

# **Lobster Fishery**

## **Environmental Impact Statement**

Public consultation document

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**NSW DEPARTMENT OF  
PRIMARY INDUSTRIES**



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PRIMARY INDUSTRIES

Details of the public consultation process and contact information are included on page 40 of Chapter A

## **Environmental Impact Statement on the Lobster Fishery in NSW**

### **Public Consultation Document**

**NSW Department of Primary Industries, December 2004**

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## **DECLARATION**

For the purpose of section 115K(4) of the *Environmental Planning and Assessment Act 1979*, the Director-General, NSW Department of Primary Industries is the person engaged as responsible for the preparation of this Environmental Impact Statement (EIS). The Director-General, NSW Department of Primary Industries is Mr Barry Buffier. A range of NSW Department of Primary Industries staff and stakeholders with expertise and qualifications in fisheries management, environmental science, fisheries science and fisheries compliance assisted in the preparation of the EIS. Where expertise was not available within NSW Department of Primary Industries, external experts were contracted.

The EIS has been prepared on behalf of the persons who are entitled to operate in the Lobster Fishery (the proponents). A list of proponents is contained in Appendix A1 of the EIS.

The address for the Director-General, NSW Department of Primary Industries, is:

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The location of the proposed activity is described in Chapter D. A description of the proposed activity and proposed controls is also provided in Chapter D. An assessment of the environmental impact of the proposed activity as described in the draft Fishery Management Strategy (Chapter D) is presented in the EIS in Chapter E. The EIS contains all available information relevant to the environmental assessment of the activity to which the statement relates. The information provided in the EIS is neither knowingly false nor misleading.

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## Abbreviations

<b>ABARE</b>	Australian Bureau of Agriculture and Resource Economics
<b>ABS</b>	Australian Bureau of Statistics
<b>ACCF</b>	Advisory Council on Commercial Fishing
<b>ACoA</b>	Advisory Council on Aquaculture
<b>ACoRF</b>	Advisory Council on Recreational Fishing
<b>ADT</b>	Administrative Decisions Tribunal
<b>AFFA</b>	Australian Fisheries Forestry and Agriculture
<b>ARB</b>	Air Resources Board (California)
<b>AS/NZS</b>	Australian Standard/New Zealand Standard
<b>CI</b>	Confidence interval
<b>CL</b>	Carapace length
<b>COE</b>	Certificate of Exemption
<b>CPI</b>	Consumer Price Index
<b>CPUE</b>	Catch per unit effort
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (Commonwealth)
<b>DIPNR</b>	Department of Infrastructure, Planning and Natural Resources
<b>DPI</b>	NSW Department of Primary Industries
<b>EAC</b>	East Australian Current
<b>EIS</b>	Environmental Impact Statement
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EPA</b>	Environment Protection Authority (NSW) (Now DEC)
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<b>ESD</b>	Ecologically Sustainable Development
<b>FAO</b>	Food and Agriculture Organisation
<b>FB</b>	Fishing business
<b>FIU</b>	Fisheries Investigation Unit
<b>FM Act</b>	<i>Fisheries Management Act 1994</i>
<b>FMS</b>	Fishery Management Strategy
<b>FRDC</b>	Fisheries Research and Development Corporation
<b>GPS</b>	Global Positioning System
<b>GST</b>	Goods and Services Tax
<b>IFS</b>	Indigenous Fisheries Strategy
<b>IFWG</b>	Indigenous Fisheries Working Group
<b>IMO</b>	International Maritime Organisation
<b>IPART</b>	Independent Pricing and Regulatory Tribunal
<b>ITQ</b>	Individual transferable quota
<b>IUCN</b>	International Union for the Conservation of Nature
<b>LFB</b>	Licensed Fishing Boat
<b>LobMAC</b>	Lobster Management Advisory Committee
<b>MAC</b>	Management Advisory Committee
<b>MPA</b>	Marine Protected Area

<b>MR</b>	Management response
<b>NPW Act</b>	<i>National Parks and Wildlife Act 1974</i>
<b>NPWS</b>	National Parks and Wildlife Service
<b>OCS</b>	Offshore Constitutional Settlement
<b>OG1</b>	Offshore General Authorisation
<b>OH&amp;S</b>	Occupational health and safety
<b>RFR</b>	Registered Fish Receiver
<b>RRFR</b>	Restricted Registered Fish Receiver
<b>SCFA</b>	Standing Committee on Fisheries and Aquaculture
<b>SCUBA</b>	Self-Contained Underwater Breathing Apparatus
<b>SETF</b>	South east trawl fishery
<b>SFM</b>	Sydney Fish Market
<b>SHR</b>	State Heritage Register
<b>SMP</b>	Share Management Plan
<b>TAC</b>	Total Allowable Catch
<b>TAC Committee</b>	Total Allowable Catch Setting and Review Committee
<b>TACC</b>	Total Allowable Commercial Catch
<b>TBT</b>	Tributyltin
<b>TSC Act</b>	<i>Threatened Species Conservation Act 1995</i>
<b>TUNAMAC</b>	Tuna and Billfish Fishery Management Advisory Committee (Commonwealth)
<b>US EPA</b>	United States Environment Protection Authority

