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FISHERIES
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PROPOSED QUOTA SETTINGS FOR THE WEST COAST ROCK LOBSTER MANAGED FISHERY

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This paper was prepared by a Quota Management Working Group, established by the Rock Lobster Industry Advisory Committee (RLIAC), under its former membership in mid 2008. The current RLIAC members have reservations about some of the rationale and recommendations. RLIAC has also received an independent expert review of the paper that raised similar concerns. This review paper, "Review of the Draft Paper 'Proposed Quota Settings for the West Coast Rock Lobster Managed Fishery'" by Dr Gary Morgan, is also available, and should be read in conjunction with the Working Group's report. A further paper on Maximum Economic Yield, "An Analysis of Maximum Economic Yield in the Western Rock Lobster Fishery" by Dr Chris Reid should also be read in conjunction with these papers.

In the interests of keeping industry and the community informed on all developments relating to the review of the rock lobster management system, RLIAC has taken the view that these documents should be made widely available by publishing them on the Department of Fisheries Website.

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Rock Lobster Industry Advisory Committee

Proposed Quota Settings for the West Coast Rock Lobster Managed Fishery

December 2008

This paper was prepared by a Quota Management Working Group, established by the Rock Lobster Industry Advisory Committee (RLIAC), under its former membership in mid 2008. The current RLIAC members have reservations about some of the rationale and recommendations. RLIAC has also received an independent expert review of the paper that raised similar concerns. This review paper, "Review of the Draft Paper 'Proposed Quota Settings for the West Coast Rock Lobster Managed Fishery'" by Dr Gary Morgan, is also available, and should be read in conjunction with the Working Group's report. A further paper on Maximum Economic Yield, "An Analysis of Maximum Economic Yield in the Western Rock Lobster Fishery" by Dr Chris Reid should also be read in conjunction with these papers.

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FORWARD

The West Coast Rock Lobster Fishery has long been considered the most valuable single species fishery in Australia, and has usually represented around 20 per cent of the gross value of the catch of Australian fisheries, or between $200 million and $350 million (at 'beach' prices).

However, in recent years, due to low recruitment levels and other factors such as high fuel and labour costs, the value of the fishery has fallen and many in the industry are experiencing financial hardship.

As a result of this, following renewed interest in quota, the then Minister for Fisheries asked the Rock Lobster Industry Advisory Committee (RLIAC) to provide him with a business case for a quota management system (QMS) in the fishery.

A RLIAC Working Group was established by the RLIAC to develop proposed QMS settings, which the RLIAC considered.

Neither the Working Group, nor the RLIAC under its former membership debated the relative merits of the current management system compared to a QMS, as its brief was to cover the management settings that would be required to implement a QMS if this system was to be adopted.

Dr Ron Edwards
Chairman
Rock Lobster Industry Advisory Committee

December 2008

Disclaimer

The views and opinions expressed in this paper are not necessarily those of the Department of Fisheries, neither should they be seen as coinciding with any official policy of the Department unless clearly indicated as such.

Executive Summary

The former Minister for Fisheries asked the Rock Lobster Industry Advisory Committee (RLIAC) to provide him with a business case for a quota management system (QMS) in the West Coast Rock Lobster Managed Fishery, following renewed interest from industry for the introduction of a QMS.

The business case consists of two components:

1. a management paper that describes the proposed quota management settings; and

2. an interactive spreadsheet financial model for licensees to explore the impact of the proposed management settings on their business.

A RLIAC Working Group was established by RLIAC to develop the proposed QMS settings. Most of the Working Group's proposals were adopted by the RLIAC. This paper provides 48 recommendations for a proposed QMS and 12 additional considerations to be annually reviewed, should a QMS be adopted for the West Coast Rock Lobster Managed Fishery.

The RLIAC did not debate the relative merits of the current management system compared to a QMS, as its brief was to cover the management settings that would be required to implement a QMS if this system was to be adopted.

The RLIAC has proposed the retention of a number of input controls during the initial years of a QMS. This paper shows that a quota based system should be viewed as an evolving system (see Appendix 1), whereby input controls can be progressively removed, as industry grows more comfortable with output controls and the benefits flowing from them. For example, while the paper proposes to initially retain controls on pot numbers, these controls would be reviewed over time.

The RLIAC has examined and made recommendations for ten major areas of interest in the fishery that were identified in earlier Department of Fisheries documents. These are: Boundaries, Seasons, Access, Effort, Biological Controls, Total Allowable Catch, Vessel Monitoring System, Transferability, Cost Recovery and Processing.

The table at Appendix 1 sets out these areas of interest, the current Individually Transferable Effort (ITE) system, and the RLIAC's proposed new system for the first one to three years of the proposed QMS and possible future changes to that system (two to ten years after introduction of QMS). It also provides a brief explanation of why the RLIAC made these recommendations.

The RLIAC has proposed that the maximum number of pots that may be used

at any one time is 0.82 of the number of units held on the MFL.

A legal framework for the initial allocation of quota and how access and individually transferable quotas (ITQs) would operate is outlined. An overview of changes that can be expected in the compliance, research and management arrangements for the fishery is provided, together with an explanation of how a QMS database would operate.

The indicative Total Allowable Commercial Catches (TACC) and likely ITQ values for each zone under the proposed RLIAC model are listed in Table 1 below. It should be noted that these figures are based on a variable TACC model and are indicative only. They could change according to the advice of the proposed Technical Advisory Group.

Table 1

INDICATIVE TACCs and ITQs

TACCs **5% Below Catch Prediction** **77mm gauge removed**

	Units		
MFL	**Zone A**	**Zone B**	**Zone C**
A	**18,638**	**8,097**	
B		**14,906**	
C			**35,634**
Total	**18,638**	**23,003**	**35,634**

Zone C

	Predicted Catch 15Nov-30Jun (tonnes)	TACC (tonnes)	ITQ (Kgs/unit)
08/09	3250	3088	87
09/10	3150	2993	84
10/11	3000	2850	80

Zone B

	Predicted Catch 15Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (Kgs/unit)
08/09	2350	2383	104
09/10	2150	2193	95
10/11	2050	2098	91

Zone A

	Predicted Catch 15Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (Kgs/unit)
08/09	1850	1608	86
09/10	1900	1655	89
10/11	1800	1560	84

*TACCs for Zone B are based on average historical catch proportions, with an estimated 63.4% of the catch being taken over the period 15Nov-14Mar over the last 10 years.

The removal of the 77mm gauge has been taken into account by decreasing the Zone A TACC by 150t and adding 150t to the Zone B TACC

INDICATIVE TACCs and ITQs

TACCs **15% Below Catch Prediction** **77mm gauge removed**

	Units		
MFL	**Zone A**	**Zone B**	**Zone C**
A	**18,638**	**8,097**	
B		**14,906**	
C			**35,634**
Total	**18,638**	**23,003**	**35,634**

Zone C

	Predicted Catch 15Nov-30Jun (tonnes)	TACC (tonnes)	ITQ (Kgs/unit)
08/09	3250	2763	78
09/10	3150	2678	75
10/11	3000	2550	72

Zone B

	Predicted Catch 15Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (Kgs/unit)
08/09	2350	2148	93
09/10	2150	1978	86
10/11	2050	1893	82

Zone A

	Predicted Catch 15Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (Kgs/unit)
08/09	1850	1423	76
09/10	1900	1465	79
10/11	1800	1380	74

*TACCs for Zone B are based on average historical catch proportions, with an estimated 63.4% of the catch being taken over the period 15Nov-14Mar over the last 10 years.
The removal of the 77mm gauge has been taken into account by decreasing the Zone A TACC by 150t and adding 150t to the Zone B TACC

It is estimated that a QMS would initially cost around an extra $50 to $55 per unit, but these costs may change over time as the QMS evolves into a 'purer' QMS.

A 15 year overview of the changes that are to be expected within the industry illustrate that, after an initial difficult period, the industry would make economic gains in the medium to long term if the system evolves into a 'pure' QMS.

The RLIAC believes that industry should be provided with the opportunity to have a say on the QMS put forward in this paper, and suggests that all West Coast Rock Lobster Managed Fishery licence holders be consulted.

Summary of Recommendations

1. *That the current boundary of the fishery, from Cape Leeuwin to North West Cape be retained under a quota management system.*

2. *That the current boundaries of Zones A, B and C be retained under a quota management system.*

3. *That the season which provides access to the Big Bank and commences on 10 February and ceases on the last day of February be removed.*

4. *That the 20 fathom line restriction on holders of Zone A units be removed under a quota management system.*

5. *That the season in Zones B and C commences on 15 November and closes on 31 August each year.*

6. *That the season in Zone A commences on 15 March and closes on 31 August each year.*

7. *That Zone A licence holders are entitled to fish in Zone B from 15 November up to and including 14 March.*

8. *That moon closures in Zone C, Sunday closures and January closures in Zone B be removed.*

9. *That Christmas, New Year and Good Friday closures in Zones C remain in place and that Christmas and New Year closures and the closure of processors on Good Friday remain in place in Zone B.*

10. *That the fishery remains open on Good Friday in Zone A.*

11. *That, as under the current licensing system, a person must hold a West Coast Rock Lobster Managed Fishery Licence attached to a Fishing Boat Licence under a quota management system to operate in the fishery.*

12. *That the current system of one WRL MFL per FBL be retained, but that Zone A licence holders have the capacity to hold multiple classes of units on the one Managed Fishery Licence.*

13. *That the right of renewal of a WRL MFL would continue under a quota management system, as required under S68 of the Fish Resources Management Act, 1994 (subject to sections 136A and 143).*

14. *That the current system of no maximum number of units on an MFL be retained.*

15. *That RLIAC agrees in principle with a minimum unit entitlement and believes that the current minimum unit entitlement (63) to operate in the fishery should be retained during the initial stages of a QMS.*

16. *That the capacity of the fishery be expressed in individually transferable West Coast Rock Lobster Fishery units (69,037 units), as in the current system.*

17. *That the maximum number of pots that may be operated from a boat should be no more than 82 per cent of the number of units held.*

18. *That the configuration of pots and number and size of escape gaps should be decided by the RLIAC.*

19. *That the current pot hauling times are under consideration by the RLIAC and any changes should be made through that process.*

20. *That the restriction that limits one pot setting and retrieval per day be removed.*

21 (a) *That baited pots may be placed in the waters of Zone C after 5.30 am on 14 November and must be removed by 7.30 pm on 31 August.*

(b) *That baited pots may be placed in the waters of Zone B after 5.30 am on 14 November and must be removed from the water by 7.30 pm on 31 August.*

(c) *That baited pots may be placed in the waters of Zone A after 5.30 am on 14 March and removed by 7.30 pm on 31 August.*

22. *That the following biological controls remain in place:*

(a) *The maximum size of 115 mm carapace length for females south of 30° South and 105 mm carapace length for females north of 30° South.*

(b) *That the minimum carapace length of 76 mm be retained.*

23. *That the two-and-a-half month period at the start of the season when the existing minimum carapace length is 77 mm be removed.*

24. *That the prohibition of the take of mature females which are setose, or carrying eggs or tar spots from 15 November to 31 August continue.*

25. *That legal rock lobsters which are taken but determined as unsuitable for market purposes, should be returned to the water within five minutes of being taken, and prior to any other pot being pulled.*

26. *That there be a conservatively set variable Total Allowable Commercial Catch (TACC) based on predicted sustainable catch levels for each zone.*

27. *That the Total Allowable Commercial Catch for each zone of the fishery would be announced by 30 March each year for the following season, together with an indicative TACC for the following two seasons.*

28. *That a Technical Advisory Group comprising scientific experts and fisheries managers calculate quota levels for each zone of the fishery based on a clear set of economically sustainable development principles.*

29. *That the Technical Advisory Group advise and make recommendations to the Rock Lobster Industry Advisory Committee on quota levels for each Zone, A, B and C.*

30. *That the Rock Lobster Industry Advisory Committee assess the Technical Advisory Group's recommendations and also take into account any other ecological, economic, market, social or management issues it considers relevant and make recommendations on quota levels to the Minister for Fisheries.*

31. *That a Zone A authorisation will have a fully transferable catch quota in Zone B that can be fished by Zone A operators until and including 14 March and may be transferred to a Zone B authorisation to fish until 31 August.*

32. (a) *That to operate in Zone B, a Zone A or Zone B authorisation must hold a minimum of 63 units in either Zone A or Zone B.*

(b) *That to operate in Zone B, a Zone A authorisation may use the same number of pots that they operate in Zone A.*

(c) *That if the units held by a Zone A authorisation in Zone B are sold to a Zone B licence holder, then the Zone B authorisation may operate those units on a ratio of 1 unit = 0.82 pots.*

33. *That Zone A fishers can complete their last pull in Zone B on 14 March, and any catch taken on 14th March is considered Zone B catch.*

34. *That Zone B licence holders will have a fully transferable catch quota in Zone B that can be fished from 15 November until and including 31 August.*

35. *That Individual Transferable Catch Quotas (units) by zone and time would be endorsed on individual Managed Fishery Licences.*

36. *That the weight of the catch as weighed in at the licensed processor would be the weight that is recorded as being taken by the MFL holder.*

37. *That any catch for personal consumption must be either :*
    - *self-weighed on board a vessel (the onus would be on the fisher to determine the weight is correct; or*
    - *returned to the fisher by the processor after official weighing.*

38. *That Vessel Monitoring System would be operational and an integral part of the quota management system.*

39. *That individual unit entitlements are not transferable between Zones, but are transferable within Zones A, B and C.*

40. *That only whole units are transferable.*

41. *That West Coast Rock Lobster Fishery maintain the same number of units in each zone.*

42. *That there be no change from the boat breakdown policy adopted by the Rock Lobster Industry Advisory Committee.*

43. *That the Department of Fisheries costs for the management of the West Coast Rock Lobster Managed Fishery would continue to be recovered according to cost attribution and recovery rules or whatever cost recovery rules are in place in the future.*

44. *That the system of payment of managed fishery licence fees by installments continue.*

45. *That the standards of licensing processor establishments continue.*

46. *That the allocation of quota should be a proportional transition from the existing units of entitlement and that catch history should not be a consideration.*

47. *That all MFL holders in the West Coast Rock Lobster Managed Fishery should be consulted on the management settings that have been proposed in this paper.*

48. *That it should be noted that the minimum timeframe for the implementation of a quota management system in the West Coast Rock Lobster Managed Fishery would be two years from when a decision is made to adopt a QMS.*

Summary of Issues to be Reviewed Annually under a Quota Management System

1. *Quotas for the "whites" and "reds" may be reviewed in time.*

2. *The season may start in the "reds" or on 15 March, or some other time, to shift fishing effort.*

3. *That Christmas, New Year and Good Friday closures be reviewed by industry over time.*

4. *That within five years, a registry be established which would enable the holding of fully transferable units within the Zone they have been purchased from without holding a FBL.*

5. *That the system of one WRL MFL per FBL be reviewed over time to ascertain its effectiveness.*

6. *That the minimum unit entitlement of 63 to operate in the fishery is reviewed.*

7. *That limiting the maximum number of pots that a boat may operate to the number of units held on the managed fishery licence be reviewed over time.*

8. *That limiting pot usage to 0.82 pots per unit may change over time, and should be reviewed in conjunction with industry.*

9. *That in the longer term more efficient pot designs could be considered if they met required biological and environmental criteria, and this should be reviewed annually.*

10. *That the taking of setose rock lobsters be considered once a greater abundance of rock lobsters on the ground has been established.*

11. *That individual quota unit entitlements be fully transferable within and between zones and within seasons. (To be considered after five years of QMS.)*

12. *The Cole/House agreement is under review and different rules for cost recovery may eventuate.*

1. Introduction

The former Minister for Fisheries, Hon Jon Ford, JP, MLC, asked the Rock Lobster Industry Advisory Committee (RLIAC) to provide him with advice on the following matters:

1 the presentation of a simple business case to industry illustrating the impact of moving to a quota management system;
2 an appropriate consultation process, given that he would be seeking a strong endorsement from industry before he would consider moving to a quota management system; and
3 the timelines of the reassessment process, and identification of the fishing season when it would be feasible to introduce a quota management system. (Note that these timelines have been provided to industry in a letter to licence holders dated 19 May 2008)

The request followed renewed interest from industry on the introduction of a QMS for the West Coast Rock Lobster Managed Fishery (the Fishery).

In response to the Minister's request, the RLIAC resolved, among other things, to establish a Working Group to develop the QMS settings that underpin the business case.

The members of the Working Group were:

John Cole, Chair
Angus Callander
Dexter Davies
Peter Glass
Greg Hart
Sam Koncurat
Roy McVeigh
Leonie Noble.

The RLIAC would like to thank the members of the Working Group for their hard work and recommendations to the RLIAC.

This paper provides information and most of the recommendations from the Working Group to the RLIAC regarding the key QMS settings. The RLIAC made a few amendments to the Working Group's document, and this paper reflects the RLIAC perspective. It also examines the business case provided in 2006 to the Department of Fisheries and gives the opportunity to consider the advantages of the model provided by the Working Group and the RLIAC and how far industry would like to see the model evolve over time.

