public meetings and extensive surveys of the community were undertaken to aid in the identification of key concerns. The Draft EIS was considered by ETSA to be a conceptual 'regional planning' study of broad corridors. Because of the significant expense involved in survey and design processes, combined with uncertainty about which alternative would be adopted, it was proposed that the more specific route, design and pole locations would be negotiated with landholders after the EIA process and decision. This appeared to be agreed to by DEP given minor alterations in the guidelines to this effect.

The proportion of focus on the main EIA tasks and the contents of the Draft EIS (103 pages of main text) are illustrated in Tables (2) and (3). The greatest focus in the Draft EIS was on the

description of the environment (25%) and on the impact evaluation (24%), followed by the technical summary and introduction. There was no separate section for a description of monitoring, nor was there any conclusion to the document. The impact evaluation was broad-scale and did not attempt to assess the impacts on individual landowners given that this was considered a matter for negotiation at the later easement acquisition stage (after approval of the final route).

Five alternative schemes were briefly presented in the Draft EIS relating to corridors, undergrounding, and the no-go option (refer also criterion 3.5.1). Only Scheme (1) was focused on in detail which involved a Direct and a Parallel Corridor between Tungkillo and Cherry Gardens. The **Direct Corridor** contained the northern route, and because it was the cheapest and technically superior option, was ETSA's preferred option (see Chapter Nine for alternative alignments). The **Parallel Corridor** contained southern routes I and II which were to be located adjacent to an existing 132 kV line for half their length. This was to be achieved by using either a new double circuit 275kV line running parallel to the 132kV line; or upgrading the existing 132kV line to a triple circuit line (which also involved widening the easements). This latter option was considered more costly and technically inferior (ETSA April 1986). The major issues addressed are reflected in the contents (refer Table 3), and related to heritage, recreation, tourism, vegetation, fauna, lifestyle, and agricultural among others. Unlike the Ardrossan and Taillem Bend proposals, no attempt was made to highlight the most significant issues.

Table 2: Proportion of focus in the Draft EIS for the Ardrossan-Dalrymple Transmission Line Proposal (103 pages in main text and summary, excluding appendixes)

EIS Task	% Focus* (sections in main text)
Summary	11%
Introduction	15%
Proposal Description	5%
Policy Framework	2%
Proposal Need	4%
Alternatives	9%
Description of environment (baseline) (alternatives/or preferred concept)	25%
Impact Description & Evaluation	24%
Mitigation	5%
Monitoring	0%
Public consultation (approach)	0.9%
Conclusion	0%

* does not total 100% because of overlaps on some pages;

**Table 3: Contents of the Draft EIS for the
Tungkillo-Cherry Gardens Transmission Line Proposal**

Contents of the Draft EIS	
1. Summary	
2. Introduction	
• Electricity generation and transmission in South Australia	
• The proposal	
• The EIA process in South Australia	
• Environmental investigations undertaken	
3. Substantiation	
• Past planning	
• Future planning (increase system capacity, diversity termination points, interconnection, increase reliability, augment supplies to southern areas, upgrade existing lines from Pt Augusta to Para substation)	
4. Alternatives considered	
• 'no-project' option	
• alternative transmission schemes	
• alternative route corridors for the preferred scheme	
5. Heritage	
• Aboriginal heritage	
• Non-Aboriginal heritage	
6. Biophysical environment	
• regional setting	
• geology, drainage and soils	
• vegetation	
• fauna	
7. Social and Economic Environment	
• population	
• land use and the economy	
• statutory planning factors	
• nature of the landscape	
• the South Eastern freeway	
• tourism	
• recreation	
• overview	
8. Environmental impacts and comparison of Transmission Corridors	
• human settlements and residential land uses	
• lifestyle	
• agricultural practices	
• water catchments	
• archaeological sites	
• non-Aboriginal heritage	
• vegetation clearance	
• fauna and conservation	
• recreation	
• tourism	
• landscape quality	
• visual intrusion to residents	
• system reliability	
• statutory land use planning objectives	
• economic considerations	
• summary and comparison of transmission corridors	
9. Environmental safeguards and management	
• electrical field effects	
• acquisition of an easement and access requirements	
• television and radio reception	
• fire precautions	
• construction procedures	
• disposal of waste materials	
• pest plants	
• protection of archaeological sites	
• visual impact	
• soil erosion	
REFERENCES	

Public Exhibition & Supplement Report

Following comments on a preprint Draft EIS by the DEP, the Draft EIS was released for public comment for a period of eight weeks from 4 April 1986 to 30 May 1986. Only 39 formal public submissions were received by the Minister of Environment and Planning, in addition to eight government submissions which were coordinated and summarised by the DEP to avoid the identification of any potential conflict within government. The community and government concerns were responded to by ETSA in the 'Supplement' Report (56 pages plus appendices) which was produced by the same consultants in December 1986 (ETSA December 1986), and publicly released on 19 January 1987. Section 7 Notices were also sent by ETSA to councils in June 1987, although one council noted that they were in no position to comment on the proposal until the EIS was officially recognised.

The main issues raised in the public and government submissions are summarised in Table (4). The issues raised most frequently related to opposition to ETSA's preferred option (or support for the other option), heritage, visual impacts, vegetation, land values, and tourism. A number of submissions for the T-C proposal were also concerned about ETSA's over-emphasis on cost factors in determining their preferred option. Other issues related to requests for further information (eg line positions, maintenance, impacts on aerial spraying etc), assumptions made (eg study and corridor boundaries), inaccuracies in the Draft EIS, and the consultation process.

The opposition evident in the public submissions was the beginning of significant public controversy and *informal* opposition which resulted in ETSA not getting their preferred option. It should be noted, however, that the number of *formal* public (including government) submissions for the proposal is below the average number received for EISs in South Australia, although there is a wide variation (average 53.82; standard deviation 98.46) (Harvey 1993: p75). According to Harvey (1993: p75), however, submission numbers are no indication of whether a project will succeed or fail under the EIA process in South Australia. Harvey (1993) also observed that the transmission lines which underwent EIA tended to involve local as opposed to state-wide community interest.

DEP Assessment Report

An Assessment Report which evaluated the ETSA's Draft EIS, Supplement, public submissions, and the overall proposal, was produced by the Assessments Branch of the DEP in August 1987, and publicly released on 31 October 1987 (DEP October 1987). The Assessment Report which was quite lengthy at 81 pages (plus appendices), noted some inadequacies of information (eg on tourism), and most importantly, disagreed with ETSA's preferred option. Although the DEP were in agreement with the overall need for the project due to increasing demand for electricity in the southern areas, they were concerned about:

'...the fact that ETSA's preferred scheme (ie. Scheme 1) would place a double circuit 275kV transmission line in a populated, scenic, historically significant and generally much appreciated portion of the Adelaide hills.

Any major transmission line in this area is highly likely to have a considerable impact on populations, landuse, views and vegetation..' (DEP October 1987: p8).

It was recommended that '*...the environmentally preferred option be located in the Parallel Corridor*' incorporating a combined triple circuit line along the parallel easement followed by a double circuit line (DEP October 1987: p77). This clearly went against ETSA's preferred option, and the DEP did not appear 100% confident that their preference would be adopted. Thus, second preferences were outlined which involved a shorter length of triple circuit line. It was also argued that the adoption of ETSA's preference would involve further analysis:

'Considerable effort has been placed in this Report on the identification of the preferred options on environmental grounds. If the ETSA preference for the Northern Route is adopted, then exacting analysis will need to be given by ETSA and the Department of Environment and Planning to ways of reducing, as much as possible, the significant impact associated with a transmission line along this route' (DEP October 1987: p76).

Table 4: Issues of concern raised in public and/or government submissions for the Tungkillo-Cherry Gardens Transmission Line Draft EIS (compiled from ETSA December 1986)

Category	Specific Comments
Detail/Impact Concerns Inadequacy & requests for further information)	<p>Broader Electricity System and Planning</p> <ul style="list-style-type: none"> • future power station sites and line requirements • interconnection • more information on system reliability (and bushfire hazards) • complications of statutory land use planning constraints <p>Detail, Maintenance, Compensation</p> <ul style="list-style-type: none"> • line positioning • maintenance frequency and security • more information on compensation <p>Alternatives and Methods</p> <ul style="list-style-type: none"> • possible alternative to Mobilong Substation • rejected northern and southern corridors (not illustrated) • technical justification for inferiority of Parallel corridor • insufficient information on each route • economic arguments • corridor comparison table needed to be expanded to facilitate evaluation • construction problems for triple circuit option • several methodological assumptions questioned (see below) <p>Impact Categories</p> <ul style="list-style-type: none"> • inadequate coverage of many issues, or not considered at all • aerial spraying and impacts on agriculture • concern re: extent of vegetation removal • number of people with another line on property; map of residences; distinguish between two routes in southern corridor (populations) • effect of climatic factors (note that this was also requirement of guidelines) • landscape quality • future tourism potential and impacts - which option better • recreational trails • heritage items • health effects • fire risks • several concerns, particularly from small property owners re: impact on property values
Assumptions	<p>Substantiation</p> <ul style="list-style-type: none"> • need for transmission line questioned (although some supported need) • statement "community at large accepts" need for lines questioned <p>Routes , Study Boundary & Methods</p> <ul style="list-style-type: none"> • 18 submissions questioned methods used to assess corridors • boundaries of study area (should have been much larger area) • should have compared specific routes • use of corridors objected to • weightings used (refer below) • variable corridor widths influenced comparative outcomes • combined Southern routes questionable for comparison with northern route <p>Equity</p> <ul style="list-style-type: none"> • rural landowners should have same considerations as townships • locals should be given more importance than tourists • assumption that agricultural impacts compensatable • focus should have been on impacts on individuals, not just in broad terms (16 submissions) <p>Alternatives</p> <ul style="list-style-type: none"> • 23 submissions objected to ETSA's preferred route • rejection of earlier alternatives questioned (northern route) • concern that decision already made and is inflexible • costs constraints for Parallel and triple circuit questioned <p>Criteria and Weightings</p> <ul style="list-style-type: none"> • several questioned criteria and emphasis • overemphasis on cost criteria as opposed to social and environmental criteria • lack of rating for lifestyle • high priority given to recreation facilities early in process • low rating given to agricultural impacts • question minimal impacts on tourism • low weight on regional planning objectives
Inaccuracies and EIS quality	<ul style="list-style-type: none"> • general comments re: inaccuracies, incorrect conclusions, inconsistencies, conduct of environmental studies • affected area of vegetation inaccurate • EIS not clear and straightforward • information actually supports non-preferred alternative • effectiveness of visual impact screening doubted • photographs fail to illustrate full visual impact
Consultation	<ul style="list-style-type: none"> • not early enough (planned since 1977; consulted 1984) • requirement to comment in absent of tower positions • concern re: lack of consultation

Thirteen recommendations were outlined in the Assessment Report relating to alternatives, mitigation requirements for further analysis, design, and construction.

Because the DEP had based their assessment solely on social and environmental criteria and not cost factors, ETSA requested that they be able to comment on the draft Assessment Report before its release. This unusual request, which was agreed to in principle by DEP, raises some questions about the independent nature of the Assessment Report. One may also ask whether a private proponent would have received the same treatment. Nonetheless, ETSA had informed DEP that they had no intentions of disputing the recommendations of the DEP, and the assessment's outcomes remained opposed to ETSA's preferred option.

Official Recognition & Field Inspections

Shortly prior to the public release of the Assessment Report, 'official recognition' of the three assessment documents (Draft EIS, Supplement, Assessment Report) was given by the Minister on 22 October 1987. This recognition, which did not constitute a final decision, was the last official stage of the EIA process under the Planning Act. Given the time pressures on ETSA, and given that the assessment process had been completed, they requested on 4 November 1987 that approval be given as soon as possible and not after February 1988. Shortly afterwards, on the recommendation of the DEP, field inspections of the site were undertaken by the Planning Commission, DEP and ETSA in December 1987.

SAPC Advice & Ministerial Directions

At time of the field inspections, the South Australian Planning Commission (SAPC) expressed support for the recommendations in the Assessment Report, and six weeks after ETSA's request for a decision, the Planning Commission forwarded their recommendations to the Minister for Environment and Planning on 18 December 1987. It was not until two months later on 15 February 1988 that these recommendations were endorsed by Cabinet. Public announcement of the proposals' approval was finally given on 25 February 1987, and the official Ministerial directions were forwarded to ETSA on 29 February. These directions were as follows:

1. That the Electricity Trust locate the Tungkillo-Cherry Garden transmission line along Southern Route II [the parallel corridor] incorporating a triple circuit transmission line'
2. That the Electricity Trust carry out additional detailed work in association with the Department of Environment and Planning to:
 - a) ensure the impact of construction on vegetation in the Mt. Bold Reservoir catchment is minimised, and
 - b) ensure that the final alignment and tower positions throughout Southern Route II are located in a manner that minimises adverse impacts.

I would also recommend that the recommendations contained within the Assessment Report by the Department of Environment and Planning be taken into account when undertaking the transmission line project.

ETSA's Response

No reference was made in the final decision to the proposed substation sites, and ETSA, following communication with the DEP, assumed that approval to purchase a site was implicit in the final directions, and that development would be conditional on further environmental evaluations. Although confirmation was requested by ETSA from DEP, it is not clear what the outcome was based on existing information. While the final Ministerial directions are not binding on crown authorities under the Planning Act (section 7(8)), ETSA forwarded a letter acknowledging the Ministerial directions to the DEP on 10 March 1988. ETSA noted:

'From our work to date we see no insurmountable problems which would preclude a transmission line from being constructed satisfactorily on the recommended route. We therefore acknowledge that we can comply with the direction 1 of the Minister's letter.

Direction 2 and the recommendations are generally consistent with our normal practices, with commitments made by ETSA in the Draft Environmental Impact Statement and the Supplement or with action taken in conjunction with your Department on other similar projects and are generally acceptable. We would point out, however, that we will be consulting with public bodies and owners of properties affected by the final route concerning appropriate measures to be included in the design and construction of the transmission line.

Our usual practice of consulting with property owners on details of the centre line, tower positions and access for construction and maintenance could result in discussion between officers of ETSA and your Department to either clarify particular recommendations or to reach a compromise acceptable to the property owners and your Department.'

This clearly indicates that the decision-making process does not always stop as soon as the EIA decision has been made, but rather, in this case, involved an ongoing process of negotiation and compromise at the more detailed survey and design stage.

The final route decision sparked some controversy in early April-May 1988 with residents, the Mt Barker Environmental Association, and the Mt Barker Council. An alternative, which was a slight alteration to the route (involving extension of the triple circuit line) was recommended at a meeting in May, during which the Minister of Environment and Planning supported the proposal. In liaison with both the Ministers for Mines and Energy, and Minister of Environment and Planning, ETSA investigated and adopted the recommended alternative in order to reduce the impacts on residents and eucalypts in the area. Although this indicated ETSA's willingness to respond to community concerns, they were under some pressure to do so from the government, particularly given the support of the Minister for Environment and Planning, and Shadow Minister for Environment and Planning), and the involvement of the Minister for Mines and Energy. Moreover, ETSA's original response in a draft letter was that the alteration involving extension of the triple circuit option was too expensive.

Recommendations from the decision were also followed through such as the vegetation survey undertaken by the internal Environmental Branch in August 1988 for the more detailed centreline which resulted in monitoring and mitigation recommendations, and ongoing liaison with the DEP to reduce the impact in Mt Bold Reservoir catchment. Extensive monitoring activities and property restoration were also undertaken by internal environmental officers which is significant because this was not even addressed in the earlier Draft EIS. Although the final decision was made to minimise impacts, this does not negate the fact that some property owners would still be impacted on. This was evident at the surveying and design stage after the final decision, with vocal opposition from some landowners.

Due to some property damage which occurred during the construction process, farmers lobbied the Minister for Mines and Energy. ETSA responded with the introduction of a new property reinstatement function for transmission lines involving a education programme for staff regarding farm management, pasture restoration, soil erosion, crop and vegetation damage. The process was judged by ETSA as an 'immediate success', *'with a situation that had the potential to develop into a major public relations disaster being averted'*. ETSA was also responsive by making minor route modifications which in turn resulted in delays, particularly given that earlier contour mapping only covered the northern route only. ETSA noted: *'While this mapping was a valuable resource for evaluating route concepts it was a pity that we did not extend it to the southern route that was eventually adopted.'*

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the legislative-process requirements? This criterion was graded at A. All requirements of the Planning Act were fulfilled by both ETSA and the government. This is not surprising given that the stages required under the Planning Act are not at the proponent's discretion. Moreover, although not technically required by law, it is in the best interests to work with the Department of Environment and Planning in terms of the guidelines, particularly given the DEP's influence on the decision making process.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at B-A. The EIS was easy to compare with the guidelines, thus indicating a degree of consistency and clarity in presentation and layout. There was some evidence of going beyond compliance

with the inclusion of detailed demographic information and quality of life (although this latter also related to visual impacts which was required by the guidelines). Omissions which did not appear too significant included requirements to address climate (eg hazards from storms), and the location of transmission towers (to be addressed after the EIA process). ETSA also did not present a more detailed evaluation of their preferred concept even though required by the guidelines. This is not significant, and as discussed later, was actually a response to public controversy and was more appropriate by allowing equal comparison between the alternatives (although a preferred alternative was still specified). Other omissions included details on rehabilitation and screening (eg reference only to facilitating 'regeneration' of vegetation, or using topography for screening), topography, fire risk, spread of pest plants/disease). Many of the requirements also lacked detail. Overall, however, compliance was high when a simple absence-presence score was used.

Criterion 1.3: Did the proponent comply with the final decision? There was insufficient information about ETSA's response to the final decision to determine whether or not all conditions were met. However, the final route constructed appears to be consistent with the southern route recommended in the final decision.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at B. Evidence that ETSA went beyond compliance was clearly demonstrated in the public consultation process. Although ETSA's endeavours in public involvement were perceived by many as ineffective, they did appear genuine and legislation required only that the proponent involve the public at the formal public review period (after the release of the Draft EIS and response at the Supplement stage). Non-statutory project-specific guidelines specified that ETSA outline any public involvement in the preparation of the EIS, but this was not a compulsory requirement. It was noted in July 1984 in the brief to the consultants that experience in other Australian states and the US demonstrated that '*early public involvement is desirable in transmission line projects*'. ETSA's consultation programme is evaluated in more detail in 'openness'.

EIS QUALITY

The Proposal & Policy Framework

2.1.1 Was the project justified and was the rationale clearly outlined? This criterion was graded at C. The rationale of the project was clear and understandable. ETSA endeavoured to provide a strong rationale for the proposal in terms of metropolitan and State significance, and careful consideration and revision of the 'substantiation' was made throughout the planning process. There was, however, a lack of reference to the broader disadvantages of the proposal which is not surprising given that this stage of the transmission network was 'locked' in by previous developments, and was necessary to complete both the Port Augusta connection to Adelaide and the Victorian interconnection. It was also difficult to identify the true need for the proposal in the absence of figures demonstrating past, present and future peak load and supply trends for different regions. Although the need for the proposal was accepted by government, it was also frequently criticised by the community, and by an engineer who previously worked at ETSA. His comments were reported in the media:

'a review of ETSA's powerline system, security voltage levels, environmental and political impacts is urgently required before the project gets the go-ahead.
The need for direct connection between the sub-stations at Cherry Gardens and Tungkillo has not been substantiated in terms of additional revenue for the Trust, percentage improvement in security of supply or the value of improvement in the system's efficiency'

In contrast, it was argued in another article that '*while many people did not want the line built at all, it was obvious Adelaide needed the power and the argument then became which route had the least impact.*'

2.1.2 Was there a detailed description of the proposal? This criterion was graded at D-C. Unlike the other case studies, there was not a separate chapter dedicated to describing the proposal. Performance was however, good in some areas. Of 11 areas which should be addressed, 9 were referred to. Unlike the other case studies, there was good detail about the numbers of workers and working hours involved. Omissions in Table (5) related to the types of materials required and their transport, and safety issues (eg use of explosives). While most of the sub-criteria in Table (5) were addressed, the grade was arbitrarily decreased given that factors such as the ease or difficulty of construction in certain areas and under certain weather conditions was not addressed,

and given the lack of detail on the proposal to purchase land for a future substation at Tungkillo. While briefly addressed, the two alternative locations for the substation were not adequately set in their environmental context (ie detailed figures/maps), nor were preliminary access points for the transmission lines outlined clearly. It was proposed by ETSA to conduct environmental evaluations of the substations at a later date, but the information in the Draft EIS was insufficient about the actual sites to adequately assess this component of the proposal. The lack of focus on this component of the proposal is highlighted by the fact that the substation was overlooked in the final decision on this proposal (refer EIA Process Summary). The problem is that once the sites are purchased, the substations becomes 'locked' in by a previous planning decision which makes it difficult for environmental assessment processes to influence the final outcome (ie unable to examine alternative sites once purchased).

Table 5: Proposal Description performance in the Draft EIS for the Ardrossan-Dalrymple Transmission Line Proposal

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	81% (9/11)

2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision making process for the proposal? This criterion was graded at D. Although not a specific requirement for EISs, any reference to the broader decision-making arena facilitates a more informed assessment (eg standards to be complied with, preconditions of these project types, planning principles and objectives, the decision maker[s], relevant legislation). Of 12 relevant policies/legislative areas listed in Table (6), 5 were referred to (41%). A summary of the EIA process was outlined in the beginning of the EIS, and some reference was made to the Development Plan principles and objectives, and standards for electrical effects of transmission lines. Reference to the Development Plan principles was good given that no reference was made in the other three ETSA case studies analysed, although it should be noted that the level of detail on the planning principles was limited. These principles, some of which conflicted with the proposal, were also discounted by ETSA as having a useful bearing on deciding between alternative transmission corridors. Some assumptions were also made about world standards for the health effects associated with large transmission lines, even in the face of significant uncertainty. These assumptions evoked significant criticism from the Health Commission (refer section on 'external pressures').

Table 6: Policy and legislative framework: Degree addressed for the Cherry Gardens Transmission Line Proposal

	Legislative or Policy Framework	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	
	Development Act requirements 1993	n/a
	Development Plan	
General	Environmental Protection Act 1993 (eg wastes, pollution policies)	n/a
Environmental Protection	Coast Protection Act 1972	n/a
	Clean Air Regulations 1969	
	Environment Protection (Impact of Proposals) Act 1974 (Cth)	n/a
Flora, Fauna,	Fauna (eg Endangered Species Protection Act 1992)	n/a
Parks	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks and Wilderness (National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	
	Animal and Plant Control Act 1986	
Land & Water	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a
	Soil (eg Soil Conservation and Land Care Act 1989) (EIS in prep. prior to this Act)	n/a
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	n/a
	Land Acquisitions Act 1969	
	Fire (eg Country Fires Act 1989) (EIS in prep. prior to this Act)	n/a
Heritage	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth))	
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements)	
	Explosives policies/legislation (eg SAA Explosives Code AS2187 1979)	
	Score	5/12 41%

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at A. As illustrated in Table (7), of 19 environmental categories, 18 were referred to (94%). The only omission related to climate, including climatic hazards (eg storm, flood). Climatic hazards were consistently omitted in all of the ETSA case studies, however.

Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment? This criterion was graded at D. As demonstrated in Table (7), 52% of categories had adequate detail. Key limitations to note include:

- only brief reference to soil with a lack of information on current status of erosion, hot spot areas, and existing remediation measures being implemented;
- lack of detail on mining in the area and industrial land uses, with no mention of how they related to the proposed development, or their implications;
- the lack of detail on fire risk zones, although referred to in terms of a Supplementary Development Plan;
- spread of pest plants and diseases was only referred to in a sentence as an issue, and no mention was made of current status of problem, types of pests and weeds, and existing remediation measures;
- detail on fauna was good in the appendices but better conclusions about the implications for the assessment could have been made in the main text;
- although detail on aboriginal heritage was assumed to be adequate (ie specific details could not be shown to protect the location of sites), there was a lack of original survey work and existing literature which raises some questions about the adequacy of detail for an informed assessment;

- detail about the quality of life, and relationships to land use was good, but presented in a disordered fashion, and was repetitive in parts;
- better statements about how many of the impact areas related to the proposal and the implications for assessment needed to be made (eg some of the data on terrain and geological landforms appeared superfluous).

Some of the strengths were as follows:

- the detail on fauna was relatively good in that a list of fauna species was listed in an appendix for several areas along the corridors (8 pages), This included reptile, mammals and birds with indications of conservation status (ie common, or rare or vulnerable). This compares with a significant lack of detail in the other case studies, where for instance, fauna might only get a couple of paragraphs;
- detail on vegetation was also relatively good with locations of significant stands of vegetation indicated in diagrams, and 10 pages of detail in the appendixes including list of plants species, their conservation status (eg endangered, vulnerable, rare) and comparative description of direct and parallel corridors; and
- reference to the significance of quality of life and why people lived in the region was also good

Table 7: Performance in the description of the environment in the Draft EIS for the Tungkillo-Cherry Gardens Transmission Line Proposal

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality	not applicable				
Hydrology					
Soils					
Native vegetation					implied
Pest plants-diseases					
Fauna					
Fire risk zones					
Residential landuse					
Demographics (population, economy, etc)					
Conservation parks, etc land use					
Industry, mining, airfields, land use					
Agriculture land use					
Recreation-tourism land use					
Infrastructure-easements landuse					
Non-Aboriginal Heritage					
Aboriginal Heritage		?			
Landscape Quality					
Noise (<i>EIS focused on quality of life</i>)					
Score (of 19)	18 94%	10 52%	3 15%	7 36%	2 10%

Key: 1=environmental category addressed?; 2=adequate level of detail?; 3=brief description of future environment?; 4=reference to significance of environment?; 5=reference to sensitivity/ capacity of environment to absorb impacts?

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. For instance:

- reference to future environments was addressed in 15% of environmental categories;
- reference to the significance of the environment was made for 36% of categories;
- reference to the sensitivity or capacity was made for 10% of categories.

This made a combined graded of 21% of categories addressed in this criterion.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at B. A separate section of the EIS was dedicated to defining the study area, and a 'conservative' boundary of 10 kilometres either side of a centre line was defined. It was argued that no impact should extend beyond this area, and that any visual impacts became negligible beyond 2-3 kilometres of the transmission line. This area for environmental investigations was extensive at 700 square km and clearly made field work logistically difficult. There were however, some limitations given that the centre line in the study area was not representative of the corridor locations. In other words, the parallel corridor bordered on the extreme southern edge of the study area boundary (<1km) which did not cater for the 2-3 kilometre boundary defined by ETSA for visual impacts. Moreover, the area leading into Cherry Gardens had a relatively narrow study area. Study areas should have been defined equally around each proposed corridor for equal comparison of issues and environments. This was also subject to criticism in public submissions. Nonetheless, many of the environmental constraints (eg heritage) were identified for the whole of the study area which made decision-making transparent about which corridor performed better. It appears overall that ETSA managed to encapsulate most of the relevant issues, although with varying emphasis (see next Section).

Impact Assessment

Criterion 2.3.1: Have all the major direct impacts been addressed in the identification and description of impacts? This criterion was graded at B. Performance was very good in terms of reference to the main impact categories for this type of development. Of 21 potential impacts listed in Table (8), 19 were referred (90%). In simple terms, these were well addressed from most categories, with particular emphasis on visual and land use impacts. However, the grade was arbitrarily decreased from an A to B given that the impacts of locating a substation impacts in the Tungkilllo area were not adequately addressed (even if the assessment did only relate to the purchase of sites rather than actual construction).

Table 8: Performance in the identification of impacts in the Draft EIS for the Cherry Gardens Transmission Line Proposal

Impact Category	Addressed?
Human Settlements	
Land Values	
Production Values	
Land use: Agriculture	
Land use (eg airfields, industry, mining)	
Hydrology (water quality)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Electrical fields-health	
Noise	
Ozone Generation	
Tv & Radio Reception	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access	
Score: (/21)	90% (19)

Criterion 2.3.2 Does the description of impacts have an adequate level of detail? This criterion was graded at C. The level of detail necessary for a full assessment of the proposed transmission line was lacking for areas such as spread of disease and pests, electrical fields and health impacts, use of explosives in construction, noise impacts during construction, impacts on soil erosion, details on land values, and fire risks. Inadequacy in detail is highlighted by the presence of additional information on land values and electrical effects, for instance, within the DEP's Assessment Report (DEP October 1987: p19). The omission of detail in the DEIS on fire risks was also a concern in many public submissions given that electricity lines were a major cause of the 1983 Ash Wednesday bushfires which devastated large areas of the Adelaide Hills. However, the actual cause in the Ash Wednesday fire was related to smaller distribution lines rather than major transmission lines, and it was thus argued in the EIS that fire risks were not a cause for concern (ETSA April 1986: p86). This statement of low risk was accepted by the DEP's Assessment Report, but with further information provided. Nevertheless, a fire incident involving a 275kV line was noted at one of the public meetings. While fire may not be a substantial risk, this issue needed more detail, both to achieve a more informed assessment, and to reduce the level of public controversy. The concerns about the description of fire risks may have been simply been a case where the provision of more comprehensive information in the EIS may have served to alleviate controversy (ie the actual cause of the Ash Wednesday bushfires).

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts? This criterion was graded at E. This criterion did not perform as well as the description of direct impacts. The more complex interrelationships between impacts were not adequately illustrated in the text or on maps comparing corridors such as the interrelationships between presence of vegetation, topography, soil erosion and water quality; or the relationships between vegetation, topography and visual impact (although this latter was better addressed). Overall, secondary, cumulative, and indirect impacts were insufficiently detailed, implied or, in some cases, not even addressed. Exceptions included the indirect effects on tourism, the incremental effects of a parallel line, and the cumulative impacts of multiple easements on one property. The difficulty of evaluating the former was acknowledged in the DEP's Assessment Report (DEP October 1987: p21).

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. Overall, the evaluation of impact significance was limited, and was difficult to assess. Significance was often implied by the level of 'emphasis' in the EIS rather than by a systematic attempt at definition. It should also be noted that there was also some disagreement in the DEP's Assessment Report regarding ETSA's treatment of significance for particular issues such as tourism and recreation. Rather than a systematic attempt to address significance, subjective terms were also frequently used:

- magnitude was often described by 'minimal', 'negligible' or 'significant';
- direction by 'intrusion' or 'incompatibility' or 'conflict';
- geographical extent by 'proximity';
- probability by 'more likely' or 'potential for'; and so on.

As demonstrated in Table (9),

- magnitude of impact was addressed in 66% of impact areas;
- direction of impact was addressed in 61% of cases;
- geographical extent was addressed in 28% of cases;
- duration and frequency of impact was addressed in 9% of cases.
- potential reversibility of impacts was addressed in 4% of cases;
- mitigation potential was addressed in 71% of cases which is satisfactory;
- probability of impact was addressed in 19% of cases.
- public controversy was addressed for 14% of cases;
- thresholds of concern was addressed for 11% of cases;
- and uncertainty was noted in 9% of cases.

This made a combined grade of 29%. Another important point to note is that magnitude was also often determined, not by deviation from baseline conditions, but relative to alternative corridors ie 'greater disruption in Direction corridor relative to Parallel corridor'. This made it difficult to determine what the absolute level of impact would actually be.

Table 9: Performance in the evaluation of impact significance in the Draft EIS for the Cherry Gardens Proposal

	Spatial-Temporal				Alleviation-Probability			Thresholds-Certainty		
	1	2	3	4	5	6	7	8	9	10*
Human Settlements										
Land Values										
Production Values										
Agriculture									n/a?	
Airfields/industry										
Hydrology										
Non-Aborig. Heritage	implied									
Aboriginal Heritage										
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts	implied									
Electrical fields										
Noise										
Ozone Generation										
Tv/Radio Reception									n/a?	
Fire										
Wastes										
Pest Plants										
Soil Erosion										
Line Access									n/a?	
Score (of 21)	14 6%	13 61%	6 28%	2 9%	1 4%	15 71%	4 19%	3 14%	2/18 11%	2 9%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision making process for or against these alternatives been summarised and justified? This criterion was graded at B. Alternatives were raised at three different levels ranging from broadest to the more detailed as follows:

Broader Alternatives

Consistent with the DEP's project guidelines, ETSA made reference to broader alternatives for meeting the same objectives (eg reduced electricity consumption, use of alternative power sources). However, rather than attempting to assess these broader alternatives, a pragmatic justification was made about why many of the alternatives raised at public meetings, interviews and in written submissions were not addressed. These were rejected on the grounds that they were unrealistic and beyond the project proposal. It was argued that these alternatives were about broader changes to community lifestyles which were outside the scope of ETSA's role. Although broader energy options were evaluated in an earlier EIS (Northern Power Station), it was similarly discovered by ETSA that none were viable. It was argued in this respect that:

'[s]ocial commitment to energy conservation programmes and alternative energy programmes may influence the timing of subsequent ETSA developments but is unlikely to reverse the growth in demand for electricity and, hence, the need for system development in the interim' (ETSA April 1986: p22).

A proposal by the State Electricity Commission of Victoria (SECV) in the late 1980s encountered similar issues, although more directly within a 'scoping and consultative group' (SCG) in the EIA process. It was noted that:

'...the SCG has now held four meetings. It has become clear that a number of the SCG members, particularly the Conservation Council of Victoria and Latrobe Valley Community Forum representatives, are in part using the SCG as a forum to address broader energy issues such as demand management. While it has been made clear to these members that the SCG is not the appropriate forum, these members feel frustrated by the lack of opportunity to participate in the broader energy debate through a formalised process. However, by attempting to use the SCG to table their views, they are in fact slowing the EES process' (cited in Ridgway 1995: p254)

It is probably this which ETSA aimed to avoid. It is recognised that broad alternatives (eg energy demand management) are difficult to address in a project-based context where system planning has already been achieved, and the project justified and locked in by earlier policy or planning decisions. This highlights the need for Strategic Environmental Assessment (SEA) at the broader and earlier policy and plan level which was not being undertaken at that time, nor is it being fully addressed today. Overall, ETSA's rationale against these broader alternatives was transparent, and is accepted within the confines of the project level of assessment.

Alternative Schemes

ETSA was explicit about the 'no-go' option, and presented five alternative transmission schemes which are summarised in Table (10) in addition to the rationale for or against the scheme. Although five schemes were presented, not all possible alternatives were considered in the Draft EIS, and three alternatives were proposed later in public submissions. Schemes (2-5) were considered unacceptable by ETSA early on in the planning process, primarily due to significant cost constraints and technical inferiority. Schemes (2-4) were clearly the longest and most roundabout means of getting between points A and B, and undergrounding involved large expense. The preferred scheme (1) was obviously the most direct and shorter route and hence, the most cost-effective. The process of selection and rejection of the schemes was transparent, but primarily based on cost and technical factors. Moreover, the DEP in their Assessment Report stated that it was impossible to fully evaluate and compare each scheme because environmental detail was only evident for scheme (1) (DEP October 1987: p10).

Table 10: Alternative Schemes proposed by ETSA for the Tungkillo-Cherry Gardens Transmission Line (compiled from ETSA April 1986: pp23-28)

<i>Alternative Schemes</i>	<i>Explanation</i>
1. Tungkillo-Cherry Gardens (preferred scheme)	<ul style="list-style-type: none"> • achieves all objectives • direct double circuit connection • includes alternatives for route corridors and construction methods (direct option, parallel option, triple circuit option)
2. Tungkillo-Tailem Bend-Cherry Gardens	<ul style="list-style-type: none"> • achieves objectives • increased costs • increased line length less effective in technical terms
3. Tungkillo-Cherry Gardens via single circuit to Tailem Bend	<ul style="list-style-type: none"> • variation of scheme 2 with single circuit to Tailem Bend, and double circuit from Tailem Bend to Cherry Gardens • no advantages • although slightly cheaper than scheme 2, considered technically inferior
4. Use of existing lines from Para to Paracombe	<ul style="list-style-type: none"> • requires 275kV substation at Tungkillo to be constructed earlier than predicted • higher costs • technically inferior • does not provide physical separation of lines • power levels at risk during construction
5. Undergrounding	<ul style="list-style-type: none"> • extreme costs (eg for same length of line - 10km, depending on terrain, soils, etc, undergrounding was estimated at \$50 million+, whereas an overhead line would cost approximately \$2.5-3 million • high visual impact of transition between underground to overhead lines • technically 'undesirable'

At the same time, however, reference to these broader schemes does indicate to decision-makers and to the public that ETSA was trying to find the best option of many possible alternatives. It was an effort to make their internal decision-making processes more transparent. Moreover, ETSA's process of rejecting the alternative schemes was accepted by the DEP in their assessment report, and the evaluation of alternative corridors (see below) was based on environmental criteria.

Alternative Corridors

ETSA had investigated a number of possible corridors within Scheme (1) comprising the northern, direct, parallel and southern alternatives. Another route which was the most direct and shortest (ie a straight line between Tungkillio and Cherry Gardens) was rejected because it was environmentally unacceptable. Criteria for this decision involved:

- settlement proximity;
- effect on Scott Creek Regional Park;
- unsuitability of freeway crossings;
- high housing density; and
- amount of vegetation that would be affected.

Both the northern and southern options were excluded from further examination because the visual impacts on surrounding townships were considered too significant (Northern corridor), whilst the length of the line for the Southern option was not justified given its lack of advantages over other routes and given that it had comparable population densities to the other options. In this sense, decision-making was transparent, but the rejected northern and southern corridors were not illustrated on a map for evaluation, nor were any specific details presented, and the reader becomes solely reliant on the conclusions made by ETSA which made assessment difficult. Nevertheless, this is not a significant limitation given that the rationale was evaluated and accepted by the DEP in their Assessment Report (DEP October 1987: pp10-17).

