

NORTH WEST SHELF JOINT ENVIRONMENTAL MANAGEMENT STUDY



Community consultation


NWSJEMS



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NORTH WEST SHELF JOINT ENVIRONMENTAL MANAGEMENT STUDY

Final report

North West Shelf Joint Environmental Management Study Final Report.

List of technical reports

NWSJEMS Technical Report No. 1

Review of research and data relevant to marine environmental management of Australia's North West Shelf.

A. Heyward, A. Revill and C. Sherwood

NWSJEMS Technical Report No. 2

Bibliography of research and data relevant to marine environmental management of Australia's North West Shelf.

P. Jernakoff, L. Scott, A. Heyward, A. Revill and C. Sherwood

NWSJEMS Technical Report No. 3

Summary of international conventions, Commonwealth and State legislation and other instruments affecting marine resource allocation, use, conservation and environmental protection on the North West Shelf of Australia.

D. Gordon

NWSJEMS Technical Report No. 4

Information access and inquiry.

P. Brodie and M. Fuller

NWSJEMS Technical Report No. 5

Data warehouse and metadata holdings relevant to Australia's North West Shelf.

P. Brodie, M. Fuller, T. Rees and L. Wilkes

NWSJEMS Technical Report No. 6

Modelling circulation and connectivity on Australia's North West Shelf.

S. Condie, J. Andrewartha, J. Mansbridge and J. Waring

NWSJEMS Technical Report No. 7

Modelling suspended sediment transport on Australia's North West Shelf.

N. Margvelashvili, J. Andrewartha, S. Condie, M. Herzfeld, J. Parslow, P. Sakov and J. Waring

NWSJEMS Technical Report No. 8

Biogeochemical modelling on Australia's North West Shelf.

M. Herzfeld, J. Parslow, P. Sakov and J. Andrewartha

NWSJEMS Technical Report No. 9

Trophic webs and modelling of Australia's North West Shelf.

C. Bulman

NWSJEMS Technical Report No. 10

The spatial distribution of commercial fishery production on Australia's North West Shelf.

F. Althaus, K. Woolley, X. He, P. Stephenson and R. Little

NWSJEMS Technical Report No. 11
Benthic habitat dynamics and models on Australia's North West Shelf.
E. Fulton, B. Hatfield, F. Althaus and K. Sainsbury

NWSJEMS Technical Report No. 12
Ecosystem characterisation of Australia's North West Shelf.
V. Lyne, M. Fuller, P. Last, A. Butler, M. Martin and R. Scott

NWSJEMS Technical Report No. 13
Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects.
C. Fandry, A. Revill, K. Wenziker, K. McAlpine, S. Apte, R. Masini and K. Hillman

NWSJEMS Technical Report No. 14
Management strategy evaluation results and discussion for Australia's North West Shelf.
R. Little, E. Fulton, R. Gray, D. Hayes, V. Lyne, R. Scott, K. Sainsbury and D. McDonald

NWSJEMS Technical Report No. 15
Management strategy evaluation specification for Australia's North West Shelf.
E. Fulton, K. Sainsbury, D. Hayes, V. Lyne, R. Little, M. Fuller, S. Condie, R. Gray, R. Scott,
H. Webb, B. Hatfield, M. Martin, and D. McDonald

NWSJEMS Technical Report No. 16
Ecosystem model specification within an agent based framework.
R. Gray, E. Fulton, R. Little and R. Scott

NWSJEMS Technical Report No. 17
Management strategy evaluations for multiple use management of Australia's North West Shelf
– Visualisation software and user guide.
B. Hatfield, L. Thomas and R. Scott

NWSJEMS Technical Report No. 18
Background quality for coastal marine waters of the North West Shelf, Western Australia.
K. Wenziker, K. McAlpine, S. Apte, R. Masini

Community report

North West Shelf Joint Environmental Management Study Community Consultation
H. Webb, D. Michel