## Glossary

Berried	Carrying eggs externally
Biodiversity	The variability among living organisms from all sources (including marine and other aquatic ecosystems and the ecological complexes of which they are a part). Includes: diversity within species (genetic diversity), among species (species diversity); and ecosystems (ecosystem diversity)
Bycatch	Fish that are caught by fishers but are not retained for sale (usually discarded but may be retained for scientific purposes, includes target species that are discarded)
Byproduct	Fish that are not targeted by fishers, but are retained for sale
Critical habitat	An area or areas of habitat declared under threatened species legislation to be critical to the survival of a threatened species
Demersal	Occurring on or near the bottom of the ocean
Ecological community	The species that occur together (often delimited by a geographic boundary)
Ecologically Sustainable Development (ESD)	Using, conserving and enhancing the community's resources so that the ecological processes, on which life depends, are maintained and the total quality of life now and in the future, can be increased (National Strategy for ESD, Council of Australian Governments 1992)
Ecosystem	The biotic (living) community and its abiotic (non-living) environment.
Elasmobranch	A fish of the class Chondrichthyes, which includes all sharks, skates and rays
Endangered species	Species that is likely to become extinct due to threatening process(es), reduction in population size or available habitat (under the <i>Fisheries Management Act 1994</i> and <i>Threatened Species Conservation Act 1995</i> ).
Endorsement	A notation placed on a commercial fishing licence or fishing boat licence that indicates the licence holder is lawfully permitted to operate in a Restricted Fishery or Share Management Fishery. An endorsement can only be issued if a person holds an entitlement in a Restricted Fishery or shares in a Share Management Fishery and satisfies the relevant entry criteria, or is nominated by another person to hold an endorsement on behalf of that other person
Entitlement	A right issued to eligible fishing businesses that enables a licence holder to gain access (i.e. an 'endorsement') in a Restricted Fishery
Escape gap	An opening, of specified minimum dimensions in a trap/pot to allow lobsters of a certain size or body shape to leave the trap more easily
Escape panel	A mesh of specified minimum dimensions used across the back side of a rectangular-shaped trap (which becomes the "floor" of the trap as it is winched to the boat) to minimise the capture of bycatch (particularly relating to finfish species in this EIS)
Fish	Marine, estuarine and freshwater fish or other aquatic animal life at any stage of their life history (whether alive or dead), including aquatic molluscs, crustaceans, echinoderms, beachworms and other aquatic polychaetes, but excluding mammals, reptiles, birds and amphibians ( <i>Fisheries Management Act 1994</i> )
Ghost fishing	The continued capture of fish in gear that has been lost (eg. if the trap marker float is cut off and the trap cannot be retrieved)
Hookah	Underwater breathing apparatus by which air is supplied to a diver from the surface via a long, flexible hose
Isobath	A line drawn on a chart of the ocean connecting all points having the same depth
Ovoviviparous	Producing living young from eggs that hatch within the body and receive no further nourishment from the mother before birth
Pelagic	Occurring at or near the surface of the ocean
Precautionary principle	A principle of ESD, which states that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

Puerulus	Post-larval stage of the rock lobster, occurring after the phyllosoma stages and just prior to settlement. Phyllosoma stages are the earlier planktonic larval stages.
Ramsar Convention	The Convention on Wetlands of International Importance, signed in the Iranian town of Ramsar in 1971. The convention aims to halt the loss of wetlands and to conserve remaining wetlands
Recovery plan	Plan designed to return a threatened species, population or ecological community to a point where its survival in nature is assured (i.e. it is no longer threatened). Preparation of recovery plans for threatened species is required under the <i>Fisheries Management Act 1994</i> , <i>Threatened Species Conservation Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i>
Resilience	A measure of the ability of a population to recover following depletion
Resource rent	The long run excess of benefits gained from the use of a natural resource over the long run costs of harvesting the resource, where benefits include both measurable (i.e. revenue from harvesting) and non-measurable (i.e. lifestyle) factors
Risk	The likelihood of an undesired event (or impact) occurring as a result of some behaviour or action
Risk management	The culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects
Sequential hermaphrodite	An organism that has functional male and female reproductive organs at different stages of its life
Shares	A statutory property right issued to eligible fishing businesses that enables a licence holder to gain access (i.e. an 'endorsement') in a Share Management Fishery. Shareholders are entitled to lawful compensation if a full Share Management Fishery is closed and shares are cancelled
Taxon	One or more organisms that belong to the same taxonomic unit (genus, family, order etc.)
Teleost	A fish of the infraclass Teleostei ("bony fish")
Threatened species	Species listed under NSW or Commonwealth legislation as endangered or vulnerable. For the purpose of this EIS, analysis of threatened species also includes species that are listed under the <i>Fisheries Management Act 1994</i> as protected species
Viviparous	Giving birth to living young, which develop within and are nourished by the mother

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Advisory Council on Commercial Fishing

Advisory Council on Recreational Fishing

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# CHAPTER A EXECUTIVE SUMMARY

## Introduction

The Lobster Share Management Fishery (Lobster Fishery) is a quota managed fishery which targets the eastern rock lobster (*Jasus verreauxi*) along the coastal and offshore waters of NSW. It is a specialised fishery that provides a premier seafood species and a small quantity of other species for local consumption and export. The operation of the current activity poses some environmental, social and economic risks, particularly impacts on the eastern rock lobster spawning stock, on species of wobbegong sharks and on the economic viability of the fishery.

These risks must be addressed for the activity to proceed in a sustainable way and for the necessary approvals to be granted. A number of actions therefore have been proposed to address the risks including mapping major lobster fishing grounds, providing enhanced protection to the spawning stock, enhancing the catch reporting framework, introducing a code of practice and developing improved performance measures for assessing the economic viability of lobster fishing. The actions represent a balanced approach to securing the objectives sought for commercial lobster fishing and sustainable fisheries.

The Environmental Impact Statement for the Lobster Fishery presents a thorough, frank and transparent assessment of the risks associated with the current activity and the measures proposed to address the risks. Public exhibition of the Environmental Impact Statement for the Lobster Fishery provides an opportunity for the community to review the environmental performance of the activity of commercial lobster fishing and to have input into its future management.

## The Development of Fishery Management Strategies and Environmental Impact Statements

In December 2000, the NSW Government made changes to ensure that fishing activities in New South Wales are managed in an environmentally sustainable way. The changes require the development of fishery management strategies and associated environmental assessments for each major fishing activity, including the Lobster Fishery.

