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# ESD Reporting and Assessment Subprogram: Development of Assessment Tools for the National ESD Framework – initial scoping exercise

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Ecologically  
Sustainable Development  
**Catching Sustainability**  
FRDC – Subprogram



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## Contents

<b>1.0 NON-TECHNICAL SUMMARY .....</b>	<b>5</b>
Outcomes Achieved.....	5
<b>2.0 ACKNOWLEDGEMENTS .....</b>	<b>7</b>
<b>3.0 BACKGROUND .....</b>	<b>7</b>
<b>4.0 NEED .....</b>	<b>9</b>
<b>5.0 OBJECTIVES.....</b>	<b>10</b>
<b>6.0 METHODS.....</b>	<b>10</b>
1) First Scoping Meeting (29-30 April 2002).....	11
2) Feedback from Reference Group (17 July 2002).....	11
3) Second Meeting (17 October 2002).....	12
4) Further feedback from Reference Group .....	12
5) Further revisions.....	12
6) Final Meeting and Publication .....	12
<b>7.0 RESULTS/DISCUSSION.....</b>	<b>13</b>
<b>8.0 BENEFITS .....</b>	<b>13</b>
<b>9.0 FURTHER DEVELOPMENT .....</b>	<b>13</b>
<b>10.0 OUTCOMES.....</b>	<b>14</b>
<b>11.0 CONCLUSION.....</b>	<b>14</b>
<b>12.0 REFERENCES .....</b>	<b>14</b>
<b>13.0 APPENDICES.....</b>	<b>15</b>
Appendix 1: Project Investigators .....	15
Appendix 2: Publications in the ESD Subprogram Series .....	16



**2002/086 ESD Reporting and Assessment Subprogram: Development of Assessment tools for the National ESD Framework – initial scoping exercise**

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## **Objectives**

1. Produce the first edition of the “Best Practice” report/manual for ESD Assessments based on currently available information.
2. Initiate discussions and preliminary testing of the various methodologies that could be used to enable the integration and assessment of possible management responses across all the elements of ESD – (economic, social and ecological dimensions).
3. Use the outcomes of the integration trials to generate a comprehensive project application that will develop the tools necessary to enable integrated ESD assessments within a fishery, amongst fisheries and finally amongst industries – ultimately leading to tools for regional marine planning.
4. Using the gaps and level of completeness within the “Best Practice” manual and the outcomes from the initial testing of models for integration, develop a project application to further evaluate the appropriateness of management options.

## **1.0 Non-technical summary**

### **Outcomes Achieved**

The outcomes of the project were:

1. The development of a framework to facilitate the summarization of information related to assessing the performance of wild capture fisheries.
2. The production of the first edition ESD Assessment Manual.
3. Identification of areas where future work is needed to fill gaps in assessment knowledge.
4. The generation of a new project application to examine the ESD needs of major stakeholders.

The requirement to complete assessments against ESD objectives has increased dramatically during the past few years. A previous FRDC project 2000/145 developed the conceptual framework and guidelines to enable reports on the contribution of a fishery to ESD. This project did not, however, develop the associated standards and benchmarks to allow systematic assessments of these reports by third parties, nor did it outline how to integrate the information obtained across the variety of issues covered in any one assessment. Consequently, through a series of meeting and workshops an ESD Assessment Manual for wild capture fisheries and a project application to develop other assessment tools were generated.

The Assessment Manual includes a description of the methods that can be used to develop objectives, performance measures and select suitable indicators for the full range of ecological issues within the ESD framework. It also includes summaries of what is currently being used by jurisdictions across a range of species and fisheries and whether they have been accepted or not by relevant environmental auditing agencies.

At this stage, given the priorities of meeting EPBC requirements, most of the information presented in the Assessment Manual only covers the ecological/environmental issues, focusing on commercial rather than recreational fishing. Future editions will begin to incorporate the social and economic components in more detail and the issues associated with the other wild capture sectors.