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ACRONYMS

ACOM	Australian Community Ocean Model
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AGSO	Australian Geological Survey Organisation now Geoscience Australia
AHC	Australian Heritage Commission
AIMS	Australian Institute of Marine Science
AMSA	Australian Maritime Safety Authority
ANCA	Australian Nature Conservation Agency
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZLIC	Australian and New Zealand Land Information Council
APPEA	Australian Petroleum, Production and Exploration Association
AQIA	Australian Quarantine Inspection Service
ARMCANZ	Agricultural Resources Management council of Australia and New Zealand
ASIC	Australian Seafood Industry Council
ASDD	Australian Spatial Data Directory
CAAB	Codes for Australian Aquatic Biota
CAES	Catch and Effort Statistics
CALM	Department of Conservation and Land Management (WA Government)
CAMBA	China Australia Migratory Birds Agreement
CDF	Common data format
CITIES	Convention on International Trade in Endangered Species
CTD	conductivity-temperature-depth
CMAR	CSIRO Marine and Atmospheric Research
CMR	CSIRO Marine Research
COAG	Council of Australian Governments
Connle	Connectivity Interface
CPUE	Catch per unit effort
CSIRO	Commonwealth Science and Industrial Research Organisation
DCA	detrended correspondence analysis
DIC	Dissolved inorganic carbon
DISR	Department of Industry, Science and Resources (Commonwealth)
DEP	Department of Environmental Protection (WA Government)
DOM	Dissolved organic matter
DPIE	Department of Primary Industries and Energy
DRD	Department of Resources Development (WA Government)
EA	Environment Australia
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPP	Environmental Protection Policy
ENSO	El Nino Southern Oscillation
EQC	Environmental Quality Criteria (Western Australia)
EQO	Environmental Quality Objective (Western Australia)
ESD	Ecologically Sustainable Development
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act
GA	Geoscience Australia formerly AGSO
GESAMP	Joint Group of Experts on Scientific Aspects of Environmental Protection
GIS	Geographic Information System
ICESD	Intergovernmental Committee on Ecologically Sustainable Development
ICS	International Chamber of Shipping
IOC	International Oceanographic Commission
IGAE	Intergovernmental Agreement on the Environment
ICOMOS	International Council for Monuments and Sites

IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
IUNC	International Union for Conservation of Nature and Natural Resources
IWC	International Whaling Commission
JAMBA	Japan Australian Migratory Birds Agreement
LNG	Liquified natural gas
MarLIN	Marine Laboratories Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships
MECO	Model of Estuaries and Coastal Oceans
MOU	Memorandum of Understanding
MPAs	Marine Protected Areas
MEMS	Marine Environmental Management Study
MSE	Management Strategy Evaluation
NCEP - NCAR	National Centre for Environmental Prediction – National Centre for Atmospheric Research
NEPC	National Environmental Protection Council
NEPM	National Environment Protection Measures
NGOs	Non government organisations
NRSMPA	National Representative System of Marine Protected Areas
NWQMS	National Water Quality Management Strategy
NWS	North West Shelf
NWSJEMS	North West Shelf Joint Environmental Management Study
NWSMEMS	North West Shelf Marine Environmental Management Study
ICIMF	Oil Company International Marine Forum
OCS	Offshore Constitutional Settlement
PFW	Produced formation water
P(SL)A	Petroleum (Submerged Lands) Act
PSU	Practical salinity units
SeaWIFS	Sea-viewing Wide Field-of-view Sensor
SOI	Southern Oscillation Index
SMCWS	Southern Metropolitan Coastal Waters Study (Western Australia)
TBT	Tributyl Tin
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention of the Law of the Sea
UNEP	United Nations Environment Program
UNESCO	United Nations Environment, Social and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WADEP	Western Australian Department of Environmental Protection
WADME	Western Australian Department of Minerals and Energy
WAEPA	Western Australian Environmental Protection Authority
WALIS	Western Australian Land Information System
WAPC	Western Australian Planning Commission
WHC	World Heritage Commission
WOD	World Ocean Database
www	world wide web

COMMUNITY CONSULTATION

1. Introduction

Information exchange between the NWSJEMS Study team and the broader stakeholder and community groups was critical for the success of the Study. This communication process allowed mutual understanding between the scientists, regulators, stakeholders and community, regarding the preferred outcomes and options in environmental and sectoral management of the North West Shelf (NWS).

2. Background

A wide range of stakeholders were involved in the communication and consultation process. These stakeholders represented a broad range of groups with different management responsibilities, interests, and values. These included:

- relevant government agencies;
- industry;
- non government organisations (NGOs);
- community groups including indigenous groups and environmental groups; and
- individual residents of the study area.

Environmental management and regulation of natural resource management on the NWS are the responsibility of several departments of the Western Australian (State) Government, Local Government and the Australian Federal Government. From a regional perspective State departments play the major role in environmental and resource management. Each of the departments has particular responsibilities but they are also required to act collaboratively in exercising these responsibilities. WA State Government Agencies were represented on the North West Shelf Joint Environmental Management Study Technical Committee as well as other industry sectors.

