Western Australia Rock Lobster Fishery

2008 Annual Surveillance Report
As Required Under the Marine Stewardship Council Program

Prepared for:
Western Rock Lobster Council

Prepared by:
Chet Chaffee, Ph.D., Scientific Certification Systems
### General Information

<table>
<thead>
<tr>
<th>Certified Fishery</th>
<th>Western Australia Rock Lobster</th>
<th>Australia</th>
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<tbody>
<tr>
<td>Fishery Agency</td>
<td>Western Australia Department of Fisheries</td>
<td>Australia</td>
</tr>
<tr>
<td>Species</td>
<td><em>Panulirus cygnus</em></td>
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<tr>
<td>MSC Registration No.</td>
<td>SCS-MFCP-F-0081</td>
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<td>13 December 2006</td>
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<td>Certification Expiration Date</td>
<td>13 December 2011</td>
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<tr>
<td>Certification Body</td>
<td>Scientific Certification Systems, Inc. (SCS)</td>
<td>2200 Powell St., Suite 725, Emeryville, CA 94608</td>
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<tr>
<td>Certificate Holder</td>
<td>Western Rock Lobster Council</td>
<td>Australia</td>
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<tr>
<td>Surveillance Team</td>
<td>Chet Chaffee, Ph.D. (SCS)</td>
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<tr>
<td>Surveillance Stage</td>
<td>1st Annual Surveillance 2008</td>
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</table>
Preface
All facts in this report were provided to SCS by Western Rock Lobster Council and the Department of Fisheries. However, the interpretation, opinions, and assertions made in this report as to the compliance of the fishery with MSC requirements are the sole responsibility of Scientific Certification Systems, Inc.
Executive Summary
This is the 1st Annual Surveillance Report (2008) for the Western Rock Lobster Fishery prepared by SCS to meet the requirements of the MSC for annual audits of certified fisheries. It is SCS’s view that the WRL fishery continues to meet the standards of the MSC and to comply with the ‘Requirements for Continued Certification’. SCS found a couple of minor non-conformances that need to be addressed by the next annual audit. SCS also recommends the continued use of the MSC certificate through to the next annual surveillance audit.

Background
The WRL fishery in Western Australia was re-certified on 13 December 2006 by Scientific Certification Systems, Inc. after the first five years of its original certificate came to a close. The Western Rock Lobster Fishery was the first fishery certified under the MSC program, and is now the first fishery to get re-certified. As is common for this fishery, it continues to lead the community of fisheries into new territory by re-asserting its commitment to sustainable fisheries management.

The requirements of the Marine Stewardship Council (MSC) still require that each certified fishery undergo at a minimum an annual surveillance to ensure the basis of certification is maintained and that the fishery continues to meet any conditional requirements identified during the full assessment process. Should a fishery fail the surveillance audit, and cannot address identified deficiencies in a reasonable period of time, then the use of the certificate and the MSC logo can be revoked by the certifier.

This report represents the first annual surveillance since the fishery was certified. The issues for the certifier are whether the fishery has sufficiently acted on the required conditions set forth in the original certification report, and whether a random check on the performance of the fishery verifies continued compliance with the MSC standards.

The surveillance was conducted by Dr. Chet Chaffee of Scientific Certification Systems, Inc. Dr. Chaffee has more than 30 years in marine sciences, which include 10 in fisheries biology and ecology, over 10 in marine fisheries certification. In addition, Dr. Chaffee has been a lead auditor for assessments and certification in a wide array of fields for more than 18 years, including marine fisheries, marine aquaculture, consumer electronics, electricity production, forestry, building products, and consumer products. Dr. Chaffee has been an assessment team member on a number of MSC assessments including Mexico sardines, Baja lobster, Russian salmon, and British Columbia halibut. In addition, Dr. Chaffee has been a team leader on numerous fisheries assessments and pre-assessments in a number of countries.

Additional team members from the original assessment were not available for this assessment for a number of reasons of conflict of schedule and conflict of professional services.
However, the recent stock assessment produced by the Western Australia Department of Fisheries (DOF) was reviewed by requirement of SCS by a stock assessment expert appointed with approval of SCS. This serves the same purpose of having a specific stock assessment expert on the assessment team, and is why it was required by SCS as part of the condition placed on the fishery. The stock assessment expert is Dr. Norm Hall (Murdoch University, Western Australia), who has served as an internal stock assessment expert on a number of national and international projects and on at least 2 MSC assessment teams (Lakes and Coorong, Southern Australia; and Australia Antarctic Mackerel Icefish). In addition, the stock assessment model and results produced by the DOF and the independent review by Dr. Norm Hall were all peer reviewed by an additional expert panel that Dr. Paul Breen (National Institute of Water and Atmospheric Research, New Zealand), Dr. Malcome Haddon (Tasmanian Aquaculture and Fisheries Institute), Dr. James Ianelli (National Marine Oceanic and Atmospheric Administration, US), and Dr. Richard McGarvey (South Australia Research and Development Institute). All the expert panel members more than meet the criteria required by the MSC for assessment team members.

Similarly under Principle 2 issues, the Ecological Risk Assessment studies were produced by an expert, Dr. Richard Stoklosa with credentials that exceed those required by the MSC for assessment team members. In addition, the ERA included participation by and comments from stakeholders, thereby providing a most thorough review prior to acceptance by the DOF.

As a result, SCS felt that Dr. Chaffee was not in need of additional assistance during this annual surveillance visit to review the information for comparison to MSC standards or the conditions set forth in the fishery and determine if the fishery has continued to maintain its compliance with the MSC standard.

1st Annual Surveillance

The annual surveillance audit process (as always) is comprised of four general parts:

1. The certification body provides questions around areas of inquiry to determine if the fishery is maintaining the level of management observed during the original certification. In addition, the surveillance team requires that the client provide evidence that the fishery management system has taken the necessary actions to meet all conditions placed on the fishery during the initial certification assessment or any previous surveillance audits.

2. The surveillance/assessment team meets with the client fishery to allow the client to present the information gathered in answer to the questions asked by the surveillance team. The surveillance team can then ask questions about the information provided to ensure its full understanding of how well the fishery management system is functioning and if the fishery management system is continuing to meet the MSC standards.

3. The surveillance team presents its findings to the client fishery at the end of the site visit. The results outline the assessment team’s understanding of the information presented and its conclusion regarding the fishery management system’s continued
compliance with MSC standards. Where indicated, the surveillance team may provide the client fishery with additional time to supplement the information provided if the surveillance team finds that there are still issues requiring clarification.

4. Where appropriate, the client fishery submits final information to the surveillance/assessment team for consideration in the surveillance findings and report. The surveillance team then reviews the final information and submits a final report to the client fishery and the MSC for posting on the MSC website. If there are continued compliance concerns, these are presented as non-conformances that require further action and audits as specified in the surveillance report.

**Surveillance Meetings**

The surveillance audit comprised the following activities:

1. An exchange of information indicating to the client the areas of inquiry by SCS for the surveillance audit.

2. Meetings (face to face) were held in Perth, Australia with the client between March 28 and March 30. Additional follow up by teleconference was conducted between April 1 – April 4 with the Western Australia Department of Fisheries to discuss and exchange information needed to complete the surveillance audit. The discussion included a review of ongoing activities associated with the “Conditions” placed on the fishery by the original assessment was conducted.

3. A further exchange of documents from the client to SCS through April 25, 2008 occurred as a follow up to inquiries made during the meeting in Perth, Australia.

4. A final follow up was made between July 10 – and Aug 13 with the WA DOF providing additional information based on requests from the MSC during its review of the surveillance report submitted by SCS 4 May 2008.

**Data Submitted to SCS**

On behalf of the client, the Department of Fisheries prepared documents for submittal to SCS and during the on-site meetings answered questions put forward by SCS. The documents compiled and submitted to SCS are:

- Attachment 1.1. - Professor Norm Hall’s Review of the 2004 and 2005 stock assessment of the Western Rock Lobster Fishery, 10 June 2007. Professor Hall reviewed the DoF stock assessment for 2004 and 2005 under eight terms of reference. They covered: the data sets used; outcomes and the interpretation of and emphasis placed on them; the new fishery model being developed; advice to stakeholders and its robustness and issues raised by the certifying body. Professor Hall also made eight recommendations to improve the stock assessment process and make it more reliable and robust.
• Attachment 1.2 - The report of the International WRLF Stock Assessment and Modelling Workshop held between 16 and 20 July 2007. This report sets out the terms of reference (TOR) of the Workshop and the key recommendations under each TOR. Individual reports from each of the four international experts are appended along with the Workshop agenda. The report will be finalised by the end of February 2008 and released for stakeholder comment.

• Attachment 1.3 - Stock Assessment Technical Report. This is a large “living” technical document that sets out all the information used for the sock assessment and modelling of the WRLF. An earlier version of this report was sent to participants prior to the International Stock Assessment and Modelling Workshop between 16 and 20 July 2007.

• Attachment 1.4 - List of invitees and list of those who attended the International Stock Assessment and Modelling Workshop held between 16 and 20 July 2007.

• Attachment 1.5 - Agenda, list of invitees and the covering letter for the International Stock Assessment and Modelling Workshop held in July 2007.

• Attachment 1.6 - Confidential. Draft Decision Rules (Harvest Strategy) paper. The paper sets out the harvest strategy for the WRLF and incorporate explicit reference to breeding stock levels; exploitation rates; the uncertainties associated with stock status and how management will take uncertainty into account.

• Attachment 1.7 - Update regarding the low rock lobster puerulus settlement in 2007-08.

• Attachment 1.8 - Update on the Status of Western Rock Lobster Fishery Management Discussions for the 2008/09 season.

• Attachment 2.0.1 - Marine Futures – The Marine Futures Project supports natural resource management by developing marine resource indicators based on an improved understanding of the relationship between marine habitats, biodiversity and our use of these values. Marine Futures is the largest marine resource management investment by the Natural Heritage Trust in Western Australia to date, and has an array of outcomes which will be useful for many key stakeholders. The Marine Futures project is a partnership between Natural Resource Management (NRM) regional councils, the Australian and West Australian Governments, the University of Western Australia and Fugro. See Attachment 2.0 and http://www.marinefutures.com.au/about for more details.

• Attachment 2.0.2 - An article, published in Western Fisheries, on the Department of Fisheries’ recently completed project investigating at the effects of fishing on mature rock lobsters in deepwater, using gradients in abundance. The Department
is currently seeking FRDC funding for a new effects of rock lobster fishing project, using fished and unfished areas.

- Attachment 2.1 - Report of the WRL Ecology and Effects of Fishing Workshop held on the 8 and 9 of August 2007. Includes the workshop agenda with a list of participants.

- Attachment 2.2 - DoF’s revised application to FRDC to fund its deepwater research project on the ecological effects of fishing. The project will compare fished and unfished areas.

- Attachment 2.3 - A paper addressing issues raised by Ecological Effects of Fishing Scientific Research Group (Eco SRG) members regarding undertaking research on the ecological effects of fishing in deepwater.

- Attachment 2.4 - Data showing the depth distribution of large (mainly mature) lobster. For coastal areas, large and mature lobsters are found in waters generally greater than 40m, where they make up the bulk of the lobster biomass.

- Attachment 2.5 - Chairman’s Report of the Eco SRG meeting held on 10 August 07 (after the WRL Ecology and Effects of Fishing Workshop, 8 and 9 August 07) to help develop a new deepwater ecological effects of fishing research project using areas closed to fishing. The Eco SRG established objectives for the project and criteria for selecting areas to close to fishing.

- Attachment 2.6 - Annual State of the Fishery Report (2005/06 fishing season), which reports the analysis of bycatch data for species taken by the WRLF.

- Attachment 2.7 - Fisheries Research and Development Corporation (FRDC) is the Commonwealth Government body that provides grants to individuals, organisations, institutions and Government Departments to undertake fisheries related research. An application has been made to FRDC to fund the proposed DoF deepwater ecology research project. FRDC is also funding the Murdoch University / CSIRO marine ecology and food web modelling project.
  http://www.frdc.com.au

- Attachment 2.8 - Strategic Research Fund for Marine Science (SRFME) has undertaken research on the effectiveness of areas closed to fishing in marine parks. SRFME has done work at Jurien Bay, Marmion and Rottnest Island.

- Attachment 2.9 - Western Australian Marine Science Institute (WAMSI) is a group of collaborating institutions and Government Departments that are undertaking marine research in six Nodes. Node 4.1 of WAMSI is concerned with ecologically based fisheries management.
  http://www.wamsi.org.au/research/nodes
Attachment 2.10 - Western Australian Integrated Marine Observing System (WAIMOS) undertakes remote sea water monitoring, specialising in the continental shelf and slope region between Jurien Bay and Fremantle and the Leeuwin Current System. The Leeuwin Current, the Leeuwin Undercurrent and Capes Current controls not only the physical system but also links to both pelagic and benthic ecosystems.


Attachment 2.11 - Wealth From Oceans (WFO) is a CSIRO research Flagship that undertakes research to deliver economic, social and environmental wealth based on leadership in understanding ocean systems and processes. There are four research themes within the Wealth From Oceans Flagship.


Attachment 2.12.1 - Report of the Western Rock Lobster Fishery Environmental Risk Assessment (ERA) – 2 and 3 April 2007. The ERA was conducted by independent risk consultant Mr Richard Stoklosa. All hazards that were ranked moderate or above by one or more participants at the 2005 ERA were reassessed and only one hazard – effect of bait bands on Dusky Whaler sharks – did not have sufficient management mitigation to address the risk and was therefore put through a CSIRO / AFMA Level 2 assessment. The recommended management mitigation was to ban bait bans in the fishery.

Attachment 2.12.2 - Survey of stakeholder satisfaction with the Western Rock Lobster Fishery Ecological Risk Assessment held on 2 and 3 April 2007.

Attachment 2.13 - Murdoch University and CSIRO’s funding application to FRDC for a project to “Evaluating how food webs and the fisheries they support are affected by fishing closures in Jurien Bay, temperate Western Australia”.

Attachment 2.14 - DoF’s marine research project on Developing Marine Resource Indicators. The Swan Catchment Council (SCC) has placed a high priority on determining key marine resource condition indicators to assist in the development of marine resource condition targets (RCTs) and the long-term monitoring of the Swan Region’s (Perth and Fremantle metro) marine fauna and habitat. $600 000 has been allocated.

Attachment 2.15.1 - Western Rock Lobster Council’s letter to the Rock Lobster Industry Advisory Committee recommending that bait bands be prohibited on rock lobster vessels that are actively fishing.

Attachment 2.15.2 - Rock Lobster Industry Advisory Committee’s confidential recommendations to the Minister for Fisheries regarding bait bands. The Minister has yet to make his decision.
- Attachment 2.16 - Independent monitoring data regarding the WRLF’s adherence to the industry code of practice regarding cutting bait bands and returning them (along with other “bait” rubbish) to onshore disposal bins.


- Attachment 2.17.2 - Agenda of the Sea lion Scientific Reference Group meeting 20 August 2007.

- Attachment 2.17.3A - Draft report sent to participants prior to the Sea lion Scientific Reference Group meeting of 20 August 2007.

- Attachment 2.17.3B - Map accompanying the draft report sent to participants prior to the Sea lion Scientific Reference Group meeting of 31 March 2006 and for the Compliance data (Attachment 2.17.4).

- Attachment 2.17.4 - Independent patrol vessel monitoring data showing the level of the WRLF’s compliance to the use of Sea lion exclusion devices (SLED) in the mandatory SLED zone. See also map at Attachment 2.17.3B.

- Attachment 2.17.5 - Chairman’s report of the Sea lion Scientific Reference Group meeting of 20 August 2007.

- Attachment 2.18.1 - Fisheries Research and Development Corporation notification to the Department of Fisheries regarding its funding application for the western rock lobster ecological effects of fishing in deepwater project, using fished and unfished area comparisons.

- Attachment 2.18.2 - Department of Fisheries’ response to FRDC’s notification regarding the western rock lobster ecological effects of fishing deepwater project.

- Attachment 2.18.3 - DoF’s revised application to FRDC to fund its deepwater research project on the ecological effects of fishing. The project will compare fished and unfished areas.

- Attachment 2.19 - Update on negotiations with the rock lobster fishing industry to establish research closures to assess the ecological impact of the Western Rock lobster fishery using fished and unfished area comparisons.

- Attachment 2.20.1 - Biodiversity and Biosecurity Branch Strategic Plan 2007-2010. DoF has established a dedicated Biodiversity Branch to significantly increase its capacity to undertake aquatic ecology, biodiversity and biosecurity research and management.
Results

The first points discussed with the Client and the Department of Fisheries comprised progress made on Conditions set forth in the original re-assessment report. The following Table identifies the Conditions, the Action Plan, and the progress made to date in meeting the Conditions.
### Table of Conditions, Action Plan, and Progress against Conditions

<table>
<thead>
<tr>
<th>Performance Indicators and Conditions</th>
<th>Action Plan to Address Conditions</th>
<th>Progress and Comments</th>
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<tr>
<td>1.1 (MSC Criterion 1) The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.</td>
<td>Corrective actions under 1.1. will be dealt with in conjunction with the independent consultant’s assessment of the 2004 and 2005 western rock lobster (WRL) stock assessment as detailed in the contract WAFIC has with Dr Norman Hall. <strong>The work will be peer reviewed</strong> by a recognized expert that meets the approval of the certification body.</td>
<td><strong>Completed.</strong> Professor Hall has completed his review of DoF’s 2004 and 2005 western rock lobster (WRL) stock assessment (Attachment 1.1).</td>
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<tr>
<td><strong>The work will be peer reviewed</strong> by a recognized expert that meets the approval of the certification body.</td>
<td>Professor Hall has completed his review (Attachment 1.1) of DoF’s stock assessment methods and results and has made the following recommendations:</td>
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<td>1. Consideration should be given to developing an assessment checklist or formal assessment framework, based on the criteria/sub criteria of MSC Principle 1, and to undertake self-assessment based on the guideposts of those criteria, to ensure that future assessments are comprehensive and</td>
<td>1. Assessment Checklist / formal assessment framework for future stock assessments is currently being developed and should be completed by the time of the 2nd audit in November 2008.</td>
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As part of the surveillance audits, SCS found a number of issues of concern with the most recent assessment in the fishery related to productivity of the target stock. The issues of sufficient concern to cause the need for “conditions” to be invoked were identified and reported in 2005 (see Chaffee. C. et al. 2004 and Chaffee. C. et al. 2005). The “conditions” relevant to getting a better understanding of the current assessments on target stock productivity are being addressed by a formal review of the Department of Fisheries’ (DoF) assessment methods and results. The review is being conducted by Dr. Norm Hall (Murdoch University).
<table>
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<tr>
<th>2.</th>
<th>A formal and comprehensive technical report should be developed as a ‘living-document’ to describe any stock assessment that is undertaken, such that this may be updated at each new assessment.</th>
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<td>2.</td>
<td>The implications of uncertainty have been and continue to be explored and will be reported on at the 2nd annual audit in November 2008 (see Attachment 1.3). They will be reported in all future stock assessments.</td>
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<td>3.</td>
<td>An appropriate integrated assessment model has been developed (and continues to be refined). The model has the ability to explore the implications of uncertainty and to assess harvest strategies. The model was developed with input from four international experts in stock assessment and modelling at the Stock Assessment and Modelling workshop held in July 07.</td>
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<td>4.</td>
<td>DoF has assigned a full time experienced modeler, Mr Peter Stephenson to the development of the integrated assessment model. Mr</td>
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<td>An appropriate integrated assessment model.</td>
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<td>6.</td>
<td>A comprehensive, computer-stored collection of the papers and reports related to Western Rock Lobster should be developed to facilitate future research.</td>
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<td>7.</td>
<td>For any new stock assessment, a copy of each of the working documents, data sets, computer programs, presentations, results of analyses, and reports related to the assessment should be stored within a computer repository specific to that stock assessment.</td>
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<td>8.</td>
<td>Reference points and the decision rule framework need to be revised such that they recognize the uncertainty that is present within data and the results of stock assessment and take this uncertainty into account.</td>
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\(^1\) DoF is currently revising the decisions rules for the fishery, rather than the harvest strategy as per the AFMA / CSIRO definition of harvest strategy (see Commonwealth Fisheries Harvest Strategy Policy [http://www.daff.gov.au/fisheries/domestic/harvest_strategy_policy](http://www.daff.gov.au/fisheries/domestic/harvest_strategy_policy)), which includes monitoring the fishery, stock assessment and the control or decision rules.

