# INITIAL ALLOCATION OF ITQS IN THE WESTERN AUSTRALIA ABALONE FISHERY

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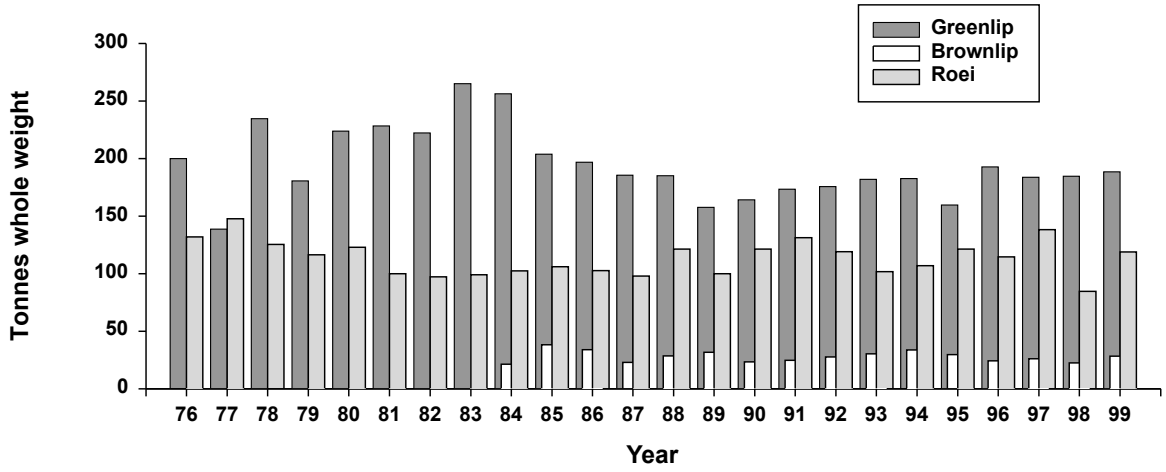
## 1. THE WESTERN AUSTRALIAN ABALONE FISHERY

The commercial abalone fishery of Western Australia is Australia's smallest abalone fishery in terms of the tonnage harvested, the gross value of this production[1], and the number of participants (currently 26, down from the maximum number of 36 participants). Most of this catch prior to 1970 was of Roe's abalone (*Haliotis roei*) which is harvested from waters of up to approximately 3 metres in depth. Since then, the species composition of the catch has expanded to include the other two species which are found off the coast of Western Australia. Even with the current high world market value of abalone, only three of the 11 existing species of abalone in Western Australian waters are commercially exploited: Roe's abalone, the greenlip abalone (*H. laevigata*) and the brownlip abalone (*H. conicopora*), primarily because of the low abundance and exceedingly small size of the other species at maturity. Catches of commercial abalone species are shown in Figure 1.

**Figure 1**
Abalone catches by species




More than 99% of the catch is exported to the port of Hong Kong for further distribution to China, Taiwan Province of China, Republic of Korea, Japan and Malaysia. About half the brownlip and most of the Roe's abalone from Western Australia are exported as canned product while the remaining brownlip and most of the greenlip abalone are exported as frozen meat. Canned abalone currently attracts a lower import tariff than frozen abalone in Taiwan Province, which is a major buyer. A small proportion of abalone is dried in Western Australia for export to China, although the traditional source of dried abalone destined for Chinese consumption has been Japan. There is also a developing live transport trade to SE Asia, but this is in its infancy at this stage. Finally, abalone shell is also sold to the Republic of Korea for manufacture of buttons, jewellery and inlay work, although demand and prices for shell have declined in recent years (Fisheries Western Australia 1998).

## 2. THE NATURE OF THE HARVESTING RIGHT

### 2.1 Nature of the harvesting right prior to introduction of individual transferable quotas

Prior to 1999 and the implementation of an individual transferable quota (ITQ) management system, the nature of the harvesting rights in the abalone fishery has been an evolving one that reflects 28 years of management changes. As the fishery has moved from being an unmanaged fishery to being a limited entry fishery and then to one based on individual quotas (IQs), the rights associated with it have become increasingly exclusive, transferable, durable, secure and divisible.