The management strategy and environmental impact assessment for each activity are presented together in an Environmental Impact Statement (EIS). Its structure is based on guidelines issued by the Department of Infrastructure, Planning and Natural Resources (DIPNR).

This overview presents a summary of the EIS, being the first chapter (Chapter A). Chapter B of the EIS reviews the existing operation of the activity, including the current management arrangements, where lobster fishing occurs, the gear used, the species harvested or otherwise affected by the operation of the fishery, and the socio-economics related to the activity. The risks associated with all aspects of the activity are assessed to identify those aspects that require modification by the fishery management strategy. Together these chapters (Chapters A and B) comprise Volume 1 of the EIS.

Chapter C provides an outline of the main alternative management options to those of the existing activity and Chapter D provides details of the proposed management arrangements for the

activity (i.e. the draft strategy). Chapter E presents an assessment of the potential impacts of implementing the draft strategy, that is, the extent to which the draft strategy mitigates the risks that were identified in Chapter B. Chapter F provides a justification for the chosen strategy, taking into account its implications in terms of environmental, social and economic factors.

This overview provides an introduction to the environmental assessment process. It briefly outlines the context within which the Lobster Fishery operates, the management arrangements proposed in the draft strategy, and the findings of the environmental impact assessment.

## **The Existing Activity**

Lobster fishing in NSW dates back to the 1800s. The existing fishery occurs along the entire NSW coast and is characterised by inshore and offshore components, targeting the eastern rock lobster, *Jasus verreauxi*. An individual transferable quota management system commenced for the Lobster Fishery in 1994. An annual TAC (total allowable catch) is set by a statutory and independent Total Allowable Catch Setting and Review Committee. The commercial component of the TAC is divided among shareholders according to the number of shares held.

There are currently 10,051 shares in the Lobster Fishery held by approximately 160 shareholders. The *Fisheries Management (Lobster Share Management Plan) Regulation 2000* currently provides shareholders with a statutory basis for their fishery and provides objectives, performance indicators and trigger points that aim to ensure that the fishery remains sustainable. The Lobster Share Management Plan will be revised following the approval of the fishery management strategy.

Rock lobsters may only be taken in the Lobster Fishery by use of a commercial lobster trap or hand picking (without using underwater breathing apparatus). Fishers who catch rock lobsters as a bycatch in another commercial fishery, such as by the methods of fish trapping or trawling, must return them to the ocean. Because of its low abundance in other States, the NSW Lobster Fishery is the only commercial fishery in Australia that targets eastern rock lobster.

Rock lobsters are caught across a wide range of depths, from reefs in shallow inshore waters out to the continental slope. Although a small component of the commercial catch is taken by hand picking, the majority of the catch is taken using baited traps. Eastern rock lobsters are subject to minimum and maximum size limits and lobsters carrying eggs must be released. It is a requirement that commercially landed eastern rock lobsters are tagged and reported on daily log sheets. Released eastern rock lobsters are also recorded in various categories as well as other information relating to the day's fishing activities (e.g. area fished, number of traps pulled and crew details).

Although eastern rock lobsters are the only target species in the fishery, a variety of finfish and shellfish species are also captured in relatively small numbers in lobster traps. The fishery does not currently report landings of non-target species other than southern and painted rock lobsters, however estimates of retained and discarded catch have been recorded through an observer survey undertaken for the Lobster Fishery.

## **Risk, Response and Predicted Outcome**

The following section briefly describes the risks of the current activity as they pertain to environmental, economic and social components (initial risk), the management responses proposed in



the draft strategy to mitigate those risks (response), and a predictive assessment of the degree to which those measures may mitigate the risks (predicted outcome). This section is also summarised in Table A1.

In order to address any perceived problems with the existing operation of the Lobster Fishery, it is first necessary to describe and evaluate the potential impacts arising from the manner in which the lobster fishing is conducted. It is also necessary to attempt to isolate the parts of the activity that are thought to contribute the most to those impacts and to adjust them through the draft strategy.

To address the risks identified in the EIS, the draft strategy offers seven major long-term goals for the management of the fishery, which are supported by approximately 24 objectives and 65 management responses. Many of the management responses are existing programs. It is important to note that a single management response can mitigate a variety of risks and therefore it is not necessary to formulate direct responses for each risk. The responses with a direct relationship to an environmental, economic or social component are briefly described below and summarised in Table A1.

## Ecological Impacts

The purpose of this section is to critically evaluate the available information on the ecological impacts of commercial lobster fishing and the underlying mechanisms by which the impacts occur. An understanding of these mechanisms is important for the evaluation of future impacts and for evaluating the extent and magnitude of existing impacts.

Broadly, the Lobster Fishery comprises seven components that have the potential for a variety of ecological impacts. The components include:

- Potting – deployment and retrieval of lobster pots/traps
- Harvesting – removal from pots and retaining lobsters and byproduct species and hand picking
- Discarding – returning undersized or oversized lobsters, berried lobsters, or undersized or unwanted bycatch
- Rope entanglements – entanglement of marine mammals and turtles in trap ropes and/or floats
- Loss of fishing gear – ghost fishing when traps are lost but continue to capture lobsters or fish
- Travel to/from grounds – boat movements to fishing grounds and return
- Boat maintenance and emissions – tasks involving fuel, oil or other engine and hull related activities that could result in spillages or leakages into the sea or air.

The major *potential* impacts of the Lobster Fishery include growth overfishing and recruitment overfishing, disruption of ecological processes, impaired recovery of threatened species and damage to habitats. The degree to which these impacts occur varies depending on the resilience of the species or ecological component and the intensity of the fishing activities.

The risk assessment conducted on the existing Lobster Fishery found that some activities of the fishery are likely to pose a risk to the environment. In particular, there are risks to the target species (particularly excessive fishing pressure on the spawning stock of eastern rock lobster) and

some non-target species such as hermit crabs, wobbegong sharks, and rubberlip morwong. Risks to threatened species, marine habitats, species assemblages and diversity were generally considered to be low, as were risks to the biophysical environment.