It is clear from modelling prepared for the Department of Fisheries by Economic Research Associates Pty Ltd and the Western Rock Lobster Council in 2006 that with the adoption of a QMS any relaxation in input controls can produce extra net benefits beyond the base case for industry. Also, the further the industry moves in relaxing or removing input controls the

greater the scope for extra net benefit. For example, in 2006 economic modelling shows that the Net Economic Benefit (using comparison to base case at zero) from a QMS without input controls is $19 million, as compared to $2.6 million with some input controls retained. These figures will vary over time.

This paper covers the initial QMS settings and gives an indication on the RLIAC's view of which settings might evolve over time, and which should remain the same. The RLIAC has kept the business settings described in the previous paragraph in mind, but has not sought to repeat the work already completed.

This paper shows that any move towards a QMS should be viewed as an evolving process (see Appendix 1), whereby input controls can be progressively removed as industry grows more comfortable with output controls and the benefits flowing from them. For example, the paper proposes to initially retain the existing controls over pot design, to be reviewed in later years.

The RLIAC has adopted an approach that enables the rock lobster industry to take measured changes from the existing rules to a QMS. Any step down the continuum represented in this paper does not prevent or compromise any move by industry to the next stage of fewer input restrictions at an appropriate time in the future.

2. Guiding Principles

The Working Group developed the following principles to guide its deliberations on the design of a QMS and these were adopted by the RLIAC:

1. That the basis for allocation be rational and the process workable.
2. That the compliance system be simple, use the latest technology and operate at minimum cost.
3. The QMS would evolve over time with some up front changes and then the gradual removal of current regulations to achieve economic efficiency.
4. The QMS would evolve over time to achieve a smoothing out of the peaks and troughs of the catch in each zone.
5. The intention of the introduction of a QMS is to manage the harvest rate (residual stock) and to increase the economic efficiency of the rock lobster industry over time.
6. The QMS should maximise the economic and social return to the state while maintaining sustainability of the rock lobster stocks.

3. Expected Outcomes

The Working Group and the RLIAC believe that the outcomes required to flow from the introduction of a QMS over time are:

1. Sustainability of the stock by ensuring that catches are capped at

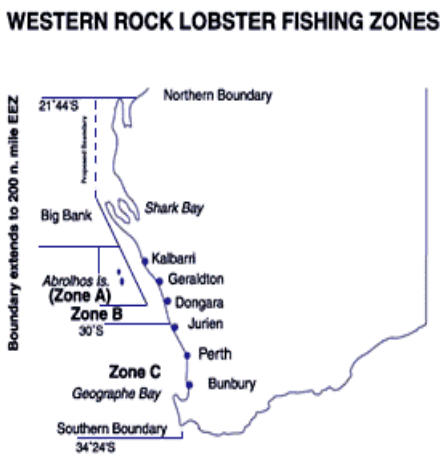
sustainable levels by adjusting the Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC).
2. Increased abundance of rock lobster over time as the sustainable and conservatively set TAC acts to increase the number of lobsters on the ground.
3. Maximisation of the commercial viability of the industry by encouraging fishers to fish at the most profitable times
4. Greater certainty around the asset (unit) values and catch values.

4. What is an Individually Transferable Quota System?

Individually Transferable Quota (ITQ) is a QMS whereby units have a value, in this case, in kilograms of lobster that can be taken. The sum of unit values equates to TACC. Biological and other controls are used in this system to ensure that breeding stock is not selectively targeted. It can be argued that this system has the potential to provide the greatest freedom to operators in terms of when they choose to harvest their share of the catch.

5. How would an ITQ system operate in the Western Rock Lobster Fishery?

5.1 Boundaries (Spatial controls)



The current zones of access and boundaries for the Western Rock Lobster Fishery are shown in the map above.

The Fishery extends from Cape Leeuwin to North West Cape. It has four fishing zones, Zones A, B, C and Big Bank, that distribute effort across the entire fishery and prevent the concentration of effort on areas of seasonally high productivity, which would result in a higher than acceptable exploitation rate. Zonal management also enables controls aimed at addressing zone specific issues to be implemented. (Fisheries Management Paper No. 212 “How do Quota Management Systems Work in Rock Lobster Fisheries?”,

Bray, T, Gill, S & Edwards, R).

The RLIAC recommends that the boundary of the Fishery and the boundaries for Zones A, B and C be retained under a quota management system.

Recommendation 1

That the current boundary of the fishery, from Cape Leeuwin to North West Cape be retained under a quota management system.

Recommendation 2

That the current boundaries of Zones A, B and C be retained under a quota management system.

5.1.1 Big Bank

Currently, access to the Big Bank commences on 10 February and ceases on the last day of February. A licensee who nominates to fish in Big Bank cannot fish in any other area of Zone B during that time. Big Bank has been an area where catches have declined in recent years and there is no certainty about catch predictions for the area. In the absence of a reliable method of predicting catches, to simplify management and keep administration and compliance costs to a minimum, the area should be closed or incorporated into Zone B. A closure may provide some benefits for sustainability but the condition of animals caught would suggest that this may be minimal, so the RLIAC is recommending that Big Bank be reincorporated into Zone B.

Recommendation 3

That the season which provides access to the Big Bank and commences on the 10 February and ceases on the last day of February be removed.

5.1.2 20 Fathom Line

The 20 Fathom line was introduced in 1981 to prevent Zone A licencees from fishing in any waters shallower than 20 fathoms that are within nine nautical miles of the mainland, over the period 1 to 14 March. Its retention is essentially a resource sharing matter to protect the B Zone boats from competition on coastal waters.

Arguments in support of removing the line include:

- it simplifies the management system;
- it is not required as the catch is being managed through ITQs;
- there are the practical difficulties in enforcement;
- the rule effectively creates an inequity between large and small boats because it restricts the operation of small jet boats from fishing

between 1 to 14 March in Zone B;
- the rule potentially increases exploitation of the breeding stock in Zone B in deep water;
- the effectiveness under a QMS would be limited because most of the quota is likely to be taken in Zone B prior to 1 March; and
- a QMS system would effectively manage the equity issues around catch sharing.

Based on these reasons, the RLIAC recommends that the 20 Fathom line be removed.

Recommendation 4

That the 20 fathom line restriction on holders of Zone A units be removed under a quota management system.

5.2 Seasons (Temporal Controls)

5.2.1 Season Opening and Closing Times

The current season starts 15 November in Zone B and 25 November in Zone C and closes 30 June, although the Abrolhos Islands area (Zone A) opens 15 March. Access to the Big Bank commences 10 February and ceases on the last day of February (see Section 5.1.1 for further discussion of this point).

The season (15 and 25 November to 30 June) reflects a range of biological factors (for example the whites migration and summer moulting) and historical matters such as the end of June closure.

In 2005/06 the start date for Zone C was changed to 25 November as part of a sustainability package. The date change made a small contribution to the package, but occurred at a time when costs were high relative to income. As sustainability can be managed under the QMS it would no longer be necessary to maintain the start date of the season for Zone C at 25 November. Therefore the start date of Zones B and C can be aligned to 15 November.

The RLIAC has taken a conservative view regarding the retention of input controls, at least in the initial stages. However, it recommends the season be extended until 31 August, so that licence holders can make their own business decisions as to whether or not to take some of their quota during July and August, when prices may be higher.

Recommendation 5

That the season in Zones B and C commences on 15 November and closes on 31 August each year.

Recommendation 6

That the season in Zone A commences on 15 March and closes on 31 August each year.

At present Zone A authorisations are entitled to fish in Zone B until and including 14 March. This would continue under a QMS.

Recommendation 7

That Zone A licence holders are entitled to fish in Zone B from 15 November up to and including 14 March.

There are a number of options for the season, such as starting the season in the 'reds', or 1 or 15 March, as a means of redistributing fishing effort to times when lobsters are more valuable (see discussion at Appendix 2). These changes could be introduced over time.

To be Reviewed Annually 1

Quotas for the "whites" and "reds" may be reviewed in time.

To be Reviewed Annually 2

The season may start in the "reds" or on 15 March, or some other time, to shift fishing effort.

5.2.2 Within season Closures

Within season closures such as moon closures, Sunday closures, Christmas to New Year closures and summer closures have been primarily introduced to meet the biological objective of the Fishery. Secondary reasons have been for social benefits e.g. Christmas and New Year closures. Good Friday 'closures' are managed by a requirement for processors to close. Sunday and summer closures in Zone B have provided a number of social benefits for industry participants in the zone, such as increased family time.

There are no Good Friday Closures in Zone A and it is not proposed to change this position.

The RLIAC proposes that most of these closures would be phased out under a QMS, as restricting the total catch rather than regulating fishing effort could achieve the primary biological objective. This approach would benefit individuals by allowing them the flexibility to decide on the most efficient time to fish. For compliance reasons, the only within season closures recommended to remain in place, to keep people from pulling other fishers' gear (for which it was originally introduced along with social reasons), are those introduced for social reasons.

Recommendation 8

That moon closures in Zone C, Sunday closures and January closures in Zone B be removed.

Recommendation 9

That Christmas, New Year and Good Friday closures in Zones C remain in place and that Christmas and New Year closures and the closure of processors on Good Friday remain in place in Zone B.

Recommendation 10

That the fishery remain open on Good Friday in Zone A.

To be Reviewed Annually 3

That Christmas, New Year and Good Friday closures may be reviewed by industry over time.

5.3 Access

5.3.1 Managed fishery licences

The current Individual Transferable Effort (ITE) system of access has transferable, zone specific Western Rock Lobster Managed Fishery Licences (WRLMFL) attached to a Fishing Boat Licence (FBL).

This system is not expected to change in the short to medium term. However, in the long term (five years), the RLIAC recommends a registry be established which would enable the holding of fully transferable units without holding a FBL. This would require an amendment to the *Fish Resources Management Act 1994.*

Recommendation 11

That, as under the current licensing system, a person must hold a West Coast Rock Lobster Managed Fishery Licence attached to a Fishing Boat Licence under a quota management system to operate in the fishery.

To be Reviewed Annually 4

That within five years, a registry be established which would enable the holding of fully transferable units within the Zone they have been purchased from without holding a FBL.

For compliance reasons, if a person is to be prosecuted it is important to know under which entitlement the person was fishing. As a result, the current

system of one WRL MFL per FBL would need to be retained under a QMS. The RLIAC is of the view that this should be reviewed over time.

Currently two separate MFLs are held for Zones A and B. A convenient way of ensuring that Zone A licence holders could continue to fish in Zone B from 15 November to 15 March would be to provide the capability for a MFL holder to hold and use multiple classes of units on the one MFL so that they can be used separately in Zone B prior to 15 March or Zone A after 15 March, similar to arrangements in the abalone fishery.

Recommendation 12

That the current system of one WRL MFL per FBL be retained, but that Zone A licence holders have the capacity to hold multiple classes of units on the one Managed Fishery Licence.

To be Reviewed Annually 5

That the system of one WRL MFL per FBL be reviewed over time to ascertain its effectiveness.

5.3.2 Right of Renewal

Under Section 68 of the *Fish Resources Management Act 1994,* if a person applies to the Executive Director for the renewal of an authorisation, the Executive Director is to renew the authorisation (subject to sections 136A and 143).

This right of renewal of a managed fishery licence would continue under a QMS.

Recommendation 13

That the right of renewal of a WRL MFL would continue under a quota management system, as required under S68 of the Fish Resources Management Act 1994 (subject to sections 136A and 143).

5.3.3 Number of units required to operate in the fishery

Under the current system there is no limit to the maximum number of units attached to a MFL. It is not anticipated that this would change.

Recommendation 14

That the current system of no maximum number of units on an MFL be retained.

There is a minimum unit-holding of 63 units per MFL boat (= 52 pots @ 0.82 unit) and although there are no restrictions on the maximum number of units a

boat can carry, most carry between 90 and 120 pots.

This number was reviewed under National Competition Policy (NCP) some years ago, but the RLIAC decided to retain the minimum unit entitlement to operate in the fishery. The RLIAC agrees with this decision in principle and recommends that this minimum unit holding requirement be retained, at least in the short term as it was unclear as to what the minimum should be if it was lowered. The reason for the retention is that there could be a number of small unit holders enter the fishery, which may result in over servicing in the initial stages of VMS operations.

Recommendation 15

That RLIAC agrees in principle with a minimum unit entitlement and believes that the current minimum unit entitlement (63) to operate in the fishery should be retained during the initial stages of a QMS.

To be Reviewed Annually 6

That the minimum unit entitlement of 63 to operate in the fishery is reviewed.

5.4 Effort

5.4.1 Units of entitlement

There are currently 460 boats operating in the Fishery, down from 836 when limited entry was introduced in 1963. These boats operate a total of approximately 56,706 pots (69,037 units).

Under National Competition Policy (NCP) principles it could be argued that there should be no limit on the number of pots held. However, the RLIAC believed that, at least in the initial stages, that pot numbers should be tied to unit holdings for the following reasons :

- It is a known and accepted system,
- There may be pot saturation or congestion in popular fishing areas, particularly inshore reefs.
- There may be an impact on the environment, such as corals and benthic communities from over-potting.
- Too many pots may exacerbate the peaks in fishing pressure, such as over the ‘whites’ and may cause the economic benefits of quota to dissipate.
- There may be problems with continuity of supply if the majority of the catch is taken during the peaks due to over-potting.
- There is potential for bigger unit holders to inhibit smaller unit holders access to inshore fishing grounds if there is no limit on pot numbers.

The RLIAC proposes that the limit on the number of pots that may be operated from a boat be retained, with the maximum number of pots limited to

the number of units held on the MFL[1] (0.82 pot per unit)**.** This would mean that pot usage would continue to be limited by units of entitlement.

For any zone the pot usage would depend on the number of entitlements (held on the MFL) that can be utilised for that particular zone and licensing period.

Recommendation 16

That the capacity of the fishery be expressed in individually transferable West Coast Rock Lobster Fishery units (69,037 units), as in the current system.

Recommendation 17

That the maximum number of pots that may be operated from a boat should be no more than 82 per cent of the number of units held*.*

An ITQ without a limit on the number of pots would theoretically provide the maximum economic benefits. Although there may be concerns about an excess number of pots leading to congestion and greater levels of conflict, experience elsewhere has been that they do not use excessive numbers, and the economic modelling indicates that pot numbers would reduce under a 'pure' QMS. The Western Rock Lobster Council's 2006 discussion paper shows pot numbers as reducing under a 'pure' QMS from the current 56,706 down to around 44,000, but being retained at 56,706 under a QMS with input controls.

Pot usage is controlled largely by a vessel's carrying capacity and how many pots can be effectively used in a day. It is not cost effective for a fisher to buy and use more pots than is necessary to use their quota in the most effective way.

Introducing a limit on the amount of catch that can be taken in the "whites" (see quota section) would avoid an excessive peak in supply in the early part of the season that could arise from a removal of pot limits.

<u>To be Reviewed Annually 7</u>

That limiting the maximum number of pots that a boat may operate to the number of units held on the managed fishery licence be reviewed over time.

<u>To be Reviewed Annually 8</u>

That limiting pot usage to 0.82 pots per unit may change over time, and should be reviewed in conjunction with industry.

[1] For example, a licensee holding 100 units could operate no more than 82 pots. If the MFL holder transferred 50 units to another licensee they could only operate 41 pots, whereas the person receiving the units could use an additional 41 pots

5.4.2 Pot Design

The configuration of pots and size (54mm) and number of escape gaps are regulated to control the level of fishing effort and to allow undersize lobsters to escape.

The current configuration of pots has an escape gap for undersize animals of 54 mm. Increasing the escape gap size from 54mm to 55mm could have a beneficial impact by reducing the handling and mortality of undersize animals and would (in most cases) have no impact on legal catch. There is some concern that the current size (54 mm) can lead to some leg loss.

However, for marketing reasons (A size is more profitable than B size at the current time) and because many in industry feel that an increase in the size of escape gaps would considerably reduce the number of size lobster taken in each pot lift, it was not proposed to increase the escape gap to 55 mm at this time.

Recommendation 18

That the configuration of pots and number and size of escape gaps, should be decided by the RLIAC.

Improved pot efficiency could mean less pot lifts and in the longer term there may be more efficient pots that could be used. A system should be developed to allow new pots to be built, tested and calibrated for comparison against standard pots for catch rates. Trials are currently underway to assist in the development of an appropriate system. New pots could be introduced over time subject to the design meeting certain criteria i.e. that they do not cause more damage to the environment or trapped lobsters than existing pots. This should be reviewed annually.

To be Reviewed Annually 9

That in the longer term, more efficient pot designs could be considered if they met required biological and environmental criteria, and this should be reviewed annually.

5.4.3 Pot Setting and Retrievals

Pots may only be pulled during specified daylight hours (November to March 0530-2030[2], April to June 0600-1800[3] in waters less that 36.6 metres deep and 0430-1930 in waters over 36.6 metres deep). It is expected that these controls would continue where there is a biological imperative such as allowing undersize lobsters to escape before the pot is hauled, and to limit

[2] Daylight Saving Time
[3] Western Standard Time

opportunities for gear interference. This matter is currently being discussed by the RLIAC and should sit with that body.