For example, the fishery was managed under open access until 1971, that is, it could be accessed by anyone who had a commercial fishing boat licence and, or, a commercial fisherman's licence, which was available upon application to the Fisheries Department. Rights-related licence characteristics of exclusivity, durability, security and transferability had no bearing.

[1] In 1980 the gross ex-vesel value of production of the fishery was estimated to be $A650 000. This had increased to $A7 million by 1991/92 and peaked around $A13 million in 1998/99 (Fisheries WA file no. 149/75 V2 Folios 8, 9 and 10).

This began to change, however, in 1970 when an influx of divers from other states of Australia caused a rapid expansion of the fishery. The Western Australia abalone divers responded with strong representations to control the expansion of the industry while scientists voiced their concerns about possible overexploitation of the resource. As a result, Fisheries Western Australia[2] decided to limit entry to the fishery and in 1971 the fishery became a 'concession' fishery, meaning that the wild capture fishery was recognised by Fisheries WA, but that it did not have a formal management plan as such.

Thus, the first change in the nature of the commercial harvesting rights was to introduce the notion of exclusivity with the implementation of a non-transferable licence system. The use of qualifying criteria resulted in the issuance of 36 annually-renewable licences, which were issued to each diver in the fishery in conjunction with regulations based on input controls such as area closures and zoning restrictions[3].

Between 1972 and 1976, the Agency pursued a dual policy of *de facto* transferability coupled with attrition. If an individual wished to leave the fishery, what amounted to a transfer could take place:

> "3.4 A concession holder who wishes to leave the fishery may dispose of his boat and gear as in the rock lobster fishery. Whoever bought the boat and gear would be required to take out a licence in his own name and operate the concession" (Government Gazette of Western Australia, 21 July 1972).

However, the licence-cancellation policy which was in place meant that licensees had to use the licence and harvest abalone or they would lose it, and under this policy the number of licences had dropped to 26 by 1976.

At this point, the agency declared the fishery to be a Limited Entry Fishery, meaning that the fishery's management was formally recognised in a management plan which formalised the restricted entry provisions, zoning, and owner-operator provisions. These provisions were supplemented by seasonal and area closures, size limits and restrictions on processing procedures - as well as explicit recognition of the transferability of the licences. A diver wishing to leave the industry could, with the approval of the Director of Fisheries, now sell his licence directly to another diver.

Along with annual changes to the abalone fishery's seasons, closed areas, and TACs in 1983 Fisheries WA issued ancillary management measures, which had the potential to affect participants in the abalone fishery: a freeze was imposed on all new applications from people wanting to enter the Western Australian fishing industry. This measure effectively limited the number of commercial fishing boats in Western Australia by ensuring that any new entrants to commercial fishing had to buy an existing commercial fishing boat licence. In the context of the abalone fishery, this meant that any shore-based abalone diver who might want to start fishing from a boat had to purchase an existing Western Australian fishing boat licence to do so.

The next direct change in the nature of the property rights in the abalone fishery occurred in the mid-1980s. Members of the industry who were operating in two of the three zones in the fishery moved to promote "orderly fishing" and to reduce competition between divers by initiating a voluntary individual quota (IQ) system. The IQ system allocated equivalent shares of the TAC in 1985 for the major fishing areas in Zone 1 (it did not apply to all of Zone 1). In 1986, having seen the system in place and working for Zone 1, fishers in Zone 2 put in place a similar system for the heavily fished areas of Zone 2. Again, it did not apply to the whole zone. For both zones, the allocation was 24t per diver[4].·

In 1988, the Zone 3 divers who were only allowed to harvest Roe's abalone also sought an IQ system. This was implemented by the Agency the same year along with the introduction of a statewide TAC for Roe's abalone[5]. Zone 3 participants were also given access to the stocks of this species along the south coast effectively giving them access to all Roe's abalone stocks throughout their range within the state.

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[2] The official name of the arm of the Western Australian (WA) Government with legislated responsibility for managing the fisheries resources of WA has changed over time. For simplicity, the current name of "Fisheries WA" or the term "the Agency" is used throughout this paper.

