

---

# **Torres Strait Tropical Rock Lobster Fishery – Five Year Business Plan**

---

*A report prepared  
for the Department of Agriculture, Fisheries and Forestry*

*December 2010*



<http://www.marsdenjacob.com.au>

**Marsden Jacob Associates**  
Financial & Economic Consultants

ABN 66 663 324 657  
ACN 072 233 204

Internet: <http://www.marsdenjacob.com.au>  
E-mail: [economists@marsdenjacob.com.au](mailto:economists@marsdenjacob.com.au)

Melbourne office:  
Postal address: Level 3, 683 Burke Road, Camberwell  
Victoria 3124 AUSTRALIA  
Telephone: +61 3 9882 1600  
Facsimile: +61 3 9882 1300

Brisbane office:  
Level 5, 100 Eagle St, Brisbane  
Queensland, 4000 AUSTRALIA  
Telephone: +61 7 3229 7701  
Facsimile: +61 7 3229 7944261

Canberra office:  
Unit 10, 11 McKay Gardens  
Turner ACT 2612 AUSTRALIA  
Tel: +61 2 6239 4382

Perth office:  
Level 6, 731 Hay Street, Perth  
Western Australia, 6000 AUSTRALIA  
Telephone: +61 8 9324 1785  
Facsimile: +61 8 9324 1751

Authors: Dr Tony Hand, Siobhan Davies

This report may be cited as: Torres Strait Tropical Rock Lobster Fishery - Five Year Business Plan, Marsden Jacob Associates 2010

This report has been prepared in accordance with the scope of services described in the contract or agreement between Marsden Jacob Associates Pty Ltd ACN 072 233 204 (MJA) and the Client. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Marsden Jacob Associates accepts no responsibility for its use by other parties.



Copyright © Marsden Jacob Associates Pty Ltd 2010

## TABLE OF CONTENTS

	Page
<b>Executive Summary</b> .....	<b>i</b>
<b>1. Introduction</b> .....	<b>1</b>
1.1. Background .....	1
1.2. Objectives .....	1
1.3. Conduct of the study .....	1
1.4. Report structure .....	2
<b>2. Brief overview of the Tropical Rock Lobster fishery</b> .....	<b>3</b>
2.1. Introduction .....	3
2.2. Location .....	3
2.3. TRL catch .....	5
2.3.1. Catch by product form .....	7
2.3.2. Total allowable catch (TAC).....	8
2.3.3. Sector shares of the fishery .....	9
2.4. Fishing effort.....	9
2.5. Distribution of TIB catch and fishing effort .....	10
2.5.1. Incentives issues created by the CDEP .....	11
2.6. Economic performance .....	12
2.7. Processing and marketing sector .....	15
2.8. Management objectives & settings.....	15
2.8.1. Proposed reforms .....	16
<b>3. Aspirations of the key stakeholder groups in the TRL fishery</b> .....	<b>17</b>
3.1. Introduction .....	17
3.2. TIB Sector.....	17
3.3. Questionnaire responses from the TIB sector.....	18
3.4. TVH sector.....	23
3.5. Marketing sector .....	24
3.6. Comments .....	25
<b>4. Strategies for TIB sector capacity building</b> .....	<b>26</b>
4.1. Introduction .....	26
4.2. Infrastructure & services.....	26
4.3. Training .....	28
4.3.1. Direct industry programs to train new TRL divers / operators.....	29
4.3.2. Mothership for use as a training platform .....	29
4.3.3. Employment subsidies for existing operators training new divers.....	29
4.3.4. Free divers.....	30
4.4. CDEP reforms .....	30
4.5. Additional assessments and toolkits .....	30
4.6. Key steps in the design of capacity building initiatives.....	32
<b>5. Models for the staged buyout of TVH quota</b> .....	<b>35</b>
5.1. Introduction .....	35
5.2. General principles to apply in designing a potential buyout package .....	35
5.2.1. Previous PZJA policy position .....	36
5.3. Staged buyout of TVH quota by Government (Option 1a) .....	36
5.3.1. Capacity building before acquisition of Tranche 1 (Option 1b) .....	37
5.4. Government buyout for Tranche 1, cost sharing model for Tranches 2 & 3 (Option 2).....	37
<b>6. Next steps</b> .....	<b>39</b>
6.1. Introduction .....	39
6.2. Establishing targets .....	39
6.3. Management reform timeliness .....	42
6.4. Key risks .....	44
6.5. Other issues to examine.....	44
6.6. Establishing a Torres Strait Fisheries Reform Taskforce.....	45

# Executive Summary

## BACKGROUND

Marsden Jacob Associates (MJA) has been commissioned by the Department of Agriculture Fisheries and Forestry (DAFF) to prepare the “Torres Strait Tropical Rock Lobster (TRL) Fishery – Five Year Business Plan”, which is to help guide the reform process for the fishery over the July 2010 to June 2015 period.

## OBJECTIVES

The Five Year Business Plan is a strategic plan that explores the aspirations of each sector in the TRL fishery, including ways to maximize the economic and social utility of the fishery. It is a vehicle by which each sector can express their desires (or “aspirations”) for the fishery and document their views on:

- infrastructure, capacity development, training and skills transfer requirements; and
- future economic, marketing and business opportunities, including business models and structures, transition schemes and partnerships.

## CONDUCT OF THE STUDY

The study included an extensive stakeholder consultation process based around seven workshops with representatives from TVH and TIB fishers (defined below), marketers, and from each of the TRL regions. Another workshop was held in Brisbane to review the overarching feedback from industry participants, and was attended by officers from the Australian Fisheries Management Authority (AFMA), DAFF, the Department of Employment, Economic Development and Innovation (DEEDI), and the Torres Strait Regional Authority (TSRA).

## BRIEF OVERVIEW OF THE TROPICAL ROCK LOBSTER FISHERY

There are four sectors in the Torres Strait (TS) TRL fishery:

- **Traditional Inhabitant Boats (TIB)** – commercial Indigenous TS Islander sector, allocated 53% of the Australian share of the total allowable catch (TAC)<sup>1</sup>.
- **Transferrable Vessel Holder (TVH)** licences – commercial non-Indigenous sector, allocated 47% of the Australian share of the TAC.
- **Traditional users** – non-commercial Indigenous TS Islanders sector, allowed to fish for personal or community use only. This sector is not included in the TAC, but is subject to a daily catch limit.
- **PNG commercial fishers** – PNG operators have limited access to the Australian fisheries jurisdiction. The Australian TS Protected Zone (TSPZ) holds around 85% of the total TSPZ TRL stock. PNG fishers are allocated up to 25% of TRL stocks in the Australian TSPZ, but in many years the allocation will be lower as it is adjusted downwards in accordance with the volume of catch taken in PNG waters.

---

<sup>1</sup> Currently, this TAC is only a notional TAC as the fishery is managed through input controls. Once the proposed quota system has been introduced, the TAC will be enforced.

The annual TRL **catch** is highly variable, with total fishery catch varying from a low of 122 tonnes in 2001 to a peak of 893 tonnes in 2005. This natural variability is accentuated by the large fluctuations in prices for live crays and tails caused by market fundamentals (demand and supply at the major international markets) or by exchange rate fluctuations.

The TS Rock Lobster Resource Assessment Group (TRLRAG) considers the fishery to be in good condition biologically, but notes that the fishery was **moderately overfished** in four of the last ten years – in 1999, 2001, 2002 and 2006 – which were also years of low abundance and low Australian catch.

### Fishing effort

At the end of 2007, there were 26 licensed primary vessels in the TVH sector, with 58 attached tenders. A buyout in 2007-08 saw 13 boats bought out with a total of 29 attached tenders. 13 licensed TVH primary vessels, with a total of 34 attached tenders, remain in the fishery today.

There are significant differences between TIB and TVH operations:

- TVH operators run mother-ship operations with up to 7 tenders (or dories) attached. All TVH divers use hookah equipment. TVH operators generally prefer to fish the deeper water to the east of the fishery, but will fish in other zones depending on the local abundance of lobsters, and weather conditions.
  - In 2009, 10 TVH operators recorded catch in the fishery, with total fishing effort an estimated 1,281 days (an average of 72 days number of days per operation).
  - The economic returns for TVH operators have been estimated at \$2,905 per tonne per annum for 2007, and are significantly higher than returns to TIB operators.
- TIB operators use a 5-6 metre tender:
  - In 2009, total fishing effort for the TIB sector was just over 11 days per fisher. An estimated 87% of TIB operators fished fewer than 20 days. Only 5% of operators fished more than 50 days.
  - A feature of the TIB sector is the wide range in fishing effort:
    - **Tier 1** ‘Serious commercial TIB fishers’ – The top 5% of TIB fishers (14 fishers) take 30% of the TIB catch;
    - **Tier 2** ‘Semi professional TIB fishers’ – Around 23% of TIB fishers (65 fishers) take 50% of the TIB catch;
    - **Tier 3** ‘Casual TIB fishers’ – The bottom 72% of TIB fishers (200 fishers) take 20% of the TIB catch. In addition, they fished an average of just four fishing days in 2009.
  - In 2007, annual profit (or income) for TIB operators (after deducting the crew’s share) ranged from \$819 to \$53,057 depending on region fished and whether the TIB fisher was in tier 1, 2 or 3.

Another factor in the TIB fishery is the role played by the Community Development Employment Projects Program (CDEP). CDEP provides a wage, currently \$257.50 per week, or \$13,390 per annum, for indigenous TS Islanders employed through the Program. Eligibility for CDEP payments is lost if income from other sources exceeds about \$27,000

per annum. Participants in the TRL fishery can thus earn up to \$39,390 per annum through the combined income from the CDEP and fishing.

While the income threshold creates an impediment to fishers becoming serious full-time commercial fishers, CDEP also places a limit on TIB fishing effort. Many individuals will only go fishing to 'top up' on their base CDEP income.

The interaction between the CDEP and the TIB fishery poses a risk of an effort explosion in the fishery in the future. Reforms to CDEP that reduced payments – or an increase in cray prices that draw participants into the TIB fishery – mean there is significant potential for an increase in fishing effort in the TIB fishery without the need to acquire any additional licences. The planned reform of CDEP in 2010-11 thus means that the impact on TIB effort will need to be monitored.

### Processing and marketing sector

There are currently three marketing agents active in the fishery. Freezers are currently operating on Thursday Island, Badu, Iama, and Poruma. There are also freezers on Mer Island and Erub, but these are mainly used for finfish, as TRL are not generally caught around these islands.

Tanks or cages can be used to keep live crays before they are collected by marketing agents for air freighting to Horn Island, and then to Cairns, before being exported to Hong Kong. Tails are transported by freight vessel to Cairns, before being air freighted to the main export markets, which include Hawaii and North America.

### Management objectives and settings

In 2005–06, the [Tropical Rock Lobster Working Group](#) recommended new management objectives which were adopted by the Protected Zone Joint Authority (PZJA). These objectives are:

- to maintain the spawning stock at levels that meet or exceed that required to produce the maximum sustainable yield;
- in accordance with the TS Treaty, to protect the traditional way of life and livelihood of Traditional Inhabitants, particularly in relation to their traditional fishing for TRL;
- to provide for the optimal utilisation, co-operative management with Queensland and PNG and for catch sharing with PNG;
- to monitor interactions between the prawn and lobster fisheries;
- to maintain appropriate controls on fishing gear allowed in the fishery so as to minimise impacts on the environment;
- to promote economic development in the TS area with an emphasis on providing the framework for commercial opportunities for Traditional Inhabitants and to ensure that the opportunities available to all stakeholders are socially and culturally appropriate for the TS and the wider Queensland and Australian community; and
- to optimise the value of the fishery.

Expansion in the fishery is limited to Traditional Inhabitants so as to maximise their opportunities.

The PZJA has imposed licensing provisions to prevent the growth of the non-Islander sector, both in terms of fishing capacity (boat replacement policy) and the containment of licence

numbers. There is also a ban on trawlers taking lobster to prevent pressure on the lobster resource from the prawn trawling fleet.

### Proposed reforms

A new Management Plan for the TS TRL fishery will be introduced in 2010-11, with a new quota management system to replace a number of existing input controls.

The principal role of the Management Plan will be to:

- streamline input controls;
- introduce a mandatory TAC system;
- set out the process for allocating quota; and
- define the rules for mandatory logbook data reporting for fishers with quota.

## THE FIVE YEAR BUSINESS PLAN

### Aspirations

In order to guide the reform process to 2015, extensive stakeholder consultation was undertaken. Key aspirations identified through this consultation showed that:

- In the TIB sector, there was a desire to:
  - achieve 70% ownership of the TRL resource, transitioning to 100% ownership over time;
  - ban hookah use in home reefs (and surrounding islands) of the Central North Cluster and Mabuiag, to protect the catch rates of TIB free divers.
  - improve infrastructure and services;
  - improve training programs, particularly business skills, engine maintenance, and use of safety gear and hookah.
  - maintain control over freezers;
  - invest in larger boats. TIB operators (as a group) do not want to move into larger boats, but prefer to continue their current style of operation (i.e., 5-6 metre tenders). Some would be potentially interested in moving into large scale operations (i.e., larger boats of 8-9 metres in length, but not the TVH mother-ship style of fishing enterprise).
- In the TVH sector the principle areas for reform are seen as being:
  - relaxation / removal of inefficient input controls;
  - improved information about the nature and timing of the Government's policy for buyout of TVH;
  - the proposed quota system.
- In the marketing sector key concerns are to improve fishery outcomes and ensure that catch volumes are maintained.

### Strategies for TIB capacity building

There are some key areas where the capacity of the TIB sector needs to be increased if they are to increase their share of the fishery and/or improve catch rates and profitability. Some

steps that agencies such as the TSRA will need to take over the 5 year period of the Business Plan include investing in:

- infrastructure and services such as freezers and landing facilities;
- training, especially in:
  - business skills, cash flow budgeting and completion of tax returns;
  - catching techniques – particularly in terms of handling techniques to promote increased supply to the live cray market;
  - the use of safety equipment and safety protocols; and
  - the use and maintenance of hookah equipment.

## RECOMMENDATIONS

### Capacity building

To progress the above capacity building initiatives (see section 1.5.2), 4 Scoping Papers are proposed, to set the foundation for a robust capacity building process.

- **Scoping Paper 1** will develop the financial, economic and social criteria for assessing new infrastructure investments, and articulate the pros and cons of different models for financing new infrastructure (covering issues such as alternative models for capital contributions, user charges and public private partnerships).
- **Scoping Paper 2** will apply the framework developed in Scoping Paper 1 using a two stage process. The first stage will be an audit of the infrastructure and services needs for the TRL industry (and broader TS fishing industry) to identify a number of potential projects. The second stage will apply the investment prioritisation process to set out the specific investment priorities for the funds allocated by TSRA (and other agencies) to the TRL and broader fishing industry in the TS.
- **Scoping Paper 3** would further develop the schedule of training modules
- **Scoping Paper 4** will identify key reforms to improve the efficiency of the freezer operations.