Factors leading to the selection of alternative alignments which were assessed in detail in the Draft EIS were clear, and for the Direct Corridor, was predominantly based on cost and length factors, although settlement proximity and visual impacts were also considered in the selection of this corridor, particularly the northern route. ETSA noted:

'Clearly, the shortest route has advantages in terms of cost and, being shortest, potentially the least exposure. However, several towns and settlements lie between Tungkillio and Cherry Gardens. After consideration of all constraints, including Hahndorf and other settlements, the direct corridor takes the shortest available course by deviating south and passing between Hahndorf and Mount Barker' (ETSA April 1986: p29).

The factors leading to the selection of the parallel corridor were not as clear, but it appeared to be chosen due to the advantages of using an existing alignment. ETSA noted: '*The several advantages of building the new line along an existing alignment for over half of its length were sufficient to retain the parallel corridor for further investigation*' (ETSA April 1986: p31). However, these *advantages* were not explicitly defined which reduces the transparency of decision-making. Nonetheless, it was noted in the Draft EIS that:

'The Trust has pursued a philosophy of minimizing disruption to human settlements in its initial route selection. None of the routes under consideration passes through towns or settlement and the effects of the proposed development upon existing town centres would be minimal...' (ETSA April 1986: p659)

Criterion 2.42: Have alternatives been compared ranked in order of preference for each environmental impact? This criterion was graded at C-B. The ranking of impacts was attempted, but in a limited fashion. Conclusions at the end of each section in the comparison of alternatives were frequently made about which corridor performed better which made the assessment more transparent. A table which ranked impacts was also presented in the EIS to facilitate easier comparison between the two alternatives. The Table in the Draft EIS is reproduced in Table (11). No thresholds were defined and differences were subjectively defined with 'low-medium-high' attainment of ETSA's goals (eg reducing disruption to lifestyle). There was no attempt to weight the importance of each impact category relative to each other, although this was originally done by the consultants in a progress report to ETSA. This lack of weighting was deliberately done by

ETSA in recognition that any values attached to each category was subjective and would vary between individuals.

However, the value of the comparative table which ranked impacts was reduced given its confusing presentation with reference to the level of 'goal achievement' as opposed to level of 'impact'. Based on a quick reading of this table, it would appear that one goal is 'disruption to lifestyle' as opposed to *reducing* this disruption, and as a result here was evidence of misinterpretation in some public submissions. If it is assumed that the results in this Table refer to level of *impact*, then the Parallel Corridor tends to look slightly worse than was actually the case. Although criticisms of this ambiguity may be viewed as overly semantic, it is an important visual tool for comparison of alternatives by the public and the government, and thus should have been dealt with more carefully.

Table 11: Summary of Environmental, Economic and Technical Selection Criteria for the Cherry Gardens proposal (ETSA April 1986: p83; shading added).

ENVIRONMENTAL & TECHNICAL GOALS (Selection Criteria)	ATTAINMENT OF GOALS	
	Direct Corridor	Parallel Corridor
Disruption to human settlements - existing - future	High Medium?	High Medium?
Disruption to lifestyle	Low	Medium
Disruption to agricultural practices	High	High
Impact upon water catchments	High	High
Disruption to archaeological sites	High	High
Disruption to non-Aboriginal heritage	Medium	High
Clearance of vegetation/habitat	Medium	Medium
Disruption to recreational uses	High	High
Impact to tourism	Medium	Medium
Reduction of general landscape quality	Medium	Medium
Visual intrusion to residents	Low	Medium
System reliability	High	Medium
Statutory land use planning objectives	Medium?	Medium?
Economic considerations	High	Medium
Utilization of existing easements	Low	Medium
System development objectives	High	High

Mitigation & Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at C. Of 21 areas for mitigation presented in Table (12), 15 were referred to (71%). Omissions comprised:

- land-productivity values (dismissed as minor);
- agricultural impacts (as above)
- impacts on industry;
- noise impacts;
- ozone generation (negligible impact anyway); and
- tourism.

Types of mitigation measures adopted primarily related to avoidance and design. Others included education (eg of contractors about Aboriginal heritage), negotiation or consultation (eg access, pest plants management), screening (eg use of terrain and vegetation to screen visual impacts), and confine (eg potential for soil erosion). Not a significant amount of effort was proposed by ETSA in terms of 'active' management, but rather the approach relied on location and on encouraging natural regeneration.

Table 12: Performance in mitigation and monitoring in the Draft EIS for the Cherry Gardens Proposal (shading=addressed)

	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Settlements		A							
Land-Product. Values									
Agriculture									
Airfields, industry									
Hydrology		C N							
Aboriginal Heritage		E A							
Non-Aboriginal Heritage		A							
Vegetation		C N							
Fauna		A N							
Recreation		A							
Tourism									
Visual Impacts		A D S							
Electrical Fields		D C							
Noise									
Ozone Generation									
Reception		R							
Fire		D A							
Waste		T N							
Pest Plants & Diseases		A Neg							
Soil Erosion		A							
Access		Co R C Neg							
Score (of 21)	15 71%	-	0	0	2	1	0	0	0

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? This criterion was graded at E. As Table (12) illustrates:

- level of mitigation difficulty was not addressed;
- level of expense was not addressed;
- level of mitigation effectiveness was addressed in 9% of cases;
- level of certainty about mitigation outcome was addressed in 4% of cases.

This made an overall combined grade of 2% which is clearly unsatisfactory.

Criteria 2.6.2 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? Both of these criteria were unsatisfactory and graded at E with no reference to monitoring for any impact areas in the Draft EIS. Monitoring is a weakness frequently noted in the EIA process, and failure to include it in this case may have been a result of two factors: firstly, monitoring was not required by the DEP's project guidelines nor by legislation; and secondly, there was very little attention paid by environmentalists to ETSA's activities *after* environmental investigations have been completed and the final decision given. Thus, relative to expected performance of the time, it was not a significant issue. Relative to today's level of knowledge and community awareness, lack of monitoring is a serious issue. Despite the lack of inclusion in the EIS, monitoring activities were undertaken by ETSA during and after construction with rehabilitation of damage to the land resulting from construction.

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Methods were graded at D, whilst information sources was graded at C. In the latter case, there was good use of existing information for the description of the existing environment in terms of demographics (eg recent data from Australian Bureau of Statistics), the State heritage register, and existing research in the areas of vegetation, and heritage. Local land use plans were also consulted, although detail was limited in parts as noted previously.

Methodology and the use of original field work did not perform highly, although performance was better than the other case studies. Some original field work was undertaken (eg for vegetation surveys), but it was noted that detailed field work was not undertaken for other issues (eg Aboriginal heritage) due to the regional planning nature of the study which required 'broad and generalised' studies (ETSA April 1986: p16). It is acknowledged that the size of the study area made field work logistically difficult, but this made full assessment difficult, particularly given the lack of knowledge about Aboriginal sites and fauna in the region.

There was a brief description of the methods at the beginning of the EIS regarding the social survey, use of existing literature, demographic data, interviews and consultation. More should have been incorporated about survey methodology (perhaps in an appendix) given that a separate report had been produced by the consultants. Overlay maps and a computer programme developed by the DEP - 'viewshed analysis' for visual impacts- were also used to identify areas of significant environmental impact (but these were not discussed or presented in the Draft EIS). Many of the assumptions made for the methodological basis were questionable and were criticised in public submissions (eg study area and corridor size, sample representativeness, use and lack of weighting for comparative criteria). The DEP's Assessment Report also demonstrated concern about the social survey, and the DEP re-analysed the data based on an updated version of results provided by ETSA (DEP October 1987: p19).

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at B. With the exception of a conclusion and section on monitoring all sections were included. The summary was quite long, but provided an excellent review of the EIS contents.

Criterion 2.7.4 : Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at C. The arrangement of information was generally logical, except that the construction procedures should have been included with the proposal description as occurred in other case studies. There was also some inconsistency in presentation of mitigation measures. Not all of the mitigation measures were identified in the appropriate 'safeguards' section in the Draft EIS, and it was easy to overlook the other commitments made by ETSA (eg for non-Aboriginal heritage, recreation). Consistency of presentation was thus an issue. Although there was a table of contents, there were incorrect page numbers in the contents pages. An index may also have been useful given that some information (eg topography, soil) extended into other sections. It is in the interests of the proponent to highlight the location of all information for easy access by evaluators.

Criterion 2.7.5 : Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at C. Information was easy to read, although a bit disjointed in parts which also relates in part to the arrangements of the document. The document was written reasonably clearly; technical terms were defined in a glossary, and there was excellent use of figures to illustrate the major constraints and issues. The tables, although some ambiguities in places (eg comparative table of alternatives; comparative table of vegetation affected/traversed) were also good. A summary table of each mitigation measure, and predicted level of effectiveness would also have been useful. Conclusions from the social survey were sometimes difficult to follow in the absence of a summary table of overall results early on. Referencing was also poor in some cases, particularly when discussing health impacts and current research. This was generally a good performance but with some concerns about disjointed presentation, poor referencing in parts, and some ambiguities in the table comparing alternatives which caused confusion in public submissions.

Criterion 2.7.6 Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This criterion was graded at B. The statement was presented as an integrated whole with adequate reference in

the main text to appendixes and, the information from separate reports (eg on vegetation, social survey, aboriginal heritage, vegetation) appear to be well integrated into the text. However, more information from these reports (eg the social survey) should perhaps have been incorporated into the Draft EIS as an appendix. Although this could also be true for the Aboriginal heritage report, heritage sites were not included so that the sites could remain protected. There could also have been greater reference to or discussion of material in the appendixes (eg for fauna), but these were only minor limitations.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. The Draft EIS was a good length. However, it was a bit wordy in parts, and although longer than subsequent EISs, the amount of useful information was not substantially greater. In short, the document was not too long or voluminous, nor too short, but detail was lacking in some areas and in some, was superfluous (ie its relevance was not defined adequately).

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation? This criterion was graded at C. The emphasis of information in the Draft EIS was generally good, but there was an overemphasis on visual impacts. While this was a significant issue it was addressed in several impact categories (eg visual impacts, lifestyle, heritage, tourism, settlements, landscape quality). Apart from this, the emphasis seemed generally good, with more detail on the most significant issues, and less on the least significant issues (eg noise, ozone). The very fact that information in the EIS pointed towards the non-preferred option, indicates that the information itself was non-biased. Rather, it was ETSA's final conclusions that appeared biased (see next criterion).

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS (if the information itself lacked bias)? This criterion was graded at D. The DEP's Assessment Report agreed with many of the conclusions raised in the Draft EIS such as heritage impacts, but disagreed with others (refer controversy section). The overall conclusions in the Draft EIS about the corridors were questionable given the emphasis on the preferred option despite evidence pointing to the parallel corridor. It was stated in the EIS:

'In considering the merits and disadvantages of each corridor and option, the Electricity Trust of South Australia indicates its preference for the Direct Option in the Direct Corridor. In drawing this conclusion, it considers that there is no overwhelming reason or combination of reasons why a more expensive and technically inferior development should be constructed in the parallel corridor' (ETSA April 1986: pxii).

ETSA's conclusions about the preferred option were based on value judgements about the importance of economic and technical factors. Yet ETSA was unwilling to assign weighting of importance to other 'environmental' factors because they were based on value judgements and would invariable differ (refer earlier review of alternatives). While the cost-technical factors are important, they too did not appear to significantly differ, and in fact would not be significant or insurmountable given that ETSA presented this as an option in the first place. There was also some indications that the information in the Draft EIS was manipulated to improve the look of the Direct Corridor relative to the parallel one given some discrepancies between the original consultant's conclusions (not presented in the EIS) and the EIS conclusions. It is unclear whether this was simply a revisal of incorrect information, and/or a direct manipulation to improve the preferred corridor. Given that all changes were in the direction which improved performance for the preferred corridor, the intention of the alterations is questionable, but conclusions should not be assumed in the absence of full information. Overall this criterion did not perform well given ETSA's value judgements about cost factors but unwillingness to assign weighting to other issues, and given that the information in the EIS pointed towards the parallel corridor but ETSA concluded that the other option was better.

Level of Controversy about EIS quality

Although the number of public submissions was not high the level of criticism and emotion was. Many of the assumptions posed by ETSA in the EIS were questioned such as methodology, weighting of cost factors, study area boundaries, definition of significance, and equity issues. Bias was a frequent concern, particularly in terms of ETSA's emphasis on financial factors in the

conclusions. It was noted in one public submission: *'after reading the Draft Environmental Impact Statement, I must express my surprise at the conclusion of ETSA.'* Other submissions noted:

'It...appeared that SEA [consultants] were not being impartial as perhaps they should have been when conducting the EIS. It seemed more of doing and reporting what they were told to do and report.'

'We are concerned at the apparent lack of objectivity in the reasoning employed by the proponent to select its "preferred option"...The treatment of environmental benefits is, in itself, open to question in terms of objectivity in that, in both the draft EIS and Supplement, every effort appears to have been made to explain away or diminish the significance of the apparent advantages of the Parallel Corridor over the Direct Route...'

'...conclusions made from the statistics presented, remain in our opinion, either irrelevant, inconclusive, incorrect of given inadequate importance.' [ETSA's conclusion] '...is again blatantly ignoring and has skilfully endeavoured to change or diminish emphasis on the important issues'.

Significance of individual impacts was also a concern including the low rating on general agricultural impacts. In terms of specific agricultural impacts, for instance, ETSA rated the impacts on aerial spraying as low, but it was noted in one public submission that overhead wires were perceived as the *'greatest single hazard and the greatest cause of accidents in their industry'* (based on public submission comments from Aerial Spraying Co comment 1986). This is supported by a recent event which made media headlines, and which involved a collision by a crop duster with overhead transmission lines and the near-fatal electrocution of a young girl. Although this was considered a 'freak' accident, the very fact that it occurred highlights some of the potential impacts of overhead transmission lines which were discounted as negligible by ETSA (no risk assessment was undertaken in the EIS). Nonetheless, the DEP's Assessment Report agreed with ETSA's conclusions, and acknowledged that aerial spraying was rarely conducted in the study area although it may increase (DEP October 1987: p19; 30).

There were also several requests for additional information in the public submissions which illustrates inadequacies in the Draft EIS (eg maintenance details, climate, tourism, heritage, broader alternatives, fire risks, triple circuit scheme, security of supply, impacts on aerial spraying, etc). Inaccuracies in the information and the general quality of the EIS were also cited as issues of concern (eg inaccurate areas of vegetation defined, ambiguities, inconsistencies in conclusions). The possibility of weed invasion was also a concern, and the level of overall impact on vegetation was also questioned: *'Any deleterious action impinging on the small percentage of remnant vegetation remaining in the Study Area would have a disproportionately large impact'*.

Government controversy was not as emotional or critical, but several concerns about the EIS quality, some of which have already been noted, were evident in the DEP's Assessment Report and from another government agency. In the latter case, the information about health effects of the line in the Draft EIS were criticised as *'inconclusive, and contradictory'*. The DEP criticised the EIS for inadequate information on tourism impacts, landscape quality, soil erosion potential; methodology for the social survey; information on health effects, and ETSA's conclusions about recreational impacts, planning objectives in the Development Plan, and the preferred option. At the same time, information in areas such as heritage, recreational impacts, and visual impacts was considered adequate for assessment. One local council also criticised the EIS for failing to address fire risks adequately.

OPENNESS AND COMMITMENT TO CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B-A. According to ETSA, *'the Trust has never before undertaken such an intensive public involvement exercise for an environmental assessment'* (ETSA December 1986: p11). The process was managed by the consultants with input from ETSA representatives when required (eg at public meetings). Once the route alternatives had been identified, there was opportunity for landowners to influence the decision-making process for route selection during and after the Draft EIS preparation. Attempts were made, through the consultant, to contact all possible landowners and the general public via advertisements, and significant time was expended

in undertaking personal interviews with many of those involved in the social survey. Despite the presence of significant controversy about the consultation process (see below), ETSA appeared genuine in their efforts to contact the community and to listen to their concerns. ETSA stated in an internal document:

'ETSA can never please everybody when trying to build major cross-country power lines. Even the most public spirited property owner can provide good reason why a proposed power line would be best located on public land, or failing that, on a neighbour's property. The best we can ever hope for, is that our customers believe that we were consistent, honest and caring when making difficult decisions or carrying out work on or near their properties.

A degree of commitment and genuineness was demonstrated by their willingness to go beyond legislative compliance (ie early consultation), the personal interviews conducted with individuals, and the willingness to learn from, respond and adapt to difficult circumstances (see next Section).

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at D-C. ETSA was open to:

- assessing a range of alternative schemes in the Draft EIS (although not on environmental terms);
- considering alternative alignments around a heritage item (Nixons Mill) to minimise impacts on Hahndorf and the Mill (found to have high environmental impacts by the DEP);
- to alternatives raised in public submissions (eg route through the Hills Face Zone);
- to an alternative raised later in the process by the Minister for Mines and Energy (ie upgrading existing Mobilong to Cherry Gardens 132kV line to form part of a 275kV line, which was also discussed in the Supplement); and
- an alternative, which was a slight alteration to the route (involving extension of the triple circuit line) recommended after the final decision, which was adopted by ETSA (refer EIA Process Summary).

However, ETSA was not open to the no-go option or to assessing broader alternatives relating to demand management. In the former case, the no-go option was considered in the Draft EIS, but was treated only briefly. ETSA acknowledged this in the Supplement:

'It is accepted that the benefits of not proceeding with the proposed development have been considered only cursorily in the draft EIS because the Trust believes that there is overwhelming reason to recommend that the project proceed. On this point, at least six respondents agreed that the case for the project had been argued and most of the respondents did not query the need for the project, but rather the route' (ETSA December 1986: p15).

The no-go option could not have been a serious consideration given that the proposal had been locked in by earlier decisions made at the time of the Northern Power Station EIS, and the interconnection with Victoria. Even if the environmental impacts were significant, ETSA was under considerable pressure to meet these interconnection requirements. The refusal to consider broader demand management at the project level is also understandable, given the government's commitment to the project. What was of major concern was ETSA's lack of openness to seriously considering the parallel option in light of the substantial public controversy.

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration with conceptual planning (phase i):** This criterion was graded at E. Environmental factors did not play a major role in the initiation of the project. In a sense, the 'environment' was added-on to a preformed decision, and development of the project was based on a need identified as a result of construction of the Northern Power Station.
- **Integration Alternatives Planning (phase ii):** This criterion was graded at B-A. More detailed environmental assessment was initiated in phase (ii) with the employment of the consultants in 1984, and the formal requirement for an EIS, although the dates of these phases are estimates only. Integration with this phase of planning was good, particularly given that the environmental investigations commenced nearly two years prior to the official

requirement for an EIS by the Minister. There also did not appear to be a separate and simultaneous planning phase for other issues such as economic or technical factors which also signals good integration. There was however, some separation between the internal 'task force', the EIA coordinator, and the EIS consultants, although information is limited in this regard. Nonetheless, a high level of communication and coordination between these participants indicates a close integration between planning and EIA.

- **Integration Design (phase iii):** This criterion was graded at B. Investigations by the consultants decreased dramatically after the preparation of the Supplement Report, but minor work did continue with input by ETSA into the Assessment Report, investigations into and minor alterations to the final route, consultation with landowners, and vegetation surveys in 1987 and 1988, and monitoring and property restoration during and after construction. Thus, the formal EIA investigations were not officially *integrated with* design, but rather *informed* the design process which still indicates a degree of integration, particularly arising from the conditions attached to the final decision. The only limitations relate to the lack of accountability and follow-up at this stage.
- **Integration Construction:** This criterion was graded at D-C. Despite all endeavours to alleviate the impacts of the proposal during the EIA-planning process, time pressures resulted in the contractor causing environmental damage as they aimed to complete the project to meet interconnection dates (see later text). Thus, not all of the environmental information, or at least the requirements to alleviate damage as much as possible, successfully transferred to the construction stage.

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at B. The initiation of consultation for the T-C proposal was relatively early in the formal EIA process, but in the overall context of proposal inception, it was relatively late given that several corridors had already been eliminated in previous technical and economic studies, given that the need for the line had been identified in the late 1970s, and given that there was no public involvement at the scoping stage (project guidelines) although this latter was not a legislative requirement. While it may thus appear that EIA and consultation were add-ons, in practical terms it is difficult for proponents to know when to formally notify the community, or to conduct more formal and extensive studies before obtaining preliminary siting information based on environmental, economic and other constraints. The ideal is to involve the public early so that they may influence the proposal. However, if this is attempted, the proposal is often only at a vague and conceptual stage, lacking final design details and this makes the commenting process difficult. ETSA took a risk and revealed the proposal before the fine details were available. It was noted by SEA consultants:

'The assessment of environmental impact is at a very preliminary stage. Aware of the sensitivity of the proposed development, the Trust has decided to get early public reaction and involvement, hence the organisation of public discussion evenings'.

Thus consultation was early in that it was initiated during the preparation of the Draft EIS and was not left until after its public release as required by law. Although good intentions were evident, this early release backfired on ETSA and there was significant public controversy about the consultation process (see below).

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at C. Of 11 possible consultation techniques listed in Table (13), 6 were utilised by ETSA's consultants. These were at the lower end of the participation scale and related to 'consultation' rather than higher levels of joint planning. Two public meetings were conducted on 10 December 1984 (80 attended) and on 11 February 1985 which were advertised via direct correspondence to interested parties and by advertisement in the local media (ETSA April 1986). A social survey was also conducted in March and April 1985 as an information-generating exercise to inform the preparation of the Draft EIS. This survey involved 186 landowners along the three routes, which was considered to be a sample representative of the whole study area (ETSA April 1986). The effort devoted to this survey appears to be significant given that most were administered by personal interview, with an 84% response rate (including mailed surveys). There were however, some criticisms of the analysis as

noted previously. The social survey was extended as a postal questionnaire to individuals interested in commenting, but who were outside the proposed routes. Several letters were also received outside of the normal formal public submission periods.

Table 13: Public participation techniques adopted by ETSA for the Cherry Gardens Proposal
(based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

Approach	Public Power	Participation Techniques	Adopted?
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA's case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)? This criterion was graded at B-A. There did not appear to be any limitations in transparency of information. Information was supplied to the public from an early stage with notification of EIS production at the initiation of the social survey, including reference to public meetings for which maps of the corridors were provided. Information in the Draft EIS appeared generally consistent with internal correspondence and documents in the project files, although there were some exceptions. Nonetheless, information in the Draft EIS allowed readers to make their own judgement about which was the better corridor option (with the exception of the schemes). This was a problem in the later Hummocks proposal where a lack of transparency made this assessment difficult. Summaries of public submissions in the Supplement were also transparent and enabled the assessors to see the main concerns at a glance. No attempts to hide these concerns or other information was apparent. Moreover, an interconnection newsletter was produced and circulated by ETSA to landowners to keep them updated about the survey and construction process.

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly? This criteria were unable to be graded. Resources dedicated to the environmental investigations appeared flexible, and were increased when the consultant requested more resources to conduct further studies in response to public controversy. Additional resources were also dedicated to preliminary design work for southern route II (originally not planned for), and property restorations after construction (see below).

Time frames for the planning and EIA process experienced significant and unavoidable delays due to public controversy, but no shortcuts appeared to have been taken for the environmental investigations stage. This is despite the fact that ETSA was highly concerned and pressured to meet the interconnection date with Victoria. Originally, environmental approval via the EIA process was planned to be completed by April 1986, but it was not until February 1988 that approval was given. Partly as a result of this, ETSA shortcutted the construction stage to meet the tight construction dates. No attempts were made to alter the construction date to allow for the unforeseen delays in planning. Ironically, ETSA believed that these delays resulted in greater environmental damage in the Adelaide Hills because contractors were pushed to finish during

winter months. This resulted in negative publicity for ETSA, and a later investment by ETSA of over one million dollars to rectify the damage.

In other words, delays in the EIA process were associated with the best of intentions by both the public and government (ie to minimise impacts), yet these delays actually exacerbated, although not caused, the impacts of construction. Because of this, it was recommended by ETSA that '*...every endeavour be made to shorten the time taken for environmental approval of transmission projects*', and that procedures for survey and construction be similarly examined. At the same time, ETSA recognised that:

'While this is highly desirable, the growing concerns of the general public...and the opposition from some people to any transmission lines, suggest that the path from Draft EIS to Ministerial approval may well become longer, not shorter. If we are not able to start the preparation of the EIS at an earlier time relative to the required completion date, then fast tracking of the post-approval procedures, ie. survey, design, tenders, construction, will become a fact of life.

Greater flexibility by ETSA in terms of construction time frames, together with earlier commencement of environmental investigations, may have alleviated the costs of restoration and adverse publicity. Although the time pressures on ETSA for this project were external, flexibility and contingencies should be built into the process by *all* parties involved in interconnection proposals of this nature. This problem appeared to be acknowledged by some officers within ETSA who initially showed scepticism about working towards a fixed time table, but it was a significant motivating factor for high performance by ETSA staff.

Level of Controversy about Openness

As for controversy about EIS quality, the level of public controversy about the consultation process was high and emotional. ETSA's initial approach to external consultation resulted in several delays, and challenged the credibility of both ETSA and the consultants particularly due to the lack of ETSA representation at the first public meeting. ETSA and their consultants failed to notify some affected individuals, and some criticised the '*low key publicity*' associated with the release of the draft EIS. The first public meeting, which was attended by 80 people, was a disaster for ETSA, the consultants, and the community, with a breakdown in communication. At this meeting, significant community hostility was evident about the proposal, the lack of detailed information provided, and the lack of ETSA representatives. The meeting was described by some as a '*waste of time*', a '*complete and total shame*', and '*a public relations exercise...*'. The consultants were also referred to as '*fall guys*' and '*public relations people*'. One submission noted, for instance:

'I must object to the presentation of the whole scheme. From the outset SEA, and ETSA I would...imagine, did not want the public to know what routes were under consideration. I refer to the first public meeting held on 10 December 1984...Throughout the whole meeting there were requests to see a map which showed the routes in the corridors under consideration. These requests were met with a "no map is available"... To everyone's surprise,...there was a map...The lack of senior ETSA personnel at this meeting and the attempt to rush the next meeting only furthered the public's lack of trust in both SEA and ETSA. It seemed to me the whole thing had to be rushed through before Christmas in the hope that the public would tend to forget it.'

Requests were made for ETSA representatives at the next meeting, together with an independent chairperson such as the local magistrate. The second public meeting, with 160 people, was also a public relations disaster, with 'heckling' and 'booing' from the audience, but was more constructive than the first meeting. A review of 18 of the social survey questionnaires indicated that 88% of respondents believed that they had not been adequately informed about the proposal. With the exception of one, all of these individuals had attended the public meetings.

Other issues of controversy included the confusion or lack of awareness about the proposal by new landowners, which was also of concern to ETSA; criticisms about the postal questionnaire because it didn't allow the full expression of individual concerns, and ignored characteristics of particular properties; a lack of direct communication from ETSA between the requirement for the EIS and the EIS release; and the timing of consultation. However, one submission appeared

satisfied about ETSA's commitment to the consultation process. It was noted: '*I have at this stage taken comfort from the conciliatory and co-operation comments of your reps...*'

No government controversy appeared evident except for the DEP's concerns about analysis of the social survey.

PROPONENT RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted based on the available information and adequate rationale given for the selection of the preferred option? This criterion was graded at E-D. In terms of the best alternatives scheme there was insufficient information in the Draft EIS to assess which was the best, but given the obvious and major cost differences, scheme (1) appears to be the best. Within Scheme (1) the parallel corridor appears to have a slight advantage as indicated in ETSA's ranking. Based on information in the Draft EIS, I reanalysed corridor performance (refer Table 14). Performance again was slightly better in the parallel corridor, but not substantially different. However, if an attempt had been made to rank the significance of the issues which performed less well in ETSA's preferred option (ie tourism, heritage, disruptions to communities), it would have become clear that the parallel corridor performed better.

Table 14: Assessment of corridor performance based on information in the Draft EIS for the Cherry Gardens proposal (shaded represents better option)

Impact Area	Alternative	
	Direct	Parallel
Settlements	no apparent difference	
Lifestyle		
Agriculture	Little difference	
Water Catchments	no apparent difference	
Aboriginal heritage		
Non-Aboriginal heritage		
Vegetation clearance	no major difference	
Fauna and conservation	no differences noted between corridors	
Recreation	no apparent difference	
Tourism		
Landscape quality		due to longer length
Visual impacts	Difficult to assess	
System reliability		
Economic considerations		
System planning objectives		

From ETSA's point of view, the direct corridor was better because it was shorter, cheaper and technically better as also indicated by the high attainment of goals for economic considerations and system reliability. ETSA was of the opinion that there was little to differentiate the corridors and that they should not have to construct a more expensive and technically inferior line (ETSA April 1986: pxii). Despite significant controversy, ETSA had made their decision early in the planning process to support the Direct Corridor and planned to stick by it. It was proposed to demonstrate as late as 1987 that the preferred route had lesser environmental impact than the alternative, which was not the case. Similarly, it was argued by ETSA in the Supplement to the Draft EIS:

'Having carefully considered the responses made by public and government submissions to the Draft EIS, ETSA remains of the view that its preferred option - using a Northern Route in the Direct Corridor - should be favoured on the grounds that no overwhelming environmental

constraints have been raised to this development and that it represents a significant cost saving over other options' (ETSA December 1986: p6).

This attitude does not leave much flexibility for change. Thus, it appears that ETSA did not appear to adopt the best option in the Draft EIS. The fact that ETSA's preferred choice was not the best option was indicated (i) by the public controversy, and (ii) given that the DEP did not agree with ETSA's preferred option and were basing their opinion on factors other than cost and technical ones. Despite ETSA's adamantness that the direct option was the best option, they were required by the Minister of Environment and Planning to adopt the alternative parallel corridor. This appears to be an indication of the EIA system working with strong evaluative and public control. In hindsight some officers within ETSA also concluded that this was probably the wisest decision (see later criterion on broader learning).

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at E-D. Factors such as technical and economic reasons clearly outweighed environmental and individual concerns in the mid-later stages of the EIA process. Although other alternatives were investigated, it was stated by ETSA that the: '*...shortest and most economic route should be pursued as the most favoured and every effort be made not to stray too far from this route*'. It was also noted by ETSA's consultants that:

'Whilst the environmental impacts of a route in the "parallel" corridor appear to be less than route in the "direct" corridor, cost factors weight the balance in the other direction. It is appropriate that these facts be presented to the public and government for considered judgement.'

ETSA's emphasis on cost criteria differed from that of the DEP which used four environmental criteria as the most significant for their assessment comprising, vegetation, tourism, visual amenity and European heritage. Although it was recognised by the DEP that cost factors and technical issues between alternative options were significant, they had minimal influence on the final recommendations. The DEP argued that costs were not significant in the broader context of expenditure on the interconnection, and that problems with technical feasibility of the triple circuit lines was related to 'inconvenience' rather than an 'absolute technical impediment' (DEP October 1987: p72). This attitude was of concern to ETSA.

The emphasis on costs by ETSA is understandable given ETSA's conclusion of no *significant* difference between corridors, and their obligations under their Act for efficiency. The proposal planning was also commenced shortly after an economic depression which may have influenced attitudes towards costs. Nevertheless, ETSA's conclusion about economic importance was based on a value assumption that differed significantly from that of the local community and the government. It is possible that the biophysical environmental impacts may have not been *significantly* different between Corridors as noted by ETSA, yet social impacts (eg quality of life, tourism, heritage) and associated public controversy certainly were. ETSA was so convinced that its decision was the right one, that as noted earlier, attempts were made to influence the outcomes of the DEP's Assessment Report which were unsuccessful in altering the outcome.

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified (process changes)? This criterion was graded at B-A. Process changes or responses to external comment appeared to be more frequent than for *project* changes. Given that SEA consultants were actively and directly involved in the process of investigations and consultation, they appeared to have a significant influence on changes to the process where necessary. This was particularly the case when their 'credibility' (and ETSA's) was severely jeopardised by management of the first public meeting, which resulted in several strong letters to ETSA and the adoption of some recommendations. It was noted that '*external/public relations were strained and tested to the limit by the interconnection transmission line projects*', particularly for this proposal where public involvement became '*emotional and illogical*'. Efforts were probably devoted towards modifying the EIA process in order to alleviate public controversy. Procedural adaptations included for instance:

- changes to the presentation of alternatives in the EIS (consultant's recommendation to ETSA). Originally it was planned to present only one preferred option in detail, but due to the level of public controversy identified early in the process, the plan was revised to consider two alternatives in equal detail. This was significant in that it entailed schedule changes, further

resources and further studies and personal interviews with affected landowners by the consultant;

- responsiveness to public requests for ETSA representatives at public meetings and a total of 5 officers were present at the second meeting. An independent chairperson was not however, present, and ETSA's southern regional manager was chair;
- updates of the project in the media when public concerns became evident about the lack of notification to new property owners, or general progress information;
- Where the public noted that their concerns had not been addressed, ETSA requested that they make a late submission which would be considered in the Supplement to the EIS;
- further investigation of route deviations recommended by the DEP to minimise impacts on vegetation and around heritage items (ETSA 1986; DEP 1987);
- further investigations into three alternative schemes raised by the public and the DEP which limited the impacts to existing easements (ie upgrading existing Cherry-Gardens-Mobilong line to 275kV, new 275kv line parallel to Cherry-Gardens-Mobilong line, Tungkillo-Cherry-Gardens via Mannum and Mobilong Substations) (DEP October 1987). These options were eventually discarded for cost and technical reasons (eg required reconstruction of several substations) following informal discussions between ETSA and the MEP (DEP October 1987).

The Supplement to the EIS also provides a good indication of responsiveness at this level, and ETSA's responses to public and government submissions are summarised in Table (10). ETSA was straightforward about the criticisms raised in submissions, and did not appear to hide or gloss over concerns. Issues and some inadequacies were acknowledged, and there were attempts to clarify details in many areas (eg maintenance procedures; compensation; broader context of demand prediction, albeit lacking in general statistics for southern areas). ETSA also acknowledged that the no-go option was treated cursorily, but highlighted the strong need for the project. Other procedural changes or responses, albeit minor, included:

- additional research (eg impacts on property values; tourism; vegetation survey *after* the EIA process);
- further consultation with other organisations (eg with E&WS, Department of Tourism; Highways Department, spraying contractors); and
- new or amended figures or tables included (eg summary table of 'unavoidable' impacts for each corridor, property distribution on each route, location of houses within 1000m, heritage items in broader area, illustration of rejected routes, and vegetation).

Much of the additional information was minor and simply justified their original decision, and/or aimed to improve mitigation. Moreover, most of the issues raised in public or government submissions evoked minimal or no action by ETSA in the Supplement Report, beyond that proposed in the Draft EIS (refer Table 15). ETSA also unsuccessfully attempted to appease hostility at the public meetings (ie by justifying the level of information due to the preliminary nature of process and use of broad corridors).

Overall, ETSA appeared very responsive to areas which required more significant changes to the environmental investigations and consultation process (eg additional alternatives, ETSA representation), and were responsive to a lesser degree to the public submissions in the Supplement (eg provision of further information, further consultation). The only concerns related to the fact that much of the additional information simply served to rejustify their original conclusions.

Table 15: ETSA's response to public submissions on the draft EIS for the Cherry Gardens proposal (compiled by the author from ETSA December 1986)

Issue	ETSA's Response
Preliminary Studies & EIA Context (p7)	ACTION: none PROPOSED ACTION: none ETSA's COMMENTS: Noted preliminary planning phase in early 1980s, but decision still flexible; restated proposal justification; noted lack of detailed field investigations at preliminary stage - only conceptual
Use of Corridors (p8)	ACTION: none PROPOSED ACTION: none COMMENTS: Justified lack of field survey of corridors for cost and efficiency reasons. Final line design process very expensive, and inefficient if all alignments are designed for EIA, yet only one chosen. Use of 'final' alignments also would not add much to the process, and 'individual details may cloud the broader planning issues..' (p8). '...selection and evaluation of alternatives...has been based in regional planning criteria to ensure that individual interests do not obscure the broader community interests' (p8). Corridors facilitate later design flexibility.
Width of Corridors (p8)	ACTION: none PROPOSED ACTION: none COMMENTS: Justified widths to land use constraints (eg high density residential areas). Agreed that caution is required in interpreting variable results, but also noted that changes would not have added greatly to the assessment.
Combined data for Southern Corridors (p9)	ACTION: new table of distribution of properties on each route (indicated that most on northern route - the preferred route; Southern Route II considered the best) PROPOSED ACTION: none COMMENTS: Justified combination of corridors in the study because part of parallel corridor (southern routes) ran on parallel easement, and issues were common to this length (eg residences, visual impacts, etc).
Assessment criteria & weightings (p10)	ACTION: new summary table of 'unavoidable' impacts for comparison of routes PROPOSED ACTION: none COMMENTS: Justification given: No weighting was provided in EIS to facilitate independent judgements from external parties. Recognised need for variety of opinion, but noted that everybody will be prejudiced based on perspective. Confidence limits noted as problematic. Conclusion: no need to further dissect information in comparative table; will not add to process, and new summary table of unavoidable impacts will aid judgement.
Earlier Public Consultation (p11)	ACTION: none PROPOSED ACTION: none COMMENTS: Justified why consultation not conducted earlier: Most extensive public consultation process ever undertaken by ETSA for EIA process. Earlier involvement in the early 1980s would have 'needlessly' involved more people when the project was not well defined. Would simply have added longer period of uncertainty, and would not have added much to the assessment process. Outdated addresses may explain why some not informed. Social survey identified major impacts and influenced scope and emphasis of the study, but were discussed in impersonal manner. Conclusion: <i>"It is inevitable that individuals...may find that their personal concerns may not be paramount when weighted against those of a neighbour of the community at large"</i> , but concerns were noted by ETSA (p8)
System Planning Reasons (p12)	ACTION: none PROPOSED ACTION: none COMMENTS: Justification for proposal re-emphasised in terms of system reinforcement, demand growth, reliability, security, interconnection, new power station connection (for 1990s).