[3] The zoning was driven by two factors, the participation patterns of three fairly distinct sets of participants and the stock distribution of the three abalone species. By 1975 there were six licences for Zone 1, eight for Zone 2 and twelve for Zone 3. Participants were restricted to one zone only, and the licence owner had to be the operator/diver (known as an 'owner-operator' provision).

[4] In 1988, the TACs for these two zones were reduced. Divers were not catching their 24t allocations and, given that the only data available in this fishery was provided by the divers, managers took a risk-averse approach in response to scientific concerns about the sustainability-related implications of the low catches. Zone 1 quota was reduced to 18t per diver because the divers did not catch the 24t quota, and in 1989 the quota in Zone 2 was reduced to 15t.

[5] The initial TAC for the Zone 3 Roe's abalone IQ system was 9.5t; in 1989 this was reduced to 9.0t. Zone 3 licensees had not sought an IQ system earlier as they had been involved in trying to resolve other management issues.

Thus, it was over a 14-year period, from 1971 to 1988, prior to the formal introduction of an IQ system that the bundle of rights associated with the Western Australian abalone fishery were:

i. increasingly defined (through more formalised recognition of the rights associated with licences)
ii. made exclusive (with the implementation of limited access to the entire Western Australian fishery)
iii. annually renewable (by the Director of Fisheries)
iv. relatively secure (unless government scrutiny revealed that licence owner had committed an offence that could justify the revocation of the licence) and
v. not divisible (*i.e.* they were only available for sale as entire licences).

More specifically, in moving from open access to limited entry to individual quotas, the characteristics of the associated rights went through 6 phases:

i. *Harvesting rights: increasingly defined*

As described above, the nature of the harvesting right in the Western Australian fishery has become increasingly more defined. Prior to 1971, the Western Australian abalone fishery was an open access fishery. In order to gain access to it, all that was needed was a Western Australian fishing boat licence and a commercial fisherman's licence - both of which were available upon request.

It progressively became a non-transferable 'concession' fishery (in 1971), a transferable 'concession' fishery (in 1972), a formally managed fishery with transferability (in 1976) and a formally managed fishery which recognised individual quota shares of a total allowable catch (1988). During the same period, the number of fishing boat licences was limited (in 1983), further restricting the pool of potential participants.

ii. *Exclusivity of the harvesting right: increased*

The 1971 limitation of access to only 36 divers gave these 'concessionaires' exclusive access to the abalone resource. This exclusivity was strengthened in 1976 with the introduction of formal management measures.

iii. *Transferability of harvesting right: became possible*

Initially non-transferable, licences became transferable - first, under implicit rules and then later under strict conditions. In addition in 1981 the Agency concluded there was no biological reason for refusing the acquisition of an authorisation in two zones, allowing divers to hold licences in more than one zone. (The Agency's attitude was that it was a private transaction between two individuals and within the policy rules of the fishery.)

iv. *Durability of harvesting right: increased*

By convention, fishery licences and the rights associated with them in Western Australia are annual but renewable. The *Fish Resources Management Act 1994* (FRMA) formalized this position so that, subject to certain conditions related to payment of fees, the life of the management plan, adherence to the provisions of the Act, and Ministerial decisions to the contrary, licensees have an expectation that their access right is renewable in perpetuity (Fisheries Western Australia 2000). The most obvious example of this is that it takes three serious breaches of the fisheries legislation for a licensee to have a licence and its associated rights revoked.

v. *Security of access of harvesting right: increased*

Security of access is, in its broadest sense, subject to any changes to the management of the fishery by the Minister or Executive Director. Given the level of consultation that is required as part of the formal management of this fishery, it would be difficult to capriciously change the rights conveyed by the management system.

Although nominated divers have been permitted to operate the licence on behalf of the licensee since 1992/93, potential new owner-operators were seldom able to find the capital to enable them to make an outright purchase of the increasingly valuable licences. The introduction of regulations allowing for the use of "Nominated Divers" increased the flexibility associated with holding an abalone licence. Nominees could participate in the fishery without having to purchase an entire licence, thus eliminating the related problem of trying to service a large debt. In addition, licensees could effectively retire from diving without relinquish their licence, thereby retaining an increasingly valuable asset.

