Project No. 2000/269

Marine Scalefish Sector
Seafood Services Australia (SSA)
Food Safety Pilot Project

South Australian Seafood Industry Council (SAFIC)

TITLE PAGE

Title: Marine Scalefish Sector –Seafood Services Australia - Food Safety Pilot Project

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Summary

Introduction

This project concentrated on reviewing the SeaQual food safety guidelines to ensure that they were pragmatic and relevant to various fishing industry sectors.
In particular it was important to demonstrate that developing a food safety plan can be done at any level in the industry. To date there had not been much work done in relation to food safety in small, multi species multi method fishing operations.

The original SeaQual food safety guidelines for harvesting, processing and retailing seafood were developed specifically to meet the requirements of Victorian legislation. It was these guidelines which were used during the project.

The project was developed to assist four (4) scalefish enterprises to develop and implement food safety programs utilising the SeaQual guidelines and template. These sectors were identified by the South Australian Seafood Industry Council (SAFIC) and included:

- Marine scale net fishing
- Marine scale line fishing
- Fresh water drum and net fishing
- Marine crab fishing

Objective

The specific objectives of the pilot project were to:

1. Develop and implement food safety plans for selected marine scale fish enterprises using the SeaQual food safety guidelines for harvesting seafood and the accompanying food safety plan template.
2. Provide input and feedback to Seafood Services Australia on how to improve the SeaQual guidelines and template for use by other fishing operations.
3. Develop capacity within the SA Marine Scale Fishery to identify and manage current and potential food safety risks.
4. Review the project and obtain feedback, particularly in relation to the ANZFA Food Safety Standards, SeaQual template and the draft SA Food Bill.

Methodology

A consultant was engaged to deliver the project and the methodology utilised included:

- An initial introductory meeting with each enterprise to explain the project and obtain a broad understanding of the fishing sector
- A one day meeting with the consultant to develop the food safety plan
- A review meeting with all enterprises, SAFIC and the consultant to discuss the project and develop suggestions for improvement
- Compilation of this report

As a result of the methodology each participant developed a food safety plan which included:

- HACCP plan
- General procedures
- Forms/records

Summary, cont.

Benefits
The templates developed for the four (4) industry sectors a will enable the industry sectors to capture the potential benefits of having a greater customer focus ie profitable, sustainable internationally competitive industry.

The project has provided direct benefits to those operators in the Marine Scale Fishery in South Australia and indirectly provided benefits to all fishing

Recommendations
An evaluation process undertaken with a review group during the project identified a number of recommended changes to the SeaQual template including:

1. HACCP Section
It is highly recommended that the SeaQual template for the HACCP section include:

- Product descriptions
- End product specifications
- Risk assessment
- Verification schedule
- Work instructions for critical control points (CCPs)
- Details on approved supplier programs

This will ensure that the template meets minimum requirements for Codex HACCP programs audited throughout Australia.

In most instances the new "SeaQual Guide to HACCP and QA" provides information on the gaps listed above and is an excellent tool for the industry.

2. Resources
Provide a list of resources for identification of critical limits for Critical Control Points (CCPs). e.g. websites where reference material can be obtained.

Conclusion
In conclusion, the SeaQual guidelines and template are a valuable tool when combined with "one to one" mentoring and implementation support.

The challenge expressed by SAFIC and the operators is to implement food safety programs throughout the industry. The review group decided it was essential that implementation included the following elements:

- Food Safety Program (HACCP) training in small groups of similar operators (eg line fishing) utilising the models in appendices 2, 3, 4 and 5.
- Individual training/mentoring for each operator
- Individual follow-up with each operator (eg 6 months after implementation)

1. Introduction & Acknowledges

The pilot project of the Scalefish sector was developed to assist four (4) scalefish enterprises to develop and implement food safety programs utilising a SeaQual template. The enterprises were from the following sectors:

- Marine scale net fishing
- Marine scale line fishing
- Fresh water drum and net fishing
- Marine crab fishing

The fishing operators who participated in the project were:

- John Vorstenbosch
- David Cain
- Bart Butson
- Jeff Wait

South Australian Fishing Industry Council (SAFIC) co-ordinated the participants and the program was funded by the Fishing Research and Development Corporation.

Wendy Davidson Enterprises Pty Ltd provided consultancy services to facilitate the development of the project.

2. Background

In April 1999 Seafood Services Australia published a set of SeaQual Food Safety guidelines for harvesting, processing and retailing seafood. These guidelines were funded by FRDC (through the National Seafood Centre) and developed with the assistance of Seafood Industry Victoria and were based on the legislative requirements of that State.

Also at that time FRDC funded the establishment of Seafood Services Australia (SSA) Stage 1: Seafood quality management and seafood safety - SeaQual Australia. Further development of the SeaQual Chooser, the SeaQual Information Packs and the SeaQual Guidelines has continued under this project.

Over the past 18 months significant effort has been directed at the establishment of state based industry/government networks to provide input to further development and distribution of SeaQual and other SSA products and services. In South Australia a Quality Committee has been formed with membership from SAFIC, the South Australian Seafood Council and PIRSA. The General Manager SAFIC is a member of the committee and is a participant in the national SeaQual Advisory Group.

2. Background, cont.

The Marine Scale Fishery in South Australia is a multi-method and multi-species fishery with over 500 licence holders taking over 120 species of fish using a large number of fishing methods. Each licence holder has a number of fishing devices registered for use and a variety of conditions of use apply to each licence.

Over the past 18 months the Marine Scale Fishery has been under review and various actions aimed at improving the efficiency and profitability of the businesses have been identified.

3. Need

With the establishment of state based networks it is increasingly important to ensure that the products and services developed and delivered by Seafood Services Australia are relevant to and driven by local needs.

The original SeaQual food safety guidelines for harvesting, processing and retailing seafood were developed specifically to meet the requirements of Victorian legislation. Since then there have been changes in the development of the ANZFA national food safety standards as well as a number of SSA initiatives including the seafood food safety risk analysis and the development of a national seafood food safety emergency management plan. The National Seafood Industry Training Package, released in March 2000, identifies food safety as one of the core competencies for anyone working in the seafood industry.

It was timely to review the SeaQual food safety guidelines to ensure that they were pragmatic and relevant to various fishing industry sectors. In particular it was important to demonstrate that developing a food safety plan can be done at any level in the industry. To date there has not been much work done in relation to food safety in small, multi species multi method fishing operations.

Demonstrating that the SeaQual food safety guidelines are useful pragmatic tools relevant to the whole industry will be an important aspect in developing the customer focus necessary to achieve an internationally competitive industry.

4. Project Objectives

The objectives of the pilot project were to:

1. Develop and implement food safety plans for selected marine scale fish enterprises using the SeaQual food safety guidelines for harvesting seafood and the accompanying food safety plan template.

2. Provide input and feedback to Seafood Services Australia on how to improve the SeaQual guidelines and template for use by other fishing operations.

3. Develop capacity within the SA Marine Scale Fishery to identify and manage current and potential food safety risks.

4. Review the project and obtain feedback, particularly in relation to the ANZFA Food Safety Standards, SeaQual template and the draft SA Food Bill.

Note:
The food safety programs must meet the requirements of the proposed ANZFA Food Safety.

5. Methodology

The methodology utilised in the project included:

- An initial introductory meeting with each enterprise to explain the project and obtain a broad understanding of the fishing sector
- A one day meeting with the consultant to develop the food safety plan
- A review meeting with all enterprises, SAFIC and the consultant to discuss the project and develop suggestions for improvement
- Compilation of this report

6. SeaQual Template

Food safety templates developed by SeaQual were utilised and include:

- SeaQual food safety guidelines for seafood harvesting (1st Edition April 1999)
- Quality Fish Catchers Pty Ltd - Food Safety Program template

The food safety guidelines were used as a briefing document for the fishing operators. The Food Safety Program template was used to develop individual programs for each operation.

7. Results

In developing each food safety program the SeaQual template was used. The template is reproduced in Appendix 3. The template included the following elements:

Procedures
1. Company Policy
2. Key Staff & Responsibilities
3. Crew Training Procedure
4. Cleaning Schedules
5. Pest Control Procedure
6. Personal Hygiene Standards
7. Trawling Procedure
8. On board Handling and Storage Procedure
9. Unload and Distribution Procedure
10. Hazard Analysis & Critical Control Point (HACCP)
11. Customer Complaint & Recall Procedures

Forms
A. Crew Training Matrix
B. Cleaning Roster
C. Fish Catch & Distribution Record
D. Process Flow – Catch to Distribution (example)
E. Hazard Analysis Table – Catch to Distribution (example)

During each session with the fishing operators the template was used as a guide. Specific procedures and supporting documents were developed and are reproduced in Appendices 4, 5, 6 and 7.

The template provided the necessary guidance for operators to be able to complete fundamental procedures (excluding procedure 10 above, HACCP). The HACCP component of the program was separated from the Quality Manual (ie procedures 1-9 and 11 above).

Whilst the template for procedures 1-9 and 11 were adequate the HACCP section (procedure 10) had specific aspects missing, which included examples of:

- Product descriptions
- End product specifications
- Risk assessment
- Verification schedule
- Work instructions for critical control points (CCPs)

7. Results, cont.

These HACCP sections were included in each operator Food Safety Program to ensure compliance with the proposed ANZFA and SA Food Regulation changes.

8. Planned Outcomes

At the commencement of the project the planned outcomes were to provide the tools and develop the capacity within the fishery to identify and manage current and potential food safety risks.

The templates developed for the four (4) industry sectors a will enable the industry sectors to capture the potential benefits of having a greater customer focus ie profitable, sustainable internationally competitive industry.

9. Beneficiaries

The project will provide direct benefits to those operators in the Marine Scale Fishery in South Australia and indirectly provide benefits to all fishing operators in Australia.

10. Evaluation

Following the development of each food safety program a meeting was conducted with the operator, SAFIC and the consultant. The aim of the meeting was to:

- Review the level of achievement
- Identify the strengths and weaknesses of the program
- Develop suggested improvements
- Identify mechanisms to continue implementation across the industry

10.1 Level of Achievement

All the operators participating in the program developed the food safety program and were very satisfied with the level of support received during the project.

10.2 Program Strengths and Weaknesses

The following strengths and weaknesses were identified:

- **Strengths**
  - Each operator indicated that the individual mentoring provided by the consultant was critical in developing the program. Without this input the programs detailed in the Appendices would not have been achieved. The mentoring included provision of specific reference material for the risk assessment and individual training and explanation of HACCP principles.
  - The mentoring service which included typing and printing the program on site at the meeting.
  - A simplistic template which did not require exhaustive procedures or complex forms.
  - Sense of security
  - Providing safe fish
  - Some customers prefer fish from operators with HACCP
  - Providing a better quality product

- **Weaknesses**
  - It takes time to implement
  - Some members of the industry will struggle to implement HACCP
  - Need buyers to put pressure on operators to implement HACCP
  - Even with simple forms there is more time required

11. Further Development

HACCP Section

It is highly recommended that the SeaQual template for the HACCP section include:

- Product descriptions
- End product specifications
- Risk assessment
- Verification schedule
- Work instructions for critical control points (CCPs)
- Details on approved supplier programs

This would ensure that the template meets minimum requirements for Codex HACCP programs audited throughout Australia.

In most instances the new "SeaQual Guide to HACCP and QA" provides information on the gaps listed above and is an excellent tool for the industry.

Resources

Provide a list of resources for identification of critical limits for Critical Control Points (CCPs). e.g. websites where reference material can be obtained.

12. Industry Implementation

The challenge expressed by SAFIC and the operators is to implement food safety programs throughout the industry. The review group decided it was essential that implementation included the following elements:

- Food Safety Program (HACCP) training in small groups of similar operators (eg line fishing) utilising the models in appendices 4, 5, 6 and 7.
- Individual training/mentoring for each operator
- Individual follow-up with each operator (eg 6 months after implementation)

The group also noted that if "do-it-yourself" kits were developed with the view of operators completing the program by themselves, this process would **not** be successful.

13. Conclusion

The SeaQual guidelines and template are valuable tools when combined with "one to one" mentoring and implementation support.

Several aspects of the template require adjustment to reflect Codex HACCP implementation requirements (refer to section 11)

It is recommended the models be used to assist the development of food safety programs throughout the industry.

It is recommended that the "SeaQual's Guide to HACCP and Quality Assurance" be utilised in conjunction with the template.

APPENDIX 1

Intellectual Property

Intellectual Property

FRDC holds 58.89% of intellectual property and the remainder is shared between SAFIC and the four participants. This is with the exception of food safety plan templates and guidelines provided by SSA or the consultant.

APPENDIX 2

Organisations Engaged During the Projects

Organisations Engaged During the Projects

The project was managed by Lorraine Rosenberg of SAFIC

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APPENDIX 3

SeaQual Food Safety Program Template

SEAQUAL FOOD SAFETY GUIDELINES FOR SEAFOOD HARVESTING

1st Edition April 1999

SeaQual Australia is a partnership between industry and governments to increase profitability and sustainability through quality management.

These Food Safety System Guidelines have been prepared by SeaQual Victoria, with funding assistance from the National Seafood Centre, in response to recent food safety legislation changes in Victoria and to the proposed changes at the national level.

Written in consultation with government and industry stakeholders (including the Australia New Zealand Food Authority, Food Safety Victoria and Fisheries Victoria) these guidelines provide you with the information needed to understand the regulatory requirements and includes suggestions on how to develop your own food safety program.

Given the speed at which changes are occurring in the food safety area we recommend that you **check with your local authority to ensure that local specific requirements are addressed in your food safety program**.

Subsequent editions incorporating other State based and/or national legislative requirements will be published so **check with SeaQual Australia to ensure that you have the latest edition of these guidelines.**

Note: These guidelines are currently being updated to include aspects of aquaculture operations. These are expected to be available in mid 1999.

Contacts for further information and assistance are provided at the end of this book.

Contents

1. Background

Wallis Lakes Oysters, Garibaldi metwurst, Kraft peanut butter - Everyone will be aware of the increased number of food poisoning outbreaks, the tragic effect on the individuals poisoned and the tragic consequences to the business; even whole industries.

Governments recognise that routine inspection of food businesses is ineffective. New regulations already in force in Victoria and proposed for the rest of Australia will require processors, wholesalers and retailers to identify food safety hazards and develop their own food safety program describing how hazards are controlled to minimise risk of contamination.

How does this affect the harvesting sector? At the present time there is no legislation which demands a Food Safety Program, however those further down the supply chain at the markets and processors will need to demonstrate the suitability of the seafood they supply and in turn will place demands on the catchers. Following the suggestions in this guideline should help to ensure a safe and wholesome seafood supply.

The foundation of any food business is Good Manufacture Practice (GMP) or Good Hygiene Practice (GHP). GMP is all about getting the basics right. Before considering catching seafood the vessel must be properly constructed, equipment must be suitable for the purpose, the surfaces clean and staff hygienic. The first two sections cover these issues.

The next section suggests items to consider during catching, handling, storing, and distribution of seafood. This covers how the vessel operates and what operations might introduce food safety risks.

Section five pulls together all the information from the previous sections and offers suggestions as to how to prepare a Food Safety Program, thus meeting potential regulatory requirements. **An accompanying disc contains an outline Food Safety Program that can be adapted for vessels.**

The final sections provide more detail on food regulation, the Hazard Analysis & Critical Control Point (HACCP) technique and a list of contacts for further information and advice.

2. Vessel Construction & Equipment

2.1 Vessel Construction

Specific construction requirements for vessels may be found in various State and other Government regulations. Many of the regulations are designed to protect the safety of employees through sound construction and provision of safety equipment. This section is concerned with how the construction and equipment might adversely affect the safety of the seafood.

'Safe Food' means food that will not cause harm to a person who consumes the food when it is prepared, stored and/or eaten according to its intended use (definition - Australia New Zealand Food Authority).

Food may be unsafe because it is contaminated with:-
- microorganisms (e.g bacteria) which may cause food poisoning
- foreign objects (e.g glass) which may cause damage
- chemicals (e.g pesticides/detergents) which may cause sickness.

What are some of the issues in relation to construction? Does your vessel comply with the following?

To prevent contamination:-
- bilge, oil, grease, drainage etc. cannot contaminate fish
- surfaces in fish handling areas smooth, impervious, non toxic ie. prevent contamination with fish slime, blood, gut, etc.
- adequate hand washing & toilet facilities
- plumbing and waste lines can cope with peak demand
- clean sea water intake away from waste outlet
- prevent entry of birds, vermin, pests
- separate facilities for offal & waste materials

For ease of cleaning:-
- all fish contact surfaces corrosion resistant, smooth, easy to clean
- vessel construction avoids sharp corners to avoid dirt traps
- construction allows ample drainage
- good supply of clean sea water or potable water at adequate pressure

To minimise damage to fish:-
- surfaces have no sharp corners or projections
- boxed or shelved fish storage avoids excessive pressure on fish
- if kept in r.s.w. fish density controlled to prevent damage
- chutes & conveyors prevent physical damage from long drops

To minimise spoilage:-

- design minimises exposure of fish to elements
- design permits quick & efficient handling of fish
- facilities for storage of ice
- if chilled sea water used , adequate cooling capacity

The above list was extracted from the draft recommended International Code of Practice for Fish and Fishery Products (1997) prepared by the Codex committee. This committee provides information on good practice internationally and the guidelines cover a range of different businesses.

Not all the above will be relevant to your vessel, particularly small day boats, but if it is and you do not comply, what can you do to prevent a risk occurring?

2.2 Equipment & Utensils

This relates to any specific equipment, containers or tools (knives, etc.) which come into contact with the fish.

Essential requirements are the same as for fish contact surfaces - corrosion resistant, easy to clean, avoid dirt traps.

Containers should be sound, clean, "fit for purpose" and not lead to crushing of the fish - *do fish market crates comply?*

Utensils covers knives, etc. and the issues to consider are exactly the same. What are they used for, are they suitable for the purpose and are there sufficient to ensure the same utensil is not used for different tasks

2.3 Services

It is also necessary to consider services such as refrigeration, water supply. If you buy in ice make sure the supplier regularly tests the ice to ensure it is free from harmful bacteria i.e. "potable". Does the pump give enough seawater pressure for proper cleaning? Is the refrigeration adequate for chilling? Is there a maintenance program?

3. Cleaning and Personal Hygiene

3.1 Cleaning Vessels & Equipment

Without clean surfaces and equipment there will always be a chance of contamination and thus a potential food safety risk.

Cleaning programs often fail because:-

- the cleaning methods are not effective **(Methods)**
- crew are not trained how to clean **(Training)**
- the cleaning tools, including cleaning chemicals, are unsuitable **(Tools)**

3.2 Methods

Cleaning programs are best decided between the owner and the supplier of the cleaning chemicals. There are so many different chemical combinations in use that it is impossible to provide a simple guideline, but the principles of cleaning involve four steps:-

1. Remove loose dirt
2. Wash
3. Sanitise
4. Dry

Loose dirt is removed by brushing or hosing the deck, surfaces, bins etc. The less dirt to be cleaned the more effective the cleaning and less detergent used. Clean up loose dirt around the boat as often as practical.

Washing uses detergents, which help break down fats and grease. Washing will remove the stuck on dirt and grease, but does not necessarily remove all the bacteria (germs).

Sanitisers are used to remove, or reduce to a safe level, any germs that remain. Very hot water (70 – 80°C) is a sanitiser, but on board often chemicals are used. Instructions for the use of chemicals must be followed as there may be a minimum contact time with the chemical for effectiveness and it may need rinsing with water afterwards.

Drying is important as germs like water and it is easy to transfer germs from wet surfaces. If possible allow surfaces to air-dry naturally eg inverted fish bins. It also allows time for the sanitisers to work.

3.3 Training

Instruction involves Demonstration, Observation and Testing.

DOTting the 'i' on instruction is important to ensure the cleaning is effective.

The cleaning technique should be *Demonstrated*, the trainee *Observed* in carrying out the cleaning and then *Tested* occasionally to ensure they have not forgotten or missed an important point.