Recommendation 19

That the current pot hauling times are under consideration by the RLIAC and any changes should be made through that process.

Pot setting and retrievals are currently restricted to one per day, however, under a QMS this should not be a matter of concern, as the catch is capped and it would be a business decision as to how many setting and retrievals per day a fisher is prepared to undertake.

Recommendation 20

That the restriction that limits one pot setting and retrieval per day be removed.

5.4.4 Pot Soaking and Baiting Dates and Times

In the past, rock lobster operators have indicated that they need a soaking period prior to the beginning of the season to prevent bubbling of pots when first put in the water, which impacts on catch rates.

Under a QMS there would be less incentive to race to fish, and as a result, soaking pots prior to the beginning of the season to gain a competitive edge would not be necessary. The RLIAC concluded that retaining the current soaking and baiting dates and times would add to compliance costs for little economic benefit.

Recommendation 21

(a) That baited pots may be placed in the waters of Zone C after 5.30 am² on 14 November and must be removed by 7.30 pm³ on 31 August.

(b) That baited pots may be placed in the waters of Zone B after 5.30 am² on 14 November and must be removed from the water by 7.30 pm³ on 31 August.

(c) That baited pots may be placed in the waters of Zone A after 5.30 am² on 14 March and removed by 7.30 pm³ on 31 August.

5.5 Biological controls

5.5.1 Minimum size

The RLIAC recommends that the following biological controls remain in place as part of the long-term sustainability settings of the fishery:

1 The maximum size of 115 mm carapace length for females south of 30° South and 105 mm carapace length for females north of 30° South.
2 The minimum carapace length of 76 mm.

Recommendation 22

That the following biological controls remain in place:
(a) The maximum size of 115 mm carapace length for females south of 30° South and 105 mm carapace length for females north of 30° South.
(b) That the minimum carapace length of 76 mm be retained.

The RLIAC recommended that the two-and-a-half month period at the start of the season where the minimum carapace length is 77 mm be removed because of the market preference for the 76 mm length.

If quota management is working properly, the need for this measure falls away. In addition, the level of mortality for 76 mm lobsters returned to the water would be eliminated, as captured animals would remain as part of the quota.

Recommendation 23

That the two-and-a-half month period at the start of the season when the existing minimum carapace length is 77 mm be removed.

5.5.2 Taking of Setose and Tarspot

In order to protect breeding females, the RLIAC recommends that the prohibition on the take of mature females which are setose, or carrying eggs or tar spots continue for the present. However, once a QMS is well established and greater abundance of rock lobster on the ground has been established, it may be possible to consider permitting the take of setose animals in July and August, as much of the catch at that time consists of setose females.

Recommendation 24

That the prohibition of the take of mature females which are setose, or carrying eggs or tar spots from 15 November to 31 August continue.

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That the taking of setose rock lobsters be considered once a greater abundance of rock lobsters on the ground has been established.

5.5.3 Return of Unwanted Animals to Water

It is expected that a QMS would lead to a degree of 'high grading' whereby damaged or sick 'legal' rock lobster that attract lower prices would be returned to the water.

Under current regulations undersize or setose and tar spot rock lobsters must be returned to the water within five minutes of being taken, and must do so before any other pot is pulled. The RLIAC is of the view that any lobster that are not consigned to catch as part of an individual's quota should be treated in the same way as undersize and setose and tar spot animals and returned to the sea within 5 minutes.

Recommendation 25

That legal rock lobsters which are taken but determined as unsuitable for market purposes, should be returned to the water within five minutes of being taken, and prior to any other pot being pulled.

5.6 Quota setting/Total Allowable Commercial Catch

To account for uncertainty around catch predictions and unforeseen environmental influences, catch quotas would be set conservatively, ie. below the catch that could potentially be realised in an effort controlled management regime. Over the first five years this is likely to produce slightly lower catches, but not necessarily lower economic returns.

A quota would be set for each zone of the fishery – A, B and C, taking into account the following:

1 catch predictions of recruitment levels to the fishery, based on the levels of puerulus settlement that occurred in the previous three to four years, would be used to set the total allowable catch (TAC) and the total allowable commercial catch (TACC) for each zone;
2 the level of breeding stock in each zone would be maintained above the level it was in the late 1970s-early 1980s (the current trigger points for management action). TACs or quotas would be adjusted to ensure the breeding stock was maintained above this level;
3 the level of harvest rate in each zone would be controlled (the current decision rule framework is being adjusted to take into account the harvest rate as well as the breeding stock);
4 the broad requirements of ecologically sustainable development would be taken into account; and
5 a reduction in TACC would be required to offset any illegal or unreported catch.

Taking into account both the variation that occurs between predicted and actual catch and the fact that a level of under reporting would occur, the

RLIAC proposes that a cautious TACC is set, particularly in the early years, at between 5 % to 15% below the predicted catch.

The actual TACC for any given year would also need to take into account the specific issues at the time, for example, the status of breeding stock, harvest rate, marketing, economics, regional development issues, social issues etc. This is in line with ecologically sustainable development principles.

5.6.1 Catch predictions

Rock lobster catches can be predicted three years in advance based on the levels of puerulus settlement that occurred three and four years previously and the expected level of fishing effort.

Based on the current catch predictions (in tonnes) and the above approach (TACC nominally set at 5% to 15% below the predicted catch), the TACC (in tonnes) over the next three seasons is in Appendix 3.

The indicative Total Allowable Commercial Catches (TACC) and likely ITQ values for each zone under the proposed RLIAC model are listed in Appendix 3 and are also shown in the Executive Summary. It should be noted that these figures are based on a variable TACC model (set at 5% and 15% below the predicted catch) and are indicative only. They could change according to the advice of the proposed Technical Advisory Group. (See Recommendation 28 for Technical Advisory Group.)

Although the predicted catch is known three years in advance and the quota can be set three years in advance, these predicted catches should be reviewed on an annual basis, particularly for the next season, and the following two seasons' predicted catches should be taken as indicative.

It should be recognised that the current catch prediction relationship may be significantly affected by any major changes in the fishing pattern (temporal or spatial variation in effort, high grading, level of black market, etc.) as a result of moving to a QMS. Therefore, there is a requirement for a greater level of fishery independent research, more onboard monitoring, the expansion of the independent breeding stock survey and development of new stock assessment models and statistical analyses.

In order for operators to manage their business operations effectively the RLIAC recognised that certainty around the following season's quota allocations is required and recommended that the TACC for each zone should be announced by 30 March each year for the following season.

Recommendation 26

That there be a conservatively set variable Total Allowable Commercial Catch (TACC) based on predicted sustainable catch levels for each zone.

Recommendation 27

That the Total Allowable Commercial Catch for each zone of the fishery would be announced by 30 March each year for the following season, together with an indicative TACC for the following two seasons.

The Chief Executive Officer (CEO) or the Minister can determine the TAC/TACC. Both methods are currently used in various management plans.

The RLIAC believes that, at least in the initial stages, the Minister should determine the TAC/TACC following advice from RLIAC with support from a Technical Advisory Group. The Minister's decision is subject to a higher level of accountability as he is accountable to Parliament and changes would be by amendment to the management plan.

The Technical Advisory Group would calculate quota levels based on a clear set of sustainability principles. A series of business rules and procedures around this process is at Appendix 4.

Recommendation 28

That a Technical Advisory Group comprising scientific experts, including one independent scientist, and fisheries managers calculate quota levels for each zone of the fishery based on a clear set of economically sustainable development principles.

Recommendation 29

That the Technical Advisory Group advise and make recommendations to the Rock Lobster Industry Advisory Committee on quota levels for each Zone, A, B and C.

Recommendation 30

That the Rock Lobster Industry Advisory Committee assess the Technical Advisory Group's recommendations and also take into account any other ecological, economic, market, social or management issues it considers relevant and make recommendations on quota levels to the Minister for Fisheries.

5.6.2 Total Allowable Commercial Catches, Zones A & B

Under the current system the zones ensure that effort is distributed across the entire fishery, rather than permitting the fleet to concentrate effort on areas of seasonally high productivity, which would result in a higher than acceptable exploitation rate. Zonal management also enables management controls aimed at addressing zone specific issues to be implemented. (Fisheries Management Paper No. 212 "How do Quota Management Systems Work in Rock Lobster Fisheries?", Volume 4, Bray T, Gill S, Edwards R, January 2006).

Zone A operators fish in Zone B from 15 November until 14 March, after which they move their operations to the Abrolhos Islands while Zone B licence holders continue to fish in Zone B. Historically, around 63.4%[4] of the catch taken from Zone B catch has been caught prior to the opening of Zone A.

Effectively, the TACC in Zone B must accommodate the movement out of the zone by Zone A fishers.

The RLIAC looked at several models (Appendix 2) before deciding that the most equitable model was Model 3 for the following reasons :

- this model allows operators to continue their historical fishing patterns, while giving A Zone licence holders the opportunity to transfer their quota to other operators in Zone B if they do not take their quota;
- it would also be possible for Zone B licence holders to sell their quota to Zone A licence holders, but this quota would have to be taken prior to 15 March; and
- it will assist in smoothing out the peaks in fishing, by allowing some of the catch currently taken during the whites run to be taken later in the season, when prices may be higher.

To achieve this Model, an additional 8,097 Zone B units would be allocated to Zone A licence holders (see Appendix 2 for why and how these units should be allocated). Each Zone A licence holder would be allocated a share of the 8,097 Zone B units, based on the proportion of A Zone units held.

This may result in some Zone A licence holders holding less than 63 units in Zone B, even though they hold the minimum unit holding (63 units) in Zone A. It is the RLIAC's intention to allow these operators to fish in Zone B in accordance with their historical practices. As a result, the RLIAC recommends that to operate in Zone B, operators should hold at a minimum of 63 units in either Zone A or Zone B.

The allocation of 8,097 Zone B units to A Zone licensees is based on the proportion of the Zone B catch taken by A Zone licensees. At present, this catch is taken using up to the number of pots that can be fished in Zone A. If either a 0.82:1 or 1:1 quota unit to pot usage ratio is implemented, then the Zone A licensees would be permitted to fish with far fewer pots to achieve the same proportion of the catch.

Zone A licence holders should therefore be permitted to use their full Zone A pot entitlement when fishing their Zone B units, which continues their historical fishing practice. Where an A Zone licensee transfers Zone B units to a dedicated Zone B operator, the 0.82:1 ratio should apply.

[4] Average over last 10 years

This would result in the maximum number of potential annual pot lifts in Zone B remaining similar to that which could currently be the case (not taking into account the extension of the season or the removal of daily pot pulling restrictions). The total number of potential pot lifts could even decline if the units were transferred to dedicated Zone B authorisations.

Recommendation 31

That a Zone A authorisation will have a fully transferable catch quota in Zone B that can be fished by Zone A operators until and including 14 March and may be transferred to a Zone B authorisation to fish until 31 August.

Recommendation 32

(a) That to operate in Zone B, a Zone A or Zone B authorisation must hold a minimum of 63 units in either Zone A or Zone B.

(b) That to operate in Zone B, a Zone A authorisation may use the same number of pots that they operate in Zone A.

(c) That if the units held by a Zone A authorisation in Zone B are sold to a Zone B licence holder, then the Zone B authorisation may operate those units on a ratio of 1 unit = 0.82 pots.

Recommendation 33

That Zone A fishers can complete their last pull in Zone B on 14 March, and any catch taken on 14th March is considered Zone B catch.

Recommendation 34

That Zone B licence holders will have a fully transferable catch quota in Zone B that can be fished from 15 November until and including 31 August.

5.6.3 Individual Transferable Quotas on Managed Fishery Licences

Similarly to units in the current system, it is envisaged that ITQs (units) for a particular zone and time would be endorsed on individual Managed Fishery Licences. This is substantially the same as under the current system, where units are held against an MFL.

Recommendation 35

That Individual Transferable Catch Quotas (units) by zone and time would be endorsed on individual Managed Fishery Licences.

5.6.4 Quota Weight

For a QMS to be able to account for all of the catch it is necessary to have a record that is traceable from the point of capture through to the final place of purchase. It also needs a definitive record of weight caught against an MFL, so that authorisation holders know how much quota they have taken and how much they have left to fish.

The RLIAC acknowledges that drip loss is a factor in all quota managed fisheries, however, the most effective and efficient weight for quota management purposes is the weight of the catch as weighed in at the licensed processor and it is this weight that should be used for reporting against the quota. Therefore, under a QMS, the processors would have responsibility for determining the catch weights deducted from a fisher's quota.

Recommendation 36

That the weight of the catch as weighed in at the licensed processor would be the weight that is recorded as being taken by the MFL holder.

Many fishermen take lobster for personal consumption.

It is proposed that operators have a choice of how personal consumption is dealt with in respect to their quota allocations. These choices are :

1. that lobsters for personal consumption may be self-weighed on board a vessel (with the onus on the fisher for correct weights); or
2. that lobsters for personal consumption may be returned to the fisher by the processor after official weighing.

Recommendation 37

That any catch for personal consumption must be either :

- ***self-weighed on board a vessel (the onus would be on the fisher to determine the weight is correct); or***
- ***returned to the fisher by the processor after official weighing.***

5.7 Vessel Monitoring System

The Department's satellite-based Vessel Monitoring System (VMS) is a valuable compliance tool that allows positional surveillance and monitoring of commercial fishing boats[5].

VMS is particularly useful in quota managed fisheries. It allows for fishery-specific management plan closures to be enforced remotely by triggering an alarm should a boundary be crossed. Officers can program their inspection

[5] It should be noted that VMS can only pass on location details to marine rescue and police if a waiver is signed

regimes and apply their investigation methods more efficiently by using the facilities provided by VMS (State of the Fisheries Report, 2005-06).

It is envisaged that a quota managed rock lobster fishery would not only use VMS as a compliance tool, but also utilize it for capturing electronic catch and effort data and as a quota reporting system, allowing the transmission of these reports in real time.

Recommendation 38

That Vessel Monitoring System would be operational and an integral part of the quota management system.

5.8 Transferability

5.8.1 Within Zone and Within Season Transfers

The RLIAC is recommending that within season and within zone transfers of unit entitlements are retained under a QMS.

Under the current system, individual unit entitlements are not transferable between Zones B & C, but are transferable within each of these zones. Under a QMS individual residual catch units would not be transferable between zones, but transferable within each zone.

Recommendation 39

That individual unit entitlements are not transferable between Zones, but are transferable within Zones A, B and C.

To be Reviewed Annually 11

That individual quota unit entitlements be fully transferable within and between zones and within seasons. (To be considered after five years of QMS.)

The RLIAC recognized the administrative difficulties involved with the transfer of portions of units, and recommends that only whole units be transferable.

Recommendation 40

That only whole units are transferable.

5.8.2 Between Zone Transfers – Zones A and B

Under the current system individual unit entitlements are transferable between Zones A and B. The policy requires that there must be a 100% swap in each direction. No change to this policy is envisaged in the short term under a QMS.

Recommendation 41

That West Coast Rock Lobster Fishery maintain the same number of units in each zone.

5.8.3 Boat Breakdown Policy

This policy is currently being reviewed by the RLIAC, and the RLIAC takes the view that a boat breakdown policy under a QMS should be based on commonsense and that the RLIAC's policy should be adopted.

The RLIAC noted that private arrangements between fishers could be made to ensure that fishers who assist other operators by pulling their pots in a breakdown situation would have that quota returned to them.

Recommendation 42

That there be no change from the boat breakdown policy adopted by the Rock Lobster Industry Advisory Committee.

5.9 Cost Recovery

5.9.1 Access Fee

The extra cost of a QMS would be around $52 per unit per annum, with some initial costs amortised over 10 years.

The extra cost takes into account:

1. Changed research methodology, including taking into account illegal catch, changes to recorded catch methods (from CAES/voluntary research log books to daily quota returns and effort data), more onboard monitoring, fishery-independent breeding stock surveys, continuing and expansion of the puerulus monitoring program and the development of new stock assessment models and statistical analyses.
2. A new management regime, which would require a Technical Advisory Group.
3. New enforcement methods including the introduction of VMS into the fishery.
4. Managing the database and producing reports on information from fishers and compliance officers.
5. The ongoing cost of transmitting data electronically.

Establishment costs include:

- a new management plan under the *Fish Resources Management Act 1994;*
- the development of new systems for modification of the current legal, licensing, quota registrations and enforcement systems; and

- establishing a database and computer program to record all quota transactions in real time.

These costs are fully explained in Section 7.

The Department of Fisheries recovers the cost of managing the West Coast Rock Lobster Managed Fishery according to cost attribution and recovery rules. Payment of managed fishery licence renewal fees may be paid by installments. This system, subject to any changes that might be made in the Cole/House Agreement review currently underway, would remain under a QMS.

