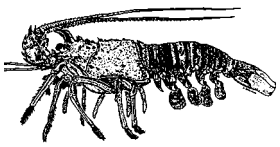

AN INPUT CONTROL MANAGEMENT SYSTEM FOR THE WESTERN ROCK LOBSTER FISHERY

An independent report commissioned by the

Rock Lobster Industry Advisory Committee (RLIAC)

FISHERIES OCCASIONAL PUBLICATION NO. 69

Department of Fisheries
168 St Georges Terrace
Perth WA 6000

June 2009

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FORWARD

There has been much debate over the past two decades on the most appropriate long-term management framework for Western Australia's Western Rock Lobster Fishery. More recently a debate over whether the fishery would be best managed under a Quota Management System (QMS) or the continuation of the current Input Control Management System (ICMS) culminated in an industry vote coordinated by the Western Rock Lobster Council (WRLC) in 2006[1].

The outcome of this vote resulted in industry support to retain the existing management system based on input controls[2], however, shortly after the vote there was a renewed level of interest in revisiting the QMS debate from sections of the industry. This renewed interest was partly attributed to industry facing significant economic pressure from a cost-price squeeze as well as declining catch predictions.

Proponents for quota argued that a QMS would provide the best management framework to optimise the fisheries economic performance. However, supporters of the existing management framework were of the view that an improved ICMS could achieve similar economic and biological objectives without the transitional costs of introducing a QMS.

While a comparative assessment of the bio-economic and sociological characteristics of an ICMS and a QMS has been comprehensively discussed with industry during the previous review process (Fisheries Management Paper 209, 210, 211 and 212), this review largely focused on the existing ICMS and a theoretical QMS.

To progress the debate the Minister for Fisheries has requested advice from the RLIAC on an actual QMS specifically designed for the Western Rock Lobster Fishery, rather than basing discussions around a theoretical QMS.

To assist in preparing its final advice to the Minister, the RLIAC commissioned a panel of independent fisheries management experts, with national and international experience, to develop an optimal QMS for the Western Rock Lobster Fishery.

The RLIAC also commissioned the Expert Panel to develop an optimal ICMS for the fishery to enable a rational comparison between the two types of management frameworks.

The Panel was comprised of: Dr Gary Morgan

Dr Caleb Gardner

Mr Roger Edwards, and

Mr Ian Cartwright

In the interests of keeping industry and the community informed on all developments relating to future management options for the Western Rock Lobster Fishery, the RLIAC has taken the view that the Expert Panel's documents should be released for industry discussion.

[1] *Review of the Management System of the Western Rock Lobster Fishery – Industry Consultation Process.* Western Rock Lobster Council June 2006.
[2] *Review of the Management of the Western Rock Lobster Managed Fishery – Results of the Industry Poll: Input vs Output Controls.* Western Rock Lobster Council 2007.

This publication contains the Expert Panel's report on an optimised ***Input Control Management System*** for the Western Rock Lobster Fishery. The Expert Panel's report on an optimised QMS for the Western Rock Lobster Fishery is published separately (Fisheries Occasional Publication No. 68).

It should be noted that the Expert Panel's optimum ICMS represents just one possible option based on the principles and objectives developed by the RLIAC to guide the long-term management of the fishery.

In developing its final advice to the Minister on long term management options for the Western Rock Lobster Fishery, the RLIAC will be taking into account the recommendations of the Expert Panel, advice from the Department of Fisheries as well as the committee's own collective understanding of particular characteristics within the fishery.

Dr Ron Edwards
CHAIRPERSON
ROCK LOBSTER INDUSTRY ADVISORY COMMITTEE

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.

EXPERT PANEL'S COVERING LETTER TO THE RLIAC

The Chairman
RLIAC
C/- Department of Fisheries
3rd Floor, The Atruim
168 St Georges Tce
PERTH WA 6000

4 June 2009

Dear Mr. Edwards,

REPORT OF THE EXPERT PANEL EXAMINING AN OPTIMAL INPUT CONTROL MANAGEMENT SYSTEM (ICMS) FOR THE WESTERN ROCK LOBSTER FISHERY

We have pleasure in attaching our report on the above issue that was prepared following a two-day workshop in Perth, which included extensive discussions with RLIAC members.

This work, which builds on the report prepared for RLIAC on a quota management system (QMS) for the Western Rock Lobster Fishery, includes a more extensive discussion and comparison of the two management systems for RLIAC's information.

It is important to recognise that in preparing both of these reports, we have been guided by the set of management principles and management objectives that RLIAC has set for the fishery. These principles and objectives will result in considerable economic and biological benefits flowing from management arrangements that effectively target them.

Therefore, in many ways, it is working towards these management objectives that are most important in ensuring a profitable and sustainable fishery for the future and not so much the precise details of **how** these management objectives are achieved. Despite this, there are of course various advantages and disadvantages to achieving the management objectives by either a QMS or an improved ICMS and, as part of the report, we have addressed these in detail.

I should stress that we have prepared this report based on our collective practical experience of in both Quota Management Systems and Input Control Management Systems in rock lobster and other fisheries, both in Australia and internationally, and not solely on the theoretical bases of these systems. It is therefore this collective experience of the Expert Panel that is reflected in the suggested ICMS and comparison with a QMS and not ideology although, of course, the outcomes of these systems are often in accordance with those expected from the theory of management.

After extensive discussions with RLIAC members and listening to their views (some of which we agreed with, some of which we did not) on both the QMS report and the ideas incorporated in to the present report on an optimal ICMS, we believe that the ICMS proposed is practical and implementable for the Western Rock Lobster Fishery and will assist in meeting the agreed management objectives of biological sustainability, improved economic performance and ecosystem protection.

One of the key building blocks of the proposed ICMS is the recommendation that the fishery moves from a focus of controlling pots to controlling pot lifts and that this new measure replace pots as the focus of management in the fishery. By keeping the number of pots at the current level, this new measure would allow significantly more flexibility in how and when operators choose to fish their pots. This would in turn result in not only a simplification of the management system but also in the ability to better capture economic efficiencies.

However, like any major change in management arrangements, including QMS, there will be transition issues in moving to the new ICMS that need to be carefully managed and, again, suggestions and comment have been provided on these.

During discussion with RLIAC members on both the previous QMS report and on the general features of an optimised ICMS, several RLIAC members requested that the Panel present their views on what administrative and other pre-requisites would be necessary to implement either a QMS or an improved ICMS. While this work was outside the Terms of Reference of the Panel's examination of the features of an optimised ICMS, the Panel has been happy to provide such advice and opinions, which is presented as an Appendix to this report.