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Western Rock Lobster (Australia) 14 SCS
A discussion paper (Attachment 1.6) is being developed to go to stakeholders by October 2008. Decisions regarding the proposed changes to the reference points and decision rules will be reported at the 2nd annual audit in November 2008. The revised reference points and decision rules will specifically take into account the uncertainty that is present within the data and the results of stock assessments.

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<tr>
<td>1.1.1.5 Information is collected on the abundance/density of the stock. <strong>Score 75</strong> Condition Resolve identified inconsistencies between time series of data and the various methods employed to assess the status of the stock (for details of suggested approach, see Corrective action for indicator 1.1.5.1). A review by Dr. Norm Hall (Murdoch University) is already underway as a result of a previous condition placed on this fishery during a past surveillance audit (as Corrective actions under 1.1.1.5 are dealt with as part of the overall work being conducted by Prof. Hall in his review of the 2004 and 2005 western rock lobster (WRL) stock assessment. <strong>Timelines:</strong>  - The independent consultant’s terms of reference will be circulated to stakeholders and placed on the WAFIC website by the end of November 2006.  - The independent consultant’s report will be completed by the end of March</td>
<td>Completed.</td>
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described under Principle 1, Criterion 1 above). Under this Condition, WAFIC is obliged to complete a technical review of the modelling efforts to understand stock status and to address any identified inconsistencies through more thorough analyses or through the implementation of management measures or industry practice.

The condition in this report requires an Action Plan that specifically places the contract with Dr. Norm Hall in the public domain for all stakeholders to be able to read, that specifically states how the results will be published that allows stakeholders to be alerted to the findings, that specifically indicates the time frame and mechanism the client (WAFIC) will use to discuss the outcomes of Dr. Hall’s review and the response to the outcomes, and that specifically states exactly when the entire process will be completed. Although SCS is not in a position to dictate time frames for each specific factor, SCS does require that all of the steps required under this condition be completed prior to the first annual surveillance audit and that any management or industry actions required as a result of Dr. Hall’s review be implemented prior to the second annual surveillance audit.

| 2007. | schedule, the report was completed in time to have it peer reviewed and for management actions to be considered. |
| 2007. | **Completed.** Peer reviewers were chosen with full understanding of the CB. A peer review of Professor Hall’s report was undertaken by a team of four international fisheries experts in July 07 (attachments 1.1, and 1.2). |
| 2007. | **Completed.** Peer review was completed in June 2007 (Attachment 1.2, Term of Reference 4). |
| 2007. | **Acceptable Progress.** Prof. Hall’s report has been circulated and was posted on the WAFIC website in June 2007. The report of the WRLF Stock Assessment and Modelling Workshop, which contains the peer review report has been completed and is expected to be circulated to stakeholders and put on the WAFIC website by the end of June 2008. This again is slightly behind schedule, but the work has been completed and goes well beyond that required under the Condition. SCS is satisfied that the Condition is being met and accepts the variance to the timeline provided. |
| 2007. | **Completed.** WRLC and DoF have |

- A peer reviewer of Dr Hall’s will be appointed in conjunction with the CB.

- Peer review report is expected in May 2007. CB to provide comment on consultant’s report and peer review.

- Circulate all reports to stakeholders and place on the WAFIC website after receiving the CB’s comments.

- Completed. Peer reviewers were appointed in conjunction with the CB.

- Peer review report is expected in May 2007 (Attachment 1.1). CB to provide comment on consultant’s report and peer review.

- Circulate all reports to stakeholders and place on the WAFIC website after receiving the CB’s comments. Completed. Peer review was completed in June 2007 (Attachment 1.2, Term of Reference 4).

- Acceptable Progress. Prof. Hall’s report has been circulated and was posted on the WAFIC website in June 2007. The report of the WRLF Stock Assessment and Modelling Workshop, which contains the peer review report has been completed and is expected to be circulated to stakeholders and put on the WAFIC website by the end of June 2008. This again is slightly behind schedule, but the work has been completed and goes well beyond that required under the Condition. SCS is satisfied that the Condition is being met and accepts the variance to the timeline provided.

- Completed. WRLC and DoF have
- WAFIC and the Department of Fisheries (DoF) to develop a draft Action Plan (AP) to address any concerns related to the reviews, within five months of receiving the peer review and comments from the CB.

- WAFIC will convene a meeting of stakeholders (e.g. WAFIC, DoF, RLIAC, WRLC, WA Conservation Council, WWF, fisheries experts from the Universities, etc) and the independent consultant (Dr Norm Hall) to review the draft AP, within three months of it being approved for consultation by the CB.

| Ok | accepted all Prof Hall’s recommendations and have or are in the process of implementing them. The recommendations of the International WRLF Stock Assessment and Modelling Workshop held in July 07 and DoF’s responses to the recommendations, under the heading Current and Future Directions form the AP (Attachment 1.2) required under the Condition. |

**Acceptable Progress.** A WRLF Stock Assessment and Modelling Workshop was conducted between 16 and 20 July 2007 (for information sent to workshop participants, the list of invitees and the agenda were provided to the CB (Attachments 1.3, 1.4 and 1.5 respectively). All the stakeholders mentioned were invited to the workshop and to the presentations that each of the international experts gave on the final day. The recommendations in the report of the workshop form the proposed action plan and response to this condition. The report of the workshop will be published by the end of May 08. While slightly behind schedule, SCS finds the outstanding work to date to more than meet the Condition, with the small exception of the release of
- Appropriately amend the draft AP in accordance with stakeholder review, within two months of the stakeholder meeting.

- Submit AP for approval to the CB.

- WAFIC will try its best to have the Action Plan recommendations commenced within 12 months of the CB approving the AP. Management actions that follow on from the results if the work are still expected to be implemented by the time of the second surveillance audit.

the workshop report. As a result, SCS finds the progress acceptable to date and accepts the variance in the proposed timeline.

**Completed.** A WRLF Stock Assessment Workshop Report (with recommendations that form the AP) has been completed and will be circulated to all stakeholders and put on the WRLC website by the end of May 2008 (Attachment 1.2). Comments on the recommendations will be sought from stakeholders and if appropriate they will be incorporated.

**Completed.** The AP (recommendations of the workshop and DoF’s responses) were provided to the CB. The CB found the work conducted to formulate and properly review the AP acceptable.

**Acceptable Progress.** The recommendations of Prof Hall and the International Stock Assessment and Modelling Workshop have either been completed or are being implemented. The additional research required to fulfill all of the recommendations has either been completed or is underway. Some aspects will be ongoing. SCS finds the progress acceptable to date as there have been many changes already implemented, including
### Performance Indicators and Conditions

| **1.1.2.2** Fishing effort is recorded, estimated, and standardized to effective fishing effort. | **Score 75** | **Condition**
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The first part of this condition is the same as for 1.1.1.5 in that the review by Dr. Norm Hall should address this issue.

In addition, the client is responsible for making sure that a specific analysis is undertaken that addresses the results in Wright et al. (in press). The analysis should specifically identify the fishing effort currently in the WRL fishery including apparent cycles and trends in catchability. The analysis should expressly reconcile all results with trends in other time series of data for the fishery, by fitting all time series simultaneously to models of the fishery, and specifically identify where any inconsistencies exist, why they exist, and a recommended course of action. This must be completed prior to the first annual surveillance audit.

### Action Plan to Address Conditions

Most corrective actions under 1.1.2.2 are being dealt with in conjunction with the recommendations from Prof. Hall’s review of the 2004 and 2005 western rock lobster (WRL) stock assessment, as summarized above.

**Additional corrective actions:**

- DoF to undertake an assessment of the application of the results of the Wright et al. (2008) paper. It will specifically identify:
  - the levels of effective fishing effort currently in the WRL fishery, and
  - the apparent inter-annual variations and trends in catchability.

- DoF to undertake an analysis to compare the results of the Wright paper and other time series of data with the efficiency rate increases used in the past.

### Progress and Comments

**Acceptable Progress.** This work has been undertaken in conjunction with the development of a fully integrated model of the fishery. The model, while having its initial formation completed on time to meet this Condition, is still being refined and tested. SCS therefore considers work on this condition to be ongoing. SCS is extending the timeline to meet the final model completion to the 2nd audit in November 08.

- **Acceptable Progress.** The estimates of the levels of effective effort in the fishery have been estimated from the depletion work of Wright et al. The first runs of the fully integrated model...
to determine whether the efficiency estimates need to be revised. This will be done by:
  - fitting the time series (e.g. different breeding stock indices) simultaneously to a model(s) of the fishery,
  - specifically identifying where any inconsistencies exist and attempting to explain these, and
  - recommending a course of action to address issues identified.

using the time series data have been completed. This is an ongoing process and will be repeated, as the model is refined. The integrated model is also currently being used to identify any inconsistencies in the time series data and to explain them. This work is ongoing. SCS finds the work completed to date more than acceptable. Normally, SCS would sign off on this Condition, but the WRLC and DoF have identified the fact that additional work needs to be completed. SCS is therefore extending the timeline on these analyses to the time of the second annual surveillance.

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<tr>
<td>1.1.4.4 Harvest strategies are precautionary</td>
<td>Most corrective actions under 1.1.4.4 will be dealt with in conjunction with the recommendations from Prof. Hall’s review of the 2004 and 2005 western rock lobster (WRL) stock assessment, as summarized above.</td>
<td>Acceptable Progress. DoF has reviewed the harvest strategy (Attachment 1.6). The approach used to revise the decision rules and what the new decision rules should</td>
</tr>
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</table>
become apparent. The one thing the harvest strategy does not currently include are explicit measures to be more precautionary as uncertainty about stock status increases. This indicator does not therefore meet the 80 scoring guideline.

Condition
The first part of this condition is the same as for 1.1.1.5. In addition it requires that the harvest strategy framework now in place must be revised to incorporate findings from the review being completed by Dr. Hall. The harvest strategy must be revised to include explicit reference to measures of uncertainty about current stock status, how uncertainty will be measured on an ongoing basis (taking account of trends in the full range of indicators available to the assessment), and how management will take into consideration uncertainty in its ongoing harvest policy responses. The revised strategy should specifically address the basis for considering the harvest strategy as precautionary.

- DoF will revise the harvest strategy documentation to include:
  - any relevant recommendations from the independent consultant (Dr Hall) will be considered in the review.
  - DoF will revise the harvest strategy documentation to include:
    - explicit reference to measures of uncertainty about stock status,
    - how management will take into consideration uncertainty in its ongoing harvest policy responses.

include were endorsed at the international WRLF Stock Assessment and Modeling Workshop (Attachment 1.2). An outline of the new decision rules framework was presented to industry stakeholders during the RLIAC Coastal Tour in October 07. A draft discussion paper was developed and was supported by RLIAC at its 5 February 08 meeting. It is proposed that the draft will be submitted to the Minister for Fisheries in June for approval to release for public comment, so that it can be released prior to September 2008 to coincide with the annual RLIAC Coastal Tour scheduled for October 08². An AP has been developed to progress this condition, it comprises the WRLF Stock Assessment and Modeling Workshop recommendations under Term of Reference 3 (To review the current western rock lobster stock assessment process and proposed future research.) and DoF’s responses to the recommendations under the heading – Current and Future Directions (Attachment 1.2)

Although the harvest strategy has not yet been fully released, it is under review and

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² Although it is anticipated that the Decision Rules paper will be released for public comment by September 2008, it should be noted that neither WRLC nor DoF can guarantee the timing, as the final decision rests with the Minister for Fisheries.
WAFIC is required to detail a work plan to meet this Condition in an Action Plan submitted to SCS for approval. The time frame for completing the action must be prior to the second annual surveillance audit under the current certification of this fishery. SCS finds the work completed to date to be acceptable progress toward meeting the Condition.

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</table>
| 1.1.5.1 Robust assessment methods are used to provide advice on stock status | ACTION PLAN  
Same as for 1.1 and 1.1.1.5 above.  
Most corrective actions under 1.1.5.1 will be dealt with in conjunction with the recommendations from Prof. Hall’s review of the 2004 and 2005 western rock lobster (WRL) stock assessment, as summarized in 1.1 above and detailed in Attachment 1.  
**Additional corrective actions:**  
- DoF to undertake a full quantitative assessment of the WRL stocks using appropriate models and fitted to all relevant time series data. The assessment to be guided by the results of the review by Dr. Hall. | Timelines  
As for 1.1 and 1.1.1.5 above.  
See responses to 1.1 and 1.1.1.5 above. |
### Performance Indicators and Conditions

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<tr>
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<tbody>
<tr>
<td>1.1.5.3 Uncertainties and assumptions are reflected in management advice.</td>
<td>Most corrective actions under 1.1.5.3 will be dealt with in conjunction with the recommendations from Prof. Hall’s review of the 2004 and 2005 western rock lobster (WRL) stock assessment, as summarized in 1.1 above and detailed in Attachment 1. <strong>Additional corrective actions:</strong></td>
<td>See Above.</td>
</tr>
<tr>
<td>Score 65</td>
<td></td>
<td></td>
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<tr>
<td>Condition</td>
<td></td>
<td><strong>Acceptable Progress.</strong> DoF is continuing to progress work that will enable it to include “best estimates” of stock status and a forecast of the effects of management arrangements in the 2008 and all future annual stock status reports on the WRL fishery. The report is expected to be published by the end of May 2008. The Stock Assessment advice will be built into the fisheries formal management</td>
</tr>
<tr>
<td>All future advice by management to RLIAC, the Minister, and stakeholders, must include as a routine feature, “best estimates” of stock status and a forecast of effects of management arrangements. At the same time, the advice must also provide a clear indication of the major uncertainties in current assessments and projections. (see also Condition to indicator 1.1.4.4, 1.1.5.1 and 1.1.5.2).</td>
<td></td>
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<tr>
<td></td>
<td>The Action Plan submitted to SCS must include a description of how this</td>
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requirement will be built into the formal processes of RLIAC and advice to the Minister, and the functions required must be implemented prior to the second annual surveillance audit.

process by being presented at the fisheries main management meetings (which take place prior to the commencement of each fishing season), to RLIAC and the Minister. The results will also be published in DoF’s annual State of the Fisheries Report, which is presented to Parliament.

It is expected that both action items will be completed prior to the 2nd annual audit in November 2008.

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<tr>
<td>1.1.5.5 The assessment includes a quantitative evaluation of the consequences of current harvest strategies.</td>
<td>See the summary of the recommendations Prof Hall’s review of the stock assessment process in 1.1 and detailed in Attachment 1.</td>
<td>See above.</td>
</tr>
<tr>
<td>Score 65</td>
<td></td>
<td>Acceptable Progress. Attachment 1.3 (Stock Assessment for the Western Rock Lobster), which will be published by the end of May 2008, shows the stock remaining above the LRP.</td>
</tr>
<tr>
<td>Condition</td>
<td>Additional corrective actions:</td>
<td>This work is coupled to the progress in developing a fully integrated model of the fishery. The ability for the new integrated model to run sensitivity tests on these uncertainties has been developed. These</td>
</tr>
<tr>
<td>The first part of this condition is the same as that for 1.1.1.5, 1.1.5.1, 1.1.5.2, and 1.1.5.3.</td>
<td>• Results that describe the probability of the WRL stock remaining above agreed reference levels will be published in DoF’s annual stock assessment reports.</td>
<td></td>
</tr>
<tr>
<td>The second part of this Condition is the requirement to expressly publish results that describe the probability of the stock remaining above agreed reference levels. Where a current assessment can not reconcile contradictory trends in different time series of data, the analysis for the stock assessment and DoF’s published</td>
<td>• Where an assessment cannot reconcile contradictory trends in different time series of data, the analysis for the stock assessment and DoF’s published</td>
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</table>
time series of data, the analysis and published reports must undertake and report on sensitivity tests to these uncertainties in assessing consequences of future harvest strategies. The implementation of this mechanism by the management system must take place either prior to the second annual surveillance audit or before a second fishing season occurs under this re-certification.

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<th>reports will report on sensitivity tests undertaken on these uncertainties and how they have been taken into account.</th>
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<td>Timeline</td>
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<tr>
<td>The above actions will be completed by September 2008, i.e. prior to the fishery’s second annual audit.</td>
</tr>
<tr>
<td>tests will have been conducted prior to the 2nd annual audit in November 2008.</td>
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PRINCIPLE 2
Overview of Recent Developments

1. Update on DoF’s application to FRDC to fund its project to assess the ecological impact of the Western Rock lobster fishery using fished and unfished area comparisons:
   a. FRDC’s notification to DoF regarding its funding application – Attachment 2.18.1
   b. DoF’s response to the issues raised by FRDC – Attachment 2.18.2
   c. DoF’s revised application to FRDC – Attachment 2.18.3

2. Update on negotiations with the rock lobster fishing industry to establish research closures to assess the ecological impact of the Western Rock lobster fishery using fished and unfished area comparisons – Attachment 2.19

3. DoF has established a dedicated Biodiversity Branch to significantly increase its capacity to undertake aquatic ecology, biodiversity and biosecurity research and management:
   a. Biodiversity and Biosecurity Branch Strategic Plan 2007-2010 – Attachment 2.20.1
   b. Biodiversity and Biosecurity Branch Organisational Structure – Attachment 2.20.2

4. Ecologically Based Fisheries Management (EBFM). DoF has recently commenced a move to EBFM whereby it will focus on managing fisheries within a much broader ecological framework than previously. This is part of DoF’s five year strategic plan to be WA’s leading aquatic management Agency. EBFM will involve a broader group of stakeholders and will include fishery, ecology, social and economic inputs. A core aspect of EBFM assessment is risk analysis for the WA’s four bioregions and strategic planning and prioritization of research and management to address both short and long term bioregional issues. The first area to undergo EBFM planning is the West Coast Bioregion, which contains the WRLF. Attachment 2.21.1 provides an overview of DoF’s EBFM, Attachment 2.21.2 gives a basic summary of the EBFM process and Attachment 2.21.3 shows the West Coast Bioregion component trees use for the EBFM risk assessment of that bioregion.

6. New management arrangements have recently been put in place to protect and rebuild demersal scalefish on the WA west coast. The arrangements have reduced rock lobster fisher access to the fishery from 500 to 10. Rock lobster fishers are also banned from catching demersal scalefish from their vessels for personal consumption (including fish that are incidentally taken by rock lobster traps). For a general over view of the management arrangements see: www.wafic.org.au/prowest/editions.phtml ProWest publications Jan/Feb 08, p16 and Apr/Mar 08, pgs 6 & 7.
To view the management plan see: www.slp.wa.gov.au/statutes/subsiduary.nsf/FisheriesT?OpenView&Start=1&Count=400 West Coast Demersal Scalefish.

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<th>Performance Indicators and Conditions</th>
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| 2.1.1.1. The nature and distribution of habitats relevant to the fishing operations is known. | • DoF to utilise the outputs from the Marine Futures project (marine mapping $4.2 million NHT\(^3\) project by University of WA) that is developing habitat maps and resource condition indicators and targets for areas within the WRL fishery region using an internationally recognised classification system. This project will cover significant, representative areas of the fishery (Abrolhos, Dongara, Jurien and the Capes). | Acceptable Progress. DoF has utilized the outputs of the Marine Futures\(^6\) project that is developing habitat maps and resource condition indicators and targets for areas within the WRL fishery region using an internationally recognised classification system (see Attachment 2.0.1. and (http://www.marinefutures.com.au/about). This project covered significant, representative areas of the fishery (Abrolhos, Dongara, Jurien and the Capes). Results of this project will be available in February 08 (FRDC 3 DNHT – National Heritage Trust.

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\(^3\) DNHT – National Heritage Trust.

\(^4\) SRFME – Strategic Research Fund for the Marine Environment

\(^5\) WAMSI – Western Australian Marine Science Institute

\(^6\) The Marine Futures Project supports natural resource management by developing marine resource indicators based on an improved understanding of the relationship between marine habitats, biodiversity and our use of these values. Marine Futures is the largest marine resource management investment by the Natural Heritage Trust in Western Australia to date, and has an array of outcomes which will be useful for many key stakeholders. The Marine Futures project is a partnership between Natural Resource Management (NRM) regional councils, the Australian and West Australian Governments, the University of Western Australia and Fugro.
stakeholders and other government agencies to ensure maximum compatibility with other efforts in the region and throughout Australia.

This condition must be met prior to the third annual surveillance of the fishery.

