

# ENVIRONMENTAL ACTION PLAN

## *OUR MISSION*

*To harvest quality  
seafood for the  
community, whilst  
sustaining the  
marine resource  
and protecting the  
Ecosystem for  
present and future  
generations.*

"Achieving Sustainability"

## **Securing a Future for the Hawkesbury Trawl Fishing Industry**

While reading this document you will no doubt come to the conclusion that it was written by fishermen, for fishermen. Most of us are, first and foremost, fisherman by choice, and have become dependent on the Hawkesbury River to make a living and as a way of life. Some fishermen are descendants of fishing families stretching back four generations.

Over the generations, the fishing industry has observed dramatic changes to the Hawkesbury-Nepean River and its catchment. Housing, industrial and tourism development, dams and weirs, and sewerage treatment works in the river's catchment are among the many factors contributing to this change, and threatening the health of the river system and the productivity of the fisheries resource upon which the industry has relied for generations.

With this in mind, fishermen wishing to continue in making a living this way, must face a few hard facts. The most urgent of these being:

- Fishermen must better inform themselves and be proactive in the fight to save the environment on which our industry relies; and
- Fishermen must improve communications between the public, governments, organizations and **themselves**.

The members of the Hawkesbury Trawl Association acknowledge that the community and government expect world's best practice in the harvesting of seafood. Fishermen are effectively paid to harvest a community owned resource for the seafood consumers. It is therefore, reasonable that seafood consumers and the community have confidence in the licenced trawl operators of the Hawkesbury River.

We believe that with care and sensible management, seafood can be harvested indefinitely and has the potential to be the **ultimate renewable resource**. To achieve this, the ecosystem and habitat must be protected at a higher level. Management of the catchment and coastal resources needs to be integrated and based on sound research supported by industry, government and the community. This is a huge challenge, but one that as a community, we must all embrace.

This plan is the vehicle to bring together trawl operators and others within the community with an interest in tackling the issues threatening the health of our river. This plan provides us with a strategic direction for improving our own performance with regards to the environment. In doing so, striving to understand and meet community expectations and an opportunity to alleviate perceptions held by some of the community about our industry. It also provides us with a strategic approach to improving the condition of the environment in which we operate and on which we **depend**.

Hawkesbury River trawl operators are on the water daily – hence they have a unique perspective on the health of the Hawkesbury River. As such, the members of the Hawkesbury Trawl Association are in the ideal position to inform the community and relevant agencies of the condition of the environment in the areas where they work and contribute greatly to the management and conservation of the Hawkesbury-Nepean River and its catchment.

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## PART 1

### 1.0 OUR ASSOCIATION

Trawl operators of the Hawkesbury River acknowledge that they have a duty of care to protect the fish resources and environment of our river. In 2001 they united to form the Hawkesbury Trawl Association (HTA) in pursuit of some common goals;

- Ensure the viability of the fishing industry.
- Protect the Hawkesbury River ecosystem.
- Gain the support of the community.
- Secure the future of fishing for all stakeholders.
- Have industry representation in decision making for the future.

### 1.1 OUR ENVIRONMENTAL ACTION PLAN

This plan is an initiative of the Hawkesbury Trawl Association (HTA). It will help the industry achieve the above mentioned goals by ensuring that ecological, economic, social and other considerations are integrated into decision-making processes at all levels. Close consultation with the community and key interests groups is a vital ingredient to the success of this plan.

This plan applies to the fishery involving the use of otter prawn trawl equipment for the harvesting of the primary species, namely prawns and calamari, however other species are harvested in this process and are considered acceptable forms of product, as listed in the *Fisheries Management Act 1994*.

The plan covers,

- Commercial fishermen licenced to operate in the Hawkesbury River Trawl Fishery who are members of this Association
- The harvesting of seafood and associated activities by the members of the Association
- The management and environmental performance of the fishery, and the environment upon which the fishery depends.

**Eventually, it is hoped that this Environmental Action Plan will cover all key activities and operations in the harvesting, processing, marketing, transport and storage of seafood produced by operators in the Hawkesbury River.**

### 1.2 OUR COMMITMENT

The HTA appreciates there are many interest groups within the Hawkesbury-Nepean River and its catchment that have a vested interest in the sustainability of the River and its surrounding environs. The members of the Association (Appendix 1) recognise that a **unified approach** is needed if the industry is to be supported by a healthy, productive aquatic environment and community confidence in the way that the fishery operates. This provides the essential ingredients of a secure and successful future for our businesses, and industry.

All members of the Hawkesbury Trawl Association (HTA) have made a written commitment to uphold the policies, Codes of Conduct of the Association (Appendix 2), and other documentation as it is developed.

### 1.3 ASSOCIATION MANAGEMENT STRUCTURE

Hawkesbury Trawl Endorsement holders who are committed to the Codes of Conduct and policies of the Association have elected a management committee from within their members. This committee will be responsible for;

- (a) Overseeing the day to day management of the Environmental Action Plan;
- (b) Securing the resources needed for development, implementation and ongoing refinement of the Plan;
- (c) Ensuring the Plan is developed in a manner that achieves a high level of industry ownership and support from interest groups and the community;
- (d) Ensuring all members are provided with sufficient and timely information to ensure they have adequate opportunity to contribute to and comply with the Plan;
- (e) Monitoring the Association's progress towards achieving its goals and objectives; and
- (f) Regularly reporting to public and key stakeholders about the Association's performance in relation to the Plan.

The elected Management Committee of the Hawkesbury Trawl Association is listed in Appendix 3.

Other parties will be invited to contribute to HTA management committee meetings on an as need basis. These parties may include NSW Fisheries, NSW Environment Protection Authority, Sydney Water Authority, Local Councils, environmental groups, recreational fishing groups, other organisations who are prepared to constructively contribute towards the continual improvement of the Plan.

**Meetings of the Management Committee of the HTA are open to all members of the Association.**

### 1.4 OVERALL RESPONSIBILITY

The HTA is responsible for overseeing the development and implementation of the Plan under the following guidelines:

- (a) Only endorsement holders within the Hawkesbury Trawl Fishery are eligible to be full members of the Association.
- (b) All businesses and people associated directly and indirectly with the fishery may become associate members of the HTA by invitation or application.
- (c) All members must be given the opportunity and encouraged to participate in the development of the Plan;
- (d) All members must commit to comply with Codes of Conduct adopted by the Association;
- (e) The Plan must promote continuous improvement of the industry's environmental performance.
- (f) All members are encouraged to respond to HTA surveys and requests for data required to assess the industry's compliance with the Plan.

## 2.0 ABOUT OUR INDUSTRY

### 2.1 THE HAWKESBURY-NEPEAN RIVER

The Hawkesbury–Nepean River and its tributaries drain a catchment of almost 22,000 square kilometres (Roberts et. al. 1999) incorporating Goulburn in the South, Lithgow in the west, and the Blue Mountains in New South Wales, Australia (Appendix 4). Some heavily urbanised areas including Hornsby, Camden, Campbelltown, Penrith, Blacktown and Liverpool and estuary areas of Broken Bay, Pittwater and Brisbane Waters are also contained within the catchment. This estuary and its catchment is of great economic and social value providing resources not only for commercial fishing, but recreational fishing, aquaculture, tourism, drinking water, agriculture, other industries and many recreational activities such as boating (HNCMT, 1997).

The Hawkesbury-Nepean River system is one of the most extensive estuarine areas on the NSW coastline and forms the northern and western boundary of the Sydney Basin, an area of major geographical and social significance to the largest city in Australia.

### 2.2 THE HAWKESBURY TRAWL FISHERY

The total river area of the Hawkesbury-Nepean River to the junction of the Grose River is approximately 172km<sup>2</sup>. Within this area certain parts are closed to trawling operations on a permanent or weekend basis. The area of our trawl fishery includes designated areas inshore from a line drawn from Box Head to Barrenjoey Headland in Broken Bay and upstream to Lower Portland providing us with approximately 76km<sup>2</sup> in which to conduct our trawling activities (Appendix 5). This leaves 96km<sup>2</sup> (approximately 56%) of the river permanently closed to trawling operations.

With these permanent closures, commercial fishermen of the Hawkesbury River Trawl fishery have access to approximately 44% of the river area on weekdays. This is further reduced to less than 16% of the river open to trawling on weekends (Appendix 6).

Otter trawling was first permitted in the Hawkesbury River in 1946 and fishers targeted prawns. A net having a head rope length of 36feet (11meters) and 1  $\frac{3}{8}$ " (35mm) meshes were permitted. In 1955, the minimum mesh size of the nets, including the cod end was increased to 1  $\frac{1}{2}$ " (38mm). With the introduction of the metric system in 1972 the minimum mesh size was increased to 40mm.