The Expert Panel has now had the opportunity of examining both a QMS and an improved ICMS that are, in the Panel's view, both appropriate and implementable for the Western Rock Lobster Fishery.

Both systems have advantages over the current management system, particularly in their ability to better ensure biological sustainability while extracting maximum long-term economic benefit from the fishery. However, as noted above, transitional arrangements from the current management system to either an improved ICMS or a QMS will pose a number of challenges.

In considering the key features of an optimised ICMS and a Quota Management System (and notwithstanding the considerable transition issues), the Panel's consensus was that, on balance, a Quota Management System offers a more appropriate and effective way of achieving the defined management objectives in the medium to long term in a way that provides and promotes efficiency in the industry through greatly increased flexibility to respond to markets.

Thank you for the opportunity of examining this issue and we wish you the very best in your further deliberations on the management of this important fishery.

Yours sincerely

For:
Dr. Gary Morgan
Dr. Caleb Gardner
Mr. Ian Cartwright
Mr. Roger Edwards

AN ICMS FOR THE WESTERN ROCK LOBSTER FISHERY

SECTION 1 INTRODUCTION

The Rock Lobster Industry Advisory Committee (RLIAC), the Hon. Minister for Fisheries and the Department of Fisheries, Western Australia have commenced a process of assessing the options for future management of the Western Rock Lobster Fishery. As part of this assessment, an expert Panel has previously prepared an analysis of an optimal quota management system (QMS) suitable for the fishery. As the next step in the assessment of management options, RLIAC requested that an expert panel also advise them on the design characteristics of an improved input control management system (ICMS) for the fishery and to provide advice on the relative merits of the two management systems in achieving the defined management objectives for the fishery.

The Expert Panel was convened in Perth on 20th and 21st May and comprised Dr. Gary Morgan, Mr. Roger Edwards, Mr. Ian Cartwright and Dr. Caleb Gardner. The Panel was assisted in its deliberations through written submissions from RLIAC members and through having discussions, as part of the 2 day workshop, with RLIAC members on both the previous QMS paper and issues surrounding current and possible future management arrangements under an ICMS. The expert panel was also assisted by administrative support provided by the WA Fisheries Department and by having access to WA Fisheries Department technical and scientific expertise, for both of which the Panel expresses its sincere thanks. Members of the Expert Panel worked to address the following Terms of Reference:

- Participate, as part of a small expert team, in a 2 day workshop, to be held in Perth, aimed at defining the characteristics of an optimised Input Control Management System (ICMS) to meet specified management objectives for the Western Australian rock lobster industry.

- As part of this work, to also generally address the issue of whether an optimised ICMS is the most appropriate and effective way of achieving the defined management objectives or whether the defined objectives can be better achieved under a Quota Management System (QMS).

- To consider what five and ten year targets would be appropriate to ensure the management principles and management objectives are achieved.

- To undertake, as part of the work of the team, analysis that contribute to the development of the optimised ICMS in accordance with the Panels' specific expertise.

- The Panel will be required to collectively prepare:

  (a) a brief report to the Rock Lobster Industry Advisory Committee (RLIAC) of the activities and analysis undertaken as part of the workshop, including an assessment of the efficacy of an optimised ICMS; and

  (b) A draft optimum ICMS paper for the Western Rock Lobster Fishery. It is envisaged that this draft ICMS, along with the previously developed QMS, would form the basis of a discussion paper to assist further consultation between RLIAC, the Department and the rock lobster industry.

This report is the paper referred to in (b) above.

SECTION 2 PRINCIPLES AND OBJECTIVES

In developing the ICMS, the same management principles and objectives, previously endorsed by RLIAC, the Department of Fisheries and the Hon. Minister were used to guide the ICMS. These Principles and Objectives are:

Management Principles

- To maintain rock lobster stocks at or above biologically sustainable levels.
- To create a management environment that encourages and supports a profitable commercial sector within the constraints of its allocated share of the resource.
- To encourage fishing practices that minimize damage to marine habitats and to non-targeted species.
- To achieve the management objectives through regulations that are targeted, non-discriminatory and cost-effective.

Management Objectives

To address the above management principles, the following management objectives will guide the management arrangements for the fishery:

1. To regulate the commercial production sector where necessary to achieve maximum economic yield from the fishery.
2. To maintain the breeding stock geographical distribution and abundance at a minimum of those levels present in the early 1980s.
3. To ensure that fishing practices are regulated to minimise damage to marine habitats, non-targeted species and lobsters that are returned to the sea.

SECTION 3 THE DESIGN ELEMENTS OF A ICMS TO ACHIEVE THE MANAGEMENT OBJECTIVES

The Western Rock Lobster Fishery is currently managed through an ICMS that has evolved since it was developed in the late 1960s to a system that is essentially an individual transferable effort (ITE) system. The management arrangements inherent in the ICMS have, in the past, been regarded as world's best practice, with the fishery and its management system being accredited as resulting in a 'sustainable' fishery by the Marine Stewardship Council. The management arrangements have also been assessed as meeting the requirements of ecological sustainable development through the process defined under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act (1998).*

However, the Expert Panel was conscious, and RLIAC members emphasised, that the management system had evolved to a point where there were now clear failures in the current input-control system although some aspects, such as controlling pot usage, were seen as positive elements.

The Expert Panel also emphasised that an ICMS, like a QMS, cannot directly address the current major biological issue of low puerulus numbers. However, by addressing the management objectives of more conservative harvest levels (through a target of MEY) and maintaining an appropriate geographic distribution and abundance of the breeding stock, both an ICMS and a QMS can produce a management outcome where there is the maximum likelihood of achieving the stock-related conditions that could result in adequate future puerulus settlement.

The question in comparing the two management approaches is how efficiently and effectively each can achieve the targeted management objectives.

3.1 Design Principles of the ICMS

The Expert Panel, in considering an improved ICMS for the Western Rock Lobster Fishery first examined the current management arrangements and investigated whether and how these arrangements addressed the management principles and objectives.

In examining these current arrangements, the Panel formed the view that the current system was deficient in a number of areas and, while the underlying principle of regulating the total number of pot lifts in a season is appropriate for any ICMS, input controls in this fishery have evolved into an overly complicated and inefficient system of management. Specifically the current system:

- Retains elements of the 'race to fish'.
- Reduces operational efficiency for all vessels through periodic pot reductions. Capital and labour of both the fishing and processing sector are also used inefficiently due to the need to cater to extremes of large peaks in catch and extended closed periods.
- Distorts supply through catch being forced into set open seasons and also through depletion within the open season.
- Places over reliance on government/collective decision-making on where and when to fish.