The demonstration should include the 'why' of cleaning not just the 'how' as staff can always find a quicker way. If sanitiser contact time is important state why the time must not be shortened.

Observation ensures that what is obvious to the trainer is also obvious to the staff being trained, even rinsing the deck involves technique and obvious details, such as rinsing away from not towards the fish processing area, may be missed.

Testing by observation every now and again is advisable to check that the cleaning technique remains thorough. Written cleaning instructions can be useful, particularly dilution and safe use of chemicals - get the chemical supplier to provide laminated instructions.

The biggest problem with giving instruction about removing germs is that you can not see their removal and staff may doubt the need.

3.4 Tools

Tools are what you use to do the cleaning. If the brush has bristles missing it cannot scrub the bin properly. If the hose has no pressure, how can it effectively rinse? Make sure the cleaning chemicals are appropriate and allocate the task of ordering chemicals and maintaining adequate stock.

3.5 Pest Control

Pests can introduce food poisoning bacteria eg salmonella and their control is an important part of a food safety program.

No animals should be allowed on board, fish should be protected from birds, particularly bird droppings. Insects and vermin need food to breed. Rubbish and waste food should be secure in bins. Take particular care during the summer.

3.6 Personal Hygiene

Staff training in personal hygiene is a vital part of minimising the risk of a food poisoning or contamination incident affecting your business.

Crew appearance

- Hair should be short or tied back.
- Clothes should be tidy; aprons must be clean
- Gloves can be a problem. Whilst they avoid contamination by hands, gloves are easily contaminated. Wash gloves often.
- Footwear should be enclosed and the soles non-slip
- Smoking and eating during the handling and preparation of fish is forbidden.

Hand Washing

This is a fundamental not only because of its importance in prevention of bacteria transfer, but hand washing is an effective reminder of the need for good personal hygiene.

There should be a dedicated hand wash basin that is not used for any other activities. It should be equipped with soap, preferably a liquid soap (not perfumed) dispenser, a supply of warm water, nail brush and single use paper towels.

Staff training should cover, why hands are notorious agents for transferring germs, how to wash hands thoroughly, including thorough drying as wet hands transfer bugs more easily.

Training should also cover why wash hands

- before handling food & seafood
- after using the toilet
- after blowing your nose
- after touching hair, body or face
- after handling rubbish

N.B. On small boats without hand washing facilities, the use of a sanitiser for hands and gloves is recommended.

Sickness

Crew should be encouraged to report all sickness, even if it has apparently cleared up and they are fit for work. Keep a log book of all incidents and reports. Diarrhoea and infectious diseases are more serious if there is the slightest risk of food contamination by infected food handlers

4 Catching, Handling, Storage & Distribution

4.1 Safety of Raw Seafood

Provided fish are caught legitimately by commercial fishermen in uncontaminated waters, then rapidly chilled, there are few food safety concerns.

Examples are:-

Biological safety hazards

Parasites e.g nematodes	not a problem unless fish eaten raw or undercooked
Biological toxins e.g ciguatoxin	warm water, reef fish - is not destroyed by cooking
scrombrotoxin	histamine in tuna, mackerel - poor chilling
Pathogenic bacteria e.g vibrio	warm water - rapid chilling & cooking prevent growth
clostridia, listeria	not found in the flesh, contamination from skin, gut, gills. Fish usually spoil before becoming toxic

Chemical safety hazards

Heavy metals e.g mercury	high levels in shark, ling, predatory fish
other metals	contamination from industrial waste, sewage, etc.

Once landed, however, contamination can occur from handling through storage and distribution. Quality of fish is critically dependent on good handling practices and the following notes are intended to provide information on some of the issues that may be important. Not all will be relevant to your fishing operation.

4.2 Catch Location

For most fisheries the skipper may catch fish within any designated area or zone applicable to the fishery. The fishing zone is generally related to territorial or fish management issues, not food safety.

Occasional closures due to the risk of contamination usually apply to shellfish rather than finfish, but the skipper is expected to be aware of any issues and to record the catch location in the daily log.

4.3 Trawl Time

Trawl time is related to a number of factors. From a food safety and quality perspective the time of trawl should be regulated to minimise fish damage and dead fish deteriorating during the trawl. For large catches the ability to handle and chill the fish rapidly may also be a factor.

4.4 Handling on Board

Whilst most fish will spoil before becoming unsafe, there are exceptions most notably histamine poisoning in scombroid fish – mackerels and tuna. Histamine is formed from the breakdown of the protein component histidine at elevated temperatures.

Handling procedures on board should be designed to ensure the rapid chilling of fish and minimise exposure to the sun. If the fish is to be headed, gilled and/or gutted before ice storage this must be done rapidly, although gutted fish will chill more rapidly than whole.

Handling also includes discarding any poisonous or potentially unsafe fish e.g. large shark.

Crew training in the reasons for rapid handling of fish should be carried out. A reminder notice by the landing deck may also be useful.

4.5 Processing and Storage

Processing techniques vary with the species. Correct gutting of shark to prevent blood (urea) contamination is an example of a particular technique.

General contamination is a risk with any form of processing and the instructions should focus on this. Is there sufficient sea water available at an appropriate pressure to cleanse and rinse the fish? Was the area clean before starting?

Rapid chilling and storage of fish requires ice, or refrigerated sea water, or refrigerated brine. As it is the water from melting ice that takes away the heat from the fish, finely divided flake ice will be much more efficient than blocks of ice. It is also likely to be less damaging to the fish.

If the fish are stored in holds or are precautions taken to prevent crushing of the fish at the bottom?

Since fish are deteriorating from the moment of landing, often from the moment of catch, the time from landing to icing should be controlled (set limits) and the efficiently of the icing measured by checking fish temperatures after a couple of hours storage. Reducing the fish flesh temperature below 5^0C in four hours from catch should be the aim to maximise quality. Is the ice clean and made from potable water?

4.6 Labelling of Catch

Recording of catch statistics may be required for fisheries returns. Labelling of catch is required for product trace purposes. Proposed regulations will require food businesses to be able to recall product should the need arise. This implies a trace system that operates from catch through wholesale and distribution to the retailer.

Where fish are stored in bins each bin should be labelled with the species, date of catch, vessel/company and approximate weight.

Where fish are stored in holds or tanks and where these may contain the contents of a number of different trawls or even different days catch, this obviously becomes more complicated. At least the date of landing, together with the species, vessel, etc. should be applied to the fish baskets during unloading.

4.7 Unloading and Distribution

Having taken the trouble to ensure the boat lands a quality safe catch of seafood it makes obvious sense to ensure that is maintained during unload and distribution.

Again, a variety of techniques apply at unload. The iced fish in bins may simply be transferred to a truck and sent to market, re-iced and sent, or in the case of bulk fish transferred to bins or stillages.

The critical factors are temperature control and prevention of contamination.

Iced fish should not be allowed to rise in temperature. The fish should be immediately transferred in ice and not allowed to warm up or be exposed to the sun. Fish landed warm must be immediately cooled with finely divided ice.

Contamination can occur from the use of dirty bins, dirty ice, dirty hands or dirty equipment. Even if the bins and ice are being supplied by the distributor, it is your fish and your reputation. Insist on the same precautions being used on land as are used at sea.

Check if the truck is clean and the refrigeration operating. If the truck is not refrigerated, is there enough ice on the fish to prevent exposure of the fish to a higher temperature during distribution.

Finally, check the fish is fully labelled before distribution

Note: Transport is a food handling operation to which the Victoria regulations and the ANZFA proposed Standards will apply. Transport owners and operators will, therefore, need to develop a simple food safety program

4.8 Training

Occupational health and safety training of crew is now automatic, with severe penalties for owners and skippers who neglect safety precautions.

Training in the safe handling of catches for food safety is a natural extension of that procedure.

A training manual covering all training needs is recommended. A simple training matrix can be prepared which lists crew, training required and training to be completed.

The trainer signs off the completion of training. The trainer should be competent in the skills required and where appropriate formally qualified. The Food Act Victoria defines a food safety instructor (see section on Food Regulations).

5. Food Safety Program

Previous sections have covered Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP) and the process from trawl to distribution of catch.

This section describes how to prepare a Food Safety Program, pulling together information from the previous sections and introducing the Hazard Analysis and Critical Control Point (HACCP) technique (see also Section 7)

More information regarding food safety regulations is provided in Section 6. In brief, the Food Act Victoria defines **a food safety program as a written document which**:-

- identifies and analyses hazards
- identifies where and how hazards are controlled
- covers supervision and monitoring of controls
- states how, when not in control, hazards are brought back under control
- must include the keeping of records.

5.1 Hazard identification

This is a major part of the HACCP technique, but first it is important to identify all the actions or steps that occur in the process.

Considering the simple process of catching, gutting and icing fresh fish, then returning and unloading, the actions/steps might be:-

> Trawl fish, land fish, sort, gut, wash, ice in bins, store, unload, distribute.

The next task is to consider what hazards might apply for each step in the process. The word "might" is emphasised. We hope none of the hazards actually apply, but if they could happen they should be included.

As stated in Section 2, food may become unsafe because it contains :

microorganisms (e.g. bacteria) which may cause food poisoning
foreign objects (e.g. glass, metal) which may cause damage
chemicals (e.g. pesticides/detergents) which may cause sickness

These are the food safety hazards.

Assessing the process for hazards may give:-

Process Flow - Catching & Distributing Fresh Fish (Gutted)

Step	Potential Hazard
Deploy net and trawl	Fishing in contaminated waters. Impact of length of trawl on fish - dead, stressed, unsafe fish
↓	
Land and sort	Contamination from by-catch. Spoilage from too long sort in sun; damage on landing
↓	
Gut and wash	Contamination from gut; contaminated sea water or insufficient hose pressure to clean
↓	
Box and ice	Contaminated fish box and/or ice. Damage (crushing); deterioration - insufficient ice or not iced quickly enough
↓	
Store and return to port	Deterioration - too long/too little ice. Contamination - dirty boxes stacked on each other. Damage - crushed fish in bottom box
↓	
Unload, re-ice and load transport	Contamination during transfer; contaminated ice. Contamination from vehicle
↓	
Distribute to customer or market	Deterioration - insufficient ice for journey. Vehicle not refrigerated. Contamination - open vehicle, tarpaulins, etc.

All of these hazards have already been considered in earlier sections, but this 'hazard analysis' brings them into focus in relation to the product. It also emphasises the build up effect of poor quality.

If the fish is of poor quality when landed it can only get worse during storage and distribution.

5.2 Controls

These must be introduced to ensure the identified hazards do not happen. Obvious controls are measurements such as temperature, but visual controls and the natural controls resulting from trained crew are just as important.

In identifying controls, consider also the acceptable tolerances - if the fish is to be sorted within half an hour will you accept 1 hour? Who is to carry out the check and how (monitoring procedures) and finally, what action will be taken (corrective action) if the limits are exceeded?

This is conveniently put together in a '**hazard analysis table**'.

Note the hazard analysis table on the next page is an example only. Each business will have to review their own processes, identify hazards and set their own control limits.

5.3 Critical Control Points

These are controls related to food safety where failure to meet the specified targets could result in a hazard to health. Fresh fish usually spoils and becomes inedible before it becomes unsafe. An exception is oily fish at risk of histamine formation through poor temperature control after catching. Also temperature control of ready to eat 'sashimi' is critical to prevent the growth of any food poisoning organisms that may have been accidentally transferred onto the fish.

No attempt has been made in these guidelines to identify all critical control points. These need to be determined by each business, however tight control of temperature and prevention of cross contamination applied to all produce and processes will be a major factor in reducing safety risks whilst enhancing quality.

In the case of fish, most of the hazards are introduced after catch and relate to contamination from unclean bins, ice, people etc.

A separate hazard analysis would be required for each different process e.g. if cooking on board or filleting as well as gutting fish.

It takes time and practice to become familiar with the HACCP technique, but it is not impossible, as all the controls should already be in place as part of Good Handling Practice.

Hazard Analysis Table – Trawl to Distribution of Fresh Fish

Step	Hazards	Control Points	Monitoring Procedure	Target/ Tolerance	Corrective Action
1. Trawl	Contamination of fish in water Deterioration of fish	Location of trawl Trawl time	Skipper ensures trawl carried out in approved zone & monitors trawl time	Trawl only in approved zone. No dead fish floating in area Trawl time max 2 hrs (?)	Cease trawl. Hold or dump any fish caught in wrong place. Inspect all fish after long trawl.
2. Land/Sort	Unsafe fish Contamination Deterioration	Visual Sorting Time	Crew sorts fish immediately on landing; monitoring time and visually checking	All by catch or unacceptable fish (eg large shark) returned to sea, sort completed within $^1/_2$ hr	Fish shaded if sort extended
3. Gut/wash	Contamination	Visual Gutting method	Crew guts & cleans using plenty of clean sea water, checks guts separated from fish	No adhering gut, fresh clean fish; meets quality standard?	Regut/clean as required
4. Box weigh & ice	Contamination Deterioration	Visual Ice quality & method	Crew immediately fills clean bin with fish to set weight(*), layers with plenty of ice flakes and on top	No delay after gutting before icing sufficient ice to cool fish & retain for storage. Ice made from potable water, flakes not chunks	Identify and Hold for assessment any long standing fish or insufficiently iced bins
5. Store & return (#)	Deterioration Contamination	Time Trip schedule Visual	Crew loads bins in hold marked with catch & date	Fish landed within 5 days of catch; boxes well iced, not stacked on each other	Over 5 day fish inspected on arrival for suitability, contaminated ice rejected.
6. Unload, re-ice, load transport	Contamination	Visual Ice quality & method	Crew unloads fish & re-ices before loading truck. Skipper checks all tickets attached	Ensures no contamination & only potable ice used	Reject any contaminated. Re ticket if necessary
7. Distribute	Deterioration Contamination	Time/temp Visual	Supervisor checks truck condition refrigeration operating before loading	Clean, enclosed truck, refrig. operating between 0°C-4°C	Wash & sanitise if not suitable; Reject truck if temp exceeded,

(*) Note: Weight control is not a safety or hygiene issue, but is a critical cost control
(#) This relates to overnight boats. Day boats will not require this step

5.4 Putting Together the Food Safety Program

Note, the suggestions below are based on complying with Victoria and proposed national requirements. As indicated earlier the catching of fish is currently not included in the regulations, but you may wish to introduce some of the ideas and prepare your own quality and safety manual. Some on-board processing e.g. cooking would require food safety plans.

The food safety program will need to be reviewed at regular intervals to make sure everything is happening according to the plan and it will need updating if changes occur or new processes are introduced.

If therefore needs to be collated into a format which is easy to use and easy to update. This could be a loose leaf file or refillable display book with plastic pockets. **A disc provided with this guideline contains a 'dummy' manual which you might adapt for your business**.

The front page may simply be the title:

Quality Fish Catchers Pty Ltd
(address & contact Nos.)

Food Safety Program

The second page will be the content or index page. By dating all the pages and changing the date whenever a section is updated or introduced the index can also be used to identify the latest issue, thus:-

	Index	13 Mar 99
1.	Company Details	24 Jan 99
2.	Key Staff & Responsibilities	13 Mar 99
3.	Crew Training	24 Jan 99
4.	Cleaning Schedules	18 Feb 99
	etc.	

The number of sections in the program is going to vary with the size and complexity of the business, and the amount of information you wish to include in addition to the regulatory requirements.

Some suggestions are:-

Company Details

A one page description of the business, may include any comments regarding quality policy and customer service. Must include a statement of commitment to the food safety program signed by the owner.

Key Staff & Responsibilities

Identifies the authorities and responsibilities of key staff. To comply with the Food Act Victoria this will include notification of the Food Safety Instructor and their qualifications (section 6); who is responsible for hygiene training or preparing the cleaning schedules.

Crew Training

It is a requirement of the regulations that all crew are trained to ensure they have the appropriate skills and competencies. Prepare an induction and training form to cover personal hygiene, protective clothing, vessel and equipment cleaning, seafood handling, seafood storage, etc. together with other items such as personal safety, hours of work, rates of pay, etc. As the crew member is trained in each item the instructor and trainee sign the form, which is then kept in a personal file.

Perhaps also prepare a chart which identifies all the necessary skills; which crew are trained for each skill and which need training as a refresher. A glance at the chart will identify whether you have sufficient trained staff for all jobs.

Cleaning Schedules

Master copies of the cleaning instructions and Material Safety Data Sheets. Include any pest control information and instructions.

Personal Hygiene Requirements

Master copy of the personal hygiene requirements, copies of any other instructions issued to crew.

Temperature Records

Master copies of the form to record temperature of iced fish after catch, prior to unload, and temp of distribution truck.
Note also that thermometers may not be accurate temperature gauges and Check your own thermometers monthly in an ice slurry (should be $0^{\circ}C+/-0.5^{0}C$). Some dial thermometers e.g. Teltru can be adjusted, but are also easily twisted out of true. Record results of calibrations and any actions taken.

HACCP Documents

The index should list the process flows and hazard analysis tables.

The actual documents should be kept in the file. It may also help to have copies laminated and placed near the deck sorting area, since the hazard analysis table is the template describing the activity, who does it, what the limits and corrective actions are and any forms used to record results.

Food Recall

The regulations require the proprietor to have the ability to recall food should the need arise. These guidelines have emphasised the need to record date codes of produce when caught to whom despatched and when. As the same requirement for recall also applies to your customers, they will soon start to ask for this information.

In this file keep a contact list and telephone numbers of your local council, environmental health officer and State health contacts e.g. Food Safety Victoria. If there is a recall of product these authorities will be the people to contact initially.

If the recall is the result of something that happened under your control then if you have a food safety program and the problem was not one that you could reasonably have foreseen you may have a defence of "due diligence".

If you do not have a food safety program you may not have a defence and subsequently you may not have a business!

Program Review and Audit (Verification)

This section should include the review plan (dates) and findings, together with results of any external audits by, for example, environmental health officers.

Program review is important. Either some of the processes have changed and not been updated or crew are rigidly sticking to a method of operation which may not be the best.

Typical questions in the review are:

- Is the hazard table accurate, are crew doing what it says?
- Can it be done better without compromising food safety - is there an easier way?
- Are all the forms being completed - if not, why? What can be done to improve?
- How is the training going? Does everyone know their job - have they any ideas for improvement?
- How well is the cleaning done? What about pest control?

It is not necessary to review the whole program at the same time. A schedule might be drawn up which reviews a different section each month. Changes to any food safety documents e.g. hazard analysis tables, can only be made by the food safety instructor, who should sign the documents.

The emphasis in the above questions is on improvement. A food safety program does not have to be a burden and cost to the business. If it is reviewed as part of a total business review this can lead to cost savings, efficiency improvements, waste reduction and greater customer satisfaction.

Validation

The above procedure is *verifying* that the process has not changed and that the standards set are being maintained. *Validation* is the process of demonstrating that critical control limits are effective in controlling food safety hazards. The temperatures used in the examples ($0^{\circ}C$ – $5^{\circ}C$) are well recognised as being appropriate and therefore do not require validation.

However if the tolerances had been set at maximum $15^{\circ}C$, then the owner would need to provide evidence to validate that produce stored at $15^{\circ}C$ cannot support the growth of food poisoning organisms.

6 Food Regulations

The catching sector has traditionally been part of a Fisheries and Agriculture Ministry at State and Commonwealth level, whereas (sea)food processing and retailing came under health.

Food Regulation in Australia has historically been State Health based with local government officers (environmental health officers) randomly checking products and premises for compliance with the Food Standards Code.

Weights and measures (trade measurement) are the responsibility of the State Ministry for Fair Trading/Consumer Affairs

Agreements between the States and more recently New Zealand set up the Australia New Zealand Food Authority (ANZFA). ANZFA are responsible for the Food Standards Code, which controls composition of foods, labelling, advertising, the use of food additives, microbiological standards, etc. A national uniform set of food safety regulations, which include the requirement to develop food safety programs, are currently being prepared by ANZFA. These guidelines have been developed with the proposed changes in mind.