### Staged buyout of TVH quota

The purchase of quota will be dependent on an external source of funding, as TIB operators do not generate sufficient operating surpluses to be able to afford to pay for TVH quota.

Two models for staged purchase of TVH quota are presented:

- **Option 1:** sequential purchase of three tranches of quota (each 15% of total Australian quota) from the TVH through a staged process fully funded by Government:
  - the acquisition of Tranche 1 by Government would achieve 70% TIB ownership.
  - any further government funding for the purchase of additional parcels of TVH quota (i.e., Tranches 1 & 2), would be conditional on the TIB sector meeting key capacity development milestones.
- **Option 2:** is a cost sharing model, whereby the Government fully funds acquisition of the first tranche, but then individual TIB operators and Government jointly fund the cost of purchasing additional parcels of quota from the TVH sector.



At this stage the Government has made no commitment to funding a buyout, or partial buyout, but core principles in designing any future buyout process would include:

- phased increase in the TIB share of the TRL resource, so that TIB capacity to catch TRL keeps pace with its capacity share;
- a planned transition process;
- investment in capacity building for the TIB sector to occur concurrently with any process of acquiring TVH quota;
- factors affecting incentives for TS islanders to participate in the TRL fishery to be addressed concurrently with any process of acquiring TVH quota; and
- mitigation of the risk of reductions in catch volumes by monitoring performance of the TIB sector (i.e., in terms of total annual catch, participation rates, incomes and profitability).

Total economic value of the fishery will decline if there is a shift in resource ownership from the TVH sector to the TIB. Hence one of the outcomes of an adjustment process would be to sacrifice economic profits from the TVH sector in return for increased employment of TIB fishers and reduced reliance on the welfare system. Longer-term benefits would include skill development for fishers, and the spill-over effects to other members of the community being engaged in full-time employment (i.e., outside the CDEP system).

### **ESTABLISHING TARGETS**

A key element in evaluating aspirations for capacity building and resource ownership is to establish clear targets for the TIB sector and monitor performance against these targets.

A significant increase in the number of full-time fishers (Tier 1 fishers) and serious part-time fishers (Tier 2 fishers) is required to lift the TIB effort by a sufficient amount to enable full utilisation of Tranche 1. A realistic target would be to increase participation to the extent required to use all of Tranche 1 over the five year life of this Business Plan.

### **KEY RISKS**

Latent fishing effort presents a risk for the TIB – if there were to be a rapid increase in use of TIB licences (or number of TIB fishing days), then the annual catch per fisher (or per tender day) will clearly decline.

Options for mitigating this risk include:

- splitting the quota between serious commercial and other TIB fishers. The former would have a separate pool of quota, and this would be allocated amongst fishers using an ITQ; and
- moving TIB fishers with low levels of fishing effort back into the traditional fishing class.

Other key risks for the fishery include:

- management decisions not being made using a Public Benefit Test framework;
- continued delays in introducing management reforms; and
- a buyout of TVH effort without the use of a phased approach coupled with appropriate TIB capacity building to ensure maintenance of catch volumes.

## OTHER ISSUES TO EXAMINE

Additional initiatives that management could consider for the fishery include:

- **Bio-economic modelling** – a bio-economic model could be used to estimate economic profits and employment under a range of management settings, effort levels, and fleet configurations. This is a decision support tool to assess the overall medium to long term targets for the fishery, and to consider the benefits and costs of the TIB moving into larger boats and hookah (i.e., to examine the tradeoffs between economic profits and employment / access).
- Review of a **flexible harvest strategy** – the TAC varies markedly each year, and it can be difficult to ascertain at the start of each season what the TAC should be. It is also difficult to predict the total effort from PNG in the fishery. The TAC could be reviewed at the beginning of the season and adjusted upwards during the season if actual stock abundance turns out to be higher than expected at the start of the season. This would avoid utilisation of an overly conservative TAC for that season and could increase economic returns for the fishery by enabling higher TACs to be adopted in some years.
- A review of the **nature of marketing businesses**. The economics of the different ‘styles’ of buyers – i.e., the island based buyers (Iama and Badu), TI buyers (Pearl Island and Tanala) and the Cairns based exporters (MG Kailis) – could be examined to better understand what level of catch would need to be maintained to keep these operations going, and what operations the fishery needs to remain viable with greater TIB ownership.
- Review of **TIB sector motives for fishing**. This study would consider the driving social and cultural factors behind TIB fishers’ decisions regarding the intensity of fishing (days fished) and style of fishing operation. This research could improve knowledge of why the levels of fishing effort in the TIB sector have been decreasing (finfish and lobster) since the buyouts. This information is important if fishery managers are to make good decisions about how to improve participation (and profitability) of the TIB sector.

## ESTABLISHING A TORRES STRAIT FISHERIES REFORM TASKFORCE

To provide the strategic direction and implement specific reform initiatives, formation of a Torres Strait Fisheries Reform Taskforce for a five year period is recommended.

The Task Force would not have a role in specific management issues per se, and hence would not enter into discussions on matters that are best addressed through the PZJA. The Task Force would help ensure that the community obtains maximum value from the TS TRL.

# 1. Introduction

## 1.1. Background

Marsden Jacob Associates (MJA) has been commissioned by the Department of Agriculture Fisheries and Forestry (DAFF) to prepare the “Torres Strait Tropical Rock Lobster (TRL) Fishery – Five Year Business Plan”, which is to help guide the reform process for the fishery over the July 2010 to June 2015 period.

## 1.2. Objectives

In accordance with DAFF’s Terms of Reference, the 5 Year Business Plan is intended to be a medium term strategic plan to explore the aspirations of each sector, including ways to maximize the economic and social utility of the fishery.

The 5 Year Business Plan is, in essence, an instrument for each sector to express their desires (or ‘aspirations’) for the TRL fishery and to document their current views on:

- infrastructure, capacity development, training and skills transfer requirements; and
- future economic, marketing and business opportunities, including business models and structures, transition schemes and partnerships.

Moreover, DAFF’s Terms of Reference specify that:

*“The business plan could provide a range of business models that could increase the participation of the Traditional Inhabitant Boat (TIB) sector in the fishery and contribute to providing certainty to the future operating environment for the Transferable Vessel Holder (TVH) sector.”*

## 1.3. Conduct of the study

The study included an extensive stakeholder consultation process, based around a series of seven stakeholder workshops, comprising:

- |               |   |
|---------------|---|
| Workshop 1    | Representatives from the TVH / marketing agent sectors at a workshop held in Cairns (October 2009).   |
| Workshop 2    | TIB fishers based on Thursday Island (December 2009).   |
| Workshop 3    | TVH sector fishers based on Thursday Island (December 2009).  |
| Workshops 4-6 | TIB sector operators – for the Central North Cluster (held at Poruma Island), Western Cluster (Badu Island), and Central South Cluster (Thursday Island). |

In addition, a project workshop (Workshop 7) was held in Brisbane on 17 February 2009 to review the overarching feedback from industry participants. The workshop was attended by officers from the Australian Fisheries Management Authority (AFMA), DAFF, the Department of Employment, Economic Development and Innovation (DEEDI), and the Torres Strait Regional Authority (TSRA).

## 1.4. Report structure

The report structure is as follows:

- Section 2      Brief overview of the Tropical Rock Lobster fishery.
- Section 3      Aspirations of the key stakeholder groups in the TRL fishery.
- Section 4      Strategies for TIB sector capacity building.
- Section 5      Models for the staged buyout of the TVH sector.
- Section 6      Next Steps.

## 2. Brief overview of the Tropical Rock Lobster fishery

### 2.1. Introduction

This Section provides an overview of the current catch and level of fishing effort for both the TIB and TVH sectors. A summary of the current management arrangements and proposed management reforms is also provided in this Section.

### 2.2. Location

Map 2.1 shows the boundaries of the Torres Strait (TS) TRL fishery.

There are four sectors that participate in the fishery.

- **Traditional Inhabitant Boats (TIB)** – this is the commercial Indigenous TS Islander sector. The TIB sector has been allocated 53% of the Australian share of the total allowable catch (TAC).<sup>2</sup>
- **Transferrable Vessel Holder (TVH)** licences – this is the commercial non-Indigenous sector. The TVH sector has been allocated 47% of the Australian share of the TAC.
- **Traditional users** – this is the non-commercial Indigenous TS Islanders sector. Traditional users are allowed to take catch for personal or community use only. This sector is not directly included in the TAC, but is subject to a daily catch limit.
- **PNG commercial fishers** – PNG operators are provided with limited access to the Australian fisheries jurisdiction and this arrangement reflects, in part, the fact that the Australian TS Protected Zone (TSPZ) holds around 85% of the total TSPZ TRL stock. PNG fishers receive an allocation of up to 25% of TRL stocks in the Australian TSPZ,<sup>3</sup> but in many years the allocation will be lower as it is adjusted downwards in accordance with the volume of catch taken in PNG waters.<sup>4</sup>

A key feature of the fishery is the marked difference between the nature of the TIB and TVH operations. TIB operators use a 5-6 metre tender (also referred to as dories or dinghies), whereas TVH sector operators use a 10-20 metre primary vessel (or mother ship) which will have between one and seven tenders attached to it. As outlined in Section 2.6, TVH operators have a much higher level of profitability than TIB operators.

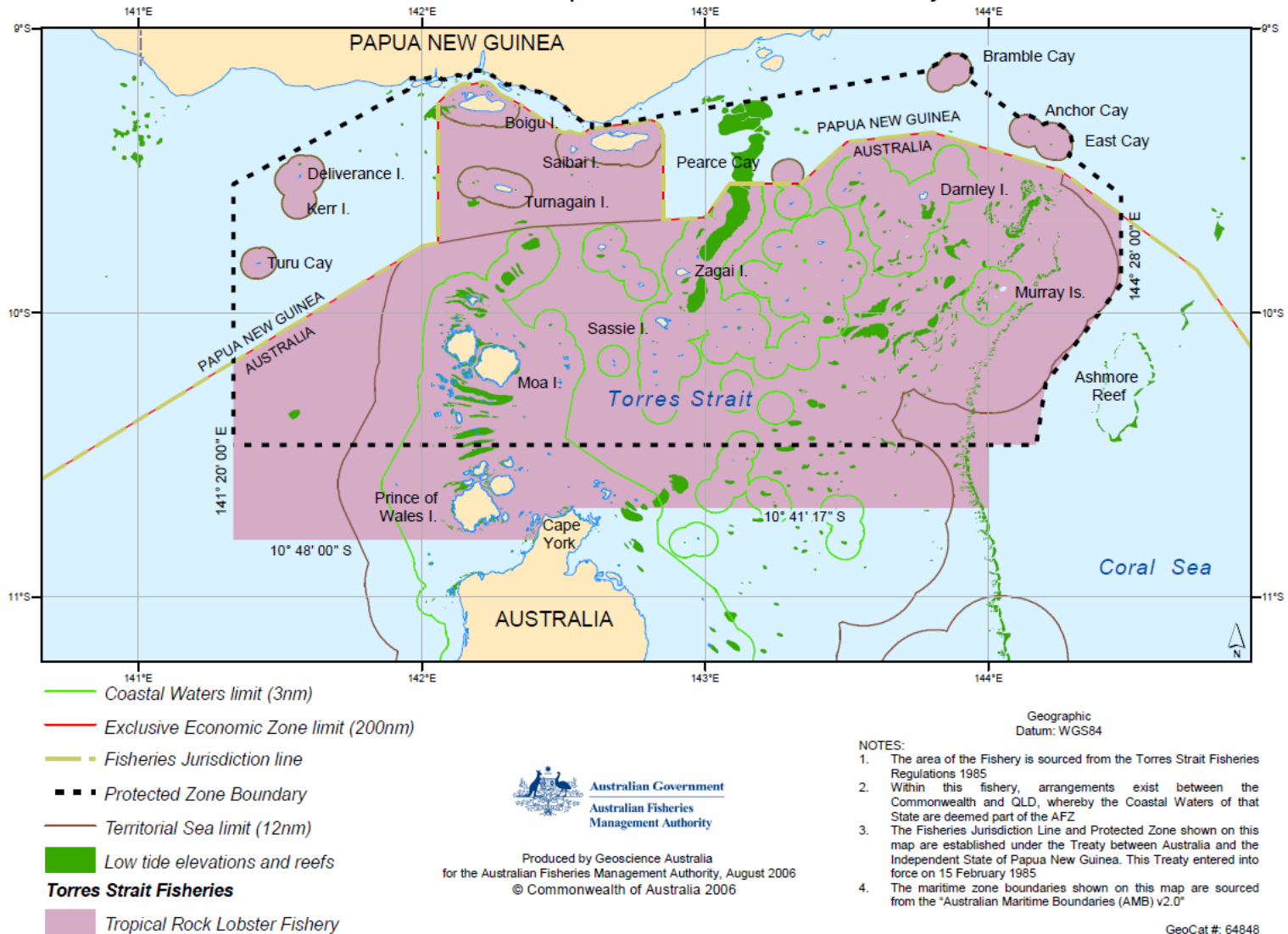
---

<sup>2</sup> Currently, this TAC is only a notional TAC as the fishery is managed through input controls. Once, the proposed quota system has been introduced, the TAC will be enforced.

<sup>3</sup> Torres Strait Protected Zone Joint Authority, Torres Strait Fisheries Management Advisory Committee, Meeting No. 11, 11-12 November, 2009.

<sup>4</sup> During the 2009 TRL fishing season, PNG cross-endorsed vessels pursued the option to enter Australian waters, fishing a total of 406 tender days in the Australian Jurisdiction to date. For the 2010 season Australia proposes to issue cross-border endorsements to access the Australian fishing jurisdiction of the TSPZ for a combined total of 1,036 tender fishing days (compared with 1,518 in 2009).

Map 2.1: Torres Strait Tropical Rock Lobster fishery



### 2.3. TRL catch

There has been high variability in annual TRL catch (Table 2.1) over the 2001 to 2009 period, with total fishery catch varying from a low of 122 tonnes in 2001 to a peak of 893 tonnes in 2005.

This high variance needs to be taken into account by operators in making investment decisions and in managing their annual business cash flows.

Further accentuating the inter-annual variation in profitability are the large fluctuations in prices for live crays and tails that can be caused by market fundamentals (demand and supply at the major international markets) or by exchange rate fluctuations.

This high variability in profitability is relatively difficult to manage for larger operations with relatively high fixed operating costs (e.g., maintenance expenditures) and/or high debt repayment obligations.

**Table 2.1: Catch by sector from 2001-09**

Year	TVH catch <sup>1</sup> (tonnes)	TIB catch <sup>1</sup> (tonnes)	Total (tonnes)
2001	68.2	53.8 <sup>2</sup>	122.0
2002	139.8	69.2 <sup>2</sup>	209.0
2003	350.1	117.9 <sup>2</sup>	468.0
2004	454.1	267.6	721.7
2005	509.3	383.7	893
2006	125.9	200.1	326
2007	257.2	238.4	495.6
2008	97.4	176.9	274.3
2009	89.8	128.9	218.7

Source: AFMA 2010.