## Target species

### Initial risk

The target species in this fishery, the eastern rock lobster, (*Jasus verreauxi*), is currently considered to be fully fished. The risk assessment of the current operation of the fishery found that there is an intermediate risk of the species becoming recruitment overfished, due to depletion of the spawning stock. It concludes that while there is no imminent risk of recruitment failure, there is a significant risk if measures are not implemented to rebuild and closely monitor the spawning stock. Contributing to the risk is the lack of accurate information on the size of the recreational harvest of rock lobsters in NSW.

### Response

The draft strategy addresses the risk of depletion of spawning stock by:

- Providing enhanced protection to the rock lobster spawning stock and in particular reducing the maximum size limit from the current size of 200 mm to 180 mm carapace length.

The draft strategy proposes a continuation of the existing measures for management of the target stock, including:

- Annual determination by the TAC Committee of the maximum weight of rock lobster to be taken by the commercial lobster fishery
- Conducting an annual assessment of the eastern rock lobster resource including a review of the exploitation status of the stock and a risk assessment of alternative harvest strategies.
- Developing models of the eastern rock lobster population and fishery
- Monitoring catch and effort for eastern rock lobster in the commercial lobster fishery
- Monitoring length and sex composition of commercial landings of eastern rock lobster
- Monitoring recruitment to the population of eastern rock lobster
- Prohibiting the taking of rock lobsters below the minimum size limit or above the maximum size limit, and
- Prohibiting taking all female lobsters carrying eggs.

### Predicted outcome

The proposed reduction in maximum size limit from 200 mm to 180 mm carapace length will protect a greater proportion of the spawning stock of eastern rock lobster. This measure, in combination with judicious setting of the TACC will significantly reduce the risk of overfishing of this component of the stock. The remaining measures, which represent a continuation of the existing program, are necessary for sustainable harvest of the stock. Continual development of population and fishery models will improve understanding of the resource, which will facilitate better management.

## Non-Target (byproduct and bycatch) species

### Initial risk

In addition to rock lobsters, a large number of other species are caught in lobster traps. Many species are returned to the water (bycatch), however, some are retained by fishers and sold (byproduct). A large majority of these non-target species are caught in small quantities and because of this, are considered to be at negligible risk from lobster fishing. Species that were subject to more detailed assessment included hermit crabs, wobbegong sharks and rubberlip morwong.

The risk to hermit crabs is considered to be moderately high due to the uncertain status of the stock. However the current negligible harvest suggests that no immediate action is required, although there is the potential for changed market conditions to give rise to larger quantities of hermit crabs being harvested by the Lobster Fishery in the future. Wobbegong sharks are considered to be at high risk of being overfished, however the Lobster Fishery accounts for a relatively small proportion (12%) of the total commercial catch of these species. Rubberlip morwong is classed as being at intermediate risk of being overfished, but similarly the Lobster Fishery takes a relatively small proportion (4% - 15%) of the (NSW) commercial harvest of the species each year.

### Response

The draft strategy will address the risk to hermit crabs by:

- Modifying the reporting system to record and monitor landings of all species (including hermit crabs) taken in lobster traps, and
- Applying a performance indicator for commercial landings of hermit crabs, requiring a review if harvest levels exceed 30 tonnes per year.

The risk to wobbegong sharks from the Lobster Fishery is addressed by:

- Modifying the reporting system to record and monitor landings of all species (including wobbegong sharks) taken in lobster traps
- Using observers aboard commercial lobster boats to collect additional biological information on shark species caught in lobster traps, and
- Applying a performance indicator for landings of wobbegong sharks, requiring a review if the annual harvest by the fishery exceeds 8 tonnes.

Furthermore, the introduction of a minimum legal size for retained wobbegong sharks (currently proposed in the draft strategy for the Ocean Trap and Line Fishery) would apply to all NSW fisheries, including the Lobster Fishery, and would also address the risk to these species.

The risk to rubberlip morwong (and other finfish species) from the Lobster Fishery will be addressed in the draft strategy by:

- Limiting lobster fishers to a defined list of species that can be retained as byproduct from waters greater than 10 m depth - the defined list of species excludes rubberlip morwong
- Contributing to the development of, and adopting any measures required by, a recovery program for species determined to be overfished, and
- Requiring the use of fish escape panels in lobster traps if it becomes evident that lobster traps are being used to target finfish.

### **Predicted outcome**

Effective implementation of the management measures in the draft strategy will adequately address any potential future risks to hermit crabs. The high risk to wobbegong sharks will be reduced by the combination of measures in the draft strategy and the minimum size limit proposed under the draft Ocean Trap and Line fishery management strategy. Given that the Lobster Fishery accounts for only a small proportion of the total catch of rubberlip morwong, risk to the species from the Lobster Fishery will be reduced by the measures in the draft strategy.

## **Listed threatened species, populations or ecological communities**

### **Initial risk**

Potential risks to threatened and protected species arise through entanglements in trap ropes (marine mammals and turtles) and capture in traps (finfish, in particular eastern blue groper). Data from observer surveys and the Department of Environment and Conservation's Marine Fauna Management Database suggest that the level of risk to threatened species due to entanglement is low. However it was noted in the assessment that there are currently no provisions for fishers to report interactions between the Lobster Fishery and threatened species. Risk to eastern blue groper is considered low because observer studies found that captures were negligible compared to harvest by other user groups.

### **Response**

Specific management responses aimed at improving knowledge of, and mitigating any future risks to threatened and protected species, are:

- Modifying reporting arrangements to enable collection of information on interactions with or sightings of threatened or protected marine species, and gear interactions with other threatened or protected species
- Implementing the provisions of any threatened species recovery or threat abatement plans
- Promoting, through the code of practice, use of fishing techniques that avoid the capture of, or interaction with, threatened and protected species, and
- Improving the accuracy of information available on interactions between the Lobster Fishery and threatened species using research projects undertaken through threatened species recovery plans.