Standard D of the Food Standards Code (currently being rewritten) covers fish and fish products, including canned. It defines fresh fish or chilled fish as fish where the temperature has not been reduced below $-1^{0}C$ (i.e. never frozen); requires ready to eat smoked fish to be free from listeria monocytogenes; sets microbiological standards for cooked prawns and oysters; demands a label showing imported or Country of Origin to be displayed next to fish not originating in New Zealand or Australia.

In Victoria the State government has already amended its Food Act as follows :-

THE FOOD ACT VICTORIA

The Food Act updated to February 1998 provides the legislative framework.

It covers requirements for cleanliness of food premises, food handlers, etc., but not the detail. Responsibilities apply to the proprietor.

The Food Act defines a food safety program as a written document which:-

- identifies and analyses hazards
- identifies where and how hazards are controlled
- covers supervision and monitoring of controls
- states how, when not in control, hazards are brought back under control
- must include the keeping of records

Introduction of food safety programs for different classes of premises at different times is allowed for.

The Act also requires training of all staff by a food safety instructor to ensure they have skills and competencies appropriate for their work, together with a mechanism for the maintenance of those skills and competencies. It also covers recall arrangements. Revisions to food safety programs must be sent to the registration authority within 14 days.

The Act defines a food safety instructor as a person who:-

- knows how to recognise, prevent and alleviate hazards
- knows which food safety competency standards apply and how they apply
- has the ability to train other people to safely handle food

A food safety competency standard is one approved by a relevant state, national, international statutory or regulatory authority.

A food premises must have a food handling arrangement where a nominated food safety instructor agrees to conduct the training required by the program. This must be a written notice to the registration authority detailing the name and qualification of the instructor and the period of the arrangement. The proprietor must ensure the person has the necessary knowledge. The Act does not preclude the proprietor from being an instructor.

The proprietor must also ensure the food safety program is reviewed regularly and audited at specified intervals. The audit determines whether the program has been complied with and whether it is still adequate. The auditor must give a certificate if o.k. and if not provide reasons, action to be taken and time frame. The auditor must check completion of actions within 14 days of the agreed time. If a serious food safety risk is identified, the auditor must notify the registration authority.

Auditors are appointed by a 'certifying body' eg the Secretary or regulatory authority. Auditors must not have written or assisted in the preparation of the food safety program being audited. Council staff must not assist in preparing food safety programs in their local government area except where part of their duties and where there is no financial reward.

Food premises must be registered with the council. The name of the proprietor must be displayed. Application must include a copy of the food safety program. Food premises means 'kept or used for the sale or handling for sale of any food'.

The Act also covers emergency powers, legal proceedings and the operation of the Food Safety Council to advise the Minister. It also allows for regulations covering such as construction standards, temperature control, microbiological standards, protective clothing, etc.

The ANZFA Food Standards Code

The proposed variations to the ANZFA Food Standards Code in relation to food safety are as follows:-

PART 3 - FOOD SAFETY

3.1.1 Interpretation and Application
3.2.1 Food Safety Programs
3.2.2 Food Safety Practices and General Requirements
3.2.3 Food Premises and Equipment

3.1.1 INTERPRETATION AND APPLICATION

Purpose

The standard provides definitions (interpretation) and the categories of business to which the three other food safety standards apply. The objective of the food safety standards is to ensure that only safe and suitable food is sold in Australia.

Some Definitions (Interpretation)

> **food business** means a business carrying on food handling for sale or selling food.
>
> **food handling** includes convey, cook, decorate, deliver, display, distribute, manufacture, pack, prepare, preserve, process, produce, receive, serve, store, transport or treat food.
>
> **hazard** means a biological, chemical or physical agent in, or condition of, food that has the potential to cause an adverse health effect in humans
>
> **proprietor** means the owner, or where the owner is not the occupier, the person in charge of the food business.
>
> **safe**, in relation to a food, means food that is not likely to cause harm to a person who consumes the food when it is prepared/stored and consumed according to its reasonable intended use.

Application

These standards apply to all food businesses and premises in Australia unless the food business is exempt from compliance in whole or in part. Exemptions are being determined, and are likely to include some fishing boats, but not land based processors.

STANDARD 3.2.1 - FOOD SAFETY PROGRAMS

Purpose

This standard is based upon the principle that food safety is best ensured through the identification and control of hazards in the production, manufacturing and handling of food, as identified in Hazard Analysis and Critical Control Point system, or HACCP, adopted by the joint WHO/FAO Codex Alimentarius Commission, rather than relying on end product standards alone. The standard requires each food business to implement a food safety program based upon the HACCP concepts. The food safety program is to be implemented and reviewed by the food business, and is subject to periodic audit by a suitably qualified food safety auditor.

Interpretation

food safety auditor means a person approved as an auditor for the purposes of the Act, and

food safety program requirement means a food safety program that satisfies the requirements of Clause 5.

Application

All food businesses as defined in standard 3.1.1

DIVISION 2. FOOD SAFETY GUIDELINES

General food safety program requirements

A food business must:

a) systematically examine all of its food handling operations in order to identify any hazards;
b) if one or more hazards exist, develop and implement a food safety program to control the hazard or hazards;
c) set out the food safety program in a written document; and
d) comply with the food safety program

Auditing and review requirements

A food business must:

a) retain records demonstrating all action taken in relation to, or in compliance with, the food safety program for use by a food auditor.
b) ensure the food safety program is regularly audited by a food safety auditor; and
c) regularly review the contents of its food safety program to ensure its adequacy and, in any event, review it for that purpose at least once a year.

Food safety programs

.A food safety program must:

a) systematically examine all of its food handling operations in order to identify any hazards;
b) identify where, in a food handling operation, each potential hazard can be controlled and the means of control;

c) provide for the systematic supervision and monitoring of these controls;
d) provide for appropriate corrective action when a hazard is found not to be under control;
e) provide for the regular review of the program by the food business to ensure its adequacy; and
f) provide that appropriate records are made and kept by the food business proprietor to facilitate the maintenance of an adequate food safety program.

STANDARD 3.2.2 – FOOD SAFETY PRACTICES AND GENERAL REQUIREMENTS

Purpose

This standard sets out specific requirements for food businesses and food handlers that, if complied with, will ensure food does not become unsafe or unsuitable. The standard specifies process control requirements to be satisfied at each step of the food handling process. Some requirements relate to the receipt, storage, processing, display, packaging, distribution disposal and recall of food. Other requirements relate to the training of food handlers and their health and hygiene, as well as the cleaning, sanitising and maintenance of premises and equipment.

Many of the food safety practices detailed in the standard have already been covered in the guidelines and are not repeated. Some general requirements are detailed below.

Food handling competencies

Persons undertaking or supervising food handling operations must have:

a) skills in food safety and food hygiene matters, and
b) knowledge of food safety and food hygiene matters commensurate with their work activities

Notification

The proprietor of a food business must, before commencing any food handling operations at a food premises, notify the relevant authority of:

a) the name and address of the proprietor;
b) the nature of the food business; and
c) the location of all food premises used by the food business.

Food Recall

A food business must have in place a satisfactory system for the recall of food that is not safe.

STANDARD 3.2.3 – FOOD PREMISES AND EQUIPMENT

Purpose

This standard sets out requirements for food premises and equipment that, if complied with, will facilitate compliance by food businesses with the food safety requirements of Standard 3.2.2 (Food Safety Practices and General Requirements). The objective of the standard is to ensure that, where possible, the layout of the premises minimises opportunities for food contamination. Food businesses are required to ensure that their food premises, fixtures, fittings, equipment and transport vehicles are designed and constructed to be cleaned and, where necessary, sanitised. Businesses must ensure that the premises are provided with the necessary services of water, waste disposal, light, ventilation, cleaning and personal hygiene facilities, storage space and access to toilets.

Much of the detail in the standard has been covered earlier in these guidelines.

7. Hazard Analysis & Critical Control Point (HACCP)

The Hazard Analysis & Critical Control Point (HACCP) technique, originally devised to provide safe food for the US space program, is used to identify food safety risks throughout all stages of production. Food safety risks are split into three categories:

- physical (e.g foreign objects, glass metal)
- chemical (e.g pesticides, excess food additives)
- microbiological (e.g pathogens above Food Standard Code limits}

Once a food safety risk has been identified the technique requires that controls are implemented to reduce risk to acceptable levels and corrective action taken when control limits are exceeded. Whilst food safety is the first priority, the technique can be equally applied to assist in ensuring regulatory requirements (eg net weight) and customer expectations (e.g flavour, texture) are met.

The HACCP method is additional to Good Manufacturing Practice. In applying the technique to a particular process, fundamentals such as personal hygiene awareness, pest control procedures, equipment cleaning and sanitation, general factory housekeeping, etc. are assumed. Procedures relating to these GMP items are found elsewhere in these guidelines.

Whilst application of HACCP can be adapted to best suit the company's particular needs, it should be based on international guidelines from the Codex Alimentarius Commission, specifically the annex to CAC/RCPI-1969, Rev 3 (1997). The principles of the HACCP system are:-

PRINCIPLE 1- Conduct a hazard analysis

PRINCIPLE 2 - Determine the Critical Control Points (CCPs)

PRINCIPLE 3 - Establish critical limit(s)

PRINCIPLE 4 - Establish a system to monitor control of the CCP

PRINCIPLE 5 - Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control

PRINCIPLE 6 - Establish procedures for verification to confirm that the HACCP system is working effectively

PRINCIPLE 7 - Establish documentation concerning all procedures and records appropriate to these principles and their application

The Codex document also provides 12 guidelines for the application of HACCP principles. The first six of these relate to **Principle 1 - Conducting a Hazard Analysis** and are:-

1. Assemble HACCP team
2. Describe product
3. Identify intended use
4. Construct flow diagram
5. On site confirmation of flow diagram
6. List all potential hazards associated with each step, conduct a hazard analysis and consider any measures to control identified hazards.

The logic of assembling a team is to ensure that all available skills are put to work identifying what actually happens during any particular process and what risks might be involved. In a small business the team may only be one or two people.

The product can be a collective, such as "raw seafood". Intended use is important. Fish is assumed to be raw for cooking before eating. If the intended use is sashimi the hazard analysis must assume "ready to eat" and be more severe in its assessment of hazards.

The flow diagram is the list of steps in the process which must be confirmed by physically going through them all to ensure none are missed.

The identification of hazards should be done first without evaluation, as unimportant hazards can always be removed later. Also consider any hazards because of the confined space on board boat. What impact can other crew have on the hazards? If you can identify a hazard, then identify a method of control. Removing hazards e.g by changing methods of operation is ideal.

All steps in the process are identified, listed sequentially and numbered. For each of these steps any potential hazards are identified, both theoretically and from observation of the process. Each step is originally considered in isolation and hazards noted without evaluation. When this is complete the whole is evaluated such that hazards eliminated by later controls can be removed, together with any covered by existing GMP.

Principle 2 (Guideline 7) - Determine Critical Control Points

Strictly critical control points only apply if there is a food safety risk. It could be argued that precise temperature control of raw fish for cooking before eating is not a critical control point, as the fish will 'go off' before causing food poisoning. However, if the fish is 'off' you have lost money, so it is critical for economics. Temperature control is critical for "ready to eat" seafood

Principle 3 (Guideline 8) - Establish Critical Limits &
Principle 4 (Guideline 9) - Establish a monitoring system for each CCP.
This is setting the standards e.g. "target 2^0C maximum 7^0C", and the monitoring e.g. "skipper checks temperature of truck before loading of fish and records on despatch form".

Principle 5 (Guideline 10) - Establish Corrective Action
Once the standards are set it is vitally important that they are adhered to, not only for food safety, but also for consistency with crew. You want them to stick to the rules, so must you, regardless of how inconvenient or expensive. If in doubt seek professional advice

In the above example the tolerance has been stretched to 7^0C, making allowance for difficulties in keeping below 5^0C, but what action is taken if the truck is 8^0C - reject? If this is too harsh, then it could be re-written

"target 2^0C, Maximum 5^0C. A truck arriving between 5^0C and 10^0C will be accepted but reported to the company; consecutive arrivals between 5^0C and 10^0C will not be accepted. Any reading above 10^0C will result in rejection of the truck".

Principle 6 (Guideline 11) - Establish Verification Procedures
Following on from Principle 5, how do you know that the standards set are appropriate. Some may be industry recognised standards, but some may need to be established for your own processes. Verification includes the regular review of the HACCP tables to ensure they are still being followed and that the process flow has not altered.

See also notes on Validation in Section 7. Verification will apply to the industry recognised standards, whereas any special standards may need to be validated by storing at the highest temperature for the proposed time and confirming no pathogen growth.

Principle 7 (Guideline 12) - Establish Documentation and Record Keeping
Not only is this important for maintenance of the food safety program, but the records can also help during verification to see how well the standards are being maintained.

Remember, HACCP is a powerful tool in establishing a food safety program, but is only effective if soundly based on Good Manufacturing and Hygiene practices.

When a number of processes are happening at the same time accidental cross contamination can easily happen. This is where staff training is most important. Also, it is not the obvious, but the unforseen that can cause a problem, e.g, who is ensuring the maintenance contractor does not move all the fish around whilst working in the coolroom?

8. Further Information

Food Safety Information Training & Quality Systems

SeaQual Australia - Manager	Tel: 07 3406 8653 Fax: 07 3406 8677
Seafood Training Australia - Executive Officer	Tel: 02 6281 0383 Fax: 02 6281 0438

Regulations

Principal Environmental Health Officer at your Local Council

Other Key Contacts

Food Safety Victoria	Senior Project Officer	Tel: 03 9637 4095 Fax: 03 9637 4509
ANZFA	Standards Liaison Officer	Tel: 02 6271 2258 Fax: 02 6271 2278
Export Regulations	State Office or Canberra	Tel: 02 6272 4725 Fax: 02 6272 5226
Ministries of Fair Trading	State Office or Canberra	Tel: 02 6213 6092 Fax: 02 6273 1992
Food Recall Coordinator	State Health or ANZFA	Tel: 02 6271 2610 Fax: 02 6271 2278

Quality Fish Catchers Pty Ltd

The Jetty
Bountiful Bay
Victoria 3808

Food Safety Program

FINAL DRAFT 19.3.99

Index

Date of Issue_____

Forms:

Quality Fish Catchers Pty Ltd 1. Company Policy	Date:

An example company policy is given below. A commitment to the supply of safe seafood through the setting up and maintenance of a Food Safety Program is essential

---

Quality Fish Catchers have been fishing the waters near Bountiful Bay for over 30 years. Our commitment as always is to land the freshest and best handled fish on the coast.

This manual has been prepared to bring together all the documents relating to the operation of our quality system. Food Safety and Quality are the keys to our past and future success. We have used the Hazard Analysis and Critical Control Point Technique (HACCP) to help identify hazards and their control.

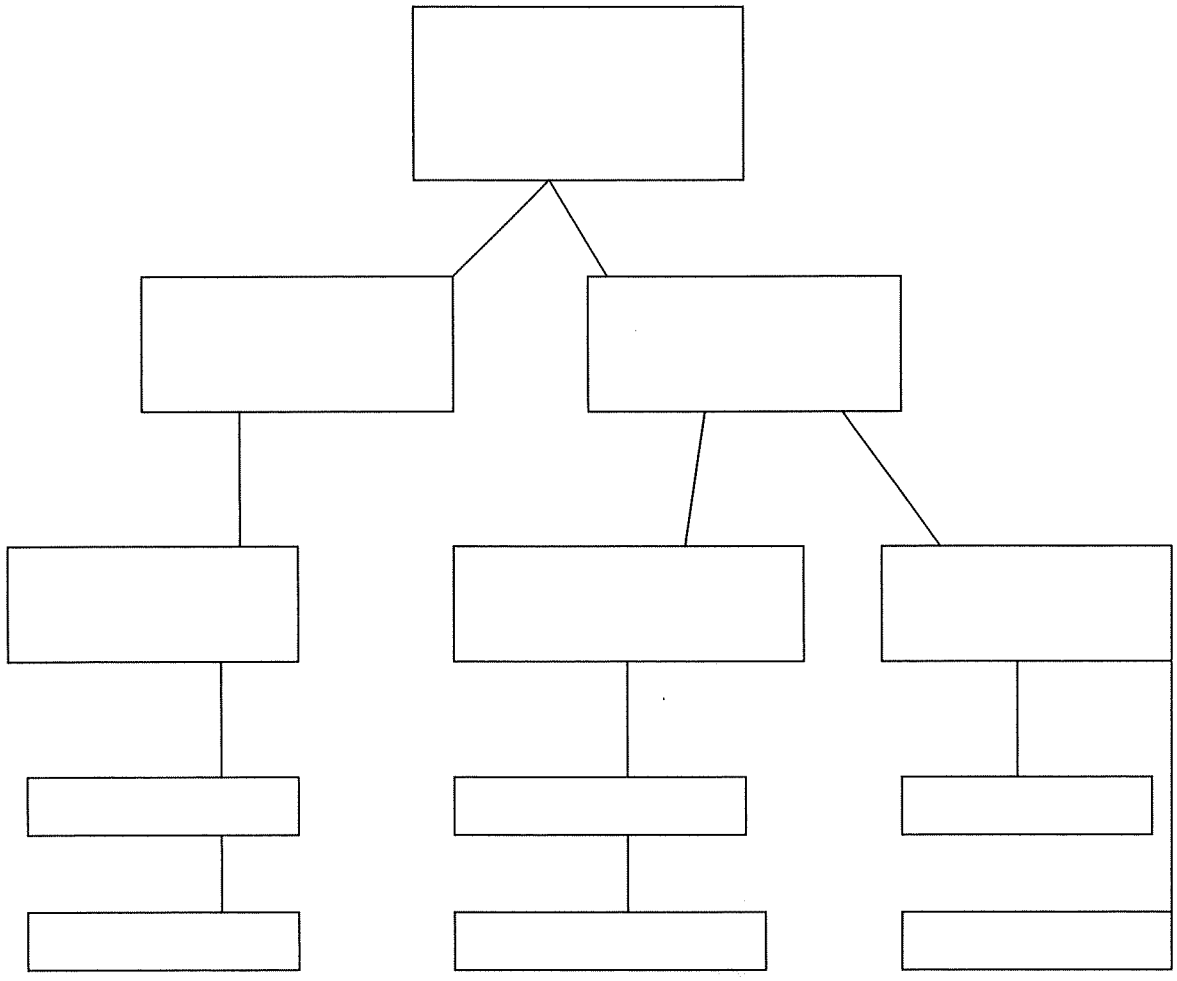
I with my fellow directors am fully committed to the principals outlined in this manual

Signed :_____

Title:_____

Date:_____

Quality Fish Catchers Pty Ltd 2. Key Staff & Responsibilities	Date:



Key staff and their relationships should be indicated in a chart similar to above.

Examples of responsibilities are given below:

The skipper has complete responsibility for all decisions, in particular those with respect to quality and safety of the fish and safety of the crew and vessel.

The Mate is responsible for ensuring all crew are trained for the particular tasks being carried out and that the relevant procedures are being followed. They are responsible for checking all documents and determining action to be taken when any out of control limit situations arise.

Quality Fish Catchers Pty Ltd **3. Staff Training Procedure**	Date:

Typically this should include:

Induction – introduction to the business;

Protective clothing - provision and use ;

Personal Hygiene – list of requirements;

Safety in the workplace – basic rules

Administration – pay, problems, sickness etc

Specific training instructions for various tasks* -

** instructions do not have to be written where on the job training is by demonstration repetition and checking by the trainer. Dot point reminders of key points may be useful.*

Quality Fish Catchers Pty Ltd **4. Cleaning Schedules**	Date:

Include key instructions for cleaning the boat and particular equipment.

Where available use the chemical supplier's data and safe handling recommendations. The instructions can be used for staff training .

Prepare a master list of all equipment and services noting the frequency of cleaning and/or maintenance from which the cleaning rosters can be prepared.

Maintenance should also include calibration of temperature gauges and thermometers. If thermometers are only used to check chill temps then a calibration in ice slurry may suffice.