<table>
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<tr>
<th>Stakeholders and other government agencies to ensure maximum compatibility with other efforts in the region and throughout Australia.</th>
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- The current DoF deep-water research project includes a pilot study on deepwater habitat mapping, which will be completed and reported on in the first half of 2007. The results will be linked with information available from other sources and the shallow water habitat mapping being produced as part of the ecological research projects that are currently being undertaken or planned by CSIRO / SRFME⁴ / WAMSI⁵.
- DoF to hold a workshop prior to the end of 2007 to develop an ongoing research project for ecosystem research that will address the issues raised in the EcoSRG plan and this condition.

**Timeline**
The Marine Futures marine habitat December 07 milestone report), January 08 (Western Fisheries article - Attachment 2.0.2) and December 08 (final FRDC report). Aspects of this work are ongoing and will be reported at the 2nd and 3rd annual audits and beyond.

**Acceptable Progress.** The DoF’s pilot study on deepwater habitat mapping, was completed in mid 2007 and the report on this aspect of the deep-water project will be completed by Dec 2008. The preliminary results of the habitat mapping were presented at the WRL Ecology and Effects of Fishing Workshop held on 8 and 9 August 07 and at the Eco SRG meeting held on 10 August 07.

DoF also held a workshop on WRL Ecology and Effects of Fishing on 8 and 9 August 07 (see workshop report at Attachment 2.1). International, interstate and West Australian based researchers attended and presented the results of all marine ecological research of relevance to the WRL. Attendees also discussed the results of the recent DoF deep-water project and issues associated with the development of a new deep-water project on the effects of fishing, using fished and
mapping project and the current FRDC deep water project should be completed prior to the fishery’s third annual audit. Research results that are available from these research projects at the time of the third annual surveillance of the fishery will be available for the CB’s assessment team.

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<th>Unfinished area comparisons.</th>
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| A meeting of the Eco SRG was held after the workshop, on 10 August 07 to help develop a new research project to investigate the ecological effects of fishing in deep water, i.e. on the large / mature rock lobster stocks. In particular the Eco SRG supported WRLC’s and DoF’s recommendation to use fished and unfinished area comparisons and established criteria for the selection of the unfinished areas. (Attachment 2.2 – DoF’s FRDC deepwater eco effects of fishing research funding application to FRDC (funding to be confirmed – see overview of recent developments at the end of Principle 2); Attachment 2.3 – A paper addressing issues the Eco SRG raised regarding undertaking research on the ecological effects of fishing in deepwater and Attachment 2.4 – Data on the depth distribution of mature lobsters). The Chairman’s report of the Eco SRG meeting held on 10 August 07 (Attachment 2.5) sets out objectives for the new project. The WRLC, RLIAC and DoF are well advanced in their negotiations with fishers to establish a closed area(s) that meet the scientific criteria established by the Eco SRG.  

Further progress will be reported at the 2**nd** and 3**rd** annual audits in November 2008 and 09. |
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<tr>
<td>2.1.1.2 Information on non-target species affected by the fishery, including incidental mortality, is known.</td>
<td>The data on bycatch collected as part of DoF’s Catch and Effort System (monthly returns – TEP and Icon species interactions), daily logbook (octopus catch rates), commercial monitoring (all bycatch – fish, sharks, shells, crabs, etc) and from other Government Agencies (e.g. Dept of Environment and Conservation data on whale interactions) will be analyzed and published annually by DoF (e.g. as part of the annual State of the Fisheries Report for the WRLF).</td>
<td>Completed. The data on bycatch collected as part of DoF’s Catch and Effort System (monthly returns – TEP and Icon species interactions), daily logbook (octopus catch rates), commercial monitoring (all TEP interactions and bycatch – fish, sharks, shells, crabs, etc) and from other Government Agencies (e.g. Dept of Environment and Conservation data on whale interactions) has been analyzed and published as part of DoF’s annual State of the Fisheries Report 2005-06 (SoF) for the WRL Fishery (Attachment 2.6). The bycatch information will be included in all future annual SoF publications. The State of the Fisheries Report for the 2005-06 fishing season has been published and the 2006-07 report (i.e. the second one containing bycatch information) is in print ready draft and it is anticipated that it will be published and put on the DoF website by the end of May 2008.</td>
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<tr>
<td>2.1.1.4 There is information on the</td>
<td></td>
<td>Acceptable Progress</td>
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Western Rock Lobster (Australia) 30 SCS
potential for the ecosystem to recover from fishery related impacts.

**Score 75**

**Condition**

To improve the score of this indicator, the client must propose an action plan that will improve performance of the management to be equivalent to the 80 Scoring Guidepost – “Based on the outcomes of research projects, models and estimates of resilience and recovery potential of the main dependent species are being developed to take account of impacts of the fishery, important aspects of ecosystem dynamics, environmental uncertainty and factors external to the fishery.” The client must create models and estimates of resilience and recovery potential of the main dependent species in the fishery. The client must ensure that the models developed take account of impacts from the fishery and the uncertainty surrounding the models and data.

Although the assessment team is not allowed to specify the mechanism for the analysis based on MSC requirements (see TAB Directives), the assessment team is required to specify the outcome. In this case, the outcome is not only the models

- EcoSRG Research Plan has been finalised and adopted by WAFIC and DoF and will be presented to RLIAC.

- A workshop will be held to review the results of the current DoF deepwater ecology research project and other relevant projects and to develop an ongoing research project that will address the issues raised in the EcoSRG plan and this corrective action prior to the end of 2007. It is anticipated that the research will be based on comparing fished and unfished areas using research closures that will need to be negotiated with Government and industry. Independent experts will be invited to attend the workshop.

- It will probably take until 2010 to negotiate the selection and to implement (e.g. via legislation) the research area closures that will be required for this project.

- Any research closures will need to be linked to and coordinated with the

The Eco SRG Research Plan was presented to the Eco SRG at its meeting on the 10 August 07. Members requested that the plan be updated in light of the results from the DoF deep water research project (completed in mid 2007) and the fact that the new deep water research project, currently being developed, will use fished and unfished areas to investigate the ecological effects of fishing. The Eco SRG Research Plan is currently being updated and will be presented again to the Eco SRG members for ratification prior to the end of October 2008. Once the Eco SRG has ratified the plan, it will be presented to WRLC, DoF and RLIAC for endorsement (all three organizations have already endorsed the general thrust of the Eco SRG Research Plan which is reflected in the major funding application DoF’s has submitted to FRDC for its deepwater ecology project using fished and unfished area comparisons).

DoF has held a workshop on WRL Ecology and the Ecological Effects of Fishing on 8 and 9 August 07, to which independent experts were invited (workshop agenda, participants and report Attachment 2.1). International, interstate
specified above, but the use of data to facilitate the models that is equal to data from direct experimental studies using fished and unfished areas. In previous years the assessment team has attempted to get the fishery to improve its understanding of the effects of fishing through collection and analysis of better data on the topic. The requirement for the use of robust data to inform the required models will be examined closely as part of monitoring the fishery’s performance against this condition.

The CB will require evidence that a plan (of research) to develop the specified models is developed and formally adopted within 1 year of re-certification and prior to the first annual surveillance audit. The research plan must outline strategies that will be used to determine what impacts, if any, are occurring, and the extent of the impacts. Strategies could include, but are not limited to, comparing impacts of the fishery using areas that are unfished with suitable/comparable fished areas at a scale that is appropriate and robust enough to understand impacts from fishing across the entire fishery. Regardless of the strategy or strategies chosen, the research plan should identify and provide evidence for broader marine park planning processes that are currently being undertaken in State and Commonwealth waters.

- The research plan developed at the above workshop will be adopted by the Client and the fishery’s manager and the timelines for delivery of outcomes will be negotiated with the CB.
- It is anticipated that at least preliminary baseline data will be collected from the proposed research closed areas by 2010.
- The deep-water research project will be linked in with the shallow water and other ecological research projects that are currently being undertaken and are planned by FRDC, CSIRO (WfO), SRFME, WAMSI and DoF.

and WA based researchers attended and presented the results of all marine ecological research in WA of relevance to the WRL. Attendees discussed the results of the recent DoF deep-water project (Final Project Report to FRDC will be completed by December 2008) and issues associated with the development of a new / ongoing deep-water project on the ecological effects of fishing (Attachment 2.3).

A meeting of the Eco SRG was held after the workshop, on 10 August 07 to help develop the new research project to investigate the ecological effects of fishing in deep water (i.e. on the large/mature rock lobster stocks). The Chairman’s report of the meeting (Attachment 2.5) sets out objectives for the new project. In particular the Eco SRG recommended the use of fished and unfished area comparisons and established criteria for the selection of the unfished areas. The project funding proposal that has been submitted to the FRDC by DoF (Attachment 2.2, funding to be confirmed) will use areas closed to fishing to investigate the effects of fishing on WRL ecology in deep water. The WRLC, RLIAC and DoF are well advanced in their negotiations with fishers.
the studies being scientifically robust.

The client will be required to show that the research plan is either developed with input from fully independent experts with demonstrated world-class credentials and research experience in ecological impacts of fishing (such as those on the ECO-SRG) or that it is properly reviewed by a set of independent experts of equal qualification. Additionally, the client must consult stakeholders (individuals and/or organizations in the commercial fishing industry, recreational fishing industry, and conservation groups) in the design and development of the plan. The client is also required to show implementation of the research plan, as well as at least 1 year of data collection and analysis before the end of 2010.

This Condition is a follow on to Conditions from the initial assessment and is required to be fully completed in the time frame of this certification.

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<tr>
<th>Timelines</th>
<th>The research plan will be implementation and at least 1 year of data collection and analysis before the end of 2010.</th>
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<td>to establish a closed area(s) that meet the scientific criteria developed by the Eco SRG. Baseline data will now be collected for 2 to 3 years before the areas are closed.</td>
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<td></td>
<td>A research plan / strategy for the new DoF deep-water project was developed by the Eco SRG after the workshop (Attachment 2.5). The objectives, methodology and site selection criteria developed by the Eco SRG were incorporated into the project funding application submitted to the FRDC (Attachment 2.2) and have been adopted by WRLC and DoF.</td>
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<tr>
<td></td>
<td>Updates on the progress of the new deep water project will be given to the CB at all future annual audits.</td>
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<td></td>
<td>Where it is possible the DoF’s new FRDC (see web link at Attachment 2.7) deep-water research project has been linked in with the shallow water and other ecological research projects that are currently being undertaken or are planned by Marine Futures, SRFME, WAMSI, WAIMOS and CSIRO (WfO) (see their web links at Attachments 2.0.1, 2.8, 2.9, 2.10 and 2.11 respectively) and DoF. DoF’s new project (like the previous deep water project) will investigate the</td>
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A detailed analysis (see dot point six above) will be available before the end of 2010.

The ecological effects of fishing in deep water, where the mature breeding stock and larger lobsters are situated, in order to satisfy the conditions. It should be noted that the impact on the ecology of the removal of a large proportion of the large/mature lobsters from deep water, where they make up the largest portion of the lobster biomass (see Attachment 2.4), was assessed as a moderate risk in the ERA undertaken in 2 and 3 April 2007 (Attachment 2.12.1 – Report of the 2007 ERA).

The removal of legal size lobsters from shallower water was assessed as a low risk at the 2007 ERA, because undersize (non-legal) lobsters make up by far the largest portion of the lobster biomass in shallow water. Results from the shallow water SRFME projects (comparing fished and unfished areas in shallow water) indicate that the removal of lobsters does not significantly impact on the areas ecology. In addition fishing mortality of undersize is low because escape gaps reduce the number of undersize in traps and fishers are required by law to return them to the water very quickly (i.e. within 5 minutes).

The new deepwater research project (based
on the Eco SRG’s research recommendations) is currently planned to commence in mid 2008. The WRLC, and DoF are well advanced in their negotiations, with fishers regarding areas to be closed to fishing. The areas are astride the 30deg parallel in the centre of the fishery (i.e. just north of Jurien Bay) in 20+fms.

At least one year of data will be available before the end of 2010.

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<td>2.1.2.1  The trophic linkages and interactions between the non-target species and the target species are known.</td>
<td>• EcoSRG Research Plan has been finalised and adopted by WAFIC and DoF and will be presented to RLAC. • A workshop will be held to review the results of the current DoF deepwater research project and to develop an ongoing research project that will address the issues raised in the EcoSRG plan and this corrective action prior to the end of 2007. It is anticipated that the research will be based on</td>
<td>Acceptable Progress</td>
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<tr>
<td><strong>Score 70</strong></td>
<td></td>
<td>• See above.</td>
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<tr>
<td>Condition</td>
<td></td>
<td>• DoF’s new deep water research project (Attachment 2.2) includes studies to assess the impacts of the fishery on trophic linkages between the lobsters and their prey (the EcoSRG recommended that this be the focus of the work, see Attachment 2.5) at the lobsters main life stages in deep water. It is proposed that trophic linkages with lobster predators will be the subject of a future Australian Research</td>
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standard of evidence that is at least equal to the quality and robustness of evidence derived from appropriate and adequate comparisons of (space and time) areas that are unfished with areas that are fished. The results of these studies must be incorporated into any new ERAs conducted on this fishery. Should these studies result in the identification of impacts under a new ERA that require mitigation, there must be a management response that is fully identified and implemented to mitigate the impacts prior to the conclusion of this certification in 5 years. This is the same timeframe built into the condition under 2.1.1.4.

-Comparing fished and unfished areas using research closures negotiated with Government and industry. Independent experts will be invited to attend the workshop.
  -The research plan developed at the workshop will be adopted by the Client and the fishery’s managers and the timelines for delivery of outcomes will be negotiated with the CB.
  -It will probably take until 2010 to negotiate the selection and to implement (e.g. via legislation) the research area closures that will be required for this project.
  -The deep-water research project will be linked in with the shallow water and other ecological research projects that are currently being undertaken and are planned by CSIRO, SFRME, WAMSI and DoF.
  -The research plan will include studies that assess the impacts of the fishery on trophic linkages between the lobsters and their predators and prey at the lobsters main life stages.

Council linkage grant application. The trophic linkages for the main life stages in shallow water have or are being assessed by different projects, e.g. SFRME, WAMSI (Attachment 2.8 and 2.9 and particularly the Murdoch University and CSIRO food web ecosystem modeling project at Jurien Bay – Attachment 2.13) and DoF’s marine resource indicator project (Attachment 2.14).

-When the results of these studies are available they will be incorporated into a new ERA of the fishery.
-It is proposed that the new DoF deepwater project will commence in July 2008 and be completed in July 2011. The results will then need to be analyzed and written up; therefore a new ERA of the fishery, using the results would not be feasible until late 2011 at the earliest. This is acceptable, since a whole new ERA was already completed ahead of schedule to meet ongoing Conditions. If the new ERA identifies impacts that require mitigation, the earliest date that a management response could be developed and implemented would be 2012. If new issues arise or significant new information becomes available on
• The results of these studies will be incorporated into any new ERA conducted on the fishery.

• Should a new ERA (using results from the new studies) identify impacts that require mitigation, there will be a management response that is fully identified and implemented to mitigate the impacts prior to the conclusion of this certification, i.e. by November 2011.

Timelines
WAFIC will use its best endeavours to meet the above timelines, however, the implementation of any mitigation measures may not be possible within the 5 years of this certification if they are not identified until late in the cycle or they require extensive consultation with stakeholders.

any hazard prior to 2011, the WRLC and DoF will undertake an update of the ERA for that hazard(s) using independent experts. See also the response to 2.1.4.1 below.

SCS acknowledges the progress made to date on this Condition, and the proposed new timeline for a new ERA and new management measures. At present, the proposal for extending the timeline will be considered as SCS reviews progress against this Condition in years 2 and 3 post-certification. SCS reserves the right to determine what timelines are acceptable during the 3rd annual surveillance.

### Performance Indicators and Conditions

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| 2.1.3.1 Use of bait and loss of bait bands and fishing gear during fishing operations is known and reported, and is within acceptable levels of impact. | **Bait Bands**
  • The WAFIC Board has passed a motion proposing to prohibit the taking of bait cartons with plastic bands to | **Acceptable Progress**
  • WAFIC consulted with its members during the 2006/07 fishing season on the motion proposing to prohibit the taking of bait cartons with plastic bands |
**Score 70**

**Condition**

The client must present evidence in the form of a scientifically defensible examination of the fishery’s compliance with the Bait Handling Code of Practice that assesses the risks associated with the use and disposal of bait bands. Scientifically defensible here means that the study is quantitative and statistically relevant in terms of identifying how these materials are treated at sea, and evaluates the number of bands and the mass of materials taken onto and off fishing vessels, in various seasons and regions of the fishery. This must be completed prior to the third annual surveillance of the fishery.

If results show that compliance with the Code of Practice is not sufficient, the client must adopt methods of enforcing the Code of Practice. This must be implemented prior to the fourth annual surveillance of the fishery.

The client must also develop and implement methods to assess compliance on an ongoing basis. This must be implemented prior to the fourth annual surveillance of the fishery.

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**Other issues**

- WAFIC will undertake a compliance risk assessment for compliance with the Bait Handling Code of Practice compared to total prohibition for waste products.

- If required, funding will be sought by WAFIC during the 2007/08 funding cycle to instigate a statistically valid sampling programme to determine the level of compliance by fishers with the Bait Handling Code of Practice. The aim will be to complete the sampling programme by the end of the 2007/08 fishing season.

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The WRLC also discussed the WAFIC proposal with its members in November 2007, with a proposal for a ban on uncut bait bands on active fishing vessels being proposed. After further consideration of the merits of a zero tolerance policy on bait bands, the WRLC wrote to RLIAC (Attachment 2.15.1) recommending a prohibition on bait bands on active fishing vessels be implemented for the 2008/09 fishing season. Active fishing vessels do not include carrier boats, dinghies and rock lobster boats that are not fishing (e.g. transporting bait from the carrier boat to camps on the Abrolhos Islands). The recommendation was discussed at a RLIAC meeting in February 2008. The RLIAC, while supporting in principle the intent of the WRLC recommendation, believed that there needed to be further investigation of the impacts on operators and on alternative packaging methods, prior to it finalizing its advice to the Minister for Fisheries. Accordingly, RLIAC resolved to address the issue by taking a stepwise approach (as outlined in
WAFIC will continue to monitor the results of beach clean up operations that provide an analysis of the composition of rubbish to determine what if any can be attributed to the lobster fishery.

Timelines
The above actions will be undertaken prior to the third annual audit of the fishery, i.e. by September 2009.

An ERA\textsuperscript{7} on the compliance risk assessment for waste products will be included in future ERAs. Independent data from DoF’s commercial WRLF monitoring program has shown that there is a high level of compliance with both cutting bait bands and returning them to rubbish containers onshore (Attachment 2.16). However, as discussed in the 2007 ERA report (Attachment 2.12), bait bands are still regarded as a moderate risk to the Dusky Whaler shark population.

WAFIC and the WRLC have continued to monitor the results of beach clean up operations that provide an analysis of the composition of rubbish to

\textsuperscript{7} An ERA to assess the risk of bait bands was conducted in April 2007. It found that the bait bands only posed a risk (moderate) to Dusky Whaler sharks (Attachment 2.12).
determine what if any can be attributed to the lobster fishery. Locations include Horrocks Beach, the Abrolhos Islands and Dirk Hartog Island, the Capes region and future monitoring is proposed for the Wedge Island to Lancelin area.

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<td>2.1.4.1 The impacts of the fishery on ecosystem structure, function, biological diversity, productivity, and habitat structure are within acceptable levels of impact and there has been an assessment of risks.</td>
<td>• The ERA project undertaken by independent consultant Richard Stocklosa will assess/review all hazards from the 2005 ERA that received a moderate or higher score by at least one participant at the 2005 workshop. The hazards that are still identified as moderate risk will be put them through a CSIRO level 2 assessment. This project will be completed by April 2008.</td>
<td>Completed both Part 1 and Part 2 of Condition for 2.1.4.1.</td>
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<td>Score 65 Condition</td>
<td>• WAFIC to commence a new ERA process for the fishery within four years of certification (i.e. not three years as proposed by the CB). The new ERA will meet the requirements identified by Dr. Mark Burgman in his 2005 review of ERA methods.</td>
<td>An ERA of the WRLF was undertaken by independent consultant Richard Stoklosa on 2 and 3 of April 2007, which incorporated CSIRO methodology (Attachment 2.12.1 – ERA report and 2.12.2 – Stakeholder satisfaction with ERA). The 2007 ERA reviewed all the hazards identified in the 2005 ERA (and participants were free to raise any additional hazards), but focused on reviewing and reassessing the 27 hazards that received a moderate or higher score by at least one participant at the 2005 ERA. The hazards that were still identified as moderate or higher risk, after management mitigation measures were taken into account, were put through a CSIRO methodology level 2 assessment. Dusky Whaler shark, an indirect bycatch species,</td>
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Timelines
The second part of the condition under 2.1.4.1 is to conduct a new Ecological Risk Assessment to a standard that meets the requirements identified by Dr. Mark Burgman in his 2005 review of ERA methods previously used in this fishery, which includes soliciting, receiving, and acting on advice from stakeholders, fishery managers, and the CB (Certification Body). A new ERA must be conducted directly following the completion of the work underway by Richard Stoklosa (E-Systems). The new ERA must occur within 12 months of the completion of the work of Richard Stoklosa, and at a minimum before 3 years after the date of certification.