**Key Words:** Ecologically Sustainable Development, fisheries, assessment, ecosystem based fisheries management.

## 2.0 Acknowledgements

This project was possible through the funding and support of the FRDC, particularly Peter Dundas-Smith and Patrick Hone. This project benefited from the input from many people on the FRDC funded ESD Reference group but also from Barney Foran (CSIRO) and Benj Whitworth (BRS).

## 3.0 Background

Ecologically Sustainable Development (ESD) is now the cornerstone for all natural resource management in Australia and is present (either directly or indirectly) in all Commonwealth and State Fisheries legislation. The urgency to develop a comprehensive and practical reporting system for ESD has increased substantially in recent years both to meet jurisdictional responsibilities and community expectations. In doing so, it must also meet the requirements of other agencies (e.g. assessments under the Environmental Protection and Biodiversity Conservation Act) and assist satisfying various certification and market access schemes.

The need to develop a national approach to address this issue was recognised by the then Standing Committee for Fisheries and Aquaculture (SCFA), which established a Working Group in 1999. This group, in collaboration with their Research Subcommittee, facilitated the development of a project proposal to initiate the process of developing a nationally agreed system for ESD assessments in fisheries. This group identified a series of linked tasks that would be needed to deliver national ESD assessments for fisheries.

Strong support was obtained from all stakeholder groups for this approach at an FRDC funded workshop on ESD and Fisheries held in Geelong during March 2000. There was also a clear signal that adequate stakeholder involvement needed to be continued to allow national agreement on ESD assessments to be obtained. Consequently, an ESD Reference Group was established which comprised representatives from the commercial seafood industry (ASIC), indigenous interests (ATSIC), recreational fishing (RecFish), aquaculture (ACWA), Environment Australia (EA), FRDC and environmental groups (Traffic WWF) and experts in economic and social research.

Following the Geelong workshop, the FRDC agreed to fund the first step which was a project (2000/145) to develop a nationally agreed approach to ESD reporting. A complimentary initiative by Seafood Services Australia to develop the tools for industry to complete Environmental Management Systems was also funded (2000/146). Subsequently, the FRDC formed an ESD Reporting and Assessment Subprogram to coordinate the various activities that would be occurring to address these initiatives.

The main objective for FRDC project 2000/145 was to develop a practical and comprehensive ESD reporting system that identified a conceptual framework to be tested and modified through the completion of a series of case studies. This project was not designed to develop national standards, benchmarks or guidelines to enable external parties to evaluate the material presented within the completed reports - these were to be developed in later steps. Thus, the reports only contain "self-imposed standards" - in the form of the performance measures and associated justifications that have been adopted within the jurisdiction - the adequacy of which may or may not have been judged outside of the agency responsible.

The ESD reporting project was reviewed at SCFA 42 and 43 (March and July 2001) and by the ESD Reference Group (October 2000, June 2001 and October 2001). At all meetings it was agreed that the project had made very useful progress, particularly in the consideration of all the dimensions of ESD –ecological, economic and social objectives. Finally, all groups concluded that there

should be follow-up projects to support the progression of this process from ESD reporting to ESD assessment.

The methods of assessment that should be included in the follow-up project were to involve the individual components within reports such as:

- the processes involved in generating the report
- the scope of the report (are all relevant components included? (are components subdivided to the appropriate level of detail?))
- the adequacy of the objective/indicator/performance measure/management actions package for each component
- the outcomes reported for each component

This should be assisted by coordinating the integration of outputs from all relevant projects that are currently underway (funded by FRDC and other sources - see below for details) with work conducted through the reporting project to provide a comprehensive set of best practice approaches (and benchmarks) for the available range of ESD objectives and components for various common fisheries situations. Those issues for which there is still an inadequate understanding of the strengths and weaknesses of current practices would be identified for subsequent evaluation and further examination/testing.