- Results in a short open season which diminishes capacity to respond to market signals.

- Prevents efficient spatial distribution of effort through zone restrictions, which otherwise would be expected to vary from year to year; and

- Possibly increases safety at sea risks because of the incentive to fish each available day, regardless of weather.

The Panel therefore investigated alternatives for managing the number of pot lifts in a more direct and efficient manner and, as part of this investigation, the Panel also addressed the issue of transition arrangements to any new system. Some of the general features of, and the principles underlying an improved ICMS were that if the number of pot lifts were being regulated efficiently, the need for some other existing input controls appeared unnecessary. The details of these are presented below.

In addition, and importantly, the current management system contains no arrangements to address the issue of increasing effectiveness of fishing effort on an ongoing basis. As a result, large adjustments (e.g. reductions in pot entitlements) are needed periodically causing major unplanned business disruptions. The Panel's view was that a better option was to incorporate into the management arrangements a system of continuous adjustment so that large, disruptive changes to pot entitlements and usage would not be needed.

The Panel agreed that, to address the issue of increasing efficiency within an ICMS for the Western Rock Lobster Fishery, a target of 1-2% annual reduction (the precise figure to be agreed upon by RLIAC) in total fishing effort (pot lifts) should be aimed for by way of an ongoing unit buyback. This allowance could be reviewed on a regular basis, say, every three years.

On the positive side, the view of RLIAC and others, as well as the Panel members, was that the recent changes in the management system has enabled fishing effort to be moved away from the peak catching times of late November/December and March at the Abrolhos with probable benefits to the processing and marketing sector. However, the Panel agreed that other measures, detailed below, could address the issue of 'flattening' the peak catch periods more efficiently.

As a result of these general observations and strategies, the Panel recommends that the following changes might be considered to the current input control management arrangements. In the Panel's views, such changes would result in a more efficient and effective management system that would (a) address the management principles and management objectives of the fishery and (b) do so in a way that is significantly more efficient and effective and is also less disruptive to operators than the current management system, while building in flexibility to respond to market signals.

SECTION 4 AN IMPROVED ICMS FOR THE WESTERN ROCK LOBSTER FISHERY

4.1 Summary and rationale of suggested major changes to management arrangements

The proposed system in summary and the rationale for each proposed management measure is as follows:

New Management measure	Rationale
Restrict pot lifts through adjustments of total available fishing days per annum while keeping the current unit pot entitlements. Allocation of fishing days: allocated fishing days to be used at operator discretion within a 12 months season. Maintain current restrictions on pot hauling times and the number of times per day pots can be hauled.	Consolidation and better utilisation of capital and labour through more extended, less peaked activity. Increased ability of individual operators to manage harvesting in response to markets. Removes incentive to fish in bad weather. Reduced capacity to fish during peaks.
Season to commence in late January.	Reduced capacity to fish during December peak for better utilisation of labour and capital. Promotes fishing to market.
Pots attached to units as per the current arrangements with units being fully transferable.	Facilitates consolidation of fleet – and thus more efficient use of capital and labour.
Current rules on pot numbers per WRL MFL maintained.	Maintains ability of vessels to optimise pot numbers to their operation. Minimum limit creates efficiency for enforcement.
Zones removed with an initial adjustment in units to deal with equity considerations.	Promotes efficient spatial distribution of effort and ability of fleet to respond to regional declines/increases in recruitment.

Built in ongoing annual reduction in pot lifts (1-2% per annum is suggested) to address effort 'creep' and increased efficiency, to be achieved by an annual unit buyback funded by a charge across all units as part of the license fee.	This is a tax effective method to maintain effective fishing effort at stable levels without the need for large periodic, mandated reductions in pot entitlements or additional temporal closures. The annual buy-back is expected to be cost-neutral since the asset value of units remaining in the fishery would increase, off-setting the after-tax cost of the buy-back. However, additional financial modelling is recommended to further clarify this relationship.

4.2 Detailed recommended management arrangements

Additional details in terms of how existing management arrangements should be addressed in transitioning to an improved ICMS are provided in the table below.

Current management arrangements	**Expert Panel's Views, Recommendations and Rationale**
The current defined boundary of the fishery is from Cape Leeuwin to North West Cape.	Retain

The fishery is currently divided into, and managed in 3 Zones, Zones A, B and C.	Abolish zones although spatial/temporal controls for some areas might be retained or introduced for biological reasons (e.g. Abrolhos). To deal with equity considerations, an equalisation of units between zones will be required. Such issues of differences in unit values between zones may be mitigated though (a) implementation of the change over several seasons, for example by announcing the change well in advance and allowing businesses to make their own adjustment over a period of years, and/or (b) differential allocation of fishing units (i.e. more units allocated to licences in zones where value of units is greater). The latter approach would require an independent valuation of units in each zone, perhaps by the Valuer-General. Following discussions with RLIAC, the Panel agrees that the implementation of removing zones might be considered as a two-step process with zones A and B first being merged and, depending on the outcome of that merger, the combined zone being merged with zone C at a later date.
The season at Big Bank was closed for the 2008/09 season. When open provided for restricted early access to the Big Bank area (for the migratory run) commenced on 10 February and ceased on the last day of February. Big Bank then opened to all A and B Zone fishers on 1 March (noting that Zone A fishers can only fish in Zone A from 15 March).	Temporary spatial closures around Big Bank and the northern area of the Abrolhos should be retained and considered as a precautionary measure until the relative importance of these areas to breeding stock is evaluated (CSIRO oceanographic modelling project). Ongoing monitoring of egg production should also continue.
A 20 fathom line (36.6m) or 9 nautical miles from the HWM of the mainland rule restricts the area of operation of holders of Zone A units in B Zone between 1 March and 14 March.	Remove. If zones A and B are merged, there is no need for this measure.