Quality Fish Catchers Pty Ltd **5. Pest Control Procedure**	Date:

Depending on the size and nature of the vessel, pest control may be limited to preventing contamination from seabirds.

it is important to recognise the food safety risks from pests, particularly if fish are dismembered on board, and any specific instructions should be included here.

If baits are used, include copies of all safety and usage instructions.

Quality Fish Catchers Pty Ltd **6. Personal Hygiene Standards**	Date:

These include instructions on when to wash hands, what protective clothing to wear, handling of seafood, reporting of illness, diarrhoea etc.

Often these are prepared as reminder notices and attached next to a sink, on the back of the toilet door, or where the crew are likely to see them. Keep copies in this file.

Again once the standards are written down in a simple list, training becomes easier and there can be no misunderstanding. Adherence to personal hygiene standards is a condition of employment.

Quality Fish Catchers Pty Ltd 7. Trawling Procedure	Date:

Generally there are few food safety hazards associated with the catching of fish. However this assumes catching in approved locations free from known contamination.

A statement committing the company to adhering to fishing regulations and rejecting any 'unsafe' fish may be appropriate. Perhaps refer also to adherence to the "Code of Conduct for a Responsible Seafood Industry".

Whilst trawl times may not impact on fish safety, they may have a big impact on quality. Any specific instructions should be included here.

Quality Fish Catchers Pty Ltd 8.On board Handling & Storage Procedure	Date:

This procedure will directly relate to the hazard analysis and incorporate any of the resulting requirements.

Briefly describe in dot point form the actions to be taken on landing of fish and how to complete the fish catch record Form C.

This includes stock separation and identification as well as the use of ice etc.

If fish are headed/gilled/gutted, include comments on waste disposal and fish cleaning after preparation.

Quality Fish Catchers Pty Ltd 9. Unload and Distribution Procedure	Date:

Depending upon how the regulations are finally written this may be the point at which the food safety requirements start.

Regardless of the above, obtaining the best price and ensuring the effort on board is not negated by poor handling and distribution practices makes good sense.

Describe any rules at unload e.g re-icing, quality checks, recording of product weights and where despatched.

Include any standards for transport vehicles.

Quality Fish Catchers Pty Ltd 10. Hazard Analysis & Critical Control Point (HACCP)	Date:

The hazard analysis and critical control point technique is described in some detail in the accompanying guideline.. Examples of a 'Process Flow' and 'Hazard Analysis Table' are provided in Form D and Form E. The content can be deleted to give a blank form to incorporate the results of the actual hazard analysis.

This section should describe the process used to carry out the hazard analysis and should be similar to the seven principles. The person responsible for the hazard analysis preparation should be identified. This person must be able to meet the requirements of a Food Safety Instructor in the Food Act Victoria legislation.

In preparing this Food Safety Program the hazard analysis needs to be completed before the earlier procedures can be confirmed. However since HACCP relies on a solid base of good handling practice it is often easier to set up the hygiene, cleaning, handling, and other procedures first. Next carry out the hazard analysis and then refine the procedures where necessary to take account of any additional hazards identified or controls that require tightening.

Quality Fish Catchers Pty Ltd **11. Customer Complaint & Recall Procedures**	Date:

Whilst no business is keen to receive customer complaints they are an important indicator of both customer opinion of the business and the quality of the products.

Customer comments good or bad should be recorded, even by fishing boats, and it is good sense to prepare a customer comment book with columns:

Date Product/Code Comment Customer Details Action Taken

Where the issues are purely quality or service the action taken is entirely a business decision. Where illness is suspected then there needs to be a procedure in place which involves:

- Notification to the Manager
- Identifying and separating any suspect stock
- Notification to the local health authority (if serious)
- Informing the supplier where appropriate
- Analytical Testing if necessary.

It is always difficult with a single complaint to be certain the seafood is the cause, but if two independent complaints relating to the same item are received then action should be taken. The log is useful as the identity of the first customer is already recorded for follow up when the second complaint is received.

Recall *of product should only take place with the involvement of the health authority.*

Most likely the company becomes part of a larger recall having supplied product subsequently found to be unsafe. In these circumstances the catch and despatch records may be vital to limiting the damage by identifying when it was sold and to whom.

The ability to carry out a recall is included in the legislation. ANZFA have published a " Food Recall Protocol " to assist a business be prepared.

QUALITY FISH CATCHERS Pty. Ltd.

Crew Training Matrix

Form A

Date of issue_____

Staff ⇒ **Task** ⇓	*John. M*		*Tony. W*		*Mary .T*		*Fred . S*		*Lisa . R*		*Trudy G*	
Induction		*5/ 10 pw*		*5/ 10 pw*		*8/ 10 pw*						
Protective Clothing		*5/ 10 pw*		*5/ 10 pw*								
Personal Hygiene		*8/ 10 pw*		*8/ 10 pw*								
Onboard Safety		*8/ 10 pw*										
Administration		*8/ 10 kn*		*8/ 10 kn*								
Trawling		*8/ 10 pw*										
Landing & Sorting												
Preparation & Storage												
Cleaning Procedures												
Temperature Recording												
Pest & Waste Control												
Complaints / Recall												
Shade in left hand box to indicate training required, then date and sign when training completed. If training must be completed by a certain date, put this date in the shaded section as on the right.											*1/ 9*	*2/ 8 js*

Comments:

Record any comments, suggestions for other training

Quality Fish Catchers Pty Ltd

Cleaning Roster Form B Date of issue _____

Week commencing

Task	Crew⇓	Mon	Tues	Wed	Thurs	Fri	Sat
Decks							
Fish Bins							
Sorting Tables etc							
Toilet / wash basin							
Hold							
etc							
Monthly task this week: --------							

Comments/Problems

_____

_____

_____

Prepare weekly task list shading out jobs not required this week, and including any non-routine monthly or quarterly tasks. Identify the crew member responsible who also must sign on completion. Allow room for recording any problems or suggestions.

Quality Fish Catchers Pty Ltd –

Fish Catch & Distribution Record

Form C Date of issue _____

Date Start _____ **Date Finish** _____ **Page Number** _____

Date	Time Landed	Species	Qty	Iced √ orX	Sign	Date Unload Despatch	Customer	Sign

Despatch & Transport details

Date	Truck no.	Truck Temp	Truck Condition	Fish Temp	Re-iced. √ or x	Qty sent.	Sign / comments

Comments

Process Flow Chart_____Form D Issue Date_____

Process Flow - Catching & Distributing Fresh Fish (Gutted)

Step	Potential Hazard
Deploy net and trawl	Fishing in contaminated waters. Impact of length of trawl on fish - dead, stressed, unsafe fish
↓	
Land and sort	Contamination from by-catch. Spoilage from too long sort in sun; damage on landing
↓	
Gut and wash	Contamination from gut; contaminated sea water or insufficient hose pressure to clean
↓	
Box and ice	Contaminated fish box and/or ice. Damage (crushing); deterioration - insufficient ice or not iced quickly enough
↓	
Store and return to port	Deterioration - too long/too little ice. Contamination - dirty boxes stacked on each other. Damage - crushed fish in bottom box
↓	
Unload, re-ice and load transport	Contamination during transfer; contaminated ice. Contamination from vehicle
↓	
Distribute to customer or market	Deterioration - insufficient ice for journey. Vehicle not refrigerated. Contamination - open vehicle, tarpaulins, etc.

(This process flow is an example only of the format and the types of hazards to be considered. Each business must identify the actual process used, the potential hazards and the risk. Risk may differ between similar operations depending upon a range of factors e.g amount of processing on board.)

Quality Fish Catchers Pty Ltd –

Hazard Analysis Table – Trawl to Distribution of Fresh Fish **Form E** **Issue Date**

Step	Hazards	Control Points	Monitoring Procedure	Target/ Tolerance	Corrective Action
1. Trawl	Contamination of fish in water Deterioration of fish	Location of trawl Trawl time	Skipper ensures trawl carried out in approved zone & monitors trawl time	Trawl only in approved zone. No dead fish floating in area Trawl time max 2 hrs (?)	Cease trawl. Hold or dump any fish caught in wrong place. Inspect all fish after long trawl.
2. Land/Sort	Unsafe fish Contamination Deterioration	Visual Sorting Time	Crew sorts fish immediately on landing; monitoring time and visually checking	All by catch or unacceptable fish (eg large shark) returned to sea, sort completed within $^1/_2$ hr	Fish shaded if sort extended
3. Gut/wash	Contamination	Visual Gutting method	Crew guts & cleans using plenty of clean sea water, checks guts separated from fish	No adhering gut, fresh clean fish; meets quality standard?	Regut/clean as required
4. Box weigh & ice	Contamination Deterioration	Visual Ice quality & method	Crew immediately fills clean bin with fish to set weight(*), layers with plenty of ice flakes and on top	No delay after gutting before icing sufficient ice to cool fish & retain for storage. Ice made from potable water, flakes not chunks	Identify and Hold for assessment any long standing fish or insufficiently iced bins
5. Store & return (#)	Deterioration Contamination	Time Trip schedule Visual	Crew loads bins in hold marked with catch & date	Fish landed within 5 days of catch; boxes well iced, not stacked on each other	Over 5 day fish inspected on arrival for suitability, contaminated ice rejected.
6. Unload, re-ice, load transport	Contamination	Visual Ice quality & method	Crew unloads fish & re-ices before loading truck. Skipper checks all tickets attached	Ensures no contamination & only potable ice used	Reject any contaminated. Re ticket if necessary
7. Distribute	Deterioration Contamination	Time/temp Visual	Supervisor checks truck condition refrigeration operating before loading	Clean, enclosed truck, refrig. operating between 0°C-4°C	Wash & sanitise if not suitable; Reject truck if temp exceeded,

(*) Note: Weight control is not a safety or hygiene issue, but is a critical cost control
(#) Will not apply to day boats.

APPENDIX 4

Line Fishing Food Safety Program

Line Fishing Pty Ltd

QUALITY MANUAL & FOOD SAFETY PROGRAM

Index

Line Fishing Pty Ltd

1. Company Policy

Line Fishing Pty Ltd have been fishing the waters of South Australia for over 25 years. Our commitment as always is to land the freshest and best handled fish on the coast.

This manual has been prepared to bring together all the documents relating to the operation of our quality system. Food Safety and Quality are the keys to our past and future success. We have used the Hazard Analysis and Critical Control Point Technique (HACCP) to help identify, reduce and/or eliminate food safety and quality hazards.

I am fully committed to the principals outlined in this manual

Signed :_____

Title:_____

Date:_____

Line Fishing Pty Ltd

2. Key Staff & Responsibilities

Skipper

The skipper has complete responsibility for all decisions, in particular those with respect to quality and safety of the fish and safety of the crew and vessel.

His key responsibilities are:

- Occupational health and safety for the crew and general public
- High quality vehicle and equipment maintenance
- Fishing within the bounds of occupational health and safety
- Financial management including: invoicing, supplies, banking, payments, wages and bank liaison
- Maintaining relationships with customers and suppliers
- Expansion of customer base
- Maintaining the Quality Assurance and Food Safety program
- Cleaning the boat and shore facilities
- Packing of fish
- Transport of fish to the customer

1st Mate

- Maintaining relationships with customers and suppliers.
- Financial management including: invoicing, supplies, banking, payments, wages and bank liaison
- Maintaining the Quality Assurance and Food Safety program
- Cleaning the boat and shore facilities
- Packing of fish

Line Fishing Pty Ltd

3. Staff Training Procedure

Form A is used to document our training.

Induction
Each new staff member upon employment is informed of the following:

- Work hours
- Pay and entitlements
- Protective clothing
- Safety rules
- Fishing handling, storage, preservation and packing
- Occupational health and safety briefing

Protective clothing
Staff are issued with the following protective clothing and must wear these items onboard the fishing vessel:

- Life jackets
- Boots
- Apron
- Gloves (self supplied)
- Wet weather gear
- Head gear
- Sun block
- Cleaning agents for hands

Personal Hygiene
Staff are trained in personal hygiene requirements which are listed in section 6 of this manual.

Safety in the workplace
The following are the basic rules for safety in the workplace:

- No alcohol
- No intoxicating drugs
- Follow the skipper's instructions
- No smoking whilst fuelling
- Maintain good health practices for fish handling
- The skipper will follow a duty of care and have reasonable expectations of workers capabilities

Administration
Any issues with pay, general problems, sickness etc are referred to the Skipper or 1st Mate.

Basic Functions
The crew's basic functions include the following:

- Prepare the bait
- Prepare the lines and make sure the gaffs are sharp
- Clean up the vessel on a continuous basis
- Anchor up
- Catching and storing the fish
- Gutting, cleaning and storing fish
- Cleaning the vessel on the way back to shore
- Store the fish in appropriate areas
- Re-fuel the boat
- Check the maintenance check list
- Fix areas or items which require maintenance
- Order any parts needed

Crew are trained in these activities on the job.

Line Fishing Pty Ltd

4. Cleaning Schedules

Form B is used to document our cleaning activities.

BOAT

Bilge (every second fishing trip)

- Wipe up oil with disposable cloth or absorbent
- Put the cloth or absorbent in a storage container
- Mop the floor with a disinfectant and warm soapy water

Deck Space (every trip)

- Hose and scrub the decks with sea water and scrub brush
- Mix a bucket bleach and water (1 cup of bleach for every 10 litres of water)
- Using protective gloves scrub all surfaces – floor and sides of boat, knives, bait boards, eskies, buckets, bins, gloves
- Rinse with spray hose
- Leave to dry

Deck Space (whilst fishing – as required)

- Prior to putting fish into bins – rinse out to clear and debris
- Hose off boat to keep debris off all surfaces
- Regularly clean esky tops
- Scrub off knives and bait board

STORAGE AREA

- Sweep floors
- Mix a bucket bleach and water (1 cup of bleach for every 10 litres of water)
- Using protective gloves scrub all fish contact surfaces – floor, bench, scales, cool room knives, cutting boards, buckets, bins
- Rinse with spray hose or damp cloth
- Leave to dry

We maintain environmentally friendly practices for the disposal of personal waste and fishing waste.

OFFAL

- Most offal is disposed at sea in an area clear of people
- Offal brought to shore is disposed of in the appropriate manner (ie picked up for further processing)

OIL

- Oil is disposed of by delivery to the local service station

Line Fishing Pty Ltd

5. Pest Control Procedure

The following pest control procedures are followed by the business:

- In the shed baits are laid on a regular basis
- Cleaning and sanitising procedures in section 4 are followed
- If contamination has occurred the area is cleaned and sanitised before use

Line Fishing Pty Ltd

6. Personal Hygiene Standards

Reporting of illness

Staff must report prior to commencing work any illness or injury which may lead to product contamination. Eg diarrhoea, cuts on the hands

Personal hygiene in the storage and processing area

To ensure that personal standards of hygiene are maintained, the following procedure shall apply:

A. Staff must wear gloves (eg red gloves) when handling product and shall ensure production clothing is kept clean.

B. Production Staff must wash hands:
   i. Before entering the storage and processing area;
   ii. Immediately after using the toilet;
   iii. After touching the nose or mouth;
   iv. After handling contaminated material (cleaning solutions, petrol & oils etc); and
   v. Whenever necessary to avoid contaminating the food.
   Note: The wearing of gloves does not exempt the Staff from having thoroughly washed hands.

C Any person who has a cut or wound must not continue to handle food or food contact surfaces until the injury is completely protected by a water proof covering which is firmly secured and which is conspicuous in colour.

D. Staff must not engage in any behaviour which could result in contamination of food, such as eating, smoking, chewing anything such as gum, sticks, nuts, etc. or any other un-hygienic behaviour in food handling areas.

E. Personal effects and clothing must not be stored in food processing areas.

F. Staff shall be responsible for maintaining a high degree of personal hygiene.

G. Staff shall be free of jewellery which may contaminate the product

Personal hygiene on the vessel

As above except:

- Gloves are not disposable

What protective clothing to wear

Staff should ensure that protective clothing is kept clean to reduce the risk of contaminating the product.

Line Fishing Pty Ltd

7. Fishing Procedure

We follow the SAFIC Code of Conduct for fishing. The code of conduct covers:

- Environment
- Interaction with people
- Maintenance of equipment
- Fish practices
- Aquatic Habitat
- Sustainability
- Safety and Quality Assurance
- Environment
- Communication
- Compliance (following the Fisheries Act)
- Research
- National parks

We adhere to the licence conditions which include factors such as fish size, fishing area status (eg open or closed). We will reject any fish we consider may be unsafe for human consumption.

Line Fishing Pty Ltd

8.On board Handling & Storage Procedure

Line Fishing

- Bait up line
- Drop over the side
- Hook fish and pull up
- Dispatch by brain spiking (a blow to the head may also be used eg sharks)
- Bleed the fish
- Drop into slurry
- Keep fish in the slurry until chilled (20 mins for whiting and 4 hours for snapper)
- Fish which do not require gutting are put on ice and left until landing at port
- Fish for gutting are removed
- Fish are gutted or headed, clean by running knife down the back bone and wash the fish over the side or with the deck hose
- Put fish on ice (note: the receptacles are cleaned prior to fish being put into the bins)

Sorting, Grading and Packing

- Each fish is checked for size and quality and put into separate bins according to size
- Fish are iced down
- No more than 10 kg are placed in each bin to avoid weight damage

Squid

- Hooked
- Place squid into a 20 litre bucket
- Rinsed off
- Place into a cool esky in 20 kg lots

We handle our fish as little as possible to maintain fish quality.

Line Fishing Pty Ltd

9. Unload and Distribution Procedure

Fish

- Take the bins off the boat
- Place bins into the cool room

Squid

- Pack squid into 10kg cartons
- Boxes are marked with a marker to identify the business and date
- Place into the cool room or freezer

Dispatch - Transporter

- Squid are picked up by the transporter
- The dispatch record is completed

Dispatch – Own Vehicle

- Load bins into cool box (the cool box contains ice)
- Transport to processor
- Unload fish into processor bins
- Clean own bins and wash out the cool box

Line Fishing Pty Ltd

10. Hazard Analysis & Critical Control Point (HACCP)

In preparing the HACCP Program the following steps were undertaken:

1. Assembled our HACCP Team.
2. Developed the product description.
3. Identified the product's intended usage.
4. Constructed a flow chart.
5. Verified the flow chart on-site

We than ensured the following was achieved:

1. Hazard Analysis, Risk Assessment & Preventative/Control Measures
2. Determine Critical Control Points (CCPs)
3. Establish Critical Limits for each CCP
4. Establish a Monitoring System for each CCP
5. Establish Corrective Actions
6. Establish Verification Procedures
7. Establish Documentation and Record Keeping

As a result of completing the steps above a HACCP program has been completed and is in a separate section.

Line Fishing Pty Ltd

11. Customer Complaint & Recall Procedures

If a customer complaint is received we record the following:

- Date
- Product/Code
- Customer details
- Complaint details
- Action taken

If there is a possibility that the food is unsafe for human consumption a risk assessment (detailed below) is undertaken.

1. Risk Assessment Procedure for Suspected Products.

Input	Step	Procedure
Customer Complaint	**1. Record complaint**	Skipper records complaint including catch day from client.
	2. Identify batch	Identify catch day of all suspect product. Cross check catch day number against sales records and orders dispatched.
	3. Consult Staff	Contact all staff involved in the handling of the product to determine root cause of problem.
	4. Assess Risk & withhold product if required.	Assess the risk to public health and safety.
	5. Collect Information	Collect as much information from staff, customer, transporters etc. and continue risk assessment. If there is no risk to public health established, terminate the process.
	6. Withdraw product	If limited health risk withdrawal may be undertaken. If there is a risk to public safety a recall is necessary. (Refer to the next procedure)

Line Fishing Pty Ltd

11. Customer Complaint & Recall Procedures, cont.

2. Recall Procedure.

Input	Step	Procedure	Records or Ref.
Risk Assessment Outcome	**1. Notification**	Skipper notifies the following: ▪ ANZFA (Australia New Zealand Food Authority) ▪ SA Health Department ▪ Minister responsible for Consumer Affairs and Fair Trading ▪ Customers with same catch day number. ▪ Bank manager ▪ Insurance agent ▪ Solicitor	Letters and facsimile
	2. Cease Production & Isolate	Skipper ceases production and quarantines product.	
	3. Arrange Returns	Skipper arranges return or disposal of product currently located with customers or in transit.	
	4. Assess Effectiveness	Skipper assesses the effectiveness of the recall by considering the following: ▪ Total amount of product under recall. ▪ Total product disposed, collected, quarantined, or corrected. ▪ Time delays between risk assessment to removal of product. ▪ Difficulties experienced in the recall ▪ Level of government assistance	
	5. Prepare Reports	Skipper prepares reports which incorporate corrective action and/or procedure changes.	