The ESD Reference Group also recognized that assessment tools were needed to examine the adequacy of performance across all components of ESD in an integrated manner. The current reporting framework 'deconstructs' ESD down to its constituent parts, but more holistic assessments will be needed to truly manage fisheries using ESD principles. Therefore, a second assessment activity was needed to develop the mechanisms (using the current ESD framework) to understand and predict the qualitative (and eventually quantitative) linkages between the ecological, economic and social outcomes of common fishery management regimes and management measures. This would build on suggestions and ideas developed during some of the case studies from the ESD Reporting Project.

Finally, the ESD Reference Group recognised the need for standards for ESD assessment, and for recommendations on the way forward for the appropriate form and development of these standards. The group emphasized the desirability for government regulators, industry based Environmental Management Plans and third party assessments of sustainability to all take a similar approach to ESD standards.

Despite the large amount of work that is currently being progressed in Australia on sustainability, the initiatives being developed as part of the National ESD framework and the ESD Reporting and Assessment Subprogram are the only projects that maintain a focus on developing a national approach. Moreover, they are also the only projects to maintain the objective to enable integration across all components of ESD - ecological, economic and social aspects.

## 4.0 Need

The requirement to complete assessments against ESD objectives has increased dramatically during the past few years. These include the changes at the Commonwealth level incorporated within the new Environment Protection and Biodiversity Conservation Act as part of their implementation of the Oceans Policy. There are also a variety of requirements within each jurisdiction to meet general government commitments to ESD, particularly when these are explicitly part of their fisheries and/or environment legislation. Finally, completing such assessments, and more importantly being able to gain some form of environmental accreditation, is likely to become increasingly important for market access and leverage in the coming years. Having a consistent and national approach to deal with these issues, one that minimizes the level of duplication is, therefore, a high priority for all jurisdictions and industry sectors.

The previous FRDC project 2000/145 developed the conceptual framework and guidelines to enable reports on the contribution of a fishery to ESD. Because it was the first step in a series of linked activities, the project was not designed to develop the associated standards and benchmarks to allow systematic assessments of these reports by third parties.

In the absence of nationally agreed ESD assessment ‘standards’, each of the stakeholder groups that review the ESD reports would be forced into a position of having to develop and apply their own set of standards. This could lead to significantly different outcomes depending upon which agency conducts the review, and potentially who within the “auditing agency” reviews the report. Such a situation is likely to result in a high level of uncertainty.

There is also a need to begin developing the tools to assess the impact of management actions across all aspects of ESD in an integrated fashion. This task will require an examination of the types of linkages that need to be made and the mathematical/programming tools that will be appropriate to assess the effects of different management options.

The ESD Reference Group (which includes representatives of all major stakeholders) met in November 2001 and agreed that there was a requirement to develop a set of projects to achieve the transition from ESD Reporting to Assessment. As an initial step, a project application was submitted on behalf of the project team to provide the resources to scope out and develop the activities required. These were to generate:

1. Current Best Practice Manual - Consolidate from a variety of sources the current “Best Practice” options for the objectives, performance measures, indicators and management responses needed for ESD assessments.
2. Tools to allow assessment across the components of ESD - This will develop the methods to enable the integration and assessment of possible management responses across all the elements of ESD – (economic, social and ecological dimensions).
3. Test Bed to Examine Options - Test and develop the options to assist with the selection of suitable objectives, indicators, and management responses and particularly what combinations are appropriate.

The ESD project team met in February 2002 and confirmed that the activities required were best completed as parts of one scoping project that would run from April 2002 – November 2002 from which a series of linked projects would be developed. These proposed activities are summarised below.

Given the strong need by most jurisdictions (and other external parties) to have some guidance on what is acceptable performance with regards to objectives, indicators etc for fisheries as soon as

possible, this scoping project would produce the first edition of the “Best Practice” report/manual by November 2002 based on information currently available. It is envisaged that a follow up project would be submitted that would update this manual at 6-12 month intervals.