The season in Zones B commences on 15 November, C commences on 25 November and a Zone on 15 March each year. The season in all Zones closes on 30 June each year.	Remove. Season for the entire fishery to begin and end in January, subject to a review of the need for maintaining a closure at the Abrolhos Islands (see above). Further discussion would be required on the appropriate opening date to reduce the peaks in Abrolhos area (i.e. season commencing in March for this area). After a few years of experience with no formal closed season, it would be prudent to impose a formal closed season in periods where there is little or no activity (probably winter months because of weather issues) to save on compliance costs
Zone A licence holders are entitled to fish in Zone B from 15 November up to and including 14 March.	Redundant without zones – remove.
There are weekly temporal closures in all zones of the Fishery e.g. Saturdays, Sundays and Mondays off during catch peaks (Dec and Mar) and Saturday and Sundays off for remainder of the season.	Remove. It is proposed that catch be managed via pot lifts, which includes a fishing day allocation that can be used in a flexible manner. Such a flexible system, together with merging Zones A and B and a January start should address catch peaks by enabling a better response to market signals. However, if concerns persist about catch peaks during the transition to the new ICMS, then further action to flatten these peaks can be achieved through restricting the number of allocated days in each 'peak catch' period that each vessel can operate as part of the flexible fishing day allocation.
There are Christmas and New Year Closures in the Fishery.	Remove.
There is a closure from 15 January to 9 February in Zone B of the Fishery.	Remove.
A person must hold a West Coast Rock Lobster Managed Fishery Licence (WRL MFL) attached to a Fishing Boat Licence (FBL) to operate in the fishery.	Retain. While license holders should not need to hold a WCRL fishery license. This should be retained for operators who use their (or others) pot entitlement.

There is a restriction of one WRL MFL per FBL. This is more of a policy rather than legislation.	Remove, since it inhibits operational efficiency where, for example, two operators could use one vessel.
There is a right of renewal of a WRL MFL, administered through S68 of the *Fish Resources Management Act 1994* (subject to sections 136A and 143).	Retain.
There are no current restrictions on the maximum number of units on an MFL.	Retain.
There is a minimum unit entitlement (63) to operate in the fishery. There is no minimum pot usage.	Retain minimum to manage enforcement costs, as discussed below.
The capacity of the fishery is currently expressed in pots. The maximum number of pots that may be operated from a boat is 50 and 42 percent for Zones C and A & B respectively of the number of units held. Licence entitlements are expressed as individually transferable West Coast Rock Lobster Fishery units. The fishery is restricted to 69,037 units.	Move to a more flexible and direct system of regulating pot lifts within a full 12 month season by retaining the current pot number entitlements and regulating the total number of fishing days in a season. The Panel therefore recommends that the number of pots allowed to be used in the fishery be retained at the current level for each unit holder with each operator having the flexibility to utilise those pots on any day during the year, up to the maximum of the allocation of days. The number of pot lifts in a season will then be regulated by the number of pots in the fishery (which will be unchanged), an adjustable number of fishing days and the continuation on restricting the number of times a pot can be lifted to one per day. While there is no obvious need to retain both units and pots, it is recommended that the familiar system of units should be retained. Consideration might also be given to a re-calibration of the number of pots per unit so that one unit is defined as one pot although any such recalibration will reduce liquidity of units with impacts on the efficiency of the suggested ongoing buyback. Further detailed analysis would therefore be needed before any such

	recalibration. Changes in the number of pot lifts could therefore be achieved by reducing the number of units (e.g. as part of the continuous effort adjustment process – see below) or adjusting the total number of days allowed to be fished. The initial allocation of fishing days would simply be calculated using the current number of days available for fishing, adjusted as necessary for the removal of any zonal restrictions (see above) and other impacts as a result of targeting an MEY objective (see below). The number of pot lifts to be automatically reduced each year by a buyout of units (i.e. pots) at market value, funded via a charge across all units as part of the licence fee. The Panel suggests an annual reduction be 1-2% of units but the exact reduction should be determined by RLIAC following advice from the Research Branch of the Department of Fisheries. This method of effort reduction would be a tax-effective way to allow for the impact of increasing efficiency of fishing effort. A decision on the market mechanism to be used to remove units from the fishery under the buyback requires careful consideration and analysis of options to avoid past mistakes experienced in other fisheries. Based on the Panel's experience, a preferred option would be to first buy units from willing sellers (e.g. through a tender process) although care would be needed to avoid seller collusion if the market for units is not sufficiently liquid. A well-designed tender process should, however, ensure that units are purchased at market value. In the unlikely event that are no (or not enough) willing sellers, then the allocation of the reduction should be in proportion to unit holdings with market value being determined either by recent sales or by the Valuer-General. A review should be undertaken by RLIAC at the end of each three-year period to assess whether any additional adjustments in the number of allowable pot lifts, up or down, are necessary to achieve the management objectives, particularly the objective of targeting MEY. This would be addressed by

	either additional buyout of units or a reduction or increase in available fishing days. It is not recommended that any increases in the number of allowable pot lifts as a result of such reviews be achieved by increases in the number of pot entitlements per unit. Trigger points of +/- 20% of the expected annual catch as determined by the Research Branch of the Department of Fisheries should be set that, if reached, would automatically trigger a review of the need for any further adjustment to the number of pot lifts. The current number of available fishing days is in the order of 160, and based on the advice provided, the fishery is currently moving towards MEY. By removing all current closures, changes in fishing patterns can be expected and effort may be targeted more effectively. It will therefore be prudent in the transition to set the initial total days available for fishing at a level less than 160 days, with the exact adjustment required being decided by RLIAC, taking into account advice from the Department of Fisheries Research Branch on likely effective effort changes and the need for other required offsets, such as provisions for soak times. Compliance issues of monitoring fishing days can be more effective if VMS is used on vessels with a simple test of 'if the vessel is not in port or transiting to another location – see below – it is fishing and that day counts as fishing day'.
That the configuration of pots and number and size of escape gaps are regulated.	Retain but introduce an assessment system for new pot designs that encourages innovation but in which new pots are tested for their impacts on marine ecosystems, non-targeted species, and rock lobsters that are returned to the sea. Promoters of new pot designs would also be required to fund calibration trials so that the relative efficiency of any new pot design could be measured and incorporated into the fishery monitoring data on effective fishing effort and stock assessment analysis.
There are restrictions on pot hauling times.	Retain due to the risk of multiple pot lifts per day under a pot lift arrangement