### **Predicted outcome**

Although risks to threatened species are considered to be low, the management measures in the draft strategy will provide better information on interactions between the Lobster Fishery and threatened species. The draft strategy also provides for the modification of the activity in line with relevant threatened species recovery plans.

## **Marine Habitats**

### **Initial risk**

Risks to various components of the marine habitat were assessed. For geological habitats (high relief and low relief hard grounds and soft grounds) and for the water column, risks are considered to be low. For biogenic habitats (the attached animals and plants inhabiting geological habitats), risks are

slightly higher (rated at moderately low) due to the relatively high vulnerability of these habitats to physical damage caused by traps. Overall, however, these risk levels do not warrant significant changes to the operation of the fishery, due to the very small area of habitat that comes into contact with lobster traps.

### **Response**

Two management responses in the draft strategy address risk to aquatic habitats:

- Allowing for the modification of lobster fishing methods in areas where their use is identified as having a detrimental impact on marine habitat and associated biota
- Mapping major lobster fishing grounds.

### **Predicted outcome**

The risks to different components of the marine habitat are generally considered to be low or moderately low, and would remain low if the draft strategy was implemented. Importantly, the actions in the draft strategy would allow for management changes in response to any future impacts that might occur.

## **Species assemblages, species diversity and ecological processes**

### **Initial risk**

Species assemblages identified as potentially affected by the fishery were macroalgal assemblages and benthic (bottom-dwelling) mobile faunal assemblages. The assessment concludes that there is a low risk to these assemblages from the operation of the fishery. Species diversity is closely linked to impacts on habitats and species assemblages, which are both considered at low risk from the Lobster Fishery. Species diversity may also be affected by trophic interactions (effects on predator and prey species of lobsters). The conclusion is a low risk to species diversity, although it is noted that studies elsewhere indicate that removal of lobsters could potentially affect the numbers of their prey species. It is also noted that there is a lack of information on the effects of lost traps (ghost fishing) on lobsters and other fish species.

Ecosystem functions are large scale processes such as the transfer of energy and nutrients through the various living and non-living components of the ecosystem. It is concluded that there is insufficient information about ecosystem functions to enable an assessment of risk for this component.

### **Response**

Management responses likely to alter the impacts of the fishery on species assemblages and diversity are:

- Using fishing closures to control fishing activities, where necessary
- Using best available knowledge and appropriate technology, modify fishing practices to reduce the impacts of the fishery on non-retained fish, invertebrates, reptiles, mammals and birds, and
- Collecting information on the number of traps in the fishery that are lost during fishing operations, and implementing appropriate management actions if necessary.

In addition, research into the impact of trap loss on mortality of lobsters and other species is proposed in the draft strategy.

### **Predicted outcome**

Given the current assessment of low risk to species assemblages and species diversity, the draft strategy adequately deals with these issues by making provisions to implement fishing closures and modify the fishing activity should any future impacts be identified. The NSW Department of Primary Industries is currently supporting projects on ecosystem based management, and these projects aim to increase understanding of ecological processes and ecosystem functions that may be impacted by fishing activities in NSW in the medium to longer term.

## **Economic aspects**

### **Initial risks**

The assessment identifies a number of internal and external risks to the economic viability of the Lobster Fishery. The highest internal risks are the availability of the lobster stock to fishers, loss of fishing gear and the lack of quality economic and social data on which to base management decisions. Intermediate internal risks include limited knowledge of industry structure on which to base restructuring decisions and the high transaction cost of the current quota trading system.

### **Response**

With regard to the availability of the lobster stock to fishers, a large portion of the draft strategy is concerned with directly improving the status of the lobster stock, and thereby improving the rate at which the stock can be sustainably harvested. These specific management responses are listed above in the section on target species.

The lack of information on the economic and social aspects of the Lobster Fishery is addressed in the draft strategy by:

- Refining the performance indicator for monitoring trends in economic viability of the fishery so as to be based on net returns
- Investigating the data available to assess the economic multiplier (flow-on) effects of the Lobster Fishery to the broader community, and developing strategies to improve the quality/usefulness of such data
- Collecting information to detect patterns in the quantity and price of share transfers and the quantity of quota traded, and investigating the feasibility of collecting data on the price of quota traded
- Developing a strategy for improving the understanding of economic and social information relating to the Lobster Fishery, taking into account the information gaps outlined in the economic and social assessment in the EIS, and
- An economic and social survey proposed as a high priority research project.

The risk caused by the loss of fishing gear through interactions with other fishing activity will be addressed by:

- Collecting information on the number of traps in the fishery that are lost during fishing operations, and implementing appropriate management actions if necessary
- Mapping major lobster fishing grounds, and

- Using cross-fishery consultation to discuss and manage issues relating to, but not limited to the multiple use of specific fishing grounds

The risk to economic viability due to the lack of knowledge about industry structure will be addressed by:

- Investigation of minimum shareholding provisions
- Collecting information to detect patterns in the quantity and price of share transfers and the quantity of quota traded, and investigating the feasibility of collecting data on the price of quota traded
- Developing a strategy for improving the understanding of economic and social information relating to the Lobster Fishery, taking into account the information gaps outlined in the economic and social assessment in the EIS, and
- An economic and social survey proposed as a high priority research project.

The risk caused by the high transaction costs of the current quota trading system will be addressed by:

- Investigating the feasibility of implementing an exchange accessible by all lobster fishers transferring quota and implementing the outcomes of the investigation.