Line Fishing Pty Ltd

HACCP Manual (HM)

Table of Contents

H.A.C.C.P. Plan

Introduction

The HACCP Team at the time of implementing the system consists of:

- *(Write team members names here)*

Scope

The scope of the HACCP Analysis includes all steps involved in:

- Catching fish
- Fish preparation (heading and gutting)
- Storage
- Handling
- Packing
- Delivery

Purpose

The purpose of the HACCP Analysis is to identify potential quality and safety hazards and undertake preventative measures to meet customer and regulatory requirements.

Products

The products contained in this HACCP program include:

- Finfish
- Squid

Hazards

The following types of food safety hazards have been defined and addressed in the plan:

- Chemical
- Biological
- Physical
- Quality

2.1 Fin Fish

Product Description	Fish with fins
Composition	Whole fish Gutted fish – eg snapper, reef fish Gutted, headless – eg shark, leather jackets
Method of Preservation	Chilled in ice slurry
Packaging – Primary	Bins (without lid)
Packaging – Shipping	Bins (without lid)
Storage Conditions	Refrigeration = fresh 1°C to 4.4°C
Distribution method	Refrigerated or in the ice box
Shelf Life	Fresh to the end consumer = 7 days Fresh to processor = 24 to 48 hours is the recommended time prior to transport to the processor
Special Labelling	Name, licence number, port of operating
Customer Preparation	Fresh – Cook and serve
Sensitive Population	People who are allergic to seafood should not eat this product. People with liver health issues should not eat this product. Elderly people should avoid eating raw seafood product.
Consumer Use	This product must be cooked prior to consumption. Product is not to be eaten raw.
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to seafood processors.

2.2 Squid

Product Description	Whole sepioteuthis australis (southern calamari)
Composition	Whole
Method of Preservation	Chilled without contacting water
Packaging – Primary	Bins or cartons (cartons have a plastic liner). Packed so that no juice is left in the squid
Packaging – Shipping	Bins or cartons (cartons have a plastic liner).
Storage Conditions	Refrigeration = fresh 1°C to 4.4°C Frozen = -18°C
Distribution method	Refrigerated vehicle or in the ice box
Shelf Life	Fresh to the end consumer = 7 days Fresh to processor = 24 to 48 hours is the recommended time prior to transport to the processor Frozen = 9 months
Special Labelling	Bin = Name, licence number, port of operating Carton = Purchases name and logo
Customer Preparation	Fresh – Cook and serve
Sensitive Population	People who are allergic to seafood should not eat this product. People with liver health issues should not eat this product. Elderly people should avoid eating raw seafood product.
Consumer Use	This product must be cooked prior to consumption. Product is not to be eaten raw.
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to seafood processors.

3.1 Fin Fish

A. GENERAL CRITERIA

Product Description	All fish with fins
Method of Preservation	Chilled
Micro. criteria	Refer to 3a. Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Bins (without lid)
Packing shipping	Bins (without lid)
Labelling	Name, licence number, port of operating
Temperature	Fresh = 1°C – 4.4°C
Transport	Refrigerated transport: Fresh = 1°C – 4.4°C

3.1 Fin Fish

B. PHYSICAL CRITERIA

Condition	Tolerance
Flesh	Glisten, firm in rigour
Eyes	Clear and not sunken
Smell	Fresh aroma
Body	Must be undamaged, stomach not bloated or discoloured

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each consignment is checked to ensure that it is 'practically free' of disease, injury and parasites.

3.2 Squid

A. GENERAL CRITERIA

Product Description	Whole sepioteuthis australis (southern calamari)
Method of Preservation	Chilled
Micro. criteria	Refer to 3a. Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Bins or cartons (cartons have a plastic liner). Packed so that no juice is left in the squid
Packing shipping	Bins or cartons (cartons have a plastic liner).
Labelling	Name, licence number, port of operating
Temperature	Refrigeration = fresh 1°C to 4.4°C Frozen = -18°C
Transport	Refrigeration = fresh 1°C to 4.4°C Frozen = -18°C

3.2 Squid

B. PHYSICAL CRITERIA

Condition	Tolerance
Flesh	Translucent and look alive
Eyes	Clear, white with dark purple, with colour still in the eye
Smell	Juice smells musky
Body	Must be undamaged, pressure test indicates active skin dots (brown, green, blue etc.)

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each consignment is checked to ensure that it is 'practically free' of disease, injury and parasites.

3a. Microbiological Criteria-

Seafood is produced to minimum standards consistent with the Australian Food Standards Code (AS1766) and AQIS Product Standards for processed foods.

Category	Standard
Standard Plate Counter	<100,000 org/g, or 4 of 5 <100,000 The 1 remaining not > 500,000
E. Coli	<2.3 (MPN) org/g or 4 of 5 <2.3 remaining <7
Staphylococci	<500g org/g or 4 of 5 <2.3 (MPN) remaining <5,000 org/g
Salmonella	Absent in 5 sample units of 25g
Paralytic Shellfish Poison	Max 80 micrograms per 100g edible raw shellfish

MPN - Most Portable Number

Authorised by: _____ Date: _____

4.1 Line Fishing

Step	Input	Symbol	Process or Step
1	Bucket, Esky, Ice, Hesson bags		Prepare Tubs
2	Line & lure		Cast line
3	Bucket, Esky, Ice, Hesson bags		Unhook fish
4	Spike		Spike fish (whiting & snapper)
5	Knife, board		Gut & gill (snapper)
6	Bucket, Esky, Ice, Hesson bags		Ice slurry fish
7	Boat		Transport to shore
8	Bins		Pack (into bins)
9	Cool room		Storage
10	Scales Poly box		Pack (into cartons) & Weigh
11	Cool room		Storage
12	Transporter		Dispatch

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
AS 1 All steps in the flow charts	People	Biological contamination	Poor personal hygiene (eg cuts, dirty hands)	4	D	21	Hygiene training, monitor staff	CP
AS 2 All steps in the flow charts	People	Physical contamination	Wearing jewellery	4	D	21	Hygiene training, monitor staff	CP
AS 3 All steps in the flow charts	Utensils, tubs, trays, containers etc	Microbiological contamination, cross contamination	Dirty tubs or utensils	4	D	21	Use only clean tubs & untensils	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
1. Prepare Tubs	Utensils, tubs, trays, containers etc	Microbiological contamination, cross contamination	Dirty tubs or utensils	4	D	21	Use only clean tubs & utensils	CP
2. Cast Line	Not of significance							
3. Unhook Fish	Fish	Quality – not to specification	Breaking the muscle block by putting unnatural weight on spinal system	4	D	21	Pick fish up from head and tail to spread lift factor across the whole body	QP
4. Spike fish	Not of significance							
5.	Gut & gill	Quality	Knife cut through the gut cavity	5	D	24	Being careful during the process	QP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
6a Ice Slurry	Refer to All Steps AS3							CP
6b Ice Slurry	Ice	Biological buildup	Insufficient ice	1	E	11	Stop fishing when ice is not sufficient	**CCP**
7 Transport to shore	Not of significance							
8a Pack into bins	Refer to All Steps AS3							CP
8b Pack into bins	Shed area	Physical contamination	Not following good manufacturing practices (GMP)	3	D	17	Regular checking of facilities	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
8c Pack into bins	Process of packing	Biological buildup	Due to extended time lapse	4	D	21	Ensure time frames are adhered to – 10 minutes to pack product into bins and put in cool room	CP
9a Storage	Cool room & freezer	Quality	Malfunction of cooling system	3	E	20	Monitor temperature Regular maintenance	CP
9b Storage	Cool room & freezer	Biological contamination	Unclean cool room	3	E	20	Clean room regularly	CP
10a Pack into Cartons and weigh	Scales	Quality – not correct weights	Not calibrated	4	D	21	Monitor performance with customer verifying correct weight	QP
11 Storage	As per 9a & 9b above							CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
12 Dispatch	Own vehicle	Refer to All Steps AS3						CP

Authorised by: _____ *Date:* _____

HM 5 HACCP Audit Table

Step	**Hazard**	**Preventive Measure** *(Preventive measure, Criteria for safety)*	**Critical Control Point** *(Yes/No)*	**Critical Limits**	**Monitoring** *(What, How, Where, When, Who)*	**Corrective Action** *(Product, Process, Who)*	**Records** *(Ref.)*
6b Ice Slurry	Biological buildup	Stop fishing when ice is not sufficient	CCP	Internal temp. of fish is brought to 10°C within 6 hours of death	***What***: Fish temperature ***How***: Thermometer ***Where***: Boat; land site ***When***: After spiking fish; before storage and before packing ***Who***: Skipper or assistant	***Product***: Dispose of product ***Process***: Review ice slurry process ***Who***: Skipper	Form C - Fish Catch and Temperature Record

Authorised by: _____ *Date:* _____

Activity	Description	Frequency	Responsibility	Records
Micro. Testing	Product: • E Coli • Faecal Coliforms • Salmonella • Listeria monocytogenes	Every 6 months	Skipper & 1st Mate	Test Result folder.
Verify Flow diagram.	Review flow diagrams and ensure accuracy.	Every 6 months.	Skipper & 1st Mate	Review Record.
Review Hazard Analysis	Review documentation is still current and effective.	Every 6 months.	Skipper & 1st Mate	Review Record.
Review critical limits.	Review to ensure limits are still current and effective.	Every 6 months.	Skipper & 1st Mate	Review Record.
Review of Monitoring and Corrective Action records.	All production records checked to ensure the system compliance.	Every week.	Skipper & 1st Mate	Production records.
Supplier Assessment	Review status	Every year	Skipper & 1st Mate	Supplier Record
Audit HACCP Plan	External audits.	Every 6 months.	External Auditor.	Audit records.

Authorised by: _____ Date: _____

ICE SLURRY – CCP 6a

Step	Procedure	Records or References
1. Prepare slurry	Once outside the marina mix 1 x 18 kg bag of ice with 1 bucket of salt water in the bin	
2. Visually check	Visually check the deterioration of the ice and solidity of the fish	
3. Top up slurry	Add ice and water as required	
4. **Complete record**	At the end of the fishing trip complete the record	Form C – Fish Catch and Temperature Record

Authorised by: _____ Date: _____

Line Fishing Pty Ltd

Crew Training Matrix

Form A

Date of issue_____

Staff ⇒ **Task** ⇓	*Skipper*		*1st Mate*	
Induction				
Protective Clothing				
Personal Hygiene				
Onboard Safety				
Administration				
Fishing				
Landing & Sorting				
Storage				
Cleaning Procedures				
Temperature Recording				
Pest & Waste Control				
Complaints / Recall				
Critical Control Points				
Ice slurry				

Form B Cleaning Record

	Fishing Days					As Required								
Date	Bilge	Deck Area	Storage area	Toilets	Gloves	Cool room	Packing area	Scales	Benches	Shed Floors	Freezer	Cool Box	Comments	Signed

Form C - Fish Catch & Temp. Record

Date	Type	Qty	Ice Slurry	Catch Temp.		Temp. Prior to storage		Cool room temp.	Signed
				Time	Temp.	Time	Temp.		

Version 1 30 Nov 00

APPENDIX 5

Crab Fishing Food Safety Program

Crab Fishing Pty Ltd

QUALITY MANUAL & FOOD SAFETY PROGRAM

Index

Procedure **Date of Issue**

Crab Fishing Pty Ltd

1. Company Policy

Crab Fishing Pty Ltd has been fishing the waters of South Australia for over 10 years. Our commitment is to satisfy customer expectations in terms seafood quality and safety. We will provide the highest possible product at all times.

This manual has been prepared to bring together all the documents relating to the operation of our quality system. Food Safety and Quality are the keys to the system. We have used the Hazard Analysis and Critical Control Point Technique (HACCP) to help identify, reduce and/or eliminate food safety and quality hazards.

I am fully committed to the principals outlined in this manual

Signed :_____

Title:_____

Date:_____

Crab Fishing Pty Ltd

2. Key Staff & Responsibilities

The business is made up of 2 personnel running the fishing operation, namely:

- Operator (owner of the business)
- Crew

Operator

The Operator has complete responsibility for all decisions in particular those with respect to quality and safety of the fish and safety of the crew and vessel.
His key responsibilities are:

- Driving the boat
- Baiting gear
- Catching crabs
- Packing crabs
- Cleaning boat and shore facilities
- Financial management including: invoicing, supplies, banking, payments, wages and bank liaison
- Maintaining relationships with customers and suppliers
- Expansion of customer base
- Maintaining the Quality Assurance and Food Safety program
- Occupational health and safety for the crew
- Vehicle and equipment maintenance

Crew

- Preparing the boat (e.g. bait etc.)
- Baiting gear
- Catching crabs
- Packing crabs
- Cleaning boat and shore facilities

Crab Fishing Pty Ltd

3. Staff Training Procedure

Form A is used to document our training.

Induction
Each new staff member upon employment is informed of the following:

- Work hours
- Pay and entitlements
- Protective clothing
- Fishing handling, storage, preservation and packing
- Occupational health and safety briefing (e.g. keeping deck clear)

Protective clothing
Staff are issued with the following protective clothing and must wear these items onboard the fishing vessel:

- Life jackets (to be worn as required)
- Waders
- Apron
- Gloves
- Wet weather gear
- Head gear (hat)
- Sun block
- Cleaning agents for hands

Personal Hygiene
Staff are trained in personal hygiene requirements which are listed in section 6 of this manual.

Safety in the workplace
The following are the basic rules for safety in the workplace:

- Keeping the deck clear
- Boat must be kept neat with no obstacles (e.g. gear to be kept in specific allocated spaces)
- No alcohol
- No intoxicating drugs
- No smoking

Administration
If the crew have any issues regarding pay, sickness etc. these are handled by the Operator.

Basic Functions

The crew's basic functions include the following:

- Prepare the boat
- Baiting gear
- Catching crabs
- Packing crabs
- Cleaning boat and shore facilities
- Clean up the boat on a continuous basis
- Minor repairs of the boat, gear and facilities

Crew are trained in these activities on the job.

The operator also undertakes the basic functions (above) and is completely responsible for driving the boat.

Crab Fishing Pty Ltd

4. Cleaning Schedules

Form B is used to document our cleaning activities.

BOAT

Deck Space (every trip)

- Seaweed, bait and other debris is cleared from the deck
- Deck is scrubbed with a broom
- Deck is rinsed with seawater

Crates & Bins

- Rinsed with seawater
- Scrubbed with a scrubbing brush
- Rinsed with seawater

LAND FACILITIES

Chiller (2 To 3 Times per Week)

- Washed and scrubbed with mains water

Trolley & Scales

Crab Fishing Pty Ltd

5. Pest Control Procedure

Rodents and Spiders

The following pest control procedures are followed by the business:

- Rodent baits are laid in the shed area when there is a problem encountered
- An external pest control company is used to control pests such as spiders
- Cleaning and sanitising procedures in section 4 are followed

Birds

We have little problem with birds contaminating the facilities e.g. boat or shed. If contamination has occurred the area is cleaned and sanitised before use.

Crab Fishing Pty Ltd

6. Personal Hygiene Standards

Reporting of illness

Staff must report prior to commencing work any illness or injury which may lead to product contamination. Eg diarrhoea, cuts on the hands

Personal hygiene in the storage and processing area

To ensure that personal standards of hygiene are maintained, the following procedure shall apply:

A. Staff must wear gloves when handling product and shall ensure production clothing is kept clean.

B. Production staff must wash hands:
   i. Before starting the fishing operation (i.e. prior to preparing the boat);
   ii. Immediately after using the toilet;
   iii. After touching the nose or mouth;
   iv. After eating food
   iv. After handling contaminated material (cleaning solutions, petrol & oils etc); and
   v. Whenever necessary to avoid contaminating the food.
   Note: The wearing of gloves does not exempt the Staff from having thoroughly washed hands.

C Any person who has a cut or wound must not continue to handle food or food contact surfaces until the injury is completely protected by a water proof covering which is firmly secured and which is conspicuous in colour.

D. Staff must not engage in any behaviour which could result in contamination of food, such as eating, smoking, chewing anything such as gum, sticks, nuts, etc. or any other un-hygienic behaviour in food handling areas.

E. Personal effects and clothing are kept separately from fishing handling areas.

F. Staff shall be responsible for maintaining a high degree of personal hygiene.

G. Staff shall be free of jewellery which may contaminate the product

What protective clothing to wear

Staff should ensure that protective clothing is kept clean to reduce the risk of contaminating the product.

Crab Fishing Pty Ltd

7. Fishing Procedure

We adhere to the licence conditions which include factors such as crab size, fishing area status (eg open or closed), total allowable catch (TAC) and crab condition (e.g. female with eggs).

We will reject any crab we consider may be unsafe for human consumption.

We do not catch female crabs, which have eggs showing, or crabs which are malting.

Crab Fishing Pty Ltd

8.On board Handling & Storage Procedure

Catching

- The nets are baited with fish carcass and set
- Check the nets
- Crabs are place into the slurry container, small crabs are returned, females with eggs
- Nets are cleaned of seaweed and other debris
- Nets are re-baited and set

Sorting, Grading and Packing

- The crabs remain in the slurry container for approximately 30 minutes
- Crabs are graded in terms of size (e.g. large, small, female etc)
- Crabs packed into storage bin and iced
- The storage bin in placed in the esky

Used bait is disposed out at sea.

We handle the crabs as little as possible to reduce the possibility of damage to the crab.

Crab Fishing Pty Ltd

9. Unload and Distribution Procedure

Weighing and Storage (at land site)

- Storage bin is taken out of the esky and placed on a trolley
- The trolley is taken to the shed
- Storage container is placed on the scales
- Excess ice is removed
- Crabs are weighed
- Crabs are re-iced and storage bin placed in the chiller

Identification

A tag is placed in the storage container slot. The tag includes details such as:

- Operator name
- Crab description
- Date of catch
- Weight

Dispatch - Transporter

- Crabs are picked up by the transporter
- The cart note is completed

Crab Fishing Pty Ltd

10. Hazard Analysis & Critical Control Point (HACCP)

In preparing the HACCP Program the following steps were undertaken:

1. Assembled our HACCP Team.
2. Developed the product description.
3. Identified the product's intended usage.
4. Constructed a flow chart.
5. Verified the flow chart on-site

We than ensured the following was achieved:

1. Hazard Analysis, Risk Assessment & Preventative/Control Measures
2. Determine Critical Control Points (CCPs)
3. Establish Critical Limits for each CCP
4. Establish a Monitoring System for each CCP
5. Establish Corrective Actions
6. Establish Verification Procedures
7. Establish Documentation and Record Keeping

As a result of completing the steps above a HACCP program has been completed and is in a separate section.

Crab Fishing Pty Ltd

11. Customer Complaint & Recall Procedures

If a customer complaint is received undertake the following:

- Determine the details of the complaint
- Determine the cause of the problem and if necessary revise procedures to eliminate future problems

Any complaints are recorded against the catch record (Form C).

If there is a possibility that the food is unsafe for human consumption a risk assessment (detailed below) is undertaken.