3. Methods

A wide range of approaches were used to facilitate the communication and consultation process, and to raise the profile of the Study. These included:

- an official launch in August 2000;
- workshops and forums;
- consultation and presentations by members of the Study team;
- community consultation program;
- media releases, newsletters, and interviews;
- web page information; and
- a survey.

3.1 Official Launch, August 2000

The Study was launched on 1 August 2000 in Perth, Western Australia. The Minister for the Environment, Hon Cheryl Edwardes, and Senator Alan Eggleston (representing the Federal Minister for Science, the Hon Nick Minchin) formally launched the Study. Cheryl Edwardes said “This is a new approach between, local, state and federal governments to marine research in Australia, providing a model which will help strengthen management in a key region of our vast EEZ”.

3.2 Workshop, August 2000

The launch was followed by a workshop, which provided a forum for developing options for improved coordination and integration of management planning strategies on the NWS. State and federal government representatives presented information on sectoral management plans, policies and strategies operating on the NWS, at State and Commonwealth levels, and possible options for improved coordination and integration. Members from the Study team provided an overview of North West Shelf Joint Environmental Management Study (NWSJEMS) and how its technical deliverables would support environmental management on the NWS.

3.3 Forum, Perth, August 2001: “One Year Later”

The main focus of the forum, chaired by the WA Chairperson of the Environmental Protection Agency (EPA), Bernard Bowen, was to provide an update on progress to date and demonstrate the Management Strategy Evaluation (MSE) prototype model and the *Data Trawler*, which provided access to data via the internet.

Tonia Swetman, the NWSJEMS Community Liaison Officer, outlined the community communication and consultation processes and presented findings from the pilot study for the survey. She also introduced two community members Anna and Robert Vitenberg from the Pilbara region, who outlined the history of the area and the changes associated with the development of various industries, and of the growth of townships such as Dampier and Karratha. They raised a number of environmental concerns associated with the rapid development of the region, including poor fishing practices, mangrove damage and poorly designed coastal infrastructure resulting in environmental damage.

3.4 Consultation by Study team members

Throughout the Study various members from the Study team have met and consulted with stakeholders in key sectors to discuss a range of topics, including:

- management responsibilities and issues;
- sector objectives and performance indicators;
- identifying data and its availability to the Study; and
- future sector development.

Interviews with key experts were also conducted to obtain valuable data and information about the NWS ecosystem. This information was integrated into the NWSJEMS GIS products.

3.5 Presentations by Study team members

In addition to the workshops, over 30 presentations have been given by members of the NWSJEMS team to a range of target groups including government agencies, community groups, industry bodies and universities. The aims of these presentations were to provide information about the Study, explain the objectives and benefits and obtain community input.

3.6 Community consultation

Key activities and outcomes were as follows:

- a Community Liaison Officer, Ms Tonia Swetman, was appointed as a consultant to the Study for a period from March to December 2001. She had lived and worked in the Pilbara area for many years, was highly respected in the region and had extensive experience in community consultation;
- meetings were conducted with major regional stakeholders;
- the development of a database of key stakeholders (over 290);
- letters and fact sheets were sent to all the key stakeholders explaining what the Study was about, and the key elements of the consultation process;
- a survey was undertaken seeking the community, regulator and other stakeholders' values, preferred outcomes and options for the environmental management of the NWS. About 3000 questionnaires were widely distributed throughout the NWS region. Another 1000 questionnaires were included as inserts in the Western Australian subscriber's of the national magazine 'Waves' (A Marine and Coastal Community Network initiative);
- posters were displayed at various centres in the NWS region;
- the Management Strategy Evaluation (MSE) prototype model was demonstrated in Karratha in August 2001;
- two long time residents of the NWS region represented local interests at the Perth workshop in 2000 and 2001; and
- media coverage.

Communication and consultation with stakeholders and the community enabled the development of a set of relevant indicators and performance measures, including environmental quality objectives that were used to guide strategic planning, and the development and evaluation of multiple-use management strategies.

Members of the scientific study team continued to visit the NWS region to provide information about the study and seek input and feedback from community members.

3.7 Newsletters and press releases

Several newsletters were published and press releases were prepared over the course of the Study. The newsletter published on the NWSJEMS web site provided both an educative and information sharing role. Some hard copies were also distributed in the Study area. These have been published on the NWSJEMS web site at [<http://www.marine.csiro.au/nwsjems>](http://www.marine.csiro.au/nwsjems)

3.8 Web site

A NWSJEMS web site was established. It contained an extensive amount of information about the Study under the following headings:

- about the study;
- the study reports (final report and technical reports);
- publications;
- animations (selections from the study modelling results);
- online tools (*MarLIN*, *Data Trawler*, *ConnIe*, *ViewNWS*, *NWS Technical User Interface*); and
- community consultation

These can be accessed at: [<http://www.marine.csiro.au/nwsjems>](http://www.marine.csiro.au/nwsjems).