### **Predicted outcome**

The risks to economic viability due to the availability of stock are reduced to some extent by measures aimed at protecting the target species. However, the fishery remains vulnerable to any fluctuations in stock availability from both internal and external sources. Several measures should lead to the collection of better economic and social data about the fishery. Better economic and social data, along with the investigation of minimum shareholding provisions, will also help to improve knowledge about industry structure. It is important that such information is used to inform decisions aimed at restructuring (e.g. investigation of minimum shareholding provisions and limits on the quantity of quota that shareholders can acquire through quota transfer during each fishing period).

## **Social issues**

A social survey found that the majority of lobster fishers are in older age brackets (over 50), are long term residents of their local communities, have a long involvement in fishing, identify strongly as lobster fishers and would be unwilling or unable to change careers. Four social aspects were identified as potentially at risk under the current operation of the fishery. First, the age structure of fishers means that a high proportion of them are likely to retire soon, possibly leading to a loss of knowledge and social capital. This issue is considered low risk, however, because it is likely to be offset by the new skills brought to the industry by a new generation of fishers, leading to an evolution of social capital rather than a net loss. Second, the limited labour mobility of fishers means that fishers' livelihoods are at risk if, for any reason, they are unable to continue operating in the Lobster Fishery. However, most lobster fishers hold endorsements in other fisheries, making this a low risk. Third, fishers' incomes are sensitive to variation in the economic viability of fishing, making this issue an intermediate risk. Fourth, a survey indicated that the likelihood of fishers being injured while fishing is relatively high, with consequences for fishers' families and loss of income. Therefore, health and safety issues were listed as an intermediate risk.

## **Response**

The two main risk issues that impact on the social environment are economic viability and occupational health and safety. The draft strategy deals with economic viability issues, and these are listed in the section on economic viability above. The following management responses deal with social risks arising from economic viability issues more directly:

- Developing a strategy for improving the understanding of economic and social information relating to the Lobster Fishery, taking into account the information gaps outlined in the economic and social assessment in the EIS, and
- An economic and social survey proposed as a high priority research project.

While occupational health and safety issues are beyond the scope of the fishery management strategy, the draft strategy notes the importance of the fishery complying with relevant legislative requirements.

## **Predicted outcome**

Overall, it is expected that risks to the social aspects of the Lobster Fishery will be reduced by management actions in the draft strategy.

## **Indigenous issues**

### **Initial risk**

The assessment found that fishing is an important part of the cultural identity of Aboriginal people. Aboriginal members of many coastal communities still regard themselves as fishing people, and a number of intra community responsibilities and obligations are linked to fishing activities – as a way to supplement diet for the whole community, share knowledge and resources across generations, earn a living and as a way to maintain traditional culture.

Many of the concerns of Aboriginal people are about access to fisheries resources. Although nominally commercial, in many cases traditional fishing, using simple fishing equipment, was closer to a subsistence lifestyle. Access to licences for this type of fishing is not available. As a consequence, Aboriginal men who attended meetings about the Lobster strategy stated that they felt communities were losing traditional skills, and did not currently have the capital or the commercial experience to enter the modern, higher technology and efficiency focused commercial fishing sector. Some Aboriginal people suggested that commercial rock lobster fishers are gaining large economic benefits from ‘our waters’ and so the Aboriginal community should also be benefiting from the exploitation of marine waters (e.g. employment opportunities, royalties).

On the nearshore reefs and rock platforms, commercial divers (and trap setting), recreational divers and Aboriginal divers target the same species. This means that, in some locations, resources may be limited by the activities of the other resource users. Lobster fishing is clearly identified as a traditional Aboriginal activity on the south coast. Although many north coast communities state that they also fished for lobster (particularly in the Forster to Port Stephens areas), the focus appears to have been less. Consequently, the available data suggests that there is a higher likelihood that Aboriginal fishers and commercial lobster fishers will interact on the south coast.

Five Indigenous values were identified as being potentially at risk under the current operation of the fishery. Aboriginal sites, places and totem species are all considered to be at low risk. Cultural



landscapes were at moderately low risk, while there is a high risk to Aboriginal socio-economic participation in the fishery.

### **Response**

The draft strategy proposes to address Indigenous issues as they relate to the Lobster Fishery by:

- Managing the Lobster Fishery in a manner consistent with the Indigenous Fisheries Strategy and Implementation Plan
- Promoting harmony between the commercial fishery and other resource users, including recreational fishers, Indigenous fishers and local communities, through fair and equitable sharing of the resource
- Modifying the activity, where relevant, in response to new information about areas or objects of cultural significance in order to minimise the risk from lobster fishing activities, and
- Continuing to provide a dedicated position on the Lobster Fishery Management Advisory Committee for an Indigenous person.

### **Predicted outcome**

It is recognised that some of the matters of concern to Aboriginal people cannot be addressed through the draft strategy alone, but will be addressed through the Indigenous Fisheries Strategy. Through management consistent with this strategy, it is anticipated that Indigenous concerns relevant to the Lobster Fishery can be addressed. The draft strategy is consistent with providing fair and equitable sharing of the resource among all stakeholders. Although the risk to sites or objects of cultural significance is currently low, the draft strategy provides flexibility in allowing for response to new information. Providing for continuing Indigenous representation on the Lobster MAC will also help to ensure that lobster fishers and fishery managers are aware of Indigenous views and expectations.

## **Sites of historic, heritage or cultural significance**

The assessment of the existing activity found that there is a low potential for the fishery to interact with, or impact on, heritage items of known historical significance, primarily shipwrecks. Continuation of the fishery as proposed under the draft strategy will not increase the risk of impacts on these items.

## **Justification for the Draft Strategy**

The EIS highlights the importance of the Lobster Fishery in terms of employment, supply of seafood to the community and economic benefits. The fishery directly employs approximately 330 people, and produces over 100 tonnes of rock lobster annually, valued at about \$4.5 million at first point of sale. The economic flow-on effect to local and regional communities are significant, and across the fishery the multiplier values range from 1.5-2.0 (i.e. every dollar spent directly in the fishery is worth \$1.50-\$2.00 in the community).