Furthermore, the FRMA gives the licence holder the right to apply for a fishing licence, but not the 'right' to that licence. The Minister for Fisheries has reserved his position to amend or revoke a management plan that would, in effect, cause any entitlement or authorisation established by a managed fishery to lapse. "In reality this has not happened, but this position provides a fine line between that which could be described as 'property' in the final sense or some form of quasi property entitlement" (Fisheries Western Australia 2000).

Since the introduction of the FRMA in the mid 1990s, Fisheries WA has maintained a Register of Interests for all Western Australian fishing licences. This register has been used by financial institutions and other interested parties seeking collateral against loans, facilitating the use of licences as security in such situations.

vi. *Divisibility: an increasing issue*

Because divisibility of harvesting rights was not allowed until 1999 and the introduction of the ITQ system, commercial licence ownership ended up becoming "corporatized", *i.e.* when original licence holders wanted to sell their asset, their inability to divide the harvest rights meant that the pool of potential buyers was restricted to those entities having access to sufficient amounts of capital. In such cases, the entities holding the licence would employ divers under lease arrangements (Prince and Sheperd 1992).

**2.2 Nature of harvesting right following the introduction of individual transferable quotas**

In broad terms the current system for assigning access to the State's fish resources ensures that the state confers rights and regulates permission to catch these fish. Therefore, the nature of the property rights is a right to actually attempt to harvest fish, but not the right to the fish as an entity (fish are only "owned" once they are caught). Thus, Western Australia does not guarantee abalone licence holders a quantity of fish, but it does have duty to provide the best resource management circumstances for those who are granted permission to fish (Fisheries Western Australia 2000).

The 1999 Abalone Management Plan set up an individual transferable quota (ITQ) system through a system of "units" which were initially attached to each commercial abalone licence by means of an endorsement called a "catch entitlement". Although the number of units allocated to an area does not change, the amount of potential harvest ascribed to each unit may change from year to year because units are denominated as a percentage of the TAC[6]. Additionally, because the respective TACs for the areas vary, the respective values for the units will vary between zones.

Under this system, there have been changes to the various rights-related characteristics of the harvesting rights. The definition, exclusivity, durability and security of these rights has been clarified and, quite importantly, they have been made divisible.

*Exclusivity of harvesting right*

With the advent of the ITQ system, the exclusivity of the rights has remained clearly defined. However, the pool of potential participants who can hold these rights has been broadened because of the separation of the right of access to the fishery (*vis-à-vis* the managed fishery licence) from the right to harvest abalone (*vis-à-vis* the holding of units).

*Transferability*

Although licences have been explicitly transferable since 1972, the introduction of ITQs has increased the ease with which explicit harvest rights can be transferred (*i.e.* leased and/or traded).

*Durability and security of harvesting right*

The introduction of ITQs has not formally affected the durability or security of the harvesting rights. Licences are still annually renewable with the same caveats as previously. In addition, current Western Australian policy under the FRMA is clear that any 'rights' extended to the commercial fishing industry are prescribed by the nature of the entitlement outlined in the legislation for a managed fishery or by licence (Fisheries Western Australia 2000).

The new fisheries legislation that established the ITQ programme also includes provisions for mandatory consultation with industry prior to any changes in management arrangements. Although consultation has always been part of the commercial fisheries management approach in Western Australia, the new mandatory nature of the consultation has given the perception of increased rights for licence holders, especially in terms of security. Legislation states that the Minister must, except in cases of urgency, consult with the advisory committees or persons specified in the fishery's management plan prior to amending the plan. The 1992 management plan specified the professional fishing association representing each of the three zones as those who must be consulted prior to any abalone management plan amendments. The replacement provision in the 1999 management plan formally nominates all licence holders.

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[6] For example, say the fishery had a total of 260 units distributed evenly among the 26 licence holders, that is each unit holder had 10 units. If each unit was given a value of 1t (TAC of 260t) then each licensee could take 10t of abalone. If it was necessary to reduce the TAC to, say 208t, the number of units would not change, only the value of each unit. Instead of each unit having a value of 1t, it would have a value of 0.8t. Each licensee could now only take 8t, however, the unit holding would not have changed - it would still be 10 units.