Prediction of Demand (p12)	<p>ACTION: provision of more detailed information PROPOSED ACTION: none (continuing existing forecast practice) COMMENTS: Clear explanation of technical terms for peak load demand (how much used), and energy supply (how much used over what period of time). Noted demand and energy growth rates may differ. Energy may be used for less time (reduced energy supply), but by more people during peak periods such as winter(peak load demand). Long lead times required for planning. Forecasts made 15 years in advance (and biannual reviews). Refined in line with reducing growth in electricity demand due to lower economic growth rate, higher prices, increased conservation awareness, and more efficient appliances. ETSA's forecasts noted as accurate by Future Energy Action Committee in 1984.</p>
Load Management Initiatives (broader options)	<p>ACTION: none PROPOSED ACTION: continuing existing initiatives occurring unrelated to the project COMMENTS: ETSA already involved in load management and increasing electricity use efficiency (eg efficient management with off-peak reduced rates). Working with Department of Mines and Energy (DME). ETSA involved in government's 'Energy Demand Management Strategy' examining impacts of energy conservation, substitution and load shifting. DME involved at broader scale of education and information programmes (eg Energy Information Centre), and supported with educational resources from ETSA.</p>
No-Project Option	<p>ACTION: none PROPOSED ACTION: none COMMENTS: Acknowledged submissions which noted that the benefits to broader community of not having the line was not considered (no capital expense, no environmental impact, and job creation to education re: energy use). ETSA accepted that this had been treated only cursorily, but noted that there was 'overwhelming reason to recommend that the project proceed' (p15). Restated rationale.</p>
Route through Hills-Face Zone	<p>ACTION: new figure showing routes rejected earlier in the planning process PROPOSED ACTION: none COMMENTS: Route proposed in submission. ETSA noted alternative. scheme already considered through HFZ (Scheme 4), but noted as inferior.</p>
Route via Mannum and Mobilong	<p>ACTION: none PROPOSED ACTION: none COMMENTS: Noted as undesirable because of significant increase in length and cost</p>
Parallel Corridor	<p>ACTION: PROPOSED ACTION: COMMENTS: Acknowledged greater support for Parallel corridor, but noted that some properties would have 2 easements (60 residents) as a result of this corridor. Noted that Sth Route I opposed by 67 residents in Harrogate. Noted considerable building activity since route was selected - now very constrained and difficult to implement. Noted that most respondents favour Sth Route II (most are residents on Nth route, but many also have no direct property interest). Conclusion: Sth Route II still inferior. Conclusion about Triple Circuit - too costly and operating limitations.</p>
Human Settlements	<p>ACTION(s): New figure - location of houses within 1000m on routes based on aerial photos and new field inspections. High degree of confidence noted, with possible omissions. More details. PROPOSED ACTION: to locate towers to minimise visual impact within 'reasonable cost and technical feasibility'. Not a new action - this was also noted in EIS. COMMENTS: ETSA's survey agreed that greater density and smaller properties in their preferred option, but ETSA also noted that number of easements to be registered over private properties was equal between Direct and Southern Route II. Noted distance is not the only factor in visual impacts (topography, vegetation), although no attempt to link these factors in a diagram/map. More detail provided on townships (Mt Barker, Littlehampton, Harrogate, Wistow), and acknowledged potential for constraints on future development (including under new SDP for Mt Barker/Littlehampton produced after EIS publication which prevents subdivisional development in growth areas). Although ETSA acknowledged that the line may make area less attractive, it was concluded that the line in preferred corridor would 'not significantly reduce the availability of land for residential development', and the visual impact could be managed by tower positioning.</p>

Property Values	<p>ACTION: further research by property consultants and valuers to supplement information in EIS</p> <p>PROPOSED ACTION: compensation (as stated in EIS) (refer also below)</p> <p>COMMENTS: research on comparison of sales of smaller rural areas affected by lines with non-affected properties. No evidence for significant impact on larger holdings. Analysis of smaller properties inconclusive, but no evidence to indicate significant value reduction (except in extreme cases - ~5-10% reduction). Concluded that compensation was calculable and sufficient mitigation.</p>
Impacts on Lifestyle	<p>ACTION: None</p> <p>PROPOSED ACTION: As for EIS; proposed compensation and visual mitigation</p> <p>COMMENTS: Noted 21 submissions concerned about lifestyle impacts. Many stated preferred Northern Route had greater impact. Agreed in ETSA's social survey. Accepts the potential of line to diminish lifestyle quality in terms of visual impact and physical imposition of towers, and limitations on developments within easements. Visual impact manageable to a degree. Compensation proposed to alleviate burdens. Rejustified why EIS did not focus on the effects on individual effects property owners because individual impacts dependent on tower locations.</p>
Agriculture	<p>ACTION: further contact with spraying contractors</p> <p>PROPOSED ACTION: None</p> <p>COMMENTS: Re-emphasised that impacts on agriculture not generally significant, and also noted that any effects can be compensated for. Contact with spraying contractors confirmed that impacts on aerial spraying minimal. Noted that effect may be 'assumed' rather than 'real' for many respondents.</p>
Impacts on Water Catchments	<p>ACTION: sought further information from Engineering & Water Supply (E&WS) Department; provided further details</p> <p>PROPOSED ACTION: Further consultation with E&WS for later detailed alignment</p> <p>COMMENTS: Referred to Waterworks Act 1932-84 Regulations and zoning. Also referred to 1985 Mt Lofty Ranges Watershed Draft SDP and watershed zone boundaries. Noted that much of Mt Barker lies in Watershed, and is unavoidable. E&WS advised that stable, dense vegetation cover should be maintained, and to minimise development. Thus, line should utilise existing gates, tracks, cleared areas and minimise veg. clearance. ETSA referred to route variation which reduces impact on vegetation (1.6km less through wooded reserve) recommended by E&WS, but justified against by ETSA because it is higher ground and greater visible impact. E&WS also preferred route to go parallel with existing easement for its length through the reserve. ETSA noted feasible, but justified against it because, like the existing line, it encroaches upon Scott Creek Conservation Park. ETSA noted that it has selected best alignments based on issues of vegetation disturbance, viability and maximum use of existing tracks. Also acknowledges that field inspections may be required to '<i>...fully appreciate these factors and is amenable to modifying the route alignment if it can be demonstrated that a variation would reduce environmental impacts.</i>' (p28).</p>
Non-Aboriginal Heritage	<p>ACTION: considered possible alternative alignments to reduce visual impact on Nixon's Mill; modified Figure 9 of EIS to indicate location of registered heritage items over an extended area (within 5km of each centreline).</p> <p>PROPOSED ACTION: towers and tracks located to avoid disturbing sites (as for EIS); proposed liaison with State Heritage Branch about tower locations.</p> <p>COMMENTS: Noted that many submissions focussed on significance of non-aboriginal heritage, particularly Hahndorf, Nixon's Mill, and Euchunga Goldfields. ETSA justified corridor by noting that preferred route is far enough from Hahndorf and thus does not interfere with heritage values. In terms of visual impacts from Nixon's mill, ETSA could not find any more suitable line alignment to reduce impact.</p>
Vegetation & Fauna	<p>ACTION: amended Figure 10 (vegetation). Noted availability of aerial photo-mosaic for inspection at ETSA which '<i>would indicate the effectors by ETSA to select practical routes which minimise tree cutting</i>' (p34)</p> <p>PROPOSED ACTION: proposed to modify parallel route slightly to avoid newly pinpoint area of vegetation</p> <p>COMMENTS: Small area of vegetation pointed out to ETSA. In parallel example, ETSA proposed to avoid disturbance by minor relocation of line. Conclusion: Less overall clearance on Nth route. Noted importance of later detailed route selection on E&WS land to mitigate. ETSA confident vegetation clearance on Northern corridor was not excessive.</p>
Recreation	<p>ACTION: none</p> <p>PROPOSED ACTION: nothing new (as for EIS; mitigation measures)</p> <p>COMMENTS: Re-emphasised importance of minimising impacts to maintain quality of life. Noted that some visual impacts unavoidable.</p>

Tourism	<p>ACTION: further investigation into tourism to establish relative worth of these areas to tourism industry; consultation with Highways Department for visitor numbers via traffic counts; consultation with Department of Tourism</p> <p>PROPOSED ACTION: nothing new (as for EIS)</p> <p>COMMENTS: Findings pointed to greater tourism role in Direct Corridor. Restated EIS conclusion that study area was important tourism area. ETSA again re-emphasised its inability to quantify level of indirect impact (as in EIS).</p>
Landscape & Visual Impacts	<p>ACTION: preliminary design of most controversial section of Preferred Corridor to facilitate assessment of notional tower locations; couple of new figures to illustrate visual effect of parallel lines and towers.</p> <p>PROPOSED ACTION: nothing new (as for EIS)</p> <p>COMMENTS: ETSA acknowledged that towers will dominate and may 'jar with their surroundings'. Noted that problems of siting lines in natural landscape is a world-wide problem of electricity authorities. No economical or technical alternatives to traditional design appropriate to further minimise impacts. Noted resident concerns re: towers, and stated final locations not yet known. Aim to minimise visibility of towers. Noted that every property owner will be approached personally to highlight concerns/preferences. ETSA will consider 'ever reasonable and practicable means' of reducing the visual intrusion upon residents' (p42). Noted cannot use smaller tower sizes for safety clearance reasons and efficient design. Noted greater impact with parallel lines.</p>
System Reliability	<p>ACTION: more details on maintenance process.</p> <p>PROPOSED ACTION: none</p> <p>COMMENTS: Noted some confusion about arguments for physical separation of lines. Rejustified separation of lines and proposal rationale. Noted lines rarely damaged by bushfires if de-energised. But noted need for lines to be at distance from each other - reduces probability of having to cut more than one line's power. Provided more information on maintenance (eg biannual maintenance by patrols; occasional trimming; annual inspection; compensation for any loss during maintenance, and land damage will be repaired).</p>
Urban & Regional Planning	<p>ACTION: brief addition of more detail</p> <p>PROPOSED ACTION: none</p> <p>COMMENTS: Noted potential for growth in urban areas. Acknowledged submissions stating proposal transgresses principles of Development Plan (SDP). ETSA noted that principles are so broad that a transmission line will inevitably conflict to some extent. Also noted that SDP recognised need for transmission line.</p>
Economic Considerations	<p>ACTION: more detail on expenditure items; independent field inspections of each corridor to determine potential effects on property values, and analysis of sales on non-affected properties.</p> <p>PROPOSED ACTION: nothing new (as for EIS)</p> <p>COMMENTS: ETSA a self-funding organisation, and must raise capital like any commercial organisation. Must provide electricity in efficient manner under legislation. Cost factors a major consideration. Provided more information on how costs were estimated. <i>'The Trust does not consider it would be best servicing its customers by adopting a more expensive option without evidence of significant environmental benefit'</i> (p51). Referred to compensation - slightly more detail on criteria for assessing compensation amounts (eg market value, loss by physical effects, loss by disturbance). Also noted effects on compensation (eg property size, location, easement alignment, land use, type of facility, topography', landuse controls, etc). Referred to compensation for tree loss, but no details.</p>
Electrical Field Effects	<p>ACTION: minor (slightly more detail)</p> <p>PROPOSED ACTION: nothing new (as for EIS)</p> <p>COMMENTS: Submissions noted uncertainty about health effects; require more research. Slightly more detail, but still no reference to direct research sources which would have been useful. Noted majority opinion that field effects are not a health risk provided they are taken into account in transmission planning. Noted design will overcome problems (as for EIS). Provided additional information of combined effects of triple circuit - not significantly different. More information provided on fire risks.</p>

Criterion 4.2.2: Was the proposal changed on environmental grounds where appropriate? This criterion was graded at D-C. A summary of changes to the project is presented in Table (16). Many of the changes to the proposal made by ETSA during the EIA process involved small route alterations, design improvements (eg reducing crossarm length), and the adoption of monitoring of vegetation and soil erosion. Once the final corridor had been adopted and decided upon, ETSA was very responsive and open to minor route alterations to minimise the impacts on individual properties and vegetation, with extensive consultation efforts.

Although ETSA appeared inflexible about the preferred option and thus made no major changes to the proposal, in practice, internal correspondence indicates that ETSA was responding to public pressure by commencing surveying and design work on the Southern Route II in order to play it safe. As noted in the DEIS, design processes are of considerable expense. Although not significant in terms of overall project costs, mapping and drafting for the Southern Route II was estimated to cost \$40,000; and for consultant surveyors for easements surveys, a maximum of \$30,000. This would add to the increased costs associated with this route relative to ETSA's preferred one. Work would also mean delays on work on other projects, and the commencement of survey and design was considered a risky investment given that the route may not even proceed. Ongoing controversy indicated to ETSA that this risk was diminishing. This action demonstrates responsiveness to a potentially major change to the proposal, but only in the face of significant opposition and pressure to do so. ETSA noted:

'Although we still maintain our preference for a route within the Direct Corridor, there has been a significant public response in favour of Southern Routes I and II. Therefore, to cover the possibility of the Direct Corridor not being chosen we propose to prepare project mapping...along the most appropriate route in the Southern Corridors. This would be Southern Route II. Southern Route I is becoming very difficult to adopt because of recent subdivision and building developments and we now consider that this option is the least likely to proceed'.

Because field surveys require entry into properties and could '*be seen as provocative*', the survey method of photogrammetry was adopted to minimise public opposition.

As illustrated in Table (16), the changes initiated by ETSA were generally minor in nature, despite the pressure to make a major change and adopt the parallel corridor rather than the direct corridor. The decision to conduct survey work on the parallel corridor to play it safe was a minor-medium change, whilst the adoption of the parallel corridor in the final decision was a major change to the project as a result of the EIA process. ETSA's initiative was poor in terms of changes to the proposal as indicated throughout this evaluation. Although initiative was demonstrated in terms of minor changes to the route and instigation of a property reinstatement action, this latter was initiated in response to public pressures. Initiative was not evident in terms of corridor selection, and the decision for the parallel option was externally imposed through the EIA process. In the absence of the EIA process, it is likely that ETSA would have stuck with their preferred option despite the significant public controversy.

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? This criterion was graded at A. ETSA's learning from the EIA process was excellent. There were opportunities for feedback, not just from the T-C process, but also from the 'Interconnection post implementation review', and through meetings and correspondence throughout the process. A total of 47 ETSA officers involved in the interconnection projects were interviewed by a review committee, and several lessons were learned for future projects and internal management processes. The most significant areas of learning related to project management, property restoration, presentation of alternatives in the Draft EIS, public consultation and relations.

The T-C proposal in particular was described by ETSA as the '*most controversial and time demanding*' of all the interconnection transmission lines. Due to the long lead time between project inception and construction, community attitudes changed significantly. It was noted:

'At times ETSA employees were slow to appreciate these changes in community and property owner attitudes and some people appeared to have problems in accepting that ETSA's views and values could be successfully challenged.

The whole environmental processes for the interconnection projects developed into a learning process for all those involved. We are probably all much wiser today than when any of the projects started...because of the dynamic nature of our planning and development procedures, we must be always prepared to change our procedures for environmental studies to take into changes in community values and expectations.'

ETSA and the consultant aimed to learn from the problems experienced in the consultation process, to derive the positives, and to overcome similar limitations in future projects, thus indicating 'listening' and responsiveness. Overall, ETSA stated:

'Public involvement in the Tungkillo to Cherry Gardens project before the preparation of the draft environmental impact statement is our response to previous criticism, and although this

has resulted in a strong initial public reaction it is the experience in some other states and overseas that early public involvement is desirable. The main lessons to be learned from the experience is that some general information will have to be made available at first public contact, and the public needs to understand that information made available before the detailed studies for the draft EIS are complete will be indicative only.'

More specific lessons learned by ETSA included:

- ETSA should not be seen to champion any route and should just present the facts and let the experts decide on environmental matters;
- the need for better coordination with external property owners ;
- value of establishing contact persons, and possibility of using toll free telephone numbers. 'The right people must always be available';
- better ETSA representation of ETSA staff at public meetings;
- better communications between function groups in ETSA regarding public liaison
- more training in customer service and liaison;
- acknowledgment that there needs to be significant input by ETSA staff into consultation, even though consultants are employed. Dealing direct is the better option;
- there should be better communication between ETSA and contractors about the environmental obligations during construction;
- recommendations to include awareness of environmental obligations as selection criteria for contractors;

Years after the EIA process, some officers within ETSA acknowledged the value of the final alternative adopted which demonstrates responsiveness beyond the context of the immediate project:

'Initially, ETSA may not have been pleased with the Minister's final decision to approve the southern route and to recommend the use of triple circuit towers. However, in retrospect it was probably the wisest decision. I doubt whether the action group, People Before Powerlines, would have ever accepted a decision to use the northern route...'

Table 16: Changes to the Tungkillo-Cherry Gardens Transmission Line Proposal during the EIA process

Nature of Change	Details
Number of Changes	unknown, but three types of changes made
Type of Changes	<ul style="list-style-type: none"> • preliminary survey and design work Southern Route II; • route amendments/deviations (during and after the EIA process) • adoption of non-preferred option as required in final decision (external requirement)
Change Significance	<ul style="list-style-type: none"> • preliminary survey work (minor-medium change) • adoption of non-preferred option (major change) • route amendments (minor changes) • property reinstatement (medium-major change)
Timing of Change	<ul style="list-style-type: none"> • late in the EIA process and after the decision (eg route modifications, property reinstatement)
Initiator of Change	<ul style="list-style-type: none"> • survey work (ETSA in response to public controversy) • final corridor adopted (government and public) • route amendments (ETSA and community) • property reinstatement (ETSA in response to public pressure)

Level of Controversy about Responsiveness

The level of public controversy for proponent responsiveness tended to reflect controversy for ETSA's openness and consultation approach, although there were very few direct comments about responsiveness *per se*. Many did however, criticise ETSA's overemphasis on financial factors leading to the selection of their preferred corridor, although one submission noted: '*At times of financial restraint ETSA has no right to look at any other than the cheaper direct route*' This was a submission from landowners on the parallel corridor who were concerned about the reactions of individuals on the direct corridor and their spread of 'misinformation' (see below).

Some individuals perceived that their submissions during EIS preparation had not been adequately addressed, and either '*glossed*' over or '*blatantly disregarded*'. The very fact that significant public opposition and informal lobbying against ETSA's preferred option was evident indicates dissatisfaction about ETSA's responsiveness to community concerns. At the same time, this lobbying came from one group affected by the direct corridor, and lobbyists against the parallel corridor had less chance to make their opinions heard (refer Chapter Nine in Volume I). If they had, then support for ETSA's approach and responsiveness rather than controversy may have been evident.

Controversy was evident from the government in that the DEP and the decision makers disagreed with ETSA's preferred option. Government controversy again, however, was not as heated as public controversy.

ETSA Project Case Study 2
TUNGKILLO TO TAILEM BEND

PROPOSAL CONTEXT & DESCRIPTION

Like the Tungkillo-Cherry Gardens transmission line, the Tungkillo-Tailem Bend (T-TB) transmission line formed part of the broader interconnection between South Australia and Victoria which was announced in 1985. Justification for the proposal was similar to the Cherry Gardens line, with opportunities for power exchanges between States, and increased reinforcement and security of supply to the South-East of South Australia which was unable to be met by existing 132kV lines and the 275kV line between Para and Tailem Bend (ETSA September 1986).

The transmission line proposal was to be located from a point 5 kilometres south of Tungkillo to an existing substation at Tailem Bend, and entailed:

- construction of a double circuit (275kV) transmission line;
- line length of 61-68 km;
- line easements of 50m in width;
- transmission towers;
- construction of a future substation south of Tungkillo;
- extension of existing substation at Tailem Bend; and
- minor alterations to towers leading into Tailem Bend substation (ETSA September 1986).

The proposal was expected to cost between \$12.7 million and \$14.1 million, and was planned to be operational by the end of 1989 (ETSA September 1986). As part of the transmission system reinforcement, a line had also been proposed from Tailem Bend to the south in order to provide extra energy for a wood-pulp mill at Snuggery (near Millicent). The Mill did not proceed, but the transmission line received planning approval as part of this process and now forms a major part of the interconnection.

EIA PROCESS SUMMARY

EIS Requirement & Guidelines

As noted in the Cherry Gardens case study, a report by ETSA's *Systems Planning Engineer* was published in February 1982 recommending both the construction of the Cherry Gardens and Tailem Bend transmission lines. Early contact was made by ETSA with the DEP in July 1982, but it was not until two years later on 6 July 1984 that a preliminary Notice of Intent (NOI) for the Tailem Bend proposal was formally lodged with the DEP. Investigation of alternatives by ETSA commenced shortly after the NOI in July 1984. It was standard procedure at this time for DEP officers to conduct a field inspection following NOIs from ETSA to determine the level of assessment. Once inspections were completed, the DEP forwarded a report to the Minister for Environment and Planning, who subsequently required on 12 November 1984, that ETSA prepare an EIS in accordance with Section 49 of the Planning Act.

No explicit justification for this requirement was given by the Minister, but based on previous experience, ETSA was fully aware of the need for an EIS. The whole interconnection proposal was regarded by both ETSA and the State Electricity Commission of Victoria (SECV) as one of economic and political sensitivity with major environmental impacts. Moreover, the report from the DEP to the Minister noted that an EIS was needed because of the:

- nature and length of the proposal (60-70km)
- crossing of River Murray and proximity to settlements; and the
- 'desirability' of maintaining a consistent approach to the assessment of 275kV transmission lines.

The other main factor was visual impact which the DEP believed to be the most significant issue in determining the level of assessment. Unlike the Cherry Gardens proposal, the impacts on native vegetation were considered minimal.

EIS guidelines were drafted by the DEP (in liaison with ETSA) in December 1984, and finalised in October 1985 which was nearly one year after the official EIS requirement (DEP October 1985). Not surprisingly, the guidelines were almost identical to those prepared for the Cherry Gardens EIS which was being assessed around the same time. Key requirements included an outline of the nature, objectives and timing of the proposal, substantiation for the proposal, consideration of alternatives, description and assessment of a preferred option, and the identification of mitigation factors.

Organisation and Management.

It is assumed that a task force was formed in a similar manner to the Cherry Gardens proposal but this is not conclusive. The main co-ordinator of the EIA process was the Design Engineer Transmission (DET) with substantial involvement by the Chief Surveyor. An external team was also formed for the EIS investigations using private consultants and sub-consultants in a similar manner to the Cherry Gardens proposal. Like the Cherry Gardens proposal, environmental officers did not appear to be on a formal planning team, nor did they have a significant role in the early stages of the EIA process, as noted in the comments from the post-implementation review. ETSA's Environmental Science and Engineering Branch (Senior Environmental Scientist) and other officers were involved in a native vegetation survey on 27 May 1988, but this was very late in the overall process and after the final decision on the proposal.

The Draft EIS

ETSA's policy was to employ private consultants to conduct the environmental investigations, although EISs had previously been done inhouse. Consultants 'Kinhill Stearns' were appointed by ETSA on 10 September 1985 to prepare the Draft EIS. Prior to the public release of the Draft EIS, the DEP informally recommended a number of minor amendments to the document, most of which were adopted by ETSA through their consultant. The Draft EIS was subsequently considered adequate, and the Minister was prepared to advertise its public release on 24 September 1986, one year after the environmental studies officially started with the appointment of Kinhill. A total of 200 copies of the EIS were published, some of which were posted direct to affected landowners.

The contents of the Draft EIS generally reflected the guidelines prepared by the DEP and are summarised in Table (1). Table (2) illustrates the proportion of EIS tasks focussed upon. The greatest focus of the EIS was on the description of the environment (25% of the EIS), and the comparison of alternative corridors (17.8%).

Table 1 : Contents of the Draft EIS for the Tailem Bend Transmission Line

Chapter	Sections
Introduction	Nature of development; study objective; timing of Construction; EIA process; public Participation; Development Plan policies
Substantiation	Existing transmission system; proposed development; reinforcement of S-E transmission system; interconnection with NSW/VIC; alternatives considered; no project option
Alternative Corridors	Regional factors; alternative corridors
Description of Existing Environment	Landforms; land use; climate ; socio-economic factors; hydrology; human constructions; soils; Aboriginal occupation & archaeology; vegetation; European heritage; fauna
Comparison of Alternative Corridors	Physical factors; biological factors; land use factors; social, heritage and economic factors; summary of corridor assessments
Preferred corridor	Description of preferred corridor; conceptual route alignment
Proposal Characteristics	Physical characteristics; easements; construction procedures; construction practices and schedule
Impact Evaluation & Mitigation	Biophysical environment; land use; social, heritage and economic aspects; miscellaneous aspects

Table 2: Focus in the Draft EIS for the Tailem Bend Transmission Line Proposal

EIS Task	Focus*
Proposal Description	10.7%
Policy Framework	1.7%
Proposal Need	10.7%
Broad alternatives	1.7%
Alternative corridors-routes (identification and comparison)	17.8%
Description of environment (baseline)	28.57%
Description of Preferred Concept (if identified)	3.57%
Impact Description & Evaluation	12.5%
Mitigation & Monitoring	small %?
Public participation	1.78%
Other	3.57%

* does not total 100% because of overlaps on some pages.

As was the case for the Cherry Gardens EIS, the focus of assessment was on broad corridors and conceptual routes rather than on detailed design and tower locations. This latter was to be addressed after the environmental approval process was completed. The next main focus in the EIS was on impact evaluation, the proposal, and its justification. Very little attention was paid in the Draft EIS to mitigation and monitoring, but this is not surprising given the lack of provision for monitoring in the Planning Act 1982.

As noted earlier, the Tailem Bend EIS focussed on a preferred corridor (alternative B) and a conceptual route alignment within this corridor (refer Chapter Nine, Volume I). The approach to the Tailem Bend EIS was slightly different to the Cherry Garden proposal in that alternative corridors were first comparatively assessed, and then a preferred corridor and conceptual route was described and evaluated separately. Unlike the Cherry Garden EIS, no major conclusion was stated upfront or at the end of the EIS about ETSA's views on the proposal. It was, however, noted in the comparison of corridors that:

'Corridor B has no serious disadvantages apart from the makeshift and occasionally used airstrip...to the east of Rathjen homestead. The airstrip can be avoided by making a diversion outside the southern boundary of the corridor in this area...

Corridor B, as amended by this diversion, will slightly increase the length and subsequent costs...[which is] estimated to be approximately 0.4 km which will increase the cost by approximately \$80,000.

Corridor B, as amended, has therefore been chosen as the preferred corridor.' (ETSA 1986: p5-9)

The major impacts addressed in the Draft EIS were much the same as those addressed in the other ETSA case studies. Unlike the Ardrossan proposal, no issues were highlighted as more significant, although factors such as non-Aboriginal heritage or tourism did not appear to be as significant for this proposal when compared to the Cherry Gardens proposal.

PUBLIC SUBMISSIONS & SUPPLEMENT

The Draft EIS was placed on public exhibition for six weeks from 29 September to 10 November 1986 (ETSA July 1987). A total of 14 public submissions was received in addition to comments from four government agencies (Department of Mines and Energy, Department of Agriculture, E&WS and the Highways Department). According to Nixon (1998: p80) a total of 87 points were raised in the submissions, compared to 352 points raised for the Cherry Gardens proposal. Many of the submissions were from landowners directly affected by ETSA's preferred Corridor (B), thus signifying localised as opposed to state-wide interest which is consistent with Harvey's (1994) findings, and experience in the Cherry Garden proposal. Key issues raised in the submissions (public and government) are summarised in Table (3). Unlike the Cherry Garden proposal where

the public had major concerns about heritage, and effects on tourism among others, the main areas of concern raised for the Tailem Bend proposal related to aircraft safety, visual effects, and the fact that many of those affected already had multiple easements on their properties. This latter was a key concern in the DEP's assessment report when deciding between corridors and farming impacts.

A number expressed their opposition to the preferred option, but this did not form the majority and some submissions simply suggested a minor realignment. Nearly half of the submissions (including government) either did not specify preference for any particular corridor, or did not object to the proposal. The Tailem Bend proposal was relatively straightforward when compared to the Cherry Gardens proposal, with significantly less public controversy about the proposal and the quality of the EIA process.

Following compilation of submissions and personal interviews by ETSA with landowners, the Supplement was drafted by consultants Kinhill Stearns. In response to public comments, three revisions were made by ETSA to the conceptual route alignment outlined in the Supplement. A pre-print version of the Supplement was informally assessed by the DEP and some minor recommendations were made on 22 July 1987. The Supplement was considered generally adequate by the DEP a week later, and was released to the public on 3 August 1987. Shortly after the release of the Supplement, on 15 September 1987, Section 7 Notices were sent by ETSA to Councils and to the SAPC in compliance with the Planning Act requirements for crown developments.

Table 3: Issues raised in public and government submissions/interviews on the Tailem Bend EIS

Category	Issue
Land Use	<ul style="list-style-type: none"> • possible crop damage • proximity to piggeries and disease transfer • hazards for aircraft • constraints to future developments
Settlements	<ul style="list-style-type: none"> • impacts on land values • multiple transmission lines on properties • visual impact • possible conflict with mining leases
Biophysical	<ul style="list-style-type: none"> • removal of native vegetation on private property • impacts on sand ridges stabilised by vegetation • effects on wildlife due to vegetation clearance • soil erosion • weed control
EIS	<ul style="list-style-type: none"> • lack of detail about tower locations for informed assessment • approval being assessed for partially designed project
Other	<ul style="list-style-type: none"> • electrical interference to radio reception • access rights • fire risks and impact on insurance premiums • lack of compensation in the past (for land damage)

Another Alternative & Public Review Period

Given concern about the environmental impacts of the proposed route, ETSA was advised by the DEP on 1 October 1987 to evaluate another alternative and river crossing which was not previously considered in the EIA process. Investigations were undertaken by ETSA in terms of settlement proximity, route length and costs, in which case it was considered that the line was longer, more costly, but advantageous due a physical separation of lines (and hence greater

security of supply, and less line congestion). An additional period for public comment for one month until 30 November 1987 was organised by ETSA at the request of the DEP, during which time 11 submissions were received (DEP February 1988).

Due to some inaccuracies and an inadequate amount of information released by ETSA to the public about the new routes, a public meeting was called by the District Council of Mannum for comments on the alternatives. Approximately 60 people attended this meeting including Mannum Council and community members in addition to 5 ETSA representatives, a DEP representative, and an independent health specialist for advice on electrical field effects. The District Council of Mannum opposed the alternatives (in their area), whilst the District Council of Murray Bridge (to the south) supported the alternative routes. ETSA noted that most opposed the alternative. Despite some technical advantages of the alternative, in January 1988, ETSA indicated support for their original Preferred Route because they believed that there were no significant environmental factors which outweighed the additional costs of the alternatives.

The DEP's Assessment Report

The DEP's Assessment Report, which evaluated the proposal, the Draft EIS, the Supplement, and public submissions, was completed in February 1988 (DEP February 1988). Alternatives addressed included ETSA's Revised Preferred Route (Corridor B), the Parallel Route (Corridor C) and the late Alternative Routes (between Corridors A and B; routes 1, 1A, 2, 3) (DEP February 1988). Corridor A was not assessed further given that it was considered inappropriate at an early stage by the DEP. ETSA had also noted its longer length, and hence greater impact. Some additional information was provided in the Assessment Report (eg mining activities, land values), and sections of the Draft EIS and Supplement were considered to be amended in terms of agricultural impacts, mining activities, settlements visual impacts, recreation and tourism, heritage and electrical effects.

Originally, the DEP suggested to ETSA that the late alternative may be more environmentally acceptable than the conceptual route in the Supplement, but preference was later indicated in the Assessment Report for the Parallel Route (corridor C) and ETSA's preferred route with amendments. Shortly prior to the release of the Assessment Report, the DEP had also indicated to ETSA that they were likely to recommend the Parallel Route, although they would note ETSA's concerns about the problems of extensive paralleling (ie reduced security of supply due to possible accidents striking both lines at once). In this case, impacts were considered to be reduced by confining them to areas already affected by transmission lines.

Unlike the Cherry Gardens EIA process, both the DEP and ETSA finally agreed on the main issues and corridor option, although with minor amendments proposed by the DEP. It was concluded by the DEP in the Assessment Report:

'Whilst there are no major distinctions between the routes on environmental grounds, the ETSA Preferred Route is considered to have a comparatively high impact.

The Alternative Route also has a potentially high impact as it introduces a new line into a previously unaffected area, and creates a new river crossing... The Parallel Route and the ETSA Preferred Route (with amendments) have similar environmental impacts, as much of the routes are in common. The ETSA Preferred Route (with amendments) would have a higher visual impact and lesser impact on individual farming properties. As the bulk of the route crosses general farming land and apart from the escarpment of the Mt. Lofty Block and the River Murray, the area does not have a high landscape value, it is considered the impact on individual farmers should be given a greater weighting in the selection between these two routes.'

It was also noted that:

'Both ETSA and the Department of Environment and Planning have identified preferred alignments on environmental, economic and technical grounds and generally agree on the preferred alignment, the ETSA Preferred Route. The Department, however, has proposed two amendments to this route to assist in minimising impacts.

The Department considers the Alternative Route and the ETSA Preferred Route without amendments to have the highest environmental impact. The Parallel Route and the ETSA Preferred Route (with amendments) are considered close in terms of environmental costs (particularly as much of the two routes are common). Economic factors favour the Parallel

Route, while technical factors favour the greatest separation of lines and the ETSA Preferred Route (with amendments) over the Parallel Route' (DEP February 1988: p32).

The DEP's final recommendation supported ETSA's Preferred Route (with two amendments) which entailed a much greater amount of paralleling with the existing 275kV transmission line than originally proposed by ETSA (13km). A total of eleven recommendations relating to 'official recognition' of the EIS, recommended route, landowner consultation, compliance with mitigation techniques, and further survey work (aboriginal and vegetation).

Official Recognition, SAPC & Ministerial Directions

Official recognition of the EIA documents was granted by the Minister for Environment and Planning on 12 February 1988. Following recommendations by the DEP on 16 February 1988, the SAPC indicated its support for the Crown Development Report and the DEP's recommendations on 29 February 1988, with details to be refined following survey and landowner consultation. The SAPC's Crown Development report and recommendations were forwarded to the Minister on 1 March 1988, and Ministerial directions and approval for ETSA's Preferred Route with two amendments were given to ETSA one week later on 8 March 1988. There is, however, some uncertainty about timing of approval given that Harvey (1993) noted that official recognition and approval for the proposal were both given on 22 March 1988.

ETSA's Response

ETSA wrote to the Minister on 16 March 1988 indicating their support for the recommended route, and their intentions to comply with the Minister's directions, albeit with some concerns (see below). Based on the DEP's recommendations, a more detailed archaeological survey was conducted of the final route by a sub-consultant in July 1988 in liaison with the Aboriginal Heritage Branch of the DEP. As a result, construction access was modified to minimise disturbance to sensitive areas. Subsequently, the Minister for Environment and Planning gave approval to construct the line near Aboriginal archaeological sites and across the Rockleigh Historic Reserve on 16 November 1988.

Although ETSA supported the Ministerial Directions, ETSA also expressed concern about the second amendment to the route, and requests were made to further discuss this route deviation with the DEP following more detailed survey of vegetation in the area. A survey of native vegetation was conducted internally by ETSA environmental officers in May 1988. Two options were assessed (direct and parallel), and it was stated that if it came to a choice between a 'best' or an 'acceptable' route, the *parallel option* would be the best due to:

- less vegetation density in the southern end;
- lower vegetation heights; and
- easier access.

Yet it was also noted by the environmental officer that the *direct route* could be argued as acceptable, and as a result, ETSA's Design Engineer Transmission recommended to the DEP in June 1988 that the direct route be adopted because of:

- lower vegetation heights;
- previous and successful recovery from other disturbances;
- a small number of towers (2) in dense scrub areas
- no line deviations, and
- cheaper costs.

The DEP disagreed with ETSA and responded in the same month by continuing to support the Parallel option which was originally discussed in the Assessment Report (ie it confined impacts to an already affected area and existing access tracks were present, thus requiring less clearance). It was also noted by the DEP that vegetation on ETSA's direct option had a higher density and greater species diversity.

The transmission line has since been completed, but it is not clear what the outcome actually was in terms of compliance to the final directions. Although maps released to the public in July 1988 indicate that the parallel option (or DEP's second amendment) was complied with by ETSA, an earlier public release in March 1988, in addition to more recent ETSA maps of the transmission system (produced in 1996), indicate that the second amendment was not adopted. The first

amendment to ETSA's preferred route, was however, adopted. Public accountability is clearly lacking in terms of follow-up, not only in terms of monitoring impacts, but also in terms of whether the proposal is actually constructed as recommended in the approval process.

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the legislative requirements? This criterion was graded at A. Like the T-C proposal, compliance with the legislation was perfect with a score of A (100%) which is expected behaviour given the lack of proponent discretion in the process.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at B-A. Compliance with the project guidelines was also good (86% of requirements were met). Omissions were minor and related to:

- explicit outline of proposal objectives (although these were implied in the rationale);
- reference to tower design/treatment;
- tower positioning (although it had been agreed that this would be addressed after final approval);
- protection of heritage items (although this was generally implied by corridor selection); and
- screening

Criterion 1.3: Did the proponent comply with the final decision? This criterion was unable to be graded. It is difficult to assess this criterion in terms of all the conditions attached to the final decision, although it is known that an archaeological survey and a vegetation survey were conducted as required. There is however, some concern about the final route adopted. It appears that the majority of the route was adopted, but a noted earlier, there is some uncertainty about the second amendment proposed with regards to vegetation protection (refer EIA Process Summary: ETSA's response). While the main conditional requirements were addressed and most of the final route appears to have been adopted, one section of the final route was not complied with.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at C. Actions beyond compliance for consultation were less than the Cherry Gardens project, but this is not surprising given that it was not believed to be necessary for this proposal. As noted previously, there was significantly less controversy than that experienced for the Cherry Gardens proposal, and early signs from local councils indicated that public meetings would not be necessary for the Tailem Bend proposal. ETSA did, however, go beyond compliance by assessing a further alternative *after* the Supplement stage, which involved a second period of public review, although this was at the request of the DEP and was not at ETSA's initiative; by conducting personal interviews with landowners prior to preparation of the Supplement, and in ETSA's commitments to monitoring, albeit restricted to soil erosion. Monitoring at this time was not a legislative requirement.