1. Risk Assessment Procedure for Suspected Products.

Input	Step	Procedure
Customer Complaint	**1. Record complaint**	Operator records complaint including catch day from customer.
	2. Identify batch	Identify catch day of all suspect product. Cross check catch day number against sales records and orders dispatched.
	3. Consult Staff	Contact all staff involved in the handling of the product to determine root cause of problem.
	4. Assess Risk & withhold product if required.	Assess the risk to public health and safety.
	5. Collect Information	Collect as much information from staff, customer, transporters etc. and continue risk assessment. If there is no risk to public health established, terminate the process.
	6. Withdraw product	If limited health risk withdrawal may be undertaken. If there is a risk to public safety a recall is necessary. (Refer to the next procedure)

2. Recall Procedure.

Input	Step	Procedure	Records or Ref.
Risk Assessment Outcome	**1. Notification**	Operator notifies the following: ▪ ANZFA (Australia New Zealand Food Authority) ▪ SA Health Department ▪ Minister responsible for Consumer Affairs and Fair Trading ▪ Customers with same catch day number. ▪ Bank manager ▪ Insurance agent ▪ Solicitor	Letters and facsimile
	2. Cease Production & Isolate	Operator ceases production and quarantines product.	
	3. Arrange Returns	Operator arranges return or disposal of product currently located with customers or in transit.	
	4. Assess Effectiveness	Operator assesses the effectiveness of the recall by considering the following: ▪ Total amount of product under recall. ▪ Total product disposed, collected, quarantined, or corrected. ▪ Time delays between risk assessment to removal of product. ▪ Difficulties experienced in the recall ▪ Level of government assistance	
	5. Prepare Reports	Operator prepares reports which incorporate corrective action and/or procedure changes.	

Crab Fishing Pty Ltd

HACCP Manual (HM)

Table of Contents

H.A.C.C.P. Plan

Introduction

The HACCP Team at the time of implementing the system consists of:
- *(write names of team members)*

Scope

The scope of the HACCP Analysis includes all steps involved in:
- Catching crabs
- Ice Slurry
- Packing
- Storage
- Weighing
- Delivery

Purpose

The purpose of the HACCP Analysis is to identify potential quality and safety hazards and undertake preventative measures to meet customer and regulatory requirements.

Products

The products contained in this HACCP program include:
- Crabs

Hazards

The following types of food safety hazards have been defined and addressed in the plan:
- Chemical
- Biological
- Physical
- Quality

2.1 Crabs

Product Description	Blue swimmer crabs
Composition	Whole crab – not cooked i.e. green
Method of Preservation	Chilled in ice slurry – on boat Iced in storage container Maintained in chiller
Packaging – Primary	Storage bins (e.g. NSW market bins) – without lid
Packaging – Shipping	Storage bins (e.g. NSW market bins) – without lid
Storage Conditions	Refrigeration = less than 4.4°C
Distribution method	Refrigerated = less than 4.4°C
Shelf Life	Fresh to the end consumer = 7 days Fresh to processor = 3 days is the recommended time prior to transport to the processor
Special Labelling	Operator name, crab condition, catch date, weight
Customer Preparation	Boil, steam or cook crab prior to serving
Sensitive Population	People who are allergic to seafood should not eat this product. People with liver health issues should not eat this product.
Consumer Use	This product must be cooked prior to consumption. Product is not to be eaten raw.
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to seafood processors.

3.1 Crabs

A. GENERAL CRITERIA

Product Description	Whole sepioteuthis australis (southern calamari)
Method of Preservation	Chilled
Micro. criteria	Refer to 3a. Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Bins or cartons (cartons have a plastic liner). Packed so that no juice is left in the squid
Packing shipping	Bins or cartons (cartons have a plastic liner).
Labelling	Name, licence number, port of operating
Dispatch Temperature	Refrigeration = fresh 1°C to 4.4°C Frozen = -18°C
Transport	Refrigeration = fresh 1°C to 4.4°C Frozen = -18°C

Authorised by: _____ Date: _____

3.1 Crabs

B PHYSICAL CRITERIA

Condition	Tolerance
Colour	Blue on top shell Crabs with stain on white bottom shell are rejected
Smell	Fresh aroma
Body	Minimal damage e.g. limb loss Crabs with two main claws missing are rejected Minimal growth on shell is acceptable – but should be cleaned prior storage Crabs with broken back shells are rejected

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each consignment is checked to ensure that it is 'practically free' of disease, injury and parasites.

Authorised by: _____ Date: _____

3a. Microbiological Criteria-

Seafood is produced to minimum standards consistent with the Australian Food Standards Code (AS1766) and AQIS Product Standards for processed foods.

Category	Standard
Standard Plate Counter	<100,000 org/g, or 4 of 5 <100,000 The 1 remaining not > 500,000
E. Coli	<2.3 (MPN) org/g or 4 of 5 <2.3 remaining <7
Staphylococci	<500g org/g or 4 of 5 <2.3 (MPN) remaining <5,000 org/g
Salmonella	Absent in 5 sample units of 25g
Paralytic Shellfish Poison	Max 80 micrograms per 100g edible raw shellfish

MPN - Most Portable Number

Authorised by: _____ Date: _____

4.1 Crabs

Step	Input	Symbol	Process or Step
1	Bait, nets		Bait Nets
2	Nets		Deploy nets
3	Crabs		Check nets
4	Esky, iced water		Ice slurry (temporary storage)
5	Nets, Bait		Re-deploy nets
			Repeat steps 1, 2, 3, 4 & 5
6	NSW market bins		Pack into bins
7	Trolley		Unload onto trolley
8	Scales		Weigh
9	Ice, NSW market bins		Re-Ice
10	Ice, chiller		Storage
11	Transporter		Dispatch

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
AS 1 All steps in the flow charts	People	Biological contamination	Poor personal hygiene (eg cuts, dirty hands)	3	C	13	Hygiene training, monitor staff	CP
AS 2 All steps in the flow charts	People	Physical contamination	Wearing jewellery	4	D	21	Hygiene training, monitor staff	CP
AS 3 All steps in the flow charts	Bins, storage container top, slurry container, boat	Microbiological contamination, cross contamination	Dirty bins, storage container top etc.	3	C	13	Cleaning program and use only clean bins etc.	CP
AS 4 All steps in the flow charts	Land facility	Microbiological contamination	Pests.	4	D	21	Pest control program.	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
1 Bait nets	Bait, nets	Quality	Bait is off	5	C	22	Keep bait frozen and covered up	QP
2 Deploy nets	Nets	Chemical, biological	Contamination from green algae bloom, oil spills	2	D	12	Check the area prior to deploying the net	CP
3a Check nets	Nets	Quality	Too much seaweed, jellyfish or debris in nets	5	D	24	Separate seaweed , jellyfish and other debris	QP
3b Check nets	Crabs	Quality – crabs not to specification	Damage from: crabs fighting, handling crabs,	4	C	18	Inspecting crabs, handling crabs with care	QP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
4 Ice slurry	Ice	Biological buildup	Not sufficient ice	2	D	12	Monitor temperature of crab	CCP
5 Re-deploy nets	Bait, nets	Quality	Bait is off	5	C	22	Keep bait frozen and covered up	QP
6a Pack into bins	NSW Market Bins	Refer to All Steps AS3						
6b Pack into bins	Crabs	Quality – crabs not to specification	Damage from: crabs fighting, handling crabs,	4	C	18	Inspecting crabs, handling crabs with care	QP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
7 Unload onto trolley	Trolley	Refer to All Steps AS3						
8a Weigh	Scales	Quality – weight not accurate	Scales are not calibrated	4	C	18	Calibrate scales regularly	QP
8a Weigh	Crabs, bins, ice	Quality – incorrect estimation of ice content in weight	Error in calculating ice content in bin	4	C	18	Maintain vigilance in undertaking the procedure	QP
9 Re-Ice	Ice	Physical contamination	Foreign objects	3	D	17	Monitor the ice	CP
10 Storage	Chiller	Biological build-up	Chiller not functioning correctly	3	D	17	Monitor temperature on a daily basis	QP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
11 Transport	Product	Biological build-up	Insufficient ice for transport	3	C	13	Check prior to dispatch and re-ice if necessary	CP

Authorised by: _____ *Date:* _____

HM 5 HACCP Audit Table

Step	**Hazard**	**Preventive Measure** *(Preventive measure, Criteria for safety)*	**Critical Control Point** *(Yes/No)*	**Critical Limits**	**Monitoring** *(What, How, Where, When, Who)*	**Corrective Action** *(Product, Process, Who)*	**Records** *(Ref.)*
4 Ice Slurry	Biological build-up	Monitor temperature of crabs *(USFDA Centre for Food Safety & Applied Nutrition – Fish and Fishery Products Hazards and Control Guide – Appendix 4)*	CCP	Internal temp. of crab is brought to 10°C within 6 hours	***What***: Temperature and time ***How***: Thermometer ***Where***: Boat & shore ***When***: Catch & prior to storage ***Who***: Operator	***Product***: Hold product and test if time permits Remove product from market ***Process***: Review cause of being outside the critical limits and introduce new methods to ensure the problem does not continue. ***Who***: Operator	Form C – Fish Catch and Temperature Record

Authorised by: _____ *Date:* _____

Activity	Description	Frequency	Responsibility	Records
Micro. Testing	Product: • E Coli • Faecal Coliforms • Salmonella • Listeria monocytogenes	Every 6 months	Operator	Test Result folder.
Verify Flow diagram.	Review flow diagrams and ensure accuracy.	Every 6 months.	Operator	Review Record.
Review Hazard Analysis	Review documentation is still current and effective.	Every 6 months.	Operator	Review Record.
Review critical limits.	Review to ensure limits are still current and effective.	Every 6 months.	Operator	Review Record.
Review of Monitoring and Corrective Action records.	All production records checked to ensure the system compliance.	Every week.	Operator	Production records.
Supplier Assessment	Review status	Every year	Operator	Supplier Record
Audit HACCP Plan	External audits.	Every 6 months.	External Auditor.	Audit records.

Authorised by: _____ Date: _____

ICE SLURRY – CCP Risk Assessment no . 4

SLURRY

Step	Procedure	Records or References
1. Prepare slurry	Mix 10kg of ice with 30 litres of salt water in the slurry container	
2. Visually check	Visually check the deterioration of the ice during the catching process	
3. Top up slurry	Add ice and water as required	
4. Complete record	At the end of the fishing trip complete the record	Form C – Fish Catch and Temperature Record

TEMPERATURE

Step	Procedure	Records or References
1. Catch - Take temperature	Insert thermometer into crab in the underside	
2. Record temperature	Record temperature and time Form C	Form C – Fish Catch and Temperature Record
3. Prior to Storage - Take temperature	Insert thermometer into crab in the underside	
4. Record temperature	Record temperature and time Form C	Form C – Fish Catch and Temperature Record

Note: If outside critical limits follow correction action listed in the HACCP Audit table

Authorised by: _____ Date: _____

Crab Fishing Pty Ltd

Crew Training Matrix

Form A

Date of issue_____

Staff ⇒ **Task** ⇓	*Operator*		*Crew*		*Crew*	
Induction						
Protective Clothing						
Personal Hygiene						
Onboard Safety						
Baiting						
Catching						
Landing & Sorting						
Storage						
Cleaning Procedures						
Pest & Waste Control						
Complaints / Recall						
Critical Control Points						
Ice slurry & Temperature Recording						

Form B Cleaning Record

	Fishing Days					As Required								
Date	Deck Space	Crates & Bins	Toilets	Gloves		Cool room	Packing area	Scales	Benches	Shed Floors	Freezer		Comments	Signed

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Form C - Fish Catch & Temp. Record

Date	Type	Qty	Ice Slurry	Catch Temp.		Temp. Prior to storage		Cool room temp.	Signed
				Time	Temp.	Time	Temp.		

Version 1 30 Nov 00

APPENDIX 6

Net Fishing Food Safety Program

Net Fishing Pty Ltd

QUALITY MANUAL
&
FOOD SAFETY PROGRAM

Index

Procedure **Date of Issue**

Net Fishing Pty Ltd

1. Company Policy

Net Fishing Pty Ltd have been fishing the waters of South Australia for over 36 years. Our commitment is to satisfy customer expectations in terms seafood quality and safety. We will provide the highest possible product at all times.

We aim to catch and land the best quality fish on the coast.

This manual has been prepared to bring together all the documents relating to the operation of our quality system. Food Safety and Quality are the keys to the system. We have used the Hazard Analysis and Critical Control Point Technique (HACCP) to help identify, reduce and/or eliminate food safety and quality hazards.

I am fully committed to the principals outlined in this manual

Signed :_____

Title:_____

Date:_____

Net Fishing Pty Ltd

2. Key Staff & Responsibilities

The business is made up of 2 personnel running the fishing operation, namely:

- Operator (owner of the business)
- Crew

Operator

The Operator has complete responsibility for all decisions in particular those with respect to quality and safety of the fish and safety of the crew and vessel.
His key responsibilities are:

- Driving the boat
- Catching fish
- General handling fish and fish quality
- Packing fish
- Grading, sorting and washing fish
- Cleaning boat facilities
- Financial management including: banking, payments, wages and bank liaison
- Maintaining relationships with customers and suppliers
- Maintaining the Quality Assurance and Food Safety program
- Vessel, vehicle and equipment maintenance

Crew

- Catching fish
- Packing fish
- Grading, sorting and washing fish
- General handling of the fish and fish quality
- Cleaning boat and shore facilities
- Financial management including: banking, payments, wages and bank liaison
- Maintaining relationships with customers and suppliers

Net Fishing Pty Ltd

3. Staff Training Procedure

Form A is used to document our training.

Induction
Each new staff member upon employment is informed of the following:

- Elements of ship board safety
- Use of the radio
- Explain principles of fishing
- Explain basic functions
- Work operations
- Fishing handling, storage, preservation and packing
- Work hours
- Pay and entitlements
- Protective clothing

Protective clothing
Staff are issued with the following protective clothing and must wear these items onboard the fishing vessel:

- Life jackets (to be worn as required)
- Waders
- Oil skins
- Gloves (individual choice)
- Head gear (hat)
- Sun block
- Cleaning agents for hands

Personal Hygiene
Staff are trained in personal hygiene requirements which are listed in section 6 of this manual.

Safety in the workplace
The following are the basic rules for safety in the workplace:

- Keeping the deck clear and put equipment in the specified area
- No alcohol
- No intoxicating drugs
- No smoking whilst during fishing operation

Administration
If the crew have any issues regarding pay, sickness etc. these are handled by the Operator.

Basic Functions

The crew's basic functions include the following:

- Set gear
- Retrieve the gear
- Catching fish
- Packing fish
- Grading, sorting and washing fish
- Slurry operation
- Adhering to safety factors
- General handling of the fish and fish quality
- Cleaning boat and shore facilities
- Clean up the boat on a continuous basis
- Minor repairs of the boat, gear and facilities

Crew are trained in these activities on the job.

The operator also undertakes the basic functions (above) and is responsible for driving the boat.

Net Fishing Pty Ltd

4. Cleaning Schedules

Form B is used to document our cleaning activities.

It is recommended that the business seek advice on using sanitising agent.

BOAT

Deck Space (after each shot)

- Cleaned of seaweed and other debris is cleared from the deck
- Washed down with seawater

If there is a spillage of oil or fuel the space is cleaned with detergent and rinsed with seawater prior to the next shot.

Slurry Bins

- Scrubbed with a scrubbing brush
- Washed with detergent at least once per week (even if it is not used)
- Rinsed with seawater

Truck (as required)

The back of the truck is cleaned of dust, dirt and grim

- Sweep off the debris
- Scrub with detergent
- Rinse with fresh water

Ice Chest (after use)

The chest is hosed out and washed with seawater

Net Fishing Pty Ltd

5. Pest Control Procedure

Birds
We have little problem with birds contaminating the facilities e.g. boat
As a first course of action we scare off the birds
If contamination has occurred the area is cleaned and sanitised before use.

We have not had any problems with rodents on the vessel.

Net Fishing Pty Ltd

6. Personal Hygiene Standards

Reporting of illness

Staff must report prior to commencing work any illness or injury which may lead to product contamination. Eg diarrhoea, cuts on the hands

Personal hygiene in the storage and processing area

To ensure that personal standards of hygiene are maintained, the following procedure shall apply:

A. Production staff must wash hands:
   i. Before starting the fishing operation (i.e. prior to preparing the boat);
   ii. Immediately after using the toilet;
   iii. After touching the nose or mouth;
   iv. After eating food
   iv. After handling contaminated material (cleaning solutions, petrol & oils etc); and
   v. Whenever necessary to avoid contaminating the food.
   Note: The wearing of gloves does not exempt the Staff from having thoroughly washed hands.

B Any person who has a cut or wound must not continue to handle food or food contact surfaces until the injury is completely protected by a water proof covering which is firmly secured and which is conspicuous in colour.

C. Staff must not engage in any behaviour which could result in contamination of food, such as eating, smoking, chewing anything such as gum, sticks, nuts, etc. or any other un-hygienic behaviour in food handling areas.

D. Personal effects and clothing are kept separately from fishing handling areas.

E Staff shall be responsible for maintaining a high degree of personal hygiene.

F Staff shall be free of jewellery which may contaminate the product

What protective clothing to wear

Staff should ensure that protective clothing is kept clean to reduce the risk of contaminating the product.

Net Fishing Pty Ltd

7. Fishing Procedure

The Net Fishery has a Code of Conduct which we follow where possible. The Code covers:

- Environment
- Vessels
- Food storage and handling
- Relationships with other people

We adhere to fishing regulations and reject any fish which may be unsafe for human consumption.

Net Fishing Pty Ltd

8.On board Handling & Storage Procedure

Catching

- Unwanted bycatch is removed and returned to the water
- Bait is left on the deck in the handling box with ice

Sorting, Grading and Packing

- The fish are bailed out of the pocket and sorted in small quantities
- The fish is placed in separate bins (i.e. one grade per slurry bin)
- The fish remain in the slurry bin until time permits to wash and packed into handling boxes
- The fish are iced in handling box and placed in the ice chest

Washing Fish

- Extra water is placed in the slurry bins
- The fish are agitated in the bin to remove excess slim

Net Fishing Pty Ltd

9. Unload and Distribution Procedure

Storage & Transport

- The fish are stored in the ice chest on the boat
- On return to port the fish are loaded onto the truck and transport direct to the customer

Identification

The handling box has the following identification marks:

- Operator name

Net Fishing Pty Ltd

10. Hazard Analysis & Critical Control Point (HACCP)

In preparing the HACCP Program the following steps were undertaken:

1. Assembled our HACCP Team.
2. Developed the product description.
3. Identified the product's intended usage.
4. Constructed a flow chart.
5. Verified the flow chart on-site

We than ensured the following was achieved:

1. Hazard Analysis, Risk Assessment & Preventative/Control Measures
2. Determine Critical Control Points (CCPs)
3. Establish Critical Limits for each CCP
4. Establish a Monitoring System for each CCP
5. Establish Corrective Actions
6. Establish Verification Procedures
7. Establish Documentation and Record Keeping

As a result of completing the steps above a HACCP program has been completed and is in a separate section.

Net Fishing Pty Ltd

11. Customer Complaint & Recall Procedures

If a customer complaint is received undertake the following:

- We ask for the fish to be returned so we can check the quality
- If we find the fish are not to the required standard we try to determine what caused the problem
- We will then negotiate a settlement the customer

Any complaints are recorded against the catch record (Form C).

If there is a possibility that the food is unsafe for human consumption a risk assessment (detailed below) is undertaken.