*Divisibility of harvesting right*

The introduction of ITQs in 1999 allowed quota allocations to be broken down and traded in smaller units of entitlement. There are requirements for minimum unit holdings of species to help simplify and assist with compliance[7].

## 3. METHOD OF ALLOCATION

### 3.1 Policy objectives in the various allocations

The Agency had no access-related policy objectives to achieve as part of the initial allocation of ITQs because access had already been determined by the move to limited access in 1971. Similarly, there were no policy objectives directly relevant to the rights-related characteristics of the ITQs because these had already been described elsewhere (to the extent that the Agency was about to describe them).

The industry's major policy objective for establishing an IQ system was to confer a greater degree of certainty over the right to fish than was provided by other management measures such as size and area limits. The increasing value of the licences meant that divers wanted to be able to offer financial backers a degree of certainty and surety about their catches and revenue streams, and an IQ system was seen as the way to providing an explicit and understandable system of fishing rights (Prince and Sheperd 1992).

The Agency's attitude to quota-based management systems at the time was, at best, one of ambivalence, despite industry's desire for security of access for catch and financial reasons. In fact, in October of 1986 at the Abalone Fishery Management Meeting, the Agency's Executive Director went on record as having already "…commented on the undesirable effects of quotas as outlined in his background paper distributed with the meeting agenda"[8]. In fact, the Agency held the view that quota controls frequently caused increased fishing pressure and could lead to problems if a quota was set too high[9]. It also held the view that quotas tend to become a catch expectation and that each diver would fish until the quota was reached, even if this meant switching effort from one species (greenlip) to another (brownlip), if the abundance of the former became low (*ibid.* Folio 265)[10]. Thus, it was not surprising that, in instituting the IQ system, the Agency made no explicit policy statements.

Despite the lack of explicit policy objectives enunciated when the fishery moved to IQs, or when it moved to ITQs, the quota management system has provided the explicit means by which the Agency can accommodate shifts in the community's use of these abalone resources over time[11].

### 3.2 Process used in allocating access

#### 3.2.1 Allocation method chosen prior to 1999

As mentioned above, it could be said that the allocation process used prior to 1999 was a gradual and evolutionary activity which took approximately 28 years beginning with the introduction of limited access in 1971. The first actual allocation of harvest rights occurred in 1985 with the voluntary individual quota system in Zone 1. This allocation was formalized under the 1988 legislated IQ system and then evolved until 1999 when a new management plan implemented the ITQ system.

The process involved in agreeing upon the implementation of an IQ system was ongoing and largely driven by industry. The subsequent formal implementation of an IQ system was decided upon in consultation with Agency staff and reflected the Australian concept of egalitarianism *vis-à-vis* equal individual catch quotas. Historical catches were not used as a basis for allocating the individual quotas because equal IQs were seen by the participants as a more equitable and acceptable allocation method.

It was the commercial sector that introduced the voluntary total allowable catches and associated individual quotas, albeit at different times in the respective zones, for the respective species and for the different sub-zones of each zone[12].

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7 For the case of greenlip and brownlip abalone the licence must be endorsed with an entitlement of not less than 450 units; for harvesting Roe's abalone, a minimum unit holding of 800 units is required.

8 Fisheries WA file *149/75 V3 Folio 316*.

9 Fisheries WA file *149/75 V3 Folio 266*.

10 Note that, in this case, "quota" refers to the use of a generic, or overall TAC, for two abalone species and not for a species-specific TAC or quota.

11 This has proved particularly important for Zone 3 of the fishery which incorporates the important recreational abalone fishing grounds of the Perth metropolitan area. Although the total allowable catch for Zone 3 has not changed over the ten years since 1989, localized sub-zones have been reallocated to the recreational sector with minimal controversy because the overall commercial TAC for that zone has been unchanged.

12 For example, in 1985, the divers voluntarily instituted a seasonal catch quota of 8t for combined harvest of greenlip and brownlip abalone for a portion of Zone 1.