In 1952 a minimum legal length for school prawn of 4" (100mm) (eye to tail) was introduced, however, after approximately 3 months it was found to be unworkable. As a result the minimum legal length was reduced to 3  $\frac{1}{2}$ " (89mm) (eye to tail). The 3  $\frac{1}{2}$ " legal length was in force for 3 years when research carried out by NSW Fisheries found it to be unnecessary and it was removed. There are currently no minimum size limits for prawns or squid caught by commercial fishers in the Hawkesbury River.

Prior to 1985, any individual could enter the fishery and access the resource. Access to the Fishery was first restricted on 1<sup>st</sup> November 1985, by the then Minister for Fisheries and Rural Affairs, Mr J. Hallam. The criteria for entry was that trawlers which had operated within the Hawkesbury River for 3

years prior to May 1985 would receive an ‘endorsement’ in the form of a condition applied to the fishing boat licence. **No new endorsements have been issued since 1985.** Several endorsements have expired and have not been renewed by the owners.

There are currently 69 endorsements to operate on the Hawkesbury River.

## 2.3 GEAR USED IN THE FISHERY

An endorsement in this fishery allows the fisher to use an otter trawl net. A trawl net is a funnel of net towed close to the riverbed behind the vessel. The net is held open by otterboards. These are small flat boards set at an angle to the direction of the towed net and act as hydrovanes. As the boards move through the water, the forces exerted on these boards spread the net open. Between the otterboards and net are sweeps (ropes) which attach the net to the otterboard.

Wire ropes from the vessel are connected to the otterboards. The headline is attached to the upper sweep, which is attached to the top of the otterboard. The footrope is attached to the lower sweep, which is attached to the bottom of the otterboard. A ground chain is attached to the footrope with the purpose to skim the surface of the riverbed to trigger the prawns to jump into the path of the oncoming net.

Figure 1: Diagram of gear used in Hawkesbury Trawl Fishery. *Source: A Guide to Bycatch Reduction in Australian Prawn Trawl Fisheries. Eayres et. al. (1997)*



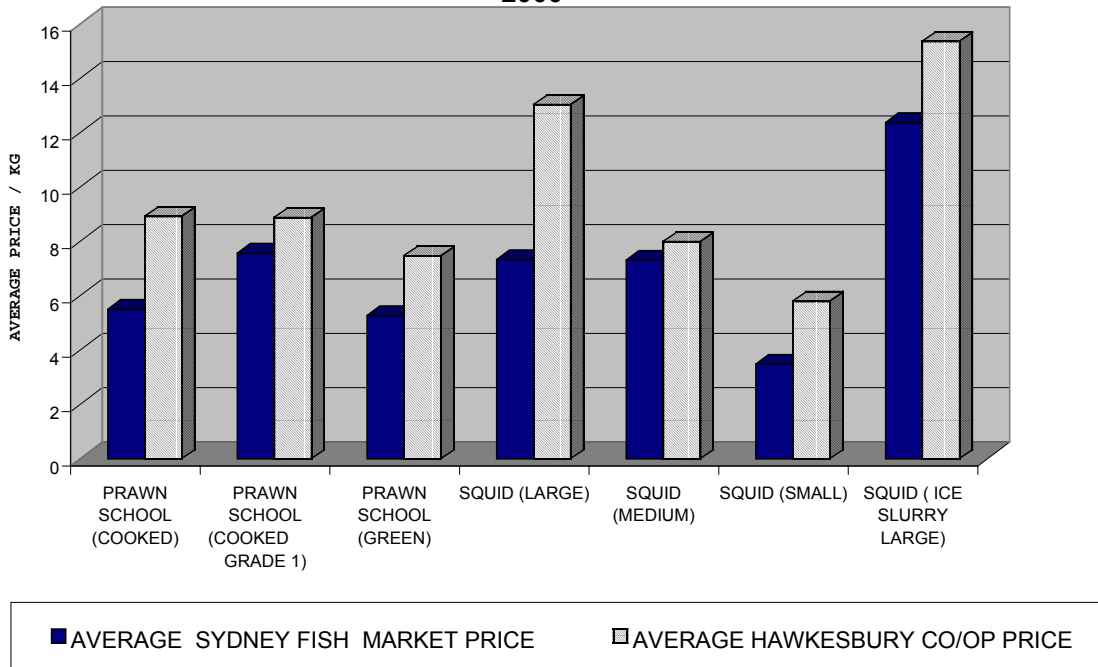
## 2.4 HAWKESBURY TRAWL PRODUCT

The primary species caught by the Hawkesbury Trawl Fishery consist of School Prawns and Calamari (squid). School Prawns and Calamari harvested by Hawkesbury Trawlers are keenly sought after in NSW markets due to the high quality of product provided.

The Hawkesbury River is the second highest producer of School Prawns in NSW (Pease & Grinberg 1995). School Prawns from the Hawkesbury River are consistently larger in size than School Prawns harvested from other estuaries in NSW and consequently attract premium prices. With respect to Calamari, the Hawkesbury River is the highest estuarine producer in NSW (Pease & Grinberg 1995). The quantity and quality of School Prawns and Calamari that are harvested from the Hawkesbury River make these products highly sought after, not just by the restaurant and catering industry but also by recreational fishers as a source of quality bait.

The figure below demonstrates that trawl operators sending their catches of prawns and calamari through the Hawkesbury River Co-Op receive better prices than that of the average Sydney Fish Market (SFM) price. The Sydney Fish Market is the largest seafood market in the southern hemisphere and constitutes the primary wholesale outlet for fresh seafood.

**Figure 2: Hawkesbury River Co-op / SFM price comparison July 1999 - June 2000**



*Data supplied by Hawkesbury River Co-Op and the Sydney Fish Market Pty Ltd.*

It should be noted that in the 1998/1999 season, only 10.7% of the total catch of school prawns and 26.8% of the total catch of calamari passed through the Hawkesbury River Co-Op. Whilst some fishermen take their catch directly to the Sydney Fish Market, the major proportion of the catch is sold directly to wholesalers or retailed by fisherman themselves at a price that is usually higher than that of the Hawkesbury River Co-Op Price.

The abundance of prawns and calamari within the Hawkesbury River is predominantly influenced by seasonal and climatic conditions. High rainfall usually enhances abundance of species harvested by the industry while production is low in times of drought. (Appendix 7), this is common in many prawn fisheries throughout the world.

## 2.5 ECONOMIC SIGNIFICANCE OF THE HAWKESBURY TRAWL FISHERY

Between 1991 and 1999 annual per capita fish and seafood consumption in Sydney increased by 12.7% (from 13.5kg to 15.1 kg of seafood consumed per person). In-home consumption of seafood rose by 8.4% while the increase in out-of-home consumption was much greater, at 19%. The 1999 studies of in-home consumption showed that shark and flathead were the leading fish products consumed in Sydney, while cooked prawns were the most popular seafood. ***"Prawns have long been a favorite item throughout Australia"*** (FRDC 2000). Studies of out-of-home consumption of seafood showed that Atlantic salmon and prawns were the leading species eaten out-of-home in Sydney.

The value of the Hawkesbury River product to the Australian economy is estimated to be four times the actual value of the product at first point of sale. This multiplier effect is an accepted value used by the Australia Seafood Industry Council and can vary between sectors. Using this multiplier effect (4) we can calculate the value of the Hawkesbury River product to the Australian economy. The average value of the Hawkesbury river product at first point of sale is \$13/kg\*, therefore using the multiplier value of four, the value of the Hawkesbury River product to the Australian economy is \$52/kg.

\*The HTA has calculated as representative of the average price obtained for product by Hawkesbury River operators. Due to the nature of an unregulated market, operators are free to sell product to various buyers which makes it very difficult to calculate an exact value for prices per kilo.

Using the same multiplier value as above, every job created in the Hawkesbury Trawl Fishery is estimated to create another 4 jobs in associated industries. The number of active endorsement holders in the Hawkesbury River for 1998/99 was 48, providing a minimum of 192 jobs. This demonstrates the economic and social significance this fishery has to the local region and its families.

Due to the fluctuating nature of catches of prawn and calamari from year to year, the gross value of production of the fishery (ie. the value at the first point of sale) also varies greatly from year to year. Table 1 represents the minimum, maximum gross value of production (GVP) of each primary species of the fishery (prawns or calamari) over the last 15 years (1985 – 2000).

Primary species	Maximum value	Minimum value
Prawns	\$ 1,797,419.00	\$ 453,283.00
Calamari	\$ 620,685.00	\$ 121,511.00

Table 1. Value at the first point

These figures are indicative figures based on the primary species caught by the fishery sold at a price of \$13.00/kg. Additional income is also generated by the fishery from secondary species that would contribute to the overall worth of the fishery.

The Hawkesbury Trawl Association estimates the fleet produced seafood with a point of first sale value in excess of \$1 million in the 1998/99 season.