4. North West Shelf survey and results

Pilbara residents were surveyed to provide data about preferred development options for the NWS. The survey was part of the community consultation process initiated through the NWSJEMS by the Department of Environment, Water and Catchment Protection and CSIRO.

Consulting with all regional user groups, and the broader community, was considered important in building an understanding of NWS research, and to create links between organisations. The survey asked questions regarding resource uses, perceived threats, community values, and preferred outcomes. Survey forms were distributed widely (see Appendix A for a copy of the survey form).

Information from the community was critical to the study. The survey provided the following information:

- where people lived, and an indication of coastal recreational activities;
- the value residents placed on the natural qualities of the NWS marine environment, and important uses of that environment;
- the perceived threats to the marine environment in the study area;
- important issues that should be considered by the study, and future management of the region;
- respondents understanding of ecological sustainability and its importance; and
- preferred goals for the study area.

The outcomes of the survey, when added to other research results contributed to options and opportunities in the way this environment is managed for the future. A summary of the results is provided below.

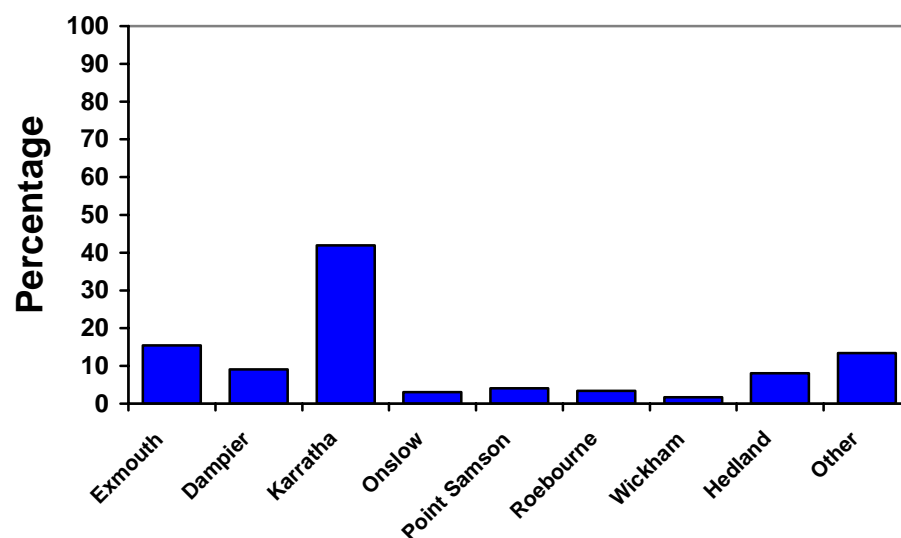
4.1 Summary of the results

Questions 1 to 7

Questions 1 to 7 were aimed at gathering information about the people who responded to the survey.

Question 5: Where do you live?

Response by Location



- 40% of the completed surveys were from residents of Karratha. This was representative sample size given that Karratha residents comprise approximately 36% of total population for the study area.

Question 6: Who do you represent?

The study wanted to know if respondents were speaking as citizens, or as a member of an organisation or group. The results were as follows:

- 75% of respondents represented themselves as residents of the area;
- 7% of respondents were visitors to the area;
- 4% of the respondents represented the tourism industry;
- 3% represented a conservation or environmental group; and
- 11% for all other sectors.

Question 7: What are your recreational activities?

The Study also wanted to know how the respondents made use of the area's recreational potential. The recreational activities, in which respondents regularly participate, are ranked below:

Activity	Percentage of Respondents
Walking along the shore	79%
Enjoying the view	73%
Fishing	70%
Looking for / watching marine life	68%
Swimming	67%
Boating	60%
Diving / snorkeling	55%
4 Wheel driving	48%
Viewing Aboriginal Rock Art	40%
Collecting seafood / shellfish	33%
Collecting shells	29%
Other	22%
Surfing	13%
Skiing	8%

Summary of questions 1 to 7

The Study learned something about where respondents lived; that most respondents replied as residents of the area; and an indication of the recreational activities undertaken in the area.

Questions 8 to 13

Questions 8 to 13 examined how respondents felt about the region and the manner of its development.