Notes: (1) All weights are calculated as whole weight equivalents using a conversion factor of 2.56 from 2001-2008 and 2.67 for 2009 to convert tails to caught weight. (2) TIB records prior to 2004 are less reliable due to the nature of reporting prior to docket books.

Focusing on the 2006-09 period (as AFMA reports that data are more accurate for this period than for the pre-2006 years), the TIB sector has exceeded its share of the notional TAC in 2006, but fell short of the TAC in the subsequent periods.

**Table 2.2: TIB catch and nominal TAC**

Year	Total (tonnes)	Sector TAC (tonnes)	% TAC
2006	200.1	186	108
2007	238.4	301	79
2008	176.9	270	66
2009	125.9	174	72

Source: AFMA 2010.

Notes: (1) Tail weight calculated as whole weight equivalent using a conversion factor of 2.56 as TAC has been determined with this conversion factor.

The TVH catch came close to reaching the nominal TAC (Table 2.3) in 2007, but fell well short of the TAC in 2006, 2008 and 2009. In 2008 and 2009, the TVH catch was particularly low relative to the TAC.

In 2006 there were twice as many TVH boats fishing than there are today, as this was prior to the buyout which took place during the 2007-08 financial year. Nonetheless, catch was low (relative to TAC) in 2006 due to low catch rates (caused by seasonal fluctuation in resource abundance) which promoted some of the larger TVH operators to focus on the East Coast Fishery instead

Only two boats were bought out in 2007 (i.e., in August 2007) with a further 11 bought out in January 2008. Hence the buyout had a relatively low impact on fishing effort in 2007 which is consistent with the high catch (98% of TAC) in 2007.

Conversely, the low catch in 2008 and 2009 (compared with 2007, and as a proportion of the TAC) is largely attributable to the impact of the buyout. The interim management measures (see below) would also have contributed to catch being well below the TAC in 2008 and 2009.

**Table 2.3: TVH catch and nominal TAC**

Year	Total (tonnes)	Sector TAC (tonnes)	% TAC
2006	125.9	161.7	78
2007	257.2	262.2	98
2008	97.5	235.2	41
2009	87.8	152.0	58

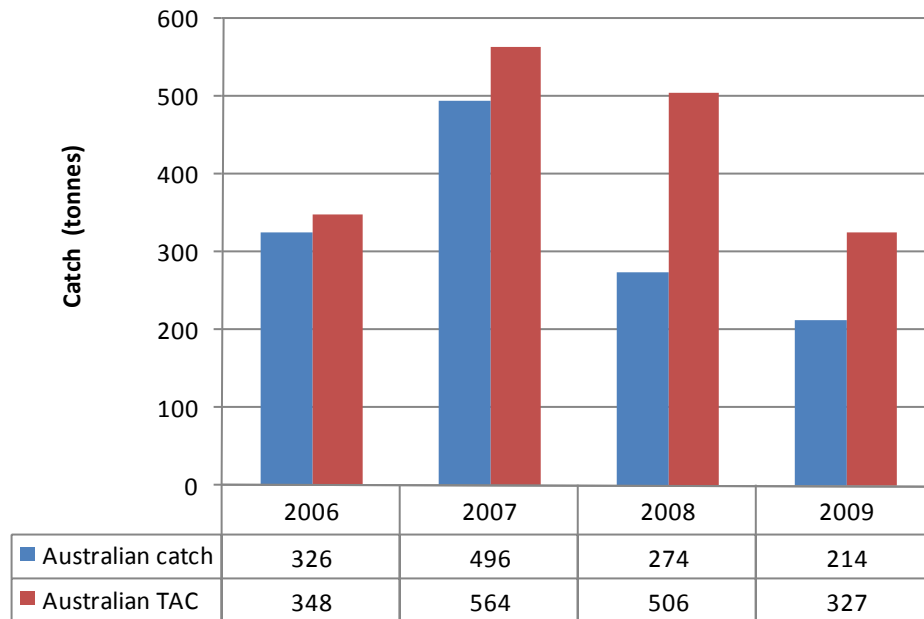
Source: AFMA 2010.

Notes: (1) Tail weight calculated as whole weight equivalent using a conversion factor of 2.56 as TAC has been determined with this conversion factor.

In aggregate terms, the Australian catch has not exceeded the TAC over the 2006-09 period (Chart 2.1). The data show that the resource was significantly underutilised in 2008 and 2009 – the Australian catch was just 54% of the TAC in 2008 and 65% of the TAC in 2009.



**Chart 2.1: Total Australian Catch compared with the TAC**



Source: AFMA 2010.

### 2.3.1. Catch by product form

The industry is seeking to increase the ratio of live crays to tails, as the price paid per tonne (as a whole weight equivalent) is much higher for live crays.

Despite a decline in the aggregate annual catch (Table 2.4), the volume of live crays taken by the TIB increased over the 2007-09 period, but there remains scope to further increase the ratio of whole crays to tails.

**Table 2.4: TIB Catch by product form**

Year	Tails (tonnes)	Whole (tonnes)	Unknown (tonnes)	Catch (tonnes)	% Whole
2007	211.5	34.9	0.69	247.1	14
2008	136.2	46.1	0.16	182.5	25
<b>2009</b>	74.2	54.7	0	128.9	42

Source: AFMA 2010.

Notes: (1) Tail weight calculated as whole weight equivalent using a conversion factor of 2.67.

The TVH sector's catch of whole crays varied significantly from 2007 to 2009 (Table 2.5) as a percentage of total catch, while the total volume fluctuated from 36.6 tonnes to 61.6 tonnes.

**Table 2.5: TVH Catch by product form**

Year	Tails <sup>1</sup> (tonnes)	Whole (tonnes)	Unknown (tonnes)	Catch (tonnes)	% Whole
2007	204.6	61.1	0	265.64	23
2008	63.2	36.9	0	100.05	37
2009	50.1	39.7	0.010	89.82	44

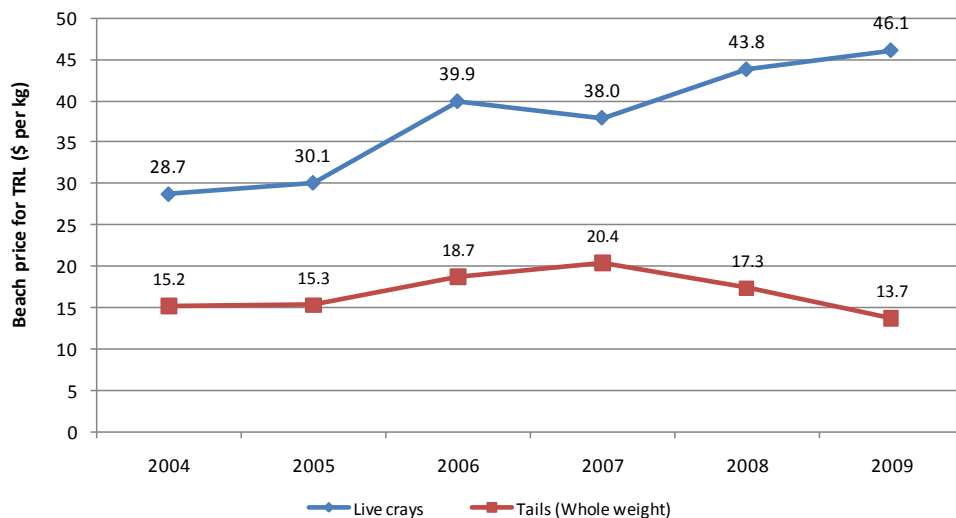
Source: AFMA 2010.

Notes: (1) Tail weight calculated as whole weight equivalent using a conversion factor of 2.67.

Beach prices paid by MG Kailis are shown below (Chart 2.2), and the average price in 2009 for live crays (\$46.1 per kilogram) was some \$32.4 per kilogram higher than the price for tails (\$13.7 per kilogram). Tails are exported to the US market and live crays are exported to the Chinese market. Hence, the strong Australian dollar relative to the US dollar in 2009 would have accentuated the price difference.

Nonetheless, the large price difference illustrates the economic benefits associated with taking measures to increase the ratio of crays supplied to the live cray market.

**Chart 2.2: Beach prices for live cray and tails**



Source: MG Kailis 2010.

### 2.3.2. Total allowable catch (TAC)

Annual fishery-independent surveys of the stock have been carried out in Australian waters of the TS annually since 1989. A second survey, closer to the start of each fishing season (pre-season), provides the information to formulate an annual TAC for the fishery.

The TS Rock Lobster Resource Assessment Group (TRLRAG) considers the fishery to be in good condition biologically, but notes that the fishery was moderately overfished in four of the last ten years – in 1999, 2001, 2002 and 2006 – which were also years of low abundance and low Australian catch.

### 2.3.3. Sector shares of the fishery

The resource share acquired by the Government through the 2007-2008 buyout of TVH operators (see Section 2.4) was used to make provision for the PNG share of the TAC, and to lift the TIB sector share of the Australian TAC to 53% (although this fell short of the TIB's aspirational target of 70% TIB ownership), leaving the TVH sector with 47% of the TAC.

## 2.4. Fishing effort

In 2009, total fishing effort for the TIB sector was an estimated 3,146 dory days (Table 2.6), but, with 279 active fishers, the average time spent fishing was low, at just over 11 days per fisher.

**Table 2.6: TIB Sector fishing effort, 2009**

<i>Effort parameter</i>	<i>Value</i>
Total number of fishers recording catch	279 fishers
Total number of TIB licences with cray (CR) endorsements	333 endorsements <sup>1</sup>
Total no. of dory days	3,146 dory days <sup>2</sup>
Maximum no. of days fished by any fisher	113 days
Average no. of days fished	11.28 days

*Source: AFMA 2010.*

*Notes: (1) as at 30 January 2009. (2) Assumes recorded catch in a docket book record is for one day's fishing in one dory (calculated as one dory day). In some cases, more than one fisherman may have fished for a recorded catch. In other cases, two fishers fishing from the same dory may sell their catch separately, and this is calculated to be two dory days of effort.*

Most of the fishers in the Central North Cluster and from Mabuiag (Western Cluster) prefer to free dive, and are opposed to the use of hookah equipment around their home reefs (see Section 3). However, a large number of Thursday Island and Badu based divers use hookah equipment. Most TIB operators embark on relatively short trips, camping on islands near the fishing grounds for one or two nights if necessary.

At the end of 2007, there were 26 licensed primary vessels in the TVH sector, with a total of 58 attached tenders. A tender process to buy non-traditional inhabitant vessels was conducted at the end of 2007 and early 2008 and resulted in the removal of 13 licensed primary vessels with a total of 29 attached tenders. Hence, 13 licensed TVH primary vessels, with a total of 34 attached tenders, remain in the fishery.

In 2009, just 10 TVH operators recorded catch in the fishery (and hence three licensed operators elected not to fish in the TS TRL fishery) and their total fishing effort was an estimated 1,281 days (Table 2.7). The average number of days fished per operation was 72.

TVH operators run mothership operations with anywhere from 1-7 tenders (or dories) attached. All of the divers working on the TVH operations use hookah equipment. TVH operators generally prefer to fish the deeper water to the east of the fishery, but will fish in other zones depending on the local abundance of lobsters, and weather conditions.

**Table 2.7: TVH Sector fishing effort, 2009**

<i>Effort parameter</i>	<i>Value</i>
Total number of operators recording catch	10 operators
Total number of TVH licences with cray (CR) endorsements	13 endorsements
Total no. of operation days	719 operation days
Total no. of dory days	1,281 dory days
Maximum no. of days fished by any fisher	136 days
Average no. of days fished	72 days

Source: AFMA 2010.

## 2.5. Distribution of TIB catch and fishing effort

A key feature of the TIB sector is the high variance in the level of participation in the fishery.

The following three tiers have been defined to demonstrate the high variance in fishing effort by active TIB fishers:

- Tier 1** ‘Serious commercial TIB fishers’ – TIB fishers with the highest annual catch per fisher are included in Tier 1. The top 5% of TIB fishers (14 fishers), who are included in Tier 1, take 30% of the TIB catch (see Table 2.8).
- Tier 2** ‘Semi professional TIB fishers’ – TIB fishers with the mid range levels of annual catch per fisher (i.e., lower than Tier 1, but higher than Tier 3) are included in Tier 2. Around 23% of TIB fishers (65 fishers) are included in Tier 2 and they take 50% of the TIB catch.
- Tier 3** ‘Casual TIB fishers’ – TIB fishers with the lowest levels of annual catch are included in Tier 3. The bottom 72% of TIB fishers (200 fishers) are included in Tier 3 and they account for only 20% of the TIB catch. In addition, they fished an average of just four fishing days in 2009.

**Table 2.8: Catch taken and fishing days for Tier 1-3 TIB fishers, 2009**

<i>Group (ranked by catch per fisher)</i>	<i>% of the total catch taken</i>	<i>Annual catch (kg)</i>	<i>Number of fishers</i>	<i>% by number of fishers</i>	<i>Average days fished per year</i>	<i>Catch per fisher</i>
Tier 1	30	38,066	14	5.0	66	2,719
Tier 2	50	64,028	65	23.3	22	985
Tier 3	20	26,837	200	71.7	4	134

Source: AFMA 2010.

Moreover, Table 2.9 provides a summary of the frequency distribution of TIB fishing days for 2009. An estimated 87% of TIB operators fished fewer than 20 days. Just 5% of operators fished more than 50 days.

**Table 2.9: Frequency distribution of TIB fishing days, 2009**

<i>Days fished</i>	<i>Volume of catch taken</i>	<i>% of TIB operators catch</i>
<10	186	67
10-19	56	20
20-29	8	3
30-49	13	5
50-69	6	2
70-113	9	3
<b>Total</b>	<b>278</b>	<b>100</b>

Source: AFMA 2010.

Hence, it is clear that most TIB fishers currently engage in a relatively low level of fishing intensity (fishing days).

However, the data presented in Table 2.8 and Table 2.9 also point to the high risk of an ‘effort explosion’ in the fishery in future. That is, if there was some trigger (reduced welfare or increased cray prices) that increased the incentives to fish, then there would be very extensive scope for the TIB sector to increase fishing effort, without acquiring any additional licences.

### 2.5.1. Incentives issues created by the CDEP

The Community Development Employment Projects (CDEP) Program provides a regular source of income for indigenous TS Islanders employed through the Program. This wage is currently \$257.50 per week, or \$13,390 per annum. An individual loses their eligibility for CDEP payments if income from other sources exceeds about \$27,000 per annum. An individual who is both on the CDEP and a participant in the TRL fishery, could therefore potentially earn \$39,390 per annum through the combined income from the CDEP and fishing.<sup>5</sup>

While the income threshold creates an impediment to fishers becoming serious full-time commercial fishers, the time allocated to the CDEP also places a limit on TIB fishing effort. But, in terms of the overall incentive framework, the key issue is that the income obtained from the CDEP lowers the level of Islander dependency on the TRL fishery as a source of income. Many individuals will only go fishing to ‘top up’ on their base CDEP income.