EIS QUALITY

Proposal & Policy Framework

Criterion 2.1.1 Was the project justified and the rationale for the proposal clearly outlined? This criterion was graded at C. The specific rationale for the proposal was described previously (refer Proposal Justification and Context), and was approached in a similar manner to that undertaken for the Cherry Gardens proposal. The main emphasis of the rationale focussed on meeting the interconnection requirements, and a description of the decision-making process leading to the interconnection project was specified. In addition, the line was needed to meet an increasing energy demand in the South-East of 2% per annum. The rationale for the proposal was clearly outlined, and based on decisions made at higher policy levels. Because of this (ie locked in by another decision), the rationale was difficult to justify in terms of enhancing security and reliability of supply to the South-East given a lack of details or statistics. For instance, although future loads were specified, it was not clear to what degree the existing transmission lines could meet this growth, nor to what extent they failed to meet the additional power supplied from the interconnection from Victoria. It was also stated that the line: '*...would provide....an additional circuit between Tungkillo and Tailem Bend to allow future developments*' (ETSA 1986: p2-5). What exactly this 'future development' entailed was not specified.

Criterion 2.1.2 Was there a detailed description of the proposal? This criterion was graded at B. As demonstrated in Table (4), of 11 areas which could be addressed in a description of the proposal, 10 were referred to (90%). Omissions related to the materials required for construction and their transport. Detail was also lacking on the modifications required to the existing Tailem Bend substation (although it was noted that changes would occur within the existing substation boundary), and on the minor modifications planned for the existing transmission line structures near this substation. The future Tungkillo substation was also referred to, but this was the subject of the Cherry Gardens proposal.

Table 4: Proposal Description performance in the Tailem Bend EIS

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers, negotiation, gates, etc)	
type of wastes produced and management	
Score: (/11)	10/11 90%

Criterion 2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision making process for the proposal? This criterion was graded at D. As demonstrated in Table (5), of 11 policy-legislative areas which may be applicable to the proposal, 6 were referred to (54%). Although heritage registers were consulted, there was a lack of detail about the requirements of the legislation relating to both Aboriginal and non-Aboriginal heritage.

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed? This criterion was graded at B. This component of the EIS was the main focus (refer EIA Process Summary). As illustrated in Table (6), of 19 possible environmental categories which could be addressed, 15 were referred to (78%). Omissions related to an outline of fire risk zones, status of pest plants and diseases, tourism (although recreation was noted), lifestyle quality, landscape quality, and climatic hazards. Climatic hazards should have been addressed because they were used to justify the physical separation of lines, and hence ETSA’s opposition to greater paralleling of the lines as outlined in the Ministerial directions. Quality of life and landscape quality were also not addressed as was the case in the Cherry Gardens EIS.

Table 5: Policy and legislative framework: Degree addressed for the Tailem Bend Proposal

	Legislative or Policy Framework	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	
	Development Act requirements 1993	n/a
	Development Plan	
General Environmental Protection	Environmental Protection Act 1993 (eg wastes, pollution policies)	n/a
	Coast Protection Act 1972	n/a
	Clean Air Regulations 1969	
	Environment Protection (Impact of Proposals) Act 1974 (Cth)	n/a
Flora, Fauna, Parks	Fauna (eg Endangered Species Protection Act 1992)	n/a
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks and Wilderness (National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	n/a?
	Animal and Plant Control Act 1986	
Land & Water	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a
	Soil (eg Soil Conservation and Land Care Act 1989) (EIS in prep. prior to this Act)	n/a
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	n/a
	Land Acquisitions Act 1969	
	Fire (eg Country Fires Act 1989) (EIS in prep. prior to this Act)	n/a
Heritage	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth), Aboriginal Heritage Register)	Register
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	Register
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements)	
	Explosives policies/legislation (eg SAA Explosives Code AS2187 1979)	
	Score (/11)	54% 6

Criterion 2.2.2: Was the level of detail on the environment adequate for an informed assessment?

This criterion was graded at E. As demonstrated in Table (6), 42% of categories had adequate detail. Specific weaknesses related to:

- a lack of detail on vegetation (densities, heights, approximate locations in corridors). Vegetation zones were only broadly illustrated on a map, and it was difficult to identify locations/densities of any remnant vegetation in the study area and different corridors;
- no reference to current status of pest plants and diseases in the area (types, spread, current management);
- Topography was difficult to visualise without a contour map and difficult to relate to soils and vegetation cover; and hence possibilities for screening of visual impacts;
- Photos of river crossing areas were needed to identify suitability and conditions;
- no fire risk zones were noted;
- landscape quality and quality of life were not even addressed even though they were a major focus in the Cherry Gardens EIS;
- No soil erosion hot spots were identified, or reference to current management of erosion in the area;
- An illustration of district council boundaries may have been useful;
- Reference was made to size of properties and variations between Sturt (western) and Russell (eastern) areas, but no boundaries of these areas shown on maps. Division of areas and smaller properties sizes in western area related to variations in terrain, rainfall, irrigation and agricultural land use. This variation should have been illustrated on figure in accordance with the Sturt and Russell boundaries. Very difficult to visualise. No reference to property size in corridor assessment either.

Table 6: Performance in the description of the environment in the Draft EIS for the Tailem Bend Proposal

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality	not applicable				
Hydrology					
Soils					
Native vegetation					
Pest plants-diseases					
Fauna					
Fire risk zones					
Residential landuse					
Demographics (population etc)					
Conservation parks, etc landuse					
Industry, mining, airfields, etc landuse				Firing Range	
Agriculture landuse					
Recreation-tourism landuse					
Infrastructure-easements(landuse					
Non-Aboriginal Heritage					
Aboriginal Heritage					
Landscape Quality					
Quality of Life (eg noise, reception)					
Score (of 19)	15 78%	8 42%	0	9 47%	4 21%

Key: 1=environmental category addressed?; 2=adequate level of detail?; 3=brief description of future environment?; 4=reference to significance of environment?; 5=reference to sensitivity/ capacity of environment to absorb impacts?

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. For instance:

- reference to future environments was not addressed;
- reference to the significance of the environment was made for 47% of categories;
- reference to the sensitivity or capacity was made for 21% of categories.

This made a combined graded of 22% of categories addressed in this criterion.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site? This criterion was graded at B-A. The study area for the assessment was large and loosely defined, and the consultant had flexibility to go beyond the corridor boundaries, which were approximately 2 kilometres wide. Unlike the Cherry Gardens proposal, corridor widths were equal which enabled a more valid comparison. The main limitation was that more information should have been presented for areas beyond these corridor boundaries (and within the study area) as occurred for the Cherry Gardens proposal, particularly to the south where no corridor option was identified. This would provide readers the ability to make their own decisions about performance in the broader study area. However, airstrips and agricultural land use were identified beyond corridor boundaries.

Impact Assessment

Criterion 2.3.1: Have all the potentially major direct impacts been addressed and compared for each alternative? This criterion was graded at A. Of 22 possible impact areas for a development of this type, 20 were referred to in the Draft EIS (90%). Two additional impacts involving constraints on future development and public inconvenience (eg traffic delays, impacts on boat movement during construction) were also addressed which are not included in Table (7). The two impact areas not addressed related to impacts on land values and on quality of life. Access was not

addressed as a separate impact, but was encapsulated in the description of the proposal and construction process (in terms of mitigation).

Table 7: Performance in the identification of impacts in the Draft EIS for the Tungkillo-Tailem Bend Transmission Line Proposal

Impact Category	Addressed
Human Settlements	
Land Values	
Production Values	
Land use: Agriculture	
Land use (eg airfields, industry, mining)	
Hydrology (water quality)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Electrical fields-health	
Noise	
Ozone Generation	
Tv & Radio Reception	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access	
Quality of life	
Score: (/21)	90% (20/22)

Criterion 2.3.2 Does the description of impacts have an adequate level of detail? This criterion was graded at C. Although most of the impacts were clearly and succinctly addressed, the levels of detail was poor for some areas, which in turn related to a lack of detail in the description of the environment (eg pest plants and diseases, soil erosion, actual impact on vegetation in terms of density and significant, impacts of bird strike, lack of detail on land values, locations of holiday shacks affected). There was also some assumptions made about some of the impacts where for instance, rather than being explicit about what the impacts of settlement proximity actually were (eg visuals, quality of life, etc), the impact was simply implied. As for the Cherry Gardens proposal, some assumptions were also made about the certainty of knowledge surrounding the health effects of transmission lines.

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, cumulative impacts, and the interrelationships between impacts? This criterion was unsatisfactory with a grade of E. No reference was made to:

- the transmission line setting a precedent for other developments in the area (ie already multiple easements in the area);
- the potential to encourage other types of development as a result of the increased energy supply (eg as was envisaged with the Hummocks proposal);
- secondary impacts associated with visual impacts for instance (eg recreational sports, tourist location, local economy).

Although the cumulative impacts of multiple lines on properties was referred to, this was only brief and was more of an issue later in the EIA process, and resulted in amendments to ETSA's preferred option as recommended by the DEP.

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. As demonstrated in Table (8),

- magnitude of impact was addressed in 52% of impact areas;
- direction of impact was addressed in 66% of cases;
- geographical extent was addressed in 33% of cases;
- duration and frequency of impact was addressed in 19% of cases.
- potential reversibility of impacts was addressed in 4% of cases;
- mitigation potential was addressed in 66% of cases which is satisfactory;
- probability of impact was addressed in 23% of cases.
- public controversy was addressed for 4% of cases;
- thresholds of concern was addressed for 11% of cases;
- and uncertainty was noted in 9% of cases.

This made a combined grade of 29%.

Table 8: Performance in the evaluation of impact significance in the Draft EIS for the Tailem Bend Proposal

	Spatial-Temporal				Alleviation-Probability			Thresholds-Certainty		
	1	2	3	4	5	6	7	8	9	10*
Human Settlements										
Land Values										
Production Values										
Agriculture									n/a?	
Airfields/industry										
Hydrology										
Non-Aborig. Heritage										
Aboriginal Heritage										
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts										
Electrical field										
Noise		implied								
Ozone Generation										
Tv/Radio Reception									n/a?	
Fire										
Wastes										
Pest Plants										
Soil Erosion										
Line Access									n/a?	
Score (of 21)	11 52%	14 66%	7 33%	4 19%	1 4%	14 66%	5 23%	1 4%	2/18 11%	2 9%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision making process leading to these alternatives summarised and justified? This criterion was graded at C-B. Unlike the Cherry Garden proposal, no attempt was made to justify against considering broader alternatives (eg energy demand management). Alternatives schemes were, however presented, but unlike the T-C proposal which proposed five alternative schemes, only two alternatives were considered in addition to the no-go option. These involved the upgrade of an existing single circuit line to a double circuit line; and undergrounding. Rationale in the Draft EIS against the former included substantial extra cost, reduced supply reliability, and inability to cope with possible future developments. Undergrounding was also considered too expensive. No environmental factors appeared to be involved in the justification against these options, and thus, one may wonder why they were presented in the first place if they were not seriously going to be considered for technical and economic reasons. Like the Cherry Gardens proposal, such options may come across as 'token' alternatives, yet at the same time, they do provide transparency about ETSA's

thinking processes when selecting alternatives for assessment. What it does signify is that technical and economic factors come first, then the environmental assessment was undertaken, which suggests that the EIA process is an add-on.

Within the objectives of the proposal, three more specific corridor alternatives were identified for assessment involving:

Corridor	Location	Length (km)	\$ (million)
A	north	68.2	13.6
B	centre; partly parallel to existing line	64.6	12.9
C	south; parallels existing line	61.4	12.3

A cross link was included between corridors in the event that permission was not given to cross the western edge of the Army Field Firing Range. Another alternative was assessed later in the process which joined corridors A and B to the north, including several route options, but these were not adopted.

The factors which led to corridor selection were clear and transparent and involved:

- housing density;
- distance from major towns and small townships;
- distance from known existing airstrips;
- distance from areas of conservation significance;
- distance from European and Aboriginal heritage sites;
- distance from other developments (eg industry, recreation, military);
- land use;
- topography;
- flora and fauna; and
- suitability of river crossing.

Options further to the south could have been explored further or explicitly justified against. The fact that all possible alternatives were not presented is indicated by the introduction of another alternative late in the EIA process by the DEP.

Criterion 2.4.2: Have alternatives been ranked in order of preference for each environmental impact, and clear reasons been outlined for the preferred alternative if one is specified? This criterion was graded at C. No attempt was made to systematically rank the corridors for each impact category in terms of attainment of goals or level of impact. However, a summary table of characteristics of each corridor was presented, including whether each corridor had an advantage over the others. But preferences were not identified for all impacts areas, and it was thus difficult to get an accurate picture of corridor performance at a glance. Nevertheless, the reasons for choosing the preferred corridor were made explicit in the comparative assessment (eg urban and rural settlements, recreational land use, social and economic considerations). The lack of systematic ranking was not necessarily significant in this case because it was noted that many of the impact categories were similar in performance between the alternative alignments. For instance:

'An important aspect in comparing the corridors is that variations in environmental characteristics between Tungkillo and Tailem Bend occur in the same general direction as each of the three corridors. This tends to simplify comparisons because, for many environmental factors including landforms, climate, hydrology, soils, vegetation, fauna and land use, there is little advantage in choosing one corridor over another' (ETSA September 1986: p5-1).

While the explicit ranking was not an overly significant omission, a better summary would have been useful. It should also be noted that the evaluation of corridors was not always explicitly linked to the existing environmental conditions, but rather comprised a 'relative' evaluation of corridors (ie which alternative performed better relative to the others) and not a deviation from baseline conditions in terms of impact significance. This was also a problem in the Cherry Gardens proposal.

Mitigation & Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at A. As illustrated in Table (9), performance was excellent. Of 20 possible mitigation areas, 18 were referred to (90%). Mitigation measures not addressed included noise and ozone generation, both of which were negligible impacts anyway. Most mitigation measures related to:

- avoidance;
- compensation;
- and confinement of the impacts to already affected areas.

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and feasibility of achievement? This criterion was graded at E. As demonstrated in Table (9):

- level of difficulty of mitigation was addressed in 5% of cases;
- level of mitigation expense was not addressed;
- mitigation effectiveness was addressed in 50% of cases (although generally implied); and
- certainty of outcome was addressed in 35% of cases (generally implied).

This made a combined grade of 22% for the level of detail on mitigation measures which is unsatisfactory.

Table 9: Performance in mitigation and monitoring in the Draft EIS for the Tailem Bend Proposal

	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	10
Settlements		A			implied				
Land-Productivity Values		CO							
Agriculture		A, CO			implied	Implied			
Hydrology		A, D			implied				
Aboriginal Heritage		A			implied		implied		
Non-Aboriginal Heritage		A			implied				
Vegetation		A, N							
Fauna					implied	Implied			
Recreation		A, C							
Tourism		A, C			implied	Implied			
Visual Impacts		C							
Electrical Fields		D				implied			
Noise									
Ozone Generation									
Reception		R							
Fire		D, A			implied	implied			
Waste		R, T							
Pest Plants & Diseases		A?					implied		
Soil Erosion		D							
Access		N, Co R							
Score (of 20)	18 90%	-	1 5%	0	10 50%	7 35%	4 20%	0	0

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Criteria 2.6.1 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? Both criterion were graded at E. Monitoring was only explicitly referred to in 20% of cases in the area of soil erosion, access, pest plants and diseases and Aboriginal heritage (although usually implied rather than an explicit description of a monitoring programme). Table (9) also demonstrates that the level of detail on monitoring was completely lacking. It is interesting that of the 87 issues raised in public submissions, none referred to the monitoring of impacts, nor was there any reference in the DEP's Assessment Report (Nixon 1998). Clearly, monitoring was not an important issue in awareness levels at the time which may explain the poor performance in this area by ETSA. Given that the environmental monitoring of projects is still ad hoc today (Nixon 1998), it is an area which needs to be improved.

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Methods was graded at D, whilst use of information sources was graded at C. Although a limited amount of field work was conducted for the environmental assessment, no record was evident in the EIS of the methods used. According to the consultant's proposal, the main methods used for the EIS were constraint maps and overlay techniques which influenced where the corridors could go, but this was not specified in the EIS. Archaeological reports from sub-consultants briefly specified methodology, but this was not available to the public and was over-reliant on the literature and archival sources rather than field work. A vegetation report had also been undertaken, but this was separate to the EIS (although the public could request a copy). In terms of information sources, a fairly wide range was used similar to the Cherry Gardens proposal, although some more recent information sources on vegetation had failed to be addressed (DEP 1987).

Criterion 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at C. Not all relevant sections were included in the Draft EIS. Omissions included a concluding chapter and an appropriate technical summary, the latter of which is a significant omission given its importance in summarising and clarifying the most important points of the assessment.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at C. Information appeared to be arranged logically, and there was a consistent structure between the environmental description, corridor comparison and impact assessment for the preferred corridor, and a table of contents highlighted the location of all sections. The main limitations were that the proposal description should have been upfront rather than after the comparative assessment of corridors; and the repetitive nature of the comparative assessment of corridors which was then repeated in parts for the preferred corridor. There was also a lack of detail about what the actual impacts were in the comparative assessment. For instance, agriculture was used as a factor for comparison of the corridors, but it was not specified in the comparison what the actual impacts were. Rather, this was assumed, and then the more detailed outline of impacts was presented for the preferred corridor. This should have been the other way around, and this approach made it difficult to identify the level of impact for each corridor alternative. It would have made more sense to conduct the impact assessment and comparison of corridors simultaneously, rather than repeating some of the issues in the impact evaluation of the preferred option. Nonetheless this was not a significant point overall.

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B. Readability was good and understandable to non-specialists, and not as disjointed as the Cherry Gardens EIS. However, the diagrams were not as effective as those presented in the Cherry Gardens EIS. Referencing was used, but it was not always clear about where information came from which was an issue of concern. These were only minor concerns however.

Criterion 2.7.6: Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This criterion was graded at B. Important information on vegetation and fauna was included in

appendix and referred to in the text. All issues seem to have been covered, and in this sense the document was an integrated whole. However, separate reports on vegetation and aboriginal heritage should perhaps have been included as separately bound appendices.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. The EIS was not voluminous and if anything was too short which reflects the lack of detail in many areas. Thus the EIS could have been slightly longer or worded more succinctly to fit other issues in.

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation? This criterion was graded at B. There did not appear to be an over-emphasis on any particular aspect, although there may have been a lack of emphasis on factors such as land values, hazards, birds, and tourism. Visual impacts were less of an emphasis than in the Cherry Gardens proposal, which may have been due to lesser numbers of people affected (residents/tourists). Prominence to particular issues appeared to be appropriate to the task, with the exception of public concerns about land values.

Criterion 2.7.9: Was there a lack of bias in the conclusions made and were these conclusions appropriately based on the information presented in the Draft EIS (if the information itself lacked bias)? This criterion was graded at B. The emphasis of the conclusions in the EIS was significantly better than the Cherry Gardens EIS. Bias did not appear evident in terms of the conclusions made from this information. Although a preferred option was identified (and hence bias was present), the conclusions appeared to be appropriately based on the information presented in the EIS, and the decisions leading to a preferred option were transparent. In contrast, the conclusions in the Cherry Gardens EIS were highly biased by contradicting the information in the EIS.

Level of Controversy about EIS quality

Unlike the Cherry Gardens proposal, public controversy about EIS quality was virtually non-existent. Only one concern about EIS quality was raised in public submissions from the Nature Conservation Society which criticised the scope and conceptual nature of the EIS. For instance:

'Any worthwhile investigations of environmental impacts cannot be based on "conceptual corridors" of approximately 2 km. in width. The actual alignment and precise locations of towers within the preferred "conceptual corridor" are necessary pre-requisites for an informed comment. This level of investigation has been denied the public by the omission of the required information... We are being asked to give approval to what amounts to a partially designed project, limiting the effectiveness of our input into the public comment component of the Environmental Impact Assessment system.'

At the same time, however, the Society noted that they were '*...unable to dispute the need for this extra transmission line and are generally satisfied that the environmental factors have been adequately considered, within the scope of the Draft Environmental Impact Statement.*' The inefficiencies of presenting a more detailed design have already been noted by ETSA for the Cherry Gardens proposal. It is agreed that detailed design on several corridors is inefficient, and also leaves little room for flexibility in the event that another corridor is identified later in the process, as was the case for this proposal. Understandably, after expending significant resources on route design in other corridors, ETSA would not be keen to further design routes in other corridors which may not even be adopted. In the event that they are required to do so by government, then in the broader context, ETSA's attitudes towards, and support for, the EIA process may decline. This would invariably affect their behaviour in future projects.

The level of government controversy (ie from the EIA Branch, DEP) about the proposal and the quality of the EIS was not high, but there were some areas of concern. Explicit reference was made in the Assessment Report to the quality of information and ETSA's conclusions, although not for all impact categories. Many of ETSA's conclusions were agreed with by the DEP in their Assessment Report (eg heritage effects, electrical effects), and information was considered adequate in terms of:

- proposal substantiation;
- description of agricultural activities;
- conclusions about fire risks;

- information on soils and impacts on soils, although further mitigation measures were recommended.

Inadequacies or concerns about the EIS noted by the DEP included:

- the lack of information on mining leases;
- unqualified statements about health effects;
- inaccuracies in vegetation species;
- inadequate consideration of potential impacts on rare or endangered plant species;
- inadequate methodology to identify rare plants;
- lack of reference in sub-consultants report on vegetation to more recent information;
- cursory treatment of bird collision potential;
- frequency or intensity of events which may effect supply security.

OPENNESS & CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B. The overall approach adopted by ETSA was slightly different to the Cherry Gardens process, and was probably a result of lessons learned from experience, and from suggestions made by the consultant. The consultant noted that, although public concern would be low due to already cleared vegetation, other factors may be influential such as the level of public awareness raised by the T-C proposal, the effects on shack dwellers at river crossings, and affected dwellings. Care was also recommended with the consultation process in regards to the river crossing and the fire risks due to the possibility for public controversy. It was noted that the public was often misinformed about the difference between transmission and distribution lines, the latter of which involved greater fire risks. Nevertheless, the level of effort expended towards the consultation process by both ETSA and the consultant was less than the Cherry Garden proposal. This may be a reflection of the lesser numbers of people affected, lower controversy in practice, and the lower environmental sensitivity in terms of native vegetation and European heritage. Given a lack of public activity, this lesser effort did not appear to have major repercussions on ETSA.

ETSA appeared genuine in their attitude, and were willing to consult and to be open about the proposal which was reflected by the personal interviews held by ETSA with landowners despite no requirement to do so. ETSA also showed initiative by consulting early with councils to identify the need for public meetings (council suggested that they were not necessary). ETSA was informed by one Council that:

‘...there is a general feeling in the community of Wall Flat and Pompoota that the Trust is really trying to do the right thing by the landowners. They feel that the Trust is not just a “faceless lot of bureaucrats”, but rather that we are involving the local residents in trying to come up with a river crossing that will have the least overall effect on the community’

Criterion 3.1.2: Has the proponent demonstrated openness and flexibility in considering all possible alternatives raised throughout the whole process? This criterion was graded at C. Alternatives were considered both early and late in the process. ETSA was co-operative with the DEP’s request to consider further alternatives after the release of the EIS and Supplement, and ETSA also gave flexibility to the consultant to go beyond the pre-selected corridor alternative if the need arose. It was also noted by ETSA at a meeting with Mannum Council that *‘the 3 corridors selected are a result of value judgements by ETSA personnel and that the environmental procedures could bring forward other alternatives’*. Clearly this represents a degree of openness to suggestion. ETSA was also open to investigating suggestions by local landowners for local route variations at the river crossing (DEP 1988).

Timing of EIA (criteria 3.2.1-3.2.4)

The main points are:

- **Integration Project Conception:** This criterion was graded at E. Environmental studies do not appear to have been a factor in formulation of the project to resolve an infrastructure problem, although this is not conclusive due to a lack of full information.
- **Integration Planning:** This criterion was graded at B-A. There did not appear to be two separate processes and environmental factors were closely integrated into the planning process (ie environmental and technical, economic studies) particularly for the early selection of alternative corridors. Performance was the same as the Cherry Garden proposal with excellent integration of the EIA process with the normal planning process.
- **Integration Design:** This criterion was graded at B. EIA was not integrated with detailed design, but it did influence it with more detailed vegetation and archaeological studies, and negotiation with landowners about tower positioning and the final route. Thus, environmental factors were being informally integrated.
- **Integration Construction:** This criterion was unable to be graded due to lack of file information for this stage and absence of monitoring data (except for information relating to the whole interconnection programme). Integration with construction is believed to be poor without explicit environmental management plans and other documented information to be communicated to the contractors. In addition, experience with the Cherry Gardens and other proposals, whereby damage was caused at the construction stage due to a breakdown in communication, is indicative of poor practice in this area.

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at C. This criterion did not perform as well as the other ETSA case studies given that consultation with the public was not undertaken prior to or during the preparation of the Draft EIS. ETSA was, however, prepared to consult early with public meetings, but did not base on external advice from Councils. Thus, consultation with councils was undertaken early, but consultation with the community was later than in the Cherry Garden process, being initiated after the release of the Draft EIS. Some attempts at contact with landowners could have been made earlier, but this does not appear to have greatly affected the outcome, nor resulted in significant public controversy. However, a public meeting was held later in the process by the Mannum Council because of inadequate information provided by ETSA on the late alternative.

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at C. Of eleven possible techniques for participation presented in Table (10), only five (45%) were undertaken including formal public submissions (a legislative requirement), personal interviews, informal correspondence, public display, and media notices. A public meeting was also held, but because it was initiated by Council and not ETSA, it was not counted in this criterion. Most of these techniques were on the lower end of Westman's (1985) participation scale at the consultation and information-provision level (a simplified version of Arnstein's [1971] original eight-rung ladder of citizen participation). However, the personal interviews indicated a willingness to conduct some form of joint planning by negotiation of the final route alignment and tower positioning (which raised the overall grade). Although ETSA were not obliged to adopt landowner requests, they were clearly open to suggestion.

Table 10: Public participation techniques adopted by ETSA for Tailem Bend EIA process (based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

Approach	Public Power	Participation Techniques	Adopted?
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA's case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: Was the proponent willing to, and did they, release adequate information to the public throughout the EIA process and after the decision (eg record of decision, monitoring, auditing reports)? This criterion was graded at B. There appeared to be no concerns about transparency of information throughout the EIA process, with factors leading to corridor selection and assessment clearly outlined. Like the Cherry Gardens EIS, information in the Tailem Bend Draft EIS appeared sufficient to allow readers to make an informed judgement about the alternatives assessed. Public submissions were also clearly summarised and presented in the Supplement. Transparency of information at the late alternative stage was a concern in light of some controversy about inadequate information provided by ETSA. It is difficult to make an assessment of information after the decision, but regular updates were provided via the interconnection newsletter which maintained transparency about the survey and construction process.

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly? As for the other case studies, this criterion was unable to be graded. Due to the DEP's request to consider new alternatives late in the process and conduct further public consultation, ETSA showed flexibility by allocating more resources (although not a significant amount) to the consultants to prepare additional documentation. This was an 'unforeseen expense', and demonstrated flexibility. As for the Cherry Gardens proposal, timeframes were flexible for the planning and approval phase, but were inflexible at the construction stage. Delays were evident in the release of DEIS, due to a resignation, leave commitments, and overabundance of ETSA work. The Draft EIS was originally scheduled for release in June 1986, but was rescheduled due to changes in presentation from a single circuit option to double circuit line. This indicates flexibility at the EIS stage. Delays of approximately two months were also experienced as a result of the alternative suggested late in the process by the DEP. It was not believed by ETSA that this would delay construction, but they were concerned that any further delays would cause problems.

As for the Cherry Gardens proposal, ETSA was concerned about meeting the interconnection dates with Victoria. Attempts were thus made in November 1987 to speed up the approval process and to push for a decision before February 1988. However, a decision was not made until March 1988 placing considerable pressure on ETSA at the survey, design and construction stages as was also the case for the Cherry Garden proposal. As a result, ETSA allocated a project coordinator to give extra attention to both the Cherry Garden and Tailem Bend proposals. It is not known, however, whether this pressure resulted in property damage as occurred during construction of the Cherry Garden line.

Level of Controversy about Openness

Performance in this area was good with virtually no public controversy about the consultation process evident in the records from the DEP. However, some controversy was evident from the public in terms of:

- lack of route details for an informed assessment (from the Nature Conservation Society);
- criticisms of information provided by ETSA for the late alternative (because the information was inadequate, a public meeting was called by Council);
- criticisms about lack of notification of some landowners about the proposal.

This latter was due to the fact that some landowners were not initially believed to be directly affected by ETSA's preferred corridor, and were thus not notified. However, due to the amendments to the final route, these landowners later became affected, which indicates a problem with the notification process which was recognised by ETSA.

RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted of those presented? This criterion was graded at C. Based on the information in the EIS, the best performer appeared to be Corridor B which was identified as ETSA's preferred option. Unlike ETSA's preferred option for the Cherry Gardens proposal, ETSA's preferred option in the Tailem Bend proposal was *not* the most direct or cheapest option. Table (11) summarises the best performers for each impact category based on the EIS information (the presentation of this Table is similar to the approach adopted by the DEP in their own comparison of alternatives).

Table 11: Comparative performance of alternative corridors in the Draft EIS for the Tailem Bend Proposal (shaded area represents best option) (modified from ETSA September 1986: p5-8)

Impact Category	Corridor A	Corridor B	Corridor C
Landforms	Terrain similar, but line longer	Little to distinguish terrain between corridors	
Climate	No significant differences		
Hydrology	Little difference	Little difference but best to confine impacts to area already affected by line	Little difference
Soils	No significant differences		
Vegetation	No significant differences		
Fauna	No significant differences		
Agriculture	No significant differences		
Settlements	Township of Ponde Less isolated rural dwellings but not major advantage	airfield corridor centre	southern side of corridor -dense population. Northern constricted by 2 rural properties and heritage site
Property Numbers	139	135 Limited no. affected	155
Property sizes	larger	smaller?	smaller?
Recreation		best to restrict line to area upstream of area already affected by line	airstrip too close
Public inconvenience	Township of Ponde	Slightly advantageous	
Visual impact	No significant differences		
European heritage	0 sites	1 site	3 sites
Aboriginal heritage	11 sites	3 sites	10 sites
Route length	68.2km	64.6km	61.4km
Economic	\$14.1M	\$13.1M	\$12.7M

Corridor B was preferable for 12 categories, whilst A and C were preferable in 8 and 10 categories respectively. Advantages of Corridor B over the other corridors related to less numbers of Aboriginal heritage sites affected, less property numbers affected, and the fact that recreational and hydrology impacts were confined to an area already affected by a transmission line. Some criticisms were apparent in public submissions about ETSA's preferred option, but this is not surprising given that they came from affected landowners. Moreover, unlike the Cherry Gardens proposal, the majority did not oppose ETSA's preferred option. Overall, the DEP's independent recommendation to support ETSA's preferred corridor in the Assessment Report, albeit slightly amended, is also indicative that this was the best option of those presented and evaluated by ETSA, although the difference between the options did not appear significant.

However, the grade was reduced from a B-A to a C given that later in the process the 'best' option proposed by the DEP (which as an amended version of ETSA's preferred option) caused some concern for ETSA in terms of the second amendment (noted previously). ETSA aimed to adopt an 'acceptable' rather than 'best' option in terms of vegetation, and it is not even clear whether the DEP's requirement for the 'best' option was even adopted. This highlights responsiveness, but to a degree so long as the proposal was consistent with ETSA's aims.

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at C. As noted in the Draft EIS, economic factors were important in selecting the preferred corridor, but there was no difference in technical factors between the corridors assessed. Environmental constraints played a major factor in initial corridor selection and the identification of the preferred alternative, particularly social-cultural factors. The important factors in selection of the preferred corridor were:

- urban and rural settlements
- recreational land use
- social considerations
- economic considerations.

The biophysical environment was not distinct enough to sufficiently differentiate between corridors, although full information was lacking particularly for vegetation clearance. Overall, the main environmental constraint was the river crossing. This was mostly consistent with the DEP's weighting of factors, although vegetation was given more influence:

- River Murray crossing
- farming
- visual amenity
- individual housing
- vegetation (DEP February 1988: p26).

Costs and technical factors were also considered by the DEP but were not major factors in the decision.

Hints of the importance of economic factors to ETSA were evident throughout the EIS, which is understandable given ETSA's mandate to produce and transmit electricity efficiently. Economic weighting was used to justify some vegetation removal which is an issue of some concern (eg each angle adds a substantial amount to the line costs). It was stated that:

'...the cost for every significant change in direction is approximately \$50,000 and, on this basis, directional changes to avoid trees would involve a substantial additional cost (EIS, p7-3). It was also stated: 'although every effort will be taken to minimize tree removal, it is necessary to keep the line as straight as possible for economic reasons' (EIS, p8-1).

Economic factors were also used to justify ongoing commitment to ETSA's preferred route rather than the new alternative proposed by DEP. For instance: '*Considering this line in isolation, our preference would be for the EIS nominated route. It is shorter and less expensive by about \$1 million and has no major environmental disadvantages*' (although it was noted that an advantage of the alternative was lesser length in proximity to existing line). Weighting was also questionable for the later survey of vegetation after line approval which was noted earlier (refer EIA Process Summary: ETSA's Response). In this case, there was disagreement between the DEP and ETSA about whether a parallel route or direct route should be adopted. ETSA supported the direct route and one of the reasons for this was cheaper cost, whilst the DEP supported the parallel because it confined impacts to one area, and had lesser density and species diversity.

Overall, however, a greater attempt was made to balance factors compared to the Cherry Gardens proposal. Although cost and technical factors were important to ETSA, they did not appear to override all factors as was apparent for the Cherry Gardens proposal. It was also noted that: *'the three alternative corridors were selected initially as they would cause the least possible inconvenience to property owners and the general public while providing satisfactory options for development on engineering and economic grounds.'* (ETSA 1986: p5-5).

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified? This criterion was graded at B. Table (12) indicates ETSA's responsiveness to public submissions as outlined in the Supplement report. Most actions resulting from public comments involved personal interviews, provision of further information, and further consultation. Four changes to the process were also made involving the assessment of a new alternative, changes to the corridor boundary (corridor B) to reflect environmental constraints, an additional public review period, and attendance at a public meeting late in the process. Although not many changes were made, there did not appear to be a need to adopt any other changes. Performance was, however, reduced because the initiators of change were primarily from external parties (ie the DEP and the Mannum Council).

Table 12: ETSA's response to public submissions in the Supplement for the Tailem Bend Proposal (compiled from ETSA July 1987)

Issue	Response
Flora and Fauna	ACTION: Interview with landowners; concerns noted PROPOSED ACTION: careful tower location to avoid cutting or removing vegetation; and to minimise disturbance of area COMMENTS: landowners indicated proposed action acceptable, but conserved at possible destruction of sand ridges.
Weed and Pest Control	ACTION: none PROPOSED ACTION: none (as for EIS) COMMENTS: ETSA noted they would continue normal practice of consultation with relevant authorities during line construction and implement appropriate management programmes (details not specified)
Future Development Constraints	ACTION: further information; personal interview PROPOSED ACTION: compensation (as for EIS) COMMENTS: ETSA noted that it was unlikely that any constraints would be imposed on future development. Noted compensation for acquisition of easements. Detailed information on criterion for compensation provided.
Effects on Land Use piggeries (possible transfer of disease between piggeries); soil (delicate); crop damage (experienced from previous transmission line and lack of adequate compensation)	ACTION: Personal interviews; PROPOSED ACTION: avoidance; corrective action and/or compensation - as for EIS COMMENTS: ETSA noted comments of Department of Agriculture that ETSA staff and vehicles keep to the easement and not enter piggeries. Soil management techniques noted in EIS reiterated.
Access Requirements Relates again to transfer of disease. Two submissions refused to allow access or to grant an easement.	ACTION: personal interviews PROPOSED ACTION: further negotiations with landowners - as for EIS COMMENTS: ETSA noted process of easement acquisition which gives ETSA the right to enter land.
Effects on Aircraft Use hazards; omission of two runways; impacts on aerial spraying	ACTION: consultation with President of Aerial Agricultural Association of Australia; realignment of conceptual route to enable continued use of airstrips, comments by Department of Aviation noted (to inform of project commencement to change Aeronautical Charts) PROPOSED ACTION: COMMENTS: Consultation with Aerial Agricultural Association indicated that aerial spraying was not unduly affected by high voltage transmission lines (conspicuous towers, ample room to fly under lines). Low level lines more hazardous. Department of Aviation had no objections to proposal.