Question 8: If you had a choice from a number of outcomes for the region, which would be most important to you?

Important outcomes respondents would like to see happen in the study area	
% of respondents	Possible outcomes
61 to 70%	Protection of marine plants and animals
51 to 60%	Unpolluted waters
21 to 30%	Accessible beaches for swimming, diving and boating
11 to 20%	Increased employment opportunities
	Thorough approval process for development
	Recognition of Aboriginal heritage
	Community education about the marine environment
	Being able to access the islands
	Having more marine parks
0 to 10%	Speedy approval process for development
	Easy and safe shipping for imports and exports
	Natural view(s)
	Increased national income from resource developments
	Increase in local business trade
	Simplified regulation and management
	Scientific research
	Mangrove protection
	Open and easily understood government approval process
	Unrestricted access for small boats
	Sharing the marine environment with visitors
	Publishing study results
	Safe waters
	Diversification of industry
	Being able to camp on the islands
	Being able to build infrastructure on the islands

- 62% of respondents rated protection of marine plants and animals on the NWS as important outcomes for the future;
- 55% of respondents rated unpolluted waters on the NWS as important outcomes for the future; and
- 22% of respondents rated accessible beaches for swimming, diving and boating on the NWS as important outcomes for the future.

Question 10: How important would you rate the following natural qualities of the NWS marine environment?

Natural Qualities	Very Important	Fairly Important	Not Important
Water quality	95%	5%	1%
Healthy and natural environment (ecosystem integrity)	93%	6%	1%
Health of animals	92%	7%	1%
Health of plants	91%	8%	1%
Variety of plants and animals (biodiversity)	89%	10%	1%
Number of plants and animals	77%	22%	1%
Aesthetic (or attractiveness) values	46%	46%	7%

- 95% rated water quality as very important;
- 93% rated healthy and natural environment (ecosystem integrity) as very important;
- 92% rated health of animals as very important;
- 91% rated health of plants as very important; and
- 89% rated biodiversity of plants and animals as very important.

Question 12: Respondents were also asked to rank the most important uses of the NWS marine environment from the following list:

Important uses of the North West Shelf marine environment	
% of respondents	Uses
41 to 50%	Tourism
	Recreational Fishing
21 to 30%	Boating
	Camping
	Resource extraction
	Monitoring activities
11 to 20%	Swimming
	Diving
	Aquaculture
	Indigenous cultural activities
	Coastal development (associated with industrial and population growth)
0 to 10%	Skiing and surface water sports
	Crabbing
	4 wheel driving
	Commercial fish trawling
	Commercial non-trawl fishing
	Transportation
	Pearling

- 47% respondents believed tourism to be an important use of the NWS marine environment;
- 44% of respondents rated recreational fishing to be an important uses of the NWS marine environment; and
- 21 to 30% of respondents rated boating, camping, resources extraction, and monitoring activities to be an important use of the NWS marine environment.

Summary of questions 8 to 13

Respondents indicated that protection of marine plants and animals; ecosystem integrity, as well as water quality are important outcomes; and that tourism and recreational fishing are important uses of the NWS marine environment.

Questions 14 to 16

Questions 14 to 16 asked respondents to consider major threats to the marine environment, and where these occurred.

Question 14: What are the greatest threats to the marine environment?

Threats	%
Commercial fish trawling	61%
Coastal effluents (e.g. sewage)	42%
Oil and gas industry	28%
Coastal development (associated with industrial and population growth)	26%
Dredging	24%
Shipping	24%
Iron ore industry	16%
Cyclones	14%
Climate change	12%
Industry	10%
Commercial non trawl fishing	10%
Tourism	10%
Recreational fishing	8%
Pastoral (coastal) land use	6%
Pollution	3%
Aquaculture	3%
Pearling operations	2%
Small boats	2%
Litter	1%
Diving	1%
Ecotourism	0%

- 61% rated commercial fish trawling as the biggest threat to the marine environment of the NWS;
followed by:
 - 42% for coastal effluents; and
 - 28% for oil and gas industry

Question 15: What are the greatest threats to the marine environment and where in the study area are they of most concern?