Recommendation 43

That the Department of Fisheries costs for the management of the West Coast Rock Lobster Managed Fishery would continue to be recovered according to cost attribution and recovery rules, or whatever cost recovery rules are in place in the future.

Recommendation 44

That the system of payment of managed fishery licence fees by installments continue.

To be Reviewed Annually 12

The Cole/House agreement is under review and different rules for cost recovery may eventuate.

5.10 Processing Sector

5.10.1 Licensing of processor establishments

In order to protect the integrity of the QMS, while it was the former Minister's intention to deregulate the restriction on the number of processors that can export (by revoking Ministerial Policy Guideline 18), it is important to ensure processing establishments maintain the current compliance standards.

Recommendation 45

That the standards of licensing processor establishments continue.

6. Initial Allocation

It is State Government policy that initial and all subsequent quota allocations would be based on the number of units of entitlement held on a licence and the units would relate directly to the number of pots that can be used, ie. each

fisher's share of the zone and seasonal quota would be calculated on the number of units he/she owns.

It is accepted that the wealth of the fishery is comprised of two key elements:

1. the value of the authorisation held; and
2. the income stream derived from the use of the entitlement.

Accordingly, any allocation process must consider both factors. Units of entitlement in the WCRLF have been transferable under the existing Plan for over a decade, and there are well-developed sale and lease markets for units of entitlement – the currency of the fishery. It is clear that the combined value of units associated with an authorisation represent the capitalisation value of that authorisation. An informal poll of financial institutions confirmed this.

For quantifying the second component of wealth, other allocation models have used catch history (with varying levels of success). However, in the case of the WCRLF, any use of catch history would distort the true value of the authorisation for the following reasons:

1. It is possible in this fishery to link catch at a given time to a managed fishery licence (MFL). But the MFL is not the currency of the fishery – the gear unit is the currency of the fishery. The extent of trading in units that has occurred within the market means that it is simply not possible to track the ownership or fishing history of each unit in the fishery with an acceptable level of administrative efficiency.

2. The market for rock lobster units of entitlement includes the expected earnings in the value of the authorisation, therefore representing the truest judgement of the quantum of wealth. The market does not differentiate between low and high catches of lobster when valuing units for sale. All units are treated with the same value by the market.

3. The strength of the lease market for rock lobster units of entitlement means that "owners" are not limited to fishing in order to use the entitlement to develop an income stream.

The RLIAC therefore believes that:

1. the allocation of quota should simply be a proportional transition from the existing units of entitlement;

2. catch history should not be a consideration; and

3. the system of allocation would be contained within a new Management Plan.

Under this system, a licensee would be allocated a quota based on the number of units of entitlement held on the MFL at the time of change over to a QMS and initial and all subsequent quota allocations would be based on the

number of units held.

This is in line with the South Australian Full Supreme Court decision in July 1995 (Minister for Primary Industries & ORS v Lawrie). In this case, quota was allocated on the basis of an equal share of the quota per pot at the end of a three year period, using the 'APACHE' (Adjusted Preferred Allocation History Equation) Model. In this case all three judges agreed that the appeal should be allowed and that the APACHE model should remain in force. After a four year transition, all pots were allocated a standard 'per pot' allocation of the TACC.

By the 30 March unit holders would be told what their quota would be for the next season based on the zone quota (TACC) and the number of units held.

Recommendation 46

That the allocation of quota should be a proportional transition from the existing units of entitlement and that catch history should not be a consideration.

7. Departmental Costs

Many of the current seasonal, pot and biological controls would be retained as transitional arrangements, subject to industry consultation. As a result, the base compliance costs would remain stable until there is information that can support decisions to offset costs, or decisions made to remove management rules from legislation. The costs of running a compliance program to address the new quota rules should be considered as additional to the cost of the current program. These costs and the reasons for them are at Appendix 5.

Under a QMS the relationship between catch and effort applied to the stock by fishers would change significantly over time as they modify their fishing strategy to maximise the value of their catch. The current catch per unit of effort (catch per pot lift) is the basic measure of abundance of lobsters used by researchers to assess the state of the stock, so the expected changes in effort under quotas would mean that alternative and/or additional data would be required to maintain an understanding of the status of stock. The additional research costs and the reasons for them are shown at Appendix 6.

A QMS is a significantly different management regime to the current one and would require a new management plan. There would be considerable additional costs associated with the establishment of a new licensing system and legal framework. However, once these systems are in place and industry and departmental officers learn how to operate the technology associated with the implementation of a QMS, ongoing administration costs are expected to be lower.

As industry becomes more comfortable with quota management, and following industry review, input controls may be removed, requiring further legislative changes.

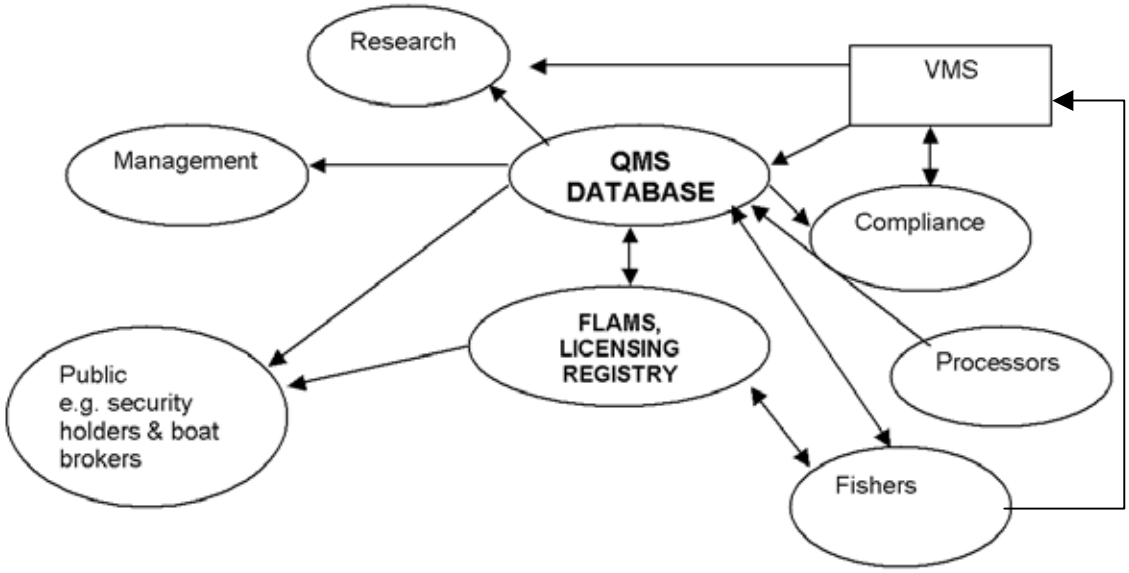
The QMS database would be held centrally and would hold the MFLs, the ITQs held by each MFL, the Registry of interests, and a real time record of each individual licence holders' quota.

Fishers would electronically transmit catch/quota reports via VMS reports prior to landing which would be forwarded to the central database. These would be tallied with electronically sent processor reports. In addition, Catch and Effort information would be passed from the VMS Division to the Research Division. Compliance would also utilize VMS information.

The central database would be available to licence holders to check their individual quota, and to processors or the public to access information such as the proportion of the overall quota that has been taken, or to check for security interests.

The communication flows are shown below in Figure 1:

Figure 1 – Communication Flows under a Quota Management System



The additional costs associated with the Legal, Licensing and Management side of a QMS and the reasons for those costs are at Appendix 7.

Listed in Tables 2 - 5 are the additional costs associated with the introduction of a QMS taken from Appendices 5, 6 and 7.

In order to make business decisions, it is important for industry to know what the approximate additional cost per unit would be if the industry moves to a QMS.

As can be seen from Table 6, the additional costs per unit are likely to peak in the first year of the new system, followed by a gradual decrease.

When comparing these costs to other quota managed rock lobster fisheries in Australia and New Zealand (Table 7), the managed fishery fees per kilogram are slightly higher than other fisheries, with the exception of the Northern Zone of the South Australian Rock Lobster Fishery.

Table 2 – Legal, Licensing & Management

Cost area	**FTEs Y-2,Y-1,Y1, Y2, Y3, Y4, Y5**	**Yr -2**	**Yr -1**	**Yr 1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**
Cost of QMS database ($1 million) to be amortised over 10 years		-	-	100,000	100,000	100,000	100,000	100,000
Managing DoF database	0, 1, 2, 1.25, 0, 0, 2	-	55,000	125,000	80,000	-	-	100,000
Policy development & legal drafting	.75, 1.25, .5, .5, 0, 0, 0	100,000	103,500	50,000	50,000	-	-	-
Licensing	0.5, 1, 1, 0.5, 0.5, 0.5,0	28,000	55,000	55,000	28,000	28,000	28,000	-
Totals		128,000	213,500	330,000	258,000	128,000	128,000	200,000
Agency Overheads (@ 50%)		64,000	106,750	165,000	129,000	64,000	64,000	100,000
Total Additional Licensing, Legal & Management Costs	**1.25, 3.25,3.5, 2.5, 0.5, 0.5, 2**	**192,000**	**320,250**	**495,000**	**387,000**	**192,000**	**192,000**	**300,000**
Current Management Costs (Licensing, Management & MAC)	6	783,247						

Table 3 – Regional Services Branch

Cost area	FTEs	Yr -2	Yr -1	Yr 1	Yr2	Yr3	Yr4	Yr5
Integration of EFORMS to database		34,800	-	-	-	-	-	-
Managing VMS RL Unit (1.5 FTE)	1.5	107,000	160,000	160,000	160,000	160,000	160,000	160,000
Transmitting CDR data		1,900	1,900	186,000	160,000	160,000	160,000	160,000
Consignment Tags		420	420	42,000	42,000	42,000	42,000	42,000
Specialist QMS compliance unit costs*	10	-	630,000	975,000	975,000	975,000	975,000	975,000
Costs for extended season		-	-	396,000	396,000	396,000	396,000	396,000
Savings from reduced large patrol boat days		-	-	-300,000	-300,000	-300,000	-300,000	-300,000
Totals		144,120	792,320	1,459,000	1,433,000	1,433,000	1,433,000	1,433,000
Agency Overheads (@ 50%)		53,500	395,000	765,500	765,500	765,500	765,500	765,500
Total Regional Services Branch Costs	**11.5**	**197,620**	**1,187,320**	**2,224,500**	**2,198,500**	**2,198,500**	**2,198,500**	**2,198,500**
Current Regional Services Costs	18	4,771,527						

* 10 staff at 0.5 FTEs in Year –1 and 10 staff in Year 1

Table 4 – Research Branch

Cost area	FTEs	Yr -2	Yr -1	Yr 1	Yr2	Yr3	Yr4	Yr5
Total landed catch	0.5	0	0	50,000	50,000	50,000	50,000	50,000
Compulsory catch & effort returns/voluntary research logbook	0.5	0	34,800	85,000	85,000	85,000	85,000	85,000
Onboard monitoring	2	0	0	175,000	175,000	175,000	175,000	175,000
Fishery-independent breeding stock survey	2	0	0	400,000	400,000	400,000	400,000	400,000
Stock assessment & modelling	1	0	0	150,000	150,000	150,000	150,000	150,000
Totals		0	34,800	860,000	860,000	860,000	860,000	860,000
Agency Overheads (@ 50%)*		0	0	195,000	195,000	195,000	195,000	195,000
Total Additional Research Costs	6	**0**	**34,800**	**1,055,000**	**1,055,000**	**1,055,000**	**1,055,000**	**1,055,000**
Current Research Costs	15	3,244,054						

*Overheads calculated as 50% of 6 FTEs @ $65,000 per annum

Table 5 – Total Costs

Cost area	**FTEs**	**Yr -2**	**Yr -1**	**Yr 1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**
Total Licensing, Legal & Management Costs	0-2	192,000	320,250	495,000	387,000	192,000	192,000	300,000
Total Regional Services Branch Costs	11.5	197,620	1,187,320	2,224,500	2,198,500	2,198,500	2,198,500	2,198,500
Total Research Costs	6	0	34,800	1,055,000	1,055,000	1,055,000	1,055,000	1,055,000
Grand total costs	**16-18**	**389,620**	**1,542,370**	**3,774,500**	**3,640,500**	**3,445,500**	**3,445,500**	**3,553,500**
Current Costs (Management, Regional Services & Research	39	8,798,828						

Table 6 – Extra cost per unit

Cost area	**Yr -2**	**Yr -1**	**Yr 1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**
Extra cost per unit from Quota Management System	**$5.64**	**$22.34**	**$54.67**	**$52.73**	**$49.91**	**$49.91**	**$51.47**

Table 7 – Comparative costs with other fisheries

	Base Fee	Per Unit Fee	Per Kg Fee	Industry per Kg fee	Total per Kg fee
South Australian Northern Rock Lobster	$2,678	$14.98			$2.14
South Australian Southern Rock Lobster	$4,349	$145.62			$1.33
Tasmanian Rock Lobster Fishery (not fully cost recovered)		$190	$1.31		$1.31
New Zealand Packhorse Rock Lobster			$0.93	0.07	$1.00
New Zealand Red Rock Lobster CRA1			$0.96	0.26	$1.22
CRA2			$0.81	0.36	$1.17
CRA3			$1.20	0.23	$1.43
CRA4			$0.84	0.22	$1.06
CRA5			$0.84	0.31	$1.15
CRA6			$0.48	0.27	$0.75
CRA7			$0.60	0.29	$0.89
CRA8			$0.96	0.49	$1.45
CRA9			$0.96	0.16	$1.12
WA Rock Lobster Fishery under current system*		$147			$1.02
Cost per unit in Western Australia Y1		$202			$1.39
Cost per unit in Western Australia Y2		$200			$1.38
Cost per unit in Western Australia Y3		$197			$1.36
Cost per unit in Western Australia Y4		$197			$1.36
Cost per unit in Western Australia Y5		$198			$1.37

* Based on average seasonal catches of 10,000 tonnes

8. Industry Future under Quota Management System

“Throughout the world of fisheries management, there are a number of assumptions made about quota management systems. Most common are that under a QMS the fleet size falls, the ownership of commercial fishing access rights would concentrate and there will be vertical integration through the catching and processing sectors. These assumed effects are made because the economic theory is that there are strong incentives for fishing fleets to restructure in order to become more efficient and focus on maximising the value of their catch as opposed to investing inputs to maximise their catch.” (Fisheries Management Paper No. 209, “An overview of Bio-Economic, sociological and Comparative Analyses, Vol 1, January 2006).

The Western Rock Lobster Council's discussion paper looked at this process and found that initially there would be significant trading in quotas, as people set their allowable catch at a level consistent with their existing structure and style of operation.

The paper states that almost certainly there would be departures from the industry of people who were unable or unwilling to operate under the new system particularly if they had to acquire more quota, or make other adjustments to their business to stay in the fishery. This rapid adjustment may also result in further cost to the industry through the disposal of surplus vessels and depreciated prices for those assets. This would be a stressful and difficult time for many in the industry and would test the quality of relationships between all parties. Under the present system, this departure is also expected to take place.

“The process of adjustment will be painful for most and may lead to forced exits from the industry for others. In the event of a move to quotas, it will be important for all businesses to consider their risk management strategies when making the adjustments. Further managing the social costs and difficulties in fishing communities will be a Government role.”

After this initial period of change, the trading in quota declines and the industry would continue to move to a lower level of boats, but at a slower rate. Further input controls could be removed to allow fishers to exploit more flexibility in catching their quotas. In this adjustment period, it is likely the industry will use this flexibility to explore cost-minimisation moves, resulting in optimum use of capital resources to catch the quota.

Finally, in the equilibrium phase, the industry would stabilise. With on-going trading in quotas as required and cost-minimisation, it is likely these businesses would be structurally sound.

This expected transition is shown in the timeline below :

Implementation period ***1 - 2 years***

- Allocation of quota (1 unit = X kgs)
- Zone based quota setting rules established
- Pot controls maintained
- Removal of some input controls

Transition period ***3-5 years***

- Trading forced by allocation formula (buying & selling quota to match catch volume with business structure/revenue)
- Rapid fleet reduction and some devaluation of vessel values.

Adjustment period ***5-10 years***

- Continued trading & fleet size reduction
- Individual investment in quota increases individual catch
- Revision system to remove redundant input controls and improve quota setting rules
- Industry focus begins to shift to profit maximisation strategies.

Equilibrium period ***10-15 years***

- Net benefits across the fleet materialise increasingly
- Operators who stay can choose to invest in more quota or restructure to minimise cost
- Fleet reduced.

Fisheries Management Paper No. 209 “Assessment of Western Rock Lobster Strategic Management Options – An Overview of Bio-economic, sociological and Comparative Analyses Vol 1”, January 2006 makes the point that business choices made by individual fishers about when they fish, where they fish and how they fish may be a trade-off against lifestyle preferences that are about lifestyle optimisation, particularly where family-run businesses are generally involved. It notes that such trade-offs can result in the net monetary benefits being different to modelling results and outcomes and may see more boats remaining in the fleet.