<p>Effects on Mining and Quarrying conflict between line and mining activities (sterilise portions of reserves, weaken tower's foundations, mining access restricted, hazards with use of electric detonators in vicinity of electrical-magnetic fields); possibility of compensation</p>	<p>ACTION: further information - reviewed nature of terrain and presence of mining leases; consultation Department of Mines and Energy; PROPOSED ACTION: none, but recommended change of detonators COMMENTS: Impacts noted on some mining lease areas, but impacts noted as insignificant. Also acknowledged possible impact of detonators. Recommended that non-electric detonating systems be used near high voltage transmission lines. No confirmation noted.</p>
<p>Visual Impact</p>	<p>ACTION: None PROPOSED ACTION: personal negotiations with landowners and accommodation of requests for tower locations where possible COMMENTS: recognised visual impacts as a concern, but noted lack of economic or technical alternatives to traditional design of high voltage systems. Acknowledged resident concerns but noted that there was no assurance all requests to reduce impacts could be acted upon.</p>
<p>Interference Reception (tv/radio)</p>	<p>ACTION: PROPOSED ACTION: in the event of interference, modifications to aerials can be made or location altered. ETSA proposed to correct problems at their expense for genuine cases. COMMENTS: same comments as in EIS (eg occurrence in weak signal areas).</p>
<p>Fire Risks impact on insurance premiums</p>	<p>ACTION: PROPOSED ACTION: COMMENTS: ETSA noted that fire risks were not substantial due to maintenance of vegetation and design of lines. Noted that there were no additional loadings on insurance premiums for properties with transmission lines.</p>

Criterion 4.2.2: Was the proposal changed on environmental grounds where a need was identified? This criterion was graded at B-A. ETSA attempted to accommodate the public concerns via minor route realignments. A total of six changes were made to the original proposal (ie ETSA's preferred corridor and route alignment) which were more significant and more responsive than that achieved for the Cherry Gardens proposal (refer Table 13). Three changes were made to the preferred proposal in response to public concerns, and involved changes to the conceptual route alignment in the Supplement. In summary, changes in the Supplement involved:

- alignment change to accommodate airstrip which involved two additional tension towers to cater for line direction changes;
- proposal to run line parallel to (and 40m away from) existing 275kV line to accommodate concerns regarding proximity to piggery and future extensions of piggery. It was noted that as a result, the line would be more 'vulnerable to accidental or deliberate disruption which may cause failure of both lines at the same time...'
- alteration of alignment (long straight section to south of Army firing range) to avoid dwelling. Original line would have been directly over the house (was not visible in aerial photos). Involves one more tension tower due to direction change.

Two changes were also made as a result of the DEP's assessment, resulting in amendments to the alignment of ETSA's preferred route being adopted. Changes were not major which was even noted by ETSA:

'As a result of comments received on the Draft EIS, and further to on-site interviews by ETSA with respondents, minor changes are proposed to the conceptual route indicated in the Draft EIS' (Supplement, p2-1).

These changes did, however, entail directional changes in the line, and hence added costs of thousands of dollars (ie each directional change was expected to cost \$50,000). Changes also resulted in more extensive paralleling of the line to the existing 275kV line which caused ETSA some concern in terms of security of supply (which requires geographical separation of lines). Thus, the changes were considered minor-medium rather than minor in nature.

Unlike procedural changes, ETSA demonstrated initiative in making changes to the proposal, both at the EIS stage and the Supplement stage. Although they were in response to public concerns,

ETSA was not obliged to make these changes. Initiative was also evident by adopting an option that was the ‘best’ on environmental grounds and not just based on cost factors. Initiative was not, however, evident with the two changes recommended by the DEP at the construction stage. Moreover, one change which was originally not made in response to public concern, was eventually recommended by ETSA’s consultants because of potential criticism by the DEP.

Table 13: Changes to the Tailem Bend Transmission Line Proposal

Nature of Change	Details
Number of Changes	6
Type of Changes	Route realignments
Change Significance	Minor-Medium
Timing of Change	<ul style="list-style-type: none"> • EIS (1 change) • Supplement (3 changes) • Decision (2 changes)
Initiator of Change	<ul style="list-style-type: none"> • ETSA in response to public concerns (4 changes) • DEP recommendations & Ministerial decision (2 changes)

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process? This criterion was graded at A. Evidence of learning was present with the interconnection post-implementation review which was noted in the Cherry Gardens case study. It was also proposed to review ETSA’s approach of choosing a preferred option as a result of landowners concern at not being informed directly about the Tailem Bend proposal. As noted earlier, they were not informed because they were not on the preferred route, but were on the later amended route. ETSA noted:

‘This issue highlights the problems that can occur when deviations are made from the preferred option stated in the Draft Environmental Impact Statement and Supplement, even if the adopted route remains inside the boundaries of the corridors under examination. However, based on this project and our experience with other similar recent projects we will be reviewing in conjunction with the Department of Environment and Planning our procedures for nominating preferred options and for notification of landowners that may be affected by future transmission line....’

Along similar lines it was noted by the DEP that:

‘The approach adopted by ETSA in this proposal, unlike that of the interconnection between Victoria and south Australia and the most recent proposal that of a line between Ardrossan and Dalrymple, identified a proposed route in the Draft EIS. This leads to a misconception among the public that the identified route is the only one under consideration and that other options will not be considered further. As was the case with this line and the Tungkillo-Cherry Gardens Line this is not always the situation.’

Lessons were learned from this, and as a result, the approach was modified slightly for the Ardrossan-West to Dalrymple line (see next case study). In this case, alternative corridors were not identified, but the corridor used as basis for assessment was much wider at 8km width and no preferred option was stated by ETSA. Notwithstanding this change, the original approach returned with the identification of a preferred option in the Hummocks to Waterloo line (see ETSA case study 4) which caused some controversy.

Levels of Controversy about Responsiveness

Public controversy was virtually non-existent except from a small number of landowners directly affected by ETSA's preferred corridor and route. However, minor route realignments were acceptable to some of these objectors. One community member (landowner) also noted that he had previous dealings with ETSA and believed '*he ha[d] not been given the consideration he would like*' (ETSA Interview B6). It is difficult to assess the reactions of the public after the Supplement release, but the Nature Conservation Society in their submission on the revised alternative stated that '*We are pleased both that the assessment process has enabled a more satisfactory route to be identified, and that E.T.S.A. have shown sufficient flexibility to embrace the new options.*' The DEP did not appear to express any concern about ETSA's responsiveness, and generally accepted their preferred option and changes, albeit with some minor amendments.

ETSA Project Case Study 3
ARDROSSAN TO DALYRMPLE

PROPOSAL CONTEXT & DESCRIPTION

The population of Lower Yorke Peninsula in South Australia relied on a single 33kV transmission line for the supply of electricity which was unable to cope with peak supply during summer, and an increasing demand for power of 3% per annum (ETSA May 1989). The line also suffered from salt corrosion from the coastal air. If power was disrupted as a result, or due to accident or fault, there was no alternative supply and the area would suffer blackout. ETSA thus decided to improve supply security and reliability with a proposal to construct:

- a transmission line (132kV) of approximately 62 kilometres in length;
- a new substation at Dalrymple (132/22kV);
- minor additions and alterations at the existing substation at Ardrossan West; and
- two 33kV line exits (each 3 kilometres long) from Dalrymple substation to existing 33 kV line (between Klein Point and Yorketown).

It was proposed to commission the line by September 1990, with the aim of completing the draft EIS by December 1987 (actual time was May 1989), and receiving approval to proceed by August 1988 (actual approval was October 1990). The cost of the line was expected to be approximately \$4.2 million (1988 price levels) (ETSA May 1989). The alternative routes proposed and assessed in the EIA process are presented in the next section.

EIA PROCESS SUMMARY

Screening & Triggering

Information was lacking in ETSA's files about when the proposal was initially formulated. It is known, however, that ETSA conducted preliminary discussions about the proposal with the DEP in September 1985, and officially informed the DEP on 16 December 1985 of their proposal to build the 132kV transmission line from Ardrossan-West to Dalrymple. It was proposed at this early stage to make maximum use of the road reserves rather than traversing private properties. The Minister for Environment and Planning (Don Hopgood) informed ETSA on 21 January 1986 of the requirement for an EIS for the 132kV line.

No reason for this level of assessment was given in the Minister's requirement, and although they may be similar to those outlined for the Cherry Gardens and Tailem Bend EIA requirements, it should be noted that the environments were different and the transmission line was of a smaller scale (132kV as opposed to 275kV). This proposal was more comparable to the lower Public Environment Report (PER) level of assessment which was conducted previously for the Hummocks to Kadina East transmission proposal. It is unclear why the Ardrossan proposal, which was of a similar size, and in a similar region, did not trigger a PER (although this lacked legislative status under the Planning Act).

The EIS requirement also did not cover the Dalrymple substation site, given that a request for planning approval for the substation had been made earlier by ETSA on 2 September 1985. Approval for the site was received by ETSA from the MEP on 12 June 1986 based on a Section 7 Notice only. Dividing proposals into separate components for approval may have the effect of reducing its overall significance. However, in this case, ETSA was simply complying with a request from a Cement Company to reroute the existing 33 kV line (requiring connection to proposed substation) so they could commence quarrying operations. If the substation was to undergo the same process as the 132kV line, it would entail a much more time consuming process. Notwithstanding this request, the substation site became a subject of public submissions during the EIA process, and ETSA ended up relocating the site in response to public concerns. This highlights the need to assess proposals as a whole.

Proposal Guidelines

The draft guidelines for the proposal, which were reviewed by ETSA, their consultants and the DEP, were completed in October 1987 nearly two years after ETSA's official Notice of Intent. It is likely that this delay was a result of the resources and effort committed to the interconnection project (refer Cherry Gardens case study). The contents of the guidelines were virtually identical to those produced for the Cherry Gardens and Tailem Bend transmission line proposals. In order to maximise responses from interested parties it was recommended that no preferred route be

identified, which is indicative of lessons learned from the Tungkillo-Cherry Gardens and Tungkillo-Tailem Bend Transmission Line EIA processes.

Organisation and Management

Key participants appeared to be similar to those for the previous two case studies, with the Design Engineer Transmission as primary co-ordinator of the EIA process, and the EIS prepared by consultants. The Chief Surveyor and Regional Manager, and Manager Transmission Engineering also had important roles throughout the process. The Chief Surveyor was also closely involved in the interview process with landowners following the submission process on the Draft EIS. ETSA's environmental officers did not appear to be on an official planning team; yet unlike the previous two case studies, they were more active in the planning and EIA process, and from an early stage. Primary involvement related to assessment of vegetation prior to the Draft EIS by an 'Environment and Tree Management Officer'. Environmental Scientists were also involved in vegetation issues, commenting on the quality of the consultants Draft EIS, and negotiating with the DEP about the centre-line of the accepted route.'

The Draft EIS

In line with ETSA's policy of employing consultants for EIS preparation, a consultant's brief was prepared by ETSA's Design Engineer Transmission in June 1987, and Woodburn Fitzhardinge Geotechnical consultants were selected from four consultants to prepare the Draft EIS and Final EIS (supplement). The environmental investigations took nearly two years up until the release of the Draft EIS in May 1989. Many of the impacts were not significant because the area had already been heavily cleared for agriculture, and as a result, the draft EIS was relatively short (37 pages plus glossary, bibliography and appendices). The overall approach to the route selection in the Draft EIS was one that minimised the inconvenience to land owners. In February 1989, a joint field inspection of the site by the DEP, ETSA and their consultants was also undertaken to discuss concerns about either route, particularly in terms of vegetation.

Preprint versions of the Draft EIS were reviewed by the Major Projects and Assessments Branch of the DEP, and a number of substantial comments were made in February 1988, February 1989 and April 1989 which influenced the quality of the EIS. The draft EIS was revised by ETSA to incorporate the DEP's comments. While most issues were addressed, some were omitted such as detail on fauna (this issue amounted to only one paragraph in the Draft EIS). Internal comments on the EIS quality had also been made by ETSA's environmental officers in the Environmental Sciences and Engineering Branch which required further detail on native vegetation, and greater attention to native fauna.

The contents of the Draft EIS and proportion of focus are presented in Tables (1) and (2). The focus was on the consideration of alternatives (27% of the EIS), description of the environment (18%), the assessment of impacts (18%), followed by a description of the proposal itself (10%). A broad corridor for assessment (8 km wide) was identified in the Draft EIS (refer Chapter Nine in Volume I) which contained two alternative routes (western and eastern) for the transmission line, one of which predominantly traversed farmland and old road reserves (eastern route), whilst the western route stretched mainly along road corridors with continuous native vegetation. These alternatives are discussed in more detail later. Routes proposed were only general in nature and lacked details on specific centre-lines and pole locations. Despite some concerns about public uncertainty and the accuracy of environmental evaluations, the DEP noted that this approach :

'...does provide the opportunity for modification as a result of public consultation and State government evaluation. Hence, this flexibility at an early stage in the planning process is considered to be advantageous' (DEP 1990: p19).

The main environmental issues outlined in the Draft EIS related to visual impacts, effects on rural landowners, and impacts on native vegetation. The draft EIS (and supplement) for the Ardrossan-Dalrymple transmission line essentially came down to an argument between two points of view:

- farmers and their concerns about the line crossing farmland; and
- organisations such as the Nature Conservation Society and the government's Roadside Vegetation Committee with their concerns about the impacts on remnant native vegetation within the road reserves (ETSA 1990).

This latter was a significant issue given that only 2% of the area's native vegetation remained on the Yorke Peninsula, and this was located predominantly in road reserves which was the farmer's (and ETSA's) preferred location (ETSA May 1989; 1990). Thus, prior to completion of the Draft EIS, ETSA organised two background reports which outlined the characteristics of the native vegetation and implications for impact mitigation, and provided a basis for preliminary design and costing. It was believed by ETSA at an early stage that the impacts on vegetation could be adequately mitigated (as illustrated by experience from the earlier EIA process for the Hummocks-Kadina line). Based on this premise, ETSA had attempted to gain approval for construction in roadsides prior to the Draft EIS, but this was refused. Nonetheless, ETSA was open to suggestion and presented no preferred option in the Draft EIS.

Table 1: Contents of the Draft EIS for the Ardrossan Proposal

Contents of the Draft EIS
1.0 Summary
2.0 Introduction
3.0 Substantiation
4.0 Details of Line
• Physical characteristics
• Easements
• Line construction
• Substations
5.0 Description of Corridor
• Regional setting
• Climate
• Vegetation
• Settlement patterns
• Land Use
• Heritage Significance
• Fauna
• Aboriginal relics
6.0 Route Selection within the Corridor
• Line & pole placement (visibility, native vegetation, land use, dwelling proximity, construction & maintenance)
• Routes considered (sth Ardrossan substation, western route, eastern route)
• Implications when crossing native vegetation (location/height/costs)
7.0 Environmental Impacts
• Visibility
• Land use
• Vegetation
• Soil erosion
• Spread of pest plants/diseases
• Television/radio reception
• Noise
• Electric and Magnetic Fields
• Effect on Fences
• Private airfields
• Fire Risks
• Substation impacts
8.0 Mitigation Measures
• Visibility
• Vegetation
• Land use
• Control of pest plants
• Soil erosion Fauna
• Waste disposal
• Fire precautions
• Aboriginal sites
List of participants; Glossary; Bibliography; Appendices

Table 2: Proportion of focus in the Draft EIS for the Ardrossan Proposal

EIS Task	% Focus*
Summary	5.4%
Introduction	8.1%
Proposal Description	10.8%
<i>Policy Framework</i>	0%*
Proposal Need	2.7%
Alternatives Description	27%
Description of environment (baseline)	18.9%
Description of Preferred Concept (if identified)	-
Impact Description & Evaluation	18.9%
Mitigation	5.4%
<i>Monitoring</i>	0%*
Public consultation (approach)	5.4%
<i>Conclusion</i>	0%*

* does not total 100% because of overlaps on some pages.

Public Submissions & Supplement

The Draft EIS was sent directly to property owners for comment, and was placed on public exhibition for six weeks from 27 May 1989 to 10 July 1989, although a number of late submissions were also received. A total of 22 submissions were received including 21 individual public submissions, and one co-ordinated State government response. Preprint copies of the Supplement report which responded to these submissions were forwarded by ETSA to DEP for review, and its approval was given on 8 December 1989. The Supplement was subsequently released to the public on 10 February 1990 (Harvey 1994), seven months after the public review period.

Overall, 96 issues were raised in the public submissions (Nixon 1998). Table (3) summarises many of the individual issues. The two major public concerns related to impacts on agricultural activities (raised in 12 submissions) and impacts on vegetation (raised in 13 submissions). Visual impacts were also a concern in 36% of submissions. Two other major concerns involved fire risks and economic factors, which also related predominantly to agricultural land use. It should be noted, however, that the DEP did not consider the public review process an opinion poll, but rather, the aim was to identify the key issues and to increase public awareness on the proposal (DEP 1990: p2).

Most of the submissions were from landowners concerned about the line traversing their property and the agricultural impacts. As indicated in the Supplement, support for the routes was as follows:

- 47% supported the western route (10 submissions) (less impact on farmland);
- 23% were neutral;
- 9% were concerned about the western route but did not comment on the eastern route (2 submissions);
- 4% supported an amended western route (1 petition with 8 signatures) (to reduce impacts on farmland);
- 4% (1 submission) supported the eastern route due to lesser vegetation effects (Nature Conservation Society);
- 4% supported a modified eastern route to traverse road reserves;
- 4% were concerned about the substation site (ETSA 1990).

A political process was initiated when two landowners also involved their local Member of Parliament about the substation, and in response a submission was made by the Member for Goyder on their behalf. The Member for Goyder was also involved by eight landowners in a petition to gain support for the western route, albeit modified in the northern end to avoid crossing farmland (ETSA 1990). In the Member for Goyder's letter to the Minister for Mines and Energy,

Table 3: Issues raised in public and government submissions for the Ardrossan Proposal

Category	Issue
Social	<ul style="list-style-type: none"> • settlement proximity • visual impact (line and substation) (residents, tourism) • nuisance: existing poles on property • health effects from radiation • noise from line operation • impacts on radio and tv reception • effects on landowners without benefits
Land Use	<ul style="list-style-type: none"> • general interference to agricultural activities • timing of maintenance and timing of cropping • risk of weed spread • risks of collision with poles; safety and machinery damage • difficulties in stock management • health effects on stock (radiation) • hazards to aircraft conducting training exercises • difficulties for aerial spraying • impacts on crop sowing around poles • crop damage from maintenance vehicles • reduction in usable land • property dissection • impacts on windmills and bores • constraints on location of future windmills • impacts on rehabilitation measures to reduce soil salinity • impacts of poles on animals
Biophysical	<ul style="list-style-type: none"> • soil erosion • soil salinity • soil: construction problems (digging footings in limestone; poor trafficability during winter in red clay areas) • increased fire risks • impacts on remnant native vegetation • loss of vegetation as shelter and buffer • vegetation: trimming good for regrowth • impacts of bird strike, particularly western route (a) near salt pan • impacts on kangaroos in one area • recommendation by government submission for a survey of fauna to be conducted at the design stage
Heritage	<ul style="list-style-type: none"> • recommended that visible European heritage sites be avoided (some ruins present) • recommendation for consultation with local Aboriginals • recommendation for detailed archaeological survey prior to final line design
Economic	<ul style="list-style-type: none"> • impacts on land values • loss of income • costs of weed control • compensation • increased insurance due to fire risks • taxpayer objection to extra expense of going across farmland • costs of line maintenance would be as expensive as if line was built in existing corridor along coast • structural damage to houses due to blasting

the route was justified in terms of both reducing agricultural impacts and improving the vegetation environment. The latter was quoted at length in ETSA's Supplement :

'Having the line follow the roadway will also provide a very positive benefit for the natural vegetation. Unless the trees are trimmed or disturbed from time to time many of them begin to suffer dieback in due course. Examples on the peninsula are numerous. Trees that are cut back or burnt, regrow into strong and healthy specimens. By making ETSA responsible for

trimming the trees...will mean that the trees will remain healthy and will improve the general environment. Much of this roadway had trees knocked down when the E&WS pipeline was put in about 30 years ago and another disturbance to the trees occurred about 15 years ago when the Telecom went underground. Today those trees look healthier than many other surrounding trees. If trees do need to be removed to locate poles - and this occurs no matter which route ETSA follow, then I believe if four trees are planted ...for every one tree removed, the general environment will be benefiting by a factor of 3...'

Although ETSA noted that the amendment to the western route proposed in public submissions would involve greater length, more angles, and a greater effect on vegetation, they had no objections to the amendment which was illustrated in the Supplement (ETSA 1990). They also noted that less compensation to farmers would be required (ETSA 1990). Much of the Supplement also outlined ways in which the impacts on vegetation could be minimised, thus implying support for construction in the road reserves. It is interesting that in this proposal, transmission lines traversing farming land was considered a major impact (ETSA 1990: p6); whereas in previous EIAs, it was considered simply a minor and nuisance issue which was compensatable. Perhaps the increased attention paid to transmission lines and the influence of the community in decision-making demonstrated in the Cherry Gardens proposal, changed ETSA's opinion on this matter.

Assessment Report & Official Recognition

As for the Cherry Gardens and Taillem Bend proposals, ETSA requested the DEP to expedite the remaining approval process. This request was made in April 1990 due to the deterioration and decreasing reliability of the existing 33kv transmission line. Despite earlier concerns, the Government's Roadside Vegetation Committee also wrote to the DEP indicating their support for ETSA's proposal to locate the line on private land in roadside areas with significant vegetation. The DEP's Assessment report of the transmission line was completed shortly after on 9 July 1990 (Harvey 1994). Following the reports' acceptance and official recognition of the EIA documents by the Acting Minister for Environment and Planning on 18 July 1990, the Assessment Report was publicly released on 4 August 1990.

Key issues addressed in the Assessment Report reflected those contained within both the Draft EIS and the Supplement, with the largest focus was on vegetation. Despite ETSA's indication that the impacts on vegetation in road reserves could be mitigated, concerns were highlighted in the Assessment Report about locating transmission lines and other services in road reserves with native vegetation (consistent with the RVC's concerns). As a result, a compromise position was reached in which case the DEP recommended an amended version of the western route which was based on the route illustrated in the Supplement and recommended by landowners. It was also recommended that the be relocated one metre from the road reserves where significant vegetation existed. In particular, the DEP concluded that:

'The Department acknowledges that ETSA has sought to ease both vegetative and farming concerns by attempting to avoid vegetation disturbance through strategic pole height and placement, and to reduce interference to farming activities by various mitigative and compensative means.

While it is recognized that the eastern route option has received only scant attention in this EIS, the SADEP considers that the western route options have the potential to provide a more environmentally, socially and economical acceptable alternative than the eastern route.

A compromise route that takes into account both the concerns of the farming community and the remnant roadside vegetation is the amended alternative western route (b)... which sites the line in road reserves except in areas recognized as having vegetation of conservation significance. In these areas, the line should generally be placed 1 m inside the fenceline on farmland... Wherever practicable, the western side of the road...will be used. This route would comply with the planning policies for Yorke Peninsula' (DEP 1990: p27).

It was also argued that:

'The emphasis on siting poles and their associated access easements is considered to have a cost factor that can be mitigated against by ETSA. Alternatively, the impact of siting poles in road reserves of conservation significance has no comparable means of mitigation against the long-

term effects on the associated vegetation. The siting of poles in farmlands along boundary fences should create only minimal disturbance to the affected farmers' (DEP 1990: p27).

A total of thirteen more detailed recommendations were also proposed by the DEP. Because Section 7 Notices had not yet been submitted, the DEP suggested that there were opportunities for further discussion with landowners if they had further issues following review of the recommendations in the Assessment Report. This highlights flexibility in the EIA process, whereby public consultation is not always restricted to the formal submission phase on the Draft EIS. The lack of comment on the assessment report signalled that most parties involved '*appear[ed] satisfied with the result*'.

Section 7 Notice

Section 7 Notices were submitted by ETSA to the SAPC and District Councils on 26 July 1990, within which ETSA noted the concerns about locating lines within road reserves with significant roadside vegetation. ETSA noted that the construction of lines in such areas conflicted with:

- the governments' Roadside Vegetation Committee's objectives;
- government guidelines which restricted the establishment of services along roads with native vegetation; and
- the Yorke Peninsula Development Plan.

ETSA also informed the councils of the compromise reached with the DEP. In addition to the proposal elements subject to EIA, ETSA notified SAPC of their intentions to relocate the Dalrymple substation in response to public concerns. No objections to the proposal were noted by the District Council of Central Yorke Peninsula in their reply to the Section 7 Notice on 24 October 1990, as long as the transmission line was placed on road reserves or within 1 metre. No objections were made from other councils.

An Agreed Alignment

Shortly after the completion of the DEP's Assessment Report and the Section 7 notification, a joint inspection of the recommended route was conducted on 31 July 1990 by one of ETSA's environmental officers and other ETSA representatives, the DEP and the RVC (Roadside Vegetation Committee). In an attempt to balanced landowner concerns and vegetation issues, a final route was agreed upon, which appears to be a slightly modified version of the route recommended in the Assessment Report. Slight changes in the northern end involved relocation of the line away from one road section and across private property. The DEP informed the SAPC of their agreed outcome for assessment in the Crown Development Report.

Crown Development Report

Based on council comments and EIA documents, the SAPC's Crown Development Report reviewed the:

- western route (2 variations);
- eastern route; and
- the amendment to the western route identified in the Supplement report.

Given that ETSA had agreed to adopt the amended western route alternative, the SAPC recommended that the Minister make no directions on the proposal. The SAPC also suggested that the MEP require ETSA to proceed in a manner consistent with the recommendations contained within the Assessment Report. No mention however, was made about the alignment agreed to by the DEP, ETSA and the RVC shortly after the Assessment Report, and as such, both ETSA and the DEP were concerned about a disparity between the SAPC recommendations (based on the Assessment Report recommendation) and the later 'agreed' alignment. This is despite the DEP's attempts to 'strongly' point out the agreed alignment to the SAPC. It was informally suggested by the DEP that ETSA proceed with the alignment agreed to, and if queried, ETSA would be supported by the DEP.

Ministerial Directions

The recommendations of the Crown Development Report were subsequently adopted by the MEP, and approval was given on 15 October 1990 (Harvey 1994). ETSA was informed of the decision on 29 October 1990. MEP approval did not, however, negate the need for ETSA to obtain approvals under other legislation where relevant.

ETSA's Response

ETSA agreed with the Assessment Report's final recommendations, and as noted earlier, the final alignment based on the joint field inspection. Once the route had been selected and directions made, ETSA continued negotiations with property owners affected by the decision to define the final route and tower locations. As required by the final decision, ETSA also conducted further studies. ETSA officers from the Environment Branch and Survey Branch inspected the sites of proposed pole locations on November 15 1991 to evaluate their location in terms of minimising vegetation clearance and avoiding disturbance of protected, rare, vulnerable or endangered plant species. A consultant from the Aboriginal Heritage Branch of the DEP was also appointed to conduct an archaeological survey of the route prior to final design. The report was completed in October 1991, and finding no major constraints, ETSA informed the DEP that line construction would proceed. In June 1992, ETSA visited property owners to identify any concerns with the construction of the line. It was noted that owners were satisfied with the '*way in which ETSA prepared and carried out the work*', and only minor concerns were evident. There are some concerns, however, about the location of the route and its consistencies with the final decision (refer to the evaluation of compliance below).

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the legislative requirements? This criterion was graded at A. All requirements were complied with, which is not surprising given the lack of proponent discretion in this area once an EIS had been required.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at B, where the majority of guideline requirements were complied with. Those areas not addressed (eg description of fauna, Aboriginal heritage), were not perceived by ETSA to be significant issues.

Criterion 1.3: Did the proponent comply with the final decision? As for the other case studies, this was unable to be graded due to insufficient information. It is known, however, that the following recommendations were complied with:

- to conduct an archaeological survey;
- to minimise impacts by appropriate location of poles (achieved as a result of more detailed vegetation surveying);
- to conduct consultation with the Point Pierce Community Council regarding Aboriginal heritage.

Compliance with the most significant part of the final decision (ie the final route). All recommended routes were illustrated previously in Figure (1) including the final route after construction based on ETSA's electricity supply map. Although there are comparison problems due to scale differences, the final routes appears to be inconsistent to the recommended route in two ways:

- first, the northern end reflects the route proposed originally in the Draft EIS and not the amendments proposed by the public, the DEP, and that agreed to by the DEP, ETSA and the RVC in July 1990;
- secondly, the mid-southern end of the line appears to traverse what was route (a) in the EIA process, and not route (b) which involved a deviation to the east (as opposed to the west).

This latter is of some concern given that the Draft EIS revealed that the roadside vegetation on option (a) was in better condition than option (b). This latter inconsistency is also particularly

surprising given that route (a) involved greater distances over cross country (in farmland) which may spark some controversy (none appeared evident). Clearly these inconsistencies need further clarification, but on current information and the requirements of planning approval, there are some major concerns about route compliance. Nonetheless, compliance to the Ministerial directions was not mandatory for ETSA.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at C. ETSA went beyond compliance in the public consultation process by:

- consulting with the public prior to the release of the EIS (eg at public meetings, verbal liaison with landowners, and receipt of informal submissions);
- conducting personal interviews with landowners about their concerns after the release of the Draft EIS;
- consulting with individuals late in the process after line construction to identify the presence of any concerns, which was not required by law;
- receiving and considering public submissions outside of the official submission period, one signed by 11 landowners, together with a number of verbal contacts requesting that the line traverse roadways (ETSA May 1989).

ETSA was strongly inclined at the time towards maintaining good public relations. This is probably partly a result of bad relations experienced for the Cherry Gardens proposal, and land damage experienced during construction of components of the interconnection project. As demonstrated by the Cherry Gardens EIA process, the public can have a major influence on ETSA's proposals resulting in non-favourable outcomes for ETSA. Attempts to maintain good public relations were also explicit in the Draft EIS which noted that maintenance in open farmland may result in crop damage, and hence result in bad public relations (ETSA May 1989: p22). Given that ETSA went beyond compliance, performance in this criterion was good, but a full score was not given because further efforts could have been made in the use of consultation techniques (see evaluation dimension 4), level of mitigation detail in the EIS, and commitment to monitoring for instance. In some respects (eg in the draft EIS), minimal compliance was attained.

EIS QUALITY

Proposal & Policy Framework

Criterion 2.1.1: Was the project justified and the rationale clearly outlined? This criterion was graded at B-A. Performance was very good with a clear substantiation for the proposal (refer earlier summary), and an outline of the proposed timing in terms of approval and commissioning dates. Omissions were only minor and related to overall demand trends. Like the previous two case studies, more details may have been useful about population trends in the region and associated energy demand statistics. These were minor limitations only. The rationale was clearly demonstrated, and the information was sufficient for assessment, as also noted by the DEP in their Assessment Report.

Criterion 2.1.2: Was there a detailed description of the proposal? This criterion was graded at B. As noted previously, 10% of the Draft EIS was dedicated to proposal description in Chapter Four of the Draft EIS. This included physical characteristics of the line, easements, line construction (access gates, tree clearing, footing and pole installation, conductor stringing), construction practices and schedules. Brief reference was also made to the Ardrossan West substation alterations, and the proposed Dalrymple substation site, the latter of which referred to site size, tallest heights, surrounding vegetation, area proposed to be cleared, noise emissions, number of expected visits, and tree planting for screening.

Table (4) presents the subcriteria which must be met for a good performance. Of 11 subcriteria, 90% ($n=10$) were referred to in the proposal description. Omissions included:

- materials required (implied in the construction process in terms of insulating material, etc);
- transport of materials;
- numbers of workers expected during construction and maintenance (however, details were provided about the management of these workers, frequency of visits to the substation, and means of reducing inconvenience to property owners).

A diagram to illustrate the substation layout at Dalrymple might also have been included, but this was not essential as the substation proposal already had approval. The omissions for this criterion

were generally the same as those for the previous two case studies. Performance was however, slightly better for this proposal due to the greater level of detail about the substation alternations and proposed new substation.

Table 4: Proposal Description performance in the Draft EIS for the Ardrossan Proposal

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design	
Costs (may include economic viability/guarantee for private sector projects)	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	90% (10/11)

Criterion 2.1.3: Was there an outline of the policy framework and legislation which was relevant to the planning and decision-making for the proposal? This criterion was graded at E-D. Table (5) lists the potential legislation or policies which may influence the proposal. Of twelve relevant areas of policy/legislation, only 41% were referred to ($n=5$), and adequate level of detail was provided for only one of these areas. It is surprising that the Development Plan was not referred to given that it was incorporated into the previous two case studies in ETSA. Lack of reference to the Development Plan principles was significant in that several principles related to native vegetation and fauna protection in the region, and formed a component in the DEP's Assessment Report and the SAPC's Crown Development Report. Although other factors such as native vegetation principles (eg from the Native Vegetation Authority) were not referred to, the informal policy emerging from assessment of a previous line (Hummocks-Kadina) was referred to in detail (ie to avoid significant vegetation in road reserves).

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at C. As demonstrated in Table (6), 77% of environmental categories were referred to, but the grade was reduced to a C given the following omissions:

- lack of reference in the description of the environment to pest plants and diseases in terms of current status, and management in the region (although it was briefly noted as an impact);
- lack of reference to fire risk zones;
- lack of demographics (may have helped to define significance in terms of numbers affected, and impact on local economy);
- lack of reference to existing tourism (not significant in the area, but should have been addressed as indicated by its reference in a public submission);
- lack of reference to quality of life (this should be addressed to illustrate existing noise levels, visual impacts, etc; to give some idea about the cumulative effects on people, or if noise and visual impacts are relatively non-existent, then the impacts of the proposal may be perceived to be greater).

Table 5: Policy and legislative framework: Degree addressed for the Ardrossan Proposal

	Legislative or Policy Framework	Addressed?
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	
	Development Act requirements 1993	n/a
	Development Plan	
General	Environmental Protection Act 1993 (eg wastes, pollution policies)	n/a
Environmental Protection	Coast Protection Act 1972	
	Clean Air Regulations 1969 (ozone?)	
	Environment Protection (Impact of Proposals) Act 1974 (Cth)	n/a
Flora, Fauna, Parks	Fauna (eg Endangered Species Protection Act 1992)	n/a
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks & Wilderness (National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	n/a?
	Animal and Plant Control Act 1986	
Land & Water	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	n/a
	Soil (eg Soil Conservation and Land Care Act 1989) (EIS in prep. prior to this Act)	n/a
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	n/a?
	Land Acquisitions Act 1969	
	Fire (eg Country Fires Act 1989) (EIS in prep. prior to this Act)	n/a
Heritage	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth))	
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements)	
	Explosives policies/legislation (eg SAA Explosives Code AS2187 1979)	
	Score:	5/12 41%

Issues which *were addressed* were the most significant, whilst those that were *not addressed* were not as significant (but still significant enough not to increase the grade). The omissions may have been considered minor by ETSA, or have been lost in the context of the two most significant and extremist arguments about traversing property versus native vegetation presented in the Draft EIS, submissions and Supplement. While the omissions may not have influenced the final outcome for the proposal, for a comprehensive assessment of the environment, and hence the proposal, they need to be explicitly addressed, even if only briefly (or justified against as an issue of concern). Some of these omissions were addressed in the assessment of impacts, and thus should have a baseline present (eg spread of pest plants; fire risks).

Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment? This criterion was graded at E. As demonstrated in Table (6), only 38% of environmental categories had adequate detail. More specific points for those impact categories addressed are as follows:

- **climate:** lacked information on potential for lightning strikes in terms of impact on transmission line, and fire risks; lacked detailed information on corrosive problems from the adjacent coast in the western route relative to eastern route;
- **fauna:** no reference to bird populations (eg salt pan nearby) which may have implications for bird strike; fauna overall was substantially less detailed than the previous case studies;
- **water:** more detail was probably required due to groundwater salinity issues and mitigation measures raised in public submissions;
- **soil:** although soil information was generally adequate, hotspot erosion zones should have been more clearly outlined, and indications of their extent presented if already evident;
- **vegetation:** although the level of detail was generally adequate, the description needed estimated densities of areas to be cleared, expected regeneration times and likelihood of regeneration for species type;

- **landscape quality:** lacked detail because it was only addressed in terms of scenic coastal route, and required more detail in terms of the regions further west (but this was not a significant issue).

It should again be noted however, that the two most significant environmental categories performed well in the level of detail relative to other environmental categories. This indicates a problem in the evaluation framework; that is, the categories are not weighted for their significance to the project. Thus, the overall grade may not accurately reflect performance in practice. In this case, performance may be adequate for making a decision on the proposal (ie it came down to two major issues), but based on an academic assessment such as this, performance is unsatisfactory. Although it is possible to weight the significance of issues (and hence the overall grade), this is highly complex because issue significance can change between proposals, and is a subjective judgement based on one's perspective. As already seen in this proposal, the impact on agricultural land use is considered a significant issue, whereas in previous proposals (eg Cherry Gardens, Tailem Bend), it was considered a minor issue. Thus weighting becomes difficult and would make direct comparison between projects difficult.

Table 6: Draft EIS: Performance in the description of the environment for the Ardrossan Proposal

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality	not applicable				
Hydrology					
Soils					
Native vegetation					
Pest plants-diseases					
Fauna					
Fire risk zones					
Residential landuse					
Demographics (population etc)					
Conservation parks, etc landuse	not applicable				
Industry, mining, airfields etc landuse					
Agriculture landuse				Implied	Implied
Recreation-tourism landuse					
Infrastructure landuse				Implied	
Non-Aboriginal Heritage					
Aboriginal Heritage					
Landscape Quality					
Quality of Life (eg noise reception)					
Score (of 18)	14 77%	7 38%	2 11%	3 16%	2 11%

Key: 1=environmental category addressed?; 2=adequate level of detail?; 3=brief description of future environment?; 4=reference to significance of environment?; 5=reference to sensitivity/ capacity of environment to absorb impacts?

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded E. As demonstrated in Table (6):

- description of future environments (without the project) was addressed in 11% of cases;
- reference to the significance of environments was addressed in 16% of cases; and
- reference to the sensitivity/capacity of the environment to absorb impacts was addressed in 11% of cases.

This made a combined grade of 12% which is unsatisfactory.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at B. A corridor boundary of 8 kilometres in width was defined, with routes located adjacent to boundary edges. The corridor was chosen due to constraints to the east (coastal scenic highway, corrosion from salt air, landform constraints). It was also noted that although routes could be defined further to the west (and east), they were constrained by increasing line lengths and hence, costs (ie deviating from the most direct route possible), in addition to a fauna reserve in the west. Thus, the corridor boundary was defined. The most significant effects were native vegetation, impacts on land use and visual effects, which would be adequately contained within the boundaries identified in the Draft EIS. No major limitations present, although dwelling locations could have been located beyond these boundaries so that external assessors are able to formulate their own decisions. Moreover, as noted by the DEP, better justification about salt corrosion (and where it becomes less of an issue) could have been better. But these points are not overly significant.