The biology and distribution of the target species (eastern rock lobster) and the size of animals captured by the fishery demand that the spawning stock be given adequate protection, and the draft

strategy therefore incorporates a reduction in the maximum size limit for eastern rock lobster. Impacts on shark species, particularly wobbegong sharks is another issue for the fishery and the draft strategy includes actions to reduce the risk such as collecting information on sharks, skates and rays (elasmobranch species) through a periodic observer survey, compulsory catch reporting of byproduct species and a performance indicator for wobbegong shark landings. The Lobster Fishery will also comply with any minimum size limit introduced for wobbegong shark species under the fishery management strategy for the Ocean Trap and Line Fishery. The draft strategy for the Lobster Fishery provides for a significant improvement in the information base for the fishery including collection of information relating to interactions with threatened species, trap loss and setting a number of important research priorities to address information gaps. Ongoing assessment of the impacts of significant management reforms is also proposed under the draft strategy.

The draft strategy contains a range of short term actions, and establishes a range of programs that will require ongoing consultation with key stakeholders and the conclusion of implementation details. A significant level of work will be required to undertake the tasks that the EIS has found as being crucial to the long term sustainable management of the fishery. In order to ensure that the fishery operates in an ecologically sustainable manner into the future and that the environmental risks are meaningfully reduced, it will be important to ensure that the strategies and plans subsequently developed under the fishery management strategy are implemented so as to fulfil the stated goals and objectives. With this qualification, the EIS concluded that the range of measures are consistent with the principles of ecologically sustainable development.

**Table A1** The environmental impact statement summary table showing the risks associated with the current fishery, the programs proposed in the draft strategy to mitigate those risks, and an assessment of the predicted effectiveness of the draft strategy.

\* It is important to note that many components are related and as such the listed programs may address more than one component. In general, the programs are listed against the major component they address.

*Component	Sub-Component	Current Risk Level	Number of Entities	Potential risk reduction by draft strategy	Issues arising from Risk Assessment	*Programs in draft strategy to mitigate risk	
Ecological	Target species (eastern rock lobster)	I	1	Reduced to ML	Protection of spawning stock needed Inadequate knowledge of recreational harvest a contributing risk	– Enhanced protection of spawning stock, incl. reducing maximum size to 180 mm CL – Continuing research – Continuing monitoring of stock and recruitment	
	Section in EIS	B2.3		E1.1.1	B2.3.2, B2.3.5		
	Non-target species (byproduct and bycatch)						
	Hermit crabs	MH	U	Reduced to ML	Potential for changed market conditions leading to larger harvest	– Recording and monitoring of landings – Trigger point for review if commercial harvest exceeds threshold	
	Wobbegong sharks	H	2	Reduced to ML	Potential for overfishing	– Recording and monitoring of landings – Collect biological information on elasmobranch species through the onboard observer survey – Trigger point for review if commercial harvest exceeds threshold	
	Rubberlip morwong	I	1	L	Potential for overfishing	– Record and monitor landings of all species taken in lobster traps – Limit lobster fishers to a defined list of species that can be retained as byproduct	
	Section in EIS	B2.4		E1.2	B2.4		
	Threatened species, populations and communities						
	Cetaceans	L	6 spp.	No change	Lack of information on interactions	– Introduce reporting of interactions with threatened or protected species – Promoting fishing techniques that avoid capture of threatened and protected species	
	Reptiles	L	4 spp.				
	Finfish	L	1 spp.				
	Section in EIS	B2.6		E1.4	B2.6		

*Component	Sub-Component	Current Risk Level	Number of Entities	Potential risk reduction by draft strategy	Issues arising from Risk Assessment	*Programs in draft strategy to mitigate risk
Ecological (cont.)	Marine Habitats					
	Geological	L	1	No change	None	– Modification of fishing methods if impacts on habitats are identified – Mapping major lobster fishing grounds
	Biogenic	ML	1	No change		
	Water column	L	1	No change		
	Section in EIS	B2.8		E1.6		
	Ecological processes	U			Insufficient data	– Use fishing closures to control lobster fishing where necessary – Modify fishing practices to reduce impacts on non-retained fish and other species
	Species assemblages	L/N		No change	Trap loss and associated impacts (“ghost fishing”) not quantified	– Collect information on the number of traps lost during lobster fishing operations – Research on effects of trap loss on lobsters and other species
	Species diversity	L		No change		
Section in EIS	B2.7		E1.5			
Biophysical	Water quality	N		No change	None	None required
	Noise/Light	N		No change		
	Air quality and greenhouse gases	N		No change		
	Section in EIS	B3		-		

*Component	Sub-Component	Current risk: Value of production	Current risk: Cost of production	Potential risk reduction by draft strategy	Issues arising from Risk Assessment	*Programs in draft strategy to mitigate risk
Economic viability (not including external factors)	Availability of stock	H	L	Risk reduced	Changes in stock availability have significant impacts on value of production	– A range of measures for target species, incl. application of a TAC and comprehensive research programs
	Method of harvesting	L	L	No change	None	None required
	Discarding of catch	L	L	No change	None	None required
	Loss of fishing gear	H	H	Risk reduced	Costs incurred due to lost catch and gear replacement	– Quantifying trap loss during fishing operations, and managing as necessary – Mapping major lobster fishing grounds – Using cross-fishery consultation to manage multiple use of specific fishing grounds
	Quality of economic data	H	I	Risk reduced	Little data available, survey bias likely	– Refining economic performance indicator to reflect net returns to fishers – Improving data on economic multipliers – Collecting data on share and quota trade – Economic survey of lobster shareholders
	Knowledge of Industry structure	I	I	Risk reduced	Assessment of industry structure required to inform decisions about structural adjustment	– Investigating minimum shareholding provisions – Collecting data on share and quota trade – Improving understanding of social and economic data – Economic and social survey of lobster shareholders
	Management charges	N/A	L	No change	None	None required
	Quota trading system	I	I	Risk reduced, if implemented	High transaction costs of leasing quota, potential underutilisation of resource	– Investigating the feasibility of implementing an exchange accessible by all lobster fishers transferring quota and implementing the outcomes of the investigation
	Section in EIS	B4.5.3	E3.1, E3.3		B4.5.3	