## PART 2

### 3.0 OUR ENVIRONMENTAL POLICY

#### 3.1 The Hawkesbury Trawl Association's Mission is:-

*“To harvest quality seafood for the community whilst sustaining the marine resource and protecting the ecosystem for present and future generations”*

To achieve this, the HTA has adopted the following three prime objectives:-

1. To ensure fisheries resources and the ecosystems on which the fishery depends are utilised in a sustainable way;
2. To maximise the profitability of fishing operations; and
3. To ensure the fisheries activities and practices are conducted within the community's expectations and standards.

To achieve these objectives, the HTA is committed to the following principles:

- To strive to effectively manage environmental impacts associated with its business;
- To integrate environmental, social and economic factors into planning and operational decisions;
- To develop and implement Codes of Conduct and an Environmental Action Plan covering all operators in the Hawkesbury River Trawl Fishery;
- To maintain and improve industry-wide environmental standards to be complied with by all trawl operators on the Hawkesbury River;
- To promote transparency in the management of the fishery and the Association;
- To constructively contribute to the development, implementation and review of statutory management strategies and environmental assessments for the fishery;
- To actively participate in the monitoring and review of the fishery and act on results;
- To promote innovation and research;
- To ensure community expectations about the industry are reflected in industry standards and activities;
- To unite and encourage people and organisations to address environmental issues of the Hawkesbury-Nepean River system;
- To minimise pollution and waste in **our** operations;
- To raise **awareness** of the fishery amongst government agencies, environmental groups and the wider community; and
- To comply with the Association's **Code of Conduct** and Environmental Action Plan and all applicable laws and regulations.



## 4.0 OUR ENVIRONMENTAL ACTIONS & CONCERNS

All activities undertaken on coastal floodplains and their adjacent estuaries interact with one another and the environment that supports them. A cumulative impact on the river, its floodplain and estuary, is generated by these activities, with consequential effects on the health of those ecosystems. Floodplains and estuaries can be highly productive, in both the ecological sense and in commercial sense. However, there are real limits to their capacity and in many instances it is clear that these have been, and are being, subject to uses and activities at levels that are simply not sustainable (*Healthy Rivers Commission 2000*).

In many places the river is displaying signs of stress, illustrated by algal blooms and the proliferation of non-native water plants such as *Egeria densa*. Given the current state of the river and the continuing pressures arising from population growth and urban expansion, key fish habitats are under threat of further, possibly irreversible, damage.

The industry's reliance on sustainable fisheries resources means that fishermen actively strive to ensure environmental issues affecting our industry are resolved. It is not surprising then that the commercial fishing industry was the first major industry in Australia to embrace ecologically sustainable development (ESD) when it emerged on the public agenda in the early 1990s.

The industry is being subjected to an increasing level of public scrutiny and public debate, involving groups "philosophically" opposed to commercial fishing. This opposition has primarily been based on the conflict of resource allocation and the perception that commercial fishing has a large impact on the environment and that commercial fishermen have no regard or understanding of environmental matters. The commercial fishing industry is now endeavouring to inform the community of the true nature of their fishing industry and the importance that the environment plays in the sustainability and future of their industry.

Fishermen are proactive in addressing their impacts on the environment and are also outspoken on issues such as degradation of fish habitat, water use and water quality, impacts due to urban development, agricultural practices, sewerage effluent, exotic weeds and changes to river flow to mention a few. Many of these impacts are generally out of the control of the commercial fishing industry but have a large impact on the river and stocks of seafood that they target.

The Hawkesbury trawl industry, by the nature of its operations and its governing regulations minimises any detrimental effects to the ecosystem. The primary limitation is by the species in which operators are allowed to target. Other limitations include:-

- Fixed number of operators that can access the resource.
- Limited areas and times in which they can operate.
- Gear configuration restrictions
  - restricted to minimum mesh size,
  - max headrope length
  - number of nets and,
  - the use of bycatch reduction devices.

- The quality, quantity and availability of product determines how long or if a fisherman works. This varies according to other factors such as
  - rough weather,
  - droughts and floods, and adequate rainfall
  - lunar cycles and subsequent tidal movement
  - water conditions such as temperature and turbidity, suited to the capture of target species.

This Environmental Action Plan provides us with the strategic direction for improving our own performance with regard to our environmental impacts. It is only when all issues impacting on the river are addressed that the future of the river can be guaranteed, not just for fishermen but all users of the river. The Hawkesbury Trawl Association recognises that there are many activities and processes that influence the health and management of our River. As a result, the HTA has made a distinction between ‘Actions’ which we have control and influence over, and ‘Concerns’ that the HTA have for the Hawkesbury River but can not directly influence, but fall within the responsibility of the community, government or other organisations.

In reviewing **our** performance at managing the potential environmental impacts on the fishery and the broader environment, the Hawkesbury Trawl Association considers the following aspects to be most significant.

### **SUSTAINABILITY OF FISHERY SPECIES**

Retained species

Non Retained species

### **THE HEALTH OF FISHERIES HABITAT & ECOSYSTEM**

Water quality

Water flows

Seagrass and Mangrove habitats

Acid sulphate soils & De-oxygenated water

Riverbed impacts

### **OTHER ISSUES**

Noise & Light

Garbage collection & disposal

### **FISHERIES MANAGEMENT**

Institutional and administrative arrangements

Latent Effort

## 4.1 SUSTIANABILITY OF FISHERY SPECIES

### 4.1.1 RETAINED SPECIES

*HTA's Objective*

**To ensure the ecological viability and sustainability of retained species.**

Within the Hawkesbury Trawl Fishery there are two primary species and three dominant secondary species retained and a small amount of other species permitted under the NSW Fisheries Regulations. The following figure represents the proportion of species landed within the Hawkesbury River Trawl Fishery.

**Hawkesbury River Trawl Catch Composition**

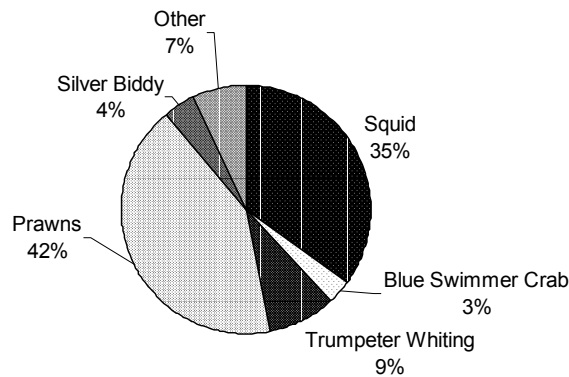


Figure 3: Composition of catch from Hawkesbury Trawl Fishery 1997-1998, 1998-1999. *Source NSW Fisheries Draft Fishery Strategy 2001.*

Commercial operators in the Hawkesbury Trawl Fishery endeavour to actively conserve stocks of retained species. The HTA recognises that there are many factors that influence the Hawkesbury River and subsequently the quality and quantity of species that are retained by trawler operators. The following actions and concerns highlight the direction required for the complete management and ongoing sustainability of the retained species.

### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<b><i>Retained Species</i></b>	<b>Body Responsible</b>
<b>Action 1</b>	
Members of the Association will fish within parameters agreed in collaboration with NSW Fisheries to sustain fish stocks.	HTA
<b>Action 2</b>	
Members of the Association will constructively contribute in the	HTA

HAWKESBURY TRAWL ASSOCIATION

development of the management strategy relevant to the Hawkesbury Trawl Fishery and associated environmental assessment process.	
<b>Action 3</b>	
Members of the Association will constructively contribute to research into parameters of retained species on influences affecting retained species.	HTA
<b>Action 4</b>	
Members of the Association will participate with researchers and fellow fishers in the further development of selective fishing gear (Code of Conduct 5).	HTA
<b>Action 5</b>	
Members of the Association will ensure that the time the net is in the water is such that seafood quality is maximised (Code of Conduct 7).	HTA
<b>Action 6</b>	
Members of the Association will strive to comply with all relevant provisions of the Fisheries Management Act and Marine Parks Act. In particular, regulations on gear restriction, net size, mesh size and area closures (Code of Conduct 16).	HTA
<b>Action 7</b>	
Members of the Association will not utilise the practices of Riddling for the grading of their prawn product (Code of Conduct 18).	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Retained Species</i>	Body Responsible
<b>Concern 1</b>	
Research & Development programs focused on filling knowledge gaps regarding ecological parameters (biomass, catch structure, maximum sustainable yield) and ecosystem requirements (habitat, water quality) of retained species.	NSW Fisheries, FRDC, CSIRO, Universities, MAC
<b>Concern 2</b>	
Quantification of total fishing pressure (commercial, recreational, traditional) and non-fishing mortality on each retained species.	NSW Fisheries, FRDC, CSIRO, Universities MAC
<b>Concern 3</b>	
Application of controls on commercial and recreational fishing that are identified as necessary to ensure the stock of retained species is at or above a level necessary to ensure long-term yield and ecological viability.	NSW Fisheries, MAC

#### 4.1.2 NON RETAINED SPECIES

*HTA's Objective,*

### **Ensure minimum impact on non-retained species through continuous improvement of their fishing gear and practices.**

Trawler operators in the Hawkesbury River are committed to reducing their impact on non-retained species. One of the main processes through which this can occur is in the modification of their fishing gear and the inclusion of Bycatch Reduction Devices (BRD) incorporated into their nets.