9. Government Objectives

9.1 Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) is the concept that seeks to integrate short and long term economic, social and environmental effects in all decision-making. The Western Australian Government is committed to the concepts of ESD and these principles are implicitly contained in the objectives

of the Fisheries Resources Management Act 1994. More recently, the then Minister for Fisheries released a “Policy for the Implementation of Ecologically Sustainable Development for Fisheries and Aquaculture within Western Australia” (Fletcher 2002) to articulate, in a practical manner, how the Department of Fisheries can demonstrate to both the government and the broader community that these requirements are being achieved.

Under the Australian Government’s environmental legislation (administered by the Department of Environment and Heritage), all export fisheries are required to have an assessment on their environmental sustainability. The West Coast Rock Lobster Fishery has undergone a rigorous ESD assessment and was the first fishery in the world to achieve Marine Stewardship Council accreditation.

A QMS satisfies the ESD objective through the setting of a TAC and TACC and by ensuring that appropriate biological controls remain in place to maintain the breeding stock.

9.2 National Competition Policy

National Competition Policy (NCP) primarily focuses on anti-competitive restrictions in fishery management plans and associated regulations.

The establishment of well defined, divisible, secure and transferable fishing entitlements (such as those within a QMS) are the preferred management model under NCP.

9.3 Objectives of the Fish Resources Management Act 1994

The objects of the *Fish Resources Management Act 1994 (FMRA)* are ‘to conserve, develop and share the fish resources of the State for the benefit of present and future generations’.

In particular, the *FRMA* has the following objectives:

(a) to conserve fish and to protect their environment;

(b) to ensure that the exploitation of fish resources is carried out in a sustainable manner;

(c) to enable the management of fishing, aquaculture and associated industries, aquatic eco-tourism and other tourism reliant on fishing;

(d) to foster the development of commercial and recreational fishing and aquaculture including the establishment and management of aquaculture facilities for community or commercial purposes;

(e) to achieve the optimum economic, social and other benefits from the use of fish resources;

(f) to enable the allocation of fish resources between users of those resources;

(g) to provide for the control of foreign interests in fishing, aquaculture and associated industries; and

(h) to enable the management of fish habitat protection areas and the Abrolhos Islands reserve.

All of these objectives are met under the current input control system and can also be met under a QMS for the West Coast Rock Lobster Fishery.

A QMS would also be in line with the Department's strategic objectives, especially Strategic Objective 2, which is "To achieve an optimum balance between ecological, economic and social considerations in aquatic ecosystems management decisions."

A QMS fits with the strategies to achieve this objective, which are to :

- Develop social and economic policies to guide the development of fisheries plans and performance measures;
- Develop procedure for the Department to evaluate ecological, economic and social considerations in its decision making;
- Review and implement consultative processes to incorporate social and economic considerations;
- Enhance social and economic capacity and resources of the Department for aquatic management; and
- Facilitate an enabling environment for industry growth that is sustainable and internationally competitive.

10. Industry consultation

The RLIAC is of the view that all MFL holders in the West Coast Rock Lobster Fishery should be consulted on the management settings that the RLIAC has put forward.

Recommendation 47

That all MFL holders in the West Coast Rock Lobster Managed Fishery should be consulted on the management settings that have been proposed in this paper.

11. Timeline for implementation

A Gantt chart is shown at Appendix 8 gives indicative timelines for the implementation of a QMS. The Fishery has around $1 to $1.5 billion in goodwill attached to it and the RLIAC is conscious of the necessity to retain this asset value for the benefit of authorisation holders and the State.

It is imperative that if a QMS is introduced, it is implemented with due care and diligence in order to provide continued protection of an extremely valuable community resource.

The timelines provided in the Gantt chart indicate that, if there are no legal

challenges, the minimum timeframe for a QMS to be introduced is two years. This timeframe includes community consultation, the development of detailed drafting instructions, legal drafting, recruitment and training of staff, development of VMS and quota management database, etc.

The RLIAC recognises that some licence holders may require time prior to the introduction of a QMS to re-arrange their business affairs. It also recognises that many licence holders in the fishery are currently experiencing financial difficulty and is of the view that should approval be given for the introduction of a QMS, that it should be implemented as quickly as possible. If the Department of Fisheries officers are able to progress the implementation within a faster timeframe they should do so.

Recommendation 48

That it should be noted that the minimum timeframe for the implementation of a quota management system in the West Coast Rock Lobster Managed Fishery would be two years from when a decision is made to adopt a QMS.

12. Conclusion

Over time, and especially in 2005/06, the issue of quota management in the West Coast Rock Lobster Fishery has been substantially canvassed. This paper provides the views of the RLIAC about what a QMS should look like, should such a system be introduced into the Fishery.

Glossary

Term or abbreviation	Meaning
Breeding stock	Rock lobsters that are sexually mature
FBL	Fishing boat licence
Input controls	Fishing effort controls based on what is put into the fishery, such as gear controls.
ITE	Individual transferable effort. An ITE is a unit of fishing effort (eg. a rock lobster pot) that can be transferred between licence holders in the same zone.
ITQ	Individual transferable quota. Each licence holder's individual share of the total allowable commercial catch (TACC).
MFL	Managed fishery licence
Output controls	Fishing controls based on the amount that is caught.
Pots	Rock lobster pots (used for catching lobster)
'Pure' quota system	A quota management system with no or very few input controls.
QMS	Quota management system. A fishing system whereby units have a value, eg. in kilograms of lobster that can be taken. The sum of unit values equates to the total allowable commercial catch (TACC).
Quota with input controls	A fishing system whereby units have a value, for example, in kilograms of lobster that can be taken. The sum of unit values equates to TACC. Biological and other controls, such as pot numbers, are used in this system to ensure that breeding stock is not selectively targeted.
'Reds'	Adult and non-migrating lobsters are known as 'reds' and form the catch between February and 30 June.
Setose	A female lobster with distinct hairs on their swimmerets under the tails indicating breeding condition.
Total Allowable Catch	The total catch permitted to be caught in the fishery by all sectors.
Total Allowable Commercial Catch	The total commercial catch permitted to be caught in the fishery.
Tarspot	A lobster carrying sperm packets.
Units	A unit of fishing entitlement that is transferable eg. kilograms and/or pots
'Whites'	Large numbers of pale-coloured, recently-moulted juveniles that migrate from inshore reefs to the deeper reefs offshore between November and January.

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APPENDIX 1
COMPARISONS BETWEEN PRESENT, PROPOSED AND POSSIBLE FUTURE MANAGEMENT ARRANGEMENTS

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
Spatial (boundaries)	Cape Leeuwin to NW Cape Four Fishing Zones (A, B, C And Big Bank)	**No change** **Three Zones (A, B and C)** **Remove Big Bank (see below)**	Boundaries of fishery Known and historical boundaries. • No reliable method of predicting catches in Big Bank and therefore setting a TACC. • Simplifies the Management system. • Minimisation of compliance and administration costs. • May be some sustainability benefits.	
	20 Fathom line	**Remove 20 Fathom line**	• Simplifies management system. Not required as catch is being managed by ITQ. • Enforcement difficulties • Creates inequities because restricts small boats. • Can increase exploitation in Zone B deeper waters. • Effectiveness limited under	

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
			QMS, which would manage equity issues	
Temporal (Seasons)	15 November – 30 June (Zone B) 25 November – 30 June (Zone C) 15 March – 30 June (Zone A) Zone A authorisation holders are entitled to fish in Zone B up until and including 14 March. Closure 15 Jan – 9 Feb (Zone B) Big Bank 10 February – last day of February Zone C moon closures Zone B & C Sunday closures Zone A Sunday closures after 1st month	**15 November – 31 August (Zone B)** **15 November – 31 August (Zone C)** **15 March – 31 August (Zone A)** **No change** **No January closure in Zone B** **No Big Bank** **No moon closures** **No Sunday closures**	• Increases flexibility. • Extending season provides the potential to fish when prices are higher. • Sustainability managed through QMS. • Allows fishers to make business decisions about when they can fish to achieve greater profits. • Number of options for start of season canvassed, and RLIAC believes these should be reviewed over time. Sustainability managed through QMS. Allows fishers to make business decisions about when they can fish to achieve greater profits. Sustainability managed through QMS. Allows fishers to make business decisions about when they can fish to achieve greater profits.	Further seasonal opening and closing dates may evolve over time, including start of season on 15 March or February or some other time for all zones. Closures reviewed over time.

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
		No change	These closures retained for social reasons.	
	Christmas, New Year and Good Friday Closures (Zones B & C)	**No change**	Retained for social reasons.	
	Christmas, New Year closures (Zone A)			
Access	Transferable zone specific WRL Managed Fishery Licence (MFL) attached to a Fishing Boat Licence (FBL)	**No change**	Any changes would require amendments to the *Fish Resources Management Act, 1994,* (FRMA).	Within 5 yrs a registry should be established to allow the holding of fully transferable units without holding a FBL.
	One WRL MFL per FBL	**No change**	Required for compliance & prosecution reasons.	To be reviewed over time
	Right of renewal	**No change**	A requirement of the FRMA.	To be reviewed over time
	Minimum unit entitlement (63) pots is required to operate	**Agree in principle, but should be reviewed.**	• May lower monitoring costs. • Unclear as to what the minimum should be, if it was lowered.	Minimum and maximum number of pots to be reviewed over time.
	No maximum unit of entitlement	**No change**	Sustainability managed through QMS. Allows fishers to make business decisions about how many units to hold to achieve greater profits.	To be reviewed over time.

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
Effort	Individually Transferable Unit Entitlements (69,282 units)	**No change. Individually transferable Western Rock Lobster Fishery Units (69,282 units**)	Capacity of the fishery, as expressed in units.	
	Variable individual maximum Gear Usage (around 56,800 pots that can be operated)	**No change. Maximum number of pots operated from a boat retained at no more than 82 per cent of the number of units held.**	• A known and accepted system controlling fishing effort. • A significant increase in pot usage may exacerbate the peaks in supply. • May be an impact on the habitat, such as corals and benthic communities if pot usage increases. • Removal of pot limits increases the potential for congestion on fishing grounds from increased pot usage. • Potential for bigger unit holders to inhibit smaller unit holders access to inshore fishing grounds.	Pot design freedom, if approved by Research.
	Pot size & volume, restricted and escape gaps remain the same.	**No change in pot size & volume, or escape gaps.**	May be amended as soon as acceptable designs are approved by Research.	
	Pot setting & retrievals restricted to one/day.	**Multiple pot setting & retrievals permitted**.	Sustainability managed through QMS. Allows fishers to make	

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
			business decisions about pot retrievals to achieve greater profits.	
	Pot soaking and baiting dates and times	**Baited pots may be placed in the waters of Zone C after 5.30 am on 14 November and must be removed by 7.30 pm on 31 August.** **Baited pots may be placed in the waters of Zone B after 5.30 am on 14 November and must be removed from the water by 7.30 pm on 31 August.** **Baited pots may be placed in the waters of Zone A after 5.30 am on 14 March and removed by 7.30 pm on 31 August.**	• No 'race to fish' under QMS. • Increased compliance costs for little economic benefit.	
Biological	***Minimum size*** 77 mm carapace (15 Nov-31 Jan) 76 mm carapace (1 Feb-30 Jun)	**76 mm carapace minimum size from 15 November to 31 August.**	Sustainability managed through QMS. Allows fishers to make business decisions about what size to take to achieve greater profits.	

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
	Maximum size for female 115 mm carapace south of 30°South 105 mm carapace north of 30°South Taking setose & tar spot prohibited Return of undersize & setose to the water within 5 minutes.	**No change** **No change** **No change, but damaged and sick animals that will not be counted as part of quota must also be returned to water within 5 minutes.**	Biological reasons to retain breeding stocks. • Biological reasons to retain breeding stocks. • Sustainability managed through QMS. Allows fishers to make business decisions about what fish to retain to achieve greater profits.	Taking of setose to be reviewed.
Total Allowable Commercial Catch (TACC)	Not applicable	**Conservatively set variable TACC based on predicted (puerulus) sustainable catch levels for each zone.** **TACC for each zone of the fishery will be announced by 30 March each year for the following season, together with an indicative TACC for the following two seasons.** **Zone A authorisation will**	Indicative TACC set at between 5% to 15% below predicted catch, but subject to advice from an expert committee. Allows for business decisions to be made. • Allows operators to continue	Quotas for 'Whites' and 'Reds'

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
		have a fully transferable catch quota in Zone B that can be fished until and including 14 March. **A Zone fishers holding B units can complete last pull in B zone on 14 March, and any catch taken on 14th March is considered B Zone catch.** **A Zone fishers can bait their pots in Zone A on 14 March, but cannot pull them until 15 March.** **Zone B licence holders will have a fully transferable catch quota in Zone B that can be fished until and including 31 August.** **Individual Transferable Catch Quotas (units) by zone, and time endorsed on individual MFLs.** **The weight of the catch as**	with historical fishing patterns • Gives Zone A fishers opportunity to transfer catch if they do not take it in Zone B. • Allows most business flexibility for Zone A & B fishers. Most effective and efficient weight	

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
		weighed in at the licensed processor will be the weight that will be used for quota purposes. **Catch for personal consumption must be weighed in at the licensed processor prior to consumption, or may be self-weighed on board vessel (onus will be on fisher to determine the weight is correct).**	for management purposes. Allows for flexibility in how lobsters taken for personal consumption are weighed.	
Vessel Monitoring System	Not applicable	**VMS will be operational and an integral part of the quota management system.**	• Allows for closures to be monitored more easily. • Can program inspections & investigations more efficiently. • Used for transmitting quota reports by fishers	
Transferability	Individual unit entitlements are not transferable between Zones B & C but are transferable within these two zones Individual unit entitlements	**That individual unit entitlements are not transferable between Zones, but are transferable within Zones A, B and C. Only whole units may be transferred.** **No Change. Only whole**	• Cross-zone fishing difficult to manage from a compliance perspective. • Administrative costs would escalate if part-units were transferable. • Cross-zone fishing difficult to	Individual catch quota to be fully transferable within zones and within seasons.

Controls	Current	Proposed Quota Management System (First 1 – 3 years)	Reasons for RLIAC Decision	Long Term Quota Management System (4 – 10 years)
	are transferable between Zones A & B. Current policy requires that there must be a 100% swap in each direction.	**units may be transferred.**	manage from a compliance perspective. • Administrative costs would escalate if part-units were transferable.	
	Boat breakdown policy	**No Change, adopt policy currently being reviewed by RLIAC**.	Should be based on commonsense.	
Cost Recovery	The Department of Fisheries management costs recovered according to cost attribution and recovery rules	**No change**	Based on Government policy.	Cole/House agreement now under review
	Payment of fees by instalments	**No change**	Allows for business flexibility.	
Processing	Licensed processing establishments	**No change**	Necessary for compliance reasons.	
	Licensing of lobster processing for domestic and export market is not restricted.	**No change**	Allows for business flexibility.	
	Licensing of lobster processing for export is restricted.	**No restrictions on export processing licence numbers.**	Allows for business flexibility.	

APPENDIX 2

Total Allowable Commercial Catch (TACC) Models

Recommendations

Zone C

TACC set for the period 15 November to 31 August

Zone A

TACC set for the period 15 March to 31 August

Zone B

TACC set for the period 15 March to 31 August

Assumptions

Six assumptions that underpin the discussion below on TACC models are:

1. The allocation will be kgs per unit by Zone.
2. Limits will remain on the number of pots that can be used.
3. The current zonal boundaries will remain in place.
4. Fishing can occur over the period from the 15 November to the 31 August.
5. There will be no carry over of quota from one period to another.
6. There will be no transfer of quota from one zone to another.

Zone C TACC Models

Three TACC setting models summarised in the Table 1 are discussed for Zone C.

Model	Season Start	TACC
1	15 Nov	15 Nov-31 Aug
2	15 Nov	15 Nov- 31 Jan
		1 Feb – 31 Aug
3	1 Feb	1 Feb – 31 Jan

Model 1

Under this model MFL holders would be allocated an ITQ for the whole season based on the TACC divided by the total number of Zone C units. Operators could commence fishing on the 15 November and subject to any closure periods have until the 31 August to take their allocation.

Model 2

Under this model MFL holders would be allocated two ITQs one for the period from the 15 November to the 31 January and one for the period from 1 February to the 31 August. The allocations, in the first instance would be based on the historical catch proportion that was taken during those two periods. The allocations could either be implemented by creating two types of units for Zone C, a "whites" unit and a "reds" unit or limiting the usage of units over a period of time.[5]

Model 3

The allocation under this model would be similar to that in model one except that fishing would commence on the 1 February each year. Essentially, there would be a split season with a two and a half month closure over the period 1 September to the 15 November.

To implement Model 3 there would be a need to ensure that the new plan commences on the 1 February.