The risks must be based on scientifically defensible evidence and inference about the possible hazards in the fishery, and moderate level risks, or hazards where there is insufficient information to determine risk, must be then used as the basis for an assessment of the impacts of the fishery across the full spatial scale of the fishery. The new ERA should at a minimum also cover all aspects of the 80 scoring guidepost for this indicator.

In addition, the research plan and

|● For all practical purposes the Stocklosa ERA project to assess/review all hazards with a moderate or higher risk and where applicable put them through a Level 2 CSIRO assessment, will be equivalent to an ERA. Stocklosa will conduct an ERA workshop with technical experts and stakeholders to review the hazards and where appropriate develop mitigation measures to address them or progress them to a Level 2 CSIRO assessment. Therefore the requirement to conduct a new ERA three years after certification is considered impractical, as it may only be 18 months after Stocklosa’s ERA project is completed. In addition the new research programs (stock assessment and ecological) that should feed into a new ERA may not have been running long enough to provide adequate data for a reassessment of risks. Therefore it is proposed to commence a new ERA within four years of the date of certification, i.e. by November 2010 (i.e. not three years as proposed by the CB). This will provide as much time as possible
|was the only hazard identified as a moderate risk and it was put through the CSIRO level 2 assessment. Recommendations for the Dusky Whaler shark and the other hazards that were reassessed are provided in the 2007 ERA report for this hazard. All the recommendations of the 2007 ERA have been accepted and are being implemented by WRLC and DoF. This project was completed in February 2008.
|After review of the ERA exercise conducted by Dr. Stocklosa, SCS finds that WAFIC/WRLC have met both the original Condition (Part 1) for reviewing past risks, as well as conducting a new ERA that meets the requirements identified by Dr. Mark Burgman in his 2005 review of ERA methods (Part 2). As a result, SCS anticipates that a new ERA is not necessary for the 5 year time horizon put forth by the DoF. However, if any additional hazards are identified by stakeholders with regard to new hazards or new data on previously identified hazards, the Client agrees to update the ERA prior to the 5 year time period for updating, using equally appropriate processes for review and stakeholder input to ensure the
implementation developed under 2.1.1.4 must integrate the information from the ERA.

for new information to be available from planned research projects and is consistent with existing government policy (ERA’s to be undertaken every five years).

- The new ERA will cover all the aspects of the 80 scoring guidepost for this indicator, but the information from the research comparing fished and non-fished areas may not be available to put into the ERA, as this project will not be completed in the timeframe set out in this condition.

new hazards are properly addressed.

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<td>2.1.4.2 Management objectives and fishing practices are set in terms of impact identification and avoidance/reduction.</td>
<td>• An “Ecological” advisory group will be formed to advise WAFIC, RLIAC, the DoF and the Minister on ecological issues pertaining to the fishery. The group to meet at least annually. • EMS for the fishery to be updated/revised/implemented and information regarding its progress published every 6 months as set out in the second dot point above.</td>
<td>Minor Non-Conformance. The groups performing this function for the WRLF are the Eco SRG and the Sea lion SRG. These groups held meetings in mid 2007 and are currently scheduled to meet again in 2008. Agendas, meeting minutes and reports of their meetings, plus background information have been published and sent to stakeholders (Attachment 2.17.1 to 2.17.5). It is proposed that these groups</td>
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although they may not have been fully tested.
• The key impacts of the fishery that have been identified as posing a significant risk are mitigated on a precautionary basis using appropriate management tools (such as gear or deployment modifications, seasonal restrictions, size restrictions, closed areas, etc.)
A description for the operation of the WRL Management System, that includes the EMS (Environmental Management System) and the ERA, has been provided through correspondence between the Department of Fisheries and SCS. This system description suggests that the entire management system would adequately handle the required environmental factors if there was evidence that all the parts of the system described in the WRL-MS and EMS provided to SCS were actually active and working.

Fully implementing all the prescribed parts of the management system (as noted above), or some other similar construct would be sufficient to meet the intent of this Condition. The system chosen and implemented must properly address the following key aspects:
• The management system should include The above actions will be implemented by October 2007.

meet at least annually, rather than 6 monthly as proposed by the CB.
WAMSI is now providing an “all of Government” approach to setting priorities for marine research in WA, particularly ecological research. For further details of WAMSI’s role see overview of recent developments under Principle 3.

Because the ERA of the fishery was not finalised until February 2008 the EMS was not updated in 2007. This constitutes a minor non-conformance. A new timeline has been agreed to clear this non-conformance – which is by the fishery’s 2nd annual audit, which will include a stakeholder consultation process.
A group, committee or set of groups or committees (previously identified to SCS as the WRL ESD Committee, the SL SRG, and the Eco SRG) that meet at least annually to discuss potential ecological risks from fishing and the management measures, if any, needed to address identified risks. The group(s), or committee(s), old or new, should have a published agenda and provide minutes and reports for public review.

- The group(s) or committee(s) should publish reports at 6 monthly intervals, on the functioning of the EMS and progress toward meeting the stated EMS objectives for identifying risks and mitigating impacts.

This condition must be met within 1 year of the date of certification and prior to the first annual surveillance audit.

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| 2.2.1.4 The impacts of the fishery on protected, endangered, threatened, or icon species do not exceed acceptable levels. | • SLEDs have been introduced to the fishery for the 2006/07 season.  
• To assess the effectiveness of SLEDs, the Sea Lion-SRG has proposed that additional underwater videoing be | **Completed.** The use of SLEDs was required by law in the sea lion (mandatory) zone for both the commercial and recreational fishery as of 15 Nov 2006 (i.e. the commencement of the 2006-07 WRL fishing season).  
**Completed.** The 2007 ERA report and the |
provide direct assessments of the risks to these species either before or as part of the required ERA (see Condition under 2.1.4.1). As stated above, the species for which risks need to be assessed in a more rigorous fashion include whales, dolphins, turtles, seabirds, and seahorses.

For sea lions, the data is clear. The assessments show that risks are higher than previously thought, so management actions are required to maintain the risks within acceptable levels. The condition for sea lions is therefore the implementation of SLEDs and the verification of their efficacy.

SLEDs must be introduced into the mandatory zone in the 2006/07 fishing season. The mandatory zone is the area shown on Figure 1 in the document ‘Additional issues for SRG discussion’, presented to the SL SRG meeting in September 2005. The SLEDs must be used for all WRL fishing within the mandatory zone. The use and effectiveness of the SLEDs in the mandatory zone must be monitored and verified commencing with the 06/07 fishing season. The bycatch of Sea Lions must be monitored using a system that is undertaken at times and in places were vulnerable sea lion pups are present. Information from the commercial rock lobster compliance program will also be used to ensure pots in the designated area are using SLED. The workshop, which will be part of Richard Stocklosa’s ERA project, will be used as a vehicle to bring together all interested parties to review the proposal by the Sea Lion-SRG to assess the efficacy of SLEDs. The final plan to monitor the effectiveness of SLEDs will be provided to the CB.

- The workshop, which will be part of Richard Stocklosa’s ERA project to reassess the hazards identified at the 2005 ERA as moderate or higher by at least 1 participant, will also be used to reassess the risk ranking of whales, dolphins, turtles, seabirds, and seahorses, if they do not fall into the moderate or higher group.
- Any actions needed to address the issue will be introduced in the 2007/2008 (note the season mistake in the condition above) fishing season or sooner if appropriate.

Sea lion SRG have recommended a plan / program to monitor the efficacy of SLEDs (Attachment 2.12.1 - ERA report and Attachments 2.17.1 to 2.17.5 - Sea lion SRG reports, background information etc). The plan has been adopted by WRLC and DoF and consisted of:

- Additional underwater videoing in 2007, at times and in places were vulnerable sea lion pups were present. This has been done and the SLEDs were shown to be effective at preventing pups entering traps (Attachment 2.17.3A). Additional video monitoring will continue in 2008 and will include the Abrolhos Is.
- Information from the commercial rock lobster compliance program was used to determine the level of fisher compliance with SLED regulations during the 2006-07 season (i.e. SLED use in pots and within the mandatory zone). It showed there was a very high level of compliance (95%, see Attachment 2.17.4). This data will be collected and published annually.

Completed. The ERA has been completed.
sufficient to provide scientifically relevant results. It is clear that a full monitoring system across the entire mandatory zone may be too costly to be approved and implemented, especially without relevant evidence that it is needed. As a result, it is necessary that additional discussions occur between all groups (conservation stakeholders, managers, scientists) to determine the best course of action to monitor the effectiveness of SLEDs. WAFIC must bring together all interested parties to discuss this issue, and within 6 months of the certification of the fishery provide a plan of action to SCS for monitoring the effectiveness of SLEDs. WAFIC is also required to implement the proposed monitoring system before the next fishing season 2006/2007. If any of these objectives are not met, the fishery would not qualify to maintain a certificate and the certificate would be revoked.

**Timeline**
- The above actions will be completed by the end of April 2007.
- Any implementation will take place in the 2007/2008 fishing season or sooner if appropriate (note the season mistake in the condition above).

and the recommendations are reported in Attachment 2.12.1. The risk ranking of whales, dolphins, turtles, seabirds, and seahorses, was reassessed and all were found to be low. In some cases management mitigation measures that had been implemented were included in the hazard assessment. The fisheries interactions with all TEP and bycatch species are now published annually in DoF’s State of the Fisheries (Attachment 2.6), which is submitted to the WA Parliament and put on the DoF website.

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| 2.2.2.1 Management objectives and fishing practices are set in terms of impact identification and avoidance/reduction to avoid or mitigate impacts of the fishery. **Score 75** | ACTION PLAN  
Same as for 2.2.1.4 above.  
Timelines  
As for 2.2.1.4 above. | See responses to 2.2.1.4. above |
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<td>Same as for Indicator 2.2.1.4. above.</td>
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PRINCIPLE 3

Overview Of Recent Developments

1. Establishment of an “all of Government” approach to marine research is Western Australia (WA). The WA and Commonwealth Government’s have recently established the Western Australian Marine Science Institute (WAMSI) to fund and coordinate marine science in WA. WAMSI has a total budget of over $80 million over five years (until 2011), comprising a Government grant of $21 million and $59 million in funding and in-kind commitments from its partners. WAMSI has a large number of stakeholders and will set priorities for and help fund marine ecology research in WA, including ecological research related to WA’s fisheries. WAMSI is establishing a leading research capability, underpinning the conservation and sustainable management of WA’s marine environment and resources. The Institution is building upon the WA’s already strong marine science capacity to create a world class science Institution to provide economic, social and environmental benefits to the State of Western Australia. There are thirteen core Parties (update now 15) in this collaborative venture, from Commonwealth and Western Australian State Government research organisations, including the Bureau of Meteorology, CSIRO, Department of Fisheries and AIMS, together with the Western Australian universities and the private sector. Each of the Parties brings to the Institution an array of capacities including research personnel and expertise. The Institution is the catalyst to further develop the WA’s innovative capacity and will engage high-capacity researchers to enable the State to protect and sustainably develop its pristine marine environment and it will also secure WA’s competitive advantages in its established offshore energy and fishing industries, and build on its emerging tourism, aquaculture and biotechnology sectors. The organizational structure of WAMSI can be found at [www.wamsi.org.au/about/structure](http://www.wamsi.org.au/about/structure)

2. Overview of marine planning structures in Western Australia:
   a. Attachment 3.2.1 gives the structural arrangements for marine planning at the Commonwealth, State and regional levels;
   b. Attachments 3.2.2a (text) and 2b (diagram) show the marine planning structure and process developed for the South Coast of WA as an example of how it works

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<td>3.1.4.2 The management system has a plan for research needed to support</td>
<td>A research plan to address the ecological impacts of rock lobster fishing has been</td>
<td>Minor Non-Conformance</td>
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Western Rock Lobster (Australia) 48 SCS
the understanding of the ecological impacts of fishing [Relates to MSC Criterion 3.8]

**Score 75**

**Condition**
The client must get developed and implemented a mechanism to ensure the ongoing development of a plan to conduct strategically based research that incorporates all the research needs of the fishery, including those identified throughout this report and as a result of ongoing conditions from this assessment (such as stock assessments, ERAs, fishing impacts, etc.). A research plan must be developed, updated annually, and made available to the public annually.

This condition must be met prior to the first annual surveillance audit.

| developed by the Eco-SRG and has been adopted by WAFIC and DoF and will be presented to RLIAC. | The Eco SRG Research Plan was presented to the Eco SRG at its meeting on the 10 August 07. Members requested that the plan be updated in light of the results from the DoF deepwater research project (completed in mid 2007) and the fact that the new deep water research project will use fished and unfished areas to investigate the ecological effects of fishing. The Eco SRG Research Plan is currently being updated and will be represented to the Eco SRG members for ratification prior to the end of October 2008. Once the plan has been endorsed by the Eco SRG, it will be presented to WRRC, DoF and RLIAC for endorsement (all three organisations have already endorsed the general thrust of the Eco SRG Research Plan, as is reflected in the fact that DoF has developed a new RL deepwater ecology project and submitted a funding application to FRDC – see update on the FRDC application in the overview of recent developments under Principle 2).

The fact that a final research plan is not available constitutes a non-conformance. However, the work to date on this is significant, so SCS considers the lack of a final a minor non-conformance.

<p>| Timeline The actions above will be completed by September 2007. | SCS and the client have agreed that this |</p>
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<td>3.3.1 The management system involves all categories of stakeholders appropriately on a regular, integral, explicit basis [Relates to MSC Criterion 3.2].</td>
<td>• An “Ecological” advisory group will be formed to provide advice to WAFIC, RLIAC, DoF and the Minister (see Action Plan 2.1.4.2 above).</td>
<td>Minor Non-Conformance</td>
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<td>• The Minister for Fisheries has approved a change in the composition of RLIAC to include a member with ecological expertise. The person will be invited to be an official observer on RLIAC while the changes are being made. The change will require an Act amendment and may take up to three years to complete.</td>
<td>The non-conformance is to be address prior to the second annual surveillance by revising the EMS and formalizing any processes whereby the fishery receives on a continuing basis advice on ecological risks associated with the fishery.</td>
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<td>• Within 12 months of certification WAFIC will provide evidence to the CB that opportunities to better represent stakeholders’ views regarding the management of the fishery and to address the deficiencies identified by CB under this performance indicator, are being considered.</td>
<td>See response to 2.1.4.1 above in terms of setting up a committee to advice management on ecological risks associated with the fishery.</td>
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<td>• WAFIC will use its best endeavors to have the changes implemented within</td>
<td>Since it has not been possible to progress this condition further, despite the support of WRLC and DoF, SCS finds this to be a non-conformance. However, again the client’s efforts have been substantial in setting up and continuing the outside Scientific Reference Groups, which go a long way to providing independent advice to the authorities on issues related to fishery impacts. Therefore, SCS considers the lack of an observer, and the lack of a relevant new strategy (to be delivered in the revised EMS), a minor non-</td>
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WAFIC must provide evidence to SCS that this is being considered within 12 months of certification, and implemented within 24 months of certification to address the deficiencies identified by SCS under this condition.
| performance indicator. | 24 months of certification. (It must be noted that WAFIC does not have the power to make legislative or policy changes with regard to the management of the fishery). | conformance due to the substantial work already completed.  
SCS was told that WRLC and DoF are currently undertaking a review of the consultation and advisory processes and structures, including the current Ministerial Advisory Committee (MAC) system (Attachment 3.1). Part of the task of the review is to identify ways to better represent and engage with stakeholders on aquatic and fisheries management issues. It is hope that one outcome of the review will be broader based stakeholder input into the strategic management of the WRLF (commercial and recreational). The review will be completed in mid 2008, however, implementation of any recommendations that require legislative changes (e.g. to the MAC system) could take a number of years to go through the Parliamentary legislative process. Progress on this review and the proposed outcomes will be reported to the CB at the 2nd annual audit. |
The second part of the surveillance constituted asking about general parameters in the fishery. Since the Conditions covered a good deal of the overall assessment of the fishery, only 2 additional areas of inquiry were identified. The following paragraphs report on the findings in these two areas of inquiry.

**Inquiry 1 – Change in management arrangements.**

SCS inquired as to whether there have been any significant changes in management arrangements that may well affect the ongoing sustainable management of the fishery. WRLC and DoF noted that the only major change was that the WRLC took over from WAFIC as the peak body for the lobster fishery. This could possibly have ramifications for management, as much work gets either conducted, facilitated, or managed by the peak body to assist RLIAC provide management advice to the Minister. Alice Hurlbatt (WRLC) provided a summary of the effects of having WRLC take over the responsibilities as the peak body for the fishery.

According to the Western Rock Lobster Council, no significant negative changes will occur as a result of oversight for the fishery being switched to the WRLC from WAFIC. In general, it is expected that the fishery may well see some significant benefits in that there will be a body with its sole focus on the lobster fishery. With a sole focus, the WRLC may well be able to accomplish more throughout the year, and even get more funds directed to helping the fishery meet some of its long-term objectives.

SCS finds that this change should have no significant detrimental effects on the management of the fishery, and therefore believes that the fishery will continue to meet the MSC requirements for a well-managed and sustainable fishery.

**Inquiry 2 – Status of the stock and recruitment in the Fishery**

The WRL fishery is experiencing some recruitment problems as identified by the Department of Fisheries. Over the past 2 years, recruitment in some areas has been at some of the lowest levels seen in the fishery. While the Department of Fisheries initially predicted the low recruitment levels to occur in the previous year, it did not expect the same problem to reoccur over the most recent year. The Department noted its concern both to SCS and to the wider stakeholder community.

During the SCS inquiry of stakeholders for this surveillance audit, one stakeholder - WWF, submitted information that directly relates to this same problem (see Attachment 1).

SCS asked DoF for an explanation of the situation with regard to the breeding stock and recruitment. The focus was on making sure that the original performance indicators used during the re-assessment are still being met. In addition, SCS notes that stakeholders are worried that recruitment failures over the past years may be associated with management of the fishery rather than external environmental causes, and as a result concerned about whether the management efforts that have been made to address the issue are sufficient.
SCS carefully considered both the client’s response as well as the stakeholder’s submission in reviewing the current status of this fishery. SCS comments to the stakeholder’s submission are shown in Attachment 1.

Concerns regarding the original PISGs (1.1.3.1, 1.1.6.1 and 1.2.1) in the *MSC Assessment Western Rock Lobster Fishery Final Report – 12 December 2006*, are in part due to confusion between the use of different terminologies and definitions used by the assessment team and the WA Department of Fisheries. This situation is substantially cleared up by referring to a newly released report from the DoF entitled, *West Coast Rock Lobster Managed Fishery - Recommended Management Changes for the 2008-09 Season* (May 2008) referred to as the 2008-09 Management Report. Although the date on the report is May 2008, it was not made publicly available until more recently, and therefore now included in this surveillance report. This new report clearly defines and details the use and importance of the fishery’s biological reference points so that stakeholders can readily determine how well the fishery is being managed for compliance with these reference points. In addition, a new harvest strategy has been developed around these reference points to help ensure that appropriate management actions are being taken as different levels of biological performance are identified in the fishery.

Based on the newly released management report (Attachment 2) and Harvest Strategy review and Attachments ([http://www.fish.wa.gov.au/docs/op/op050/index.php?0206](http://www.fish.wa.gov.au/docs/op/op050/index.php?0206)), the following overview can be provided. For a more thorough explanation, please refer directly to the Management Report.