For over 40 years estuarine prawn fishers in NSW and QLD have been using inclined panels of netting called "blubber chutes" to reduce jellyfish catches and other bycatch species. For the last 20 years they have also used inclined metal grids for the same purpose (Eayres *et al* 1997).

During the last 16 years, fishers in the Hawkesbury River have been worked with NSW Fisheries to develop methods to minimise the incidental catch of non-retained species. Projects to date have included working with a trouser trawl to trial various rigid and soft grids, square mesh panels and various sized meshes. Individual fishermen have also obtained permits for the development of BRD's at their own time and expense to further reduce incidental catches.

Bycatch Reduction Devices (BRD) are mandatory in all trawl nets that are to be used upstream of Juno Point. It is the vision of the Hawkesbury Trawl Association that BRDs will be mandatory in all trawl nets throughout the fishery, following results of further research being conducted by N.S.W. Fisheries, Sydney University and trawl operators to develop effective and appropriate BRDs for this area. (See Appendix 8 for types of Bycatch Reduction Devices).

#### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Non-Retained Species</i>	Body Responsible
<b>Action 8</b>	
Members of the Association will participate with researchers and fellow fishers in the further development of Bycatch Reduction Devices (Code of Conduct 4)	HTA
<b>Action 9</b>	
Members of the Association will participate with researchers and fellow fishers in the development of selective fishing gear (Code of Conduct 5).	HTA
<b>Action 10</b>	
Members of the Association will minimise the catch of non-target species, the incidental catch of non-utilised species, marine mammals, reptiles, seabirds and impacts on associated or dependent species using such measure as mesh or gear modifications, closed areas and bycatch reduction devices (Code of Conduct 13).	HTA



HAWKESBURY TRAWL ASSOCIATION

<b>Action 11</b>	
Members of the Association will not injure fish with the use of a spike (Code of Conduct 14).	HTA
<b>Action 12</b>	
Members of the Association will constructively contribute in the development of the management strategy relevant to the Hawkesbury Trawl Fishery and associated environmental assessment process.	HTA
<b>Action 13</b>	
Members of the Association will take immediate action to mitigate any impacts on protected or endangered species from their trawling operations if they are found to be having an impact.	HTA
<b>Action 14</b>	
Members of the Association will develop or improve and implement practices that minimise trawl induced mortality of non-retained species. Eg Swim tanks etc.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Non-Retained Species</i>	Body Responsible
<b>Concern 4</b>	
Encourage and participate in research to quantify trawl induced mortality of non-retained species of particular conservation interest, public concern or other economic, social or cultural interest.	NSW Fisheries ACCF, NCC, FRDC, MAC
<b>Concern 5</b>	
Quantify the total non-fishery mortality on each species	NSW Fisheries CSIRO, EPA, SWA, SCA.
<b>Concern 6</b>	
Implement controls on non-fishery activities that result in mortality of species of particular conservation interest or of public concern.	NSW Fisheries, EPA, SWA, SCA, Local Council, DUAP.

## 4.2 THE HEALTH OF FISHERY HABITAT & ECOSYSTEM

Sources of land based pollution can be divided into two types:

- point source and,
- non-point source pollution.

Pollution where the source can be ascertained is known as point source pollution. Examples of point source pollution can include sewerage treatment plants and some industries licensed to discharge effluent into waterways. Pollutants can include nutrients such as phosphorus and nitrogen, endocrine disrupting compounds, bacteria, heavy metals and industrial chemicals. Threats from point source pollution are greatest during dry periods when natural water levels are low and polluted effluent makes up a significant proportion of water flow.

Non-point source pollution comes from stormwater run-off carrying sediments and other pollutants from urban and rural lands into the waterway. These pollutants can include petrol and rubber residues from roads and factories, industrial chemicals and metals, agriculture and urban pesticides and fertilisers and **litter and rubbish**. Sewage overflows may also contribute during wet weather.

### 4.2.1 WATER QUALITY

*HTA's Objective,*

**To minimize impacts on water quality which affects the rivers ecosystem to the detriment of the system and the sustainability of its fishing industry.**

Whilst marginal improvements in water quality have occurred in recent years, excessive nutrient pollutants from sewerage effluent and agriculture run-off are a threat to aquatic ecosystems. These conditions are ideal for aquatic weed growth and also for the development of algal blooms. Sewage effluent can dramatically effect the quality of the water within the Hawkesbury. The water quality in many of the creeks and tributaries of the Hawkesbury River is **very poor** for protecting aquatic ecosystem health (SWC 2000)(Appendix 9). Phosphorous and nitrates are passed into the river via 18 sewage treatment works handling 15% (165,000,000 litres per day) of Sydney's effluent. Hawkesbury City Council also operate two sewage treatment plants, one of which discharges into the Hawkesbury River. Sydney Water has a strategy (WaterPlan21) to further reduce discharges of nutrients to the river. The next phase of this strategy should be completed in 2003. (Bickford *pers. com* 2001)

Members of the Association are committed to minimising their impacts on the environment. The use of oil absorbent material in the bilges of vessels will minimise oil and diesel passing into the environment through the discharge of bilge water.

### HAWKESBURY TRAWL ASSOCIATION ACTIONS

<i>Water Quality</i>	Body Responsible
<b>Action 15</b>	
Members of the Association will use oil absorbent devices for the removal of fuels and oils from their bilge water (Code of Conduct 10)	HTA

<b>Action 16</b>	
Members of the Association will as soon as possible notify the relevant authority, on detection of environmental contamination or degradation, for example chemical spills, blue green algae, mangrove destruction etc. (Code of Conduct 15).	HTA
<b>Action 17</b>	
Members of the Association will constructively contribute in the development of the management strategy relevant to the Hawkesbury Trawl Fishery and associated environmental assessment process.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Water Quality</i>	Body Responsible
<b>Concern 7</b>	
Identify all sources of discharges into the Hawkesbury River and assess their impact.	EPA
<b>Concern 8</b>	
To ensure there is no further decreases in the water quality of the Hawkesbury River	NSW Fisheries, EPA, DLWC, NPWS, SCA, SWC, Local Councils, Waterways.
<b>Concern 9</b>	
Take whatever action necessary to bring about change in non-fishery activities that are adversely impacting water quality of importance to the Hawkesbury Trawl Fishery.	NSW Fisheries, EPA, DLWC, NPWS, SCA, SWC, Local Councils, Waterways.
<b>Concern 10</b>	
Continue the education of the general community as to the effects and impacts that their daily actions have on the water quality of the Hawkesbury River.	NSW Fisheries, EPA, DLWC, NPWS, SCA, SWC, Local Councils, Waterways.
<b>Concern 11</b>	
The education and awareness of the boating community as to the impacts they have on the water quality of the Hawkesbury River with specific respect to effluent disposal, recreational fishing gear and general rubbish.	NSW Fisheries, EPA, Local Councils, Waterways.

#### 4.2.2 WATER FLOW

*HTA's Objective,*

#### **To stop further impediments on the natural flow of the Hawkesbury River**

Numerous studies worldwide support the concerns of the HTA that impediments to the natural environmental flow of rivers adversely affect the populations of animals and plants that frequent those rivers (Healthy Rivers Commission 2000).

There is a strong link between freshwater flows, floods and prawn productivity. Dams, weirs and water extraction reduce the freshwater flow reaching the estuary, particularly in the case of small rainfall events. Floods contribute nutrients to the river and also link the river channel to the floodplains and wetlands.

River flows within much of the Hawkesbury Nepean catchment are heavily controlled by the presence of five major dams and numerous major weirs operated by Sydney Water Authority for Greater Sydney's potable water supply. These impediments also can prolong droughts and low flow periods. Some 3531 hectares are authorised for irrigation in the catchment and 1500 surface water licences have been issued (DLWC 1999).

The general operations of the dams can have localised impact on the fishing industry of the Hawkesbury River and can also modify habitat. Warragamba Dam is currently responsible for collecting water from 40% of the catchment. It is foreseeable that as the population of Sydney increases, so will the demands for potable water restricting further the flow of water through the Hawkesbury Nepean River.

#### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<b><i>Water Flows</i></b>	<b>Body Responsible</b>
<b>Action 18</b>	
Members of the Association will constructively contribute to any management plans or strategies for the future flow regimes of the Hawkesbury River	HTA
<b>Action 19</b>	
Liaise with Sydney Catchment Authority (SCA) as to the impacts and timing of water releases from the water storage's that flow into the Hawkesbury-Nepean catchment.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Water Flows</i>	Body Responsible
<b>Concern 12</b>	
To identify critical environmental flow requirements for the Hawkesbury Trawl Fishery.	NSW Fisheries, EPA, SWC, SCA, DLWC, NCC, HNRMF
<b>Concern 13</b>	
Ensure there is no further decreases in the flow regimes for the Hawkesbury River	HNRMF
<b>Concern 14</b>	
To ensure that the quality of the water releases within the Hawkesbury River are not detrimental to the Hawkesbury Trawl Fishery.	HNRMF
<b>Concern 15</b>	
To continue the embargo on water extraction licences and volumes within the Hawkesbury River.	DLWC

**4.2.3 SEAGRASS BEDS, REED BEDS and MANGROVE AREAS**

*HTA's Objective,*

**To promote the effective management and preservation of seagrass beds, reed beds and mangrove habitats.**

Seagrasses play a pivotal role in the coastal ecosystems of Australia and the world. Seagrasses are particularly important in the sustainability of commercial and recreational fish stocks, primarily because of their roles maintaining sediment stability, water quality, and in providing shelter and food critical to the survival of a variety of aquatic biota. The Hawkesbury Nepean River possesses seagrass beds that contribute to its biodiversity and marine habitats (Appendix 10).

Seagrasses generally grow quickly and produce a large amount of organic material, which enters the estuarine food chain. Echinoderms, crustaceans, molluscs and some fish species directly eat seagrasses and many species of juvenile fish, crustaceans and molluscs use seagrasses as nursery areas before moving to other habitats. The postlarvae and juveniles of some fish, such as yellowfin bream, luderick and leatherjackets recruit to, and live in seagrass habitats. Due to their particular importance as shelter and habitat to the juvenile life stages of marine fish and crustaceans, seagrass beds are sometimes referred to as the “nurseries of the sea”.

Seagrasses are however, a fragile habitat. While some species such as Eelgrass *Zostera spp.* are comparatively hardy and may recolonise areas after removal, others, such as Strapweed *Posidonia*

*australis* do not and are particularly susceptible to impacts. Some species, for example *Posidonia spp*, are also now comparatively restricted in their distribution.

Many major estuaries in NSW have lost as much as 85% of their seagrass beds in the past 30 to 40 years. This loss may contribute to declines in the abundance and diversity of fish and invertebrates in some of these estuaries and the nearby coastal zone (NSW Fisheries 1999).

It must be stressed that trawling in the Hawkesbury River **does not** occur over seagrass beds. Even though some “weed” may at times be brought to the surface in trawl nets in the upper Hawkesbury River, this weed is *Egeria densa*, an exotic weed taking over the native ribbon weed beds along the edges of the river. *Egeria densa* weed breaks away from the foreshores and is ‘captured’ in trawling nets, increasingly making the use of nets more difficult. Kelp is sometimes brought up in trawl nets working in Broken Bay after periods of rough weather where the kelp has been dislodged from the surrounding rocks and rocky reefs and drifts within the water column.

### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Seagrass &amp; Mangrove Habitat</i>	Body Responsible
<b>Action 20</b>	
Members of the Association will constructively contribute to any seagrass, reed beds and mangrove habitat mapping exercises in the Hawkesbury River.	HTA
<b>Action 21</b>	
Notify as soon as possible to the relevant authority, on detection of environmental contamination or degradation, ie. Chemical spill, blue green algae, mangrove destruction etc (Code of Conduct 15).	HTA

### **HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Seagrass &amp; Mangrove Habitat</i>	Body Responsible
<b>Concern 16</b>	
To identify the seagrass beds, reed beds and mangrove habitats within the Hawkesbury for the sustainability of the fishery.	NSW Fisheries.
<b>Concern 17</b>	
To prevent the further degradation of seagrass beds, reed beds and mangrove habitats within the Hawkesbury River from other influences and activities.	NSW Fisheries, DLWC, DUAP, Local Councils, EPA, SCA, SWC, HNRMF.

#### 4.2.4 RIVERBED IMPACTS

*HTA's Objective,*

**To minimise our impact on the riverbed and maintain the biodiversity of riverbed habitats.**

The Hawkesbury-Nepean River is a tidal system with approximately four movements of water occurring in any 24-hour period (i.e. associated with a low or a high tide approx. every 6 hours). This tidal movement constantly stirs the riverbed, changing the colour of the water throughout the tide. Moreover, the river is continually subjected to flooding and fresh water flows that scour the riverbed depositing and removing sediment.

Against this backdrop of natural disturbance, together with the impacts associated with urban practices within the catchment, the Hawkesbury Trawl Association believes that the otterboards used to spread the trawl net do minimal damage to the riverbed. The otterboards are designed to take the net to the river bottom and spread the net to the distance required by the fishermen. While some displacement of sediment occurs by the action of the otterboards, they are designed not to ‘dig-up’ the river bottom. Fishermen strive to develop and refine otterboard designs that will not damage the riverbed.

Similarly the ground chain, which makes contact with the riverbed, is designed not to excavate the riverbed but to skim the surface. When prawns encounter the ground chain they react by contracting their bodies and jumping up into the net. A ground chain, which is too heavy, will halt trawling as the net will fill with mud and close up.

While commercial quantities of Calamari and King Prawns frequent the lower reaches of the Hawkesbury River (Pittwater, Cowan, Broken Bay etc), School Prawns populate all parts of the river and its tributaries as far upstream as the Grose River (Montgomery & McDonnell 1988). Of this area of the Hawkesbury River, 55% is permanently closed to trawling. These permanent closures in the upper reaches as well as the lower reaches, help protect and conserve stocks to maintain biodiversity, sustainability and viability. On any working day on the river the trawl nets used by fisherman cover less than 5 % of the riverbed (Appendix 6).

#### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i><b>Riverbed</b></i>	<b>Body Responsible</b>
<b>Action 22</b>	
Members of the Association will liaise with the HTA Committee and pass on any community concerns or attitudes towards commercial trawling practices on the Hawkesbury River (Code of Conduct 17).	HTA
<b>Action 23</b>	
Members of the Association will endeavour to seek out information on new designs for otter boards and promote research into the development of new designs.	HTA
<b>Action 24</b>	
Members of the Association will participate with researchers, when required, into the effects of otter board trawling on the Hawkesbury River.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Riverbed</i>	Body Responsible
<b>Concern 18</b>	
To prevent pollution of the riverbed and its associated sediments that may find their way into the food chain and affect the ecosystem and its functioning.	EPA, Local Councils, NSW Fisheries.

**4.2.5 ACID SULFATE SOILS**

*HTA Objective*

**To minimise the potential risk of Acid Sulfate Soils within the Hawkesbury Nepean Catchment and the effect this may have on the sustainability of our fishery.**

Acid Sulfate Soils (ASS) are the common name given to soils containing iron sulfides. These iron sulfide layers are found along the coast of NSW generally in areas where the surface elevation is less than 5 metres above mean sea level (Sammut 1997). In the Hawkesbury River, areas naturally rich in iron sulfide occur in the waterlogged sediments of estuarine wetlands, some naturally saline peat swamps, and riverine wetlands and floodplains as far upstream as North Richmond.

Under natural conditions iron sulfide layers are covered by water and native vegetation. If the water table drops or these layers are exposed to air, the iron sulfide oxidises and generates sulfuric acid. In floods following dry periods, some acid can be released into streams and rivers. Whilst salt water can neutralise the effect of this sulfuric acid, when generated in large amounts it can not be neutralised and can affect the health of fish and other organisms in the river (Sammut 1997). Massive fish kills can occur when sulfuric acid is washed into waterways.

Whilst fish kills are a very visual result of acid discharges into a river, less visible effects such as reduced hatching and decline in growth rates are more common and widespread, particularly in northern NSW (Sammut 1997).

**HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Acid Sulfate Soil &amp; Water De-Oxygenation</i>	Body Responsible
<b>Action 25</b>	
The Association to review existing knowledge of the presence of ASS within the Hawkesbury Nepean Catchment and if applicable, are existing management regimes adequate.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Acid Sulfate Soils &amp; Water De-Oxygenation</i>	Body Responsible
<b>Concern 19</b>	
If Potential Acid Sulfate Soils (PASS) are identified, education of land management practices to mitigate the likelihood of ASS occurring in the Hawkesbury River	DLWC, NSW Ag.



## 4.3 OTHER ISSUES

### 4.3.1 NOISE & LIGHT

*HTA Objective,*

**To minimise conflict with residents and other users of the waterway.**

Due to the nature of and times that trawling takes place on the Hawkesbury River, consideration must be extended to residents along the estuary, as well as other uses of the waterway such as recreational fishers, water skiers and leisure boats. The HTA has developed initiatives and Codes of Conduct to deal with these instances.

#### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Noise &amp; Light</i>	Body Responsible
<b>Action 26</b>	
Respect the rights and recognise the needs of other users of the water way and residents residing along the river and promote and use methods to alleviate conflict (Code of Conduct 6)	HTA
<b>Action 27</b>	
To make trawler operators aware of impacts from exhaust, gear operation and radio noise	HTA
<b>Action 28</b>	
Identify maximum workable noise emission (DB) from trawlers.	HTA
<b>Action 29</b>	
Communicate concerns over noise and light levels from other methods of fishing to the relevant Management Advisory Committee (MAC).	HTA

#### **HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Noise &amp; Light</i>	Body Responsible
<b>Concern 20</b>	
Education and awareness of all commercial fishermen as to the effects that noise and light from their fishing activities have upon the community.	MAC

### 4.3.2 GARBAGE

*HTA Objective,*

#### **To collect and appropriately dispose of all matter of refuse.**

Members of the Hawkesbury Trawl Association have a vested interest in protecting the health of the Hawkesbury–Nepean River. Trawl operators come into direct contact with the garbage that is illegally or accidentally disposed of into the river system. This refuse is often trawled up from the bottom of the river and includes among other items;

- plastic bags, including bait bags,
- household waste confined in garbage bags,
- plastic garbage bins, such as ‘wheelie’ bins
- boats & outboard motors
- car tyres & car bodies
- building materials
- recreational fishing refuse such as fishing line, rods, reels & plastic buckets
- personal equipment such as sunglasses and wristwatches
- ski ropes and handles
- navigation marker poles and lights
- syringes

With this in mind the HTA has developed as part of its Code of Conduct, the requirement that all members of the Association must carry the HTA approved and supplied garbage receptacle on his/her vessel. The contents of these garbage receptacles must be emptied onshore into the appropriate facility.

#### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Garbage</i>	Body Responsible
<b>Action 30</b>	
Carry onboard a HTA approved garbage receptacle (Code of Conduct 11)	HTA
<b>Action 31</b>	
Retain garbage and refuse recovered during routine fishing operations for disposal onshore (Code of Conduct 12)	HTA

#### **HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Garbage</i>	Body Responsible
<b>Concern 21</b>	
Promote the education and awareness as to the effects of garbage and litter on the aquatic environment.	Local Council, NSW Fisheries, EPA, NPWS, Waterways.

## 4.4 ENVIRONMENT & FISHERIES MANAGEMENT

### 4.4.1 ADMINISTRATIVE ARRANGEMENTS

*HTA Objective,*

**To encourage a holistic approach to management of the environment and the fishery by all government agencies.**

There are multiple state and commonwealth agencies that are responsible for the management of the Hawkesbury Nepean River system, its catchment and the industries that operate within (Appendix 11). The current legislative and policy driven management of the environment is not conducive to solving environmental degradation that is occurring daily on this river system. Management boundaries can often hinder the process of effective management of natural resources. It is the view of the Hawkesbury Trawl Association that effective communication is crucial between all stakeholders and relevant agencies to ensure holistic management of the environment.

Long term vision is urgently needed by management agencies and local governments as to the cumulative effect of short term decisions that impact on the environment. It is difficult to find workable solutions to stop the further decline in the state of the environment. The decision making process is ultimately influenced by the dollar and the consequence at the end of the day is generally not in favour of the environment and ecological sustainable development (ESD).

Currently, the framework for advice from industry to government is via the Management Advisory Council (MAC) process. A MAC is composed of elected representatives from industry by region / estuary, a conservation representative, NSW Fisheries staff and an independent chairperson. Whilst there needs to be increased coordination and improvements in knowledge by all agencies, NSW Fisheries also need to increase their knowledge about our fishery and its surrounds. Fisheries managers need to work with trawler operators at a much closer level to achieve effective fisheries management solutions.

### **HAWKESBURY TRAWL ASSOCIATION ACTIONS**

<i>Administrative Arrangements</i>	Body Responsible
<b>Action 32</b>	
Participate in and comply with management regimes to ensure sufficient seafood resources for present and future generations in the context of ESD (Code of Conduct 2)	HTA
<b>Action 33</b>	
The Hawkesbury Trawl Association will endeavour to be pro-active with government agencies and other relevant parties as to the consequential effects of management decisions.	HTA

<b>Action 34</b>	
Promote the willingness of the HTA to be involved in any community consultation relevant to the environment within the Hawkesbury Nepean river and its catchment.	HTA
<b>Action 35</b>	
To educate fishermen as to the role the MAC plays in the decision making process and management of their fishery.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Administrative Arrangements</i>	Body Responsible
<b>Concern 22</b>	
Further enhancement of the Hawkesbury Nepean <i>Habitat Protection Plan No. 3</i>	NSW Fisheries
<b>Concern 23</b>	
To encourage NSW Fisheries to ensure impacts on the environment as well as impacts on the fishery are provided to relevant parties.	NSW Fisheries
<b>Concern 24</b>	
To ensure that relevant legislation from neighbouring government agencies is complementary to provide effective management of the environment.	All State & Commonwealth agencies and local government.
<b>Concern 25</b>	
Promote the use of trawler operator knowledge in Fisheries Management Strategies to promote practical and sensible management of our fisheries.	NSW Fisheries
<b>Concern 26</b>	
Any research and development programs to be undertaken concerning our fishery to be in consultation with the MAC to ensure results are reflective of industry practices.	MAC NSW Fisheries
<b>Concern 27</b>	
Identify future costs (management & research) that will be incurred by trawler operators in the Hawkesbury River.	NSW Fisheries

NSW Fisheries is currently in the process of undertaking Environmental Assessments of fishing activities and consequently drafting Fishery Management Strategies for all fisheries in NSW. The outcome of these Environmental Assessments may influence our Environmental Action Plan, and the Hawkesbury Trawl Association will revise this plan accordingly.

#### 4.4.2 LATENT EFFORT

HTA Objective,

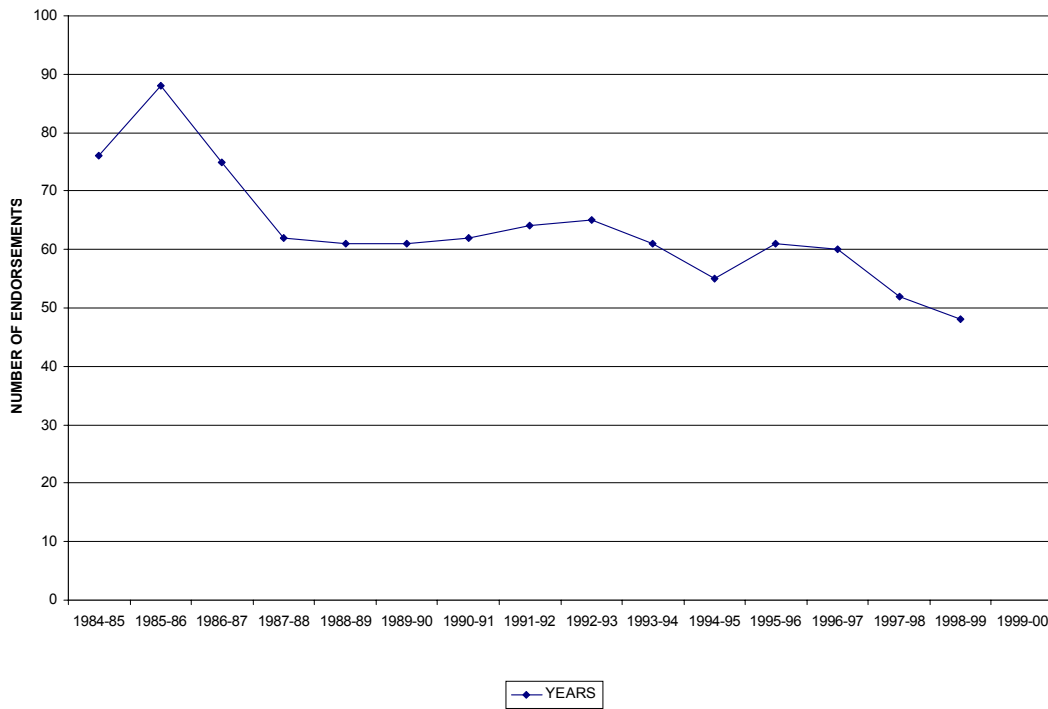
**To identify and effectively estimate latent effort in the fishery using management procedures in accordance with the principles of the Environmental Action Plan and Code of Conduct.**

Latent effort has been considered by NSW Fisheries and the MAC as the potential for non-working endorsements to return to the fishery, thus increasing overall fishing effort. There are currently 69 endorsements in the Hawkesbury Trawl Fishery. As a number of endorsements in the fishery may represent latent effort, effective procedures are currently being discussed between stakeholders and the MAC to identify and manage latent effort. This will be undertaken either through,

- a) through implementation of transfer criteria or
- b) other measures discussed and agreed upon by the majority of stakeholders.