Discussion

All three models are likely to have the same total TACC over a 12 month period, but vary in terms of limiting the periods when the catch can be taken. Model 1 has the most flexibility in allowing a fisher to determine when they

[5] For example, if a MFL holder could use no more than 50% of their units in the "whites", a person with 100 units @ 100kgs/unit could take a maximum of 5 tonne in the "whites". Under this model it could be possible to carry over any uncaught quota to the "reds", but this would be subject to advice on the impacts if any on sustainability.

can take their catch, but it has the disadvantage that it may increase production during the “whites”, when prices are generally lower. Model 1 also has the advantage that it is an uninterrupted fishing period.

Models 2 and 3 are options for limiting production when prices are lower in the “whites”. Model 2 achieves this by limiting the total amount that can be caught in the “whites” by effectively creating two TACCs. Model 3 achieves it in a different way by creating the opportunity to take most of the catch in the “reds” before the “whites” run commences, however it has an interrupted fishing period. Starting the season in C Zone on the 1 February will have to be considered in the context of how this arrangement would operate in the northern region. The TACC models for Zones A and B are discussed below.

With pot limits in place there is less of a need to control when the catch is taken because pot limits will constrain the capacity of fishers to increase fishing effort in the “whites”.

Conclusion

In comparing the three Zone C models it essentially becomes an assessment between the benefits of taking the catch when costs are lowest, and the benefits that might arise from increasing supply when prices have historically been higher. As Model 1 is likely to be the simplest in terms of one allocation for the season, provides the opportunity to take the catch at the most economical time and provides for a continuous fishing period, it is the preferred TACC model for Zone C.

Zones A and B TACC Models

The relative advantages and disadvantages of four allocation models for quota between Zone A and B MFL holders are discussed in this background paper.

Model	Zone B MFL Holders Access	Zone A MFL Holders Access
1	Zone B: 15 Nov - 14 Mar	Zone B: 15 Nov – 14 Mar
	Zone B: 15 Mar – 31 Aug	Zone A: 15 Mar – 31 Aug
2	Zone B: 15 Nov – 31 Aug	Zone B: 15 Nov – 31 Aug
		Zone A: 15 Mar – 31 Aug
3[6]	Zone B: 15 Nov – 31 Aug	Zone B: 15 Nov – 14 Mar
		Zone A: 15 Mar – 31 Aug
4	Zone B: 1 Mar – end Feb	Zone B: 1 Mar – end Feb
		Zone A: 1 Mar – 31 Aug

Model 1
Under this allocation model two TACCs would be set for Zone B. One for the period from the start of the season until the 15 March, and the other from 15 March to the end of the season. The TACC would be set on the historical catch proportions taken between the periods. The average catch taken up to the 15 March in Zone B, over the last ten years, has been 63.4% of the total Zone B catch. The ITQ for Zone A and Zone B MFL holders for the first period would be the TACC divided by the number of Zone A and B units.

The ITQ for the second period would be for Zone B MFL holders only and be the TACC for the period 15 March to 31 August divided by the number of Zone B units.

In practice in order to implement this type of model new classes of units would need to be created. A unit entitlement for taking catch in Zone B over the period 15 November to 14 March (33,544 units = 18,638 allocated to Zone A unit holders and 14,906 allocated to Zone B unit holders) and another for taking catch in Zone B over the period 15 March to 31 August (14,906 units).

Model 2
Under this allocation model there would be only one TACC set for Zone B. The ITQ for Zone A MFL holders would be the same as for Model 1, but for Zone B MFL holders the allocation in the two different periods would be combined. Zone A and B MFL holders would not be restricted to a time period when they could take their ITQ.

[6] An explanation of the allocation of zone B units to Zone A MFL holders is provided in at the end of this section

Model 3[6]

Implementation of Model 3 would require Zone A MFL holders to receive an allocation of B Zone units that is equivalent to their historical catch proportion. The allocation of Zone B units would be on a pro-rata basis according to the number of zone A units held on the licence. However, Zone A MFL holders would only be able to utilise their B zone unit entitlement up to the 15 March, whereas Zone B MFL holders could take their ITQ at any time throughout the season.

Model 4

Model 4 is a variation to model 2 except that the season starts on the 1 March. Under this arrangement both Zone A and B MFL holders would be able to fish in Zone B over the period 1 March to the end of August. Zone A MFL holders would receive an allocation based on the historical proportional of the catch taken by Zone A MFL holders in Zone B.

Discussion

Model 1 essentially maintains the status quo in terms of the historical catch proportions taken and the rights of access of Zone A MFL holders to Zone B. There may be a change if there was a rush to fish in the "whites" but this would be less likely with the limit on pots maintained. Any uncaught quota by either Zone A or B MFL holders in the first part of the season would remain uncaught during that season. Zone A MFL holders could not return to Zone B after Zone A season opened.

Model 2 changes the status quo so that Zone A MFL holders would have access to Zone B through out the season and they could return to fish in Zone B when Zone A is open. This provides greater flexibility about when and where a person can take their quota and trading of quota. If there was a rush to fish by holders of Zone B ITQs more catch could be taken in the first part of the season. However, if pot limits remain there would be less potential for this to occur. It may in fact redistribute fishing effort to the later part of the season. A disadvantage of this option is that more animals may move from Zone B to Zone A if there was lower exploitation in early part of the season and there could be a consequential reduction in the TACC for Zone B. A detailed stock assessment would need to be undertaken to investigate this matter.

Model 3 maintains the status quo in terms of access for Zone A or B MFL holders to Zone B. Under this model Zone A MFL holders could not return to Zone B to take any uncaught quota in Zone B, but they could transfer their uncaught quota to B Zone MFL holders. As in Model 2, if exploitation was lower in the first part of the season there may be a greater movement of animals to Zone A.

Model 2 is the simplest and most flexible arrangement, and therefore in principle is likely to yield the most benefits. Although it changes current access arrangements it does not change equity in terms of catch sharing

[6] An explanation of the allocation of zone B units to Zone A MFL holders is provided in at the end of this section

between Zone A and B MFL holders. The potential to increase the catch proportion taken in Zone B in the early part of the season would be restricted if pot limits remain in place. If pot limits were removed it may be necessary to restrict the amount taken in the early part of the season. With pot limits remaining in place there could be the incentive to shift fishing effort to the later part of the season.

Model 1 is more complicated than Model 2 and reduces the flexibility to change when the catch is taken according to price movements. There may in fact be more pressure for MFL holders to fish at less efficient times to ensure that they take their quota before 15 March.

Model 3 maintains historical access and catch shares between Zone A and B holders. However, it provides for greater choice over when Zone B holders can take their catch and allows Zone A licence holders more business flexibility in that they can sell any uncaught quota to Zone B holders to take after 15 March. Zone B holders could bring their catch forward or take their quota later in the year when prices are higher. With pot limits in place, Zone B MFL holders would be limited in bringing their catch forward, thus avoiding huge peaks in supply.

A disadvantage with Model 1 is that it may increase the supply peak in March with both Zone A and Zone B quota periods opening on the same date. Extending the Zone B first quota period to the end of March has scope to reduce the potential for this to occur. Under this scenario there would be an overlap in seasons with the Zone A opening on the 15 March. In practice Zone A MFL holders could fish in both Zones B over a two week period from the 15 to 30 March.

Aligning the Zone B opening date with the proposed Zone C opening date would be problematical if Zone A retains an opening date of 15 March as there is a very short period (6 weeks) for Zone A MFL holders to fish in Zone B. This would complicate the quota setting process, create a rush to fish and create another peak in supply around the opening date. Model 4 includes the option of opening Zones B and A on 1 March and would avoid some of the peak supply problem, but not completely as there is still the likelihood of a high level of fishing activity when stocks are most abundant.

The allocation of 8,097 Zone B units to A Zone licensees is based on the proportion of the Zone B catch taken by A Zone licensees. At present, this catch is taken using up to the number of pots that can be fished in Zone A. If either a 0.82:1 or 1:1 quota unit to pot usage ratio is implemented, then the A Zone licensees would be permitted to fish with far fewer pots to achieve the same proportion of the catch.

Zone A licence holders should therefore be permitted to use their full Zone A pot entitlement when fishing their Zone B units, which continues their historical fishing practice. Where an A Zone licensee transfers Zone B units to a dedicated Zone B operator, the 0.82:1 ratio should apply.

ASSESSMENT OF QUOTA MODELS FOR ZONES A & B

Key assumptions

1. No carry over of quotas
2. No conversion of a class of units to another class.

Model	Access	Sustainability /TACC	Economic flexibility
1	Changes for B MFLs Restricted to 2 seasons	Maintains historical exploitation patterns Removal of 77mm = ↑ TACC B ↓ TACC A	Low No transfer of "whites" to "reds" "Whites" TACC "Use it or lose it "
2	Changes for A MFLs Longer access to B Zone	Could change historical fishing patterns. Decreased exploitation in "whites" ↑ movement of animals to A Zone = ↑ TACC A ↑ mortality in "whites" = ↓ TACC B. Increased exploitation in "reds" = ↓ TACC B Removal of 77mm = ↑ TACC B	High Maximises opportunity to trade units and take more of the catch at the time that maximises profitability.
3	No Change	Same as Model 2 except that the affect on the TACC would be less as there is essentially a notional TACC for the "whites" for Zone A MFL holders.	Medium Increased flexibility for Zone B MFLs, can transfer "whites" to "reds". Zone A MFLs no change to access, would need to utilise their Zone B allocation in the "whites" but can transfer unutilised B units to A Zone B MFL holder after the 15 March.
4	Changes for A MFLs	Same as Model 2	High Maximises opportunity to trade units and take the more of the catch at the time that maximise profitability.

Conclusion

In comparing the four Zone A and B models it becomes an assessment of which model provides the greatest flexibility as to when the catch is taken. Although the assessment is complicated because of historical fishing patterns and Zone A MFL holders' catches in Zone B.

Model 3 maintains the current access of holders of A Zone MFLs to B Zone but does not penalise A Zone holders if they do not take their B Zone unit allocation before the A Zone season commences. This is because they can transfer unutilised B units to B Zone MFL holders. As Model 3 retains the access arrangements, but provides flexibility to transfer B units between A and B Zone MFLs it is the preferred model.

Explanation of allocation of B units to Zone A MFL holders.

Zone A units would be allocated to Zone B MFL holders on the basis of the 10 year historical proportion of the B Zone catch taken in the period 15 November to 14 March, and the ratio of the number of Zone A units compared to Zone B units. The method used to estimate the allocation of B units to holders of A Zone licensees is explained below using the following information.

The 10 year historical catch proportion = 63.4%

B Units = 14,906

A Units = 18,638

Total A + B Units = 33,544

A Zone proportion of the B Zone Catch is equal to the A units divided by the Total of A and B units multiplied by the proportion of the B Zone catch taken in the period 15 Nov – 14 March. I.e.

A Zone proportion of B Zone catch = 0.634(18,638/33,544) = 0.352

Therefore the total number of new B units allocated to A Zone MFL holders as a proportion of the total B units is 35.2% ie

New B Units/(New B units + 14,906 B units) = 35.2% or

New B Units = 0.352(14,906)/(1-0.352) therefore

New B Units= 8,097

The new B units would be allocated to A Zone MFL holders on a pro-rata basis. For example a holder of 120 A Zone units would be allocated 52 B Zone units e.g.

(120/18,638) 8,097 = 52 B Zone units

This may result in some Zone A licence holders holding less than 63 units in Zone B, even though they hold the minimum unit holding (63 units) in Zone A. These operators should be permitted to fish in Zone B as they have historically done. Therefore, to operate in Zone B, operators should hold at a minimum of 63 units in either Zone A or Zone B.

APPENDIX 3

Table 1

INDICATIVE TACCs and ITQs

TACCs **5% Below Prediction** **77mm gauge removed**

	Units		
MFL	**Zone A**	**Zone B**	**Zone C**
A	**18,638**	**8,097**	
B		**14,906**	
C			**35,634**
Total	**18,638**	**23,003**	**35,634**

Zone C

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC (tonnes)	ITQ (kgs/unit)
08/09	3250	3088	87
09/10	3150	2993	84
10/11	3000	2850	80

Zone B

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (kgs/unit)
08/09	2350	2383	104
09/10	2150	2193	95
10/11	2050	2098	91

Zone A

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (kgs/unit)
08/09	1850	1608	86
09/10	1900	1655	89
10/11	1800	1560	84

TACCs for Zone B are based on average historical catch proportions, with an estimated 63.4% of the catch being taken over the period 15Nov-14Mar over the last 10 years.

*The removal of the 77mm gauge has been taken into account by decreasing the Zone A TACC by 150t and adding 150t to the Zone B TACC .

Table 2
INDICATIVE TACCs and ITQs

TACCs **15% Below Prediction** **77mm guage removed**

	Units		
MFL	**Zone A**	**Zone B**	**Zone C**
A	**18,638**	**8,097**	
B		**14,906**	
C			**35,634**
Total	**18,638**	**23,003**	**35,634**

Zone C

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (kgs/unit)
08/09	3250	2763	78
09/10	3150	2678	75
10/11	3000	2550	72

Zone B

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (kgs/unit)
08/09	2350	2148	93
09/10	2150	1978	86
10/11	2050	1893	82

Zone A

	Predicted Catch 15 Nov-30 Jun (tonnes)	TACC* (tonnes)	ITQ (kgs/unit)
08/09	1850	1423	76
09/10	1900	1465	79
10/11	1800	1380	74

TACCs for Zone B are based on average historical catch proportions, with an estimated 63.4% of the catch being taken over the period 15Nov-14Mar over the last 10 years.
*The removal of the 77mm gauge has been taken into account by decreasing the Zone A TACC by 150t and adding 150t to the Zone B TACC

Appendix 4

Legal Framework and Procedures Required for ITQs

This appendix utilises the model (with some changes) produced in Fisheries Management Paper No. 209 "Assessment of Western Rock Lobster Strategic Management Options - An overview of Bio-economic, Sociological and Comparative Analyses", Vol 1, January 2006

If it were decided that the fishery was to move to an ITQ system this is what the legal framework and process will look like.

Legal framework

A legal framework will be established to allocate quota in the first instance and to set quota on an ongoing basis. The main aspects could include:

1. the initial quota allocation and the annual quota setting procedure would be in the Management Plan;
2. the RLIAC would recommend quota levels to the Minister;
3. a Technical Advisory Group for quota allocation, which would calculate quota levels based on a clear set of sustainability principles and timing milestones that must be adhered to. This committee would be comprised of scientific experts and Fisheries. They would advise and make recommendations to the RLIAC;
4. a new management plan under the FRMA to clearly set out the rules of the quota management system, including transfers of quota (buying, selling and leasing);
5. new regulations and penalties for quota enforcement; and
6. development of new systems or modification of the current legal, licensing, quota registrations and enforcement systems (e.g. paper trail audits of fishers and processors).

Quota setting procedure

The quota setting process for the West Coast Rock Lobster Fishery is described below. Quotas would always be set at ecologically sustainable levels, taking into account the recreational fishing catch.

1. For each zone (A, B and C) the biological information on puerulus settlement, catch predictions, rock lobster stock status (size and sex frequencies, abundances, etc), breeding stock levels and ecological issues would be compiled, modelled, analysed and documented by research scientists.
2. The Technical Advisory Group (comprising scientific experts and fisheries managers) would use a set of clear business rules to review and assess the biological information and calculate the level of quota that it believed should be set for each zone (A, B and C). The

Technical Advisory Group would then make a recommendation to the RLIAC.

3 The RLIAC would assess the Technical Advisory Group's recommendation and supporting documentation. It would also take into account any other ecological, economic, market, social or management issues it considered relevant before it made its recommendation on quota levels to the Minister for Fisheries.
4 The Minister for Fisheries would make an announcement on the TACC for each zone for the following season by 31 March each year and would also give an indicative TACC for the following two seasons for each zone.

The Basis of Quota Setting

Conservative quota setting

To account for uncertainty around catch predictions and unforeseen environmental influences, catch quotas are traditionally set below the catch that could potentially be realised in an effort controlled fishery. In the short term (e.g. five years) this could produce slightly lower catches (though not necessarily lower economic returns). However, conservative quota setting can lead to an increase in abundance of the overall lobster population, which could result in:

1 greater catching efficiency, i.e. because of the generally higher abundance of lobsters, they are easier and quicker to catch and hence there can be significant savings on operating costs (e.g. pot numbers, bait, travelling time, etc);
2 higher catches at times of the season when catches are normally low; and
3 greater ecological stability due to a higher density of all sizes of lobsters on the fishing grounds, which would result in less impact overall on the general/rock lobster ecology.

Quota management issues

Commercial catch quota setting for each zone would be done taking into account the following:

1 **Catch predictions**: The catch predictions, which are predictions of recruitment levels to the fishery based on the levels of puerulus settlement that occurred in the previous three to four years, would be used to set the quota for each zone. For example, if the catch prediction for a zone was between 4.5 and 5.0 million kg, then the quota could be set at 4.5 million kg. The lower end of the catch prediction would initially be used to minimise the risk of impacting on the ecological sustainability of the stock, due to the uncertainties inherent in predicting catch, unforseen changes in fishing fleet responses and lobster behaviour due to changing patterns of

exploitation and the natural variations that occur in environmental factors.