<sup>5</sup> All of the Mabuiag fishers participating in the Western Cluster Workshop, held on Badu, commented that they alternate between one week on CDEP and one week TRL fishing.

## 2.6. Economic performance

In 2007, MJA surveyed a number of divers from Thursday Island, Badu, and Warraber as part of the study MJA conducted for the Torres Strait Regional Authority (TSRA) on the “*Economic assessment of the Torres Strait Islander commercial fishing sector’s ability to increase their share of the Kaiar and Finfish Fishery*”.<sup>6</sup>

A summary of survey results is provided in Table 2.10. Annual profit (or income) for operators (after deducting the crew’s share of income) varied from:

- \$31,820 to \$53,057 for Thursday Island operators;
- \$6,878 to \$26,816 for Badu operators; and
- \$819 to \$9,120 for Warraber operators.

The actual variation among TIB divers will be very high, and will depend on:

- annual fishing days;
- whether hookah equipment is used (as opposed to freediving);
- fishing location;
- skill / expertise; and
- proportion of catch sold as live versus tails.

**A key finding from this analysis of annual fishing returns, is that for the average TIB fisher, there is very little, if any, economic surplus (over-and-above personal income) that could be used to finance the acquisition of quota from the TVH. Thus at an individual level it is unlikely that any TIB fishers will be able to buy quota. Moreover, the current business model may not allow them to use quota in any case.**

---

<sup>6</sup> MJA, 2008, Economic assessment of the Torres Strait Islander commercial fishing sector’s ability to increase their share of the Kaiar and Finfish Fisheries, report prepared for the TSRA, May.

**Table 2.10: Annual fishing income, Thursday Island TRL operators**

	<i>Thursday Island</i>			<i>Badu Island</i>			<i>Warraber Island</i>		
	<i>Operator 1</i> (\$)	<i>Operator 2</i> (\$)	<i>Operator 3</i> (\$)	<i>Operator 4</i> (\$)	<i>Operator 1</i> (\$)	<i>Operator 2</i> (\$)	<i>Operator 1</i> (\$)	<i>Operator 2</i> (\$)	<i>Operator 3</i> (\$)
Total revenue	140,250	115,000	91,625	68,250	25,200	69,300	15,000	15,000	3,125
Total costs	45,997	38,977	32,767	26,557	13,736	24,607	5,880	5,910	2,306
Profit (Before crew share)	94,253	76,023	58,858	41,693	11,464	44,693	9,120	9,090	819
Crew's share of operating profit	41,196	33,904	27,038	20,172	4,585	17,877	-	-	-
<b>Net profit / earnings</b>	<b>53,057</b>	<b>42,119</b>	<b>31,820</b>	<b>21,521</b>	<b>6,878</b>	<b>26,816</b>	<b>9,120</b>	<b>9,090</b>	<b>819</b>

Source: MJA TS TRL Fisher Surveys, 2007.

The economic returns for TVH operators were estimated by ABARE (Table 2.11) using survey data it collected for a study it conducted on TS fisheries in 2007.<sup>7</sup>

**Table 2.11: TVH operators, 2004-05**

	TRL (\$)
Annual returns	457,518
Variable fishing costs	272,692
Owner and family labour	83,204
Gross operating profit	101,622
Fixed costs	43,503
Net profits	58,119
Total catch	20 tonnes
<b>Profit per tonne (\$/tonne/annum)</b>	<b>\$2,905</b>
<b>Capitalised value (\$/tonne)</b>	<b>\$29,005</b>

Source: MJA Torres Strait TS TRL Fisher Surveys 2007.

The principal reasons for the higher returns for TVH fishers, compared with TIB operators, include the following.

- **Use of the mother ship / multiple tender style of operation** – this enables the boats to stay out longer, and to travel in rougher seas. There is far less time spent travelling to and from port.
- Use of **hookah rather than freediving**, which not only increases productivity but also results in a higher percentage of crays being kept in a condition suitable for supply to the live cray market.
- More **commercially oriented** – the TVH operations are substantial fishing enterprises, which drive skippers and crew to achieve high levels of operating efficiency and productivity.
- **TVH operators fish full-time while most TIB operators are part-time fishers.** Moreover, TVH divers typically spend more hours diving each fishing day, increasing catch rates which are measured on a catch per day basis.
- **Greater capital efficiency** as TVH operators fish a much greater number of days each year and this spreads the capital costs over a greater number of fishing days.
- **Greater returns from investing in skills development** as they have higher retention rates (i.e., for non-Indigenous crew).
- **Some of the TVH boats have dual endorsement for the TS and East Coast fisheries.** This enables higher catch rates to be maintained in the long term, as boats can be shifted to the East Coast Fishery when there are relatively low catch rates in the TS fishery.

<sup>7</sup> Fairhead, L. And Hohnen, L., 2007, *Indigenous fishers in the Torres Strait – Improving their Economic Benefits*, ABARE Research Report 07.AA, prepared for the Fisheries Resources Research Fund, Canberra, September.



## 2.7. Processing and marketing sector

There are currently three marketing agents active in the fishery – MG Kailis, Pearl Island seafoods and Tanala Seafoods.

Freezers are currently operating on Thursday Island, Badu, Iama, and Poruma. There are also freezers on Mer Island and Erub, but these are mainly used for finfish, as TRL are not generally caught around these islands.

Tanks or cages can be used to keep live crays before they are collected by marketing agents for air freighting to Horn Island, and then to Cairns, before being exported to Hong Kong.

Tails are transported by freight vessel to Cairns, before being air freighted to the main export markets, which include Hawaii and North America.

## 2.8. Management objectives & settings

During 2005–06, the [Tropical Rock Lobster Working Group](#) recommended new management objectives which were adopted by the Protected Zone Joint Authority (PZJA). These objectives are as follows:

- to maintain the spawning stock at levels that meet or exceed the level required to produce the maximum sustainable yield;
- in accordance with the TS Treaty, to protect the traditional way of life and livelihood of Traditional Inhabitants, particularly in relation to their traditional fishing for TRL;
- to provide for the optimal utilisation, co-operative management with Queensland and PNG and for catch sharing to occur with PNG;
- to monitor interactions between the prawn and lobster fisheries;
- to maintain appropriate controls on fishing gear allowed in the fishery so as to minimise impacts on the environment;
- to promote economic development in the TS area with an emphasis on providing the framework for commercial opportunities for Traditional Inhabitants and to ensure that the opportunities available to all stakeholders are socially and culturally appropriate for the TS and the wider Queensland and Australian community; and
- to optimise the value of the fishery.

In the TS TRL Fishery, expansion in participation is limited to Traditional Inhabitants so as to maximise their opportunities.

The PZJA has imposed licensing provisions to prevent the growth of the non-Islander sector, both in terms of fishing capacity (boat replacement policy<sup>8</sup>) and the containment of licence numbers. There is also a ban on trawlers taking lobster to prevent pressure on the lobster resource from the prawn trawling fleet.

---

<sup>8</sup> Under the boat replacement policy, if primary vessels operated by the TVH sector (there are a total of 13 licensed primary vessels) are to be replaced, they must remain within their existing size classes which are generally defined in around 2-4 metre increments.

In addition, interim measures to control effort were introduced in 2003 and 2005 and include:

- a 30% reduction in the number of months that tenders from non-traditional inhabitants were allowed to operate for licence holders that have two or more tenders associated with a primary vessel (i.e., the '30% tender reduction'); and
- a prohibition on the use of hookah three days before, on the day of, and three days after either the full or new moon each month from February to September (i.e., 'moon tide' closures).

Other regulations currently implemented in the TS TRL Fishery include:

- limiting the method of taking of lobster to either hand or with the use of a hand-held implement, such as a spear or scoop net;
- an October to November (inclusive) ban on commercial fishing;
- a further ban on the use of hookah gear during December and January (inclusive);
- a minimum tail size of 115 mm or minimum carapace length of 90 mm for all commercially caught lobsters;
- a bag limit of three lobsters per person or six lobsters per dinghy applies to traditional fishing (Islander or visiting PNG Traditional Inhabitants) (the same limit applies to recreational fishing under Queensland State law); and
- the prohibition of the processing or carrying of TRL meat that has been removed from any part of a TRL on any boat.

### 2.8.1. Proposed reforms

The principal reform measures include the introduction of a new Management Plan for the TS TRL fishery in 2010-11 and the introduction of a new quota management system which would replace some existing input controls that are deemed to be economically inefficient (or simply unnecessary once the quota system has been introduced).

The principal role of the Management Plan would be to:

- **streamline input controls** – removing any controls which are unnecessary in achieving resource management objectives (hence it will be necessary to determine whether the interim management controls – see above – are to become part of the future management system, or whether they are deemed to be no longer necessary);
- introduce a **mandatory TAC system** that would apply to fishers either as part of the quota system, or through application of an Olympic system or 'race for the catch' (i.e., in the event that some, or all, of the TIB sector of the fishery are not initially part of the individual transferable quota (ITQ) system);
- set out the **process for allocating quota**, and monitoring and enforcement of quota systems (in July 2005 the TS PZJA made the decision to implement quota management in the TRL fishery); and
- define the rules for **mandatory logbook data** reporting for fishers with quota.

## 3. Aspirations of the key stakeholder groups in the TRL fishery

### 3.1. Introduction

In this section, we present an overview of the aspirations of each of the key stakeholder groups which were attained through the series of workshops (see Section 3) conducted with TIB operators, TVH operators, and marketing agents.

### 3.2. TIB Sector

At the workshops with the TIB sector, there were a number of consistent aspirations, which were as follows.

1. ***A desire to achieve 70% ownership of the TRL resource as a starting point, transitioning to 100% ownership over time (although at the Central North Cluster Workshop participants called for 100% ownership as a starting point).***

The underlying issues that sit behind the ownership aspiration include the desire of TIB operators to:

- maintain high catch rates in low TAC years;
  - provide enough resource share for the next generation of TIB fishers;
  - reduce local depletion effects caused by TVH;
  - offset the effect of an increase in catch by PNG operators; and
  - provide additional resource share to accommodate fishing activity by new TIB fishers (i.e., in the event that there is a large increase in participation due to east coast fishers coming back to the TS, winding back of the CDEP, or successful training programs).
2. ***A ban on hookah use by both TIB and TVH fishers in home reefs and surrounding islands of the Central North Cluster and Mabuag (in the Western Cluster).***

The rationale for this aspiration is to protect the catch rates of TIB free divers. Hookah divers are able to spend a lot more time diving each day and can dive in deeper water, catching crays before they move on to the shallower reefs where free divers operate. Consequently, intense fishing effort by hookah divers in a particular sub-region could create local depletion effects (creating a negative impact on free divers' catch rates).

Some fishers also called for an increase in the length of the seasonal hookah ban.

There remains some uncertainty about the extent to which the interaction between hookah and free diving affects catch rates for free divers. (i.e., it is difficult to accurately estimate the significance of any competition on local fishing grounds between hookah and free divers). However, AFMA Officers have noted that Tim Skewes from CSIRO has conducted some research which indicates that lobster do not move from deep water to reef tops during the season, but move to the top of the reef during summer and stay there until they migrate to spawn.

**3. Improve infrastructure & services for the fishing industry, including:**

- **improved loading / unloading facilities (a number of islands);**
- **dedicated pontoon for fishing boats (Thursday Island);**
- **freezers (a number of islands);**
- **availability of provisions / safety equipment; and**
- **availability of servicing (engine and fibre-glassing) on more outer islands.**

The results of a brief survey on infrastructure and services for the fishing industry are provided in Section 4, along with a more detailed discussion of the steps to prioritise investments in infrastructure and services for the fishing industry.

**4. Improve availability of training programs, particularly in relation to:**

- **business skills;**
- **engine maintenance;**
- **use of safety gear; and**
- **use of hookah (for young divers on Thursday Island).**

There is high demand amongst TIB fishers to improve their skills. Hence, as discussed in Section 5, there needs to be development of a series of appropriate short training programs for existing fishers. In addition, we discuss alternative employment programs that have been put forward in the stakeholder workshops and could be suitable for prospective TIB fishers.

**5. Communities in the Central North Cluster are keen to maintain control over freezers.**

Workshop participants were clear that any future model should exclude divestment of freezers to new operators, as they place a high priority on maintaining control of freezers. This aspiration is probably related to a concern that, if the community does not control the freezer, then their bargaining power with middle men (marketing agents) may be eroded.

**6. Investment in larger boats**

At the workshops the general view given by TIB operators (as a group) was that they do not want to move into larger boats, but instead would prefer to continue their current style of operation (i.e., 5-6 metre tenders). As discussed below, their questionnaire responses indicated that a number of them would be potentially interested in moving into large scale operations (i.e., larger boats of 8-9 metres in length, but not the TVH mother ship style of fishing enterprise).

### **3.3. Questionnaire responses from the TIB sector**

At the Central North Cluster and Western Cluster Workshops, a questionnaire was completed during an extending breakout session. This provided a forum for individual views, rather than the common group opinion, on certain issues to be presented; thus avoiding one of the potential pitfalls of workshops which is the tendency for the group to convey only one view on the main issues.

Some of the questionnaire results (regarding future investment priorities for individuals and the types of operation TIB fishers would like to potentially make the transition into) are summarised in Charts 3.1 to 3.10.

Key results are listed below.

- TIB operators completing the questionnaire placed much greater emphasis on ‘continuing to enjoy my current style of fishing operation’ (79% in the ‘very high priority’ or ‘medium-high priority’ categories) than ‘engaging in substantial development and growth of my business’ (56% in the ‘very high priority’ or ‘medium-high priority’ categories).
- On the other hand, almost 60% indicated that they would attach either a ‘very high’ or ‘medium-high’ priority to ‘investing in a larger boat as this would allow me to go on longer trips and increase my annual Kaiar catch’.
- Only 20% indicated that they would attach either a ‘very high’ or ‘medium-high’ priority to ‘Starting to use hookah, or increasing use of hookah’ (moreover, at the TIB workshops, most TIB fishers who are currently free divers were opposed to the use of hookah equipment on reefs where they fish and did not support increased use of hookah).
- There was an overwhelming response in relation to investment in safety gear, with 86% indicating that they would attach either a ‘very high’ or ‘medium-high’ priority to investing in more safety gear (life jackets, flares, EPIRB, GPS, etc.).

It is noted that the questionnaire was not completed by Thursday Island operators, and that a total of 25 questionnaires were completed. Hence some caution is required in interpreting the results.

The lack of support for motherships was relatively strong, but it was considered to be potentially beneficial in servicing the Central North Cluster fishers operating from their existing tenders. Use of a mother ship, in this context, would enable them to stay at the fishing grounds for longer periods, reducing the amount of time spent travelling to and from their home islands. However, the workshop participants were adamant that the mother ship would need to work in tandem with their community freezer, and be operated by the community. On this issue, a workshop participant from Mabuiag commented that:

*“We had two motherships previously – but don’t want to return to that type of operation, although it might be an option we would consider if it was operated by the community freezer rather than by an agent.”*

Even if there was a desire to move into mothership style operations, it would be difficult to provide the appropriate training, as most TIB fishers (and TS Islanders in general) are reluctant to work alongside TVH operators. Hence, joint-venture models for the transference of fishing skills from TVH to TIB are unlikely to be supported by the TIB operators.