Impact Assessment

Criterion 2.3.1: Have all the major *direct* impacts been addressed in the identification and description of impacts? This criterion was graded at C. As demonstrated in Table (7), of 21 relevant impact areas, 66% ($n=14$) were addressed in the impact assessment.

Table 7: Performance in identification of impacts in the Draft EIS for the Ardrossan Proposal

Impact Category	Addressed?
Human Settlements	
Land Values	
Production Values	
Land use: Agriculture	
Land use (eg airfields, industry, mining)	
Hydrology (water quality)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Electrical fields	
Noise	
Ozone Generation	
Tv & Radio Reception	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access	
Score:	66% (14/21)

Omissions related to:

- hydrology (eg groundwater and soil salinity and the potential impacts of the line on rehabilitation measures, as noted in two public submissions);
- impacts on non-Aboriginal heritage (but only a minor issue for the proposal);
- impacts on Aboriginal heritage;
- impacts on fauna (including avifauna and bird strike);
- impacts on tourism-recreation (minor issue);
- ozone generation (minor issue); and
- wastes (minor issue).

Although Aboriginal heritage and fauna were not addressed in the impacts section, this was a result of comments by the DEP which suggested that paragraphs on fauna and heritage in the 'impacts' section be transferred to Chapter Three in the EIS. Moreover, it was implied in the Draft EIS that these issues were not significant and would not be impacted upon by the proposal. Nevertheless, some assumptions were made given the lack of information and detailed surveys in the area for these two issues, and there was no reference to issues such as bird strike which was a potential impact of the line.

Criterion 2.3.2 Does the description of impacts have an adequate level of detail? This criterion was graded at C which is again a result of the overemphasis on vegetation and agricultural issues at the expense of other issues.

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts? Like the previous two case studies, performance was graded at E. Limitations comprised lack of reference to:

- cumulative impacts of other services or developments in the area (eg multiple towers on properties? other easements?) (one public submission was concerned about multiple towers already on property);
- setting a precedent in the area for other similar developments (will the line be upgraded in the future to 275kV? Will a parallel line be constructed in the future as occurred in the T-C proposal?);
- secondary effects such as constraints on future developments, or future revegetation schemes (the latter was raised as an issue in one public submission), or increasing viability for larger-scale development operations to the south (minor point in the context of this proposal).

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. As demonstrated in Table (8):

- magnitude of impact was addressed in 42% of impact areas;
- direction of impact was addressed in 61% of cases;
- geographical extent was addressed in 19% of cases;
- duration and frequency of impact was addressed in 4% of cases.
- potential reversibility of impacts was addressed in 4% of cases;
- mitigation potential was addressed in 52% of cases which is satisfactory;
- probability of impact was addressed in 14% of cases.
- public controversy was addressed for 9% of cases;
- thresholds of concern was addressed for 11% of cases;
- and uncertainty was noted in 9% of cases.

This made a combined grade of 23% which is unsatisfactory.

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the criteria used to justify these alternatives (including those not adopted) presented? This criterion was graded at B. Alternatives were identified at three levels and clearly justified including:

- two broad schemes were identified involving construction of a second 33kV line, or construction of a new 132kV line (the latter was assessed in the EIS). The former was cheaper, but justified against due to better voltage levels resulting from the 132kV line (ETSA May 1989: p6).
- route selection within the corridor which involved two route concepts: western route (a and b) and eastern route (refer Table 9). Unlike previous EIA processes for transmission lines, however, ETSA did not identify alternative corridors for the line. Rather, a broad corridor of 8 kilometres width was proposed.
- alternative approaches to construction and line design were proposed to cater for varying vegetation heights. It was noted that standard line designs with a Maximum Permissible Height (MPH) of vegetation of 4 metres would result in unacceptable impacts. Thus, five options were proposed ranging from MPH of 4 metres (standard line design) to MPH of

greater than 10 metres. While the cost of construction increases for the greater MPH, the yearly maintenance cost decreases (refer Table 9).

Reference could have been made to undergrounding as was the case for the previous case studies, but this is a minor issue given the prohibitory costs.

Table 8: Performance in the evaluation of impact significance for the Ardrossan Proposal

	<i>Spatial-Temporal</i>				<i>Alleviation-Probability</i>			<i>Thresholds-Certainty</i>		
	1	2	3	4	5	6	7	8	9	10
Human Settlements										
Land Values										
Production Values										
Agriculture									n/a?	
Airfields/industry										
Hydrology										
Non-Aborig. Heritage										
Aboriginal Heritage										
Vegetation										
Fauna										
Tourism-Recreation										
Visual Impacts	Implied									
Electrical fields										
Noise										
Ozone Generation										
Tv & Radio Reception										
Fire									n/a?	
Wastes										
Pest Plants	Implied									
Soil Erosion										
Line Access									n/a?	
Score (of 21)	9 42%	13 61%	4 19%	1 4%	1 4%	11 52%	3 14%	2 9%	2/18 11%	2 9%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Table 9: Alternatives proposed for the Ardrossan proposal: Routes and Construction
(MPH=maximum permissible height for vegetation) (ETSA May 1989)

Route	Total Length (km)	Total cost (million)	Length-cost Standard Line MPH 4m	Length-cost for 8m MPH	Length-cost for 10m MPH	Length-cost for >10m MPH
Western(a)	63	2.53	32.5km 1.14M	14.2km 0.6M	13.3km 0.63M	3.0km 0.16M
Western (b)	63.8	2.6	31.8km 1.11M	9.6km 0.41M	16.2km 0.76M	6.2km 0.32M
Eastern	61.1	2.26	52.4km 1.83M	2.7km 0.12M	1.0km 0.05M	5.0km 0.26M

Factors leading to route selection were transparent in the Draft EIS and were outlined in Chapter Six ('Route Selection within the corridor'). Selection criteria were in part based on lessons learned from the previous Hummocks-Kadina EIA process, and related to:

- visibility;
- native vegetation (an extensive focus in route selection);
- land use;
- proximity to dwellings;
- ease of construction and maintenance in open farmland versus roadside locations (eg access, negotiations with property owners, fire risks, vegetation removal).

In addition, the most acceptable route would also be one that minimises cost (ETSA 1989: p23).

As already noted, other alternatives to the west and east were justified against. More central routes in the corridor were also justified against due to their significant impacts on farmland (which would be greater than the two routes presented). Although it was noted that several other routes were possible, it was stated that the impacts would be similar in nature to the routes identified for assessment. Thus, the two routes presented appear to be representative of each of the two main issues (vegetation: eastern; farmland: western). The only concern was that issues such as housing proximity and vegetation could have been presented beyond the corridor boundaries so that decision-makers were more informed about the area, and could identify other alternatives if viable. But this is a minor point, and ETSA's economic justification was valid, particularly given the presence of reserves to the west, and scenic landscapes to the east.

Criterion 2.4.2: Have alternatives been ranked in order of preference for each environmental impact? This criterion was graded at C. As in the Taillem Bend EIS, alternatives were not systematically ranked in order of preference. They were, however, compared in tables for issues such as:

- ease of construction and maintenance (eg Table 3 in the EIS);
- distance in farmland in road reserves, settlement proximity, number of road crossings (Table 4 in the EIS);
- implications for vegetation and costs (Table 5 and 6 in the EIS);
- visual impacts (Table 7 in the EIS); and
- land use impact (Table 8 in the EIS).

Inadequacies were evident because it was not immediately apparent which route performed better on certain categories, and a more systematic approach which ranked the routes; performance according to each issue would have been useful.

Mitigation & Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at B. As demonstrated in Table (10), mitigation measures were identified for 75% ($n=15$) of impact areas. Omissions included a lack of mitigation for:

- hydrology (not addressed as an impact area);
- non-Aboriginal heritage (only 2 sites identified, not significant);
- fauna (noted as insignificant issue, but lack of information to determine this);
- ozone (not addressed as an impact area); and
- radio or television reception.

Of the possible mitigation measures - "TRANSCEND" (ie Transfer, Rehabilitate, Avoid, Natural regeneration[facilitate], Screen, Confine, Compensate, Educate, Negotiate, Design) - the most commonly used mitigation measure was avoidance. Other mitigation areas included:

- design (eg vegetation clearance heights, alleviate fire risks);
- confine (eg impacts on agricultural land, vegetation-small areas for tower construction);
- screen (eg visual impacts);
- compensate (eg land values);
- transfer (eg wastes);
- negotiate (eg easement access);
- rehabilitate (eg access damage);
- natural regeneration (eg promote for native vegetation).

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? This criterion was graded at E. As demonstrated in Table (10):

- level of mitigation difficulty was not addressed;
- level of expense was addressed in 5% of cases ($n=1$);
- effectiveness of mitigation was generally implied in 25% of cases; and
- certainty of outcome was generally implied in 25% of cases.

This made a combined grade of 13%.

Criteria 2.6.1 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? Both criterion were graded at E. As demonstrated in Table (10), monitoring was identified for 5 impact categories, but more often than not, this was simply implied by either further survey work prior to line construction (eg fauna, archaeological), or during maintenance (eg maintaining tree clearances to alleviate fire risk). The level of detail for monitoring was completely unsatisfactory with no detail for any impact category.

Table 10: Performance in mitigation and monitoring in the Draft EIS for the Ardrossan Proposal

	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Settlements		A, S							
Land-Productivity Values		Co				Implied			
Agriculture		A, C, Co				Implied			
Airfields, industry		A				Implied			
Hydrology							Implied		
Aboriginal Heritage		A							
Non-Aboriginal Heritage		A							
Vegetation		A, C, R, N, D				Implied	Implied		
Fauna		Negl.					Implied		
Recreation-Tourism		A							
Visual Impacts		A							
Electrical Fields		D							
Noise		C							
Ozone Generation									
Reception									
Fire		A, D					Implied		
Waste		T							
Pest Plants & Diseases		A, C, Ne					Implied		
Soil Erosion		A, R							
Access		Neg, Co, R							
Score (of 20)	15 75%	-	0	1 5%	5 25%	5 25%	5 25%	0	0

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Description of methods was graded at D, whilst the use of information sources was graded at C. Methods for the assessment of impacts and description of the environment were not specified in any detail. Although original field work was conducted for vegetation resulting in two separate reports, no field work was conducted on fauna or archaeological sites. This was proposed to be conducted after approval and prior to line construction. In addition, the impacts were assessed with the western routes (a) and (b) combined rather than differentiating the routes for comparison with the eastern route. As for the Cherry Gardens proposal, this made comparisons less valid, although it should be noted that in some cases, differentiation was made, and most of the western route was the same for options (a) and (b). Reference to information sources was better, including reference to the State Heritage Register, and the DEP's record of Aboriginal sites.

Criteria 2.7.3: Were all relevant sections included in the EIS including introduction, conclusion, technical summary and terms of reference? This criterion was graded at B. All relevant sections were included with the exception of a conclusion, which was also lacking for the previous two case studies. Unlike the Tailem Bend Draft EIS, the technical summary was very good and elucidated the main issues and arguments for the proposal. This summary was not originally incorporated, and was a result of comments on the EIS quality from the DEP which noted the usual practice of including a summary.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at B. The Chapters were arranged logically and related to the major EIS tasks involving environmental description, route selection and alternatives, impact assessment and mitigation. A table of contents highlighted the location of information, and whilst no index was present, this is not significant due to the short length of the EIS. The only section lacking was one on monitoring.

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B-A. Information in the Draft EIS was easily understandable by the non-specialist, and there were no apparent ambiguities about the main issues and how each route performed (except where there was a lack of adequate detail). Technical terms and acronyms were adequately defined, and referencing was good. It was clear in most cases where the information was sourced from. Visual aids were presented throughout with the use of tables and figures and the end of the documents. Photographs were also incorporated which gave a better understanding of the environment. A similar approach should have been adopted for the previous two case studies.

Criterion 2.7.6: Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This criterion was graded at C. Generally, the information was presented as a whole. The main problem in this criterion was the reference to reports on vegetation and fauna species which were not attached to the Draft EIS. Readers were referred to ETSA's library which made assessment of the information inconvenient, particularly for those in the Yorke Peninsula. ETSA was situated across the Gulf of St. Vincent, making access difficult. The reports in question were also not found in the project files.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at C. Concerns about the short length of the EIS are not overly significant given the size and nature of the proposal (ie it should probably have triggered a PER rather than a full EIS). However, given the lack of detail on some environmental categories and impacts, the EIS was probably too short (at only 37 pages plus appendixes and bibliography, etc).

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the EIS with a lack of bias in presentation? This criterion was graded at B. The information appeared to be appropriately presented and there did not appear to be bias towards any option, despite ETSA's preference for the western route. Areas of potential bias or overemphasis was evident with:

- the emphasis on the mitigation of vegetation which pointed towards the western corridor favoured by landowners;

- the DEP's comment that the eastern route had received scant attention (although it is not clear whether they were referring to the EIS, the process, or their own assessment); and
- the detailed information on vegetation heights (in an appendix) was also focused entirely on the western route
- over-emphasis on the two main issues of agriculture and vegetation (although this appeared to be generally appropriate to the proposal).

Criterion 2.7.9: Was there an appropriate emphasis on the conclusions in the EIS with a lack of bias, and were the conclusions appropriately based on the information presented in the EIS (if the information itself lacked bias)? This criterion was graded at C-B. This criteria was difficult to assess in the absence of explicit conclusions about the proposal and a preferred option. However, conclusions relating to route justification appeared appropriate based on environmental and cost constraints. The only concerns were that some conclusions were made based on inadequate information (eg fauna as negligible impact) or assumptions (eg that mitigation would be effective). ETSA's conclusion about locating lines in road reserves containing remnant vegetation was also a concern of the government's Native Vegetation Authority (see later text).

Level of Controversy

There appeared to be no public controversy about the quality of the EIS, and in fact two positive comments about the thorough nature and presentation of the EIS were made in two public submissions. In contrast, concerns were evident from the government about the quality of the EIS. Shortly prior to the release of the draft EIS, the government's Native Vegetation Authority (Roadside Vegetation Committee) expressed concern about the information on vegetation which '*... did not enable an adequate appraisal of the need for an ongoing tree-cutting programme*'. As noted previously, the DEP also had an influence on the final quality of the Draft EIS, with several comments made on a preprint version in terms of minor editorial comments and more significant issues such as detail on fauna, vegetation, layout, lack of detail on route positions, and corridor boundaries among other things. The DEP also criticised the Draft EIS for adopting the role of the Supplement and the Assessment Report in one report. It was suggested that the EIS was pre-emptive of both public opinion (prior to exhibition period) and the Assessment Report, and allowed for minimal flexibility in the final decision. The DEP noted:

'While the public meetings held in February 1988 may have provided for some public comments to be noted, and the document thus influenced, the document does not allow for the opinions of others in the general public who were not at the meeting or who did present an opinion at that time.'

A broader-based document was recommended which provided the same information for each route examined, and a requirement for ETSA to outline reasons if only one feasible option was available. Nevertheless, the DEP also noted in their Assessment Report that '*The information contained within the Draft EIS and Supplement is considered to fulfil the requirements for an environmental evaluation of the proposal*' (DEP 1990: p2). Thus, overall controversy about the EIS document released to the public (not the earlier preprint) does not appear to be significant.

OPENNESS & CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B. ETSA devoted significant effort to liaising individually with landowners where possible. The overall approach to the EIA process was to minimise disturbance to landowners, which required consultation. As noted previously, ETSA was endeavouring to maintain good public relations, which is also indicative of a genuine desire for consultation. It could be concluded ETSA would not have gone beyond compliance in terms of early consultation or personal interviews if their desire was not genuine.

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at C-B. ETSA generally demonstrated openness to most options proposed. For instance:

- an alternative to the western route raised in public submissions was openly considered by ETSA in their Supplement with an illustration of the amended option;
- ETSA was open to public suggestions to relocate the Dalrymple substation, despite not being an official part of the EIA process;
- an alternative route suggested in one public submission was briefly investigated but not adopted because it entailed a 2.4km increase in line length with more angles;
- DEP requested cost estimates for undergrounding of the line, but cost constraints precluded this option (ie \$50 million compared with much smaller costs for overhead lines).
- ETSA was also willing to be flexible about the corridor boundary assessed given the amended alternative recommended by the public went beyond this boundary.

However, openness and flexibility was questioned by the RVC prior to the release of the Draft EIS in May 1989:

'The impression which the Roadside Vegetation Committee is now gaining is that the Electricity Trust is adhering more rigidly to a policy that new and replacement powerlines should be placed where possible on road reserves. The flexibility shown earlier by ETSA with the location of the South Hummock-Kadina line is now no so evident. If this impression is correct, the implications for roadside vegetation could be highly significant.'

ETSA was more flexible about this issue later in the process as indicated by their agreements with the DEP's recommendations and the compromise position reached which deviated the line into farmland in areas of significant vegetation.

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration project conception:** This criterion was graded at E. In March 1987, ETSA's System Planning Engineer reinforced the need for the proposal, but this was based predominantly on technical issues.
- **Integration Planning:** This criterion was graded at B-A. In liaison with the DEP, ETSA identified preliminary routes (ii) based on environmental constraints, and from principles learned from the earlier Hummocks to Kadina Transmission Line EIA process. The environmental investigations were well integrated into the planning process (ie there were not two separate processes and the assessment of alternatives covered environmental, technical and economic factors in the assessment).
- **Integration Design:** This criterion was graded at B. Although the formal EIA process was focussed on planning of alternative alignments, environmental information appeared to be integrated at the later design stage as a result of recommendations and commitments arising from the EIA decision. Pole locations and heights were informed by a more detailed vegetation survey, and archaeological study was undertaken to protect any potential sites (none identified to impede line). Negotiations with landowners were also conducted regarding specific tower locations. Thus, environmental information informed the design stage, although there was less integration at the *formal* EIA stage. No major concerns for this criterion, except for the lack of accountability, transparency and follow-up for this stage which would have occurred if the EIA process was initiated when the detailed information was available. However, if this was the case, there would be less room for flexibility in the final decision (ie too many resources invested into the design).
- **Integration Construction:** There was insufficient information available to assess this criterion.

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at B. Public consultation was taken early and prior to the release of the Draft EIS, although not before the instigations of the formal EIA process. Since the previous Hummocks to Kadina PER, which was prepared by the same consultants, ETSA found that government departments and the public had become increasingly opposed to transmission lines and had become more involved in issues about health effects, vegetation, and land use. Thus, during preparation of the draft EIS, local councils were approached and seminars given in October 1987. Two public meetings were also held in February 1988 in conjunction with District Councils with an attendance of approximately 65

individuals combined (ETSA 1989). Early consultation was also undertaken with the government's Roadside Vegetation Committee (RVC). A list of other organisations consulted was contained in the Draft EIS and included for instance, local councils, government organisations at the Commonwealth and State level (eg Department of Transport, Department of Agriculture-Animal and Plant Control Commission; Aboriginal heritage; Health Commission; Department of Tourism), and the United Farmers and Stockowners of SA Inc. (ETSA 1989: p37).

Approach

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at C. Of the possible techniques, 45% were utilised ($n=5$) in a similar fashion to the Taillem Bend proposal (refer Table 11). The majority were at the lower end of the participation scale, although the personal interviews involved some degree of joint planning (which raised the grade), albeit limited in the context of the overall proposal decision.

Table 11: Public participation techniques adopted by ETSA (based in part on Westman's 1985 five-scale participation model and Glasson et al 1994)

Approach	Public Power	Participation Techniques	Adopted?
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA's case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: Was the proponent willing to release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)? This criterion was graded at B-A. ETSA was willing to release information as required by law (eg the EIS) and by verbal comments during interviews. Although vegetation reports were not attached to the EIS, ETSA was willing for the public to review them in their library. ETSA also made available summaries of the public submissions and the individual interviews conducted with landowners after the public review period. After the decision is less clear, but based on information in the project files, there did not appear to be any further information released to the public (eg details of decision, monitoring details), although ETSA was not legally required to do so. Overall, there did not appear to be any attempts to hide information from the public.

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly? As for the other case studies, this criterion was unable to be graded. Based on the available information, there did not appear to be any need for major changes to the programme. Thus, the criterion was not applicable, although information not accessed may demonstrate otherwise. If so, this criterion still could not be assessed due to a lack of information. There also did not appear to be a need for major changes to the time frame, except in that ETSA's original intention was to obtain planning approval by 1988, yet this was not forthcoming until 1990. ETSA was also requesting speedier approval near the end of the EIA process, even though they

were not subject to the interconnection deadline pressures as was the case for the previous two case studies. However, pressure to commission the line as early as possible was evident from the Systems Planning Engineer who noted that if delays occurred (or the line not constructed) then *inter alia*:

- voltage levels would be inadequate under normal conditions in summer in some areas;
- restrictions would be necessary on major industrial load increases;
- voltages would collapse if a 33kV regulator failed;
- overloading of the 132/33kV transformers at Ardrossan West would be overloaded in summer in an emergency (1992/2) and in 1996/97 for normal operation;
- replacement of the corroded equipment could not be conducted without extensive and prolonged supply loss.

It was also stated by ETSA's System Planning Engineer that the project should have gone ahead in 1986, but because of the interconnection workload, 1990 was the earliest practical time for commissioning the project. Although ETSA were flexible due to the delays in expected approval timeframes, they had no other choice but to wait for planning approval. Overall, however, information was insufficient for a full assessment of this criterion in terms of both the planning approval process and construction timeframe flexibility.

Level of Controversy about Openness

Other than those comments already noted, controversy was low from both the public and the DEP. The DEP, in their Assessment Report, noted that 15% of submissions requested more public consultation by ETSA authorities (DEP 1990: p3). There appeared to be no other controversy about the consultation process by either the public or government.

RESPONSIVENESS

Alternatives-Weighting of issues

Criterion 4.1.1: Was the 'best' alternative adopted by the proponent of those presented? This criterion was graded at B. No preferred option was publicly identified by ETSA in either the Draft EIS or the Supplement. On the surface, the *eastern route* initially appeared to be the best option for ETSA because it was cheaper, shorter and involved less technical difficulties of construction (ie avoiding vegetation and associated construction requirements). At the same time, compensation to landowners for crossing farmland in the eastern route would have offset the cheaper costs (ETSA 1990), and significant effort had been made by ETSA into identifying ways of alleviating the impacts on vegetation in the western route. It was believed that these impacts could be significantly reduced resulting in no major problems. In practice, ETSA favoured the *western route* over the eastern route because there was less potential for salt corrosion from the coastal air, and because construction and access to roadsides for maintenance patrols was easier. It was considered bad public relations at the time to continuously access private properties. Moreover, the Regional Manager stated that '*provided the roadside vegetation issue can be resolved satisfactorily...the western route is more acceptable to the local community.*'

In order to identify the 'best' corridor, an evaluation was done based on the information in the EIS. As demonstrated in Table (12), it is difficult to differentiate a preferred route. On some issues, preference was either unable to be determined based on available information, or there was no significant difference between routes. Both the eastern route and the western route were preferable in five areas. Two of the preferences in the eastern route were not significant (ie little difference in human settlement proximity; and fire risk), thus indicating favour towards the western route. Those areas in Table (12) highlighted with asterices are the most significant issues for this proposal, and in this case, the eastern route performs better by one (visuals, vegetation, agricultural). It should however, be noted that the DEP in their Assessment Report stated that the western route performed better in terms of visual impacts, and not the eastern, as Table (12) suggests, which favours the western route. Thus, again, it comes down to the two issues of vegetation versus agricultural land use (which also relates to land and production values which favours the western route). Overall, there was little to differentiate the routes.

Table 12: Performance of route options for the Ardrossan Proposal EIA process (shaded represents 'best' option)

Impact Category	Western Route	Eastern Route
Human Settlements		
Land Values		
Production Values		
Land use: Agriculture**		
Land use (eg airfields, industry, mining)		
Hydrology (water quality)		Unknown
Non-Aboriginal Heritage		not significant
Aboriginal Heritage		Unknown
Vegetation**		
Fauna		
Tourism-Recreation		
Visual Impacts (& landscape quality)***		
Electrical fields		No preference
Noise		No preference
Ozone Generation		No preference
Tv & Radio Reception		No preference
Fire		
Wastes		No preference
Pest Plants & Diseases		Unknown
Soil Erosion		Unknown
Access to line (impact on property owners)		
Score: (presence-absence)	5	5 (2 insignificant)

The best option tends to vary depending on one's perspective. ETSA favoured the western route for the above-noted reasons (eg salt corrosion, ease of access). The farmers also favoured the western route (b) because it involved less disruption to farmland. In contrast, the eastern route was probably the better option for the vegetation (ie traverses farmland rather than roadsides). Nonetheless, although the government's Roadside Vegetation Committee favoured the eastern route, it was acknowledged that the western route could be adopted with deviations into paddocks in areas of vegetation with significant conservation status.

As noted earlier, the final option decided upon was a compromise of these perspectives with the adoption of an amended western route (b). Both sides of the argument were compromised so that neither lost too much (ie farmers had the line traverse fencelines rather than across country; whilst the impacts on vegetation was mitigated by deviation where necessary and by shortening line spans between poles to maintain height clearances). Ideally the better option for vegetation would have been the eastern route, but the impacts on the social environment were too high. That this was best option adopted by ETSA was indicated by support in the DEP's assessment report, and support by the majority of public submissions. Although the DEP did not indicate a commitment to either route at a field inspection during the preparation of the Draft EIS, they suggested that the preferred western route would involve no major concerns (except for the removal of vegetation emergents). Whether or not this was the best option in practice, depends of course on how effective the mitigation and regeneration of vegetation was, which was not assessed in this research.

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at B-A. The environment was clearly a significant factor in the decision, although divided within between social and biophysical environments. Costs were also a factor in the proposal given ETSA's mandate under their Act to produce electricity efficiently. Cost factors were involved in the selection of the corridor boundaries for instance. Areas outside these boundaries made the proposal less direct, and hence more costly. Costs were also a factor in terms of vegetation management. In this case, ETSA referred to the vegetation policy arising from the earlier Hummocks-Kadina EIA which required that the line not be constructed in areas where there were stands of native vegetation in original condition or had not been degraded to a significant extent (ETSA May 1989). They noted:

'The adoption of this policy for the South Hummocks to Kadina transmission line increased construction costs due to the need for diverting the line into adjacent paddocks where native vegetation was present on both sides of the road and led to more road crossings than usual where native vegetation alternatives from one side of the road to the other. Where the line was placed in a road reserve containing vegetation less than 4 m in height it was also realised that in years to come, lopping of vegetation may be necessary as more and higher species became naturally introduced into the roadside reserves.

With the need to construct the proposed line and possibly others in regions similar to the South Hummocks to Kadina line it was decided to examine more closely alternative ways in which lines could be designed and constructed to have minimal impact on roadside vegetation.' (ETSA 1989: p19).

This attitude led to some concerns from the RVC. Yet although costs were a factor leading to the examination of alternatives, so was the reduction of impacts on future taller vegetation. These alternatives would also still increase construction costs, and the option was also still open to divert the line:

'Where good stands of native vegetation remain within the road reserve it would be necessary to divert the line into adjacent farmland or to institute the strategies outlined in section 6.1.2 [pole heights and line spans] to minimise the impact during both the construction and maintenance stages of the life of the line' (ETSA 1989: p24).

The weighting of issues was better in terms of balance between environmental and economic issues than the previous two case studies. ETSA left the options open and devoted significant effort into finding alternative ways of mitigating the impacts on the biophysical environment. Moreover, the option adopted was the more expensive as outlined in the Draft EIS (although not a significant difference).

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified? This criterion was graded at B. As noted previously changes to the process related to:

- further consultation (eg Aboriginal Heritage Branch);
- provision of additional information (eg compensation criteria, fauna);
- conduct of further studies (eg archaeological, fauna);
- assessment of other alternatives (eg amended western route, undergrounding);
- assessment of proposal outside corridor boundary.

No other changes to the consultation and investigations process appeared necessary, although more detail could perhaps have been supplied in some areas such as weed control, or rehabilitation measures. Responsiveness to public and government submissions in the Supplement is summarised in Table (13).

Table 13: Responses in the Supplement to public concerns identified for the Ardrossan proposal (compiled from ETSA 1990)

Issue	Actions and Comments
Alternative routes	ACTION: Investigation of recommended amendment to western route (b). Rejustification against coastal route PROPOSED ACTION: none COMMENTS: No objections noted to recommended amendment. Main points noted: additional length required (2.4km), taller poles, additional angle poles, increased cost (but savings on easement compensation and gates, etc); impact on roadside vegetation.
Roadside Vegetation	ACTION: further consideration of comment from RVC about on-going trimming if tree heights not yet mature. PROPOSED ACTION: If necessary, further 2 m clearance over vegetation will be allowed to cater for growing trees to reduce need for trimming. COMMENTS: As above, and reiteration of some points made in the draft EIS.
Property Vegetation	ACTION: none PROPOSED ACTION: poles could be placed adjacent to vegetation, and at a height to ensure adequate lateral clearance COMMENTS: Reiterated policy to minimise impacts on native vegetation with poles placed
Vegetation at Pole Locations	ACTION: Provided further justification for approach PROPOSED ACTION: in areas of continuous roadside vegetation, construction would take place from adjacent paddock (as for Draft EIS). COMMENTS: Noted that continuous vegetation at the canopy level does not necessarily mean that there will be continuous vegetation at the ground cover level. Noted that disturbance of area 2m by 3m does not imply destruction of that area of vegetation, and natural regeneration will take place. Noted presence of rare plants to be taken into account at pole selection stage.
Future tree plantings	ACTION: Noted that was not significant due to adequate planning facilities in ETSA to ensure future tree planting opportunities not constrained (although lacking detail about what these facilities were). PROPOSED ACTION: none COMMENTS: Noted that any future tree plantings would have to be approved by ETSA, but can be allowed up to 4m in height with standard lines.
Soil erosion	ACTION: Justification of approach PROPOSED ACTION: remediation in event of damage (as for Draft EIS) COMMENTS: ETSA did not envisage problem of construction in sandy soil based on previous experience.
Soil salinity	ACTION: as for vegetation on property (noted above) PROPOSED ACTION: saline areas avoided where possible COMMENTS: to be avoided where possible due to problems of access, and effects on concrete and steel structures
Weed & Pest Control	ACTION: Reiteration of statements in Draft EIS PROPOSED ACTION: Follow policies outlined in Draft EIS COMMENTS:
Fauna	ACTION: provision of additional information PROPOSED ACTION: possibility of fauna survey once the final line located. Location of line away from salt lakes to minimise impacts on birds. COMMENTS: Protected by minimising impacts on vegetation in road reserves as noted above. Impacts on fauna should be minimal and temporary. Notes possibility of bird strikes
Construction & Maintenance damage	ACTION: Additional information on criteria for compensation PROPOSED ACTION: compensation (as for Draft EIS); poles, access tracks to be sited to minimise disturbance (as for Draft EIS); rehabilitation of damage COMMENTS:
Machinery damage, income loss	ACTION: none PROPOSED ACTION: compensation (as for draft EIS) COMMENTS: No compensation for machinery damage.
Effect on Aircraft	ACTION: Additional information PROPOSED ACTION: none COMMENTS: Noted previous discussions with aerial spraying contractors who said spraying close to power lines was part of the job and did not result in increased costs. Civil Aviation Authority also indicated that line should not be a hazard.
Effect of Future Development	ACTION: none PROPOSED ACTION: none COMMENTS: line should not be a problems (eg for future windmill siting which is flexible)

Fire Risk	ACTION: additional information on landowner liabilities PROPOSED ACTION: none COMMENTS: Acknowledged submission favouring eastern route, but noted that the line would be extremely unlikely to cause fire anyway.
Location & Visibility	ACTION: none PROPOSED ACTION: where possible, line to be located maximum distance from homesteads COMMENTS: Stated submission concerns; acknowledged scenic concerns of salt lake
Property Devaluation	ACTION: reviewed location of Dalrymple substation PROPOSED ACTION: recommended relocation of substation COMMENTS:
Aboriginal Heritage	ACTION: further consultation with Aboriginal Heritage Branch; consultation with Point Pierce Community Council which requested archaeological survey PROPOSED ACTION: to commission archaeologist to conduct archaeological survey when route finalised COMMENTS:

Criterion 4.2.2: Was the proposal changed on environmental grounds where appropriate? This criterion was graded at B-A. The proposal was changed in five ways which are summarised in Table (14), and related to route amendments and pole locations. For instance, in addition to the main route realignment:

- the proposal originally entailed overhead 33kV lines which exited from the substation because it was the most economic choice, and because the impacts of tree removal and trimming could be minimised by designing the lines with taller poles over tree heights. It had however, been suggested by the ETSA's Selection Committee that all 33 kV exits be undergrounded for environmental and safety reasons. During the EIA process it was found that the visual impact and traffic hazards for trucks (ie from poles near road intersection) warranted the more expensive option of undergrounding in minimising the impacts on the environment.
- there were also public objections to the Dalrymple substation location which had previously been purchased following normal selection procedures. The main concern was its close location to two dwellings and noise impacts. Following an investigation into transformer noise levels, it was found that levels would exceed permissible levels under the South Australian Noise Control Regulations. *'Therefore it was recommended that the substation site ...be relocated in response to public comments'.*

The changes to the proposal were not significant overall. Changes considered of medium significance included:

- the northern amendments which involved more angles, greater length, and additional cost of approximately \$110,000, although this was offset by cheaper compensation and construction costs (ETSA 1990);
- relocation of Dalrymple substation site;

whilst minor changes involved:

- deviation of the line into paddocks (greater costs, but was probably expected by ETSA in light of government policies about roadside vegetation);
- relocation of some poles to avoid vegetation following more detailed vegetation survey.

Although the relocation of the Dalrymple substation sites appears to be a more significant change and an indication that ETSA was committed to addressing public concerns, the relocation actually had minimal impact on the project and overall costs. Screening and earthworks requirements were similar between the sites, and although 33 kV cables would cost an additional \$60,000, there was also a saving of \$10,000 on one 132kV section, and the owner of the alternative site was willing to exchange sites. Thus it was concluded that relocation *'would be practically cost neutral'*. Overall, the changes were minor-medium in significance. Initiative was demonstrated by ETSA for 2-3 of the changes (refer Table 14). Other changes, although recommended by the public, were readily adopted or investigated by ETSA. However, there did appear to be some reluctance early on about locating lines on farmland, as indicated by the RVC comments (refer criterion 4.1.2), and ETSA's comments about costs in the Draft EIS. Thus, changes in this area tended to be a result of pressure from the RVC. Nonetheless, ETSA was generally responsive and showed initiative.

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? Unknown. This criterion was not assessed, but project

files do not indicate any changes to internal processes or policies as occurred for the previous case studies. However, ETSA did make use of previous EIAs such as the Hummocks-Kadina PER as a guide for the EIA process for this project.

Table 14: Changes to the Ardrossan-Dalrymple proposal

Nature of Change	Details
Number of Changes	5
Type of Changes	<ul style="list-style-type: none"> • amendments to the western route in the north to avoid farmland; • deviation of the line into farmland in areas of significant roadside vegetation; • relocation of Dalrymple substation (although not officially a part of the EIA decision); • relocation of pole sites and spacing between them was varied to minimise the possibility for ongoing trimming of trees (result of inspection in 1991 by ETSA officers); • undergrounding of exit lines from substations;
Change Significance	minor-medium
Timing of Change	<p>Mid EIA process:</p> <ul style="list-style-type: none"> • amendments to the western route in the north to avoid farmland (public submission stage); <p>Late EIA process</p> <ul style="list-style-type: none"> • deviation of the line into farmland in areas of significant roadside vegetation (also proposed as option early, but adopted late in the process); • undergrounding of exit lines from substations (Nov 1989-Feb 1990); • relocation of Dalrymple substation (although not officially a part of the EIA decision) <p>Late process (after decision)</p> <ul style="list-style-type: none"> • relocation of pole sites and spacing between them was varied to minimise the possibility for ongoing trimming of trees (result of inspection in 1991 by ETSA officers)
Initiator of Change	<p>Public</p> <ul style="list-style-type: none"> • amendments to the western route in the north to avoid farmland; • recommended relocation of Dalrymple substation (although not officially a part of the EIA decision) <p>Government Authority-ETSA</p> <ul style="list-style-type: none"> • deviation of the line into farmland in areas of significant roadside vegetation <p>ETSA</p> <ul style="list-style-type: none"> • relocation of pole sites and spacing between them was varied to minimise the possibility for ongoing trimming of trees (result of inspection in 1991 by ETSA officers); • undergrounding of exit lines from substations

Level of Controversy about Responsiveness

Controversy about decision-making was virtually non-existent with the exception of the RVC concerns noted earlier about ETSA's initial reluctance to divert the line away from vegetation, and general public concerns about locating the line on property (but this was early in the process and ETSA was particularly responsive to their concerns). Rather than negative controversy, ETSA was praised for their efforts. It was reported in the Yorke Peninsula Times for instance: *'As with the line from South Hummocks to Kadina, the Trust is going to a great deal of trouble to liaise with landholders along the general route the new line will take, to ensure that landholders are happy with the arrangements.'* Similarly, the chairman of the Central Yorke Peninsula District Council stated:

'One can only congratulate the Electricity Trust of S.A. on their immense endeavours to please all people concerned with the installation of the 132kV transmission line from Ardrossan West to the Dalrymple sub-station...'

He also stated that '*no stone has been left unturned in ETSA's effort to satisfy the whole community*'. Similarly, the RVC noted that '*ETSA's offer to increase the height of the line over areas of vegetation is most commendable, as well as their offer to monitor areas where poles have been installed and to assist revegetation if natural growth does not occur.*'

ETSA Project Case Study 4
HUMMOCKS-WATERLOO

PROPOSAL CONTEXT & DESCRIPTION

In 1987, ETSA's system planning engineer recommended that the Bungama-Hummocks-Northfield transmission line, which was the main supply to the Yorke Peninsula in South Australia, be upgraded as soon as possible. The line had originally been constructed in the early 1950s, and was in poor mechanical condition. However, the upgrade was unable to be undertaken immediately due to ETSA's commitment to the interconnection project. Some work was completed on the northern Bungama-Hummocks section of the line in 1991, but given its poor condition, several circuit failures occurred, including damage as a result of storms which destroyed several transmission poles. This, combined with the development of a Substation at Robertstown and a potential load increase at Balaklava as a result of industrial development, led to another review in June 1993 of the southern Hummocks-Northfield section of the line.