The fishery dependent breeding stock indices each have a set of biological reference points defined as follows:

- **Threshold Reference Point (TRP).** This is set at the breeding stock level recorded in the fishery in the late 1970s and early 1980s (the actual reference point is taken as 1980), which is estimated to be a safe level. This is based on the fact that historically the fishery was functioning well with these breeding stock levels; and therefore, breeding stock levels at or above this threshold are expected to be able to continue to support a healthy fishery. The TRP (1980 egg production level) is the value below which management action is required. The attached 2008-09 Management Report shows the TRPs (solid green lines) for the Southern (C) and Northern (B) Zones of the fishery in Appendix 5, Figures 1 and 2 on p.37. This needs to be read in conjunction with Target Area (see below).

- **Target Area (TA).** This is the area above the TRP, i.e. it corresponds to levels of breeding stock that are above the 1980 level. It is the area above the green line, as shown in Appendix 5, Figures 1 and 2 on p. 37 and represented by the green area in the diagram on p. 48 of the 2008-09 Management Report. Management aims to keep the breeding stock indices in the TA.
- **Limit Reference Point (LRP).** This is set 20% below the TRP, i.e. halfway between the 1980 and the 1993 breeding stock levels. The LRP is the value below which immediate significant management action is required. The 2008-09 Management Report shows the LRPs (dotted red lines) for the Southern (C) and Northern (B) Zones of the fishery in Appendix 5, Figures 1 and 2 on p. 37.

The 2008-09 Management Report sets out the management recommendations to deal with the three low recruitments forecast for the fishery (2008/09, 2009/10, and 2010/11) that are predicted to reduce recruitment to the breeding stock for six years, to 2013 (see the Southern (C) Zone, pages 15 to 20; Northern (B) Zone, pages 21 to 25 and the Abrolhos Is (A) Zone, pages 26 to 30). The effects of reducing the effective effort by 0% to 30% on the breeding stock indices have been modeled out to 2013 for the Southern (C) Zone, as shown in Figure 1 on page 17 and for the Northern (B) Zone in Figure 2 on page 22. The Rock Lobster Industry Advisory Committee (RLIAC) has recommended approximate reductions of 20% in the effective effort in each of the three zones (A, B and C) of the fishery to keep the breeding stock indices above the TRP for the next six years (i.e. to 2013). [According to a note provided by the Department of Fisheries, the Thresholds/TRPs shown in Figures 1 and 2 on pages 17 and 22 respectively, correspond to the egg production values of approximately 1.2 relative to the egg production of 1980 and should have come out on the graphs as horizontal lines at value 1.21 and 1.18, respectively.]

The 2008-09 Management Report also discusses the proposed “Harvest Rates” in the fishery’s decision making rules/processes. This has been achieved by defining the TRP and LRP for the harvest rates in the Southern (C), Northern (B) and Abrolhos Is (A) Zones as shown in Appendix 2, Figures 1, 2 and 3 on pages 32 and 33. The fishery’s new decision rules propose a preliminary harvest rate TRP of 70% and a LRP of 80% for the Southern (C) and Northern (B) Zones and a TRP of 85% and a LRP of 90% for the Abrolhos Is (A) Zone. The 20% effective effort reduction that has been proposed by RLIAC, is predicted to reduce the harvest rates of Zones A, B and C to below their proposed TRPs (see Tables 1 and 2 in Appendix 7 of the 2008-09 Management Report). However, due to estimated annual increases in fishing efficiency of 1% in Zone A and 2% in Zones B and C further effective effort reductions will be required in the future to maintain harvest rates at or below each zone’s TRP.

These clarifications are useful in bringing together the data submitted and reviewed under the original re-assessment of the fishery and this surveillance report on the current management of the fishery. With TRPs, LRPs, and harvest strategies redefined, it is possible to determine if the fishery continues to meet the relevant performance indicators used in the re-assessment (PISG 1.1.3.1 and PISG 1.1.6.1).

It appears the fishery meets the relevant scoring guideposts for 1.1.3.1, in that it requires (1) Limit and target points are justified based on stock biology or exploitation history, (2) they [LRP and TRP] are measurable given data and assessment limitations, and (3) There is no significant scientific opposition about those points outside the management agency. All of these issues appear to be addressed in that the TRP and LRP are clearly defined.
and based on exploitation history of the fishery, both are measurable, and at present there does not appear to be significant opposition from outside the management agency. However, it is noted that WWF is still concerned about the current status of the fishery, although it is not clear that WWF has specific objections to the TRP or LRP as defined.

For 1.1.6.1 [The stock is at or above appropriate reference levels.], it again appears that the fishery complies with the 80 scoring guidepost for this indicator, which reads – “Assessments show the stock is likely above the target reference point and very likely always above the limit reference point.” According to the most recent assessments, the fishery is in compliance with the newly defined TRP and LRP.

One other indicator that could be seen as relevant, is indicator 1.2.1 [When the stock is below the target point, there are measures to rebuild the stock specified and implemented for recovery and rebuilding of the stock.]. However, since the fishery status has been determined to be at appropriate levels, this indicator need not be invoked at this time. The breeding stock indices are not below their TRPs and the 20% effective effort reduction that has been recommended by RLIAC for the 2008-09 season, should ensure that the predicted poor recruitments to the fishery in 2008/09, 2009/10, and 2010/11, don’t reduce the breeding stock indices below their TRPs for the next six years (to 2013).

While all of this appears to keep the fishery in compliance with the MSC standard, there are two points of additional interest that should be noted. First, the compliance with the MSC reassessment performance indicators depends heavily on the Minister following the advice of RLIAC. Should this not occur, the fishery would be subject to immediate reassessment for conformance with the MSC standard. Second, it would seem that the assertion that most of the poor recruitment is due to environmental influences should be further investigated. If the management actions taken fail to correct the situation as suggested, a better understanding of the role of the environment on recruitment may be necessary to put into effect better management options.

Conclusion

It is SCS’s view that the WRL fishery continues to meet the standards of the MSC and to comply with the ‘Requirements for Continued Certification’. SCS did issue a couple of minor non-conformances that need to be addressed. Given the situation under each of these conditions, SCS finds that it is acceptable to set a timeline for addressing these non-conformances by the next annual audit. SCS also recommends the continued use of the MSC certificate through to the next annual surveillance audit.
Attachment 1 – WWF Submission to SCS on 1st Annual Surveillance of the Western Rock Lobster Fishery

WWF SUBMISSION ON THE FIRST WESTERN ROCK LOBSTER FISHERY SURVEILLANCE AUDIT 2008
Thank you for the invitation and opportunity for WWF – Australia to provide comment to Scientific Certification Systems Inc (SCS) regarding the first surveillance audit in 2008 for the Western Rock Lobster Fishery (WRL). This letter provides WWF – Australia’s key areas of concern with the fishery since its MSC recertification in 2006. The key areas of concern include:

1. · Harvest strategy and recruitment failure;
2. · Management arrangements and efficiency changes; and
3. · Interactions with wildlife (sealions and sharks).

PRINCIPLE 1:
The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.

1.1.4 There is a well-defined and effective harvest strategy to manage the target stock; and
1.1.4.4 Harvest strategies are precautionary.

WWF - Australia is concerned that the current harvest strategy and management arrangements are inadequate for the successful medium to long-term sustainable management of the fishery.

Given the recent historically significantly low recruitment figures and substantially reduced predicted catch over the next three seasons, it is clear that the current harvest strategy has failed to ensure that the catch levels do not impede on the target stocks ability to continually maintain a high productivity or impact on the associated ecological communities.

In terms of medium to long-term sustainable management of the WRL fishery, the current harvest strategy appears unable to maintain and rebuild the target stock as required under MSC certification. It is unlikely that the current management arrangements (i.e., input controls) will allow and/or facilitate the harvest strategy to effectively conduct catch levels at a precautionary level, given that the current arrangements are insufficient in controlling efficiency changes in the fishery. WWF - Australia is of the opinion that the harvest strategy should adopt a more precautionary approach under the current management regime.

WWF - Australia is also concerned that some experts present at the last ERA workshop were of the opinion, in terms of Risk 3 - Efficiency changes, that no specific new management responses were required as it was felt that the current management regime
was appropriate for mitigating such risks and that the potential risks were considered to be ‘low’. WWF - Australia questions the validity of such claims, especially since it is clear that the last effort reductions (in the order of 15%) were barely sufficient to maintain the target stock, and were not adequate to rebuild the target stock.

WWF - Australia is aware that the WRL fishery is currently considering a further effort reduction in the order of 30% for the upcoming season. It therefore appears that the risk of efficiency changes in the fishery is much higher than the assigned ‘low’ category, and that the current management responses have been inadequate to date in mitigating this risk over a short period of time. WWF - Australia believe that the current management controls, or a combination of management responses to mitigate efficiency changes in the fishery, will fail to provide any medium to long-term mitigation strategies, and therefore a combination of alternative management systems such as output controls and a comprehensive series of permanent closures need to be implemented as a matter of urgency.

Past research has demonstrated that a proportion of the rock lobster stock does not migrate for spawning events. The series of closures should build on past research knowledge and include identified areas of continually high densities of breeding stock within the fishery. If this precautionary strategy were adopted, then it would provide the fishery, government, industry and the community much better management outcomes by providing a guaranteed minimum base of breeding stock, irrespective of management systems employed.

One of SCS’s conditions of the WRL fishery were: that the harvest strategy be revised to include explicit reference to measures of uncertainty about current stock status; how uncertainty will be measured on an ongoing basis; how management will take into consideration uncertainty in its ongoing harvest policy responses; and specifically address the basis for considering the harvest strategy as precautionary. WWF – Australia is encouraged and supports the Department of Fisheries (DoF) commitment to reviewing the harvest strategy in-line with SCS condition.

However, it is expected that this review will not be complete and a draft strategy released for stakeholder comment until at least September 2008. In light of current puerulus settlement, catch predictions and recruitment estimates, WWF - Australia is concerned that management action may not occur until such a review has been complete. If this is the case, WWF - Australia is of the opinion that the established timeframes are inappropriate as the sustainability of the fishery is currently ‘on a knife edge’, requiring immediate management action to prevent further stock decline and possible collapse.

Given the above and on the basis of recent research data, WWF – Australia strongly argues that the Western Rock Lobster stocks, under current management arrangements, are being depleted and as such there is evidence of stock decline. Therefore it could be contested that the fishery no longer meets the standards set under MSC certification for Principle 1 (The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population) and thus action should be taken immediately.
SCS - There is currently no indication that any of the breeding stock level indicators are below the reference point. This has been confirmed through both the standard sets of indices previously used by the fishery, as well as some additional modelling that has occurred as a result of the Hall Review and peer reviewed as part of the modelling workshop that was convened by the Department of Fisheries in response to the SCS Condition placed on the fishery during the re-assessment process. DoF believe at present that a low puerulus settlement appears to be the result of a change in environmental conditions. Given the fact that the other indices appear to support the fact that the stock is above biological limits, only two things can be done: First, follow the circumstance closely for another year; and second, take management actions to mitigate the problem. The Department of Fisheries and WRLC have pointed to the fact that further cuts in effort are being suggested for next season. This is intended to mitigate the low recruitment. As pointed out in the surveillance report, SCS will be watching this closely. If management actions to reduce effort in some way do not occur, SCS reserves the right to conduct an additional surveillance audit to determine if the fishery is still in compliance with MSC standards.

WWF also makes the point that the harvest strategy (input controls) is not able to be used to mitigate the problem. SCS finds that this statement is incorrect. Both past and current history of management in this fishery would suggest otherwise. In past years, lowering effort worked very successfully to improve the spawning stock biomass and recruitment in the fishery on at least 2 occasions. There is no reason that using input controls on effort cannot work again. Switching to output controls, while an interesting point and something the fishery has and is looking into, do not appear the only way to address the problem.

Additionally, the fishery authorities are considering further harvest control rules to provide a more precautionary approach to managing the harvest (see attachments to this report). WWF-Australia’s concerns that the revised rules will not be out in time for next season is valid. While a significant reduction in fishing effort, for the 2008/09 season, has been recommended to the Minister for Fisheries to address the low puerulus and catch situation facing the fishery, implementation is the key. Again, SCS will be monitoring this situation closely and lack of progress by the Minister or changes in the proposed harvest strategy are very likely to trigger the need for a re-assessment of the fishery against the re-assessment performance indicators. At a minimum, indicators 1.1.3.1, 1.1.6.1, and 1.2.1 would be re-evaluated, but other may be included as necessary.

WWF-Australia also suggests that more are closures are necessary to manage the fishery. SCS is not able to say whether additional closures would be helpful or not. This is a debate and discussion that is occurring in Western Australia, and the outcome of this will be followed as part of the annual surveillances of this fishery. SCS does note however that the WWF assertion about lobster migrations does not appear to be supported by the technical/scientific literature that has been published for this fishery. The Eco-SRG, an independent advisory committee, does not seem to share this same view. Instead, the advisory committee has asked for additional research on deep-water populations where it
is expected that there is a reservoir of older individuals that add substantially to the spawning biomass.

**PRINCIPLE 2:**
There is adequate knowledge of the ecosystem relevant to the distribution, life history strategy and fishery for the target species.
2.1.2 There is adequate knowledge about the effects of fishing on habitats and species in the areas of the fishery; and
2.1.2.1 The trophic linkages and interactions between the non-target species and the target species are known.

WWF - Australia is encouraged by DoF’s commitment to the elements and conditions of this principle. WWF - Australia is also appreciative and understanding of the timeframes associated with implementing specific research closures in appropriate legislation. However, WWF - Australia is of the opinion that the requirement on the fishery to establish these specific closed areas to assess the impacts of the fishery on trophic linkages between the lobsters and their predators and prey at the lobsters main life stages, has been discussed at length internally for several years without any real progress to date. WWF - Australia believes that with the current management review underway, it is a prime opportunity to consult industry and other relevant stakeholders on this matter, with the expectation that specific closed areas be implemented, in legislation, by the start of the 2008/09 fishing season.

WWF - Australia is concerned that the Research Plan has yet to be released for stakeholder comment/information, especially given the amount of time that has lapsed since this requirement was first placed on the fishery. WWF - Australia considers this document as one of the key elements in successfully managing and setting research priorities for the fishery in the longer-term to address ecosystem impacts and to provide stakeholders insight into how DoF envisages it will undertake these tasks. This document should be released as a matter of priority.

Since information in relation to the impacts of the fishery on trophic linkages (particularly between the lobsters and their predators and prey at the lobsters main life stages) is limited, and strategies for assessment of these impacts, as far as WWF - Australia is aware, have yet to be developed in a Research Plan and the use of specific closed areas to provide robust scientific analysis, WWF - Australia remains concerned that the WRL fishery may be causing serious ecosystem impacts through the removal of rock lobsters.

In particular WWF - Australia would like to highlight the possible negative impacts to the ecosystem due to the massive removal of rock lobsters during the “white’s” mass migration, particularly in shallow waters. These impacts concern the trophic interactions and the loss of prey availability for predators/scavengers and therefore the general nutrient flow within the ecosystem.
WWF - Australia does not accept the justification that simply during this phase of the rock lobsters life cycle they are subject to very large level of natural mortality and the amount that the fishery extracts is minuscule in comparison. There is scientific evidence supporting the claim of very high natural mortality during this stage, suggesting that there are a large number of predators and scavengers (sharks, rays, teleosts, crustaceans, octopus, etc) that rely on this mass migration each year as a source of food. Thus, by the fishery removing large quantities at this time, it may be having serious consequences. WWF – Australia appreciates the progress the fishery has made regarding the FRDC project investigating effects of fishing on deep water ecosystems. However, considering it is most likely that the biggest ecological impact from the fishery occurs in the shallow water environment where natural mortality of settled biomass is greatest through high predation and interactions with dependent species, WWF – Australia is concerned that the same priority and commitment has yet to be installed on the shallow water ecosystem. Until a detailed Research Plan is finalised, specific research closed areas implemented and robust research is conducted on this and other similar matters and results of these studies incorporated into a new ERA and EMS, this area of the fishery remains a high risk to the surrounding ecosystem and should be a research priority.

SCS – The DoF, in conjunction with the client, has submitted a proposal to fund the research on deep water lobster populations. The core of the research plan is to establish a closed area(s) to assess the ecological impact of lobster fishing / depletion. This information will be very useful in identifying whether further closures will be valuable in the management of this fishery. Funding requests have been sent to the FRDC, and are expected to be successful and allow the start of this research during 2008. In addition, SCS has been given information that there are already ongoing discussions with fishers about additional areas of fishing closure to allow research on fished versus unfished areas – as presently designed into the FRDC grant. All of this would suggest that there is movement forward to better understanding the effects of fishing on lobster populations. SCS does however understand WWF’s concerns that it has taken so long to get to this point. While SCS is not in a position to comment on this view, SCS can say that the movement now being undertaken is necessary to maintain certification, and that any lack of movement to meet the Condition can cause the fishery to lose its certification.

2.1.3 There is adequate knowledge about the risks to the ecosystems, habitats and species that are posed by bait, bait bands or lost gear.
2.1.3.1 Use of bait and loss of bait bands and fishing gear during fishing operations is known and reported, and is within acceptable levels of impact.

The conditions placed on the fishery by SCS regarding the use of bait bands are inadequate and fail to address the identified moderate risk associated with the loss of bait bands at sea by the WRL fishery.

While WWF - Australia accepts that it is not known whether the WRL fishery is the source of the bait bands that have been reported to entangle Dusky whalers, the WRL fishery is the biggest user of bait bands with an estimated 1 million per annum loaded
onto WRL fishing vessels. Furthermore it has been conservatively estimated that approximately 1% of these are lost at sea, and less than 10% of those are in an ‘uncut’ condition (still forming a ring that could entrap animals). The recent ERA process predicted that about 1,000 uncut bait bands are lost at sea each year and it is not known how many Dusky whalers, or other marine fauna, interact with these bait bands, or what percentage survives the interaction.

WWF - Australia is aware that an industry Bait Band Code of Conduct has been established to educate industry, making them aware of the hazard of bait bands to marine species. Given the recent figures, WWF - Australia is of the opinion that there is still no scientific evidence that the fishery is complying with the established Bait Band Code of Conduct and therefore failing to satisfy criterion 2.1.3.1 and conditions placed on the fishery by SCS. WWF - Australia recognises that it is not known if the potential entanglement of Dusky whaler shark in bait bands is resulting in additional mortality to the species of 1-2% per year; or if the combined effect from the commercial and recreational fishery, illegal fishing activities, and variations in natural mortality rates is resulting in an unsustainable additional mortality. However, it is clear from the PSA level 2 assessment that the Dusky whaler is on the least productive limit of the scale. The recent ERA assessment states that:

‘the productivity analysis is consistent with the scientific view that the Dusky whaler has one of the lowest population growth rates among shark, and that its exploitation should be conducted with extreme caution and under close monitoring’.

The productivity of the Dusky whaler is at the very ‘low’ end of the scale, and the susceptibility to bait bands is at the upper end of the scale of the PSA. The sustainability of this bycatch species is particularly vulnerable to increased mortality.

It is important to note that the ERA Technical Panel suggested the remedial action of eliminating bait bands from fishing vessels, with a zero tolerance of bait bands by the WRL fishery. The ERA Technical Panel also recommended the following:

No further risk assessment of bait band entrapment hazards to the by-catch species *Carcharhinus obscurus* (Dusky whaler shark) is recommended in the short term. Alternatives to bait bands, to avoid the use of materials that can entangle *C. obscurus* and other by-catch species, should be investigated as a matter of improving environmental management of the Western Rock Lobster fishery. If the bait band hazard is eliminated, no other specific actions would need to be taken by the Western Rock Lobster fishery to avoid impacts to this species. If bait bands continue to be taken to sea by the Western Rock Lobster fishery, ongoing stock assessments of *C. obscurus* should consider the threat of mortality due to bait band interactions, and investigate methods for collecting data to monitor any increased mortality with a high level of confidence.

This section of the ERA concluded by stating that:

‘The potential mortality of *Carcharhinus obscurus* (Dusky whaler shark) from bait bands taken to sea on rock lobster fishing vessels represents a moderate risk that
WWF - Australia agrees with this statement and strongly supports the total elimination of the use of bait bands by the WRL fishery. If this low cost, simple but very effective measure were adopted and enforced, this risk, from the WRL fishery, would be eliminated.

The WRLC has recommended that there be a total ban on bait bands. It is SCS understands that RLIAC has suggested a tiered approach to the bait band issue. SCS also understands that additional work has been done to monitor compliance with the bait band policies. SCS is closely monitoring this issue to see if an elimination of bait bands eventually goes into effect. If it does not, SCS will expect a more robust analysis on the occurrence of uncut bait bands being released from boats.