Despite the survey results in favour of larger boats, some participants at the Central North Cluster Workshop commented that in their region, larger boats (around 8-9 metres) would not provide significant benefits, because they can extend their trips (using the current boats which are 5-6 metre tenders) by camping on small islands and therefore do not require larger boats to embark on longer trips. During the group discussions at the Workshop it was stated that the idea of a mother ship working in conjunction with the community freezer had greater potential benefits than upgrading to larger boats.

The Western Cluster Workshop group had more support for larger boats, with one participant noting that:

*“We want to invest in funding for larger boats so we can go out far in rough weather and invest in safety gear, EPIRB and GPS.”*

The sentiment of the Thursday Island fishers was that they could not rule out the potential option of some fishers wanting to move to larger vessels to facilitate longer trips and to enable them to go out in rougher seas. However, they showed little support for returning to the mother ship model, except in relation to the option of using a mother ship as a training platform which is an option discussed in more detail in Section 5.

But, on balance, from our workshop discussions it is likely that most TIB fishers would generally prefer to continue in their current style of fishing operation (using a single tender), and are not interested in making the transition into larger boats and/or the use of mothership operations. While this is at odds with the questionnaire results, the questionnaire result probably reflects a desire to ensure the option of moving to larger boats stays open to TIB operators.

TIB fishers are reluctant to make the transition into larger boats / mothership style operations because they would need to:

- undertake much longer fishing trips (staying away from home for up to 7-10 nights), which is a lifestyle they would not enjoy;
- spend a lot more time on vessel maintenance, and, in many cases, they would need extensive training in business management, vessel maintenance and operation before they could utilise a larger vessel; and
- employ more crew and divers, which is likely to be very difficult. If a TS islander has the expertise to dive for crays, then they generally prefer to run their own tender.

Moreover, the TIB sector's current style of fishing operation (based around the use of a single 5-6 metre tender) provides them with the income they need, and hence there are no strong economic incentives for them to make the transition into larger boats. This characteristic of TIB fishers may pose a risk to the capacity building program, and the incentives facing each fishing sector need to be taken into account by management agencies.

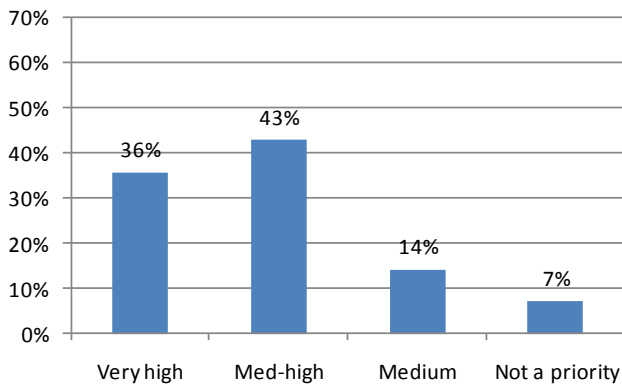
However, this creates somewhat of a 'road block' in the sense that, realistically, a TIB operator would need to successfully make the transition into larger, more profitable fishing operations if they are going to afford to buy TVH quota (see Section 2). There is simply insufficient profit from operating 5-6 metre tenders for a private operator to generate the necessary capital to pay for TVH quota.

Managing cash flow in a TRL business with high debt levels (which is generally the case in the initial years after purchase of a new boat) would be difficult, as an operator could experience difficult operating conditions if catch rates and/or TRL prices were low in this period.

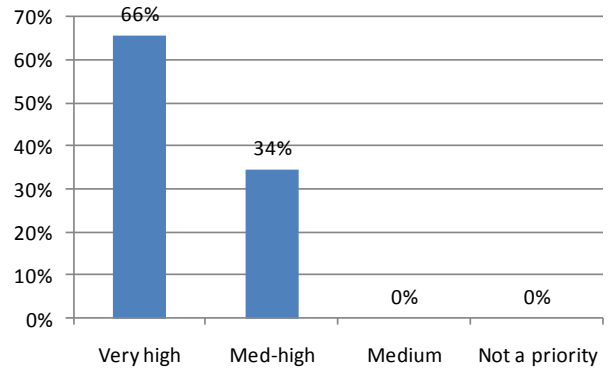
Another observation is that a much higher level of business skills and cash flow management would be required to run a TRL business if an operator has to repay a loan provided for the purchase of a larger boat (which could cost anywhere from \$150,000 to \$400,000).

Participants noted that one of the constraints on investing in larger boats is the requirement for a 20% deposit for TSRA loans (i.e., a deposit of \$40,000 for a \$200,000 boat), and they called for relaxation of this requirement in cases where the operator has a good track record in the fishing industry and presents a sound business case to the TSRA. Participants also identified the need for assistance with the preparation of business cases, indicating that TSRA could establish a panel of contractors to provide assistance in this regard.

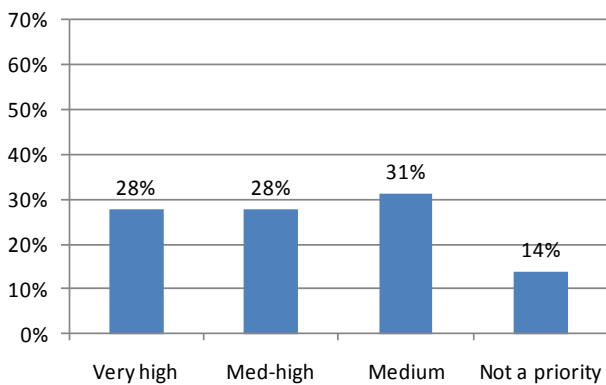
**Chart 3.1: Continue to enjoy my current style of fishing operation**



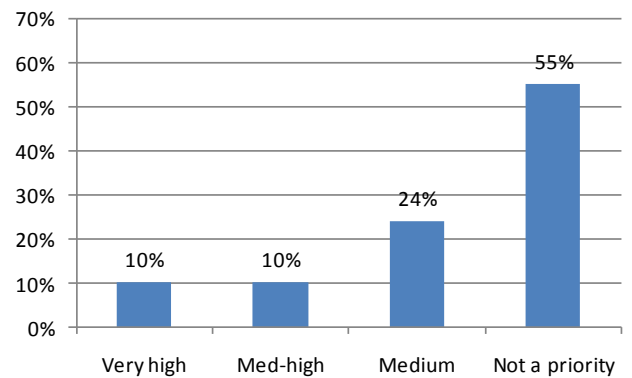
**Chart 3.2: Develop or sustain a profitable fishing business to pass on to my children**



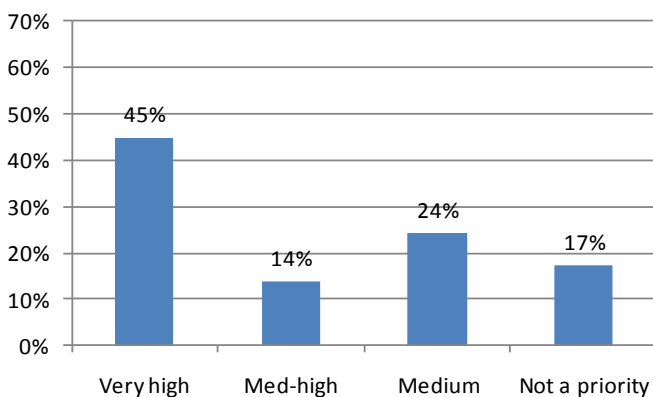
**Chart 3.3: Engage in substantial development & growth of my business**



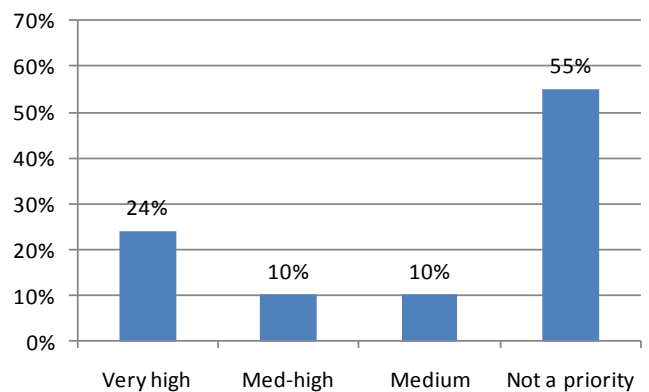
**Chart 3.4: Start using hookah, or increase use of hookah**



**Chart 3.5: Invest in a larger boat as this would allow me to go on longer trips and increase my annual Kalar catch**

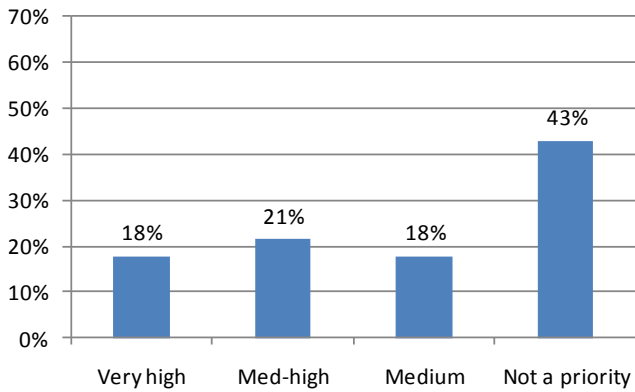


**Chart 3.6: Invest in a mother ship to support expansion**

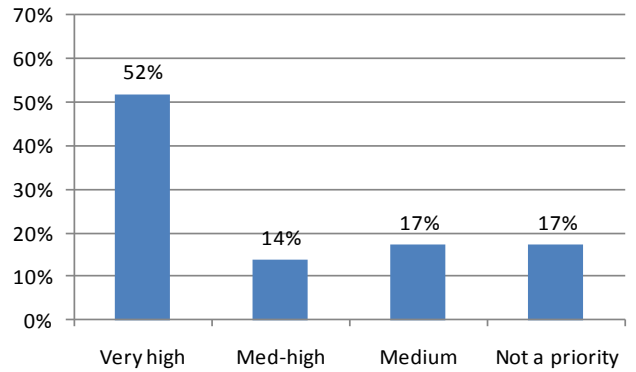


Source: MJA survey of TIB fishers 2010.

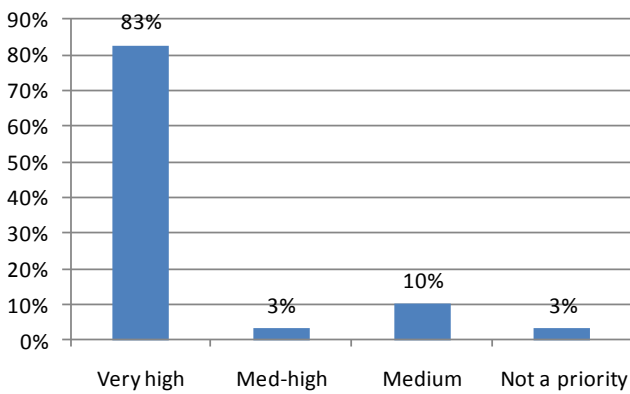
**Chart 3.7: Fish to a mother ship (run by another operator), as this would enable me to stay at sea longer**



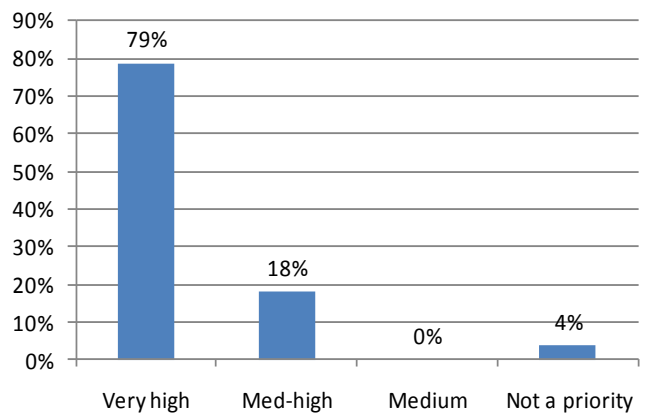
**Chart 3.8: Fish more days each year using my existing fishing boat and gear, to increase my annual catch**



**Chart 3.9 Invest in more safety gear (life jackets, flares, EPIRB, GPS, etc.)**



**Chart 3.10: Improve my fishing skills, boat maintenance skills and business skills to improve profits**



Source: MJA survey of TIB fishers 2010.



### 3.4. TVH sector

The principal areas where the TVH sector would like to see reforms and/or more specific advice from management are outlined below.

*Relaxation / removal of inefficient input controls, namely:*

- **30% tender reduction;**
- **moon (Neap) tide hookah closures;**
- **master fisherman's licence (MFL); and**
- **boat replacement policy.**

TVH operators feel that many of the input controls they are currently facing reflect a desire to unfairly handicap the sector, and reduce its annual take (despite the fact that they remain under quota).

The TVH operators who attended at the Cairns and Thursday Island workshops were strongly opposed to management continuing to retain the **30% tender reduction** (which is effectively 30% of their productive capacity). They noted that this was meant to be a temporary measure introduced in 2003 to help manage a short term risk of excess fishing effort in the fishery. However, the measure can no longer be justified on the basis of resource management as there has been significant reduction of latent and real effort in the fishery. To put this into perspective, we need to think of the extensive economic cost that would be imposed in other industries if 30% of productive capacity was taken away through a regulatory instrument.

The TVH operators hold similar views about the **moon tide hookah closures** (which reduces the number of fishing days by up to 25%) – i.e., it was only ever intended, in their opinion, to be used as a temporary measure and has no relevance today.

The TVH operators are also frustrated by **the MFL requirements**,<sup>9</sup> commenting that many TS Islanders flatly refuse to go on extended fishing trips – they usually only last one trip before deciding they do not want to work on a TVH boat.

The MFL requirement often means that TVH operators have to leave a tender behind at the home port, as they are unable to find a TS Islander with an MFL to work as crew. Moreover, there are excessive administrative requirements associated with registering a TS Islander under the MFL system (a MFL is not transferable across TVH boats). The TVH operators also noted that the MFL does not signify that the holder has any formal fishing experience or training – it can be attained through a standard administrative process. In terms of the objectives of the policy, they see few benefits in terms of training and experience for TS Islanders, simply because TS Islanders do not want to work on TVH boats. Hence they are being trained for a job that holds no long term interest to them.

The **boat replacement policy** should be removed following introduction of quotas, according to the TVH. They consider that this type of input control should be relaxed if an output control system is introduced. That is, it becomes an unnecessary constraint on fishing efficiency if the resource is managed using a quota system.

---

<sup>9</sup> The MFL requirements are that a holder of a Master Fishermans Licence (MFL) is required for each TVH fishing vessels. Since 1989 MFLs have only been issued to Indigenous people.