	and handling of undersize lobsters.
There are restrictions that limit the setting and retrieval of pots to once per day.	Retain due to the risk of multiple pot lifts per day under a pot-day arrangement.
There are restrictions on the times of setting baited and soaking unbaited pots prior to the beginning of the season in each Zone and following a lengthy closure periods (i.e. the B Zone summer closure).	Remove but these should be considered within the initial allocation of fishing days. Contingency days for this purpose should therefore be incorporated into the initial total available days.
There are restrictions on the use of certain baits e.g. hide.	Retain for marketing purposes.
The following biological controls are in place: • A maximum size of 115 mm carapace length for females south of 30° South and 95 mm carapace length for females north of 30° South. • A minimum carapace length of 76 mm, except from 15 November to the end of January where a minimum size of 77mm in Zone B applies. • A minimum size of 77mm for the entire season in Zone C applies.	Initially retain but gradually remove maximum size restrictions over the first three year period as stock rebuilding proceeds, with decisions based on data from the breeding stock monitoring programme. Targeting of an MEY management objective as well as the specific objective related to breeding stock should result in the maintenance of high levels of breeding stock over the entire fishery. The Panel observed that, in reaching this management objective, the geographic spread of egg production may be an important consideration perhaps better served by temporal/spatial closures (Northern areas). Retain current minimum size limits but reassess these in the light of reduced fishing effort (as MEY is targeted) so that they are set at the appropriate level for achieving maximum yield per recruit.
There is a prohibition on the take of mature females that are setose, or carrying eggs or tar spots at all times. These are known as totally protected fish.	In the first three year period, remove restrictions on setose, tarspot and review the need for continued protection of berried females. This change would be subject to effort controls being shown to be effective in the maintenance of egg production above management thresholds. The rationale here is that egg production is more affected by the tonnage of females removed than the stage in the reproductive cycle that females are removed. The Panel preferred more efficient capture of females to multiple handling and sorting of females based

	on reproductive stage.
Rock lobsters that are not retained must be returned to the water within five minutes of being taken, and prior to any other pot being pulled.	Retain
Units and FBL are freely transferable within zones but not between zones. However, Zones A and B may swap provided the number of units is the same.	Redundant as zones are removed. Units and associated pots should be freely transferable within the fishery as a whole. Within season transfers of whole units should be permitted but only to licences with equal or less days unused during the season. This would avoid instances where pots could be transferred onto a license that had a large number of fishing days remaining. Because fishing days are not part of the unit entitlement, no transfer of fishing days or carryover of unused days on licences should be permitted.
Sea lion exclusion devices (SLED's) must be used in certain areas of the fishery.	Retain.
Small spatial closures exist including around Rottnest Island and Point Quobba.	Retain.
There are restrictions on finfish that can be retained.	Retain.
There are restrictions on the use of boats during closure periods within the season.	Redundant if the fishery is open all year. However, if a vessel is transiting the fishery but not fishing, then a prior reporting process is required so that those days are not counted as a fishing day.
There is a boat breakdown policy in place.	Change to a Gear Retrieval Policy to address the inability to retrieve pots that have been set because of breakdown. Business rules around operation of VMS would cover this. Allocation of a replacement fishing day would be on a case-by-case basis. Long-term boat breakdown can be addressed through the current vessel transfer policy (Regulation 132 of the *FRMR 1995*).

The Department of Fisheries costs for the management of the West Coast Rock Lobster Managed Fishery are recovered through license fees according to cost attribution and recovery rules.	Retain for ongoing management although consideration should be given to seeking Government structural adjustment funds to fund the transition costs of moving to a new management system.
There are restrictions on the numbers of processing establishments and also standards for processor establishments.	Review the need for restriction on numbers; retain standards that address product quality and food safety.

SECTION 5 THE RELATIVE ADVANTAGES AND DISADVANTAGES OF QMS AND ICMS

As part of the work done by the Expert Panel in addressing a both an ICMS and a QMS for the Western Rock Lobster Fishery, a general assessment of the relative merits of the two management systems was made.

In summary, this assessment concluded:

- A QMS is often no easier to administer and manage compared with an ICMS. Rather, it is the types of issues that often change rather than the quantum of issues. Experience has also shown that some input measures, including spatial controls, would almost certainly be needed and/or retained as part of an overall QMS to account for spatial differences in the biological characteristics of the western rock lobster.

- A QMS provides better business certainty and asset security since TACCs may be fixed over a number of years and the associated ITQs provide access to a more 'bankable' class of asset. This can assist with business security and financing. Annual catches vary less, and annual catch rates vary more under a QMS whereas annual catches vary more and catch rates vary less under an ICMS. This said, it should be noted that in reality perfect information about pricing within a season does not exist, and hence "targeting" price, as is often promoted as a QMS advantage, can sometimes be difficult at an individual business level.

- An intent of both the QMS and ICMS structures developed by the Panel was to provide more efficient use of capital and labour by spreading catch through the season rather than around peaks. The system of pot days in the ICMS partially addresses this objective but effort and catch is still expected to be concentrated which implies that there will be other periods of the year when labour and capital will be idle. The QMS provides a greater penalty for fishing when the price is low and thus would be expected to more effectively spread effort throughout the year, thus allowing greater consolidation of fishing and processing capital.

- Both systems provide some motivation to fish at periods of higher catch rate / lower price (i.e. peaks) although the incentive is greater with the ICMS. This is because fishers in ICMS target maximum revenue from a fixed number of days, while fishers in QMS target maximum revenue from a fixed tonnage of lobsters. The ICMS promotes competition between fishers in the early part of the season.

- A QMS provides direct control over the critical unit being managed (i.e. the catch from the fishery) whereas an ICMS provides indirect control of catch through fishing effort constraints. Any necessary changes to management arrangements under a QMS will therefore result in more certainty, both in economic and biological terms, as to the impact of those changes than under an ICMS.

- There is no need for continuous fishing effort adjustments under a QMS, as has occurred sporadically throughout the history (including recent history) of the Western Rock Lobster Fishery under ICMS, although TACCs may change over the longer term. One of the key recommendations in this paper is to incorporate a system of continuous adjustment to fishing effort as part of an improved ICMS for the Western Rock Lobster Fishery rather than make occasional, large changes.

- A QMS provides a simpler and more direct mechanism for 'carrying over' biomass from one year to another and for trades in both units and seasonally leased quota.

- A QMS replaces 'corporate' decision making under a ICMS with individual business decision making and, from experience, this often leads to greater fleet diversity and heterogeneity and less dissipation of economic rent through over-capitalisation (i.e. 'capital stuffing'). Importantly, fishing costs are often driven down by innovation and flexible operating practices that can be better captured and utilised under a QMS than under an ICMS.

- Both a QMS and an ICMS facilitate vertical integration of the industry, although this is likely to be more significant under a QMS because of the greater certainty of the unit (weight of rock lobsters) and the more 'bankable' nature of the asset being acquired. However, this may be a disadvantage if the vertical integration results (e.g. by controlling large quota holdings) in anti-competitive practices. Likewise, it is probable that third-party holdings of units would be greater under a QMS than under an ICMS for the same reason.