2 **Breeding stock**: The level of breeding stock in each zone would be maintained above the level it was in the late 1970s-early 1980s (the current trigger points for management action). Quotas would be adjusted to ensure the breeding stock was maintained above this level.
3 **Harvest rate**: The level of harvest rate in each zone will be controlled. The current decision rule framework is being adjusted to take account the harvest rate as well as the breeding stock.
4 **Ecological sustainability**: The broad requirements of ecologically sustainable development would also be taken into account in quota setting.
5 **Illegal catch**: A reduction in commercial quota allocation would be required to offset any illegal (unreported) catch, due to some fishers cheating on their quota.
6 **Increases in lobster abundance**: If over a number of years, fishery independent research monitoring showed that rock lobster abundances on the fishing grounds had increased and were consistently well above the level required for both sustainability and ecological purposes, then the quota could be increased for a number of seasons to harvest the surplus.
7 **The timing of the start of the season**: There could be a big impact on fishers' behaviour depending on which month the quota season started. For instance, if the season started in February after the whites or in May after the reds, fishers may adopt different fishing strategies to those they currently use. This would be further compounded if there were also significant difference in price/kg for different periods of the season (e.g. lower prices in the whites).

Zone Quotas

A quota would be set for each zone – A, B and C. Quotas could be set in the following way:

1 'A' fishers would have a quota in Zone B that they could catch up until the 14 March. 'A' fishers would then move to Zone A where they would have a quota from 15 March to the end of the season, allocated on the basis of how many units (pots) were held on a licence.
2 'B' fishers would have one quota in Zone B up until 14 March and another quota in Zone B from 15 March to the end of the season, allocated on the basis of how many units were held on a licence. 'A' and 'B' fishers could have their quotas for the period 15 November to 14 March calculated as a proportion of total catch taken in Zone B in the following way:
    - Catch for the period 15 November to 14 March could be averaged over a 10-year period as a percentage of total catch in Zone B (15 November to end 30 June) and this percentage could then be used to split future quotas between these two periods of the season.

- The quota calculated for the period 15 November to 14 March would be allocated to ‘A’ and ‘B’ fishers on the basis of the number of units held on a licence.

3 Zone C fishers could have one quota for the whole season allocated on the basis of how many units were held on a licence.

APPENDIX 5

COMPLIANCE PROGRAM FOR PROPOSED WCRL QUOTA MANAGEMENT SYSTEM

CAVEATS:

- **The system described here is built on a broad qualitative understanding of the concepts and principles of quota management and how it may be implemented in the fishery. Fully developed, accurate costs cannot be determined until management rules have been fully developed and finalised and agreed to by industry and the Minister for Fisheries.**
- Costs are only those relating to new quota-imposed requirements and an extension to the season by two months. They do not include the costs associated with any of the current input controls or any savings from their removal.
- Savings in relation to input controls cannot be determined until management arrangements have been finalised.
- Depending on the level of actual compliance by the various sectors, further controls and resources may be necessary.

ASSUMPTIONS:

- Where possible the quota system will be automated using electronic quota forms to transfer electronic data into a quota monitoring database. This will minimise data entry errors and administration costs by eliminating triplicate paper systems and large numbers of data entry staff.
- The only persons who can receive lobsters from the fishermen are authorised processors.
- The system will not use point-of-landing weighing stations or fisher weighing. For the purpose of determining the quota, the weight provided by authorised processors will be used.
- The lobster season is to be extended an extra two months so that it runs from 15 November to 31 August.
- A fleet-size of 400 lobster boats is assumed from Year 1.
- Prior notification of intention to land catch and the catch details takes place by secure messaging terminals on each fishing boat.
- An audit trail will be established from the point of landing catch through to point of sale to the public.
- If practical, it is intended to incorporate existing basket designs so far as is possible.

THE QUOTA SYSTEM

- A total allowable commercial catch (quota) for each of the existing three zones of the fishery will be broken down into individually transferable quota units of entitlement for each zone and reflected on the Managed Fishery License.
- Industry and Compliance officers will need real time access to the available (residual) quota to be fished through an appropriate Quota

Monitoring System (i.e. Available Quota on an MFL = (Permanent entitlement) + (Transfers to the MFL) – (Transfers from the MFL) – (catch to date against the MFL).

- Each vessel and authorised processor would be required to fit approved hardware to support a VMS quota system.
- Fishers will convey catch information by means of a secure-messaging terminal fitted to each lobster boat and interfaced to a VMS Automatic Location Communicator (ALC) that relays catch disposal record (CDR) information.
- ***The fact that catch weight determination (by authorised processors some time after landing) and quota entitlements (transfers) occur independently of each other, will result in a degree of logistical complexity in a quota monitoring system that may not be immediately apparent from a high-level perspective.***
- A CDR must be completed every time before catch is landed (more detail on the weighing process is provided in later sections).
- Fishers would use standardised baskets (possibly several types) that can be sealed with unique-numbered tags[7].
- It will be an offence to have non-tailclipped rock lobster anywhere in WA except where it is accompanied by the appropriate CDR, or transit manifest or sales receipt.
- Direct sales by fishers will not be allowed under a quota system.
- The quota software will incorporate functionality to deal with vessel breakdowns.
- The system will require a high level of security, both to protect commercial interests, and for compliance integrity to withstand the judicial process if/when required.
- There will need to be 24/7 availability of the core IT systems, with appropriate paper backup/breakdown policies for individual stakeholders.
- It will be illegal to hold tailclipped lobster on any commercial (fish-related) premises.

ESTABLISHING THE AUDIT TRAIL

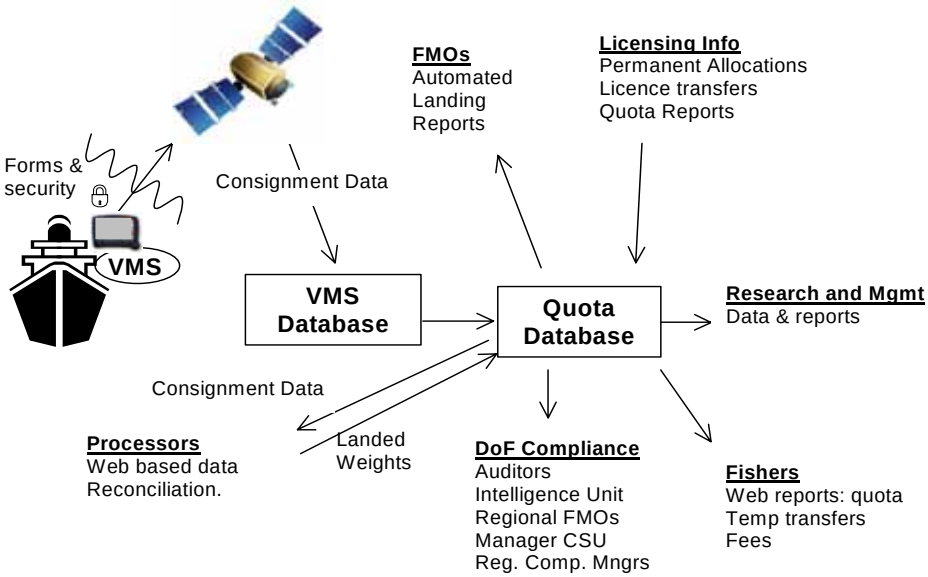
Under a quota management system, the emphasis shifts from the input controls (ie number of pots) to the amount of lobsters that can be taken (quota), Compliance with the quota arrangements is critical for ensuring the fishery remains sustainable. Therefore, it is not only important that the quota be set appropriately, but it is also vitally important there be a system in place to ensure all the catch is accounted for.
[8]

[7] Tags will ideally serve two purposes:
1. They will secure the baskets in a tamperproof manner and 2. They will allow tracking of individual consignments through the supply chain. A variety of tags are available (RFID's, Bar codes, "Kangaroo tags" etc) and some discussion will be required with all parties concerned to identify the most suitable and cost-effective tags. It is noted that there is little point engaging in this level of detail until a decision has been made to move to quota.

For a quota management system to account for all of the catch, it is necessary for there to be a legal requirement on both the people who catch the fish and the people who receive the fish (processors and retailers) to complete certain records and where required submit these to the management authority in a timely manner. These records must account for lobsters from the point of capture to the final place of purchase.

Because quota management is a new concept for many within the rock lobster fishery, the Department of Fisheries Regional Services Branch has developed an outline of what both fishers and processors would be required to do under a VMS quota system. A schematic of the processes is shown in Figure 1:

Figure 1: Schematic showing main data transfer routes, likely stakeholders, and type of information required.



The key steps in the process are as follows (Note circumstances for Abrolhos and Holding Over generally are dealt with later in this document):

1. Prior to landing, the master completes an electronic CDR using the VMS terminal. The details will include: date, relevant master, MFL, landing port, the number of baskets, estimated catch weight, the tag ID numbers used to consign catch, the consignee(s) and the number of lobsters retained for personal consumption.

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2. Automatic submission of CDR data to the QMS database with notification to Departmental compliance staff and processors.

3.(a) Where the catch is delivered directly to an authorised processor by the fisher, the processor is immediately required to weigh the lobsters and enter the details into the QMS database via a web-based interface, identifying: consigner, MFL, and the account for the number of containers, tags and weight of lobster.

(b) Where the catch is delivered to a holding depot or carrier for delivery to an authorised processor, the party receiving the lobsters completes and retains a transport manifest and provides a copy to the fisherman. The transport manifest must accompany the consigned lobsters at all times. On delivery of the lobsters to the authorised processor both parties are to verify and sign off on the transport manifest. Step 3(a) then applies to the authorised processor.

4. Automatic reconciliation of consignment with fishers' CDR and submission of consignment weights from fish receiver to Quota database.
5. Processors, wholesalers and retailers will be required to keep records of purchases and sales of lobsters, which should align with current legislation and normal business practice.

- Appropriate online reporting available across all stages of process to DoF (Compliance, Licensing, Research) and Industry (Fishers, Processors etc.).

Dashed lines (-------), represent quality control/validation stages using additional business rules (automatic and manual – with opportunities for manual follow-up). A comparatively large amount of quality control and validation must be performed on CDR data, to avoid data quality problems masking genuine offences. It is expected that much of this quality control will be automated, a task that complicates the initial build, but reaps efficiency dividends in the mature system.

FISHING AT ABROLHOS

The particular fishing, landing and consignment practices at the Abrolhos require slight modification to the general approach indicated above:

1. An "Abrolhos holding form" will be completed using the VMS terminal each day. This will detail the number of baskets of lobsters caught.

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2. Successive days catches will be submitted as per 1.

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3. An "Abrolhos consignment form" will be used by the master of the vessel to collectively allocate tagged baskets to a carrier boat (or processor/depot/hauling company if landing on the mainland). *Alternatively this step may be paper-based.*

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4. Carrier boat masters must record details of the individual consignments allotted to them (in an similar manner to the transport manifest in 3b of the general scheme above, either by utilising the VMS link provided by the carrier boat's ALC if fitted, or using a paper form). Carrier boat

masters will be required to visually confirm the details of the consignments and electronically "accept" the consignment details prior to departure.

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5. When the catch is offloaded from the carrier boat to a holding depot or carrier for delivery to an authorised processor, the party receiving the lobsters completes and retains a transport manifest and provides a copy to the Master of the carrier boat. The transport manifest must accompany the consigned lobsters at all times. On delivery of the lobsters to the authorised processor both parties are to verify and sign off on the transport manifest. Step 3(a) of the general scheme then applies to the authorised processor.

HOLDING OVERNIGHT (EG ON AN ANCHORAGE)

To minimise the risk of illegal offloading, it will be an offence to offload lobsters to any vessel other than an authorised carrier boat and fishers must notify the Department prior to off-loading catch. Any catch retained on a vessel overnight must be notified to the Department using a "general holding over" form, submitted via the VMS terminal once the day's fishing has ceased.

PERSONAL CONSUMPTION

Fishers have a choice:

1. Lobsters for personal consumption may be self-weighed on board a vessel (the onus will be on the fisher to determine the weight is correct); or
2. Returned from the processor to the fisher after official; weighing.

In both options lobsters for personal consumption must be tailclipped and removed from the vessel in a tagged basket which cannot be opened until at the fishers place of residence.

ESTABLISHING A QUOTA MANAGEMENT SYSTEM DATABASE

With a fleet size of approximately 400 vessels, fishing on average 185 days per season, there will be ~74,000 landings each season (assuming only one landing per operator per day). Each of these landings will require an electronic CDR to be completed and submitted by both the fisher and processor.

Administering such a system will require the Department to invest in new hardware, software and people. Although not dealt with specifically here, a computer system will be required, that can collect consignment information submitted via VMS terminals on fishing boats and reconcile that data with the consigned weights from processors. The system must interface to licensing details to allow quota transfers to be processed and combined with catch histories so that individual fishers can ascertain their available quota. Quota reports and reconciliation processes will need to be available to fishers, industry and departmental licensing and particularly compliance staff in real time. From a compliance perspective this serves the dual purpose of ensuring accountability of the system and provides intelligence upon which compliance

operations will be planned.

COMPLIANCE RESOURCES REQUIRED TO MONITOR QUOTA

It is well documented that under a quota system, there are incentives for fishers to under-report catch. If it is difficult or expensive to enter a high value fishery, there are incentives for the creation of illegitimate commercial operations outside of the managed fishery.

A large number of transactions will need be monitored and audited for irregularities to deter potential quota fraud offences and to detect and prosecute actual ones. To successfully police quota and minimise quota fraud requires high quality data and specialised investigation and forensic analysis skills, which is new business for this department in this fishery. It is proposed that, at a minimum, a specialist unit of 10 officers will need to be established to form audit teams comprised of a mix of analysts/investigators and forensic auditors.

If the Department identifies that quota fraud is becoming a significant problem then it is likely that additional resources would be required. Officers from the quota unit would be investigating different classes of offences than those under the current management plan. For example, random and targeted audits of paperwork and data systems (E.g.: Sales receipts, invoices, transport manifests, back-up paperwork resulting from ALC or other hardware failure, customer listings and general financial accounts etc.) held by fishers, wholesalers, retailers and processors would become a standard practice.

OVERVIEW OF ADDITIONAL COSTS

There are eight cost areas to be considered. Table 3 sets out these costs over a five-year period to demonstrate the level of cost and which costs are implementation costs and which are ongoing.

Table 3: Details of estimated additional costs of compliance should the fishery move to a quota management system.

Cost area	***FTE***	**Yr -2**	**Yr -1**	**Yr 1**	***Yr2***	**Yr3**	**Yr4**	***Yr5***
Integration of EFORMS to database		34,800	-	-	-	-	-	-
Managing VMS RL Unit (1.5 FTE)	1.5	107,000	160,000	160,000	160,000	160,000	160,000	160,000
Transmitting CDR data		1,900	1,900	186,000	160,000	160,000	160,000	160,000
Consignment Tags		420	420	42,000	42,000	42,000	42,000	42,000
Specialist QMS compliance unit costs	10.0	-	630,000	975,000	975,000	975,000	975,000	975,000
Costs for extended season		-	-	396,000	396,000	396,000	396,000	396,000
Savings from Patrol Vessel budget		-	-	-300,000	-300,000	-300,000	-300,000	-300,000
Totals	**11.5**	144,120	792,320	1,459,000	1,433,000	1,433,000	1,433,000	1,433,000
Agency Overheads (@ 50%)		53,500	395,000	765,500	765,500	765,500	765,500	765,500
Total Regional Services Branch Costs		**197,620**	**1,187,320**	**2,224,500**	**2,198,500**	**2,198,500**	**2,198,500**	**2,198,500**

The costs of submitting electronic logbook data or statutory CAES forms are not included.
FURTHER SAVINGS ARE POSSIBLE BUT CAN ONLY BE COSTED WHEN A TIMELINE FOR REMOVING INPUT CONTROLS IS ESTABLISHED
COSTS OF BACKUP SYSTEMS (PAPER/TELEPHONE ETC) NOT INCLUDED ABOVE - BUT LIKELY TO BE MINIMAL. ALL COSTS ARE ESTIMATES AND MAY INCREASE OR DECREASE OVER TIME.

1. **Integration of EFORMS to Departmental Quota database** ($34,800)

The proposed method of transmitting consignment information by fishers to the Department is via a terminal unit interfaced to a VMS ALC unit. The terminal runs "E-Forms", software configured to allow easy entry of the relevant information. There are costs associated with initially designing and building the E-Forms required.

2. **Managing VMS RL Unit** (1.5 FTE) ($160,000)

Based on the Department's past experience with VMS in other fisheries, it is expected that an additional 1.5 FTE staff will be required within the VMS unit to undertake general compliance and research support duties, coordinate installations and to manage breakdowns, general training, help and queries regarding VMS and the terminal units and the processes that will be established to facilitate their use. These staff are clearly needed early in the project (1 FTE in Yr –2, the additional 0.5 FTE in Yr –1).

3. **Transmitting CDR data** ($186,000)

An ongoing cost to the industry will be the cost of transmitting the consignment data via satellite link to the Departmental quota database. Satellite transmission of data can be expensive compared to other transfer methods, but is significantly more reliable in remote locations.