2.2.1.4 The impacts of the fishery on protected, endangered, threatened, or icon species do not exceed acceptable levels.

2.2.2 Objectives are established and mitigation is implemented to address and restrain impacts of the fishery on protected, endangered, threatened or icon species to within acceptable minimum levels.

2.2.2.1 Management objectives and fishing practices are set in terms of impact identification and avoidance/reduction to avoid or mitigate impacts of the fishery.

WWF - Australia is pleased with DoF’s efforts to eliminate the incidental mortality of Australian sealions from rock lobster pots via the mandatory use of SLEDs within the identified SLED area. However, continued monitoring of these devices is required to verify their use, efficacy in preventing sealion mortality, and the impact of SLEDs on the fishery in terms of greater retention of rock lobsters (particularly breeding stock in deep water), and byproduct (octopus, finfish and sharks).

WWF - Australia remains concerned with the level of sealion interaction within Zone A (Abrolhos Islands) of the fishery. There is anecdotal evidence that sealions are interacting with rock lobster pots within the Abrolhos Islands area. Continued monitoring of sealion populations and behavior is paramount in this zone and should be a priority. Any evidence of sealion interaction with rock lobster pots during monitoring or reported by fishers needs to be mitigated immediately with the legislative requirement that all pots within that zone must be fitted with an approved SLED.

If the latest monitoring data indicates a level of interaction between pots and sealions, given the history of SLEDs in the fishery and robust assessment of designs and impact on fishers catch rates, the implementation of SLEDs into the Abrolhos Islands should occur before the commencement of the 2008/09 fishing season.

These issues are currently being investigated and will be reported at the second audit. Monitoring is being conducted through the programs already in place in the fishery. In
addition, it is our understanding that further video work is being completed to show that
the SLEDs are working with regard to protecting mortality on sea lion pups.

GENERAL COMMENTS
WWF - Australia has previously questioned if climate change has been effectively
incorporated into the management of the target and non-target species. WWF – Australia
is unaware of any studies currently being implemented that investigate the impacts of
climate change on future recruitment and trophic relationships. The need for such studies
has recently been advocated in this fishery with scientists claiming that the recent failure
of recruitment and poor catch predictions in the coming years is a product of combined
climate influences (namely changes in oceanic currents and temperatures) coupled with
increased fishing effort. However, without detailed scientific studies in this area, it is hard
to attribute stock decline, poor catch predictions and recruitment failure on climatic
conditions while the harvest strategy for the fishery continues to lack a precautionary
approach and management arrangements allow the unlimited take of every available legal
sized lobster from year to year.

Research by DoF in collaboration with CSIRO is underway to investigate effects of
climate change over the last 40 years on the western rock lobster fishery. WAMSI is also
undertaking climate change research that will provide an indication of future climate
change trends off WA and the implications this may have for fish stocks, including rock
lobsters. SCS will follow this to see what conclusions are drawn from existing work by
the Department, WAMSI, and CSIRO.

We look forward to working with you and the WRL Fishery through the recertification
period and appreciate the opportunity to comment. If you would like to discuss these
comments further, please contact Mr Peter Trott on +61 (0) 437 960 812 or email
PTrott@wwf.org.au.

Yours sincerely

Dr Gilly Llewellyn
MARINE PROGRAM LEADER
WWF-AUSTRALIA
4 APRIL 2008
ROCK LOBSTER INDUSTRY ADVISORY COMMITTEE

WEST COAST ROCK LOBSTER
MANAGED FISHERY

RECOMMENDED MANAGEMENT CHANGES
FOR THE 2008-09 SEASON

MAY 2008
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EXECUTIVE SUMMARY

The main purpose of this report is to inform stakeholders of the Rock Lobster Industry Advisory Committee (RLIAC) recommendations regarding management changes for the 2008/09 season.

The recommendations discussed in this paper are aimed at addressing the sustainability and economic objectives of the fishery for the next three seasons. The relative success of this management package will be monitored annually and be fully reviewed prior to the start of the 2010/11 season.

The focus of the paper is on meeting the management needs to address the sustainability objectives of the West Coast Rock Lobster fishery. The RLIAC is concerned that a higher residual biomass should be left in the fishery, in order to address effort creep in recent years. The management needs for economic objectives are discussed to a much lesser extent, as an economic analysis is being undertaken by the Western Rock Lobster Council (WRLC).

The first part of the report outlines the policy development process for each zone and the issues that Rock Lobster Industry Advisory Committee (RLIAC) has identified, along with the objectives and strategies to address the issues. The second part of the report provides information on the need for management changes for each zone, along with a discussion of the recommendations, with an estimate of the effective effort reduction and expected reduction in pot lifts.

Although there has been renewed interest in a quota management system, the options being proposed are under the current input management system. The development of a quota management system business case is being undertaken as a separate process, by RLIAC and is not under consideration for 2008/09.
RECOMMENDATIONS

1.1.1 Zone C

Objectives
1. Ensure that egg production remains above the threshold level over the next six years, given recent low recruitments.
2. Reduce harvest rate to below the indicative 70 per cent level.
3. Introduce changes that reduce short-term and longer-term costs and have a minimum negative impact on the overall profitability of the fishery.

Recommendations ¹
1. An additional 10 per cent pot reduction for the whole season beginning in 2008/09 (equivalent to a 0.74 pot usage for the entire season). [10 per cent].
2. Seven-day moon closures from March to June inclusive, beginning in 2008/09 [4.5 per cent].
3. Closure from 11 – 28 February (or 29 February in a leap year) [approximately 4.6 per cent].

TOTAL EFFECTIVE EFFORT REDUCTION 19.1 PER CENT

1.1.2 Zone B

Objectives
1. Ensure that egg production remains above threshold level over the next six years, given recent low recruitments.
2. Reduce harvest rate to below the indicative 70 per cent level.
3. Ensure equity is maintained between Zone B and A, with the introduction of new management changes.
4. Introduce changes that have a minimum negative impact on the overall profitability of the fishery.

Recommendations ¹
1. An additional 10 per cent pot reduction for whole of the season beginning in 2008/09 (equivalent to a 0.66 pot usage from 15 November to 14 March, and a 0.74 pot usage from 15 March to 30 June). [10 per cent].
2. Extend Sundays-off for the whole season beginning in 2008/09 [7.9 per cent].

TOTAL EFFECTIVE EFFORT REDUCTION 17.9 PER CENT

¹ Effective effort reductions are provided in square brackets for each management change
1.1.3 Zone A

Objectives
1. Reduce pot density saturation by reducing the number of pots to maximise overall profitability of the fishery.
2. Reduce harvest rate to below the indicative 85 per cent level.
3. Ensure equity between Zones A and B is maintained with the introduction of new management changes.

Recommendations\(^1\)

1. Extend the current 10 per cent pot reduction (ending on 15 April) through to 30 June beginning in 2008/09 (equivalent to a 0.74 pot usage from 15 March to 30 June) [Five per cent if there is no pot density saturation].
2. Sundays-off from 15 March to 30 June beginning in 2008/09 [13.7 per cent].

**TOTAL EFFECTIVE EFFORT REDUCTION 18.7 PER CENT**
SECTION 2    INTRODUCTION

The RLIAC developed the management recommendations presented in this paper to primarily address the sustainability objectives of the fishery, and industry concerns about the state of the fishery. The source of industry views about the need for management changes and the types of changes that were required include:

- Requests made by fishers at coastal tour meetings in October 2007 for the committee to recommend changes to the management arrangements for the 2008/09 season to address concerns about sustainability and profitability.
- The WRLC advice that there was a need for a substantial reduction (30 per cent) in fishing effort to improve profitability and address effort creep.
- Several Professional Fisherman’s Association submissions to the Committee about proposed management changes.

In addition to these submissions and the requirement to review the current package in 2007/08, the very low puerulus settlement for 2006/07 and 2007/08 has also added impetus to assess the management strategy for the next three to four years, in order to mitigate the effect of these low settlements on the breeding stock.

While the focus of the package is on addressing the sustainability objective, there are a number of economic issues that are impacting on the industry. Conclusions from the RSM Bird Cameron study on the financial situation (below) highlight these issues:

- Currently the catch sector is experiencing a cost-price squeeze from increasing costs and recent price volatility.
- The long-term impact of these changes will be minimised by the ability of the industry to reduce costs and improve catch efficiency.
- The price of the main cost driver, fuel, shows little sign of easing in the foreseeable future.
- There is evidence suggesting highly-gear operators are facing an increasing level of financial stress.
- If net earnings are used as the basis for valuing entitlements, reducing profit margins will also reduce the capital value of pots.
- To improve its current rate of return, the fishery must restructure input costs.
- Consideration needs to be given to improving marketing and processing of product.
- The industry is facing challenges in obtaining and maintaining crew.

These financial impacts are likely to result in lower returns to industry over the next three to four years that will create the need for further fleet rationalisation.

While the RLIAC has limited information available to consider the economic impact of its recommendations, it believes its recommendations are likely to minimise the short-term financial impact on operators, while fostering a long-term restructure.

In 1993/94 the fishing effort reduction package, which included an 18 per cent pot reduction was very successful in protecting and improving the breeding stock and it acted as catalyst for fleet rationalisation (i.e. reduction in fishing vessels). However,
these gains have been eroded over the intervening years, as the fishing fleet has increased its fishing efficiency and exploitation.

A decision-rules framework, developed in 2004, based on protecting the breeding stock underpinned the next major change in management arrangements introduced in 2005/06. The 2005/06 management package was aimed at reducing effective effort by 15 per cent in the northern region of the fishery, and five per cent in the southern region.

The package for the north included a combination of pot and time closures, while in the south the package included time closures only. The 2005/06 package was subject to review in the 2007/08 season (i.e. the third season after it was introduced).

The requirement for management changes for sustainability under the current decision-rules framework is based on the biological objective of the protection of the breeding stock (i.e. maintaining the breeding stock above the 1980s level).

New decision rules, which are currently being developed, will incorporate harvest rates into the current decision-rules framework and take into account the uncertainty associated with the estimates of breeding stock and harvest rate indices. Management changes were considered to reduce harvest rates in anticipation of the adoption of the new framework.

Once the reasons for management action based on the decision rules framework have been determined, the actual response should be specified in terms of a measure (i.e. effective effort) that will allow for the comparison and evaluation of management options. Under this package, the RLIAC is recommending effective effort reductions of around 20 per cent for each of the zones of the Fishery.

The period over which the management changes are introduced can be either at one time, or phased-in over a period of time. A large change introduced as a one-off could be very disruptive to industry, but can provide a quick response. On the other hand, if there is no persuasive case for urgent action, changes can be phased-in over a longer time frame.

A one-off response would have the following advantages:

1. Ongoing amendments to the management plan would not be required.
2. Until legislated, additional measures for implementation in years two and three of the package may be seen by industry as being negotiable, hence protracting consultation processes.
3. Having a three-year package in place and implemented would enable industry and the Department of Fisheries to concentrate on discussions regarding the long-term management arrangements for the fishery.
4. It may provide some level of stability for the industry, in terms of rule changes and values of entitlements.

In this instance, the RLIAC, based on the considerations above, is recommending a one-off response for introduction in 2008/09.
There are many options that could provide the required management response. However, the timeframes involved, and the work required to evaluate these effects, means that proposed changes should focus on pot reductions and time closures.

Pot reductions have the long-term advantage of encouraging restructure in the fishery, whereas time closures have the advantage that they can provide an immediate cost saving. In combination they will both provide benefits, so the RLIAC has recommended changes to pot usage and time closures for all the zones.

The process described above is summarised in the following policy development structure.

**POLICY DEVELOPMENT STRUCTURE**

The structure below has been adopted by the RLIAC in order to assist policy makers with the development of management proposals (specific to each zone) by providing a policy framework in which to guide the decision-making process:

- Identification of issues/objectives.
- Discussion of the ‘pros and cons’ of management tools.
- Zones A, B and C:
  - Identify zone specific issues;
  - Set management objectives; and
  - Develop proposals.

**KEY INFORMATION**

Information used to support the policy development process included:

- Decision-rules framework:
  - 2004 \(^2\); and
  - 2008 (new framework being developed);
- Catch predictions;
- Breeding stock indices;
- Harvest rates;
- Integrated model predictions for effect of effort reduction on catch and breeding stock;
- Impact of various temporal closures on effective and nominal effort;
- Professional Fisherman’s Association proposals;
- Individual licensee’s proposals;
- Western Rock Lobster Council advice; and
- RSM Bird Cameron study.

\(^2\) An extract of the 2004 Decision Rules Framework used in the preparation of the RLIAC recommendations can be found at Appendix 9.
Most of this information is provided in the appendices to this document, apart from the draft decision-rules paper, which is being prepared separately, and the RSM Bird Cameron study, released by the Western Rock Lobster Council in 2007. More detailed research information will be made available when the draft stock assessment report (written by Caputi et al.) is released later this year.
SECTION 3  PART A: Issues

The RLIAC identified the following issues facing the industry at its October 2007 meeting:

- High harvest rate (including ‘effort creep’);
- Low puerulus settlement;
- Low residual biomass;
- Cost price squeeze
  - Operating costs increasing
  - Capital value/declining unit prices
  - Financial pressures;
- Undersize mortality;
- Equity between Zones A and B;
- Pot saturation (particularly in Zone A);
- Optimum marketing (e.g. peak in ‘reds’ and ‘whites’ lobsters, between years);
- Impact of heavy fishing pressure on low recruitment, thus reducing breeding stock;
- Social (occupational health and safety, family); and
- Carbon footprint.

In addition to the issues listed above, consideration will need to be given to what changes should be made to the management arrangements of the recreational sector under Integrated Fisheries Management principles. This issue is discussed later in the paper.

OBJECTIVES/STRATEGIES

The following objectives and strategies were developed by RLIAC to address some of the issues outlined above.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategies (08/09)</th>
<th>Strategies (09/10 +)</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce costs (operating).</td>
<td>Days off (moon, Sundays, June, Feb).</td>
<td>Pot reductions.</td>
<td>Days off may not increase profitability, cost savings for processors.</td>
</tr>
<tr>
<td></td>
<td>Pot reductions.</td>
<td>Pot reductions.</td>
<td>See 3.2.1 below.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop more efficient pots.</td>
<td></td>
</tr>
<tr>
<td>Reduce costs (capital - i.e. fleet size)</td>
<td>Pot reductions.</td>
<td>Pot reductions.</td>
<td>Reduce fleet size - Social issues.</td>
</tr>
<tr>
<td>Increase unit prices.</td>
<td>Pot reductions.</td>
<td>Pot reductions.</td>
<td>May or may not improve stability in prices.</td>
</tr>
<tr>
<td>Reduce pot saturation (Zone A).</td>
<td>Pot reductions.</td>
<td>Pot reductions.</td>
<td>Increase in working cost.</td>
</tr>
<tr>
<td>Equity between Zones A and B.</td>
<td>1 March opening.</td>
<td></td>
<td>High mortality, poor product (soft shell), may have to align Sunday closures.</td>
</tr>
<tr>
<td></td>
<td>1 March minimum size change.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce harvest rates to improve breeding stock.</td>
<td>Day and pot reductions.</td>
<td></td>
<td>Reduces high variability of catch between years, reduces risk of stock failure, could improve profitability.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum size reduction.</td>
<td>Increases breeding stock and increases resilience loss of catch.</td>
</tr>
<tr>
<td>Reduce undersize mortality</td>
<td></td>
<td>Increase number of escape gaps.</td>
<td>Minimizing the handling of catch.</td>
</tr>
<tr>
<td>Improve supply pattern for marketing</td>
<td>Day and pot reductions (e.g. December and March).</td>
<td></td>
<td>Improved prices.</td>
</tr>
<tr>
<td></td>
<td>Extend season.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce carbon footprint</td>
<td>Day and pot reductions (Reduce fuel usage).</td>
<td></td>
<td>Increased capital costs, more targeted fishing days.</td>
</tr>
</tbody>
</table>
EVALUATION OF STRATEGIES

The following information is provided to inform the discussion regarding the choice between strategies.

3.1.1 Pot Reductions

Pot reductions have the potential to reduce the cost associated with fishing, based on the assumption that with less gear the cost of ‘inputs’ (such as pots, ropes, floats, bait and the time required to operate gear) is reduced.

Pot reductions are likely to increase the incentive for fleet rationalisation in the long term as licensees sell their entitlements and pots are redistributed amongst those remaining licensees.

It has been argued that pot reductions would increase demand for units and therefore improve unit and lease prices in the short term, as fishers attempt to maintain the number of pots allowed to be used at the level prior to the reductions.

From an economic perspective, fleet rationalisation can assist the industry to be more efficient and therefore more profitable. Some of the pots will be transferred to more efficient operators.

The impact on catch in the short-term and long-term would be variable between zones with pot reductions.

Overall pot reductions could be considered equitable in the sense that they do not affect the proportional catch share. However, individuals may be affected differentially, depending on when and where they fish and how their business is structured.

Pot reductions may have associated social implications, as the downsizing of the fleet could affect the social structure of smaller “lobster-dependent” communities.

In terms of phasing-in changes over a period of time, pot reductions have the advantage that it is relatively straightforward to implement in legislation and communicate the change to industry.

The RLIAC has previously considered many of the advantages and disadvantages associated with pot reductions that have been identified by industry. Table 2 summarises some of the advantages and disadvantages considered by the RLIAC when developing its management recommendations.
Table 2  Advantages and disadvantages associated with pot reductions that were identified by industry.

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Contributes to the breeding stock.</td>
<td>• Encourages fleet changes (i.e. a decline in boat numbers).</td>
</tr>
<tr>
<td>• Encourages fleet rationalisation (i.e. a decline in boat numbers or fleet composition).</td>
<td>• Social impacts from a decrease in boat numbers (community and family).</td>
</tr>
<tr>
<td>• Seen as equitable for all fishers.</td>
<td>• Could force small boats out of fishery.</td>
</tr>
<tr>
<td>• Have economic benefits.</td>
<td>• Encourages fishers to fish harder and smarter and put more pressure on the fishery.</td>
</tr>
<tr>
<td>• Less pots in water and hence less competition between fishers.</td>
<td>• Seen to shift value of fishery to larger operators.</td>
</tr>
<tr>
<td>• Some smoothing of high catch peaks (spread catch over the year), which could have economic benefits.</td>
<td>• Less cost-effective compared to other options.</td>
</tr>
<tr>
<td>• No increase in compliance cost.</td>
<td>• Could impact more on lease operators.</td>
</tr>
<tr>
<td></td>
<td>• Small pot holdings could become less economically viable.</td>
</tr>
</tbody>
</table>

3.1.2 Time Closures

Time closures such as moon closures, Sundays-off, summer closures in Zone B, and the late start to the season in Zone C generally reduce fishing costs. The actual impact on profitability will depend on the relativity of the cost saving to the reduction in catch (revenue). The impact on catch would have a different effect in the short term (larger impact) and long term (smaller impact).

Time closures have various social and marketing impacts that can be important. For example, long periods of ‘down time’ can negatively affect the ability to hire, retain and train crew, and manage business cash flows. On the other hand, time closures may have a positive impact on family social values and occupational health and safety.

Time closures have a differential effect that depends on the catch rate during that period. Therefore, in assessing different time closures, an estimate is provided for the reduction of pot lifts (nominal effort) as well as an estimate of the reduction in effective effort that takes into account the catch rate in the period.

The relationship between the effective effort and nominal effort can be used as an indicator of the relativity of the cost saving (reduction in fishing inputs) compared to the revenue loss (reduction of catch). For example, if a time closure has a relatively high percentage reduction in nominal effort (high cost savings), but a relatively low
percentage reduction in effective effort (small affect on catch), then this would result in an overall positive benefit in comparison to an alternative that did not have the same outcome.

Marketing impacts are another factor which are relevant to the previous discussions about time closures, such as the capacity to provide product for the Chinese New Year, which traditionally occurs during a period when prices are higher.

### 3.1.3 Comparison of Pot Reductions Versus Time Closures

The mix of pot reductions versus time closures will need to be assessed in terms of the relative importance of the different objectives in each of the zones of the Fishery. While both pot reductions and time closures reduce effort, the mix of these strategies can be tailored to meet other non-effort related objectives for each zone.

For example, an objective to improve unit values and fleet rationalisation would shift the balance towards pot reductions. Whereas, if reducing operating costs in the short-term was an objective, then the balance could shift towards time closures, noting that social issues will be an important consideration.