- Continuation of management under an ICMS would allow better continuity of fisheries monitoring data than under a QMS since a QMS operates in a different way to an input-controlled fishery. However, under the proposed ICMS, some issues of continuity of monitoring data would also have to be addressed.

- The transition issues from the present ICMS to a QMS would probably be more significant than a change from the present system to a better ICMS. However, the optimal ICMS identified here also poses challenges in the transition which, while achievable, are in the Panel's view, necessary.

- Experience has shown that if the number of owner-operators decreases under a QMS, as it often does, this can lead to a decreased sense of stewardship of the resource. The Panel noted that the same problem can occur under ICMS where fishing is conducted by lease fishers.

- A QMS can result in increased black market activities. However, this can usually be managed through deterrent penalties and/or adjustments to the TACC to take this into account. The Panel also noted that black market sales are often a minor issue if penalties, the risk of detection and chance of prosecution are high.

- Based on the Panel's experience, ongoing costs of an effective QMS should not be higher than the optimal ICMS outlined in this paper and, under both

systems, savings could be made by using technology based, rather than people based systems. Experience has shown that involving industry in the design of an effective system and provision of cost information about the options while designing either a QMS or an ICMS can lead to high levels "ownership" by industry of the eventual system.

The most appropriate management arrangements for any fishery, whether a QMS or an ICMS, are specific to the characteristics of the fishery and therefore advantages and disadvantages cannot be generalised. Accordingly, a more comprehensive analysis of the relative merits of optimal QMS and ICMS arrangements as they relate to the Western Rock Lobster Fishery are presented below and provide a convenient summary of the main features of each system.

Criteria	Input (ICMS)	Output (QMS)
Sustainability		
Contribution to stock rebuilding/ recovery.	Indirect. Precise impacts of management changes on stock biomass more difficult to predict.	Direct. Impacts of management changes on stock biomass predictable with high level of confidence.
Control/constrain the total catch or effort level within an agreed precautionary range.	Requires continuing adjustment to effort levels but no control on catch. Annual catch variation larger than under a QMS.	Simple direct mechanism to constrain catch but no control on effort. Annual catch variation smaller than under an ICMS.
Maintain spawning stock levels and distribution above target levels.	Indirect through effort controls and therefore the impact of management measures on breeding stock biomass is more difficult to predict.	Direct. Impacts of management changes on breeding stock biomass predictable with high level of confidence.
Data collection for stock assessment.	Past data requires standardisation to be comparable with data collected under an improved ICMS.	Past data requires standardisation to be comparable with data collected under a QMS.
Economic efficiency		
Relative strength of the access right provided.	Moderate. Relative catch will vary between license holders. Competition for access to a share of the catch remains.	High. Constant catch relativity between license holders. Competition for a share of the resources is limited, assuming TAC is set correctly – see below.
Level of operational flexibility provided.	Good under the proposed fishing day approach.	High.

Control of overcapitalisation.	Moderate under the proposed pot day approach.	Good. Promotes cost reduction and limits capitalisation in unproductive assets through market mechanisms.
Overall economic performance.	Improved stability of economic performance in the face of natural variation in stock abundance. Capacity to maximise catch value improved.	Even greater decoupling of economic performance from natural variation in stock abundance. Capacity to maximise catch value is maximised.
Capacity to deal with inter-annual variability in abundance (to maximise returns).	Moderate. No of days can be adjusted but because of the indirect nature of effort controls on stock abundance, the precise impact is difficult to predict with certainty.	Good capacity and direct relationship of management intervention with abundance. TAC can be adjusted as appropriate.
Capacity to deal with within season variability in abundance (to maximise returns).	Flexibility in when to fish provides good capacity to deal with within-season variability in abundance and to target profit-maximising strategies. Additional pots can, if needed be acquired through the market to further enhance flexibility. Individual fishers will seek to maximise profit per day but their collective behaviour will not maximise profit from the resource (because competition for stock remains).	Good flexibility to deal with abundance variability. Profit will most likely be maximised per tonne of quota at the individual business level and hence maximum profit will be achieved from the available long term tonnage extracted from the fishery. Relies on market mechanisms to maximise returns. Therefore assumes that market signals reach the operator efficiently and the operator exhibits profit-maximising behaviour -which may not be the case in the WRL fishery. Also assumes perfect knowledge about fishing conditions and catch rates within seasons. Where

		uncertainty exists, fishing patterns are likely to tend towards fishing during high-catch periods and away from the end of the season. With high confidence that the full TAC will be taken, fishing patterns will adjust to respond to market signals and the maximum profit/kilogram driver.
Autonomous adjustment in the fishery.	Moderate. Adjustment will be reflected in annual catch variation. Ongoing adjustment for effort required.	High. Investment in the fishery and adjustments to fishing inputs (vessels etc) will be less reflective of the need to compete and more responsive to cost minimising/profit maximising drivers.
Wealth redistribution.	Low.	Medium – high, most likely resulting over time in a heterogeneous fleet structure as individual operators adjust their businesses to their own requirements and opportunities.
Social		
Maintenance of reasonable levels of public access/ recreational opportunities.	Good.	Good.
Responsibility/ stewardship for management by stakeholders.	Larger proportion of owner-operators may be maintained, which promotes stewardship.	Fewer owner-operators may result, which would negatively impact on sense of stewardship.
Support for the management arrangements by stakeholders.	Depends on involvement in developing the arrangements. High involvement usually results in high level of support. Better alignment of objectives with those of stakeholders.	Depends on involvement in developing the arrangements. High involvement usually results in high level of support. Better alignment of objectives with those of stakeholders.

Regional development impacts.	Depends on fishing pattern adopted. May be positive as operators spread the number of fishing days over the whole year. Multiple landing sites acceptable, thereby minimising regional impacts.	Long term reduction in the number of operators and restriction of landing sites for quota monitoring purposes may negatively impact regional communities but depends on exactly how the industry re-structures.
Time at sea/safety considerations.	Less time at sea than with current arrangements and improved safety aspects through less motivation to utilize available fishing days to fish in rough weather.	Possibly more time at sea than with ICMS, although less motivation to fish in rough weather. Some operators may compromise safety in seeking to reduce costs.
Costs of management		
Administration (licensing, transfers, etc).	Probably no change from current.	Probably no change from current situation.
Compliance.	Probable reduction if VMS is introduced. Current approach based on ensuring boats are not fishing in closed/unlicensed areas or using additional pots requires more expensive at-sea enforcement rather than on-land.	Probable reduction if VMS is introduced. Approach based on ensuring landings of lobsters does not exceed individual allocations or overall TAC. Note incentive for individuals to find ways to take more than the allocated share of catch – if compliance under funded/ unsuccessful then quota integrity could be threatened.
Monitoring and data collection.	Probably only minor change from current.	Probable increased costs in development or adoption of new systems but ongoing costs should be either the same or reduced from current levels.
Research.	Probably no change from current.	Probably no change from current.