The review found that an upgrade to the Hummocks-Northfield section was still necessary to provide an adequate security of supply to Yorke Peninsula; to minimise failure due to mechanical faults; and to upgrade the line to more recent design standards. Although any upgrades did not result in increased revenue for ETSA, work had to be undertaken because the existing line failed to comply with ETSA's obligations under the *Electricity Trust of SA Act 1946*, which required that lines be designed in accordance with certain standards and practices accepted by the electricity industry. The poor conditions of the line and substandard ground clearances also posed a safety hazard to the public and to ETSA staff (eg possible collapse of poles, impact of storm damage). Thus, the upgrade to the existing system of supply was adequately justified.

Two alternative schemes were proposed for achieving the upgrade involving:

- construction of a new transmission line between Hummocks-Waterloo (scheme i); and
- upgrade of the existing Hummocks-Northfield line (scheme ii).

Scheme (i), which would also involve decommissioning part of the Hummocks-Northfield transmission line, was recommended primarily as a result of cost factors. Although scheme (ii) required less upfront outlay, ETSA considered scheme (i) the better option given that it had lower economic losses over a much longer time frame (30 years) because it eased the pressures on the northern Bungama-Hummocks section (and hence lower electrical losses); and it provided a more economic means of supplying power to a proposed pulp mill at Balaklava (although the existing 33kV system could provide power to this development, it would result in electrical losses of \$100,000 per year).

The overall proposal recommended in 1993 by ETSA's Transmission Development Manager entailed:

- upgrade of 15km of existing Hummocks-Northfield 132kV line;
- *construction of a new 132kV line from the point 15km south of the Hummocks Substation to Waterloo Substation;*
- dismantling of 35km of the remaining line to near the Mallala/Windsor area;
- improving the safety of the remaining 132kV line from Mallala/Windsor area to Cavan (approximately 45km);
- erection of a section of 132kV line between Cavan and Northfield to be used to supply AETC (Australian Electrical Test Centre).

Only the new 132kV transmission line between Hummocks-Waterloo was subject to the formal EIA process. It was noted that the upgrade to 15km of the existing line would be confined to the existing route, and hence would not require an environmental assessment. No mention in terms of environmental assessment was made of the other components, including alterations to the existing Hummocks and Waterloo Substations. Although these individual components may not be significant, this is another example of a proposal which has been divided up for assessment and approval; in other words, fragmented decision-making.

Ideally, the project was required in 1993, but it was predicted that the earliest date for completion was 1996 subject to environmental approval. The estimated cost for the proposal was \$7.2 million (1993 prices). It was aimed to complete environmental approval by the end of 1994, which unlike the previous case studies, was successfully achieved. The alternative routes proposed and assessed for the Hummocks-Waterloo transmission line are presented in Chapter Nine, Volume I of this thesis.

EIA PROCESS SUMMARY

Screening and Triggering

Although it is not known when an official Notice of Intent was forwarded to the DEP, it is known that ETSA approached the DEP in 1990 about a proposal to construct a transmission line in the mid-North region. ETSA also approached the DHUD (replaced the DEP) in early 1993 with an amended version of the proposal (see above proposal rationale), which resulted in an inspection by DHUD officers of the area. At this time, the DHUD informed ETSA that an EIS would be required, although they envisaged that approval could be obtained.

Preliminary notification and discussions were also undertaken with the DHUD in November 1993, and an agreement on the environmental approval process was made between the DHUD and ETSA in March 1994. In this case, an EIS was not warranted as long as ETSA conduct a public consultation programme of alternatives prior to formal environmental impact investigations, and prepare a report on the environmental, social and economic impacts of the proposal in the form of a Public Environmental Report (PER). The process was as follows:

- ETSA to conduct preliminary public consultation with an 'invitation to comment' brochure;
- ETSA's consultants prepare Public Environmental Report, including responses to public comments;
- ETSA forward Section 49 Notices to District Councils allowing 2 months comment on the proposal and PER;
- ETSA release PER for 2 months public comment;
- ETSA submit Development Application to the DAC;
- DHUD's prepares advice on proposal to DAC;
- DAC advises Minister; and
- Minister makes decision.

At the time, PERs had no explicit legislative status under the Development Act (replaced the Planning Act), and did not involve a second supplement report as was the case for EIS assessments. The proposal was relatively small scale, and was appropriate at this level of assessment. ETSA was satisfied with this new approach and noted two achievements as a result:

- increased public consultation and comment incorporated at an earlier stage than previous projects;
- shorter time frames for approval, which was achieved within 12 months of commencing public consultation.

PER Guidelines

In consultation with ETSA, the DHUD prepared PER guidelines in April 1994. Despite being a lower level of assessment to the EIS, the guidelines were virtually identical to those for the previous three case studies, with the addition of a requirement for details on a preferred corridor. This latter is despite previous comments made about the problems of identifying 'preferred' options (for the Cherry Gardens proposal), and the fact that no preferred option was identified in the Ardrossan proposal as a result. Another addition to the guidelines related to the new approach to public consultation, which obliged ETSA to respond to any public comments in the PER made from the 'Invitation to Comment' brochure in the PER.

Organisation and Management

As for the previous three ETSA case studies, several ETSA personnel were involved, but the EIA process appeared to be coordinated by one individual. Unlike the previous case studies which involved the Design Engineer Transmission, the main co-ordinator for this project was the Transmission Lines Engineer from the Distribution and Transmission Services Branch (although this may simply be another name for the same position). In addition, a Project Manager was appointed to oversee all elements of the project, and not just the 132kV Hummocks-Waterloo line. The Transmission Lines Engineer handed the Hummocks-Waterloo project over to the Project Manager in November 1995.

There were indications of environmental officer involvement, although not on an official study or planning team. The Senior Environmental Scientist (SES) was on the list of circulation for copies

of the project status reports prepared by the Project Manager. There was attendance by environmental officers at the DAC meeting to discuss the preferred option and council concerns; and an Environmental Scientist was involved at the late survey stage for personal meetings with landowners to discuss issues such as vegetation. The timing of environmental officer involvement is unclear however.

Public Consultation: Stage 1

Preliminary contact about the proposal was made by ETSA with local councils in April 1994, and an 'Invitation to Comment Brochure' (ETSA April 1994) was prepared and circulated by ETSA to all landowners in April 1994. Within this brochure, the decision-making process and rationale leading to the transmission line was outlined, in addition to the three preliminary alternatives which were to be assessed in the PER (Corridors A, B, and C) (ETSA April 1994). Unlike the previous Ardrossan proposal, alternative *corridors* were proposed rather than more detailed *routes* within one corridor. This allows greater flexibility for ETSA to make minor deviations to the route in response to environmental issues or individual landowner concerns.

The primary concerns at this stage, in addition to economic and engineering factors, related to the use of road reserves which avoided native vegetation, and which reduced the impacts on agricultural activities (ETSA April 1994). Farmer's attitudes were similar to the Ardrossan proposal in that they preferred the line to be located in road reserves to minimise interference to their operations (ETSA September 1994). ETSA proposed to deviate the line *within* the road reserves where vegetation existed rather than encroach private land, unless directed to do so by the Minister. In this case however, most of the road reserves were free of native vegetation which alleviated many of the problems experienced for the Ardrossan transmission line (ETSA September 1994). This may be the reason why a full EIS was not triggered.

A questionnaire was also included in the brochure asking the community to identify their preferred route, and to rank the importance of issues such as:

- keeping lines away from settlements;
- limiting disturbance to agricultural land;
- limiting disturbance to native vegetation;
- limiting potential for soil erosion, and so on (ETSA April 1994).

Estimates of brochures circulated vary (eg 610 reported in the media), but it was noted by ETSA that of 590 brochures circulated to landowners and 20 brochures collected at councils, 165 were returned by the due date (10 June) and another 14 were received after the cut-off point, making a total of 179 responses (29%) (ETSA September 1994). Although this is a low response rate, 179 responses is very high when compared to for instance, 22 submissions for the Ardrossan proposal. The technique of multiple choice and open-ended questionnaires using prepaid return was likely to be one of the reasons why so many responded.

Based on data in ETSA's project files, issues of medium-high importance to the public comprised:

- agricultural impacts (93% of all respondents);
- use of public land rather than private land (93% of respondents);
- soil erosion (86% of respondents);
- proximity to dwellings (85% of respondents)
- impacts on vegetation (83% of respondents);

Issues such as radiation, spread of pest plants, and reception were of medium-high importance, but were only raised by a small number of respondents. This may be due to the fact that they were not included in ETSA's multiple choice question which listed areas of importance or potential concern. Unlike the Ardrossan proposal, fire risks and visual impacts were not rated highly by many people. Like the Ardrossan proposal, heritage issues were not considered significant by many in the area.

The Public Environmental Report

A consultant's brief was prepared in March 1994 and consultants Rust PPK were appointed in April 1994 to prepare the Public Environmental Report (PER) and to respond to the public concerns identified in the questionnaires. The PER, which was similar length to the Ardrossan

proposal, took approximately 5 months to prepare and was released on 2 September 1994. It is not known if the DHUD commented on preprint versions of the PER, as occurred for the previous case studies.

The contents of the PER and the proportion of focus on EIA tasks are summarised in Tables (1) and (2) respectively. The greatest focus was on the description of the environment (36% of the PER), and on the description of impacts (24%). Like previous case studies, no separate section was dedicated to monitoring or to a policy-legislative framework. As in the consultation brochure, three corridors were presented in the PER for assessment comprising Corridor A (northern), Corridor B (central) and Corridor C (southern). Further options were also proposed involving links between these corridors. Consistent with the PER guidelines, a preferred option was identified by ETSA which comprised components of both Corridors B (western portion) and Corridor C (using a northern link).

Table 1: Contents of the Public Environment Report for the Hummocks Proposal

Contents of the PER
Summary
1. Introduction
2. Public Participation
3. Justification for the Line
quality of existing line
access opportunities
alternatives to building the line
4. Details of the Line
• characteristics of the 132kV line
• construction and maintenance practices
• easements
• pole design
• locating the line within the corridor
• positioning of poles
5. Alternative corridors
• preferred corridor
6. Description of the preferred corridor
• overview of the region
• geological and soil conditions
• vegetation
• fauna
• heritage
7. Environmental impacts
• physical impacts
• biological
• social
• Aboriginal and European heritage
8. Management of environmental impacts
• physical
• biological
• social
• Aboriginal and European heritage
List of Respondents
Bibliography; Appendices?

Table 2: Proportion of focus in the PER for the Hummocks Proposal (excluding appendices) (note % is based on 41 pages in text, but some pages may have been missing in the final sections of the PER).

EIS Task	% Focus* (main text)
Summary	4% (2pp)
Introduction	2% (1)
Proposal Description	9% (4)
Policy Framework	0
Proposal Need	2%
Alternatives	14% (6)
Description of environment (baseline) (alternatives/or preferred concept)	36% (15)
Impact Description & Evaluation	24% (10)
Mitigation	?**
Monitoring	0
Public consultation (approach)	9% (4)
Conclusion	?

* does not total 100% because of overlaps on some pages; ** pages missing in PER copy

ETSA's preferred option contrasted with the community responses to the questionnaire which favoured Corridor A (favoured by 46%), followed by Corridor C (38%), and Corridor B (16%) (ETSA September 1994). Other respondents either did not nominate a preferred option, or favoured a combination of corridors (ETSA September 1994). However, the specific issues addressed in the PER generally reflected community concerns.

Public Consultation: Stage 2

The PER was released for further public comment for a period of two months which coincided with the Section 49 Notice to Councils (see below), and copies were sent direct to landowners. Some local opposition to ETSA's preferred option became quickly apparent. A public meeting was held by residents and attended by approximately 30 people on 4 October 1994 at Auburn to push for an upgrade to the existing line and to prevent the construction a new line. An additional 25 residents were also interested in their cause but unable to attend. It was proposed by residents to elect 'champions' for their cause, to attract media coverage, and to organise a petition.

Due to short notice, ETSA was unable to attend the meeting but further discussions were arranged with ETSA, RUST PPK, Council, a newspaper reporter, and community representatives one week later. At this meeting, ETSA further justified the need for a new line (as above), and noted that an upgrade would cost ETSA an additional \$3.6 million in the longer term. Discussions were then held about compensation and acquisition of easements, and ways of mitigating the effects of the line via pole placement, pole height and colour, and the use of non-reflective conductor for instance. Surprisingly, ETSA also explained to the residents how they could get their case considered by the Minister responsible for the decision. It was planned to conduct follow-up discussions in December of that year.

The issues in written public submissions on the PER, of which there were about 25, were similar to those raised earlier, and those commonly raised for this type of development. Of fourteen submissions analysed, the most frequently raised issues related to:

- visual impacts ($n=11$);
- health issues ($n=7$),
- fire risks ($n=6$)
- constraints on future development ($n=6$), and
- impacts on tourism ($n=5$).

This differs somewhat to the issues raised in the earlier consultation stage, which appeared to be influenced by the presence/absence of issues in the questionnaire's multiple choice section.

Some of the submissions were very similar in content, including threats of legal action, which suggests an organised response. It is likely that this response was one outcome from the resident's meeting, particularly given that most of the submissions on the PER supported an upgrade to the existing line. As noted previously, however, ETSA was not required to respond to these submissions in a separate document or 'Supplement'. Rather, public comments were directed to the Development Assessment Commission (DAC) for consideration in the final decision-making process.

Despite media attention, ETSA was of the view that opposition was only minor and that the proposal should be supported by the Minister for Infrastructure. However, soon after this opinion was made, a petition supported by 300 residents in the mid-North was presented to the Development Assessment Commission for consideration in the final recommendations. Copies of the submission were also sent to the Member for Custance and the Minister for Housing, Urban Development and Local Government Relations. ETSA's Transmission Lines Engineer met with representatives from the resident's committee which organised the petition in late November 1994, but the outcome of this meeting is unknown. As a result of the public pressure, the Member for Custance, *'Mr Venning said that he was 'quietly confident' that upgrading could become the preferred option.'* This prediction turned out to be incorrect.

Section 49 Notice & Development Application

In contrast to the previous case studies, ETSA forwarded Section 49 Notices to three councils in September 1994 *prior* to the governments' assessment of the proposal. Councils affected comprised the District Councils of Wakefield Plains; Riverton; and Saddleworth and Auburn. A formal Development Application in addition to the PER was also lodged with the DAC on 7 September 1994 for assessment. The Section 49 Notices are equivalent to the previous Section 7 Notices under the old Planning Act, and allowed the councils a period of two months to comment on the preferred proposal. Because the Notice was initiated prior to government assessment, councils lacked the benefit of having independent government conclusions about the proposal.

District Council Concerns

Council responded to the Section 49 Notice within the same month of notification. Two of the councils supported ETSA's preferred option, although one had some concerns about the need for a new line as opposed to upgrading the old line. In contrast, the third council did not object to a new line, but was completely opposed to ETSA's preferred option in the PER. In the earlier consultations, the Council's support had been given for Corridor A, followed by Corridor B and not a combination of B and C. They further noted that the preferred corridor was distorted in the PER compared to the original presentation in the consultation brochure, and that the preferred option went against community preferences. In addition, the Council indicated that ETSA's preferred option impacted on six families in the Woolshed Flat/Undalya area; had a high visual impact in an area of scenic attraction; potentially interfered with radio reception; and posed a danger to motorists where stobie poles are located in road reserves. An alternative corridor was recommended which linked Corridors A and B, and concern was indicated about why this alternative was not proposed as an option in the original proposal.

ETSA promptly responded to these issues in a letter to the DAC in October 1994, in which it was noted that the Council had misunderstood the preferred corridor in the PER (I also can see no misrepresentation on ETSA's part). ETSA acknowledged the Council's earlier concerns about Corridor C which were recorded in the PER, and noted that corridor selection was not only based on community concerns, but also on additional environmental, social, economic and technical investigations. It was also argued that interference to reception was unlikely but if it occurred would be rectified at ETSA's cost, and the alternative suggested by the council (A-B) was not viable and precluded from further analysis due to earlier public concerns about the high scenic and tourist value in the region. The Council was able to voice their concerns to the DAC in person in December 1994 (see below), and follow-up discussions were conducted by ETSA in the same month.

The only issue that remained was the need to either upgrade the existing line or continue with constructing a new line which was raised by one of the other councils. Although community opposition was low overall, ETSA noted that the group of landowners pushing for this option were backed by this council. In correspondence to the Council, an upgrade to the existing line was discounted as an option by ETSA for technical reasons, and it was noted that discussions had already been held with councils on this issue at a meeting in October 1994. The reasons against

the upgrade were the same as those given in the earlier 1993 recommendation for the proposal (see previous summary), and related to cost factors rather than environmental or social factors. Nonetheless, one council was still reluctant in November to make a decision on the proposal until the provision of more information.

DHUD's Assessment

As part of the approval process (although not required by law), the DHUD was required to prepare an independent report on ETSA's proposal in providing advice to the DAC. The DHUD's report to the DAC, which was forwarded to ETSA on 16 December 1994, was not as extensive as 'Assessment Reports' under the EIS process, being only 7 pages, and was not publicly available. Much of the earlier controversy demonstrated by community members appeared to be lacking in the DHUD's assessment, and does not appear to have been taken into account. In fact, most of the DHUD's report was simply a summary of the process, ETSA's decision-making rationale and commitments, Development Plan principles, and Council comments. Unlike the previous case studies, the DHUD's report appears to lack a strong evaluative role in the assessment process. It was, however, stated that the government's Planning Strategy for this region did not cater for transmission developments, and thus the proposal was inconsistent with many of the planning principles and objectives. None of these principles were raised by ETSA in the PER.

The issues considered to be most significant by the DHUD were similar to public concerns and comprised impacts on native vegetation (particularly roadside), disruptions to farming operations and visual impacts (which could generally be mitigated). However, native vegetation was less significant to the community than the latter two. Other issues noted by the DHUD included land devaluation (although not considered significant), income loss, restrictions on future development, loss of amenity and impact on tourism, fire risks, erosion, weed infestation, electromagnetic radiation, electrical interference and disturbance to historical sites. Reference to land devaluation was important given that it was not raised by ETSA in the PER. Overall, it was stated in the DHUD's report that:

'The construction of a power transmission line through the lower Mid North is not considered to be at variance with the Development Plan for the region provided vegetation clearance (esp. roadside vegetation) and visual impacts can be minimised.

'... the impacts arising from the construction and maintenance of the line will be minimal, including selected trimming of trees for survey work, disturbance during pole erection and wire stringing, seed transport (especially weeds), soil compaction, weed removal, suppression of future regrowth and creation of a heath community (ie low shrubs)....

It is expected that if ETSA carries out this project in accordance with the approaches proposed in the PER, especially regarding vegetation, visual impacts, loss of amenity and hazard to aerial spraying then the impacts should be minimised as much as possible for this activity.

Finally, the DHUD recommended that the DAC advise the Minister:

1. That the development be approved.
2. That approval be subject to ETSA minimising impacts as outlined in the PER.
3. That final route design in the Woolshed Flat region be negotiated in consultation with the State Heritage Branch (DENR), local residents and the DC Riverton.
4. That a report be prepared to be laid before both Houses of Parliament because the District Council of Riverton is opposed to the proposal.

DAC Advice

Shortly after the DHUD's advice, the DAC met on 20 December 1994 with District Councils, ETSA representatives, and the consultant Rust PPK. One council remained in opposition to the proposal due to the effects on residents in its area. Nevertheless, the DAC approved ETSA's proposal on the same day with conditions based on the DHUD's advice (refer Table 3), and it is unclear to what extent the community and council opposition was discussed - obviously it was not influential. The conditions attached to the decision were generally consistent with normal ETSA practices. ETSA also reiterated its desire to maintain communication with land owners and local councils in the region, in addition to those areas adjacent to the Waterloo Substation which already had a number of transmission lines.

Ministerial Directions

A decision by the Minister for Housing, Urban Development and Local Government Relations was planned for January 1995, but it was not until mid March 1995 that the approval to proceed was given and forwarded to ETSA's General Manager. Although it had been noted earlier by the DHUD that if Council was still opposed, then the Minister must prepare a report to be laid before both Houses of Parliament, it is unclear whether or not this occurred. In the Minister's directions, reference to ETSA's mitigation measures were made, and to a requirement for consultation with the State Heritage Branch, local landowners and the District Council of Riverton regarding the Woolshed Flat district, which is consistent with the DAC's advice.

ETSA's Response

Shortly after the decision a Project Definition Report was internally released by ETSA which outlined works relating to *inter alia* Notices of Intent to enter properties, acquisition of easements, creation of access agreements with landowners, preparation of access maps, and the provision of information to land owners (process-timing of construction, possible damage, and subsequent restoration and compensation). Information sheets were circulated to landowners in March 1995 by ETSA's Land Information and Easement Branch about the 'Notice of Intention to Enter' properties. Negotiations were also conducted with landowners in May and July 1995 about the final centreline and tree removal-screening, including meetings with groups of residents resulting in route modifications within the corridor.

ETSA noted that landowners were generally accepting of the preferred corridor's approval, but some of the personal interviews about the final alignment and the project itself indicate some dissatisfaction by some landowners. ETSA also noted that the removal of trees was the most controversial issue during the survey stage, and responded by bringing in one of their Environmental Scientists to conduct personal meetings with concerned landowners. A number of resident concerns about crop-land damage were also evident with intentions to place claims for compensation.

As part of the decision requirements ETSA also:

- consulted with the State Heritage Branch to minimise impacts on European heritage;
- undertook investigations into sourcing indigenous tree stock for supplying locally indigenous trees to property owners and councils for screening of the line;
- organised a flora and fauna survey involving a herpetological survey of Pygmy Blue Tongue Lizards in early 1995; and
- organised Aboriginal archaeological surveys.

In this latter case, two archaeological surveys which involved consultation with the Kaurna Heritage Committee were conducted in 1995 and 1996, in addition to the 1994 survey by a subconsultant. The initial surveys in 1994 had discovered 18 Aboriginal sites and four isolated artefacts along or close to the proposed alignment. The Kaurna Committee was concerned about further sites and requested close monitoring of excavations, and, aware of their obligations under the Aboriginal Heritage Act, ETSA organised further inspections by their archaeological subconsultant to inspect the excavation locations, resulting in the 1996 report which identified no constraints to the line. The Kaurna Aboriginal Committee appeared satisfied with the work and protection-monitoring measures proposed, and supported a recommendation that there were no further constraints to the line, as did the Department of State Aboriginal Affairs who noted the clear data and sound methodology of the archaeological surveys.

Table 3: Conditions of Approval for the Hummocks proposal

	Conditions
Visual	<p>ETSA carefully consider the visibility of line, particularly from existing dwellings and at road crossings, during surveying and final pole placement procedures.</p> <p>ETSA place the line behind roadside vegetation or within a road reserve where possible</p> <p>ETSA screen the line using existing native vegetation and topography where possible.</p> <p>Lowering the eight of poles will also be an option</p> <p>ETSA negotiate with property owners and councils regarding final siting of poles, especially in the vicinity of Woolshed Flat</p>
Native Vegetation	<p>ETSA minimise vegetation clearance and disturbance in the siting of poles and the maintenance of the transmission line easement</p> <p>Final route should avoid areas of roadside vegetation and blocks of vegetation with conservation significance</p> <p>ETSA minimise the requirement for clearance by varying the spacing between poles and increasing the height of the line where necessary to avoid the need for clearance and ongoing lopping programs</p> <p>ETSA prepare a tree cutting/trimming schedule indicating the extent of clearance required for individual trees</p> <p>ETSA p provide suitable locally indigenous trees, grown from seed collected within 5 km of the site to property owners and councils who make a reasonable request for trees to screen the line</p> <p>Topsoil and vegetation removed during construction of the line to be respread over disturbed areas, as soon as possible, to encourage natural revegetation</p>
Fauna	<p>ETSA undertake a herpetological survey of the proposed corridor prior to final line design to determine the presence of the Pygmy Adelaide Blue Tongue Lizard</p>
Land Use	<p>ETSA consult with property owners and councils during final line design to consider their requests. Particular consideration should be given to safely accommodating aerial spraying requirements</p> <p>Poles be located within road reserves or along property/section fencelines where possible</p> <p>ETSA proved every affected property owner with plan of their property, detailing the location and distance of each pole in relation to existing fencelines</p> <p>ETSA place reflective tape at a suitable height on the four sides of poles sited in paddocks to minimise the likelihood of collision with farming equipment</p>
Pest Plants	<p>ETSA keep equipment as free of mud, dirt and seeds to reduce introduction of new weed species</p> <p>ETSA consult with pest control offers (Department of Primary Industries - Agriculture) and property owners to limit the spread of pest plants</p>
Erosion	<p>ETSA undertake measures to control erosion, particularly in the Mt Lofty Ranges, including levelling and reseeding, gravel placement and installation of enviromat</p>
Fire	<p>During line construction and maintenance ETSA will conform with the Country Fire Act (1989) and its regulations and in accordance with ETSA standards</p>
Aboriginal Heritage	<p>Prior to final line design ETSA will conduct a detailed archaeological survey to identify any significant sites that need to be avoided</p> <p>ETSA cease construction works if an aboriginal site is uncovered along the finalised route and inform the Department of State Aboriginal Affairs</p>
European Heritage	<p>ETSA consult with the State Heritage Branch (DENR) prior to final line design to minimise impacts on sites of European heritage, particularly the Heritage Register listed Wesleyan Church at Woolshed Flat</p>
Health	<p>ETSA exercise 'prudent avoidance' and locate the line as far as practicable from dwellings to reduce the possible impacts from EMF</p>
Reception	<p>If interference to TV and radio reception arises, ETSA will rectify any problems by modifying an aerial or its location at its own expense.</p>

EIA COMPLIANCE

Criterion 1.1: Did the proponent comply with the legislative-process requirements? This criterion was graded at A. The details of the PER process were not legally outlined, although it fell within Section 49 of the Development Act. The process was one which was agreed to by both ETSA and DHUD, and appeared to be complied with 100%.

Criterion 1.2: Did the proponent comply with the project guidelines? This criterion was graded at C. Unlike the previous case studies, compliance with the guidelines was relatively poor with a 61% of guideline requirement met. Most omissions related to the description and comparison of the alternative corridors which is a problem of transparency in the process (ie decision-making process leading to the preferred) option. This is raised later as an issue in the discussion of alternatives and openness. Although some factors such as vegetation were addressed in the corridor descriptions, this was limited and generally restricted to a sentence or two, with a lack of diagrams. It is likely that the lack of detail was one trigger for the public controversy and suspicion which emerged about ETSA's preferred option.

Criterion 1.3: Did the proponent comply with the final decision? This criterion was unable to be graded. The constructed route in ETSA's 1996 map appears to be consistent with the preferred option which was approved. Many of the conditions were met relating to further consultation and surveys, and tree screening for instance. Performance was not known with respect to the other conditions. This highlights the need for more research which measures the level of compliance prior to, during and after construction.

Criterion 1.4: Was there evidence of going beyond compliance? This criterion was graded at D-C. The assessment of going beyond compliance is difficult in this case study. If assessed in terms of the other case studies, evidence of going beyond compliance would be apparent for the public consultation process (ie prior to the PER, use of questionnaire). But since this was part of the agreed process for the H-W proposal, the additional efforts in the consultation process were simply meeting compliance requirements. That is, with the exception of the personal interviews that were undertaken by ETSA with landowners and attendance at resident meetings. However, some concerns about going beyond compliance were evident. In scoping works for tree planting and screening of the line to meet environmental obligations, for instance, it was noted by an ETSA officer that '*minimal requirements only*' should be met. This indicates compliance-based behaviour rather than a demonstration of initiative for 'compliance plus'.

PER QUALITY

Proposal & Policy Framework

Criterion 2.1.1 Was the project justified and was the rationale clearly outlined? This criterion was graded at D-C. The need for an upgrade to the existing situation was clearly demonstrated in the PER; however, the justification for a new line versus an upgrade was not completely apparent, given that its sole basis lay in cost factors rather than other factors. Concerns were highlighted about the need for the proposal by one District Council:

'...it is stated that the Northfield line has reached the end of its useful life and this is accepted, but the costs are too high to upgrade this line. The new line will be built over more difficult terrain, it is creating adverse public opinion, all new easements, gates, vegetation removal must be carried out and compensation paid and yet an existing corridor already exists and possibly all of the above would be overcome if this was used.'

However, ETSA noted:

'This project has had a lot of scrutiny in terms of its justification, more so than most of the previous environmental approvals. This is in part because Councils and residents "perceive" that the upgrade of the existing line is an alternative option.'

Nonetheless, the rationale for a new line should have been better and explicit in terms of environmental and social factors. Moreover, the need for a new line in terms of supplying a proposed pulp mill was questionable, and it was noted in a media article that the pulp mill had yet to get off the ground after 5 years, and that there was insufficient working capital to begin the project. Demand trends could also have been better, although performance was improved over the

last three case studies with figures on energy demands for new industry projects in the region, and savings in electricity losses for two options of upgrading or building a new line.

Criterion 2.1.2 Was there a detailed description of the proposal? This criterion was graded at B. The description of the proposal was similar to that in the Ardrossan EIS and was detailed enough for an informed assessment. Of 11 requirements in Table (4), 10 were referred to in the PER (90%). However, the grade was arbitrarily decreased slightly because there could have been information on the ease of construction on road reserves versus private property as was done in the Ardrossan EIS. But this was a minor concern only. The issue of detailed alignment versus conceptual corridor assessments was also raised in the process:

‘On the issue of public opinion it would be of considerable assistance to the Council in answering questions from landowners if we had a more definitive route along which the proposed line will go. As indicated in the plans the corridor is one kilometre wide and the proposed line can be located anywhere within that area.’

Despite the obvious benefits of having more detail for assessment, it is recognised that assessment at the broader conceptual stage allows greater flexibility in decision-making. Arguments supporting this approach have been put forward by both ETSA and the DEP (refer previous case studies). Broad corridors also allow flexibility and refinement of the final line based on individual negotiations with landowners after the final decision. The only concern in this regard relates to accountability, with a lack of follow-up mechanisms to ensure that ETSA was doing the ‘right’ thing at the detailed alignment stage.

Table 4: Proposal Description performance in the PER for the Hummocks Proposal

Proposal	Addressed?
Size	
Land use requirements	
Layout	
Design	
Costs	
Production processes & rate of production	n/a
construction timing and duration	
construction process	
materials required and their transport	
safety	
property access (may include numbers of workers-visits)	
type of wastes produced and management	
Score:	90% (10/11)

Criterion 2.1.3 Was there an outline of the policy framework and legislation which was relevant to the planning and decision-making for the proposal? This criterion was graded at E. As for the previous case studies, performance was very poor in this regard (refer Table 5). Of possible 16 requirements, only 6 were addressed (37%). In particular, there was no reference to Development Plan and Planning Strategy principles and objectives which is a significant omission given its inclusion in the DHUD’s advice to the DAC. Moreover, several principles in the Development Plans relating to vegetation and farming areas were clearly relevant to the proposal. The incorporation of this information into the PER would facilitate a more informed decision by councils and community members. There seems little point in devoting effort into Planning Strategies and principles for development if these are not explicitly considered and outlined by proponents in their assessment of proposals and alternatives.

Table 5: Policy and legislative framework: Degree addressed for the Hummocks Proposal

	Legislative or Policy Framework	Addressed?
ETSA	Electricity Trust of South Australia Act 1946	
Planning	Planning Act requirements (eg EIA process, Section 7 notices)	n/a
	Development Act requirements 1993	
General Environmental Protection	Development Plan	
	Environmental Protection Act 1993 (eg wastes, pollution policies)	
	Coast Protection Act 1972	n/a
	Clean Air Regulations 1969	n/a
Flora, Fauna, Parks	Environment Protection (Impact of Proposals) Act 1974 (Cth)	n/a
	Fauna (eg Endangered Species Protection Act 1992)	
	Native Vegetation (eg Native Vegetation Management Act 1985; Native Vegetation Act 1991)	
	Parks and Wilderness (National Parks and Wildlife Act 1972; Wilderness Protection Act 1992)	n/a?
Land & Water	Animal and Plant Control Act 1986	
	Land management (eg Pastoral Land Management and Conservation Act 1989; Pastoral Land Management Act 1989);	
	Soil (eg Soil Conservation and Land Care Act 1989) (EIS in prep. prior to this Act)	
	Water (eg Water Resources Act 1990; Catchment Water Management Act 1995)	n/a?
	Land Acquisitions Act 1969	
Heritage	Fire (eg Country Fires Act 1989) (EIS in prep. prior to this Act)	
	Aboriginal Heritage (eg Aboriginal Heritage Act 1979, or 1988; Aboriginal and Torres Strait Islander Heritage Protection Act 1987 (Cth))	
	European Heritage (eg National Trust of SA Act 1955; SA Heritage Act 1978, Heritage Act 1993; State Heritage Register)	
Health-Safety	Health Standards (eg WHO, Health Act; guidelines International Radiation Protection Association; Public and Environmental Health Act 1987)	
	Noise Standards (Noise Control Act 1976-1977 and subsequent replacements)	
	Explosives policies/legislation (eg SAA Explosives Code AS2187 1979)	
	Score:	37%
	Total Score: 23% (6/26)	6/16

Description of the Environment

Criterion 2.2.1: Have the main environmental categories been addressed in the description of the environment? This criterion was graded at B-A. As demonstrated in Table (6), of 18 possible environmental categories for description, 15 were addressed (83%). Omissions included the lack of reference to tourism in the area (which was noted as a significant issue in public submissions), climatic hazards and potential line damage, fire risk zones, avifauna, the current status of pest plants and diseases in the region, and to the existing quality of life (eg noise, existing easements-transmission lines, visual, and operational impacts). Although the latter two were addressed in the impact assessment section, they should also have been addressed in the environmental description to establish baseline conditions. These omissions are similar to the previous case studies. However, it should be noted that the PER also included reference to seismic potential, and reference to 'erosion', which were issues not explicitly addressed in the environmental descriptions in previous case studies where soils were discussed, but not differentiated in terms of soil type and erosion.

Table 6: PER: Performance in the description of the environment for the Hummocks Proposal

Environment Category	1	2	3	4	5
Terrain-landforms					
Climate					
Air quality	not applicable				
Hydrology					
Soils					
Native vegetation					
Pest plants-diseases					
Fauna					implied
Fire risk					
Residential landuse					
Demographics (population, etc)					
Conservation parks, etc landuse	not applicable				
Industry, mining, airfields, etc landuse					
Agriculture landuse					
Recreation-tourism landuse					
Infrastructure landuse					
Non-Aboriginal Heritage					
Aboriginal Heritage			n/a		implied
Landscape Quality				implied	
Quality of Life (eg noise , reception)					
Score (of 18)	15 83%	8 44%	2/17 11%	4 22%	4 22%

Key: 1=environmental category addressed?; 2=adequate level of detail?; 3=brief description of future environment?; 4=reference to significance of environment?; 5=reference to sensitivity/ capacity of environment to absorb impacts?

Criterion 2.2.2: Is the level of detail and conclusions about the environment adequate for an informed assessment? This criterion was graded at E. As demonstrated in Table (6), only 8 of 18 (44%) categories had adequate detail. There was, however, a better performance in the description of vegetation, particularly relative to the Tailem Bend proposal. The total area of native vegetation was given (2km), and was broken down into three areas each of which were described in terms of species, heights, and indicated on maps. Areas of concern in this criterion related to:

- climate data not related to proposal or construction (thus appeared superfluous);
- lack of reference to climatic hazards;
- needed diagrams to highlight drainage, river, lakes and other wetland areas and needed to be related to the proposal in terms of relevance;
- erosion could have included hotspots and locations on diagram (or photos), in addition to any protection measures currently in place which may be impacted upon;
- needed reference to future vegetation (eg height growths, natural regeneration, planting schemes eg as windbreaks);
- lacked information on avifauna, and more information could have been provided on native mammals;
- airfields could have been located on a map;
- lack of detail on agricultural regions on map, future agricultural potential, sensitivity of agricultural environment, significance, and conclusions. This was generally assumed and implied, and then referred to in impacts section without a base line condition (eg locations of grazing vs viticulture, implications for the line, etc);
- not enough information on existing easements and transmission or distribution lines in area;
- landscape quality needed photos, figures.

Criterion 2.2.3: Was there a description of future environments (without the project) and conclusions about the significance and sensitivity of the environment? This criterion was graded at E. For instance:

- reference to future environments was addressed in 11% of environmental categories;
- reference to the significance of the environment was made for 22% of categories;
- reference to the sensitivity or capacity was made for 22% of categories.

This made a combined graded of 18% of categories addressed in this criterion.

Criterion 2.2.4: Is the affected environment defined broadly enough to include all potentially significant effects occurring away from the immediate construction site, and is this boundary adequately justified? This criterion was graded at E-D. Unlike the previous case studies, no broad boundary or study area which encapsulated the corridors was defined, and the issues assessed were restricted to three 1km wide corridors. This involved a much smaller boundary than the Cherry Gardens EIS which had a study area boundary of 10km either side of a centre line (although corridor widths were unequal). The Tailern Bend approach which was similar, involved corridors which were 2km wide; whilst the Ardrossan corridor was 8km wide.

The size of 1km for this proposal could be challenged in that in the previous Cherry Gardens proposal, ETSA noted that any visual impacts became negligible after 2-3km, which extends beyond the 1km corridor boundary for the Hummocks proposal. Thus, the boundary may not adequately cover all impacts, although many of the impacts would fall within this boundary (eg direct impacts on agriculture, vegetation). Nonetheless, ETSA considered that a 1km wide corridor would ‘...provide sufficient scope to position the line in such a way to satisfy ETSA’s needs and landowner requests,’ and ‘...would allow flexibility for deviations in the line to avoid remnant vegetation, homesteads and to accommodate where possible, landowner requests on the positioning of the line within the corridor.’