Locality	Greatest threats to the marine environment	%
Exmouth	Commercial fish trawling	67%
	Coastal effluents	38%
	Oil and gas industry	33%
Onslow	Commercial fish trawling	61%
	Cyclones	42%
	Small boats / coastal development	25%
Dampier	Commercial fish trawling	74%
	Coastal development	49%
	Shipping	37%
Karratha	Commercial fish trawling	69%
	Coastal effluents	43%
	Dredging	27%
Point Samson	Commercial fish trawling	69%
	Oil and gas industry	60%
	Shipping	44%
Wickham /Roebourne	Iron ore industry	82%
	Industry in general	44%
	Oil & gas industry	43%
Hedland	Coastal effluents	71%
	Oil and gas industry	46%
	Dredging	42%

Identification of threats varied from one locality to another

Question 16: The Study also asked whether there were any other activities or events (natural and human) apart from those suggested which were considered to be major threats to the marine environment in the NWS Study area.

Although a wide variety of responses were elicited, a number of common themes were prevalent, including:

- over fishing;
- uncontrolled tourism;
- litter;
- ignorance / lack of knowledge / lack of education;

- industry;
- illegal fishing;
- poor access to beaches (people make their own roadway and destroy dunes etc);
- dust (this was a more common response from Dampier and Wickham residents);
- structures that are built and cause a change in water flow;
- the size of the study area / lack of monitoring / lack of Fisheries officers / poorly guarded coastline;
- jet skis;
- unmanaged coastal dwellings (Cleaverville and Dampier Archipelago shacks);
- spear fishing; and
- 4 wheel drives on dunes / beaches.

A number of participants, from the Exmouth area, expressed concern regarding the proposed development at Coral Bay (Maud's Landing) as a threat to the environment in that locality.

Summary of questions 14 to 16

Natural resource use; impacts from coastal developments and industry; and shipping were perceived as the greatest threats to the NWS marine environment.

Questions 17 and 18

Questions 17 and 18 asked what important issues should be addressed by the study, and about preferred management options for the region.

Question 17: What are the important issues that should be considered by the study?

Responses varied but highlighted two main themes:

- impacts of natural resource use and coastal development; and
- the need to protect the natural environment.

Question 18: What would you like to see in place for future management of the region?

Responses ranged from the very specific to more general. A comment that was made and which best summarises the various points is:

"Needs to be a happy medium between industry and jobs and preservation/conservation."

Summary of questions 17 and 18

Responses to these two questions highlighted the need for a balanced approach between the environment and economic development when considering issues and management options.

Questions 19 to 21

Since the Government of Western Australia's overall goal is that of ecological sustainable development (ESD) of the NWS region, the Study thought it important to know if respondents understood what was meant by the term ecological sustainability, and whether it was felt to be important.

Question 19: What do you understand by the term ecological sustainability?

The level of understanding of the respondents was rated as follows:

Level of Understanding	Excellent	Some	None
Percentage	45%	48%	7%

Question 20: Do you think ecological sustainability of the marine environment is important?

- 99% believed that ecological sustainability of the marine environment to be important.

Question 21: Why is it important or why is it not important?

Respondent's rationale for their belief that ecological sustainability of the marine environment is important followed a common theme. The following comments summarise the general response:

"We have a wonderful environment here in the Pilbara and we need to make sure we plan for its future, or it may not have one."

"So our kids can use it."

Summary of questions 19 to 21

Overall respondents demonstrated a good understanding of the term ecological sustainability, and believed it to be important both now and for the future.

Question 22

Question 22 asked respondents to rank a list of goals in terms of importance to them, from most important to least important. The results were as follows:

Ranked goals	
Ranking	Goals
1st	Maintenance of sustainable relationships among plants, animals and people
2nd	Having processes in place to manage the region's environment
3rd	Growth in employment, income and standard of living
4th	Pleasant environment with features available for the public to use

4.2 Summary of findings

The general direction of the survey strongly indicated a desire to preserve the region's water quality and ecosystems, and to protect the environment, while allowing development of the area.

The response indicated, however, that environmental protection is the more important outcome. This highlights the importance of the Management Strategy Evaluation (MSE) approach developed by the study. The use of MSE, provides managers and regulators with a tool to evaluate the effectiveness of proposed management strategies.

APPENDIX A: NORTH WEST SHELF SURVEY QUESTIONNAIRE

North West Shelf

JOINT ENVIRONMENTAL MANAGEMENT STUDY



Dear Community Member,

You are being asked to help in the environmental management of the North West Shelf waters – the coastal waters from Exmouth to Port Hedland. You can help by having your say as part of the community consultation process conducted by the Department of Environmental Protection and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Just complete the attached survey, which will take you approximately 30 - 45 minutes, to enable us to understand the community values and aspirations for the North West Shelf marine area.

PLEASE BE ASSURED THAT YOUR INPUT WILL REMAIN CONFIDENTIAL.