Data supplied by NSW FISHERIES

**Figure 4 :NUMBER OF UTILISED HAWKESBURY TRAWL ENDORSEMENTS**



#### HAWKESBURY TRAWL ASSOCIATION ACTIONS

<i>Latent Effort</i>	Body Responsible
<b>Action 37</b>	
To provide information to NSW Fisheries and the MAC as to the effects of proposed solutions to latent effort within estuary trawl fisheries in NSW.	HTA

<b>Action 38</b>	
To voice and provide alternatives and solutions to the MAC, with regards to latent effort within the Hawkesbury Trawl Fishery.	HTA

**HAWKESBURY TRAWL ASSOCIATION ADDITIONAL CONCERNS**

<i>Latent Effort</i>	Body Responsible
<b>Concern 28</b>	
Consultation through the MAC to develop a suitable strategy for the effective management of latent effort to be accepted by industry.	MAC, NSW Fisheries

## PART 3

### 5.0 ENVIRONMENTAL ACTION PLAN ASSESSMENT

#### 5.1 AUDITING

All '*Actions*' which cover all the key activities and operations in the Hawkesbury Trawl Fishery will be audited annually (Appendix 12):

Auditing and assessment of the Hawkesbury Trawl Associations '*Actions*' provides trawl operators with a gauge on the issues they have some direct influence over. Assessment of the Hawkesbury Trawl Association '*Priorities*' highlights for the general public external issues that are impacting on the rivers environment and its management and are out of the control of HTA Members, but impact on their fishery.

Initially, compliance with the plan will be by way of industry self-assessment and community feedback.

Ultimately, a third party could be brought in to the auditing process to enhance the transparency of the Environmental Action Plan. This process would strengthen community confidence with respect to the achieved *actions* from the Plan and commitment by members to their Code of Conduct.

#### 5.2 MANAGEMENT REVIEW

The annual report produced by the HTA in conjunction with their AGM will be available to any interested parties on request after that date. The HTA's intention is to find a suitable means of auditing its procedures and activities that ultimately is acceptable to the community.

An annual report will be produced by the HTA considering the following:

- (a) Has this Environmental Action Plan been appropriate in meeting our needs and vision?
- (b) Does our Environmental Action Plan accurately reflect the HTA commitment to improved environmental performance?
- (c) Has our Plan been effective in delivering the common goals of the Association?
- (d) To what extent have our actions and priorities been met?
- (e) What changes are required to our Plan to reflect the changing circumstances surrounding our industry?
- (f) Have the resources of HTA been used appropriately?

To ensure the success of this Environmental Action Plan, recommendations will be incorporated as an ongoing refinement of this document.

### **5.3 PUBLIC REPORTING**

The need for significant industry ownership and input cannot be overstated. To achieve this, meetings with all Hawkesbury trawl operators are essential. Critical to the success of this plan will be support and commitment from a wide range of other interest groups.

The increased transparency, accountability and public awareness of the Hawkesbury trawl industry's management and operations, underpinned by an industry culture of continuous improvement will enable our industry to demonstrate to the public, that it is operating within environmental standards which meet or exceed community expectations.

This plan will not only benefit commercial trawl operators, but provide strategic progress in the environmental management of our river for the community as a whole, both now and into the future.



## REFERENCES

Bickford, G. 2001. Manager Environment & Innovation Department. *Sydney Water Corporation, Sydney*.

Department of Land & Water Conservation (DLWC). 1999. Hawkesbury Nepean Catchments Stressed Rivers Assessment Report. *DLWC, Sydney*.

Eayrs, S., C. Buxton & B. McDonald. 1997. A Guide to Bycatch Reduction in Australia Prawn Trawl Fisheries. *Australia Maritime College*.

Fisheries Research & Development Corporation (FRDC). 2000. Retail and Consumption of Seafood. *FRDC Canberra*.

Hannan, J. (1998) Hawkesbury Nepean River System – Habitat Protection Plan No. 3. *NSW Fisheries*.

Hawkesbury-Nepean Catchment Management Trust (HNCMT). 1997. Focus on Aquatic Environments of the Hawkesbury Nepean Catchment. *Hawkesbury Nepean Catchment Management Trust*.

Healthy Rivers Commission. 2000. Securing Healthy Coastal Rivers – A Strategic Perspective. *Healthy Rivers Commission of New South Wales*.

Montgomery, S.S. & V.C. McDonald. 1998. Summary of the Research Conducted on Prawn Trawl Fisheries in NSW & Recommendations for Their Future Management. *NSW Fisheries Research Institute, Cronulla*.

NSW Fisheries. 2001. Estuary Prawn Trawl Draft Fishery Management Strategy. *NSW Fisheries*.

NSW Fisheries. 1999. Policy and Guidelines – Aquatic Habitat Management and Fish Conservation. *NSW Fisheries, Port Stephens Research Centre*.

Pease, B.C. & A. Grinberg. 1995. NSW Commercial Fisheries Statistics. *Fisheries Research Institute, Cronulla*.

Roberts, D.E., A.G.Church & S.P.Cummins. 1999. Invasion of Egeria into the Hawkesbury-Nepean River, Australia. *Journal of Aquatic Plant Management*. 37: 31-34.

Sammut, J. 1997. An introduction to Acid Sulfate Soils. *NSW Agriculture, Wollongbar*.

SWC. 2000. Sydney Water Authority Annual Environmental and Public Health Report 2000. *Sydney Water Corporation*.

## Acronyms

ACCF	Advisory Council on Commercial Fishing
AMC	Australia Maritime College
BRD	Bycatch Reduction Device
CSIRO	Commonwealth Scientific & Industrial Research Organisation
DB	Decibels (unit for measuring the loudness of sound)
DLWC	Department Of Land and Water Conservation
DUAP	Department of Urban Affairs and Planning
ESD	Ecological Sustainable Development
FRDC	Fisheries Research and Development Corporation
HNRMF	Hawkesbury Nepean River Management Forum
HTA	Hawkesbury Trawl Association
MAC	Management Advisory Council
NCC	Nature Conservation Council of NSW
SFM	Sydney Fish Market
SCA	Sydney Catchment Authority
SWC	Sydney Water Corporation

## GLOSSARY

**Bycatch** – species taken incidentally in a fishery where other species are the target.

**Decibels** – Unit for measuring the loudness of sound.

**Ecological Sustainable Development** – using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.

**Endorsement** – a licence for the authorised take of commercial species for sale subject to the conditions set by NSW Fisheries and its legislation & regulations.

**Fishing effort** – the amount of fishing taking place, usually described in terms of gear type and frequency or period for which it is in use; for example ‘hooks set’, ‘trawled hours’.

**Juvenile** – a life stage prior to reaching maturity.

**Latent Effort** – the potential for non working endorsements to return to the fishery, thus increasing overall fishing effort.

**Non-target species** – The species that are captured during the fishing operations which are not the primary focus of the commercial fisher within the fishery.

**Primary species** – The species that are the dominant targeted species with the fishery.

**Recruitment** – entry of new individuals into a population by reproduction or immigration.

**Riddling** – the process of passing prawns over a wire mesh for the purpose of grading prawns by size.

**Secondary species** – The species that are captured during the fishing operations which are not the dominant target of the commercial fisher within the fishery.

**Target Species** – The species that are the primary focus for capture by commercial fishers within a fishery.

# APPENDIX 1

## Members of the Hawkesbury Trawl Association

Full Members	Associate Members
Gary Howard	Brenda Ireland
Graeme Hillyard	Mary Howard
Carl Blacklidge	Nicole Middleton
Tony Clenton	Barry Clenton
Troy Ireland	
Geoff Rose	
Mark Peterson	
Sydney Davidson	
Rolf Norington	
Peter Robinson	
Bryan Finch	
John Perry	
Dennis Clarke	
Paul Smith	
Graham Howard	
Claude Davidson	
Greg Webber	
John Ireland	
Doug Singleton	
Steve Fernie	
Tom Van Derneut	
Daniel Jekstadt	
Ricky Howard	

## APPENDIX 2

### **HAWKESBURY TRAWL ASSOCIATION CODE OF CONDUCT FOR RESPONSIBLE COMMERCIAL TRAWLING PRACTICES IN THE HAWKESBURY RIVER.**

#### **Background**

Commercial trawling has been conducted in the Hawkesbury River since 1946. This trawl fishery is viable in terms of its productivity, sustainable in its activities and its contribution to employment and the economy of the region.

This code of conduct sets very clear standards to which trawler operators will comply with when operating in the Hawkesbury River. This code has been developed by the Hawkesbury Trawl Association in response to increasing community expectations in relation to trawling and the environment in the Hawkesbury River.