### 3.2.2 Allocation method chosen in 1999

Eventually, participants found that IQs did not give them the business flexibility they needed to carry on their business efficiently, and the Abalone Management Consultative Group recommended a move to ITQs in order to provide greater flexibility and administrative simplicity. As a result, in 1999 management of the fishery moved to an individual transferable quota system. This move did not involve an explicit reallocation of harvest rights. Instead, it merely involved another calculation which converted IQ holdings into species-specific units and amounts. Under the system there is a TAC for each zone of the fishery and a licence holder for the zone is allowed to take a proportion of the zone's TAC according to the number of units held.

The introduction of an ITQ system via unitisation of the fishery has ensured that the harvest rights do not have to be traded in their entirety along with the managed fishery licence as was required under the pre-IQ system and even under the IQ system. Units can now be traded in small amounts, which means that the number of licences is no longer a limiting factor, rather the minimum quota holdings and the extent to which consolidation occurs (or not) are the constraint on the number of participants.

## 4. DATA REQUIREMENTS AND COMPUTATIONAL PROCESS

Catch records are kept by all commercial fishermen in Western Australia as a requirement of the *Fish Resources Management Regulations 1995*. Specific requirements for participants in the abalone fishery are detailed in the Abalone Management Plan and all abalone sold by abalone divers must be accompanied by the required documentation. These records are closely monitored and checked against the licence holder's catch entitlement.

With the initial introduction of the voluntary IQ system, a number of essential mandatory control measures were put in place:

> "1. The abalone produce is to be sold only to a small number of licensed processing establishments as nominated by the fishermen.
> 2. The approved processing establishments are required to maintain a precise set of data of receivals of abalone setting out date, weights, number of animals, from whom received *etc* and also be able to account for all abalone held. "Cash sales" will not be acceptable and the name of the fisherman consigning the abalone must be recorded. These requirements are to be included as a condition of the processing licence.
> 3. Zone 1 and Zone 2 abalone fishermen must keep a daily record of abalone caught, setting out dates, number of animals, weights and processor to whom product is consigned.
>
> The data as per 2 and 3 is to be kept on a form to be known as "Abalone Catch and Disposal Record" and the form is to be made available on a regular basis (daily or per consignment) to the local District Fisheries Officer." (Agency letter to the abalone industry, 22 December 1986)

The data system has continued in a similar though more formalized form since that time. When catch records first arrive at Fisheries WA, they are checked for accuracy and the data are then entered into the Agency's computerised Catch and Effort Statistical System. The need for these tight systems is largely compliance-driven, rather than research-driven, although the data requirements have been amended over time for research purposes (Fisheries Western Australia 1998).

Sustainable management of the abalone resource is based on three things:

i. the 'catch and effort' returns provided by participants for the quota monitoring system
ii. consultation with industry and
iii. the observations of divers form.

Despite the fact that this is relatively limited information, the long-term data series from the fishery appears to indicate that the current quota levels are biologically sustainable and that the use of quotas linked to areas and sub-areas has largely addressed concerns about localized depletion.

## 5. APPEALS PROCESS

There have been no appeals regarding the introduction of IQ or ITQ allocations in the Western Australian abalone fishery[13].

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[13] The generic process for fisheries appeals prior to the introduction of the FRMA in 1995, was that appeals for access to a fishery would be made to the Minister for Fisheries, who would then decide the merits of the appeal. Under the FRMA, a formal independent objections tribunal process has been established.

## 6. ADMINISTRATION OF THE ALLOCATION PROCESS

### 6.1 Staff requirements

Relatively few Agency staff resources have been allocated to the management of this fishery generally, and there has been minimal staff involvement in terms of the allocation process. This is not to say that considerable management, compliance and research resources have not been spent in the development of management arrangements at various times in its history. It simply means that these resources were devoted to responding to other management issues and needs and not to the allocation process (which was generally agreed upon by the industry and the Agency).

### 6.2 Additional programme funding requirements

No special funds were explicitly set aside for the introduction of either the IQ or the ITQ systems in the abalone fishery until the late-1990s when a specific quota-management computer-system was purchased by Fisheries WA to manage all of its quota managed fisheries in a more efficient manner[14]. Furthermore, since 1995 the Abalone Managed Fishery has been under the Government's policy of full recovery of management, research and compliance costs[15]. With the phase-in of full cost recovery, this has meant that, increasingly, there are funds available for the services required by the fishery.