### 3.1.4 Escape Gaps

Increasing the escape gap size from 54mm to 55mm could have a beneficial impact by reducing the handling and mortality of undersize animals and in most cases have no impact on legal catch.

If there is some loss in legal-sized lobsters, it would have the same effect as an effort reduction, where any catch foregone in one year would be available for capture in future seasons. The amount of catch foregone would vary throughout the season and between seasons, depending on the availability of stock.

Although the actual impact is not quantified overall, increasing the escape gap size would have a positive impact.

### 3.1.5 Maximum and Minimum Size Gauge Control

There are no readily identifiable and direct socio-economic benefits associated with gauge changes. While reducing the maximum size of lobsters that can be taken is an effective biological measure (by directly contributing to the breeding stock with minimal impact on catch) it could add an additional inefficiency, given that oversized animals will continue to be caught and consequently need to be handled with no direct economic return.
SECTION 4  PART B: ASSESSMENT OF EACH ZONE

ZONE C

4.1.1 Stock Assessment

Due to a period of below-average recruitment, the predicted catches for Zone C will continue to decline - down to 3,100 tonnes in the 2010/11 season (Appendix 1, Table 1, Figure 1). The predicted catch for the whole Fishery in the 2010/11 season is expected to be about 7,200 tonnes (Appendix 1, Table 1), which will make it one of the lowest catches on record.

The harvest rate for Zone C is relatively high, being slightly above the indicative proposed threshold level of 70 per cent³ (Appendix 2, Figure 1).

The weight of setose females returned to the water in 2006/07 has decreased considerably from the previous season, and is now below the amount returned in the 2001/02 season (Appendix 3).

The residual legal biomass estimated to remain at the end of the fishing season has continued to decline, and is below the estimated levels in the early 1990s (Appendix 4, Figure 1).

The RLIAC is concerned at this continued decline in the residual biomass, which may have resulted from overfishing related to ‘effort creep’, and is of the view that measures are needed to assist the recovery of the biomass.

The median fishery-dependent Breeding Stock Index (BSI) for Zone C is currently above the Biological Reference Point (BRP) threshold (being the level observed in the early 1980s), albeit showing a trend downwards (see Appendix 5, Figure 1).

The fishery-independent BSI, like the fishery-dependent BSI, is also declining and is now at a similar level to that of the early 1990s (Appendix 6, Figure 1).

Model projections of the effect of the current series of low recruitment, coupled with a high harvest rate, indicates that the breeding stock will continue to decline (Figure 1, below).

³ The proposed 70 per cent threshold harvest rate will be subject to further consultation with industry when the updated decision-rules paper is released later this year.
4.1.2 Key Issues

1. Low profitability due to predicted low catches and high costs.
2. Decreasing egg production, which may fall below the threshold level.
3. High harvest rate, meaning low residual legal biomass.

4.1.3 RLIAC Objectives

1. Ensure that egg production remains above the threshold level over the next six years, given recent low recruitment.
2. Reduce harvest rate to below the indicative 70 per cent level.
3. Assist the recovery of the residual legal biomass.
4. Introduce changes that reduce short-term and longer-term costs and have a minimum negative impact on the overall profitability of the fishery.

4.1.4 Assessment of Reductions in Effective Effort

At its meeting in November 2007, the RLIAC requested that the Department of Fisheries provide an assessment of the impact of a range of effective effort reductions (five per cent and 10 per cent per year for three years, and 20 per cent and 30 per cent in the first year) on the predicted BSI and catch for each fishing zone. These impacts were estimated using modelling methods developed by the Department.

The impacts on the BSI are displayed in Figure 1 below. In summary, a five per cent per year reduction in effective effort was estimated to have no significant impact on the decline of the predicted BSI. A 10 per cent per year reduction in effective effort for three years is estimated to slow the decline in the BSI, but the response is not as fast as the 30 per cent reduction.

A 20 per cent and 30 per cent reduction in effective effort in the first year is estimated to provide a more immediate response. In the long term (2013), both the 10 per cent effective effort reduction over three years, and the 30 per cent effective effort one-off reduction are estimated to result in a similar level BSI.
Figure 1  
Actual BSI values and BSI Model projections for five per cent and 10 per cent reductions per year over three years and a 20 per cent and 30 per cent reduction in the first year of the three-year management package.

The expected percentage reductions in catch are provided in Table 3. For example, a five per cent reduction per year is estimated to reduce the actual catch by three per cent, three per cent and four per cent below the predicted catches for the seasons 2008/09, 2009/10 and 2010/11 respectively (Table 3).

Table 3  
Percentage catch reductions per season from the predicted catch for five per cent and 10 per cent reductions per year over three years and a 20 per cent and 30 per cent reduction in the first year of the three-year management package.

<table>
<thead>
<tr>
<th>Season</th>
<th>Reduction in Predicted Catch (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5% Each Year</td>
</tr>
<tr>
<td>2008/09</td>
<td>3</td>
</tr>
<tr>
<td>2009/10</td>
<td>3</td>
</tr>
<tr>
<td>2010/11</td>
<td>4</td>
</tr>
</tbody>
</table>

A detailed assessment of the impact of effort reductions on key indices is provided in Appendix 7.
4.1.5 Management Proposals

4.1.5.1 Stakeholder Proposals

Below is a brief summary of the management proposals relating to Zone C that has been provided to the RLIAC.

2007 Coastal Tour, Fremantle
- February Closure.

Western Rock Lobster Council
- 30 per cent pot reduction over two years (15 per cent per year).
- 10-day February moon closure (with pots out).
- 77mm minimum size for all zones from 2009/10 season.

Latitude 31 Pro Fish Association
- 8.5 per cent pot reduction to 1 March.
- Closure from 14 February to 1 March or
- February closure or
- June closure or
- Nominate days fished.

Western Australian Rock Lobsters’ Fishers Federation
- Close last two weeks of February.
- Close last two weeks of June.

Central West Coast Professional Fisherman’s Association
- 20 – 30-pot reduction.
- Seven to 10-day moon closures.
- Season commences on 15 November.

SW Rock Lobster Wet Fisherman’s Association
- No change proposed.

Zone C Professional Fisherman’s Association
- Will provide comment following the outcomes of a workshop being organised by the Western Rock Lobster Council (to be held on 21 April 2008).

4.1.5.2 RLIAC Recommendation

At its 27 February meeting, the RLIAC resolved to adopt a number of management measures to maintain the current fishery-dependent Breeding Stock Index (BSI) in Zone C, ensuring that at the very least, it remains above the threshold level by the end of this management package in 2010/11 (or preferably by 2013/14, which is when the low recruitments will reach the breeding stock).

The RLIAC also resolved to reduce the harvest rate to below the 70 per cent indicative threshold.
The RLIAC noted that a five per cent effective effort reduction per year for three years commencing in 2008/09 would have little effect on slowing the decline of the BSI (Figure 1), based on modelling that was carried out.

In contrast, modelling showed that a 30 per cent effective effort reduction slowed the decline, with the BSI well above the threshold in six years. A 20 per cent effective effort reduction, (Figure 1) although not slowing the decline to the same extent, resulted in the BSI remaining above the threshold while having a lower impact on catch (Table 3).

As a result, the RLIAC resolved to recommend that a 20 per cent effective effort reduction would achieve the primary objective of maintaining the breeding stock above the threshold in six years.

In terms of this effort reduction, the RLIAC formed the view that an equal mix of pot reductions and time closures were preferred, as they will provide short-term cost savings while bringing about long-term restructuring through pot reductions.

| Aim – to reduce the effective effort in Zone C by about 20 per cent by using a mix of both pot reductions and time closures. |

4.1.5.3 Time Closures

In order to ensure that any management changes reduce costs and have a minimum impact on the overall profitability of the Fishery (Objective 3), the RLIAC considered the information presented in Tables 1 and 2 at Appendix 8, which compare effective effort versus nominal effort reductions for a variety of temporal closure options.

The ratio of the percentage reduction in nominal effort to effective effort can be used as an indicator of the cost savings relative to the effective effort reduction. Closures that have a higher nominal effort reduction compared to the effective effort reduction will potentially deliver the best economic outcome in the short term.

For example, Table 2 (Appendix 8) shows that a February closure will provide an effective effort reduction of 9.2 per cent and a nominal effort reduction of 14.1 per cent. In contrast, Table 1 (Appendix 8) shows that seven-day moon closures during the “whites” lobster run would deliver a 9.6 per cent reduction in effective effort, but only a 7.1 per cent reduction in nominal effort.

Therefore, a February closure could be expected to have comparatively less financial impact than seven-day moon closures during the “whites”, while achieving a similar reduction in effective effort.

The RLIAC believes that a combination of monthly closures and moon closures would be the best way to achieve the required 10 per cent reduction in effective effort. The committee believes that closing all of February would have too adverse an impact on marketing arrangements because Zone B is closed in the first half of February. Similarly, the committee chose not to recommend a June closure, due to the possibility of achieving higher prices toward the end of the season.
Closing the last half of February was considered to be a suitable option, giving an approximate 4.6 per cent effective reduction. This closure provides the additional benefit of complementing the “summer closure” in Zone B, ensuring continuous supply of rock lobster to the market.

As moon closures are already in place for Zone C and given they are generally well received by industry, the RLIAC recommended that they be extended from three days to seven days (from March onwards) to provide an additional 4.5 per cent reduction in effective effort required to achieve its aim of a 10 per cent effective effort reduction by time closures. The February closure would replace the existing 3-day moon closure in February.

The RLIAC management recommendations (with the effective effort reduction in square brackets) for Zone C are as follows:

**Recommendations**

1. An additional 10 per cent pot reduction for the whole season beginning in 2008/09 (equivalent to a 0.74 pot usage for the entire season). [10 per cent].
2. Seven-day moon closures from March to June inclusive beginning in 2008/09 [4.5 per cent].
3. Closure from the 11th to 28th (or 29th in leap year) of February [approximately 4.6 per cent].

**TOTAL EFFECTIVE EFFORT REDUCTION 19.1 PER CENT**
ZONE B

4.1.6 Stock Assessment

Due to a period of below-average recruitment, the predicted catches for Zone B will continue to decline - down to 2,450 tonnes in the 2010/11 season (Appendix 1, Table 1, Figure 1). The predicted catch for the whole fishery in the 2010/11 season is expected to be 7,200 tonnes, which will make it one of the lowest catches on record.

The harvest rate for Zone B is above the indicative threshold level of 70 per cent (Appendix 2, Figure 2). While the harvest rate was above 80 per cent prior to the 2005/06 management package, by the end of the 2006/07 season it had declined to approximately 75 per cent (Appendix 2, Figure 2).

The weight of setose females returned to the water in 2006/07 is very similar to the previous season, but remains at the lower end of the range observed since the mid-1990s (Appendix 3).

The residual legal biomass estimated to remain at the end of the fishing season in Zone B has stabilised, but remains at a relatively low level (Appendix 4, Figure 2).

Prior to the start of the 2005/06 management package the median fishery-dependent Breeding Stock Index (BSI) for Zone B had almost declined to the Biological Reference Point (BRP) threshold (see Appendix 5, Figure 2). As illustrated by Figure 5, Appendix 3), the fishery-dependent BSI has increased following the introduction of the 2005/06 package, but remains close to the threshold.

The fishery-independent BSI, like the fishery-dependent BSI, is also declining slightly and is at a similar level to that of the early 1990s (Appendix 6, Figure 1).

Model projections of the effect of the current series of low recruitment, coupled with a high harvest rate, indicates that the breeding stock in Zone B will start to decline (Figure 2).

4.1.7 Key Issues

1. Egg production is currently close to the threshold, and is expected to reach the threshold by the 2010/11 season.
2. High harvest rate and low recruitment, resulting in low residual legal biomass.
3. Equity with Zone A.
4.1.8 Objectives

1. Ensure that egg production remains above threshold level over the next six years, given recent low recruitment.
2. Reduce the harvest rate to below the indicative 70 per cent level.
3. Ensure equity is maintained between Zones B and A, with the introduction of new management changes.
4. Introduce changes that have a minimum impact on the overall profitability of the fishery.

4.1.9 Assessment of Reductions in Effective Effort

At its meeting in November 2007, the RLIAC requested that the Department of Fisheries provide an assessment of the impact of a range of effective effort reductions (five per cent and 10 per cent per year for three years and 30 per cent in the first year) on the predicted BSI and catch for each Zone. These impacts were estimated using modelling methods developed by the Department.

The impacts on the BSI are displayed in Figure 2 below. In summary, a five per cent per year reduction in effective effort is estimated to have no significant impact on the decline of the predicted BSI. A 10 per cent per year reduction in effective effort is estimated to provide an increase in the BSI, while the 30 per cent reduction provides a substantial initial increase in the BSI.

In the long term (2013) both the 10 per cent effective effort reduction over three years, and the 30 per cent effective effort one-off reduction are estimated to result in a similar level BSI.

![Figure 2](image)

*Figure 2*  Actual BSI values and BSI Model projections for five per cent and 10 per cent reductions per year over three years and a 20 per cent and 30 per cent reduction in the first year of the three-year management package.
Table 4 (below) provides the estimated percentage reductions in catch for the five per cent and 10 per cent reductions over three years and a 30 per cent reduction in the first year. For example, a five per cent effective effort reduction per will result in a negligible reduction in the predicted catch (Table 4).

In contrast, the 30 per cent reduction in the first year provides a substantial 18 per cent reduction in the first year and a seven per cent reduction in the second year of the package (Table 4). The 10 per cent per year reduction affords a more moderate reduction in catch, with a five per cent, six per cent and seven per cent reduction (Table 4)

**Table 4**  
Percentage catch reductions per season from the predicted catch for five per cent and 10 per cent reductions per year over three years and a 20 per cent and 30 per cent reduction in the first year of the three-year management package.

<table>
<thead>
<tr>
<th>Season</th>
<th>Reduction in Predicted Catch (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5% Each Year</td>
</tr>
<tr>
<td>2008/09</td>
<td>2</td>
</tr>
<tr>
<td>2009/10</td>
<td>1</td>
</tr>
<tr>
<td>2010/11</td>
<td>0</td>
</tr>
</tbody>
</table>

A detailed assessment of the impact of effort reductions on key indices is provided in Appendix 7.

### 4.1.10 Management Proposals

#### 4.1.10.1 Stakeholder Proposals

Below is a brief summary of the management proposals from associations relating to Zone B that have been provided to the RLIAC.

**Western Rock Lobster Council**
- 10 per cent pot reduction.
- Sundays-off all season.
- No fishing outside 20 fathoms for all fishers between 1 March and 15 March.
- Zone A fishers out of Zone B on 1 March.
- 77mm minimum size for all Zones from 2009/10.

**Kalbarri Professional Fisherman’s Association**
- Zone A fishers out of Zone B on 1 March.

**Geraldton Professional Fisherman’s Association**
- 30 per cent pot reduction.
Dongara Professional Fisherman’s Association

- 20 per cent pot reduction.
- Maintain the 77mm minimum size until 1 March.
- Replace summer closure (15 January to 10 February) with a February closure.
- Two days in a row off during the week.
- Zone A fishers out of Zone B on 1 March.

4.1.10.2 RLIAC Recommendation

At its 27 February meeting, the RLIAC resolved to adopt a number of management measures to maintain the current fishery-dependent BSI in Zone B above the threshold level by the end of this management package in 2010/11 (or preferably by 2013/14 which is when the low recruitments will reach the breeding stock). The RLIAC also resolved to reduce the harvest rate to below the 70 per cent indicative threshold.

The RLIAC noted that a five per cent effective effort reduction per year for three years commencing in 2008/09 virtually had no effect on slowing the predicted decline of the BSI (Figure 2). A 30 per cent effective effort reduction increased the BSI to well above its current level (and the threshold) after six years.

A 20 per cent effective effort reduction (Figure 2), although not increasing the BSI to the same extent, is nonetheless predicted to raise the BSI above the current level and to maintain it above the threshold, while having a lower impact on catch than a 30 per cent reduction (Table 4). Therefore, the RLIAC resolved to recommend that a 20 per cent effective effort reduction would achieve the primary objective of maintaining the breeding stock above the threshold in six years.

The RLIAC formed the view that a mix of pot reductions and time closures were preferred, as they will provide short-term cost savings while bringing about long-term restructuring through pot reductions.

| Aim – to reduce the effective effort in Zone B by 20 per cent by using a mix of pot reductions and time closures |

4.1.10.3 Time Closures

In order to ensure that management changes reduce costs and have a minimum impact on the overall profitability of the Fishery (Objective 3), the RLIAC considered Tables 3, and 4 at Appendix 8, which compare effective effort versus nominal effort reductions for a variety of temporal closure options.

The ratio of the percentage reduction in nominal effort to effective effort can be used as an indicator of the cost savings relative to the effective effort reduction. Closures that have a higher nominal effort reduction compared to the effective effort reduction will potentially deliver the best economic outcome.

For example, Table 4 (Appendix 8) shows that a November closure will provide an effective effort reduction of 8.9 per cent and a nominal effort reduction of 11.1 per
cent. In contrast, Table 1 (Appendix 8) shows that seven-day moon closures in December would deliver an 8.8 per cent reduction in effective effort, but only a 6.1 per cent reduction in nominal effort. Therefore, a November closure could be expected to have comparatively less financial impact than seven-day moon closures in December, while achieving a similar reduction in effective effort.

Given that moon closures appear to be unpopular with Zone B fishers, the RLIAC proposed to continue the current “Sundays-off” for the entire season. These closures provide a reduction in effective effort of 7.9 per cent, with an 8.4 per cent reduction in nominal effort.

The management recommendations of the RLIAC (with the additional effective effort reduction in square brackets) for Zone B are as follows:

**Recommendations**

1. An additional 10 per cent pot reduction for whole of the season beginning in 2008/09 (equivalent to a 0.66 pot usage from 15 November to 14 March, and a 0.74 pot usage from 15 March to 30 June). [10 per cent].
2. Extend “Sundays-off” for the whole season beginning in 2008/09 [7.9 per cent].

**TOTAL EFFECTIVE EFFORT REDUCTION 17.9 PER CENT**
ZONE A

4.1.11 Stock Assessment

Following a period of increased catches in Zone A, the decline in the recruitment on the coast will bring about a corresponding decline in catches for Zone A. Although the Zone A catch does not tend to vary as greatly as the coastal zones, the predicted catch is expected to decline to 1,650 tonnes in the 2010/11 season (Appendix 1, Figure 2). The predicted catch for the whole fishery in the 2010/11 season is expected to be 7,200 tonnes, which will make it one of the lowest catches on record (Appendix 1, Table 1).

The harvest rate is above the “indicative” threshold level, which has been initially been proposed to be 85 per cent (Appendix 2, Figure 3). Historically, the harvest rate in Zone A has been higher in comparison to the coastal zones - being recorded above 90 per cent. A lowering of the harvest rate should be considered to carry over some residual stock to the following season.

The weight of setose females returned to the water in 2006/07 has declined slightly from the 2005/06 season, but remains well above the levels observed since the mid-1990s (Appendix 3).

The residual legal biomass estimated to remain at the end of the fishing season in Zone A continues to remain above the levels estimated during the 1980s and 1990s, due to good catches achieved in recent years (Appendix 4, Figure 3).

In contrast to the coastal zones, catch is used as an indicator of the breeding stock in Zone A as there has not been a long-term monitoring program in this zone. Recent catch levels have been trending upwards, suggesting that the breeding stock in Zone A is at higher levels (Appendix 5, Figure 3). The apparent migration of “white” lobster at an earlier size appears to be a contributing factor to the increased catches above those predicted in the Abrolhos and below those predicted in Zone B.

Given that the 1993/94 and 2005/06 pot reductions did not result in any significant impact on total catch or catch distribution per month, the pot density saturation effect could be offsetting any reduction in pots operated in that Zone. As a consequence, it would be possible to reduce the number of pots in this Zone (and hence reduce operating costs) without significantly affecting the total catch taken.

Figure 3 (below) illustrates the pot density saturation effect in Zone A of the Fishery. This figure shows that there is a relationship between the number of potlifts (nominal effort) and the catchability of rock lobsters (i.e. with a decrease in potlifts as result of the 18 per cent pot reduction in 1993/94, there has been a corresponding increase in catchability).

However, if potlifts continue to be reduced, at some point the catchability of animals will stop increasing at the corresponding rate and the effort reductions will start to reduce the harvest rate. The number of pots where the pot density saturation effect ceases (illustrated by the slightly curved line in Figure 3) is not known, and can only
be determined by a gradual decrease in pots until a decrease in harvest rate is observed.