Ecosystem effects		
Minimise bycatch.	Retention of escape gaps and pot design restrictions minimise impacts. No high grading and hence less handling mortality.	Retention of escape gaps and pot design restrictions minimise impacts. Greater risk of high grading especially when leg loss is more prevalent. Ability to trade quota reduces risk (i.e. if beach price is greater than the lease price for accessible quota then fishers incur a loss through discarding).
Adverse impacts on endangered or threatened ecological communities.	Fixed effort levels will retain physical impacts. Increased spread in effort through the year under revised ICMS reduces risk of whale interaction.	Physical impacts may decline as fishing effort required to take the TAC declines. Increased spread in effort through the year under QMS reduces risk of whale interaction.
Incidental mortality of endangered or threatened species.	Retention of existing arrangements for sea lion exclusion devices etc. will minimise impacts.	Retention of existing arrangements for sea lion exclusion devices etc. will minimise impacts.

SECTION 6 MONITORING PROGRESS UNDER AN ICMS AND 5 AND 10 YEAR TARGETS

Monitoring of the progress of implementation of an improved ICMS is of similar importance to monitoring the implementation of a QMS and should be guided by the management Principles and Objectives. The management objectives are measurable and should be used, preferably as part of the management plan for the fishery, as the basis for regular reporting, particularly on the stock sustainability measures.

While the management principles should be set for long term guidance, the management objectives should be reviewed each 10 years to ensure they are still relevant and realistic. As part of the management planning process, performance reviews should be undertaken each five years against the criteria of the management objectives. These reviews will require data on:

- The level of fishing effort (pot lifts) at the point of MEY and the current level of fishing effort.
- Levels and geographic distribution of the breeding stock.
- Puerulus settlement over the past 5 years.
- Asset value of the entitlements in the fishery. These provide a good 'snapshot' of the effectiveness of the overall system in profit maximisation.
- Average and range of operating profits in the industry. If the fishery is managed by a QMS then this should have objectives of continued reductions in fishing costs, better targeting of markets and therefore increasing profits. Profits can sometimes be hard to measure across the fleet but a useful proxy is "scarcity rent", which is simply the average lease price multiplied by the TAC.
- Structure and level of ownership of units (e.g. owner-operators, processors, investors etc) since this may impact on issues of competitive markets, potential for anti-competitive activities, foreign ownership etc.
- Impacts on marine habitat, non-targeted species and lobsters returned to the sea.

It should be noted that although a number of *ad hoc* studies have been undertaken, there is no commitment at present to formal ongoing monitoring of the economic parameters of the industry or of the ownership structure of units in the fishery. Such data collection systems would need to be initiated based on a period that coincides with 5-year reporting requirements, as part of the management planning process. Interim reporting of these data to RLIAC on an annual basis would also be beneficial in monitoring the fishery. Importantly, the level of catch / residual stock that delivers MEY will alter as a function of costs and price so ongoing assessment of economic data is required.

APPENDIX REQUISITES FOR AN OPTIMISED ICMS OR QMS

During the workshop, the RLIAC requested information on issue on the legislative, administrative, scientific and compliance systems that would be required to effectively introduce either the optimised ICMS or QMS, the readiness/capability of existing systems and any additional expenditure and activities that would be required. The Panel agreed to consider these issues when compiling their report.

It is clear that such a task would require considerable input and a detailed and prescriptive analysis is considerably beyond the terms of reference against which the Panel is reporting. That said, the Panel has given some consideration, based on their experience, to the key requisites that WA Fisheries would need to meet to implement either an optimised ICMS or a QMS.

Each of a number of key issues is discussed below. Most points under each heading apply equally to both optimised ICMS and QMS systems, and where differences exist between the two, these are noted. A previous RLIAC paper *Proposed Quota Settings for the West Coast Rock Lobster Managed Fishery* (Fisheries occasional publication No. 61) also provides a detailed consideration of some of these issues and associated estimated costs (for a QMS).

In the opinion of the Panel the cost estimates require further discussion with those that prepared them since there appears to be significant potential for cost reductions (for example though adaptation of lobster quota monitoring databases from elsewhere rather than building a new system). As a guide the current approximate cost of operating a QMS across 250 vessels in South Australia is $16,000/vessel. If the decision to move to a QMS is taken, then industry, as the primary user and funder for QMS support services should be closely involved in the development of systems and associated establishment and ongoing budgets. There are often trade-off between costs and compliance and industry is best placed to balance these.

Legal Framework

The *Fish Resources Management Act 1994* (FRMA) will provide the enabling mechanism with respect to the development of a new or amended Fisheries Management Plan. This Plan (or amended plan) would then incorporate the newly agreed Management Principles and Objectives. For a QMS, the TAC setting process, (which the Panel re-iterates) must be done independently and based on scientific advice, should be clearly articulated, including a clear route of consultation and advice up to the decision maker, which will presumably be the Minister or his delegate.

A wide range of new rules will be required, pertaining to both fishing operations and, in the case of the QMS, processors. This will cover issues such as logbooks and other reporting including VMS (if implemented). Rules establishing the property right through an appropriate register will be particularly important.

The Panel considers that the relative differences between the legislative requirements to implement an optimised ITE or QMS are not significant.

Licensing System and Databases

Three major database systems are typically used:

- a license management database, to include a register of interests (personal and vessel licences, pots, quota, vessels) and transfers (of permanent and seasonal quota and licenses),
- a quota Management System (QMS) , to deal with quota decrementation, and
- a catch and effort database that stores logbook data on fishing operations for monitoring of the fishery.

The databases require a comprehensive set of business rules and need to be linked through fields such as client ID and license ID for optimal functionality. In the case of the catch and effort database and the quota monitoring database there should be cross validation of catch information. If possible the recording system needs to operate in "real time" with quota or fishing day balances available immediately and via remote electronic access.