It should also be noted however, that the lack of a broad study area (ie the focus was on environments *within* the corridors) made it difficult in terms of transparency of factors leading to corridor selection (see alternatives section and proponent responsiveness). In other words, specific environmental constraints were not detailed for the whole area, and only for the preferred option which did not allow individuals outside of ETSA to make an informed judgement about the corridor selection process.

Impact Assessment

Criterion 2.3.1: Have all the major *direct* impacts been addressed in the identification and description of impacts? This criterion was graded at B. As indicated in Table (7), 17 of 21 potential impacts were addressed with a percentage of 80%. Some of the impacts were addressed in the impacts ‘management’ section, and should have been incorporated into the impacts ‘assessment’ section, but this is a minor point only. Omissions related to impacts on land and production values, impacts of access, and spread of pest plants and diseases, although the latter was briefly addressed in a paragraph under impacts ‘management’. The impacts on vegetation and of health effects for instance, were addressed in detail, whereas impacts on agriculture was brushed over, particularly when compared to previous proposals. This may have been another factor which led to the public controversy from farmers and landowners associated with this proposal (see also public controversy sections).

Criterion 2.3.2 Does the description of impacts have an adequate level of detail? This criterion was graded at C.

Table 7: Performance in the identification of impacts in the PER for the Hummocks Proposal

Impact Category	Addressed?
Human Settlements	
Land Values	
Production Values	
Land use: Agriculture	
Land use (eg airfields, industry, mining)	
Hydrology (water quality)	
Non-Aboriginal Heritage	
Aboriginal Heritage	
Vegetation	
Fauna	
Tourism-Recreation	
Visual Impacts (& landscape quality)	
Electrical fields	
Noise	
Ozone Generation	
Tv & Radio Reception	
Fire	
Wastes	
Pest Plants & Diseases	
Soil Erosion	
Access	
Score:	80% (17/21)

Criterion 2.3.3: Have impacts which are less obvious been outlined including indirect, secondary, and cumulative impacts? This criterion was graded at E. As for the previous case studies, this criterion performed generally poorly with a grade of E. Whilst the concept of 'indirect' impact was noted, there was no detail identifying why some impacts were indirect as opposed to direct. There was also no reference to cumulative impacts of multiple lines or easements on properties, nor was there any attempt to look at the indirect effects of attracting new industry. It was noted by ETSA in correspondence to Councils that the transmission line could be beneficial by providing incentive for new industrial development in the areas surrounding the line. In fact, a proposed pulp mill was one reason for constructing a new line in the first place. Despite this, no attempts were evident in the PER to look at the secondary impacts (positive or negative) of drawing industrial developments into the area (ie biophysical impacts, social issues).

Criterion 2.3.4: Has there been an adequate attempt to evaluate significance of impact? This criterion was graded at E. As demonstrated in Table (8),

- magnitude of impact was addressed in 42% of impact areas;
- direction of impact was addressed in 66% of cases;
- geographical extent was addressed in 4% of cases;
- duration and frequency of impact was addressed in 4% of cases.
- potential reversibility of impacts was not addressed;
- mitigation potential was addressed in 66% of cases which is satisfactory;
- probability of impact was addressed in 28% of cases.
- public controversy was addressed for 52% of cases;
- thresholds of concern was addressed for 5% of cases;
- and uncertainty was noted in 14% of cases.

This made a combined grade of 28% which is unsatisfactory.

Table 8: Performance in the evaluation of impact significance in the PER for the Hummocks Proposal

	Spatial-Temporal				Alleviation-Probability			Thresholds-Certainty		
	1	2	3	4	5	6	7	8	9	10*
Human Settlements										
Land Values										
Production Values										
Agriculture									n/a?	
Airfields/industry	moderate									
Hydrology										
Non-Aborig. Heritage										
Aboriginal Heritage							high			
Vegetation	minimal	implied								
Fauna	minimal	implied								
Tourism-Recreation										
Visual Impacts										
Electrical fields							implied			
Noise	minimal									
Ozone Generation										
Tv/Radio Reception	implied								n/a?	
Fire	minimal						low			
Wastes										
Pest Plants										
Soil Erosion										
Line access									n/a?	
Score (of 21)	9 42	14 66%	1 4%	1 4%	0	14 66%	6 28%	11 52%	1/18 5%	3 14%

Key: 1= magnitude of impact; 2= direction of impact; 3= geographical extent of impact; 4= duration and frequency of impact; 5= reversibility of impact; 6= impact mitigation potential; 7= probability of impact; 8= public or government concern levels; 9= thresholds, standards or guidelines referred to; 10= levels of certainty or confidence

Alternatives

Criterion 2.4.1: Have alternatives been outlined, and the decision making process leading to these alternatives summarised and justified? This criterion was graded at C. A number of alternatives were presented at both the broader scheme level and the corridor level. In the first case, four alternative schemes were noted:

- the no-go option;
- new line versus upgrade of existing line;
- alternative energy sources; and
- undergrounding.

Each of these options were briefly described and justified against (refer Table 9). The addition of alternative energy sources is interesting given that it relates to a broader level of decision-making and as noted by ETSA for the Cherry Garden proposal, fell outside the scope of this level of assessment. Although this may appear to be a token alternative which could not possibly be seriously considered at this level as indicated in the Cherry Gardens proposal, it is of value by informing the community about ETSA's broader activities (ie not just being reactive at the project level).

Table 9: Alternatives proposed in the PER for the Hummocks proposal

Alternative	Description and Justification For or Against
No go	Consequences of not proceeding were noted including less security of power supply, inability to accommodate extra loads, and losses on the existing Bungama-Hummocks line. ETSA's obligation to provide sufficient power was noted as rationale was also noted.
New versus line upgrade	considered costs over 30 year timeframe which justified construction of new line. Also noted that new line would reduce power flow in Bungama-Hummocks line; and lower electrical losses (although it is unclear how these losses are prevented-technical information not provided).
Alternative energy schemes	noted that ETSA had embarked on multi-million dollar plan for research into alternative energy technologies since 1993 (eg fuel cell, solar, wind energy). Note potential for small-scale application which reduces losses associated with transmission over long networks from large power stations. Notes costs of technologies still too high for grid connection.
Undergrounding	noted that many residents wanted undergrounding, and that ETSA considered the viability of undergrounding considered for all projects. But noted costs were too high for a line of this size, in addition to technical problems.
Corridor A	not described equally to Corridor B. Direct corridor over farming and grazing regions. includes scenic landscape, significant lengths of road reserves with roadside vegetation, and other areas of native vegetation. crosses river and minor water courses. Low population than other corridors. Justified against due to cost, length, high visual impact, impacts on heritage and tourism, and areas of native vegetation. <i>'Whilst Corridor A largely traverses areas with low population numbers and densities where the land use is predominantly cereal cropping and grazing, it would have a negative impact on the efficient utilisation of agricultural land holdings, and on existing stands of native vegetation, particularly located on road verges and west of Waterloo and Manoora'</i> (ETSA 1994: piii).
Corridor B (preferred option)	described in detail. Preferred corridor. Issues for included only minor impacts on vegetation, utilisation of existing corridor for 7.5km, and least cost. Issues against including impacts on heritage and tourism, some visual impact. Also note that had highest length through private property. <i>'Corridor B is the most effective scheme and benefits from its proximity to Balaklava and the ability to service the existing and likely future development associated with the town. It also passes few dwellings/settlements and would have minimal impact on archaeological/heritage sites. Some visual impact would arise particularly in relation to its proximity to Auburn and the tourist area associated with the Clare Valley. Where it traverses agricultural land, there would also be impact on the efficient management of farming activities'</i> (ETSA 1994: piii).
Corridor C	not described equally to Corridor B. Justified against due to potential impacts on Aboriginal heritage, impact on river, heritage, recreation, proximity to dwellings, high visual impact, cost, impacts on remnant vegetation, and close location to sites of geological interest <i>'Corridor C passes close to Bowmands ad known sites of archaeological/heritage importance, and could have a significant impact on the River Wakefield and associated scenic areas, such as "The Rocks". As with Corridors A and B, the crossings agricultural land would result in an impact on farming activities'</i> .

The transparency of decision-making and justification for the no-go, alternative energy sources and undergrounding was clear and adequate, and it is recognised that cost and security of energy supply were significant issues. Cost and technical reasons were also used to select a new line versus an upgrade of the existing line. Although the criteria in this case were transparent and justified, there are some concerns about the justification for the new line. Nonetheless, the factors which

influenced the selection of corridor alternatives were also clear and transparent in the PER and comprised

- land use (agricultural);
- native vegetation;
- housing proximity;
- use of road reserves where possible (for preferred option);
- and engineering-economic factors.

However, it is not clear what these engineering factors actually entailed in terms of corridor selection, nor why another alternative between A and B was not presented. This later is particularly unclear given the lack of information over a broader study area (ie rather than being restricted to corridors).

Criterion 2.4.2: Have alternatives been compared ranked in order of preference for each environmental impact, and adequate rationale been given for the preferred alternative selected (if selected)? This criterion was graded at D. Alternative corridors were briefly compared, and the issues summarised in a comparative table. In selecting a preferred option ETSA noted:

'Following assessment of each of the corridors, which took into account socio-economic impacts, flora and fauna, land use, archaeological issues, and geological and soil considerations, it was considered more appropriate to utilise the western portion of Corridor B, and then deviate to Corridor C using the northern-most link. In this way, the corridor will have minimal impact taking into account the socio-economic, flora and fauna, land use, archaeological and geological issues' (ETSA 1994: piii).

However, like previous case studies, no attempt was made to explicitly rank these issues which were used as selection criteria. It was also difficult to compare the performance for all alternatives given that some options involved a combination of corridors which were not separately described as a whole in the comparison. There were also some limitations regarding the decision-making process leading to the selection of the preferred option. The constraints for Corridors A and C were not sufficiently detailed when compared to the preferred corridor description. Thus, one was reliant on ETSA's judgement about the 'best' option in this regard. The criteria used were also questionable when used in practice. It is interesting for instance, that, although agricultural interference was a major factor in corridor selection, the preferred corridor appeared to traverse the greater area of private property than the other corridors. Thus the 'best' option was not clear based on the available information and lack of ranking.

Mitigation and Monitoring

Criterion 2.5.1: Have mitigation measures been identified where appropriate? This criterion was graded at C. As demonstrated in Table (10), of 20 possible areas for mitigation, 14 were addressed (70%). Those not addressed included:

- compensation for land or production losses;
- fauna (although this was closely related to vegetation mitigation as habitat);
- airfields and aerial spraying;
- impacts of access to easements during construction and maintenance; and
- ozone generation (although this was considered negligible).

Most of the mitigation measures related to:

- avoid (eg settlements);
- confine (eg vegetation);
- negotiate (eg landowners to reduce visual impacts and interference);
- rehabilitate (eg soil erosion);
- educate (eg contractors regarding fire risks);
- naturally regenerate (eg vegetation);
- screening (eg using topography, corridors, vegetation).

Criterion 2.5.2: Is the information on mitigation measures sufficiently detailed to facilitate informed assessment about how, when, and the effectiveness of measures? This criterion was graded at E. While the majority of impacts had some form of mitigation, the level of detail was limited which was a similar problem in the previous case studies. As Table (10) illustrates:

- level of mitigation difficulty was not addressed;
- level of expense was not addressed;
- level of mitigation effectiveness was addressed in 15% of cases;
- level of certainty about mitigation outcome was addressed in 5% of cases.

This made a combined grade of 5% which is unsatisfactory.

Criteria 2.6.1 and 2.6.2: Have monitoring arrangements been detailed for each impact category? Is the information on monitoring sufficiently detailed to facilitate an informed assessment about its appropriateness and feedback capabilities? Both criterion were graded at E. Reference to monitoring was limited with only one impact category with monitoring requirements (fire risk) and no detail about monitoring frequency, duration, responsibility or contingency plans (Table 10).

Table 10: Performance in mitigation and monitoring in the PER for the Hummocks Proposal

	Mitigation						Monitoring		
	1	2	3	4	5	6	7	8	9
Settlements		A							
Land-Productivity Values									
Agriculture		A C Ne							
Airfields, industry									
Hydrology		R							
Aboriginal Heritage		A							
Non-Aboriginal Heritage		A							
Vegetation		A D N, C							
Fauna		Negl							
Recreation-Tourism									
Visual Impacts		C A, S Ne							
Electrical Fields		A, D							
Noise		C							
Ozone Generation		Negl.							
Reception		A R				Implied			
Fire		D E A				Implied	Implied		
Waste		T R Ne							
Pest Plants & Diseases		C A							
Soil Erosion		R							
Access									
Score (of 20)	14 70%	-	0	0	3 15%	1 5%	1 5%	0	0

Key: 1=mitigation measure identified; 2=mitigation type (TRANSCCEND: *Transfer, Rehabilitate, Avoid, Natural Regeneration, Screen, Confine, Compensate, Educate, Negotiate, Design*); 3=level of mitigation difficulty; 4=level of mitigation expense; 5=mitigation effectiveness; 6=certainty of mitigation outcome; 7=monitoring noted; 8=monitoring details (frequency, duration, and responsibility); 9=contingency plan noted

Communication & Presentation

Methods & Information Sources (Criteria 2.7.1 and 2.7.2)

Methods was graded at D, whilst information sources was graded at C. As for the Ardrossan proposal, methods of assessment and environmental description were not specified. Research into

original information performed better with questionnaire surveys of public issues, limited surveys of vegetation and fauna within the preferred corridor, and a survey of Aboriginal heritage sites. Where information was lacking it was proposed to conduct further studies (eg proposed survey of blue tongue lizards; further surveys of aboriginal archaeology). Surveyed areas were also noted on a diagram which was good, although indicative of the limited nature of the surveys. It should however, be noted that field inspections were limited to viewing from road reserves because ETSA did not have right of entry into private properties. As noted earlier, preliminary surveys of settlement proximity, vegetation, and settlements could also have been undertaken for a broader study area rather than being restricted to the chosen corridor. Sources of information used included the Australian Bureau of Statistics, health references (ie EMF issues), heritage references (eg importance classification systems), a number of Aboriginal heritage references, an established local fauna database, vegetation, and references on South Australian environmental provinces.

Criteria 2.7.3: Were all relevant sections included in the PER including introduction, conclusion, technical summary and terms of reference? An introduction, and summary were included. However, due to missing pages in the PER, it was not possible to assess this criterion.

Criterion 2.7.4: Was the information logically arranged in sections and the location of important data highlighted in a table of contents of index? This criterion was graded at B. A table of contents was present, and the arrangement was logical and similar to previous case studies involving introduction, rationale, description of the proposal, comparison of alternatives, description of the environment, assessment of impacts, and impact management. The only weaknesses related to the inconsistencies of certain information. For instance, fire was listed as an impact, but was not referred to in the environmental description (eg fire risk zones, past experience). Some of the issues in impact management were not referred to in the impacts assessment (eg hydrology, erosion, EMR). There should also have been a section on monitoring.

Criterion 2.7.5: Was information comprehensible to the non-specialist, and were technical terms adequately defined, visual aids used where appropriate, and references adequately sourced? This criterion was graded at B-A. The PER was easy to read and there was not an over-reliance on technical jargon. If anything, information was sometimes simplified too much. Visual aids such as maps of the preferred corridor and location of surveys, heritage sites, vegetation and dwellings were very clear and allowed an informed decision about location *within* the corridor, but not outside. A photo indicated the nature of the tower design and impact on the landscape quality. Tables were used, for instance, to compare the corridors. Overall, the PER was very clear, although referencing was sometimes missing.

Criterion 2.7.6: Was the statement presented as an integrated whole, and where summaries of data were presented in separately bound appendices, was reference made in the text? This criterion was graded at B. No reference to other documentation necessary for the assessment was made, and this criterion thus performed highly.

Criterion 2.7.7: Was the document of an appropriate length for the task (ie not voluminous with excess data, but not too short with lack of detail)? This criterion was graded at B. Given that the assessment was a PER rather than an EIS, the length appeared appropriate. If it was a full EIS, it would probably be too short as was the case for the Ardrossan EIS. In fact detail in some areas was better than previous EISs (eg in the environmental descriptions). Detail was however, lacking on mitigation, monitoring and impact 'significance' which would not have added significantly to the overall length, but was of some cause for concern.

Criteria 2.7.8: Was there an appropriate emphasis on the key issues in the PER with a lack of bias in presentation? This criterion was graded at D. The information appeared to be quite biased in that it focused primarily on a preferred option. Although the Tailem Bend and Cherry Gardens proposals also presented preferred options, the information leading to these preferred options was more detailed than the Hummocks proposal. There also appeared to be a lack of emphasis in detail on agricultural impacts and compensation despite the fact that they were major issues for the community.

Criterion 2.7.9: Was there an appropriate emphasis on the conclusions in the PER with a lack of bias, and were the conclusions appropriately based on the information presented in the PER (if the information itself lacked bias)? This criterion was graded at C. In terms of conclusions about the best corridor adopted, this was difficult to assess given the lack of detail on *all* corridor alternatives. There was a lack of transparency in this regard. Some bias was evident given that the original intention was to avoid impact on farming operations, yet the preferred option traversed

the greater lengths of private property. Conclusions about the impacts on fauna (ie negligible) was questionable given that a further survey was needed on blue tongue lizards, and given the lack of information on the amount of vegetation which would actually have to be cleared. Conclusions about soil erosion were also difficult to justify given the lack of detail about mitigation effectiveness in past projects. Nonetheless, conclusions were good in terms of vegetation impacts, Aboriginal heritage impacts, fire risks and conclusions about the risks of Electromagnetic fields with the adoption of a precautionary approach.

Level of Controversy about PER Quality

Public controversy was evident about the quality of the PER, both negative and positive, although the former tended to outweigh the later. Examples of comments are as follows:

'I think the PER has dealt thoroughly and fairly with all issues and has chosen a compromise which is likely to please the most number of people'.

'We have considered the Public Environmental report...and feel the impact on the construction of the lines in our district have not been fully or properly assessed.'

'...we find it very hard to believe that not once did any ETSA or RUST Pty Ltd representative come onto our or anyone else's property to see if there really were any aboriginal sites or to check on soil types, vegetation, lizard colonies, etc.'

The local residents committee which was formed in response to the proposal '*was ...concerned that there were a number of inconsistencies and misleading information contained throughout the PER report which needed to be addressed.*' It was also reported in the media that residents considered the '*...PER to be a biased document that continually presented a subjective and sometimes contradictory viewpoint.*' Tourism and recreation was also not adequately addressed. For instance, landowner concerns were reported in the media:

"Tourism in our area is a sensitive industry, beginning to blossom, and consider the PER has not adequately taken into account the visual impact of the proposed line in our area which is renowned for its subtle beauty. No mention has been made of the Riesling or Wakefield walk, bushwalking, birdwatching, fly fishing, nor the historic town of Undalya".

Surprisingly, there appeared to be no controversy from the DHUD about the PER quality, despite some omissions in the PER, and despite the public controversy emerging. The DHUD's assessment was very straightforward and failed to take these issues into account (except to recommend that visual concerns be accommodated by ETSA). Controversy was, however, evident at the local government level, and one council noted that the PER '*falsely and improperly distorts what was shown as Route 'B' in the original E.T.S.A. pamphlet*'. This did not, however, reduce the overall grade given that ETSA noted a misunderstanding about the preferred alternative by the council. I also did not see any evidence of misrepresentation on the diagrams. Thus, no *major* government controversy appeared evident about the PER quality.

OPENNESS & CONSULTATION

Attitude

Criterion 3.1.1: Is a genuine desire for consultation demonstrated by the proponent? This criterion was graded at B. ETSA's desire to consult appeared genuine in light of the approach adopted which involved earlier timing and the use of greater techniques than previous case studies. ETSA believed they were doing the right thing as indicated by their article '*Consultation a priority in new Mid North line*'. ETSA also indicated their commitment to DHUD (consultation was a requirement of the PER level), at meetings with the DAC, and to district councils, for instance: '*ETSA is committed to communicating with landowners and considering their requests prior to defining the position of the line and poles within the preferred corridor if the development is approved.*' It was also noted in ETSA's Project Definition Report (following the EIA process) that the following measures must apply during easement access and acquisition:

- all dealings with property owners must be fair, reasonable and unbiased
- ETSA's reputation and image must be conserved or improved

- all promises and agreements made must be capable of being achieved or “delivered”...
- property owners must be well informed and have realistic expectations of what the project will entail.

These values were not publicly available, and hence do not appear to be simply a ‘public relations’ stance. As indicated in the above statement, maintaining good public relations was very important to ETSA, and this involved close consultation and liaison with the community members via personal interviews, questionnaires, attendance at residential and council meetings, early consultation with councils, toll-free phone lines, and informal correspondence, all of which were not required by law. The two periods of consultation were also lengthy (each 2+ months), and extended beyond formal periods normally experienced under the higher EIS level.

Criterion 3.1.2: Has the proponent demonstrated openness to considering all possible alternatives raised throughout the whole process? This criterion was graded at D-C. If an option was put forward, ETSA generally considered it, and in a radio broadcast they noted that they were open to making changes to the proposal where necessary. ETSA was open to suggestions where feasible in response to individual landowner requests regarding the final route alignment (after the final decision). For instance:

- one landowner suggested an alignment outside of the approved corridor which ETSA was open to considering as long as it met a number of criteria such as no environmental impact.
- another alternative was proposed by landowner at late stage, but this was not considered given that it was outside the approved corridor and entailed additional cost and lengths.
- ETSA considered request by a landowner at the survey stage to underground the line at crossing with Main North Road south of Undalya., but noted that cost would be \$1 million which was not warranted or justifiable.

ETSA also considered DHUD's request to assess alternative poles to stobie poles, where it was found that an alternative might be more cost-effective and environmentally friendly (visually). However, no mention was made of this assessment in the PER or final decision, so it is unknown what the outcome was.

The question is, how open was ETSA given their focus on a preferred option. Was ETSA truly open to considering the significant community push for an upgrade of the existing line rather than constructing a new line? ETSA reassessed the feasibility of this option, thus signalling a degree of openness. However, this did not entail any additional effort, and it was clear throughout the process that ETSA would not seriously consider this as an option given that the rationale against this option was the same as that posed earlier in 1993 (ie precluded by cost and technical factors).

Timing of EIA (criteria 3.2.1-3.2.4)

The main points in this category are:

- **Integration with conceptual planning:** This criterion was graded at E. The timing of the environmental investigations appeared to commence around phase (ii) at the consideration of alternatives. Environmental factors did not appear to play a role at the identification of the need for the proposal and the recommendation for a new line made by the Transmission Development Manager in June 1993. As is noted throughout this evaluation, the primary rationale for the line was based on economic and technical factors, but should have referred to environmental and social differences at a broader level (which would then inform the assessment of alternatives).
- **Integration Alternatives Planning:** This criterion was graded at B-A. As for the previous case studies, the environmental investigations were well integrated with this phase.
- **Integration Design:** This criterion was graded at B. Performance was similar to the previous case studies, whereby formal investigations were not officially integrated with design, but rather informed the design process. This indicates some degree of integration of the environmental information, particularly arising from the conditions attached to the final decision (which was standard practice for ETSA anyway).

- **Integration Construction:** There was insufficient information to assess this criterion.

Criterion 3.2.5: Has public consultation been undertaken as early as practically possible prior to the release of the Draft EIS? This criterion was graded at B. This criterion performed well given that community consultation commenced prior to the formal PER, and informed the PER. It was noted by ETSA that this was new approach by involving people earlier than usual. ‘... this was the first time that the public had been involved at the beginning of such a project. Normally the only time that the general public would be contacted would be after the release of the Public Environmental Report’. While this may be true of PERs, consultation was undertaken during EIS preparation for the Ardrossan proposal and the Cherry Gardens proposal.

APPROACH

Criterion 3.3.1: Have a wide range of techniques been used for public consultation? (eg review panels, consultative groups, local workshops, public meetings, interviews, questionnaires, hotlines, displays)? This criterion was graded at C. A wider range of consultation techniques was used than in previous proposals assessed. Six of the eleven techniques listed in Table (11) were utilised, although at the lower end of the consultation spectrum. Public meetings were also not initiated by ETSA which is surprising given the interest demonstrated in the proposal from the questionnaire, and given that they had been utilised for previous projects.

Table 11: Public participation techniques adopted by ETSA for the Hummocks Proposal
(based in part on Westman’s 1985 five-scale participation model and Glasson et al 1994)

Approach	Public Power	Participation Techniques	Adopted?
Delegated Authority	High	Review boards (established for project, although can be permanent boards)	
Joint Planning	Moderate	Community Consultative groups, advisory committees	
		Structured Workshops	
Consultation	Low	Public Meetings or hearing	
		Personal Interviews*	
		Formal public submissions	
		Questionnaires	
		Informal Correspondence (outside formal submissions)**	
Information	Nil	Telephone Hotlines	
		Public Displays	
		Media Notices	

*can also become a means for joint planning, but is dependent on proponent attitude. In ETSA’s case, landowners had an ability to influence the location of the final route, thus indicating a degree of joint planning, although ETSA did not have to abide by landowner concerns or requests. **can also mean simple information-provision depending on content of materials. Often the correspondence by ETSA involved standard letters providing information about the process.

Criterion 3.3.2: Was the proponent willing to, and did they release information to the public both throughout the EIA process, and after the decision had been made (eg record of decision, monitoring, auditing reports)? This criterion was graded at D-C. Information was released early to the community, to district councils, and to State and Commonwealth government agencies (eg phone company, Housing Trust). The main limitations in this criterion relating to the lack of transparency and detail about the constraints in a broader study area leading to a preferred corridor, and clarification of engineering factors leading to corridor selection. Although consultation was initiated early, the information available to make an informed assessment was not overly detailed and summarised in a short brochure of 4 pages. As a result, approximately 40 individuals had to contact ETSA for further information (ETSA September 1994). ETSA was responsive and either posted further information or met personally with the people requesting further information which is indicative of a degree of transparency (and further supportive of their ‘genuineness’). No information appeared to be released about monitoring or auditing reports (probably because there was not any information to release), but some information about conditions of the decision which were relevant to landowners was released (eg use of indigeneous vegetation to screen the line).

Criterion 3.3.3: Were resources and time tables for the EIA process flexible enough to cater for unforeseen requirements or delays, or to cater for an option which is better environmentally but more costly? This criterion was not graded. There did not appear to be any need for flexibility given that the process appeared to be relatively straightforward and the consultant was not required for additional work. The time frames for getting development approval were 'tight' and the aim was to get approval by December to meet the overall time table for the project, and to reduce internal labour costs. To meet a request from the DHUD to consider the use of alternative pole types compared to stobie poles, consultants Rust PPK made a commitment to include the results into the PER by 15 July 1994, but they were clearly, pressed for time. Although no delays in the approval process were apparent (except for the Minister's final decision), flexibility is questionable given this 'tight' time line. In fact, ETSA was concerned about time frames near the end of process, particularly if the Minister referred the proposal for consideration by Parliament which would affect the milestone date of 23 December 1994 for environmental approval, which in turn would affect rest of project milestones. Given that ETSA was expecting to commence the more detailed surveying and design by January, but this did not occur until after the final decision in March, some flexibility is indicated, and despite the project being stalled by 6 months, it still went ahead to plan.

Level of Controversy about Openness

The level of public controversy about the consultation process was less than that for the PER quality. Public concerns noted included:

'In their submission the property owners said they believed the process of consultationTo have been deliberately divisive, unjust and a deception.

one resident was '...very concerned about the amount of misleading information from ETSA'.

'...the only information I gleaned on this development has been in the local print media. On no occasion have I or any member of my family been approached by anyone from ETSA or RUST PPK Pty Ltd. Perhaps the "Invitation to Comment" was considered enough in public relations. However, I would have thought the comments and questions of residents within the proposed corridor could have been valuable.'

concerns about the lack of visits to properties despite opposition to preferred option.

It should, however, be noted that ETSA was not obliged to undertake personal visits at any stage of the process, although this was undertaken following approval. There appeared to be no government controversy about ETSA's level of openness and commitment to consultation.

RESPONSIVENESS

Alternatives-Weighting

Criterion 4.1.1: Was the 'best' alternative adopted by the proponent of those presented? This criterion was graded at D. This was very difficult to assess given the lack of explicit ranking, given that information on each alternative corridor was not equally presented, and given that views conflicted between councils and community 'versus' ETSA and government assessors and decision makers. Because of the focus of information on the preferred option, one was solely reliant on ETSA's judgement. However, the best option depended on one's perspective:

- much of the community supported Corridor A rather than B-C, and were supportive of upgrading the existing line;
- one council was concerned about the preferred option, whilst another was also supportive of an upgrade;
- ETSA wanted a new line solely due to cost-technical factors. The preferred corridor option performed relatively well in terms of lesser visual impact, lesser cost, and lesser impacts on vegetation among other things (ie traversed less areas of road reserve). Only 3 disadvantages were raised (impacts on heritage and tourism, some visual impact, and requirement for upgrading of part of existing line), whereas 5 disadvantages raised for Corridor A, and 8 for Corridor C. It is unknown then, why part of Corridor C was adopted in the preferred option -

it is also not clear if the eastern portion of Corridor C which was adopted had lesser advantages than the whole of Corridor C.

- DHUD and the decision-makers appeared to agree with ETSA's view, and there was little consideration of community views in the DHUD's assessment.

Overall, this criterion was graded at D:

- given strong community and council opposition towards the preferred option and support for an upgrade rather than a new line;
- given the lack of adequate or comprehensive justification by ETSA against upgrade of the existing line (the cost factors did not appear significant enough to justify against a social-environmental assessment of an upgrade versus new line);
- given ETSA's reliance on cost factors and industrial development as one key driver;
- given that the preferred corridor traversed the greater area of private property despite a commitment by ETSA to avoid this;
- given the lack of detail on each corridor which led to preferred alternative;

but given that:

- it is not a 'voting' issue (greater numbers opposing does not necessarily mean the worst option in terms of the biophysical environment for instance);
- environmental issues were considered in the selection of the preferred option (although not detailed sufficiently);
- costs and engineering factors are also important in the final selection; and
- given government support for ETSA's decision by both assessors and decision makers in State government.

It is unclear, however, what the best option was based on the available information which highlights problems with selecting and focusing on a preferred option rather than equally assessing alternatives as was the case for the Ardrossan proposal.

Criterion 4.1.2: Was the environment considered at least equally with economic and technical factors? This criterion was graded at C. ETSA's performance in this criterion was variable. As noted throughout, the weighting appeared good for the corridor selection whereby environmental issues played a major role in the initial corridor selection, and the identification of a preferred option. Costs had a role in the selection of the preferred option (ie it appeared to be the least cost option). Cost and technical factors also outweighed any environmental or public controversy associated with constructing a new line versus upgrading the existing line. Although this may have been justified in ETSA's eyes, a comparison in environmental and social terms should have been conducted on the two alternative schemes as noted throughout this evaluation. Costs were also a factor in pole types used/assessed in addition to improvement in appearance (although corrosion may be a problem). Thus weighting in this regard was poor.

In April 1995, a landowner requested if ETSA would consider an alternative alignment outside of the approved corridor. Although ETSA noted that it was usual for ETSA to construct the line within a defined corridor as approved by the Minister, they did note that an alternative would be considered if it:

- did not have an increased environmental impact
- did not significantly affect additional property owners than those owners included within the preferred/approved corridor
- had the full & unanimous agreement of the affected landowners
- did not significantly detour or deviate from the approved corridor
- did not incur significant cost increase.

This indicates a more significant weighting for environmental-social factors in decision-making.

Procedural & Substantive Changes

Criterion 4.2.1: Were the environmental investigations and/or the public consultation process modified or supplemented where a need was identified? This criterion was graded at B. There did not appear to be a need to undertake further investigations, nor did there appear to be a need to alter the public consultation process. However, where a need was identified for ETSA

representation at local residents meetings, ETSA attended (except for the initial meeting with short notice). ETSA was also willing to respond to landowners concerns about inadequate information in the early consultation stage (ie the initial invitation to comment), and made efforts to meet with individuals in the field. In response to controversy after the decision ETSA was also responsive by bringing in their environmental scientists to conduct personal meetings on the issue of vegetation (refer earlier EIA summary). Other process changes were not generally apparent because ETSA was not required to respond to public comments in a Supplement report. Thus, factors such as further consultation, provision of further information did not occur as transparently.

Criterion 4.2.2: Was the proposal changed on environmental grounds where appropriate? This criterion was graded at D-C. Again, this was difficult to assess, but performance does not appear to be as good as the previous Ardrossan proposal for instance. There appeared to be no changes to the proposal evident in the PER, and most changes appeared to relate to the stage *after* environmental approval had been obtained (Table 12). Changes that were made generally related to route deviations within the approved corridor (although not all requests agreed to), and provisions for tree replacement in areas which replaced windbreaks.

Changes were generally minor despite a possible need to consider more major changes based on environmental factors such as the line upgrade (Table 12). Initiative was demonstrated by ETSA in terms of soliciting landowner views and requests for minor route deviations within the approved corridor. No initiative was demonstrated to further consider other alternatives in response to public and council concern. This is not surprising given that ETSA considered public opposition to be only minor.

Criterion 4.2.3: Did the proponent demonstrate learning from the EIA process resulting in changes to internal policies or processes? There did not appear to be any reference to lessons learned as a result of public controversy and the adoption of a preferred alternative, as occurred for the Cherry Gardens and Tailem Bend proposals. This criterion could not however, be fully assessed given that some information in the files was missing.

Table 12: Changes to the Hummocks Proposal

Nature of Change	Details
Number of Changes	unknown (most related to minor deviations after environmental approval) no apparent changes during PER process
Type of Changes	minor route deviations provision of trees for windbreak-screening
Change Significance	very minor
Timing of Change	very late (after approval)
Initiator of Change	ETSA and landowners (by negotiation)

Level of Controversy

Public controversy was very high in terms of ETSA’s responsiveness. Most of these concerns related predominantly to dissatisfaction about the final route positions. For instance:

‘I...find it hard to understand and somewhat disappointing to find that after replying to “An Invitation to Comment”, I read in the P.E.R that the preferred corridor was the least favoured by a substantial majority. I cannot help wondering if the concerns of landowners were really taken seriously.’

'...we feel very hurt that our original letter apparently carried no weight at all, along with others from Route B. ... of the people who responded to the survey, only 16% voted for this Route!...We realise from the Public Environmental Report, that many other factors (social, environmental and economic) were considered. However we find it very hard to believe that not once did any ETSA or RUST Pty Ltd representative come onto our or anyone else's property to see if there really were any aboriginal sites or to check on soil types, vegetation, lizard colonies, etc. We feel that it was totally unfair that people had the choice of only Route A, B, or C, instead of a fourth and seemingly far more sensible option of upgrading the existing line. This has resulted in the division of the community, people affected by Route A being pitted against people from Route B ... - very unfortunate and unpleasant in a small close-knit community.'

'It seems amazing that you would choose option B when only 16% of the respondents favoured it and 46% favoured Route A. However, in our opinion, the only option which would be acceptable to most people in the areas involved, is to upgrade the existing line.'

'ETSA hasn't listened to the opinions of people who [have] spent their whole lives in the district.'

'There is little point of seeking public views if they are to be totally ignored.'

'The overwhelming public view appears to have been disregarded.'

ETSA reported in the media that they had to have a balanced view. While this may be true, the information was not transparent enough in the PER to assess how 'balanced' this view was, which is probably one trigger for the high level of controversy. ETSA's Transmission Lines Engineer acknowledged controversy in October 1994: *'I can understand the resident's opposition to the line. However, a lot of research has been undertaken to select the best possible solution.'* It was also noted that ETSA was willing to make deviations within the corridor at landowner requests, but *'...naturally not everyone can be pleased.'*

Overall, indications were that ETSA was unresponsive to the issues relating to an upgrade versus a new line based on environmental and social issues. ETSA's limited responsiveness to public concerns, as opposed to biophysical concerns, is also indicated in their attitude to the controversy. In this case, ETSA noted that *'despite the proposed development being the focus of recent media attention we are of the view that there is only minor opposition to the proposed route and the recommended corridor should be supported'* In addition, no government controversy appeared evident except for council concerns noted previously relating to a line upgrade and choice of preferred corridor. One positive comment about ETSA's responsiveness was also made:

'As chairman of the Church's Trust Committee, I would like to thank E.T.S.A. for being aware of our concern of the visual impact that this line will have in this area and appreciate the effort being taken to limit this.'

Appendix 18: Dunphy and Stace's Scales of Change
(1993 in Senior 1997: p35)

SCALE OF CHANGE	EXAMPLES
<p>Fine Tuning (Scale Type 1) (ongoing changes to improve match between strategy, structure, people and processes)</p>	<ul style="list-style-type: none"> • refining policies, methods, procedures • creating specialist units • developing personnel with training and development • clarifying established roles
<p>Incremental Change (Scale Type 2) (adjustments to changing environment, with distinct modifications (but not radical))</p>	<ul style="list-style-type: none"> • expanding sales territory and product emphasis • improved technology • communicating modified mission statements to employees
<p>Modular Transformation (Scale Type 3) (major realignments on subcomponents of the organisation)</p>	<ul style="list-style-type: none"> • major restructuring of department/divisions • changes in executives and managerial appointments • reduced workforce numbers • reformed departmental/divisional goals • introduction of significantly new process technologies affecting department/divisions
<p>Corporate Transformation (Scale Type 4) organisational-wide changes and revolutionary)</p>	<ul style="list-style-type: none"> • reformed missions and core values • altered power and status • reorganisation with major structural changes and procedures • revised interaction patterns (new procedures, communication networks, decision-making patterns) • new executives in key positions from outside the organisation