***Improve information about the nature, and timing, of:***

- ***the Government's policy for buyout of TVH; and***
- ***the proposed quota system.***

The Government first announced the policy to introduce quota in 2005 and there is still no firm date for implementation of quota. The TVH sector is concerned that this is delaying the realisation of efficiency improvements that can be achieved following introduction of quota. That is, if quota is introduced, input controls can be relaxed – i.e., to the extent that they are no longer required if output controls are achieving the desired resource management outcomes.

The TVH sector needs to see:

- firm information from the Government about the design of the quota system; and
- a firm indication of the timelines for implementation of the quota system.

The TVH sector is also concerned that there has been a strong push to reduce its level of ownership of the fishery, yet operators are uncertain about the true nature of the Government's policy on this issue. This has put them in a 'holding pattern' where they cannot make investment decisions, because they do not know if they have a future in the fishery.

But, on balance, most TVH operators consider that, if the above matters relating to input controls and reducing investment uncertainty are resolved, they would like to remain in the fishery. There are a number (up to 30%) of TVH operators, however, that some industry participants believe would potentially be looking to exit the fishery if there was a reasonable buyout offer available to them.

### **3.5. Marketing sector**

The principal areas where the marketing sector would like to see improved fishery outcomes are outlined below.

***1. Ensure catch volumes and catch quality are maintained.***

Ultimately, the marketing sector is not concerned about whether catch is taken by the TIB or TVH sectors, as long as the volumes are maintained.

It needs to be recognised, however, that the marketing sector has to manage large variability in annual returns due to:

- environmentally induced fluctuations in catch volumes;
- large movements in prices and exchange rates; and
- logistical constraints associated with operating in the TS.

Hence, managing a TRL marketing business is not straightforward and there is considerable expertise required in managing cash flow as a result of the abovementioned sources of revenue volatility.

Consequently, it is very important that regulatory settings and government programs (such as the TVH buyback) do not further exacerbate the volatility in profitability that the sector already has to manage.

The main priority, therefore, for the marketing sector is that any future buyback be carefully managed so that the buyback does not result in significant reductions in TRL catch volumes.

The marketing sector called for a gradual re-allocation of the TRL resource to the TIB sector to avoid reductions in throughput. They also stressed the need for a concurrent concentrated effort on TIB capacity building, to ensure that the TIB sector is able to 'fill the void' and use all of the additional resource allocated to them under a potential future buyout process.

### 3.6. Comments

One of the key features of natural resource management is striking a balance between the needs of different stakeholder groups when allocating the rights to harvest natural resources.

In this respect, it is important to recognise the views and aspirations of all of the key stakeholder groups, but it is imperative that there is clear recognition of the need to take account of economic efficiency, and social and equity criteria when assessing trade-offs between the needs of different stakeholder groups.

To promote sound management outcomes, the PZJA should apply a clear set of evaluation criteria when examining management reform options. Any reallocation of the resource, or application of any input control, must be supported by an objective review of the key outcomes against the standard assessment criteria.

Most Government agencies now apply a standardised Regulatory Impact Statement and Public Benefit Test process to review regulatory models or reform options. This process would be highly beneficial in ensuring that future decisions by the PZJA are supported by a transparent assessment process.

In respect of the TVH aspirations, temporary management measures cannot be supported in terms of meeting the objectives of management. Hence, in principle, they should be removed, unless a Public Benefit Test demonstrates that they represent an efficient mechanism for achieving management objectives.

Turning to the TIB aspirations, before Government invests in funding further buyout of the TVH sector, a very clear Public Benefit Test is required, including development of an action plan to guard against reductions in catch volumes.

In terms of the marketing sector's concerns, it is necessary to ensure that any buyback of TVH quota occurs in a phased fashion with concurrent focus on increasing the capacity of the TIB sector.

## 4. Strategies for TIB sector capacity building

### 4.1. Introduction

There is a general recognition that there are key areas where the capacity of the TIB sector needs to be increased if they are to increase their share of the fishery and/or improve catch rates and profitability.

This section explores some of the main areas where capacity building is required and outlines the key steps that agencies such as the TSRA will need to take over the 5 year period of the Business Plan.

### 4.2. Infrastructure & services

A brief questionnaire on the standard of infrastructure and services was completed by TIB fishers who attended the January 2010 Central North and Western Cluster Workshops (this was a group exercise, with fishers from each island represented at the Workshops submitting a single questionnaire representing their 'collective' response).

Thursday Island operators also provided anecdotal information about the gaps in infrastructure on Thursday Island during meetings held in January 2010.

Further investigation will be required to assess gaps in infrastructure and services, but the information we have gathered through this process, provides initial insights into where to focus future investigations into infrastructure and services.

Mabuiag fishers attending the **Western Cluster workshop** were concerned about the lack of freezer facilities at Mabuiag:

*“There’s currently no freezer on Mabuiag – this is an essential requirement. We rely on [the freezer at] Badu – we’d prefer to have our own freezer and own facilities. ... We run the risk that if there’s any engine failure [during the trip to Badu] we could have serious safety problems.”*

They also had concerns about the landing facilities at Badu:

*“We just pull up on a stone jetty [on Badu] which can be very slippery and walk to the freezer, carrying crays in plastic bins. This can be dangerous.”*

Moreover, the lack of services and provisions on both Badu and Mabuiag was also flagged:

*“Safety gear and general supplies are needed at Mabuiag and Badu – they are currently only available on Thursday Island and this can be a problem for us.*

*We need to book into the service centre on Thursday Island 3-4 times a year to get engine servicing and for boat maintenance (fibre glassing). It takes around 1.5-4 hours to travel to Thursday Island (each way). It takes longer at low tides as they have to navigate around the reefs.”*

Moreover, the Mabuiag fishers attending the Western Cluster Workshop noted that the poor infrastructure for the fishing industry, particularly the lack of a freezer on Mabuiag, is acting as a deterrent for more young TS Islanders to enter the industry.

**Table 4.1: Ratings for services and infrastructure provided in TIB questionnaire, 2010**

Rating →	Poor	Average	Good	Excellent
Piers / boat ramps	Masig, Iama	Mabuiag, Warraber, Poruma <sup>1</sup>		
Freezer	Mabuiag, Masig, Iama, Warraber <sup>2</sup>	Poruma		
Live cray facilities	Mabuiag, Masig, Warraber, Poruma <sup>3</sup>	Iama		
Airstrips		Masig, Mabuiag	Iama, Poruma	Warraber
Maintenance services for boats / fishing gear / hookah / engines	Mabuiag, Masig, Iama, Warraber, Poruma <sup>4</sup>			
Services provided by fish marketers	Iama	Masig, Warraber	Mabuiag, Poruma <sup>5</sup>	
Information & consultation from management agencies	Masig, Iama	Poruma <sup>6</sup>	Mabuiag	Warraber
Availability of supplies of provisions, fuel, ice, etc.	Mabuiag, Masig, Iama, Warraber	Poruma		

Source: MJA questionnaire at Central North Cluster Workshop, Western Cluster Workshop, and stakeholder discussions at Thursday Island Workshop, January 2010.

**Notes:**

- (1) Loading facilities are considered to be okay at high tide, but are considered poor at low tide.
- (2) There are no freezers in operation on either Mabuiag, Masig, Iama, or Warraber.
- (3) There are no live cray facilities on these islands. They rely on individually owned cages – this can increase damage to crays, as fingers can be bitten by predators and sea lice can cause damage.
- (4) These islands rely on Thursday Island for nearly all services and provisions.
- (5) Workshop participants considered services provided by marketing agents to be good in terms of frequency of buying trips and ease of communication but poor in terms of transparency – they would like more explanation as to why the price paid varies between islands.
- (6) Poruma fishers called for TSRA or AFMA to provide information on catch rates for the past 5 years.

The general discussion at the Central North Cluster Workshop included some support for investment in a mothership to be run by the community freezers:

*“...Investment in mother ships (Central North Cluster) to service the existing operators could increase our productivity. The mothership would have to be operated in conjunction with the community freezer. ...larger boats don't really provide any significant benefits for us, we should continue using tenders, but if we could off load to a mother ship, and obtain fuel and provisions from the mother ship, this would help improve productivity.”*

Fishers also noted that the TSRA should look into initiatives that help increase the take of live crays

*“We require TSRA assistance for Turkey Pens to hold live crays and towable cage for each boat.”*

In summary, most discussion from the TIB sector has been about increasing resource ownership, but from our workshop discussions and the results of the infrastructure / services questionnaire, it is clear that there is a suite of measures where investment is required from the Government (potentially in partnership with industry) to greatly improve the productive efficiency and safety of the industry.

### 4.3. Training

There is a significant level of interest in training among TIB fishers, with a strong recognition amongst fishers that there are likely to be significant benefits from obtaining training in:

- business skills, cash flow budgeting and completion of tax returns;
- catching techniques – particularly in terms of handling techniques to promote increased supply to the live cray market;
- the use of safety equipment / safety protocols; and
- the use and maintenance of hookah equipment (mainly relating to Thursday Island and Badu, as most fishers on other islands are generally opposed to the use of hookah around their home reefs and islands).

Mabuiag fishers commented that they are interested in learning how to catch crays for the live market:

*“Badu and Thursday Island operators have offered to teach us how to catch live crays. This would benefit us in terms of higher returns, but also means that we avoid travel time [as we don't have to deliver crays to Badu if we are air transporting them].”*

An area that TSRA could look at is whether it can engage industry participants to train Mabuiag fishers and fishers from other islands on methods for catching live crays. Some operators may already be catching live crays, but may be keen to learn new methods for increasing the proportion of catch taken that is suitable for the live cray market.

Moreover, operators at the Central North Cluster Workshop were keen to have training on the preparation of financial budgets:

*“[we need] workshops on budgets – this will help us particularly if you want to be a full time diver. We need to learn how to effectively prepare tax returns –*

*this will help us in becoming more business oriented, which will be important if we are to re-invest in boats / gear. We would be prepared to attend a longer course of up to 2-4 days.”*

A training module on budgets as well as tax returns and Business Activity Statements could be beneficial. Moreover, advice on how to assess the financial viability of new investments, such as boats and equipment, could also be worthwhile.

As noted in Section 4.5 below, further work will be required in designing and commissioning the training modules. Given the TIB sector’s interest in improving capacity in these areas, there is a strong *prima facie* indication that there would be significant benefits in terms of productivity, profitability and safety from investing in training in these areas.

#### **4.3.1. Direct industry programs to train new TRL divers / operators**

The option of direct industry programs to bring young TS Islanders (post school age) into the fishery was also identified by TIB workshop participants. Options for longer term training initiatives raised during workshops include:

- investing in a large mother ship that would be operated primarily as a training platform; and
- employment subsidies for existing TIB fishers, whereby hookah divers receive a subsidy to train young TS Islanders to become hookah divers.

#### **4.3.2. Mothership for use as a training platform**

Assistance from a Government agency (probably the TSRA) would be required to support investment in a mother ship for use as a training platform. If the assistance were granted, then the TSRA and the proponent of the training program would need to enter into a contract such that the entity running the mother ship has a clear set of training objectives and obligations. In designing this type of training program / investment, a number of issues would need to be resolved before entering into an agreement with the private sector operator. For example, it would be necessary to determine:

- whether the enterprise transitions, over a period of say 4-5 years, to a normal commercial fishing venture, as there may not be a need for long-term / ongoing training of hookah divers;
- whether the entity is able to sell quota it is allocated after the initial 4-5 year period; and
- the key performance indicators (KPIs), in terms of TS islanders trained and the levels of expertise reached by trainees, that would apply and the linkage to receipt of any ongoing funding.

One of the issues with this model is that there has not been strong interest from TS Islanders in running a mother ship / multiple tender style operation. Hence, it may be more efficient to adopt a training approach which relates to the use of single tenders.

#### **4.3.3. Employment subsidies for existing operators training new divers**

Thursday Island operators noted that it generally takes about one year to train a young hookah diver to a level where they are able to independently operate their own fishing business.

One of the real impediments to training, however, is that once a diver attains the necessary skills, they will want to run their own fishing business. Hence, there are very low incentives for training new divers. Consequently, an employment subsidy may represent an efficient policy initiative for encouraging more direct industry training, which is the most relevant type of training for TS Islanders with the desire and motivation to enter the TRL industry.

#### **4.3.4. Free divers**

If a new entrant to the TIB TRL sector mainly wants to pursue free diving, then there is not a large amount of formalised training required to become a professional (or semi-professional) fisher. It is generally possible to rely on advice from existing fishers in the community. Nonetheless, provision of training in business skills, engine and boat maintenance and safety procedures would be extremely beneficial for young free divers entering the fishery.

Moreover, due to the reduced requirements for technical skills, the industry training programs (i.e., the mothership training platform and the employment subsidies outlined in Sections 4.3.2 and 4.3.3 above) are probably not required for free divers

#### **4.4. CDEP reforms**

The CDEP is to be reformed over the 2010-11 period, to ensure that only those serious about developing the necessary skills to transition to other jobs remain on the program. The specific nature of the reforms has not yet been determined.

Many stakeholders have observed that the CDEP creates major disincentive to engage in fishing because it reduces the financial incentive by paying a significant wage to participants. Furthermore, time spent working on CDEP jobs generally cannot be used for fishing.

One concern is that if the CDEP were removed that there could be too much effort in the TIB sector – hence the impact on TIB effort would need to be closely monitored if there is a major reform of CDEP.

While the CDEP remains a large scale employer of TS Islanders, options for encouraging some program participants to move off CDEP and into fishing businesses need to be looked into in more detail by TSRA and the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA).

The large inter-annual fluctuations in catch and prices could make some TS Islanders nervous about relying on fishing as their sole source of income and reluctant to let go of the safety net they receive in the form of CDEP income.

One option would be to enable those engaging in fishing to continue to receive a proportion of their CDEP income, while building up their fishing expertise and incomes for a limited period of two years. This should only occur for a select number of fishers (up to 10 fishers) looking to become Tier 1 fishers. This would provide an income safety net for fishers which would be important during the initial phases of their fishing careers, as they gradually build up their expertise and income levels.

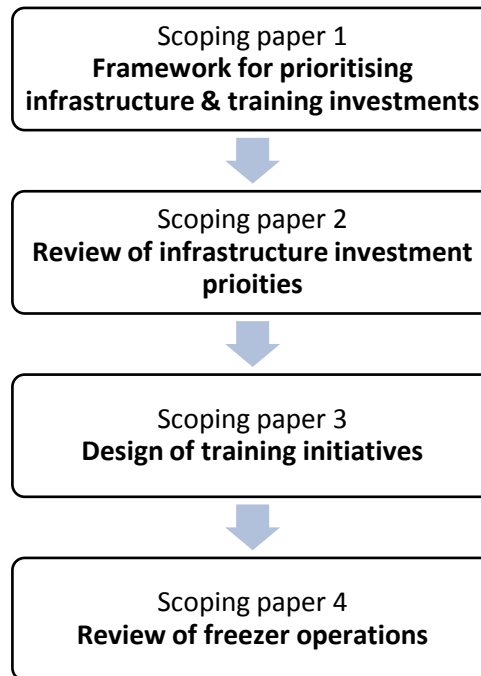
#### **4.5. Additional assessments and toolkits**

To further progress the above capacity building initiatives, it will be necessary to develop four Scoping Papers (Chart 4.1), to ensure that all capacity building initiatives and investments are focused on areas expected to deliver the maximum benefits for TS Islanders.