A QMS will require a substantially more complex and expensive data storage and handling capability than an ITE. Database establishment and per unit transaction costs and the ongoing maintenance and development costs of software and hardware can be substantial. The growth in database systems in quota fisheries (including rock lobster) at a range of levels and increasingly effective and lower cost IT software and hardware options should provide a range of off the shelf modules that will help minimise development and roll-out costs.

There is an initiative underway in southern rock lobster quota managed fisheries to standardise database systems as far as possible. The intent is to enable sharing of costs if changes are required, for example in shifting to a new software platform or integrating new technology such as electronic logbooks. Detection of errors and maintenance of database integrity checks is expected to improve with more users of the shared resource. The sharing of database systems (not data) between States is also intended to facilitate sharing of research data and thus provide better research capability. There would appear to be opportunity for WRL in becoming involved in this process.

Compliance

The current approach of ensuring boats are not fishing in closed or unlicensed areas will largely continue under an optimised ICMS. The introduction of VMS system to monitor fishing days and increase compliance cost-effectiveness is likely to be required. A QMS will require a different approach aimed at ensuring quota integrity, primarily by focusing on ensuring individual allocations are not exceeded. Experience from other fisheries has show that to effectively minimise quota fraud requires good data and intelligence, and specialised skills in investigation and forensic analysis. Rock lobster compliance systems and approaches have been refined over the last 20 years and as with technology, places WA in a good position to capitalise on the lessons learned in other jurisdictions.

Key compliance requirements under a QMS comprise:

- Prior reporting before landing to increase compliance effectiveness and an associated electronic reporting system, possibly using VMS-based technology.

- A VMS system, with the potential to be used beyond position reporting and provide catch and effort data and increased options for cost-effective spatial management.

- An electronic/paper audit trail to ensure product is traceable from the point of capture through to the final place of purchase, incorporating the processing sector.

- Additional responsibility for processors to establish and report catch weights, allowing for drip loss and other factors.

- Approved places/ports for unloading to minimise compliance risk.

- Consideration of innovative technology, such as video monitoring of scales/landing and the electronic lodgement of dockets.

- Special arrangements for the fishing landing and consignment practices at the Abrolhos, where mother ships are used.

Monitoring and Research

The shift to an optimised ICMS or QMS will change fisher behaviour as fishing occurs at different times of the year, and probably with an altered composition of skippers, depth of fishing etc. This change is likely to be greater under a QMS where beach price will have a greater influence on fisher behaviour, and multiple shots per day could be allowed. Changes in behaviour will alter CPUE data, which is a key indicator of stock status. To account for this change the catch rate data must be standardised (to remove the biases in CPUE caused by change in fishing patterns). Standardisation of catch rate data requires comprehensive logbook data that is linked to licensing and quota monitoring data (so that catch data can be standardised against license data such as skipper ID and vessel length).

The currently poor level of logbook return coverage should ideally be improved under both an improved ICMS and QMS to provide greater capacity to standardise CPUE data and thus provide more informed fishery management, although compulsory catch and fishing returns by area provide comprehensive, although less detailed data. It is well recognised by the Panel that the provision of voluntary log book data in the Western Rock Lobster Fishery has always been a difficult issue and the maximum support that has been provided by industry to such a scheme has rarely exceeded 30% of licence holders. As a result, other options for improving coverage might be investigated such as increased observer sampling although this is likely to be more costly. It is noted that the current concern with compulsory logbooks is related to the inability to control quality of data submitted; a QMS addresses this to a large degree as the audited catch through QMS allows logbook catches to be validated.

Improved data on recreational removals may also need to be considered, but appears a lower priority at this stage.

Other information required under both systems is direct on-board pot sampling, ongoing collection of biological data (e.g. is size at maturity changing), and monitoring of ecological indicators (e.g. bycatch). Some of this sampling requires observers but fishers can conduct other aspects themselves to reduce costs.

Pot sampling data could be collected through observer sampling or by fishers. Fisher-based pot sampling has been implemented effectively in SA and NZ with fishers measuring lobsters in 1 pot each day. This industry participation reduces data collection costs and also provides much better coverage across the stock than can be achieved with observers. Industry sampling in Tasmania is being conducted without paper to make the process simple and quick for fishers (using either electronic callipers to log each measurement or water-proof dictaphones). Pot sampling data assists length based modelling of regional trends in biomass and regional BSI, which was emphasised as a management need by RLIAC.

Collecting data on discarding / high grading is more important with QMS than ICMS. Discard data is collected effectively and at low cost through the catch and effort logbooks in SA and Tasmania with periodic validation by observers at sea and processor checks.

Economic data collection to monitor progress towards MEY-based objectives will need to be introduced as an ongoing data collection program. The SA approach using relatively simple and repeatable periodic surveys of fishing costs are a useful model that could be applied to the fishery. The SA cost survey is updated each year at very low cost by adjusting the main drivers of profit in the fishery (e.g. fuel, CPI, price) with period surveys each few years to update detailed economic data.

Price data should be obtained from processors because the size-splits in price should be included in bio-economic modelling. Size splits in price are typically averaged in the beach price paid by processors, so although fishers aren't directly exposed to this grading, they can have a profound effect on economic yield. These size splits become an increasingly important influence on economic yield as the stock rebuilds.

Annual reporting of economic data provides a valuable measure of trends in the fishery. Put simply, it's vital to monitor trends in economic yield of the fishery if the management goal is to target maximum economic yield.

Management

The shift to an optimised ICMS or QMS will require intensive management through a transition phase and then ongoing system performance monitoring and adjustments. It is recommended that, for either system, a framework is established through a management planning process that guarantees a partnership between industry and government to dealing with day to day management.

The framework will need to deal with the following as a minimum:

1. TAC or effort settings.
2. Spatial and/or biological settings.
3. Cost recovery.
4. Management efficiency targets.
5. Environmental issues.
6. Industry accreditation.
7. Resource sharing.
8. Fleet infrastructure (e.g. wharfs, jetties etc).
9. Innovations, and
10. Economic performance.

As pointed out by the Expert Panel in its report to RLIAC on a Quota Management System, the critical decisions under QMS will be about the initial TACC, initial allocation issues and how and when adjustments are made. A process which draws on the best science and involves industry communication and engagement, but which in the end is independent of industry is recommended. The same approach for dealing with ongoing effort offsets and adjustments will be required for the ICMS system. The added complexity under the proposed ICMS is the proposed ongoing unit buyback mechanism.

Importantly, it is critical that industry is well resourced and organised to ensure effective engagement. This could occur through and performance based contract between Government industry that requires professional and planned management activities by industry aimed at delivering all aspects of the management plan. The Government would source funding from the industry.