A series of workshops and discussions would be held to gain an understanding of the interconnectedness across the elements of ESD (social, economic and ecological) and initiate an examination of the potential methods/models to enable their integration and predict flow-on effects. It is envisaged that this first stage would concentrate on examinations within a single fishery. It was recognised, however, that there will be a need to expand the scope of these assessments to include “across fisheries” and ultimately “across industries” over the next 2 –5 years. The outcomes of the preliminary work would be used to produce a longer term, more comprehensive project application for the December 2002 round.

Finally, the gaps and level of completeness of the elements contained within the first edition of the “Best Practice” manual and the initial discussions and preliminary model testing of the methods for integration would provide the information needed to develop the application for the “Options Test-Bed” project by December 2002.

The ESD Reference Group would provide input on progress and the content of the new applications at meetings scheduled for June and November 2002 respectively.

## **5.0 Objectives**

1. Produce the first edition of the “Best Practice” report/manual for ESD Assessments based on currently available information.
2. Initiate discussions and preliminary testing of the various methodologies that could be used to enable the integration and assessment of possible management responses across all the elements of ESD – (economic, social and ecological dimensions).
3. Use the outcomes of the integration trials to generate a comprehensive project application that will develop the tools necessary to enable integrated ESD assessments within a fishery, amongst fisheries and finally amongst industries – ultimately leading to tools for regional marine planning.
4. Using the gaps and level of completeness within the “Best Practice” manual and the outcomes from the initial testing of models for integration, develop a project application to further evaluate the appropriateness of management options.

## **6.0 Methods**

The methods used to complete this scoping exercise largely involved a series of meetings of the project team plus a number of workshops with the Reference Group.

The meetings were used to develop ideas that during the intervening periods project team members developed into more complete examples, tested ideas or undertook reviews of published literature to further our knowledge of the relevant issues. At regular intervals, these outlines and drafts were presented to the ESD Reference Group to ensure that the project team was progressing effectively to meet the objectives and develop material that would be relevant to stakeholder needs.

The remainder of the methods outlines the outcomes from these meetings and workshops. More complete descriptions of the methods used in generating the outputs from this project are located in the Assessment Manual which is now published and available from the subprogram website [www.fisheries-esd.com](http://www.fisheries-esd.com)

## **1) First Scoping Meeting (29-30 April 2002)**

The contents and structure of the “Best Practice” Manual were decided upon and the suggested name was changed to “Current Practices and Options” to reflect the preliminary nature of the material included. Both process and outcome issues would be covered in the manual, however it was recognised that time constraints and/or lack of information may prevent the completion of these issues within the first edition.

Analyses of each issue should be short, using current information and the format would follow the structure of the ESD reporting framework, i.e using the major headings – objective, indicator, performance measures and management responses. It was also thought sensible that the summaries of information should be done at both a generic level (particularly with reference to the impacts of different information levels) and also at a specific level (precise levels related to an individual species- or group of species or fishery).

Brief outlines, with an example of each, were to be completed by the end of June 2002 for discussion at the July 2002 ESD Reference Group Meeting.

Issues relating to the development of tools for using the outputs of the ESD reports were also discussed. Two types of tools discussed, those for Aggregating and Interconnectedness.

The aggregation of scores relates to questions not restricted to the assessment of issues on an individual basis. Instead, they cover the assessment over a group of related issues up to the overall performance of a fishery - potentially leading to a PASS-FAIL type of test.

Interconnectedness, however, examines the impact of possible management options across a number of the components of ESD. This requires an understanding of the linkages amongst the components and therefore requires some model of the system. It was recognised that this could require simple qualitative models all the way to complex systems-based, quantitative models.

Development of a new FRDC project application to cover these issues was initiated. This was to include a critical review of the possible methods already available for use in relation to the types of issues required to be addressed by management agencies and others. An outline of this proposal was to be discussed at the July 2002 Reference group meeting.