## 7. EVALUATION OF THE INITIAL ALLOCATION PROCESS

### 7.1 Success in achieving initial policy objectives

The gradual introduction of IQs into all zones of the fishery was generally considered successful in achieving industry's policy objectives of:

i. conferring more certainty of access to an increasingly valuable resource and
ii. providing greater flexibility for business decision-making.

The move to an ITQ system has also allowed for innovation on the part of licence-holders and requires minimal agency oversight. For example, a recent newspaper advertisement called for tenders of offers to buy abalone ITQs, meaning that private ITQ owners now have an asset worth advertising in an innovative way.

The introduction of output-based IQs and ITQs has provided industry with more certainty over access to the abalone stocks, and the community with an understandable reference point for resource sharing debates. It has also provided a way for the agency to effect specific shifts in resource use over time by establishing an explicit means by which commercial TACs could be amended in response to other community uses if required.

### 7.2 Satisfaction of rights-holders with the process

The industry has been the major driver for the change to a quota management system. They saw the advantages of the IQ and ITQ systems that were being introduced in other Australian States during the late 1970s and early 1980s. Thus, the IQ and the ITQ systems were promoted by industry, rather than Government, for a number of reasons:

i. the increasing value of licences meant that divers had to take more of the resource to service their debts
ii. the floating of the Australian dollar saw the product become more valuable in Australian dollar terms, which may have led to rapid fishing down of the resource and
iii. industry required more long-term certainty that the resource would be available.

The changes have achieved industry's objectives of increased certainty over the right to fish and increased flexibility. In particular, the introduction of divisibility (via units) in 1999 and greater transferability (coupled with the removal of the restriction on the number of licence holders in the fishery) have increased the flexibility of participants.

It is worth noting that this fishery gradually went from limited access to an industry-initiated IQ and then to an ITQ management system, steps which appear to have helped to circumvent many of the allocation-related arguments which arise when fisheries move directly from open access input-based systems to ITQ-based output controls.

### 7.3 Views of other community groups

Recreational fishing groups supported the introduction of an output-based quota management system because the recreational sector saw the system as a means of ensuring their share of the resource. This is particularly the case in Zone 3 where there is a sub-zone in which most recreational abalone fishing occurs. In

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14 Various elements and costs of the computer system have also been shared with the state of South Australia.

15 The application of full cost recovery for this fishery was based on its high gross value of production, which led to its being classified as one of the six major fisheries in Western Australia.

this sub-zone a specific TAC has been set for commercial fishers and this is adjusted when necessary to maintain the resource share with recreational fishers. Ironically, however, the commercial TAC for Zone 3 has not been altered, implying that although there has been a spatial redistribution of access, which may affect the costs of commercial harvesting activities, the commercial sector has not lost in terms of the quantity of its potential harvest.

### 7.4 Hind-sight assessment

The introduction of output-based IQs and ITQs has provided industry with more certainty over access to the abalone stocks and the community with an understandable reference point for resource sharing debates. Despite early misgivings, the Agency eventually realised that, although output controls confer quasi-property rights to harvest abalone, they also offer much tighter control over each year's catch without the problems associated with controlling effort using input controls. IQs have also reduced the competition between divers and, hence, allow the divers to operate on their own schedule and to take the responsibility for their own personal health and safety.

The current information on which all management decisions, including TAC setting, is solely based on catch data supplied by the commercial fishers. No other source of data has been developed to provide a broader information platform on which to base quota-advice (Fisheries Western Australia 2000).

Although the introduction of quota management to the Western Australian abalone fishery was a long and tortuous process, it had industry and community support and was accepted as the most appropriate way to manage that resource. Taking a long-term view, there was a need for a gradual shift to clearer forms of access entitlements that provide a framework for continuous adjustments between commercial and recreational fishers. The quota arrangements in the abalone fishery have enabled this to happen, particularly in Zone 3.

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Further information is also available from the Fisheries WA website - http://www.wa.gov.au/westfish