1. Risk Assessment Procedure for Suspected Products.

Input	Step	Procedure
Customer Complaint	**1. Record complaint**	Operator records complaint including catch day from customer.
	2. Identify batch	Identify catch day of all suspect product. Cross check catch day number against sales records and orders dispatched.
	3. Consult Staff	Contact all staff involved in the handling of the product to determine root cause of problem.
	4. Assess Risk & withhold product if required.	Assess the risk to public health and safety.
	5. Collect Information	Collect as much information from staff, customer, transporters etc. and continue risk assessment. If there is no risk to public health established, terminate the process.
	6. Withdraw product	If limited health risk withdrawal may be undertaken. If there is a risk to public safety a recall is necessary. (Refer to the next procedure)

2. Recall Procedure.

Input	Step	Procedure	Records or Ref.
Risk Assessment Outcome	**1. Notification**	Operator notifies the following: ▪ ANZFA (Australia New Zealand Food Authority) ▪ SA Health Department ▪ Minister responsible for Consumer Affairs and Fair Trading ▪ Customers with same catch day number. ▪ Bank manager ▪ Insurance agent ▪ Solicitor	Letters and facsimile
	2. Cease Production & Isolate	Operator ceases production and quarantines product.	
	3. Arrange Returns	Operator arranges return or disposal of product currently located with customers or in transit.	
	4. Assess Effectiveness	Operator assesses the effectiveness of the recall by considering the following: ▪ Total amount of product under recall. ▪ Total product disposed, collected, quarantined, or corrected. ▪ Time delays between risk assessment to removal of product. ▪ Difficulties experienced in the recall ▪ Level of government assistance	
	5. Prepare Reports	Operator prepares reports which incorporate corrective action and/or procedure changes.	

Net Fishing Pty Ltd

HACCP Manual (HM)

Table of Contents

H.A.C.C.P. Plan

Introduction

The HACCP Team at the time of implementing the system consists of:

- *(Write HACCP team members names here)*

Scope

The scope of the HACCP Analysis includes all steps involved in:

- Catching fish
- Ice Slurry
- Packing
- Storage
- Delivery

Purpose

The purpose of the HACCP Analysis is to identify potential quality and safety hazards and undertake preventative measures to meet customer and regulatory requirements.

Products

The products contained in this HACCP program include:

- Fin Fish

Hazards

The following types of food safety hazards have been defined and addressed in the plan:

- Chemical
- Biological
- Physical
- Quality

2.1 Fin Fish

Product Description	Fish with fins and scales
Composition	Whole fish Gutted, headless – eg leather jackets
Method of Preservation	Chilled in ice slurry
Packaging – Primary	Bins (without lid)
Packaging – Shipping	Bins (without lid) in an ice box
Storage Conditions	Ice and ice chest storage
Distribution method	Transported on own truck not refrigerated
Shelf Life	Fresh to the end consumer = 5 to 10 days
Special Labelling	Name
Customer Preparation	May be processed eg headed, gutted, filleted, frozen or dispatched to another factory
Sensitive Population	People who are allergic to seafood should not eat this product. People with liver health issues should not eat this product. Elderly people should avoid eating raw seafood product.
Consumer Use	This product may be cooked prior to consumption.
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to seafood processors.

3.1 Fin Fish

A. GENERAL CRITERIA

Product Description	All fish with fins and scales
Method of Preservation	Chilled in ice slurry
Micro. criteria	Refer to 3a. Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Bins (without lid)
Packing shipping	Bins (without lid) in an ice box
Labelling	Name
Temperature	Chilled in ice slurry
Transport	Transported on own truck not refrigerated

3.1 Fin Fish

B PHYSICAL CRITERIA

Condition	Tolerance
Flesh	Glisten, preferrably still in rigour
Eyes	Clear, not cloudy with no white pupil
Smell	No unpleasent aroma
Body	Practically free of damage, body should be intact with minimal visual damage, stomach not bloated or discoloured

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each consignment is checked to ensure that it is 'practically free' of disease, injury and parasites.

4.1 Net Fishing

Step	Input	Symbol	Process or Step
1	Net		Prepare & cast net
2	Net		Pull in Net
3	Sorting bin		Unload & sort fish
4	Boxes, ice, salt water		Ice slurry fish
5	Handling bins		Washed and packed
6	Knifes		Head & gut (selected species as necessary)
7	Transporter		Dispatch

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
AS 1 All steps in the flow charts	People	Biological contamination	Poor personal hygiene (eg cuts, dirty hands)	4	C	18	Hygiene training, monitor staff	CP
AS 2 All steps in the flow charts	People	Physical contamination	Wearing jewellery	4	D	18	Hygiene training, monitor staff	CP
AS 3 All steps in the flow charts	Bins, slurry container, boat, knives, filleting board	Microbiological contamination, cross contamination	Dirty bins, storage container, knives, filleting board etc.	4	D	18	Cleaning program and use only clean bins etc.	CP
AS 4 All steps in the flow charts	Boat	Microbiological contamination	Unclean boat area	4	D	18	Cleaning program	CP
AS5 All steps in the flow charts	Truck	Microbiological contamination	Unclean trucks area, pests contamination eg cats	4	D	18	Cleaning program, pest control	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
1a Prepare & cast net	Net	Nil						
1b Prepare & cast net	Water	Micro contamination Chemical contamination	Urban runoff Rural runoff Storm water Factory discharge	3	C	13	Fish in approved water. Monitor status of area regularly via medial water	CP
2 Pull in net	Nets	Nil						
3 Unload & sort	Gill net	Micro buildup	Time taken to unload the net	4	C	18	Difficult to control amount of fish entering the net.	CP
3 Unload & sort	Preparing for the catch (procedure)	Poor quality	Insufficient ice, bins for the days catch	4	D	21	Ensure the quantity caught will not exceed the limits specified in the "Ice slurry" step	QP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
				Severity	Likely	Risk		
4 Ice slurry	Process	Micro buildup	Over exposure to high time and temperature. Wind factor can increase the problem	2	D	12	Monitor time & temperature exposure	CCP
5 Washed & packed	Water	Refer to 1b (previous page)						
6 Head & gut (selected species as required)	Knives	Refer to All Steps						
7 Dispatch	Truck	Refer to All Steps 5						

Authorised by: _____ *Date:* _____

HM 5 HACCP Audit Table

Step	**Hazard**	**Preventive Measure** *(Preventive measure, Criteria for safety)*	**Critical Control Point** *(Yes/No)*	**Critical Limits**	**Monitoring** *(What, How, Where, When, Who)*	**Corrective Action** *(Product, Process, Who)*	**Records** *(Ref.)*
4 Ice slurry	Micro buildup	Monitor time & temperature exposure *(USFDA Centre for Food Safety & Applied Nutrition – Fish and Fishery Products Hazards and Control Guide – Appendix 4)*	CCP	Internal temp. of fish is brought to 10°C within 6 hours	***What***: Time & temperature ***How***: Thermometer & watch ***Where***: On boat ***When***: Upon catching fish and then before delivery (We usually deliver to the processor within 6 hours of catch) ***Who***: Operator/crew	***Product***: Re-chill fish ***Process***: Inform the processor that the fish should be cooked and not eaten raw. ***Who***: Operator	Form C – Fish Catch and Temperature Record

Authorised by: _____ *Date:* _____

Activity	Description	Frequency	Responsibility	Records
Micro. Testing	Product: • E Coli • Faecal Coliforms • Salmonella • Listeria monocytogenes	Every 6 months	Operator	Test Result folder.
Verify Flow diagram.	Review flow diagrams and ensure accuracy.	Every 6 months.	Operator	Review Record.
Review Hazard Analysis	Review documentation is still current and effective.	Every 6 months.	Operator	Review Record.
Review critical limits.	Review to ensure limits are still current and effective.	Every 6 months.	Operator	Review Record.
Review of Monitoring and Corrective Action records.	All production records checked to ensure the system compliance.	Every week.	Operator	Production records.
Supplier Assessment	Review status	Every year	Operator	Supplier Record
Audit HACCP Plan	External audits.	Every 6 months.	External Auditor.	Audit records.

Authorised by: _____ Date: _____

ICE SLURRY – CCP Risk Assessment – 4 Ice Slurry

SLURRY

Step	Procedure	Records or References
1. Prepare slurry	Mix 2-3 parts ice to 1 part seawater	
2. Visually check	Visually check the deterioration of the ice during the catching process	
3. Top up slurry	Add ice and water as required	
4. Complete record	At the end of the fishing trip complete the record	Form C – Fish Catch and Temperature Record

TEMPERATURE

Step	Procedure	Records or References
1. Catch - Take temperature	Insert thermometer into fish underside (i.e. bum)	
2. Record temperature	Record temperature and time Form C	Record in pocket book and transfer into Form C – Fish Catch and Temperature Record
3. Prior to delivery take temperature	Insert thermometer into fish underside (i.e. bum)	
4. Record temperature	Record temperature and time Form C	Record in pocket book and transfer into Form C – Fish Catch and Temperature Record

Note: If outside critical limits follow correction action listed in the HACCP Audit table

Authorised by: _____ Date: _____

Net Fishing Pty Ltd

Crew Training Matrix

Form A

Date of issue_____

Staff ⇒ **Task** ⇓	*Operator*		*Crew*		*Crew*	
Induction						
Protective Clothing						
Personal Hygiene						
Onboard Safety						
Casting Nets						
Catching						
Landing & Sorting						
Storage						
Cleaning Procedures						
Pest & Waste Control						
Complaints / Recall						
Critical Control Points						
Ice slurry & Temperature Recording						

Form B Cleaning Record

	Fishing Days					As Required								
Date	Deck Space	Slurry bins	Handling bins	Ice Chest		Truck							Comments	Signed

Form C - Fish Catch & Temp. Record

Date	Type	Qty	Ice Slurry	Catch Temp.		Temp. Prior to delivery		Signed
				Time	Temp.	Time	Temp.	

Version 1 11 Dec 00

APPENDIX 7

River Fishing Food Safety Program

River Net Fishing Pty Ltd

QUALITY MANUAL
&
FOOD SAFETY PROGRAM

Index

Procedure **Date of Issue**

River Net Fishing Pty Ltd

1. Company Policy

River Net Fishing Pty Ltd has been fishing the waters of the Murray River for over 30 years. Our commitment as always is to land the freshest and best handled fish on the Great Yarra Reach.

This manual has been prepared to bring together all the documents relating to the operation of our quality system. Food Safety and Quality are the keys to our past and future success. We have used the Hazard Analysis and Critical Control Point Technique (HACCP) to identify, eliminate and/or reduced hazards.

I am fully committed to the principals outlined in this manual

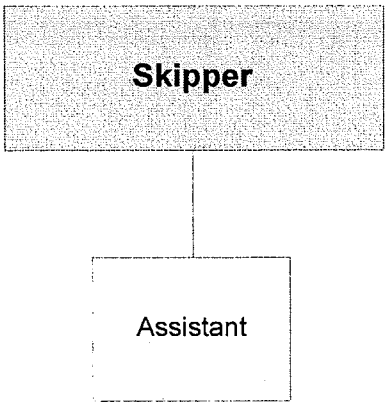
Signed :_____

Title:_____

Date:_____

River Net Fishing Pty Ltd

2. Key Staff & Responsibilities



Skipper

The skipper has complete responsibility for all decisions, in particular those with respect to quality and safety of the fish and safety of the crew and vessel.

His key responsibilities are:

- Boat maintenance
- Daily fishing
- Financial management including: invoicing, supplies, banking, payments, wages and bank liaison *(At times this activity is conducted by administrative personnel within the business)*
- Preparing product for sale and transport
- Maintaining relationships with customers and suppliers.
- Expansion of customer base.
- Maintaining the Quality Assurance and Food Safety program
- Cleaning the boat and shore facilities
- Ensuring that critical limits in the HACCP plan are followed

Assistant

The Assistant is responsible for:

- Assisting in daily fishing tasks
- Repair nets and other equipment
- Cleaning the boat and shore facilities
- Prepares for the day's activities (eg petrol, crates etc.)
- Cleaning and washing of fish

River Net Fishing Pty Ltd

3. Staff Training Procedure

Induction
Each new staff member upon employment is informed of the following:

- Work hours
- Pay and entitlements
- Protective clothing
- Safety rules
- Check the staff members has the required licence to operate vessel
- Fishing handling, storage, preservation and packing
- Identifying the defined fishing area
- Cleaning instructions
- Give information on the SA River Fishery Association and membership details
- Issue staff with the Marine Safety Code book

Protective clothing
Staff are required to bring the following protective clothing and must wear these items onboard the fishing vessel at all times:

- Water boots
- Gloves
- Wet weather gear (only when wet)

Personal Hygiene
Staff are trained in personal hygiene requirements which are listed in section 6 of this manual.

Safety in the workplace
We follow the Marine Safety Code which includes but is not limited to the following safety rules:

- Must wear protective clothing
- Wear a PFD (personal floatation device)
- Torch, PFD, fire extinguisher, oar, rope and bucket
- For night fishing a light must be carried

River Net Fishing Pty Ltd

4. Cleaning Schedules

Boat (Daily and Weekly)

- The boat will be washed down daily by hosing out debris.
- Each week the boat is emptied out completely and sanitise with a chlorine based chemical. The chemical instructions are followed.

Nets (as required)

- Remove large amounts of debris by hand picking or shaking the net.
- With a pressure hose clean each net
- Let the net dry
- Pack for next use

Crates (daily)

- Remove large amounts of debris by pressure hose
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Air dry the crate

Cool room (weekly or as required)

- Remove soiled contaminants from floor and walls
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Turn on cool room and leave door open to air dry

Cooker (after each use)

- Remove soiled contaminants
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Leave to air dry

4. Cleaning Schedules, cont.

Scales (after each use)

- Remove soiled contaminants
- Wipe down with warm water with detergents
- Wipe off with clean water
- Sanitise with a chlorine based chemical
- Leave to air dry

Utensils (after each use)

- Remove soiled contaminants
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Leave to air dry

Shed area (after each use)

- The shed floors are sweep
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Leave to air dry

Freezer (as required e.g every 6 months)

- Remove soiled contaminants from floor and walls
- Wash with warm water with detergents
- Rinse with clean water
- Sanitise with a chlorine based chemical
- Hot rinse
- Leave door open to air dry

River Net Fishing Pty Ltd

5. Pest Control Procedure

The following pest control procedures are followed by the business:

- In the shed baits are laid on a regular basis
- When the boat is stored a cover is used to prevent soiling
- Cleaning and sanitising procedures in section 4 are followed
- If contamination has occurred the area is cleaned and sanitised before use

River Net Fishing Pty Ltd

6. Personal Hygiene Standards

Reporting of illness

Staff must report prior to commencing work any illness or injury which may lead to product contamination. Eg diarrhoea, cuts on the hands

Personal hygiene in the storage and processing area

To ensure that personal standards of hygiene are maintained, the following procedure shall apply:

A. Staff must wear disposable gloves (eg blue gloves) when handling product and shall ensure production clothing is kept clean.

B. Production Staff must wash hands:
   i. Before entering the storage and processing area;
   ii. Immediately after using the toilet;
   iii. After touching the nose or mouth;
   iv. After handling contaminated material (cleaning solutions, petrol & oils etc); and
   v. Whenever necessary to avoid contaminating the food.

   Note: The wearing of gloves does not exempt the Staff from having thoroughly washed hands.

C Any person who has a cut or wound must not continue to handle food or food contact surfaces until the injury is completely protected by a water proof covering which is firmly secured and which is conspicuous in colour.

D. Staff must not engage in any behaviour which could result in contamination of food, such as eating, smoking, chewing anything such as gum, sticks, nuts, etc. or any other un-hygienic behaviour in food handling areas.

E. Personal effects and clothing must not be stored in food processing areas.

F. Staff shall be responsible for maintaining a high degree of personal hygiene.

G. Staff shall be free of jewellery which may contaminate the product

Personal hygiene on the vessel

As above except:

- Gloves are not disposable

What protective clothing to wear

Staff should ensure that protective clothing is kept clean to reduce the risk of contaminating the product.

River Net Fishing Pty Ltd

7. Fishing Procedure

Fishing Area
We fish in licenced cordoned area known as reaches. These reaches are approved by Primary Industry and Resource South Australia (PIRSA). The licence details are:
Licence number – R06
Licence Holder: River Net Fishing Pty Ltd

Processing Licence
We are licenced as a fish processor under the Fisheries Act 1982 South Australia. The registration details are:
Number - FX0280
Premises – Shed at rear of, Lot 140 Dustone Drive, Waikerie

Code of Conduct
We follow the River Murray Fishery Code of Conduct developed by the SA River Fishery Association in conjunction with SAFIC. The Code covers:

- Mission statement
- Objectives
- Principles
- Aquatic Habitat
- Sustainability
- Safety and Quality Assurance
- Environment
- Communication
- Compliance
- Research
- National parks

We also adhere to the Code of Practice Version 2.1 developed by the SA River Fishery Association.

Product Safety
SA Water monitor the river for blue/green algae blooms. We are notified through the media of any outbreaks. If we encounter algae we ensure fish are not washed in the affected area.

We adhere to the licence conditions which include factors such as fish size, fishing area status (eg open or closed). We will reject any fish we consider may be unsafe for human consumption.

River Net Fishing Pty Ltd

8.On board Handling & Storage Procedure

Running the Gear

The catch from all nets/pots is generally completed with four (4) hours. This timeframe is from the first net/pot to completing transport to the cool room facility.

- Remove the fish and crustaceans from the net. All product is handled with care to ensure damage is reduced or eliminated.
- Brain spike (callop/goldern perch and cod only)
- Take temperature of fish and record
- Separate species
- Species suitable for sale are placed immediately in the ice slurry (except yabbies) to optimise shelf life
- The above process is repeated for each net.
- Prior to gilling and gutting take temperature of product and record
- When required gilling and gutting is completed including rinsing the product prior to placing in the ice slurry.
- Waste from the gilling and gutting is placed back into the river.
- The fish is loaded into a container (eg esky) with ice/ice packs and transported to the cool room.

River Net Fishing Pty Ltd

9. Unload and Distribution Procedure

This procedure described the practices used when the product reaches the processing facility (eg shed).

Storage

- Check temperature and record prior to placing in cool room
- Unload product and place into cool room

Cooking (yabbies only)

- Fill cooker with water and salt solution
- Bring to the boil
- Place yabbies in the boiling water
- Return to boil
- Cook for the appropriate time of 100°C for 2.5 minutes (minimum)
- Drain the yabbies
- Place in the cool room for the appropriate time
- Take temperature of the yabbies at hour 2 and hour 6 to ensure critical limits are reached (Critical limit = 60°C to 21°C within 2 hours and then 21°C to 4.4°C within 4 hours)

Packing

- Name, licence number are placed onto the container (eg sticker)
- Place the container on the scales
- Place ice in the bottom of container
- Check temperature of fish prior to placing on top of ice
- Record temperature of the fish
- Fish are placed on top of ice (or in plastic bag on top of ice)
- Fish are covered with ice
- Container is sealed ready for transportation

Transport

- The containers are delivered to the transport depot.
- The containers are placed directly into the cool room awaiting transportation.
- A cart-note is written for each consignment

River Net Fishing Pty Ltd

10. Hazard Analysis & Critical Control Point (HACCP)

In preparing the HACCP Program the following steps were undertaken:

1. Assembled our HACCP Team.
2. Developed the product description.
3. Identified the product's intended usage.
4. Constructed a flow chart.
5. Verified the flow chart on-site

We than ensured the following was achieved:

1. Hazard Analysis, Risk Assessment & Preventative/Control Measures
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6. Establish Verification Procedures
7. Establish Documentation and Record Keeping

As a result of completing the steps above a HACCP program has been completed and is in a separate section.

River Net Fishing Pty Ltd

11. Customer Complaint & Recall Procedures

If a customer complaint is received we record the following:

- Date
- Product/Code
- Customer details
- Complaint details
- Action taken

If there is a possibility that the food is unsafe for human consumption a risk assessment (detailed below) is undertaken.