Your views are important and to ensure they are considered please complete the survey by the closing date, **30TH SEPTEMBER 2001** and post to:

PO Box 658, KARRATHA WA 6714, or you can fax your completed survey to Tonia on: 9185 6790.

Alternatively you may wish to complete and submit the survey on our web page:

www.marine.csiro.au/nwsjems/index.html

WIN

By completing the survey, you also have the chance of winning a trip for two to Tasmania*, the Apple Isle, which includes:

Two return tickets flying ANSETT from Karratha to Tasmania
One week fully paid accommodation in beautiful Launceston
One week free hire car
PLUS
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About the study

The North West Shelf Joint Environmental Management Study is a joint initiative between Western Australia and CSIRO Marine Research. The study officially commenced in June 2000.

The study area extends from the coast to the 200-metre depth contour, from Exmouth to Port Hedland. This is an area of 110,000 square kilometers. It does not include the Ningaloo Marine Park.

The major objective of the study is to gather as much information about the region as possible and to use it in combination with models of the marine ecosystem. This will help to predict the impacts of natural events and human activities on the North West Shelf. Natural events include tropical cyclones, coral bleaching and events related to the effects of El-Nino, while human activities include fishing, oil and gas exploration and production, mineral processing, recreation and tourism.

The information will be combined with environmental, economic and

social objectives to develop a computer system that will enable the evaluation of existing and proposed management strategies for the many uses of the North West Shelf. This system will assist in the development of a more integrated approach to planning and management of the North West Shelf region with the goal of achieving ecologically sustainable development.

A collaborative approach to integrated management is essential to balancing these uses, and avoiding conflict. This will provide a holistic framework for future decisions about competing uses of the marine ecosystem.

Critical to the study is information from the community about development options for the North West Shelf environment. Therefore, the values the community places on the environment and economic development, as well as their components, are an important part of the study.

The community consultation process will help to achieve this.



FURTHER INFORMATION ABOUT THE STUDY IS AVAILABLE FROM:

Web Pages: <http://www.marine.csiro.au/nwsjems/index.html>
<http://epagate.environ.wa.gov.au/>

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North West Shelf - Joint Environmental Management Study - Community Survey

1. Name: (essential to enter competition)

2. Phone Number and/or Postal Address:

3. Email Address:

4. Are you of Indigenous descent? (please tick ✓ one box ONLY)

☐ Yes

☐ No

5. Where do you live, or live closest? (please tick ✓ one box ONLY)

<input type="checkbox"/> Exmouth	<input type="checkbox"/> Onslow	<input type="checkbox"/> Roebourne
<input type="checkbox"/> Dampier	<input type="checkbox"/> Point Samson	<input type="checkbox"/> Wickham
<input type="checkbox"/> Karratha	<input type="checkbox"/> Port Hedland	<input type="checkbox"/> Other (list) _____

6. In answering this survey, who do you best represent? (please tick ✓ one box ONLY)

<input type="checkbox"/> Myself, as a resident of the area	<input type="checkbox"/> Pastoral Industry	<input type="checkbox"/> Recreational Group
<input type="checkbox"/> Myself, as a visitor to the area	<input type="checkbox"/> Tourism Industry	<input type="checkbox"/> Local Government
<input type="checkbox"/> Oil and Gas Industry	<input type="checkbox"/> Salt Industry	<input type="checkbox"/> State Government
<input type="checkbox"/> Pearling Industry	<input type="checkbox"/> Iron Ore Industry	<input type="checkbox"/> Federal Government
<input type="checkbox"/> Commercial Fishing Industry	<input type="checkbox"/> Conservation / Environmental Group	<input type="checkbox"/> Other (list) _____

7. Which of the following recreational activities do you do regularly — or would like to do regularly - in or around the study area? (please tick ✓ as many as you like)

<input type="checkbox"/> Fishing	<input type="checkbox"/> Diving / Snorkeling	<input type="checkbox"/> Viewing Aboriginal rock art
<input type="checkbox"/> Walking along the shore	<input type="checkbox"/> 4 Wheel Driving	<input type="checkbox"/> Other (list) _____
<input type="checkbox"/> Surfing	<input type="checkbox"/> Collecting seafood, shellfish	_____
<input type="checkbox"/> Boating	<input type="checkbox"/> Skiing	_____
<input type="checkbox"/> Swimming	<input type="checkbox"/> Looking for/watching marine wildlife	_____
<input type="checkbox"/> Collecting shells	<input type="checkbox"/> Enjoying the view	<input type="checkbox"/> I don't do — or want to do — anything at the coast regularly

8. Rate the following possible future outcomes concerning the study area according to their importance to you. (please tick ✓ whether you believe the possible outcome is 1 very important, 2 fairly important or 3 not important.)