## **2) Feedback from Reference Group (17 July 2002)**

The ESD Reference Group meeting discussed the two key elements of the assessment project. Significantly, the “Current/Best/Acceptable Practice” Manual was renamed the “Assessment Manual”. Furthermore the meeting agreed that the manual should have three levels of detail –

1. Generic - Process,
2. Generic - Performance Levels,
3. Specific - Performance levels, Indicators and Management options.

The proposed new FRDC application on tools for aggregation and interconnectedness was also discussed. It was raised that there were different needs amongst the various jurisdictions, and how fast some of these needs were changing. There were also some comments that this proposed project may be going too far too quickly, but having a summary of the state of play would be very valuable. Nonetheless there was, general agreement that the project should proceed to complete the drafting of a full application for the next FRDC round.

### **3) Second Meeting (17 October 2002)**

The second scoping meeting for the project group was delayed from the original timetable because too little progress in generating material would have occurred for the meeting to be of value if held any earlier.

A more comprehensive draft of the Assessment Manual and draft of the new project application were tabled and discussed. A plan was developed to add further elements to the Assessment Manual and also to amend the new project application before the next Reference Group meeting to be held in November.

### **4) Further feedback from Reference Group**

The final format of the Assessment Manual was reviewed by the ESD Reference Group at the meeting on 28<sup>th</sup> November 2002. Whilst it was recognised that the current working draft was still in its infancy, the direction that it was taking was seen as being valuable in not only structuring the way that applications could be assessed, but also in helping determine whether the performance of a particular fishery was likely to be acceptable or not.

A draft of the new FRDC project application was presented and copies circulated. It was explained that the project would include three main elements covering issues previously identified by the Reference Group.

1. Continual updates of the Assessment Manual.
2. Issues of Integration, aggregation and comparison.
3. Issues of interdependence and interconnection.

The Reference Group supported submission of the finalised application to FRDC for the current round. An application was submitted to the 2003/04 round of FRDC but was not funded.

### **5) Further revisions**

Following the circulation of the draft Assessment Manual, numerous comments were received and substantial revisions were made to the final version. These additions and amendments were to be discussed at the final meeting of the project team, which was held on 28<sup>th</sup> March 2003.

### **6) Final Meeting and Publication**

The draft Assessment Manual was discussed and finalised and the final draft was submitted to the Marine and Coastal Committee of the Natural Resource Management Standing Committee for endorsement. The first edition of the Assessment Manual was completed and a copy was forwarded to FRDC in November 2003.

## **7.0 Results/Discussion**

The project successfully developed an Assessment Manual (Fletcher et al., 2003) that includes a summary of the information that was available across most ecological components of ESD from which an understanding of what was considered acceptable &/or best practice for the main species/fisheries within Australia could be initiated.

The Manual contains two main sections that provide different types of information to assist agencies in generating and reviewing reports on ESD. One section presents data that is of a generic nature that should be relevant across all fisheries and covers both ecological and economic components. In many respects, the information presented in this section expands upon the material presented in Appendix 2 of the *How To Guide* (Fletcher et al., 2002) and provides more formal advice on the 'best' way to generate these segments of the reports.

The other section presents material specific to a particular species or fishing method which, in most cases, is based on empirical data &/or direct experiences or current practices. This extends the generic concepts by providing specific guidance as to what is already in use and currently regarded as acceptable (and by whom) for each of the major types of species and fishing methods. This section only covered the ecological components of ESD because minimal information was available at the time on the social and economic aspects.

The information provided was not meant to be prescriptive about management or actions to be taken, as these will vary dependent upon the specific management objectives and resources available. Thus, it provides a commentary on specific combinations of management actions/indicators/performance measures in relation to their relative levels of robustness and risk which each can be viewed as possibilities.

## **8.0 Benefits**

Having material on performance measures, indicators and management responses for at both a generic level and also summarised for specific species and fisheries provides a valuable resource for those completing or assessing applications related to ESD or EPBC activities.