4. **Consignment Tags** ($42,000)

To ensure that catch has not been tampered with in the time between nominating to land catch and consigning it to a processor for weighing, a unique tag will be used to secure the baskets containing catch. For the purpose of this preliminary costing, it has been assumed that simple pre-printed mechanical tags that are tamper-evident will be used. Significant work on the actual type of tag will need to be undertaken if a decision is made to move to quota (e.g. Bar-coded tags, RFID active or passive tags, or simple mechanical tags).

5. **Specialist QMS compliance unit costs** ($975,000)

This is the major compliance cost for the QMS, representing the specialised audit teams that will be required to ensure that all fishers abide by the rules governing quota to give confidence that the total commercial catch does not exceed the TACC. The 10 FTE required are to be recruited and trained halfway through Yr-1, so the unit is operational for the start of Yr1.

6. **Costs for extended season** ($396,000)

It has been proposed that the season be extended to the end of August when quota is introduced. This will require additional compliance costs on the input

side of the fishery so these have been estimated here by a simple ratio of the 07/08 budget factoring in the additional days.

7. **Savings from reduced large patrol boat days** ($300,000)

As a result of the installation of VMS, a number of operational efficiencies will be generated in respect to potting and boundary offences.

NOTE:
It should be noted that many assumptions have been required and while those assumptions and the figures resulting from them are reasonable to the best of our knowledge, they remain broad estimates. Producing costings, to which any real degree of certainty could be attached, can only occur after the rules governing the entire fishery have been determined by industry and the Minister for Fisheries. The exercise undertaken to date provides an indication of how quotas could be implemented and where additional resources are required.

If industry and government support moving the fishery to a quota system, further detailed investigation of these costs and technology requirements for processors / fish receivers will be necessary once all the details of the management system are known. If a decision is made to manage the fishery by quota, an industry-departmental working group will need to develop a detailed, robust and operationally practical system for quota management.

OTHER FACTORS IDENTIFIED SO FAR BY RSB:

- Working out many details is dependent on exactly where data entry points are required (processors, boats, etc) and what data must be transferred.
- Training of users and operators: industry and internal people to use new system
- Licensing will need to be involved
- Legislation is involved – Act: Evidentiary provisions for PIN & unchangeable doc. Industry agreement required to how it's going to work.
- Specialised hardware will be required for weighing catch and allocating to MFL holders – potential opportunity for collaborative work between Compliance Branch and Processors to find most efficient and effective solution. This work will also need to consider the types of tags used to secure baskets.
- Research may need to consider quantification of sick/dead lobsters in Zone A as they are unlikely to be recorded accurately under the proposed compliance regime.

Appendix 6

Research data for stock assessment under quota management

Under quota management arrangements, the relationship between catch and the effort applied to the stock by fishermen can be expected to change significantly over time, as fishermen modify their fishing strategy to maximise the value, rather than the quantity, of the catch. The fishing gear may also be modified to improve catchability. Given that catch per unit of effort (catch per pot lift) is the basic measure of abundance of lobsters used by researchers to assess the state of the stock, the expected changes in effort under quotas dictates that alternative or additional data will be required to maintain an understanding of the status of stock.

The need for additional data is strongly supported by overseas research experience following the introduction of quota management. The overall impact on the research division of the introduction of quotas to the rock lobster fishery in the initial stages is likely to require up to an additional $1,000,000 per year (direct costs). The specific changes to research programs and the need for additional information under quota management have been considered and the changed requirements are set out below. All of these programs would require detailed project briefs summarising the objectives and methods and the risk associated with not undertaking the additional project. Some of these projects could also be funded from external grants.

Total landed catch *(Approx $50,000 p.a.)*

Under a quota situation, it must be expected that attempts to pass a significant portion of the catch through a "black market" system will be made. This has certainly been the case in other similar fisheries. Additional enforcement and research resources will be required to continually monitor the quantity of unreported catches from year to year. A very approximate estimate of such a field survey process (if required) is about $50,000 per year.

Existing methods of monitoring recreational catches are unlikely to be adequate under a quota management arrangement. It can be anticipated that a significant 'shamateur' operation will develop under quotas. Within the existing bag limits, it is likely some legally licensed recreational rock lobster fishermen will become a significant force for illicit landing of previous commercial product. It is anticipated that the need to both quantify and control recreational catch will require a significantly greater research/ enforcement program. The costs of managing the recreational sector will not be born by the commercial sector.

Catch and effort returns/voluntary research log book (Approx $85,000 p.a.)

Due to the requirements of quota management, the existing monthly returns will probably need to be replaced by quota records of landed catch by all vessels. The log book system could also be merged with the daily quota returns, which would then need to provide space for voluntary research data

to be recorded (e.g. numbers of undersize, spawners etc). The reliability of the data will vary (the catch will be under- reported to varying degrees due to black market, high grading), and will no longer have the degree of confidentiality available to present research log books.

Effort data is likely to be recorded as normal, however, the changing "application" and distribution of effort will result in an effort data set not comparable to pre-quota times. Any changes to types of traps being used will also require catch rates to be compared between the different trap types. Voluntary data on spawners, undersize catch, etc. is still likely to be recorded on the daily quota forms by a proportion of the skippers. About $85,000 additional costs will be incurred for processing the larger volume of data if the current research log book system is merged with a quota records system.

Onboard monitoring (Approx. $175,000 p.a.)

Under quotas, there will a need for much greater reliance on direct observations by research personnel. At present, the observer program is restricted to onboard monitoring of catches at five coastal locations and at the Abrolhos. The data produced is used to validate and extend the detailed research log book data set. In the initial stages (i.e. the first five years at least), this program would need to be expanded to cover additional ports and the extended season. The program would also provide an indication of the level of high grading that may be occurring. Based on current costs, an additional $175,000 per year would be required.

Fishery-independent breeding stock survey (Approx. $400,000 p.a.)

The existing program uses charter vessels to cover six locations every 5 years and is scaled back to three sites in the intervening years. This is used to calibrate commercial data based indices of spawner abundance. Under quotas, it is expected the independent breeding stock survey index will need to assume greater significance in the ongoing assessment of the status of the fishery's breeding stock levels, due to changes in the pattern of fishing that are likely to occur. Consequently, the survey would need to be expanded slightly but increased in effort level, from 10 days to 20 days, to achieve a greater reliability in the index produced. Based on existing budgets, the expanded program would require approximately $400,000 per year**.**

Stock assessment and modelling (Approx. $150,000 p.a.)

The preceding supplementary data requirements and the changed relationship between catch and effort under quotas will require additional staff time to develop new assessment models and statistical analyses. Specifically, research will be required to overcome the changes to the data presently available to monitor the stocks and to try to relate the data series from before and after the introduction of quotas. In the short term, this would require an additional modeller/statistician to existing staff, for a period of approximately five years.

In an input controlled system that is generally well managed, a major stock assessment would be required every 3-5 years. However, under a quota system with variable recruitment, there would be a requirement for a stock assessment each year to recommend an annual quota for each zone (and possibly for the whites and reds fishery) based on recruitment and status of the breeding stock. Annual research costs would be in the order of $150,000 per year.

There would typically be a quota setting committee to oversee the quota setting process and quite often there would be a need to have regular, independent reviews of the stock assessment process and the quota recommendations being made. This latter process has not been included in the research budget outlined in Table 1, however, the need for economic research to complement the stock assessment should also be considered.

The costs in Table 1 are all given at the highest end of the range, while Table 2 shows the variation in additional costs that may occur once quota management is introduced.

Table 1 Additional estimated mid range cost of Research under a Quota Management System

Cost area*	**Max. FTE**	**Yr -2**	**Yr -1**	**Yr 1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**
Total landed catch	0.5	0	0	50,000	50,000	50,000	50,000	50,000
Compulsory catch & effort returns/voluntary research logbook	0.5	0	34,800	85,000	85,000	85,000	85,000	85,000
Onboard monitoring	2	0	0	175,000	175,000	175,000	175,000	175,000
Fishery-independent breeding stock survey	2	0	0	400,000	400,000	400,000	400,000	400,000
Stock assessment & modelling	1	0	0	150,000	150,000	150,000	150,000	150,000
Totals		0	34,800	860,000	860,000	860,000	860,000	860,000
Agency Overheads (@ 50%**)		0	0	195,000	195,000	195,000	195,000	195,000
Total Additional Research Costs	6	**0**	**34,800**	**1,055,000**	**1,055,000**	**1,055,000**	**1,055,000**	**1,055,000**
Current Research Costs	15	3,244,054						

* Costs are **indicative** only and provided in the middle range of likely costs. Further refinement will be required when there is more certainty about the actual management settings. Project proposal would require negotiation with industry prior to proceeding. External funding (e.g. FRDC) is likely to be available for some of the projects.

** Agency overheads have been calculated at 50% of 6 FTEs @ $65,000 pa.

Table 2 – Range of additional indicative cost of Research under a Quota Management System

Cost Description*	**Total Annual Costs $ (range)**	**Poss. FTEs**	**Max. Cost / unit**
Total landed catch.	0 - 100,000	0.5	$1.45
Compulsory catch and effort returns/ voluntary research log book.	65,000 - 100,000	0.5	$1.45
Onboard monitoring	150,000 - 200,000	1.5	$2.90
Fishery-independent breeding stock survey.	300,000 - 500,000	1	$7.25
Puerulus monitoring program.	0 - 10,000		$0.45
Stock assessment and modelling.	150,000	1	$2.17
Total additional direct costs	665,000 – 1,060,000		$15.35
Additional costs (including overheads)**	100,000 - 150,000		$7.67
Total additional costs (direct + overheads)	865,000 - 1,210,000	4.5	$23.02

* Costs are **indicative** only, further refinement will be required when there is more certainty about the actual management settings. Project proposal would require negotiation with industry prior to proceeding. External funding (e.g. FRDC) is likely to be available for some of the projects.

** Direct cost attributed to the rock lobster fishery attracts a percentage of the overheads of the running of the Department of Fisheries agency, which is equivalent to 50% of the direct costs.

Appendix 7

Budget - Licensing and Management under a Quota Management System

The costs provided here are preliminary, and may change over time. They are based on the assumption that the quota management arrangements proposed by the RLIAC are adopted. If changes are made, these costs (particularly in the database estimations) may differ substantially. It should also be recognised that until absolute specifications are given, it is not possible to give any other than 'ball park' figures for the database component.

Database – Software (Approx. $100,000 p.a.)

A central Quota Management System (QMS) database will hold records of MFLs, ITQs held against each MFL, the Registry of interests, and a real time record of each individual licence holders' quota. Quota 'trading' will take place through this system.

Fishers will electronically transmit estimated catch/quota reports via VMS reports prior to landing, which will be forwarded to the central database. These will be tallied with electronically sent processor reports. The weight of the catch as recorded by the licensed processor will be the weight used for quota purposes.

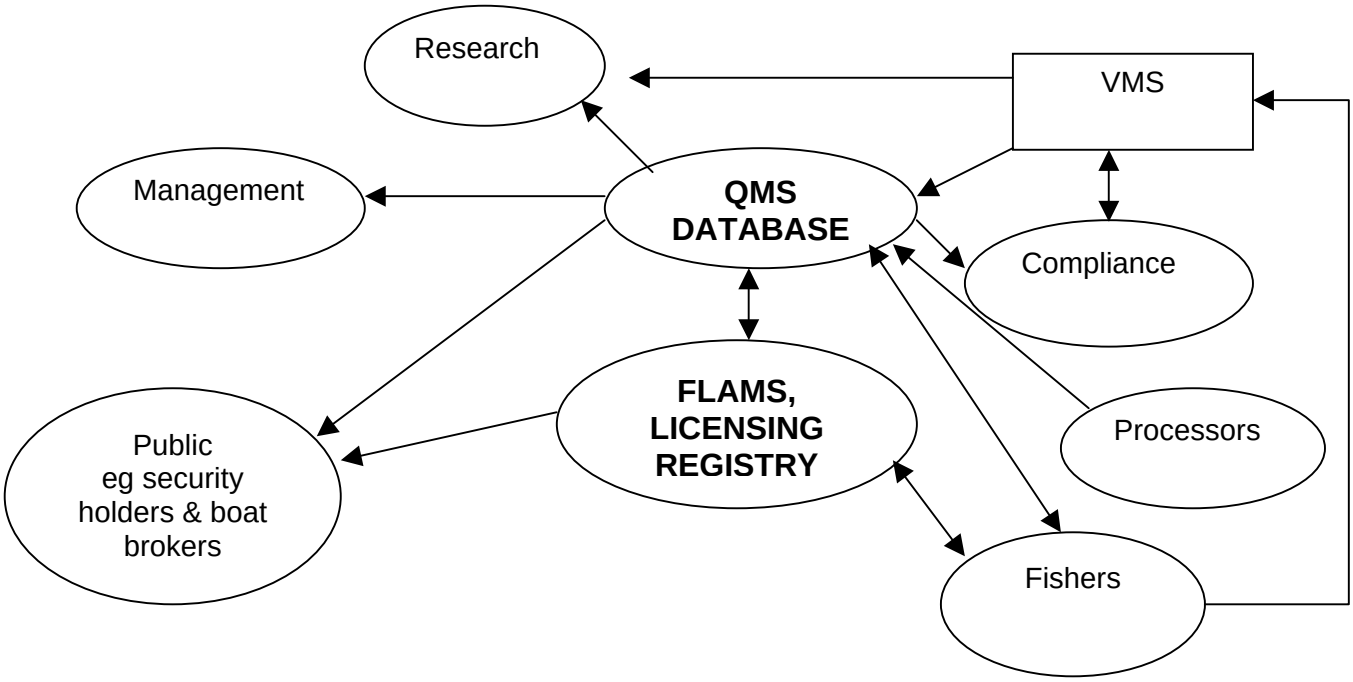
In addition, Catch and Effort information will be passed from the VMS Division to Research Division. This will mean an end of the paper based Catch and Effort reporting system (except where there is a breakdown in the VMS), and will lead to more real time research data collection.

Compliance will also utilise VMS information.

The central database will be available to licence holders to check their individual quota allocations. This will be done by a secure access method in order to protect fishers' information.

Processors and the public will also have access to the database, to check (for example) the cumulative quota taken, or for security interests.
A large database of this nature will cost at least $1 million. It is anticipated that in the establishment and the first three to four years of the quota management system a database administrator and a programmer will be required, initially fulltime and subsequently part-time.

The communication flows are shown below:



Policy Development and Legal Drafting (Approx. $100,00 p.a. for two year implementation phase, then approx $50,000 p.a. for first two years of QMS)

If the decision is made to adopt a quota management system for the West Coast Lobster Fishery, a management officer will be assigned full time for this purpose. This will ensure continuity and consistency in the policy development and drafting instructions, while allowing the day–to-day management of the fishery to continue uninterrupted.

This process will ensure the details of the proposed quota management system are examined and addressed, approved by the Minister for Fisheries and incorporated into full drafting instructions.

Based on experience of implementation of other management plans, such as the wetline fishery, it is anticipated that it will require a full time legal officer to draft the new management plan. This will be completed in conjunction with the management officer.

Licensing (Average around $32,000 p.a.)

While the existing WCRLMF Management Plan enables the trading of units on a permanent or temporary basis, licensing officers will need to be trained to use the new database. In addition, higher volumes of unit trading are

expected in the lead up to the quota management system and in the first two to five years under QMS, as business restructuring takes place.

A licensing help desk function is anticipated in the initial stages to assist fishers and processors to access quota data. It is expected that the necessity for these functions will decrease overtime with fleet size reductions and as the new quota management system becomes more familiar to users.

Estimated budget for Licensing, Legal and Management Costs

Listed in Table 1 are the estimated additional Licensing, Legal and Management costs, including the proposed quota management system database.

Table 1 – Additional Indicative Costs under a QMS for Legal, Licensing & Management

Cost Area	**FTES Y-2 Y-1 Y1 Y2 Y3 Y4 Y5**	**Yr -2**	**Yr -1**	**Yr 1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**
Cost of database to be amortised over 10 years @10%		**-**	**-**	100,000	100,000	100,000	100,000	100,000
Managing DoF database	0 1 2 1 0 0 2	-	55,000	125,000	80,000	-	-	100,000
Policy development & legal drafting	.75 1.25 .5 .5 0 0 0	100,000	103,500	50,000	50,000	-	-	-
Licensing	0.5, 1, 1, 0.5, 0.5, 0.5,0	28,000	55,000	55,000	28,000	28,000	28,000	-
Totals		128,000	213,500	330,000	258,000	128,000	128,000	200,000
Agency Overheads[1] (@ 50%)		64,000	106,750	115,000	79,000	14,000	14,000	50,000
Total Licensing, Legal & Management Costs	**1.25, 3.25,3.5, 2.5, 0.5, 0.5, 2**	**192,000**	**320,250**	**445,000**	**337,000**	**142,000**	**142,000**	**250,000**

[1] Staff costs only

Appendix 8
Gantt Chart