The Scoping Papers should all be commissioned in 2010, under the umbrella of a single project, to set the foundation for a robust capacity building process.

**Chart 4.1: Research papers to underpin capacity building process, 2010**



The main themes, and objectives, for the Scoping Papers are as follows:

- The primary purpose of **Scoping Paper 1** is to provide TSRA with a toolkit to enable it to apply a systematic and rigorous approach in allocating a limited pool of funds across competing potential infrastructure & services projects. In Scoping Paper 1, the financial, economic and social criteria for assessing new infrastructure investments need to be clearly articulated, as well as the pros and cons of different models for financing new infrastructure (covering issues such as alternative models for capital contributions, user charges and public private partnerships).
- **Scoping Paper 2** will apply the framework developed in Scoping Paper 1 using a two stage process. The first stage will be to conduct an audit of the infrastructure and services needs for the TRL industry (and broader TS fishing industry) to identify a number of potential projects (the main types of potential projects have been flagged in Section 3). The second stage will apply the investment prioritisation process to set out the specific investment priorities for the funds allocated by TSRA (and other agencies) to the TRL and broader fishing industry in the TS. Potential project delivery models will also be outlined at this stage.

The delivery model would include details of:

- potential funding contributors;
- loans *versus* grants;
- capital grants *versus* annual subsidies;
- cost recovery models; and
- tender processes for selection of developers, etc..

- **Scoping Paper 3** would further develop the schedule of training modules, including identification of:
  - course outlines & durations;
  - indicative costs;
  - periods when the courses are to be offered;
  - locations (outer islands / Thursday Island / Cairns);
  - list of potential course convenors; and
  - confirmation of alignment of proposed training programs with industry needs.
- The objective of **Scoping Paper 4** would be to identify key reforms to improve the efficiency of the freezer operations. This is considered essential to ensure that this sector makes the improvements necessary to underpin improved performance of TRL operations in outer islands. This study would include extensive interviews with industry players to determine their views on an efficient ‘holistic’ model for operating freezers in the TS. This would focus on initiatives to remove impediments to efficient freezer operation. For example, the involvement of communities has been nominated as a significant deterrent by some marketing agents to setting up permanent freezer facilities on outer islands. A new model is required whereby the community maintains an equity interest in the freezers without limiting the flexibility of the private sector partners.

#### 4.6. Key steps in the design of capacity building initiatives

The overall options for capacity building are summarised in Table 4.2 below. While there are a number of initiatives, the overall constraint is that the fishery is of relatively low value (\$7-10 million in gross value annually) and therefore this places some limit on the potential economic returns from investment in infrastructure and training. However, the social benefits from encouraging participation by TS Islanders, in the largest private sector enterprise in the TS region, should be used as a further rationale for making the investment in capacity building initiatives.

A five step process is proposed to activate the capacity building process.

- Step 1** Commission the above scoping studies – this is important because it greatly increases the stream of benefits derived from funds subsequently allocated to the above areas of focus.
- Step 2** Engage trainers to develop and conduct the required training programs.
- Step 3** Develop and implement infrastructure investment priorities.
- Step 4** TSRA’s Economic Development Unit to provide input on the design of the new CDEP to address incentive issues for the fishing industry – can the CDEP be designed so that it does not have such a significant impact on incentives to undertake fishing?
- Step 5** Develop a policy for reform of freezer operations (based on findings from the scoping study).

Following completion of the above steps, the implementation phases for each element of the capacity building process would commence. There would also need to be ongoing monitoring and evaluation, thus facilitating a process of continuous refinement of programs and enhanced prioritisation of investments.

As discussed in Section 6.6, a Torres Strait Fisheries Reform Taskforce should be established for the specific purpose of ensuring that the above steps are carried out to a high standard, with performance monitoring to ensure that a significant stream of benefits is derived from the initiatives.

**Table 4.2: Capacity building initiatives for the TIB TRL fishery – broad categorisation of initiatives**

<i>Infrastructure &amp; services</i>	<i>Training</i>	<i>Freezer operations</i>	<i>Market prices</i>	<i>Incentives to participate in the TRL fishery / TIB catching capacity</i>
<ul style="list-style-type: none"> <li>▪ Pontoons / piers</li> <li>▪ Loading / unloading facilities</li> <li>▪ Airstrips</li> <li>▪ Live cray facilities</li> <li>▪ Equipment &amp; provision suppliers (outer islands)</li> <li>▪ Vessel / engine maintenance services (outer islands)</li> <li>▪ Updates on catch rates by sub-region</li> </ul>	<ul style="list-style-type: none"> <li>▪ Business skills</li> <li>▪ Vessel maintenance &amp; repairs</li> <li>▪ Engine maintenance &amp; repairs</li> <li>▪ Fish handling</li> <li>▪ Safety</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensuring the involvement of communities does not negatively impact efficiency of operations</li> <li>▪ Identifying the efficient operating model &amp; business model for freezer operations in the TS islands</li> <li>▪ Addressing transport logistics (through infrastructure enhancements &amp; business model reforms)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increasing the ratio of live crays to tails</li> <li>▪ Improving transport logistics (benefits to be shared between marketing and catching sectors)</li> <li>▪ Improving the transparency of prices paid by agents</li> <li>▪ Regular regional updates on price trends</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reform of the CDEP</li> <li>▪ Investment in larger boats</li> <li>▪ Reviewing TSRA loan deposit requirements</li> <li>▪ Information sessions for young TS islanders - career nights</li> <li>▪ Employment programs - incentives for existing TIB operators to train new hookah divers</li> <li>▪ Training platforms (mother ship + multiple tenders)</li> </ul>

Source: MJA 2010.

## 5. Models for the staged buyout of TVH quota

### 5.1. Introduction

The purchase of quota will be dependent on an external source (i.e., either a Government agency or Indigenous Business Australia (IBA)) providing the necessary funding, as our analysis indicates that TIB operators do not generate sufficient operating surpluses to be able to afford to pay for TVH quota.

Two models for staged purchase of TVH quota are presented in this section:

- (i) the sequential purchase of three tranches of quota (each 15% of total Australian quota) from the TVH through a staged process fully funded by Government (Option 1); and
- (ii) a cost sharing model, whereby the Government fully funds acquisition of the first tranche, but then individual TIB operators and Government jointly fund the cost of purchasing additional parcels of quota from the TVH sector (Option 2).

At this stage the Government has made no commitment to funding a buyout, or partial buyout, but there are some core principles in designing any future buyout process, discussed below.

### 5.2. General principles to apply in designing a potential buyout package

Following consideration of the aspirations of each sector it was evident that there should be some core principles applied in designing any future buyout process. These principles are as follows:

- **phased increase in the TIB share of the TRL resource**, so that TIB capacity to catch TRL keeps pace with its capacity share;
- any buyout should include a **planned transition process** that is implemented through buyout contracts or other binding agreements;
- **investment in capacity building for the TIB sector** to occur concurrently with any process of acquiring TVH quota;
- **factors affecting incentives for TS islanders to participate in the TRL fishery** should be addressed concurrently with any process of acquiring TVH quota; and
- **mitigate risks of reductions in catch volumes by monitoring performance of the TIB sector** (i.e., in terms of total annual catch, participation rates, incomes and profitability).

Given the profit estimates in Section 3, total economic value of the fishery will decline if there is a shift in resource ownership from the TVH sector to the TIB.

That is, the main change following an adjustment process would be to sacrifice economic profits from the TVH sector in return for increased employment of TIB fishers and reduced reliance on the welfare system. The benefits of increased employment could be far reaching if a buyout helped to change the overall work ethos in the region, and encourages greater participation in business activities.

In other words, the benefit from the Government investing in a buyout would not simply be the reduction in CDEP or other welfare payments, but also the long-term benefits associated

with skill development for fishers, and the spill-over effects to other members of the community who can directly observe the benefits of engaging in full-time employment (i.e., outside the CDEP system).

But, ultimately, the Government will need to decide if a buyout would generate a net public benefit when considering the above trade-off between economic returns and social benefits.

A core issue, however, is that in carefully managing a transition from TVH to TIB, catch volumes must be maintained, to mitigate any negative flow-on effects to the marketing sector. This is why MJA has advocated a staged process of acquiring quota with concurrent investment in capacity building programs (including a monitoring process to track participation and annual catch in the TIB sector). This is to ensure that the TIB can step up to the next level in terms of annual catch volumes.

A further step to manage the transition would be to allow for lease back of a proportion of quota to the TVH sector for a period of up to five years following acquisition of each tranche. Following the acquisition of each tranche, there may be some lags before the TIB builds sufficient capacity to take the full additional catch volumes. To manage this situation, some of the quota could be leased back. This should not be done opportunistically on a year-to-year basis, because the TVH operators need a longer planning period to ensure they can attain a reasonable return from their investment (or, alternatively, divert resources to other fisheries if they no longer have access to the TS TRL fishery).

### **5.2.1. Previous PZJA policy position**

Any assessment of the option of government providing financial support for the purchase of more quota would need to recognise the outcomes from the previous buyout which provided the TIB with 53% of Australia's share of the TAC.

Following the 2007/2008 buyout, the TIB sector has utilised more than 72% of its TAC in any given year. The buyout was justified on the basis that:

- it re-allocated ownership such that the needs of the TIB sector were adequately met (i.e., the amount of resource allocated to the TIB was considered to be consistent with the catching capacity of the sector); and
- management agencies were introducing new management arrangements such as output controls.

At the time of the buyout, the PZJA policy was for the TIB sector to self-fund any additional TVH quota purchases (i.e., if there was a desire to achieve the overall target of 70% ownership).

In light of the previous PZJA policy position regarding the TIB self-funding further buyouts of TVH operators (or quota), the rationale for any change in the PZJA policy stance on this issue would need to be clearly articulated.

### **5.3. Staged buyout of TVH quota by Government (Option 1a)**

Under Option 1a, acquisition of TVH quota could occur in three tranches, as set out in Table 5.1.

**Table 5.1: Acquisition of 3 Tranches of TVH Quota, Buyout Option 1a**

	Year	Australian Quota (%)	Total TIB Quota (%)	Total TVH Quota (%)
Tranche 1	1	16	70	30
Tranche 2	5	15	85	15
Tranche 3	10	15	100	0

Source: MJA 2010.

The acquisition of Tranche 1 by Government would achieve 70% TIB ownership. As noted in Section 3, many of the TIB fishers consulted with for this project indicated that this is the minimum requirement for them to agree to participating in the final stages of stakeholder negotiations regarding the new management plan.

Under this model, provision of any further government funding for the purchase of additional parcels of TVH quota (i.e., Tranches 1 & 2), would be conditional on the TIB sector meeting key capacity development milestones.

The capacity development milestones would be defined in terms of the TIB sector's seasonally adjusted annual catch relative to their TAC, as well as other secondary indicators such as catch rates, participation in training programs, and performance in repaying TSRA loans.

### 5.3.1. Capacity building before acquisition of Tranche 1 (Option 1b)

Option 1b is designed to provide a further safety net, guarding against any drop in catch volumes through the quota acquisition process, and to encourage the TIB to build capacity before any more buyouts occur.

Under this option, the Government would enter into an agreement to lease quota from a small number of TVH operators who are currently not active in the fishery, and, when the TIB have demonstrated they can consistently take the additional catch, the Government would purchase the quota. At this stage, if capacity building has been successful, the Government could also purchase any additional volumes required to achieve the targeted volumes (16% of quota) under Tranche 1.

There are currently three operators not participating in the fishery, and hence there could be an opportunity to lease quota from these operators. Under this option, subsequent acquisitions of Tranches 2 & 3 would be in accordance with Option 1a, but the timelines would be adjusted to maintain the same length of time between the dates for purchase of each of the tranches.

## 5.4. Government buyout for Tranche 1, cost sharing model for Tranches 2 & 3 (Option 2)

Under Option 2, the same process that is recommended for the purchase of Tranche 1 under Option 1 would apply.

Quota purchased under Tranche 1 would be integrated into the common pool of the TIB's TAC. Initially, this is to be harvested by TIB fishers using the Olympic model (race for the catch).

Under Option 2, however, it is proposed that additional parcels of quota (after the purchase of Tranche 1) could be purchased by TIB operators with funding assistance under a new 'TRL Quota Acquisition Scheme'.

The Scheme would have a predetermined level of funding which would be allocated to serious TIB fishers (full-time or serious part-time) on a competitive basis to assist in the purchase of quota.

There would be a single round of funding each year. Submissions would be made to the Scheme administrator (TSRA) and applications assessed using a range of criteria (economic cost, employment, track record of the operator in the fishing industry, business plan, etc.).

Quota purchased in this fashion would be held by individual operators. Rules would be required to eliminate any misuse of the Scheme, including the use of government assistance to fund speculative trading in quota (hence there may need to be a non-trade period introduced for all quota held by fishers who are recipients of funds for quota purchase through this scheme).



## 6. Next steps

### 6.1. Introduction

The vision for transition of the fishery and capacity building has been outlined in the previous sections. However, major new initiatives are required to enable stakeholders' visions for the fishery to reach fruition. The principal steps that MJA has identified are outlined in this section.

### 6.2. Establishing targets

A key element in evaluating aspirations for capacity building and resource ownership is to establish clear targets for the TIB sector and monitor performance against these targets.

A simple analysis (Table 6.1) of the impact of increasing participation in the fishery provides some guidance on meaningful five year targets for the industry.

A significant increase in the number of full-time fishers (Tier 1 fishers) and serious part-time fishers (Tier 2 fishers) is required to lift the TIB effort by a sufficient amount to enable full utilisation of Tranche 1 (see Section 5).

Indicatively, to achieve an increase of annual catch of 74 tonnes (15% of Australian quota if the annual allocation is 500 tonnes) there would need to be another 20 Tier 1 and 20 Tier 2 fishers. This is purely illustrative of the broad quantum of TIB sector growth required to utilise Tranche 1, and is not intended to act as an accurate forecast.<sup>10</sup>

---

<sup>10</sup> The estimates in Table 6.1 are based on 2009 catch rates which may have been lower than the long-term average. Hence, there may be more rapid increase in TIB catch than indicated in Table 6.1 if average catch rates in future periods exceed 2009 levels. On the other hand, the average TAC could be significantly higher than 500 tonnes. This would have the counter effect of increasing the length of time before the TIB can take an additional 15% of the Australian quota.