## **9.0 Further Development**

After the initial FRDC application was rejected in April 2003, the project team continued the development of a revised version of the FRDC application based upon advice from the FRDC Board. The possible revisions were discussed at the ESD reference group meetings held in July 2003 and November 2003. Unfortunately whilst gaining support from this group, the resultant application was also not successful. A further realignment of the proposal was however successful and was funded as FRDC 2004/006 in July 2004.

The material presented in the Assessment Manual covers most of the issues of relevance to the major "auditing"/management agencies along with environmental and broader community groups, at an appropriate level of detail. This is the first edition of what is expected to be an ongoing process with revisions and updates occurring at regular intervals. At this stage, most of the information presented only relates to the ecological/environmental issues, and mostly for commercial rather than recreational fishing. Future editions will begin to incorporate the social and economic components in more detail. It is our hope that any errors or omissions in this edition will inspire the provision of alternative or additional information that can be used in subsequent editions.

## **10.0 Outcomes**

The outcomes of the project were:

1. The development of a framework to facilitate the summarization of information related to assessing the performance of wild capture fisheries
2. The production of the first edition ESD Assessment Manual
3. Identification of areas where future work is needed to fill gaps in assessment knowledge
4. The generation of a new project application to examine the ESD needs of major stakeholders

## **11.0 Conclusion**

This project has been a useful component of the initiative to implement ESD across all Australian fisheries and aquaculture sectors.

## **12.0 References**

Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. and B. Whitworth (2002). *National ESD Reporting Framework for Australian Fisheries: The 'How To' Guide for Wild Capture Fisheries*. FRDC Project 2000/145, Canberra, Australia 120pp.

Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., (2003). *The ESD Assessment Manual For Wild Capture Fisheries*. FRDC Project 2002/086, Canberra, Australia 136pp

## 13.0 Appendices

### Appendix 1: Project Investigators

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## Appendix 2: Publications in the ESD Subprogram Series

1. Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. and B. Whitworth (2002) *National ESD Reporting Framework for Australian Fisheries: The 'How To' Guide for Wild Capture Fisheries*. FRDC Project 2000/145, Canberra, Australia. 120pp.
2. Whitworth, B., Chesson, J., Fletcher, W.J., Sainsbury, K.J., Fisher, M., Hundloe, T., and A.D.M. Smith, (2002) *National ESD Reporting Framework for Australian Fisheries: Technical Support Document – Ecological Components of the 2000/2001 Case Studies*. FRDC Project 2000/145, Canberra, Australia. 98pp.
3. Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. and B. Whitworth (2003) *National Application of Sustainability indicators for Australian fisheries*. Final Report: FRDC Project 2000/145. 48pp.
4. Fletcher, W.J., Chesson, J., Sainsbury, K.J., Hundloe, T., Fisher M., (2003) *National ESD Reporting Framework for Australian Fisheries: The ESD Assessment Manual for Wild Capture Fisheries*. FRDC Project 2002/086, Canberra, Australia 163pp.
5. Fletcher, W.J., Chesson, J., Sainsbury, K.J., Fisher, M. & T. Hundloe (2005) A flexible and practical framework for reporting on sustainable development for wild capture fisheries. *Fisheries Research*. 71: 175-183.
6. Fletcher, W.J., Chesson, J., Fisher M., Sainsbury, K.J., and Hundloe, T.J. (2004) *National ESD Reporting Framework: The 'How To' Guide for Aquaculture*. FRDC Project 2000/145.1, Canberra, Australia 85pp.
7. Schirmer, J. (2004). *Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia*. FRDC Project 2003/056. Canberra, Australia 50pp.
8. Fletcher, W.J., Chesson, J., Sainsbury, K.J., Fisher, M., Hundloe, T., (2005). *ESD Reporting and Assessment Subprogram: Development of Assessment Tools for the National ESD Framework – initial scoping exercise*. Final Report FRDC Project 2002/086, Canberra, Australia 16pp.