*Component	Sub-Component	Current Risk Level	Number of Entities	Potential risk reduction by draft strategy	Issues arising from Risk Assessment	*Programs in draft strategy to mitigate risk
Social	Social capital					
	Age structure of fishers	L	-		Potential loss of social capital as many fishers reach retirement	None required
	Labour mobility	L	-		Limited labour mobility of fishers	None required
	Economic viability	I	-	Risk reduced	Poor economic viability may impact fishers' social capital	– Several measures are outlined above in the section on economics
	Health and safety	I	-	Beyond scope of strategy	Relatively high rates of injury causing loss of income	– Draft strategy notes importance of adherence to occupational health and safety requirements
	Section in EIS	B5.4		E3.3	B5.4	
	Indigenous issues					
	Aboriginal sites	L	-	No change	Impacts unlikely	– Managing the fishery consistent with the IFS – Promoting harmony between the commercial fishery and recreational fishers, Indigenous fishers and local communities, through fair and equitable sharing of the resource – Modifying the activity in response to new information about areas or objects of cultural significance – Continuing to provide a dedicated position on the Lobster MAC for an Indigenous person.
	Aboriginal places	L	-	No change	Impacts unlikely	
	Totem species	L	-	No change	Impacts unlikely	
	Cultural Landscapes	ML	-	No change	Conflicts about access to the resource	
	Socio-economic participation	H	-	Risk reduced to ML	Currently low participation	
	Section in EIS	B5.5		E3.2.2	E3.2.2, Table E3.8	
	European heritage	L	-	No change	None	None required
	Section in EIS	B5.6		E3.2.3		

N = Negligible, L = Low, ML = Moderately Low, I = Intermediate, MH = Moderately High, H = High. N/A = not applicable. U = uncertain

## How the Environmental Impact Statement was Developed

This EIS was developed using a modified framework of the generic risk management process (AS/NZS 4360) acknowledged by Standards Australia and Standards New Zealand. AS/NZS 4360 uses a seven-step process for risk management, but this EIS has added an eighth step in that following the treatment of risk (i.e. the draft strategy), it has re-evaluated the level of risk that would eventuate if the management strategy was to be implemented.

As well as satisfying the environmental assessment requirements of the NSW *Environmental Planning and Assessment Act 1979*, the EIS will also be submitted to the Commonwealth Government to meet the assessment requirements of the Environment *Protection and Biodiversity Conservation Act 1999*.

### Development of the draft strategy

The draft strategy for the Lobster Fishery was compiled with significant input from the Lobster Management Advisory Committee (LobMAC). The LobMAC includes elected representatives from the fishery, recreational fishers, and the Nature Conservation Council. Input into the draft strategy was also sought from the Minister for Primary Industries' advisory councils on commercial fishing and recreational fishing. Government agencies, such as DIPNR and the Commonwealth Department of the Environment and Heritage, have been consulted during the drafting of the EIS.

The draft strategy for the Lobster Fishery contains the proposed rules for management of the fishery, but it is much more than a collection of rules. The strategy contains the objectives for the fishery, a detailed description of the way the fishery operates, and describes the management framework for at least the next five years. It also outlines a program for monitoring the environmental, social and economic performance of the fishery, establishes trigger points for the review of the strategy, and requires regular reporting on performance in order to ensure that the strategy meets its objectives.

### Development of the environmental impact assessment

The environmental impact assessment and the draft strategy have been developed concurrently, in a series of steps. The draft strategy assessed here is in fact the second draft of the strategy. The process has been designed to give early feedback and allow a response to the predicted environmental impacts of the management proposals. Each draft of the strategy is then modified to ensure that the proposed management framework appropriately addresses the environmental impacts identified during the assessment process.

One difference between assessing the impacts of an existing activity and assessing, for example, a new building development is that the activity being assessed already exists. Consequently, any changes to the fishery and levels of production will have direct social and economic impacts on already-established businesses, commercial fishing and related industries. It is important that when the impacts of proposed changes are assessed time is allowed, where appropriate, for industry to adjust to any required changes.

The assessment of fishery impacts is also much more difficult than is the case with many other natural resources because, in comparison to our knowledge of terrestrial resources, much less is known about aquatic ecosystems. The environmental assessment acknowledges such uncertainty and,

where there is little information upon which to draw definitive conclusions, the precautionary principle is applied. The precautionary principle, a key component of the principles of ESD, states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent that environmental degradation.

## **Consulting the Community**

You are invited to make written submissions on the Environmental Impact Statement on the Lobster Fishery in NSW, which is on public exhibition until 4 February 2005. The full EIS can be viewed at fisheries offices of NSW Department of Primary Industries, the head office and regional offices of the Department of Infrastructure, Planning and Natural Resources, NSW Government Information Service, local councils and the Sydney office of Environment Centre (NSW) during normal business hours. A paper or CD copy can be purchased for \$25 (includes GST) by contacting the Department of Primary Industries on 1300 550 474. It is also available on the Fisheries section of the NSW Department of Primary Industries website at [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au).

For more information, visit: [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

### ***Would you like to comment?***

Write to:            Environmental Impact Statement Submission  
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                         PO Box 21  
                         CRONULLA NSW 2230

Fax:            (02) 9527 8576 (marked attention "Lobster Fishery EIS Submission")

Email: [lobster.eis@fisheries.nsw.gov.au](mailto:lobster.eis@fisheries.nsw.gov.au)

If you wish your name and address to remain confidential, your submission should be so marked.

***Submissions must be received by 4 February 2005.***