**Table 6.1: Increase in fishing effort and catch associated with influx of serious part-time and full-time fishers, 2010**

	Average effort	Addition of 5 serious part-time & 5 full-time	Addition of 10 serious part-time & 10 full-time	Addition of 20 serious part-time & 20 full-time
Increase in effort – serious part-time (dory days) (Tier 2 fishers)	22	110	220	440
Increase in effort – serious full-time (dory days) (Tier 1 fishers)	66	330	660	1,320
Total additional effort (dory days)		440	880	1,760
Percentage increase in total TIB effort (compared with 2009)		14%	28%	56%
<b>Increase in catch (applying average catch for 2009) (tonnes)</b>		<b>18.5</b>	<b>37</b>	<b>74</b>
<b>Increase in catch as a % of the Australian TAC (at 500 tonne TAC)<sup>*</sup></b>		<b>4%</b>	<b>7%</b>	<b>15%</b>

Source: AFMA data on average fishing days and catch for Tier 1 and 2 fishers – see Table 2.8. MJA estimates.

\* The average Australian TAC has been approximately 450 tonnes, but ranges between 327 and 564 tonnes per annum.

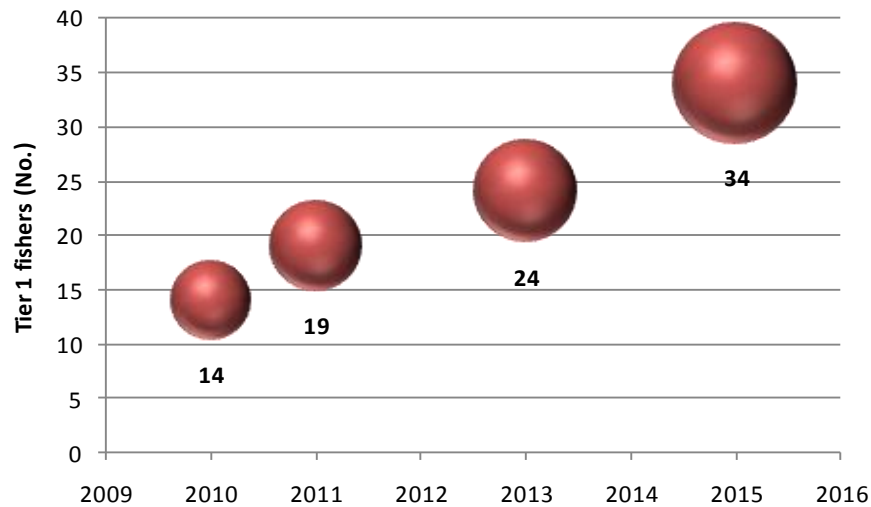
The above estimates of capacity growth required to use Tranche 1 are only indicative, as they are based on one period only (2009) and apply broad industry averages regarding catch rates. If, for example, most of the increase in effort occurred in the hookah sector, the volume of catch associated with the effort increase could be much greater than estimated below.

This information also provides guidance on the order of magnitude of the increase in TIB sector participation required to use Tranches 2 and 3 (i.e., an increase of 40 Tier 1 and 40 Tier 2 fishers is required to use all of Tranche 2, and an increase of 60 Tier 1 and 60 Tier 2 fishers would be required to use all of Tranche 3, representing a 430% increase in the number of Tier 1 fishers, and a 90% increase in Tier 2 fishers. Hence, this analysis provides strong support for the tranche quota acquisition process recommended in Section 5.

**Our view is that a realistic target would be to increase participation to the extent required to use all of Tranche 1 over the five year life of this Business Plan.**

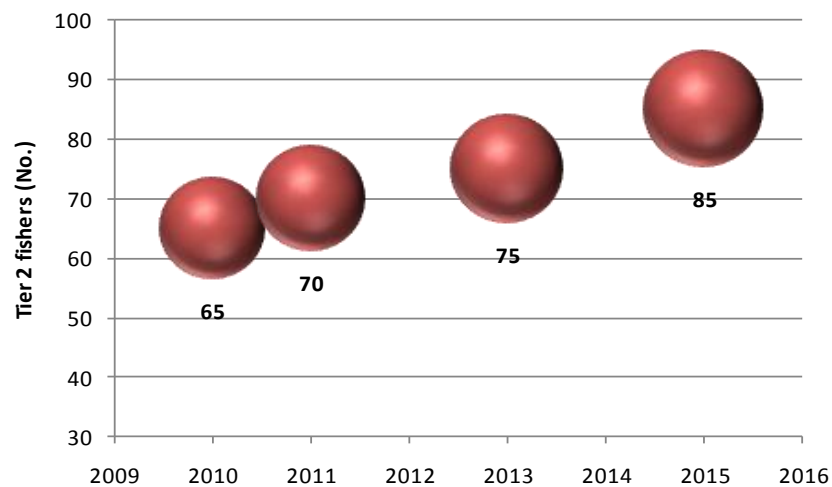
Charts 6.1 & 6.2 show the interim targets for expansion in the number of Tier 1 and Tier 2 fishers to achieve this growth target for the mid 2010 to mid 2015 period.

**Chart 6.1: Increase of serious full-time fishers (Tier 1 fishers) required to utilise an additional 15% quota (Tranche 1)**



Source: MJA 2010.

**Chart 6.2: Increase of serious part-time fishers (Tier 2 fishers) required to utilise an additional 15% quota (Tranche 1), 2010**



Source: MJA 2010.

The other way to increase fishing capacity is to move into TVH style operations. Their catch per tender day is around 70 kg compared with around 40 kg for full time TIB fishers. However, as mentioned above, the TIB sector would generally prefer to maintain their current style of operation, and hence it is difficult to envisage this occurring. Nonetheless, if there were investment in larger scale TIB operations, management would need to look closely at the impacts on other fishers, and re-calibrate the targeted increase in fishing effort accordingly (to avoid excessive TIB effort).

### 6.3. Management reform timeliness

MJA recommends that stakeholders work towards the schedule for review of management settings and implementation of management reforms set out in Table 6.2 below. Priority should be given to confirmation of commitment to meeting these timelines by all stakeholder agencies.

One of the identified gaps and sources of investment uncertainty, for both the TIB and TVH sectors, is communication on firm dates for decisions about the relaxation of input controls (to the extent that this is recommended in the Public Benefit Test), introduction of quota management systems, and implementation of the Management Plan.

We would stress that all management reforms should be evaluated using a Public Benefit Test process, to ensure that the most efficient and effective options for achieving management objectives are properly tested against well established criteria. A Public Benefit Test could also be used to develop a general policy around TIB reaching TAC before the end of the season.

In developing the quota management system, consideration will need to be given to whether there should be a separate pool of quota for serious TIB fishers to protect them from potential reductions in average catch per fisher if there is rapid expansion of TIB fishing effort at any stage in the future.

The assessment of interim management options would focus on:

- 30% tender reduction; and
- moon tide closures

As these options should have been removed following alleviation of short term concerns about excess effort, the onus of proof should be framed in terms of the base-case not including these measures. That is, the cost and benefits of introducing the measures should be examined (as the default policy position should be that they are not included in the management regime, as they were only intended to be short term measures).

In terms of the wider gamut of reforms under the new TRL Management Plan, a Public Benefit Test may be required to review costs and benefits of options against management objectives, to ensure that any remaining input controls are well designed and align with best practice in terms of efficiently meeting the policy objectives.

In general, a Public Benefit Test process should be actively promoted by management agencies and stakeholders, as this encourages adoption of an objective and transparent process in considering critical management reform issues.

**Table 6.2: Reform measures & indicative timelines**

<i>Review interim management measures</i>	<i>Design &amp; implement quota management system</i>	<i>Draft Management Plan</i>	<i>Implement Management Plan</i>
<ul style="list-style-type: none"> <li>▪ Review by 31 July 2010</li> <li>▪ Remove if not justified on public benefit grounds</li> <li>▪ Assess performance against management objectives, using a Public Benefit Test framework</li> <li>▪ Apply well defined assessment criteria in formal advice to PZJA</li> </ul>	<ul style="list-style-type: none"> <li>▪ Full design options presented for discussion by 31 August 2010</li> <li>▪ Firm advice on planned implementation date</li> </ul>	<ul style="list-style-type: none"> <li>▪ Review all input controls against management objectives</li> <li>▪ Remove or relax input controls if not required in current form post introduction of quota</li> <li>▪ Draft Management Plan by 30 September 2010</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consultation on Draft Plan</li> <li>▪ Followed by implementation by 30 June 2011</li> </ul>

Source: MJA 2010.

## 6.4. Key risks

Latent fishing effort creates a risk for the TIB – if there were to be a rapid increase in use of TIB licences (or number of TIB fishing days), then the annual catch per fisher (or per tender day) will clearly decline.

The impact of potential increases in fishing effort can be gleaned from the estimates in Table 6.1 of the effect (and fishery effort levels) from moderate increases in the number of Tier 1 and Tier 2 fishers (i.e., weekend warriors moving up to a much higher level of participation).

A specific concern is that, in the future, we could see a scenario where there is a large increase in the TIB sector's participation in the fishery, resulting in serious fishers being unable to earn a reasonable income from the fishery (or their incomes could get significantly reduced).

The key options for management to mitigate this key risk factor are to:

- create a division between serious commercial and other TIB fishers. The former would have a separate pool of quota, and this would be allocated amongst fishers using an ITQ system or an Olympic model would apply (there could be a transition to an ITQ system when the industry has developed sufficiently); and
- move TIB fishers with low levels of fishing effort into a license class that would not allow an expansion of fishing effort

The other key risks for the fishery are that:

- management decisions are not made using a Public Benefit Test framework;
- there are continued delays in introducing management reforms; and
- there is a buyout of TVH effort, without the use of a phased approach coupled with appropriate TIB capacity building to ensure there is no reduction in catch volumes.

The buyout models presented in Section 5, along with the capacity building initiatives, provide a clear framework and approach for mitigating the above risks relating to the reallocation of the TRL resource from the TVH to TIB sector.

## 6.5. Other issues to examine

Some additional initiatives that management may want to consider for the fishery include the following:

- **Bio-economic modelling:** the general objective is to use the model to estimate economic profits and employment under a range of management settings, effort levels, and fleet configurations. A bio-economic model could be used as a decision support tool to assess the overall medium to long term targets for the fishery, and to consider the benefits and costs of the TIB moving into larger boats and hookah (i.e., to examine the tradeoffs between economic profits and employment / access).

This could be important if managers need to fully understand the implications of reforms over time that could change the fleet structure, or if they want to examine the benefits and costs associated with constraining the TIB sector's fishing effort in the future to avoid dissipation of all fishery profits.

Bio-economic models have a very flexible structure and they can be used to examine the effects on TRL fishery performance of changes in the total number of boats, number of tender days, fleet structures in terms of boat types / sizes, geographic location of fishing effort (if they have a spatially disaggregated population dynamics model), and settings for a flexible harvest strategy (see below).

- Review of a **flexible harvest strategy**: the TAC varies markedly each year, and it can be difficult to ascertain at the start of each season what the TAC should be. It is also difficult to predict (and take account of) the total effort from PNG in the fishery. The planned approach is to review the TAC at the beginning of the season based on numbers of lobster immediately prior to the season (November).

A more flexible harvest strategy could be considered as an alternative management strategy. The main feature of this approach is that the TAC could be adjusted upwards during the season if actual stock abundance turns out to be higher than expected at the start of the season. This would avoid utilisation of an overly conservative TAC for that season and could increase economic returns for the fishery by enabling higher TACs to be adopted in some years.

- A review of the **nature of marketing businesses**: the economics of the different ‘styles’ of buyers – i.e., the island based buyers (Iama and Badu), TI buyers (Pearl Island and Tanala) and the Cairns based exporters (MG Kailis) – could be examined to better understand what level of catch would need to be maintained to keep these operations going, and what operations the fishery needs to remain viable with greater TIB ownership. Issues to assess in this study include:
  - the breakdown of volumes purchased by each fish marketers on the basis of the purchase point, and the fishers they buy from,
  - the ‘breakeven point’ in terms of the minimum lobster volumes they require to remain viable, and
  - changes in marketing required to increase the proportion of live lobsters sold to end markets.
- Review of **TIB sector motives for fishing**: this study would consider the driving social and cultural factors behind TIB fishers’ decisions regarding the intensity of fishing (days fished) and style of fishing operation. The study could look at what factors motivate them to stay with free diving rather than use hookah. This study could also provide detailed insights into what motivates them to go fishing on a given day or month. This type of research could help improve knowledge of why the levels of fishing effort in the TIB sector have been decreasing (finfish and lobster) since the buyouts. This information is extremely important if fishery managers are to make good decisions about how to improve participation (and profitability) of the TIB sector.

The option of developing a bio-economic modelling and applying a flexible harvest strategy should be examined as part of the process of developing the Draft Management Plan.

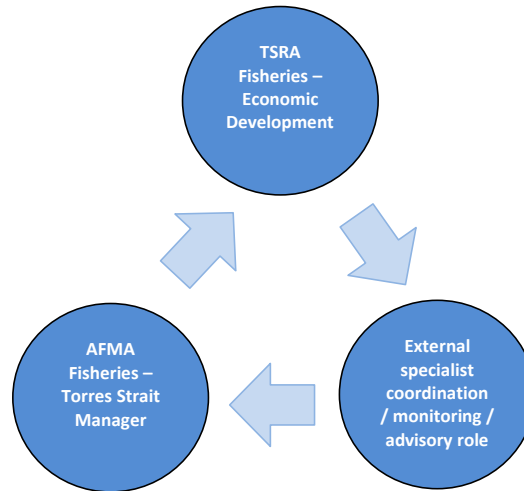
## 6.6. Establishing a Torres Strait Fisheries Reform Taskforce

To provide the strategic direction and implement specific reform initiatives, formation of a Torres Strait Fisheries Reform Taskforce for a five year period is recommended (Chart 6.3).

Due to the emphasis on capacity building and a desire to maintain a small cohesive unit, the taskforce would comprise three members only – the head of TSRA’s Economic

Development Unit, the AFMA Manager for Torres Strait Fisheries, and an external specialist who would be assigned the coordination, monitoring and advisory role.

**Chart 6.3: Torres Strait Fisheries Reform Taskforce**



Source: MJA 2010.

Moreover, it is recommended that the Torres Strait Fisheries Reform Taskforce would be charged with responsibility for:

- ensuring all of the scoping studies are undertaken to a high standard;
- monitoring the capacity building process;
- advising on infrastructure, services, and training issues;
- advising on program development;
- advising on delivery models for new infrastructure; and
- setting strategic directions and prioritising expenditure over a five year rolling period for fisheries in the TS.

The Task Force would not have a role in specific management issues per se, and hence would not enter into discussions on matters that are best addressed through the PZJA. The Task Force would help ensure that the community obtains maximum value from the TS TRL fishery.



## BIBLIOGRAPHY

Fairhead, L. And Hohnen, L., 2007, *Indigenous fishers in the Torres Strait – Improving their Economic Benefits*, ABARE Research Report 07.AA, prepared for the Fisheries Resources Research Fund, Canberra, September.

MJA, 2008, Economic assessment of the Torres Strait Islander commercial fishing sector's ability to increase their share of the Kaiar and Finfish Fisheries, report prepared for the TSRA, May.