1. Risk Assessment Procedure for Suspected Products.

Input	Step	Procedure
Customer Complaint	**1. Record complaint**	Skipper records complaint including catch day from client.
	2. Identify batch	Identify catch day of all suspect product. Cross catch day number against sales records and orders dispatched.
	3. Consult Staff	Contact all staff involved in the handling of the product to determine root cause of problem.
	4. Assess Risk & withhold product if required.	Assess the risk to public health and safety.
	5. Collect Information	Collect as much information from staff, customer, transporters etc. and continue risk assessment. If there is no risk to public health established, terminate the process.
	6. Withdraw product	If limited health risk withdrawal may be undertaken. If there is a risk to public safety a recall is necessary. (Refer to the next procedure)

2. Recall Procedure.

Input	Step	Procedure	Records or Ref.
Risk Assessment Outcome	**1. Notification**	Skipper notifies the following: ▪ Company Directors ▪ ANZFA ▪ SA Health Department ▪ Minister responsible for Consumer Affairs and Fair Trading ▪ Customers with same catch day number.	Letters and facsimile
	2. Cease Production & Isolate	Skipper ceases production and quarantines product.	
	3. Arrange Returns	Skipper arranges return or disposal of product currently located with customers or in transit.	
	4. Assess Effectiveness	Skipper assesses the effectiveness of the recall by considering the following: ▪ Total amount of product under recall. ▪ Total product disposed, collected, quarantined, or corrected. ▪ Time delays between risk assessment to removal of product. ▪ Difficulties experienced in the recall ▪ Level of government assistance	
	5. Prepare Reports	Skipper prepares reports which incorporate corrective action and/or procedure changes.	

River Net Fishing Pty Ltd

HACCP Manual (HM)

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H.A.C.C.P. Plan

Introduction

The HACCP Team at the time of implementing the system consists of:

- *(Write HACCP team member names here)*

Scope

The scope of the HACCP Analysis includes all steps involved in:

- Catching fish
- Processing
- Storage
- Handling
- Packing

Purpose

The purpose of the HACCP Analysis is to identify potential quality and safety hazards and undertake preventative measures to meet customer and regulatory requirements.

Products

The products contained in this HACCP program include:

- Finfish
- Yabbies

Hazards

The following types of food safety hazards have been defined and addressed in the plan:

- Chemical
- Biological
- Physical

2.1 Fin Fish

Product Description	Fish with fins
Composition	Whole Gutted Gilled & gutted
Method of Preservation	Chilled or live
Packaging – Primary	Whole, gutted, gilled & gutted – plastics bags
Packaging – Shipping	Poly box
Storage Conditions	Whole, gutted, gilled & gutted in refrigeration = fresh 1°C to 4.4°C
Distribution method	Refrigerated or frozen transport, or In foam boxes with ice packs
Shelf Life	Fresh – 10 days (Fishy Business book)
Special Labelling	Business details (name, address, reach number) Customer details (name, address) Weight (gross)
Customer Preparation	Cook and serve
Sensitive Population	People who are allergic to seafood should not eat this product. People with liver health issues should not eat this product.
Consumer Use	This product must be cooked prior to consumption. Product is not to be eaten raw.
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to wholesalers

2.2 Crustaceans Seafood

Product Description	Yabbie
Composition	Whole
Method of Preservation	Chilled
Packaging – Primary	Boxed with plastic liner Boxed with plastic bag
Packaging – Shipping	Poly box
Storage Conditions	Refrigeration = fresh 1°C – 4.4°C
Distribution method	Refrigerated transport, or In foam boxes with ice packs
Shelf Life	7 days
Special Labelling	Business details (name, address, reach number) Customer details (name, address) Weight (gross)
Customer Preparation	Cooked = Ready to serve Raw = Cook and serve
Sensitive Population	People who are allergic to shellfish should not eat this product. People with liver health issues should not eat this product.
Consumer Use	May be eaten once cooked
Consumer	General public
Intended for Retail or Food Service	Intended from general consumption. Sold to wholesalers and general public

3.1. Fin Fish

A. GENERAL CRITERIA

Product Description	All fish with fins
Method of Preservation	Chilled
Micro. criteria	Refer to Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Plastic sleeves & or bags
Packing shipping	Poly boxes
Labelling	Business details (name, address, reach number) Customer details (name, address) Weight (gross)
Dispatch Temperature	Fresh = 1°C – 4.4°C
Transport	Refrigerated transport: Fresh = 1°C – 4.4°C

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3.1 Fin Fish

B PHYSICAL CRITERIA

Condition	Tolerance
Flesh	Glisten, firm
Eyes	Clear, not sunken
Body	Must be undamaged and ridgid

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each consignment is checked to ensure that it is 'practically free' of disease, injury and parasites.

3.2 Crustaceans

A. GENERAL CRITERIA

Product Description	Yabbie
Method of Preservation	Chilled
Micro. criteria	Refer to Micro criteria
Chemical criteria	ANZFA, Food Standards, D1, A12 & A14
Physical criteria & Permissible defects	Refer to page 2
Packing - primary	Plastic bags
Packing shipping	Poly box
Labelling	Business details (name, address, reach number) Customer details (name, address) Weight (gross)
Transport	1°C – 4.4°C

3.2 Crustaceans

B. PHYSICAL CRITERIA

Condition	Tolerance
Colour	Red to light black
Body	Whole with minimal damage Should look moist not dry

C. PRESENCE OF DISEASE, INJURY AND PARASITES OR OTHER ABNORMALITIES

1. Each batch is checked to ensure that it is 'practically free' of disease, injury and parasites.

'Practically free' in relation to an offending characteristic is not present in the food at a level that would affect the food's fitness for human consumption.

4.1 Drum & Gill Nets

Step	Input	Symbol	Process or Step
1	Bucket, Esky, Ice, Hesson bags		Prepare Tubs
2	Drum net		Pull in Net
3	Bucket, Esky, Ice, Hesson bags		Unload fish
4	Spike		Spike fish
5	Thermometer		Temperature check
6	Bucket, Esky, Ice, Hesson bags		Ice slurry fish
7	Thermometer		Temperature check
8	Knife River water		Gut & wash fish (except Carp & herrings)
9	Bucket, Esky, Ice, Hesson bags		Ice slurry fish
10	Vehicle		Transport
11	Thermometer		Temperature check
12	Cool room		Storage
13	Scales Poly box		Weigh & box
14	Thermometer		Temperature check
15	Transporter		Dispatch

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4.2 Yabbie

Step	Input	Symbol	Process or Step
1	Pots Bait	○	Set pots
2	Pots	○	Pull in Pot
3	Bucket, Esky, Ice, Hesson bags	○	Unload yabbies
4	Bucket, Esky, Ice, Hesson bags	▽	Ice slurry yabbie
5	Vehicle	⇨	Transport
6	Cooker Basket Water	○	Prepare cooker
7		○	Boil & temp. check yabbies
8	Water Bucket	○	Chill yabbies (in chilled water)
9	Crate, slotted container	○	Drain
10	Cool room	▽	Storage
11	Thermometer	○	Temperature Check
12	Poly box Scales	○	Box & Weigh
13	Transporter	⇨	Dispatch

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HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
				Severity	Likely	Risk		
All steps in the flow charts	People	Biological contamination	Poor personal hygiene (eg cuts, dirty hands)	4	D	21	Hygiene training, monitor staff	CP
All steps in the flow charts	People	Physical contamination	Wearing jewellery	4	D	21	Hygiene training, monitor staff	CP

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
1 Prepare Tubs	Utensils, tubs, trays, containers etc	Microbiological contamination	Dirty tubs or utensils	4	D	21	Use only clean tubs & utensils	CP
2 Pull in net	Net	Chemical contamination, biological contamination	Fish are dead due to river contamination, illness	2	C	8	Do not keep product. Dispose of fish in proper means (not back into river)	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
2 Pull in net	Net	Quality	Fish are dead due to leaving fish in net for too long	5	D	24	Do not keep product.	QP
3 Unload fish	People	Refer to all steps on page 1 of this Risk Assessment						
4 Spike fish	Spike	Biological contamination	Unclean spike	4	d	21	Clean spike before use	CP
5 Temperature Check	Thermometer	Biological contamination	Unclean thermometer	3	D	17	Clean before use	CP
6a Ice slurry	Bucket, esky, ice	Biological contamination	Unclean buckets	4	D	21	Clean before use	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
6b Ice slurry	Bucket, esky, ice	Biological build-up	Not enough ice taken on trip	2	C	8	Ensure sufficient ice is taken for the trip	CCP
6c Ice slurry	Bucket, esky, ice	Quality	Not enough ice taken on trip	4	D	21	Ensure sufficient ice is taken for the trip	QP
7 Temperature Check	Thermometer	Biological contamination	Unclean thermometer	3	D	17	Clean before use	CP
8a Gill, gut & wash fish	Knife	Biological contamination	Unclean knife	4	D	21	Clean before use	CP
8b Gill, gut & wash fish	Water	Chemical & biological	Sprays, houseboats effluent Algae blooms	2	C	8	Monitoring media, checking immediate area for signs of contamination	CCP

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HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
9a Ice slurry	Bucket, esky, ice	Biological build-up	Not enough ice taken on trip	2	C	8	Ensure sufficient ice is taken for the trip	CCP
9b Ice slurry	Bucket, esky, ice	Biological contamination	Unclean buckets	4	D	21	Clean before use	CP
9c Ice slurry	Bucket, esky, ice	Quality	Not enough ice taken on trip	4	D	21	Ensure sufficient ice is taken for the trip	QP

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HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
10 Transport (own vehicle)	Vehicle	Physical	Loose materials and objects in back of vehicle	3	D	17	Vehicle must be kept clean and free of debris	CP
11 Temperature Check	Thermometer	Biological contamination	Unclean thermometer	3	D	17	Clean before use	CP
12a Storage	Cool room	Biological contamination	Unclean cool room	3	D	17	Clean room regularly	CP
12b Storage	Cool room	Quality	Malfunction of cooling system	3	C	13	Monitor temperature Regular maintenance	QP
13a Weigh and Box	Scales	Quality	Scales not calibrated	4	D	21	Calibrate scales regularly	QP

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HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
13b Weigh and Box	Poly boxes	Biological contamination	Use of second hand boxes	2	D	12	Adhere to policy of not using second hand poly boxes.	CP
13c Weigh and Box	Plastic tubs	Biological contamination	Tubs are not cleaned or sanitised	2	D	E	Ensure tubs are clean and sanitised.	CP
14 Temperature Check	Thermometer	Biological contamination	Unclean thermometer	3	D	17	Clean before use	CP
15a Transport	Transport Vehicles	Quality – reduction in shelf life	Non delivery of product or refrigeration breakdown	3	D	17	Use reputable transport operators	QP
15b Transport	Transport Vehicles	Biological (cross contamination)	Transporters mixing products (eg. Placing red meat and fin fish in same area)	2	D	12	Use reputable transport operators	CP

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HM 5 HACCP Audit Table

Step	**Hazard**	**Preventive Measure** *(Preventive measure, Criteria for safety)*	**Critical Control Point** *(Yes/No)*	**Critical Limits**	**Monitoring** *(What, How, Where, When, Who)*	**Corrective Action** *(Product, Process, Who)*	**Records** *(Ref.)*
6b. & 9a Ice Slurry	Biological contamination	Ensure sufficient ice is taken for the trip *USFDA*	CCP	Internal temp. of fish is brought to 10°C within 6 hours of death	***What***: Fish temperature ***How***: Thermometer ***Where***: Boat; land site ***When***: After spiking fish; before gill & gutting; before storage and before packing ***Who***: Skipper or assistant	***Product***: Dispose of product ***Process***: Review ice slurry process ***Who***: Skipper	Form C - Fish Catch and Temperature Record
8b	Chemical & biological contamination	Monitoring media, checking immediate area for signs of contamination *Micro limits sheet; ANZFA Food Standards*	CCP	Nil contamination	***What***: Water quality ***How***: Media monitoring, checking area for signs of contamination ***Where***: Media outlets and river ***When***: Daily ***Who***: Skipper & assistant	***Product***: Dispose or do not catch ***Process***: Continue monitoring ***Who***: Skipper	Form C - Fish Catch and Temperature Record

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
				Severity	Likely	Risk		
All steps in the flow charts	People	Biological contamination	Poor personal hygiene (eg cuts, dirty hands)	4	D	21	Hygiene training, monitor staff	CP
All steps in the flow charts	People	Physical contamination	Wearing jewellery	4	D	21	Hygiene training, monitor staff	CP

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
1 Set Pot	Pot & bait	Nil						
2a Pull in pot	Pot	Chemical contamination, biological contamination	Yabbie are dead due to river contamination, illness	2	C	8	Do not keep product. Dispose of fish in proper means (not back into river)	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
2b Pull in pot	Pot	Quality	Yabbie are dead due to leaving yabbie in net for too long	5	D	24	Do not keep product.	QP
2b Pull in pot	Pot	Quality	Yabbie not to specification Female yabbies with eggs	4	C	18	Visually check and train staff	QP
3 Unload yabbie	People	Refer to all steps on page 1 of this Risk Assessment						
4a Ice slurry	Bucket, esky, ice	Biological contamination	Unclean buckets	4	D	21	Clean before use	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
4b Ice slurry	Bucket, esky, ice	Biological build-up	Not enough ice taken on trip	2	C	8	Ensure sufficient ice is taken for the trip	CP
4c Ice slurry	Bucket, esky, ice	Quality	Not enough ice taken on trip	4	D	21	Ensure sufficient ice is taken for the trip	QP
5 Transport (own vehicle)	Vehicle	Physical	Loose materials and objects in back of vehicle	3	D	17	Vehicle must be kept clean and free of debris	CP
6 Prepare cooker	Cooker & basket	Physical contamination	Loose metal from basket	4	D	21	Check basket before use.	CP
7a Boil & Temp. Check Yabbie	Yabbies	Quality contamination	Used bait placed in with yabbies. If left in with finished product the smell will be a problem with customers.	2	D	12	Check and remove any loose used bait prior to boiling	QP

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HM 5 Risk Assessment

Step	**Input** *Product, process, people, premises, procedures*	**Hazard** *Chem, Biological, Physical, quality*	**Cause**	**Risk** (High or Low)			**Preventative Measure**	**CCP (Yes/No)**
7b Boil & Temp. Check Yabbie	Yabbies	Biological contamination	Insufficient time and temperature exposure	2	D	12	Monitor time and temperature	CCP
7b Boil & Temp. Check Yabbie	Yabbies	Quality	Excess scum from overuse of water	4	D	21	Regularly change water	CP
8 Chill yabbie	Water, bucket, yabbie	Quality	Over-cooking due to temp. remaining high if not chilled	4	D	21	Ensuring water remains cool	CP
9a Drain	Crate or slotted container	Biological contamination	Unclean crates or slotted container	4	D	21	Must use clean crates or slotted container	CP
9b Drain	Crate or slotted container	Physical contamination	Loose metal from basket	4	D	21	Check crates before use.	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
10b Storage	Cool room	Quality	Malfunction of cooling system	3	C	13	Monitor temperature Regular maintenance	QP
10a Storage	Cool room	Biological contamination	Unclean cool room	3	D	17	Clean room regularly	CP
11a Temperature Check	Thermometer	Biological build-up	Cooling time too long	2	C	8	Monitor cooling time	CCP
12 Weigh and Box	Scales	Quality	Scales not calibrated	4	D	21	Calibrate scales regularly	QP
12b Weigh and Box	Poly boxes	Biological contamination	Use of second hand boxes	2	D	12	Adhere to policy of not using second hand poly boxes.	CP

Authorised by: _____ *Date:* _____

HM 5 Risk Assessment

Step	Input *Product, process, people, premises, procedures*	Hazard *Chem, Biological, Physical, quality*	Cause	Risk (High or Low)			Preventative Measure	CCP (Yes/No)
12c Weigh and Box	Plastic tubs	Biological contamination	Tubs are not cleaned or sanitised	2	D	E	Ensure tubs are clean and sanitised.	CP
13a Transport	Transport Vehicles	Quality – reduction in shelf life	Non delivery of product or refrigeration breakdown	3	D	17	Use reputable transport operators	QP
13b Transport	Transport Vehicles	Biological (cross contamination)	Transporters mixing products (eg. Placing red meat and fin fish in same area)	2	D	12	Use reputable transport operators	CP

Authorised by: _____ *Date:* _____

HM 5 HACCP Audit Table

Step	Hazard	Preventive Measure *(Preventive measure, Criteria for safety)*	Critical Control Point *(Yes/No)*	Critical Limits	Monitoring *(What, How, Where, When, Who)*	Corrective Action *(Product, Process, Who)*	Records *(Ref.)*
7b Boil & Temp. Check Yabbie	Biological contamination	Monitor time and temperature Chapter 16 US FDA, CFSAN Fish & Fishery Products Hazard and Control Guide – Chart on last page	CCP	100°C (boiling point) for 2.5 minutes	***What***: Water & time ***How***: Visually & clock ***Where***: At cooker ***When***: During the process ***Who***: Skipper or assistant	***Product***: Rework (boil) the yabbies ***Process***: Review problem to identify root cause ***Who***: Skipper	Form D – Yabbie Cook Sheet
8b	Cooling	Monitor cooling time *Chapter 12 US FDA, CFSAN Fish & Fishery Products Hazard and Control Guide – Step 14*	CCP	60°C to 21°C within 2 hours and then 21°C to 4.4°C within 4 hours	***What***: Time & temperature ***How***: Visually & clock ***Where***: Processing area ***When***: Each batch ***Who***: Skipper & assistant	***Product***: Dispose or do not catch ***Process***: Continue monitoring ***Who***: Skipper	D – Yabbie Cook Sheet

Authorised by: _____ *Date:* _____

Activity	Description	Frequency	Responsibility	Records
Micro. Testing	Product: • E Coli • Faecal Coliforms • Salmonella • Listeria monocytogenes	Every 6 months	Skipper	Test Result folder.
Verify Flow diagram.	Review flow diagrams and ensure accuracy.	Every 6 months.	Skipper	Review Record.
Review Hazard Analysis	Review documentation is still current and effective.	Every 6 months.	Skipper	Review Record.
Review critical limits.	Review to ensure limits are still current and effective.	Every 6 months.	Skipper	Review Record.
Review of Monitoring and Corrective Action records.	All production records checked to ensure the system compliance.	Every week.	Skipper	Production records.
Supplier Assessment	Review status	Every year	Skipper	Supplier Record
Audit HACCP Plan	External audits.	Every 6 months.	External Auditor.	Audit records.

Authorised by: _____ Date: _____

Step	Procedure	Records or References
1. Prepare slurry	Once outside the marina mix 1 x 18 kg bag of ice with 1 bucket of salt water in the bin	
2. Visually check	Visually check the deterioration of the ice and solidity of the fish	
3. Top up slurry	Add ice and water as required	
4. **Complete record**	At the end of the fishing trip complete the record	Form C – Fish Catch and Temperature Record

TEMPERATURE

Step	Procedure	Records or References
1. Catch - Take temperature	Insert thermometer into fish in the underside	
2. Record temperature	Record temperature and time Form C	Form C – Fish Catch and Temperature Record
3. Prior to Storage and Packing -Take temperature	Insert thermometer into fish in the underside	
4. Record temperature	Record temperature and time Form C	Form C – Fish Catch and Temperature Record

Note: If outside critical limits follow correction action listed in the HACCP Audit table

Authorised by: _____ Date: _____

For each fishing trip the following procedure will be followed:

Prior to the Fishing Trip

1. The Skipper will note any media announcements regarding contamination in the River system.
2. If contamination has been announced the Skipper will investigate the area and likelihood of potential contamination to the fish.
3. If there is a risk to public health the fishing trip will be postponed.

During the Fishing Trip

1. The Skipper and crew will check the water for obvious contamination (eg waste from houseboats).
2. If contamination is within the proximity of the nets the fish will not be harvested.

Recording

Any contamination will be recorded on the Fish Catch and Temperature Record (Form C)

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Step	Procedure	Records or References
1. Prepare tub	Fill the cooking tub with fresh water and turn on gas	
2. Bring to boil	When the water starts boiling place the yabbies in the tub.	
3. Boil yabbies	Boil for 2.5 minutes Record boil time	Form D Yabbie Cook Sheet
4. Empty tub	Remove yabbies and place on cooling tray Record the time at which the yabbies were placed on the cooling tray	
5. Check temperature	In 2 hours check the temperature of the yabbies has reached 21°C and at 6 hours the temperature has reached 4.4°C	Form D Yabbie Cook Sheet

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