**This Code is supported by all the members of the Hawkesbury Trawl Association.**

1. Support the broader principles of conservation and management measures to ensure the sustainability of the resources at optimal levels.
2. Participate in and comply with management regimes to ensure sufficient seafood resources for present and future generations in the context of ecologically sustainable development (ESD).
3. Participate with researchers in the collection of timely and reliable statistics needed for the conservation and management of fish stocks.
4. Participate with researchers and fellow fishers in the further development of Bycatch Reduction Devices (BRD).
5. Participate with researchers and fellow fishers in the further development of selective fishing gear.
6. Respect the rights and recognise the needs of other users of the waterway and residence residing along the river and promote and use methods to alleviate conflict.
7. Ensure that the time that the net is in the water is such that seafood quality is maximised.
8. Provide safe and wholesome products to consumers.
9. Offer assistance to other users of the waterway, who maybe in difficulty.
10. Use oil absorbent devices in bilge water
11. Carry onboard a Hawkesbury Trawl Association approved garbage receptacle.

12. Retained garbage and refuse recovered during routine fishing operations for disposal on shore.
13. Minimise the catch of non-target species, the incidental catch of non utilised species, marine mammals, reptiles, sea birds and impacts on associated or dependent species, using such measures as mesh or gear modifications, closed areas and bycatch reduction devices.
14. I will not injure fish with the use of a spike.
15. Notification as soon as possible to the relevant authority, on detection of environmental contamination or degradation, ie. Blue Green Algae, Chemical Spills etc.
16. Strive to comply with all relevant conditions of the Fisheries Management Act 1994 and Marine Parks Act, in particular, regulations on gear restrictions, net size, mesh size and area closures.
17. Liaise with the Hawkesbury Trawl Association Committee and pass on any community concerns or attitudes towards commercial trawling practices on the Hawkesbury River.
18. I will not utilise the practice of riddling for the grading of prawns.

## APPENDIX 3

### Management Committee of Hawkesbury Trawl Association

<b>Secretary / Media Officer</b> <b>Gary Howard</b> <b>771 River Road</b> <b>Lower Portland</b> <b>NSW 2756</b>  <b>Tel: 45 754 009</b> <b>Fax: 45 755 347</b>	<b>Public Officer / Media Officer</b> <b>Graeme Hillyard</b> <b>330 Blackwall Road</b> <b>Woy Woy</b> <b>NSW 2256</b>  <b>Tel: 43 416 147</b> <b>Fax: 43 431 293</b>
<b>Chairman</b> <b>Rolf Norington</b> <b>Brooklyn</b>	<b>Treasurer</b> <b>Troy Ireland</b> <b>Wisemans Ferry</b>
<b>Sydney Davidson</b> <b>Spencer</b>	<b>Carl Blacklidge</b> <b>Umina</b>
<b>Tony Clenton</b> <b>Davistown</b>	

## APPENDIX 4

### **Catchment of Hawkesbury Nepean**

*Source: Hannan (1998) Hawkesbury Nepean River System – Habitat Protection Plan No. 3. NSW Fisheries (1998)*



## APPENDIX 5

### Area of Hawkesbury Trawl Fishery

# HAWKESBURY RIVER



## **APPENDIX 6**

### **Land and Property Information Figures**

**APPENDIX 6 (cont:)**

The Hawkesbury Trawl Association using data obtained from the NSW Department of Information Technology and Management has calculated the following figures.

Total area of water in the Hawkesbury River system (up to the junction of the Grose and Nepean Rivers)	172.17km <sup>2</sup>
Total area of the system that is closed to trawling	96.18 km <sup>2</sup>
Total area of the system that is open to trawling	75.99 km <sup>2</sup>
Maximum daily area trawled in Hawkesbury River	5%

**Daily area trawled has been calculated by using the following assumptions:**

1. Trawl speed at 2.2 knots
2. Total tow time at 6hrs
3. Net spread at 24.12 feet (7.3meters) (67% of headline length)
4. No. of working endorsements (98/99) - 48

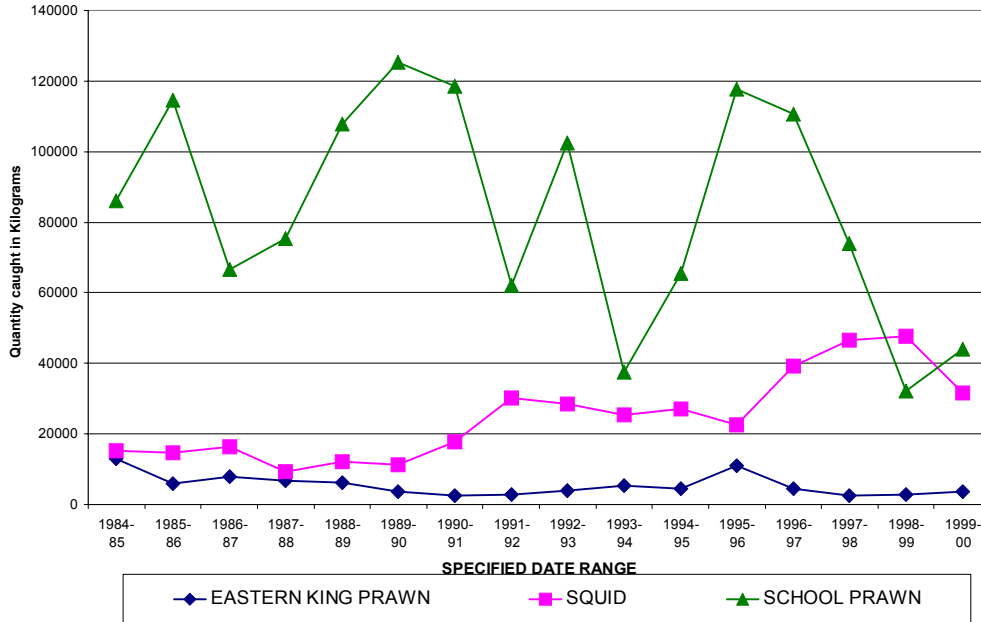
The figure of 5% represents a potential maximum daily area covered using the above data. This calculation has not taken into account the overlap of ground which would occur in the day to day operation of trawling in the Hawkesbury River. Therefore it is the opinion of this Association that the total seabed area covered would be far less than 5% of the system per day.

# APPENDIX 7

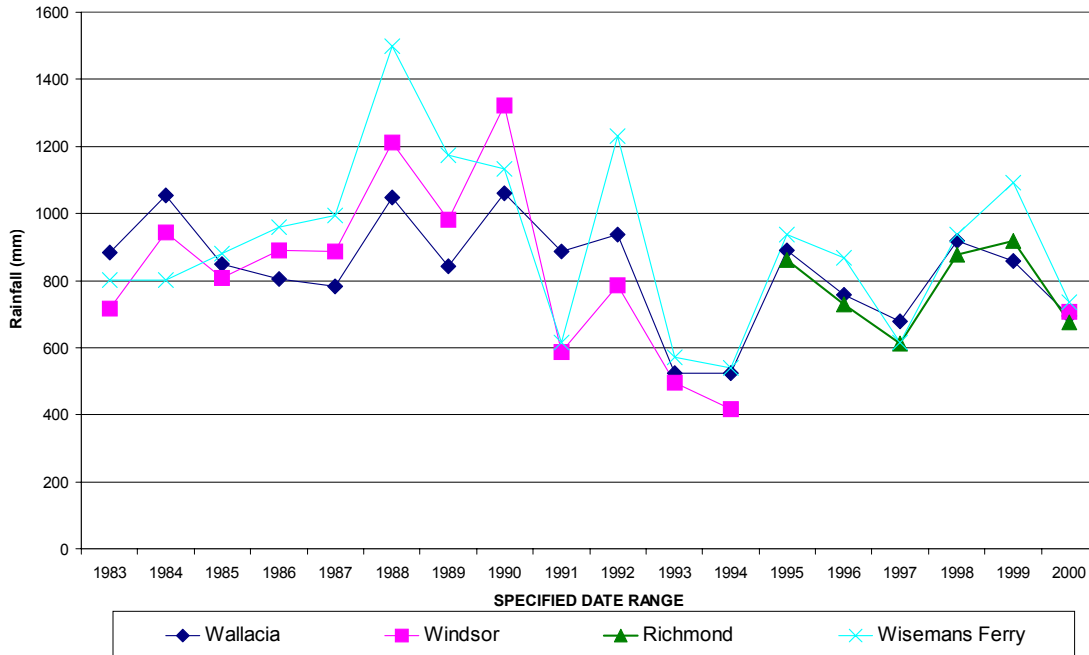
## Rainfall and Prawn Production

Data supplied by NSW FISHERIES Commercial Fishing Database.

**CATCH (Kg) of Prawns/Squid by Year - HAWKESBURY RIVER**



**ANNUAL RAINFALL**



Data supplied by NSW BUREAU OF METEOROLOGY