	1	2	3		1	2	3
Increased employment opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Protection of marine plants and animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speedy approval process for development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Open, easily understood government approval process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thorough approval process for development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unrestricted access for small boats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy and safe shipping for imports and exports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community education about the marine environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unpolluted waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sharing the marine environment with visitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accessible beaches for swimming, diving and boating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Publishing study results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural view(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safe waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased national income from resource developments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diversification of industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase in local business trade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Being able to access the islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Simplified regulation and management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Being able to camp on the islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scientific research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Being able to build infrastructure on the islands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mangrove protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Having more marine parks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognition of Aboriginal heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

9. What are the three **(3) most important outcomes** from question 8 that you would like to see happen?

i.

ii.

iii.

10. The marine environment has many **natural qualities** and **uses**. How important would you rate the following **natural qualities** of the North West Shelf marine environment? (please place one tick ✓ whether you believe the possible outcome is **1** very important, **2** fairly important or **3** not important for each natural quality.)

	1	2	3		1	2	3
Water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Healthy and natural environment (<i>ecosystem integrity</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Variety of plants and animals (<i>biodiversity</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other (list)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of plants and animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health of plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health of animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aesthetic (<i>or attractiveness</i>) values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. What are the **three (3) most important** natural qualities to you in question 10?

i.

ii.

iii.

12. How important would you rate the following **uses** of the North West Shelf marine environment? (please place one tick ✓ whether you believe each use is **1** very important, **2** fairly important or **3** not important for each.)

	1	2	3		1	2	3
Recreational Fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skiing and surface water sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aquaculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pearling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crabbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indigenous cultural activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Monitoring activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Coastal development (associated with industrial and population growth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 wheel driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other (list)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial non-trawl fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial fish trawling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tourism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resource extraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. List what you believe to be the **three (3) most important uses** in question 12.

i.

ii.

iii.

14. The following activities (natural and human) that occur in the study area impact upon the environment in different ways. Rate them according to the level of threat they are to the marine environment. (please tick ✓ whether you believe the activities 1 pose a great threat, 2 pose some threat or 3 are not a threat to the marine environment.)

	1	2	3		1	2	3
Commercial non-trawl fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dredging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eco tourism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Oil and gas industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pearling operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Iron ore industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquaculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tourism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Coastal effluents (e.g. sewage)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commercial trawling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small boats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Coastal development (associated with industrial and population growth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other (list)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pastoral (coastal) land use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyclones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. List the **three (3) greatest threats** to the marine environment from question 14 and explain why they are threats and where in the study area they are of most concern to you.

i.

ii.

iii.

16. Are there any other activities or events (natural and human) apart from those listed above, that you consider to be major threats to the marine environment in the North West Shelf study area? If so, **what** are they, **where** are they threats and **why** are they threats?

17. In your opinion, what are the most important issues that should be addressed in this environmental study?

18. List things that you would like to see put in place for the future environmental management in the study region.

19. What do you understand by the term 'ecological sustainability'?

20. Do you think ecological sustainability of the marine environment is important?

☐ Yes

☐ No

☐ Don't Know

21. Why / Why not?

22. For the study area, rank the following goals from 1 - 4 in terms of importance to you, from most important (1) to least important (4).

GOAL

RANK

Having processes in place to manage the region's environment.

☐

Maintenance of sustainable relationships among plants, animals and people.

☐

Growth in employment, income and standard of living.

☐

Pleasant environment with features available for the public to use.

☐

23. In the study area, where do you spend a significant amount of your time and what do you do there? Please be specific.

24. Do you have any other comments, concerns, issues or suggestions concerning the management of the marine environment?

Thankyou for completing this survey!

PLEASE RETURN BY 31ST SEPTEMBER 2001 TO:

Tonia Swetman
Community Liaison Manager
North West Shelf Joint Environmental Management Study
PO Box 658
KARRATHA WA 6714

LIKE TO KNOW MORE ABOUT THE STUDY?

Contact Tonia on: 9185 6790 or email: cognito@kisser.net.au

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Department of Land Information

Department for Planning and Infrastructure (Department of Transport)

Pilbara Tourism Association

Shire of Roebourne

Town of Port Hedland

Tourism Western Australia

Western Australian Land Information System

Western Australian Museum

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Chevron Australia

Dampier Salt

Hamersley Iron

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