Therefore, a pot reduction with a corresponding increase in catchability results in a reduction in potlifts (and hence a cost saving) with little or no reduction in catch. It should be noted that a reduction in potlifts using time-off would result in a reduction in harvest rate.

Figure 3  Effort versus catchability in Zone A of the Fishery showing that a decrease in potlifts due to the 18 per cent pot reduction in 1993/94 resulted in a corresponding increase in catchability.

4.1.12 Key Issues

1. Pot density saturation, meaning there are more pots in the water than necessary, which reduces the economic efficiency of the fishery.
2. High exploitation rate, meaning low residual legal biomass.
3. Equity with Zone B.

4.1.13 Objectives

1. Reduce pot density saturation by reducing the number of pots to maximise overall profitability of the fishery
2. Reduce harvest rate to an indicative 85 per cent level.
3. Ensure equity between Zones A and B is maintained with the introduction of new management changes.
4. Introduce changes that have a minimum negative impact on the overall profitability of the fishery.
4.1.14 Assessment of Reductions in Effective Effort

The assessment of effort reductions is complicated by the level of pot density saturation that appears to be occurring in this zone. This was particularly evident with the 18 per cent pot reduction in 1993/94.

As pots are reduced in this fishery the level of pot saturation will be reduced, but it is difficult to predict the rate at which this will occur. Therefore, pot reductions have a different effect in this zone compared to zones B and C where there is little evidence of pot saturation.

An adaptive management approach should be considered to assess the effect of pot saturation. This involves undertaking pot reductions and assessing the effect on the fishery. If pot saturation is still occurring, then there will not be any effect on harvest rates and hence catches but a reduction in nominal effort (and hence costs) will occur.

Time reductions will reduce the effective effort and hence harvest rate and reduce the nominal effort.

A detailed assessment of the impact of pot reductions on key indices is provided in Appendix 7.

4.1.15 Management Proposals

4.1.15.1 Stakeholder Proposals

Below is a brief summary of the management proposals relating to Zone A that have been provided to the RLIAC.

**Western Rock Lobster Council**
- 10 per cent pot reduction.
- the 10 per cent pot reduction in place between 15 March and 15 April continues for the remainder of the season.
- June closure.
- Zone A fishers out of Zone B on 1 March.
- 77mm minimum size for all zones.

**Kalbarri Professional Fisherman’s Association**
- Zone A fishers out of Zone B on 1 March.

**Geraldton Professional Fisherman’s Association**
- 30 per cent pot reductions.

**Individual Zone A Licensee**
- 30% pot reduction, 10% over three years.
- Sundays off, except in March.
- Remove the 77mm gauge and have a 76mm minimum size all season.
Dongara Professional Fisherman’s Association
- Zone A fishers out of Zone B on 1 March.

4.1.15.2 RLIAC Recommendation

At its 27 February meeting, the RLIAC resolved to address the current pot density saturation issue in Zone A, and to reduce harvest rates to below the indicative level of 85 per cent.

Notwithstanding the need to make adjustments for sustainability in Zone A, pot reductions can provide a financial benefit where there is pot density saturation occurring. This is because a pot reduction would lead to a reduction in the number of potlifts (hence the cost savings) without any significant reduction in harvest rate and hence catch.

As the information on the exact amount of pot reductions required to negate the pot density saturation effect is not available, an adaptive management approach could be used to arrive at a figure. That is, pot usage could be reduced a certain amount (say five per cent per year) until a catch or harvest rate response was determined. At that time, the need for further reductions could be determined.

Until the pot saturation density effect has been negated, the only possible way of reducing the extremely high harvest rate in Zone A is by initiating time closures. Due to uncertainty in the wider industry around the pot density saturation effect, the RLIAC aimed to weight its proposal more toward addressing the high harvest rate in Zone A using time closures than addressing the pot density saturation effect with pot reductions.

The RLIAC resolved to reduce the effective effort in Zone A by a similar amount to that of Zones B and C.

| Aim – to reduce the effective effort in Zone B by 20 per cent by using time closures and, to a lesser extent, pot reductions |

4.1.15.3 Time Closures

In order to ensure that any management changes reduce costs and have a minimum impact on the overall profitability of the Fishery (Objective 4), the RLIAC considered Tables 5, and 6 at Appendix 8, which compare effective effort versus nominal effort reductions for a variety of temporal closure options.

The ratio of the percentage reduction in nominal effort to effective effort can be used as an indicator of the cost savings relative to the effective effort reduction. Closures that have a higher nominal effort reduction compared to the effective effort reduction will potentially deliver the best economic outcome.

Tables 5 and 6 (Appendix 8) show that the June closure with a 16.7 per cent reduction in nominal effort compared to a 6.2 per cent reduction in effective effort is likely to provide the best financial outcome (greatest savings compared to loss of revenue).
However, the RLIAC considered that there may be some marketing advantages in continuing to fish in June.

As a consequence, the RLIAC proposed that Zone A have Sundays-off from the start of the season through to the end of June (a 13.7 per cent reduction in effective effort compared to a 13.1 per cent reduction in nominal effort) as a way of achieving the bulk of the reduction required. This closure is aligned with the “Sundays-off” proposal for Zone B, which will mean that processors will not have to receive rock lobsters from Zones A or B on any Sunday during the season. This should result in cost savings at the processing factories.

The RLIAC management recommendation (with the effective effort reduction in brackets) for Zone A is as follows:

**Recommendations**

1. Extend the current 10 per cent pot reduction (ending on 15 April) through to 30 June beginning in 2008/09 (equivalent to a 0.74 pot usage from 15 March to 30 June) [five per cent if there is no pot density saturation].
2. Sundays-off from 15 March to 30 June beginning in 2008/09 [13.7 per cent].

**TOTAL EFFECTIVE EFFORT REDUCTION 18.7 PER CENT**
SECTION 5 APPENDICES

APPENDIX 1

CATCH PREDICTION

The puerulus settlement for the 2007/08 season continued to remain at low levels until the last sampling period in December. The usual peak period of settlement for coastal locations occurs over the period September to November.

Assuming that there will be no change in this trend of low puerulus settlement, a preliminary prediction for the 2010/11 season has been made. The predictions for the next three seasons, *assuming the same effort levels as 2006/07*, are provided in Table 1.

<table>
<thead>
<tr>
<th>Season</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008/09</td>
<td>1,900</td>
<td>3,150</td>
<td>4,500</td>
<td>9,550</td>
</tr>
<tr>
<td>2009/10</td>
<td>1,750</td>
<td>2,700</td>
<td>4,000</td>
<td>8,450</td>
</tr>
<tr>
<td>2010/11</td>
<td>1,650</td>
<td>2,450</td>
<td>3,100</td>
<td>7,200</td>
</tr>
</tbody>
</table>

*Table 1*  Catch predictions (in tonnes) by zone for the period 2008/09 to 2010/11.

*Figure 1*  Catch predictions (in tonnes) by zone for the period 2008/09 to 2010/11.
APPENDIX 2
HARVEST RATE INDICES

Southern Coastal Harvest Rate Indices

Figure 1  Harvest Rate Index (smoothed) for the southern coastal area (Zone C). The straight solid line is the 70 per cent threshold level.

Northern Coastal Harvest Rate Indices

Figure 2  Harvest Rate Index (smoothed) for the northern coastal area (Zone B). The straight solid line is the 70 per cent threshold level.
Figure 3  
Harvest Rate Index (smoothed) for the Abrolhos Islands area (Zone A). The straight solid line is the 85 per cent threshold level.
APPENDIX 3

SETOSE ANIMALS RETURNED

Figure 1  Weight (tonnes) of setose rock lobsters returned to the ocean.
APPENDIX 4

RESIDUAL BIOMASS (LEGAL ANIMALS)

Figure 1  Estimated residual legal biomass at the end of the fishing season in Zone C.

Figure 2  Estimated residual legal biomass at the end of the fishing season in Zone B.
**Figure 3**  Estimated residual legal biomass at the end of the fishing season in Zone A.
APPENDIX 5

FISHERY-DEPENDENT BREEDING STOCK INDICES

**Figure 1** Fishery-dependent breeding stock indices for the Southern Zone (Zone C) of the fishery with a three-year moving average. The threshold reference point is shown as the straight line and the limit as the dashed line.

**Figure 2** Fishery-dependent breeding stock indices for the Northern (Zone B) of the fishery with a three-year moving average and standard deviation. The threshold reference point is shown as the solid straight line and the limit as the dashed straight line.
Figure 3  The catch (tonnes) from Zone A as an index of the breeding stock over the period 1980/81 to 2006/07.
APPENDIX 6

FISHERY-INDEPENDENT BREEDING STOCK INDICES

Figure 1  Fishery-independent breeding stock indices for the Southern Zone (Zone C) of the fishery with a three-year moving average.

Figure 2  Fishery-independent breeding stock indices for the Northern Zone (Zone B) of the fishery with a three-year moving average.
Figure 3  Fishery-independent breeding stock indices for the Zone A of the fishery with a three-year moving average.
APPENDIX 7

IMPACT OF EFFORT REDUCTION ON KEY INDICES

Zones B and C

This section attempts to explain how effort reductions affect nominal and effective effort, breeding stock and catch in the short-term (one to two years) and longer term (five to ten years). These comparisons can be made relative to the year that the reductions were first introduced or in comparison with a given year if the reduction had not occurred:

1. Impact on catch and breeding stock is relative to what it would have been each year without the effort reduction, assuming variable recruitment;
2. Impact on catch and breeding stock can be considered to be relative to that in Year 0, assuming constant recruitment to the fishery; and
3. Impact on effort is relative to Year 0.

Table 1  Effect of effort reductions on nominal and effective effort, breeding stock and catch in the short-term (one to two years) and longer term (five to ten years) of a 20 per cent effort reduction and assuming a two per cent efficiency increase per year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal effort</th>
<th>Effective effort</th>
<th>Breeding stock</th>
<th>Catch rate (legal size)</th>
<th>Catch</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>Baseline set to 100</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
<td>82</td>
<td>101</td>
<td>107</td>
<td>88</td>
<td>Large drop in catch in first year</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>84</td>
<td>104</td>
<td>117</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>80</td>
<td>86</td>
<td>110</td>
<td>115</td>
<td>99</td>
<td>Catch loss is minimal by year 3</td>
</tr>
<tr>
<td>4</td>
<td>80</td>
<td>88</td>
<td>116</td>
<td>113</td>
<td>99</td>
<td>Harvest rate is still lower</td>
</tr>
<tr>
<td>5</td>
<td>80</td>
<td>90</td>
<td>122</td>
<td>110</td>
<td>99</td>
<td>Breeding stock is still higher</td>
</tr>
<tr>
<td>10</td>
<td>80</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>Effect of effort reduction is totally dissipated after 10 years of two per cent efficiency increases</td>
</tr>
</tbody>
</table>

Key results

- Nominal effort reduction maintained unless there is capacity to fish more days (latent effort) i.e. cost savings is maintained.
- Effective effort reduction of 20 per cent is dissipated by level of efficiency increase, i.e. two per cent per year.
- Catch rate of legal-size lobsters is increased due to lower harvest rate and increase in average size.
- Significant drop in catch in first year. This is dissipated mainly by the catch not taken in the first year being available for capture at a larger size.
- Breeding stock is increased even after five years due to lower harvest rate allowing more lobsters to flow through to breeding stock.
- Effect of effort reduction is totally dissipated (except for nominal effort) after 10 years of two per cent efficiency increases per year.
Assumptions

- No significant pot saturation (evidence of this in Zone A).
- No significant latent effort (capacity to fish more days).
- Harvest rate is relatively high, i.e. > 60 per cent
Zone A

- Assuming significant level of pot saturation (particularly in shallow water), i.e. any pot reduction is compensated immediately by an efficiency increase of remaining pots
- Impact on catch and breeding stock can be considered to be relative to that in Year 0, assuming constant recruitment to the fishery.
- Impact on effort and harvest rate is relative to Year 0.

Table 2  Effect of effort reductions on nominal and effective effort, breeding stock and catch in the short-term (one to two years) and longer term (five to 10 years) of a 20 per cent pot reduction and assuming a one per cent efficiency increase per year and pot density saturation is still occurring after the pot reduction. The purpose of this table is to illustrate the effect of pot density saturation and a comparison with the coastal fishery (Table 1) and does not represent a model assessment.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal effort</th>
<th>Effective effort</th>
<th>Breeding Stock</th>
<th>Catch rate (legal size)</th>
<th>Catch</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>Baseline set to 100</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
<td>97</td>
<td>103</td>
<td>101</td>
<td>98</td>
<td>Large drop in nominal effort but not in effective effort</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>98</td>
<td>102</td>
<td>101</td>
<td>99</td>
<td>Effect on catch or breeding stock is minimal</td>
</tr>
<tr>
<td>3</td>
<td>80</td>
<td>99</td>
<td>101</td>
<td>101</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>80</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>80</td>
<td>101</td>
<td>99</td>
<td>99</td>
<td>100</td>
<td>Effect on indicators is minimal except for nominal effort</td>
</tr>
<tr>
<td>10</td>
<td>80</td>
<td>106</td>
<td>95</td>
<td>95</td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

Key results
- Pot saturation effect is reduced.
- Nominal effort reduction is maintained unless there is capacity to fish more days (latent effort), i.e. cost saving is maintained
- Effective effort (and harvest rate) reduction of 20 per cent is dissipated immediately by an improvement in catchability of the remaining pots
- Minimal drop in catch as the effective effort is not changed.
- Minimal change in breeding stock and legal catch rate, as the effective effort is not changed.

Assumptions
- Significant pot saturation.
- No significant latent effort (capacity to fish more days).
- Harvest rate is relatively high, i.e. > 80 per cent.
APPENDIX 8

TEMPORAL CLOSURES - EFFECTIVE VERSUS NOMINAL EFFORT

Zone C

Table 1  Southern Coastal (Zone C) percentage reduction in effective and nominal effort due to three, five and seven-day moon closures, in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Three days</th>
<th>Moon Closure period</th>
<th>Five days</th>
<th>Seven days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
<td>Nominal</td>
<td>Effective</td>
<td>Nominal</td>
</tr>
<tr>
<td>November</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>December</td>
<td>2.4</td>
<td>1.9</td>
<td>4.4</td>
<td>3.2</td>
</tr>
<tr>
<td>January</td>
<td>1.3</td>
<td>1.0</td>
<td>2.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Whites total</td>
<td>3.7</td>
<td>2.9</td>
<td>6.7</td>
<td>4.8</td>
</tr>
<tr>
<td>February</td>
<td>0.0</td>
<td>0.0</td>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>March</td>
<td>0.8</td>
<td>1.2</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>April</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.7</td>
</tr>
<tr>
<td>May</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.7</td>
</tr>
<tr>
<td>June</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Reds total</td>
<td>0.0</td>
<td>0.0</td>
<td>3.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>3.7</td>
<td>2.9</td>
<td>10.1</td>
<td>9.8</td>
</tr>
</tbody>
</table>

Table 2  Southern Coastal (Zone C) percentage reduction in effective and nominal effort due to Sunday closures and entire monthly closures in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Sundays off</th>
<th>Month off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
<td>Nominal</td>
</tr>
<tr>
<td>November</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>December</td>
<td>3.6</td>
<td>2.4</td>
</tr>
<tr>
<td>January</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Whites total</td>
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<td>4.6</td>
</tr>
<tr>
<td>February</td>
<td>1.1</td>
<td>1.7</td>
</tr>
<tr>
<td>March</td>
<td>1.6</td>
<td>2.0</td>
</tr>
<tr>
<td>April</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>May</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>June</td>
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<td>1.1</td>
</tr>
<tr>
<td>Reds total</td>
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<td>8.1</td>
</tr>
<tr>
<td>Total</td>
<td>12.0</td>
<td>12.7</td>
</tr>
</tbody>
</table>

1 Effective Effort - Predicted effective annual effort reduction, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.

1 Nominal Effort - Predicted reduction in pot lifts, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.
Zone B

Table 3  Northern Coastal (Zone B) percentage reduction in effective and nominal effort due to three, five and seven day moon closures in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Three days</th>
<th>Five days</th>
<th>Seven days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective %</td>
<td>Nominal %</td>
<td>Effective %</td>
</tr>
<tr>
<td>November</td>
<td>0.6</td>
<td>1.4</td>
<td>0.7</td>
</tr>
<tr>
<td>December</td>
<td>3.6</td>
<td>2.5</td>
<td>6.3</td>
</tr>
<tr>
<td>January</td>
<td>0.7</td>
<td>1.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Whites total</td>
<td>4.9</td>
<td>5.1</td>
<td>8.1</td>
</tr>
<tr>
<td>February</td>
<td>0.6</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>March</td>
<td>1.1</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td>April</td>
<td>0.8</td>
<td>0.7</td>
<td>1.8</td>
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<tr>
<td>May</td>
<td>0.6</td>
<td>0.8</td>
<td>1</td>
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<tr>
<td>June</td>
<td>0.1</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Reds total</td>
<td>3.2</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Total</td>
<td>8.1</td>
<td>9.6</td>
<td>14.5</td>
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</table>

Table 4  Northern Coastal (Zone B) percentage reduction in effective and nominal effort due to Sunday closures and entire monthly closures in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Sundays off</th>
<th>Month off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective %</td>
<td>Nominal %</td>
</tr>
<tr>
<td>November</td>
<td>1.1</td>
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<td>December</td>
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<td>2.9</td>
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<tr>
<td>January</td>
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<td>0.9</td>
</tr>
<tr>
<td>Whites total</td>
<td>5.1</td>
<td>5.2</td>
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<tr>
<td>February</td>
<td>1.9</td>
<td>2.2</td>
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<tr>
<td>March</td>
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<td>1.0</td>
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<tr>
<td>April</td>
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<td>0.0</td>
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<tr>
<td>May</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>June</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Reds total</td>
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<td>3.2</td>
</tr>
<tr>
<td>Total</td>
<td>7.9</td>
<td>8.4</td>
</tr>
</tbody>
</table>

1 Effective Effort
Predicted effective annual effort reduction, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.

1 Nominal Effort
Predicted reduction in pot lifts, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.
Zone A

Table 5  Abrolhos (Zone A) percentage reduction in effective and nominal effort due to three, five and seven day moon closures in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Three days</th>
<th>Five days</th>
<th>Seven days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
<td>Nominal</td>
<td>Effective</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whiters total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>3.3</td>
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<td>4.6</td>
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<tr>
<td>April</td>
<td>3.5</td>
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<tr>
<td>May</td>
<td>1.6</td>
<td>2.8</td>
<td>2.9</td>
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<tr>
<td>June</td>
<td>0.5</td>
<td>1.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Reds total</td>
<td>8.9</td>
<td>8.5</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>8.9</td>
<td>8.5</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Table 6  Abrolhos (Zone A) percentage reduction in effective and nominal effort due to Sunday closures and entire monthly closures in addition to the current (2005/06) management package.

<table>
<thead>
<tr>
<th>Month</th>
<th>Sundays off</th>
<th>Month off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
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<tr>
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<tr>
<td>Whiters total</td>
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<tr>
<td>February</td>
<td></td>
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<tr>
<td>March</td>
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<tr>
<td>May</td>
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<tr>
<td>June</td>
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<tr>
<td>Reds total</td>
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<td>13.1</td>
</tr>
<tr>
<td>Total</td>
<td>13.7</td>
<td>13.1</td>
</tr>
</tbody>
</table>

1 Effective Effort
Predicted effective annual effort reduction, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.

1 Nominal Effort
Predicted reduction in pot lifts, based on an average of the catch and nominal effort during the 2005/06 and 2006/07 fishing seasons.
APPENDIX 9

EXTRACT FROM 2004 DECISION RULES FRAMEWORK

Decision Rule No.1

The formal application of the first decision rule, designed to ensure biological sustainability, needs to occur annually and be based on a formal stock status report provided by the Department of Fisheries Research Division. In the case of western rock lobster this is likely to be in February or March.

DR 1 – biological sustainability

Is the biomass indicator in the GREEN zone?

YES.
Response: Consider DR 2

NO
Response: is the biomass indicator in the ORANGE zone?

YES
Response: Additional analysis required to determine:
- Trend
- Likely cause
- Need for reduced exploitation rate

Options to reduce exploitation rate include:
- Gauge control
- Closed season
- Reduced unit value

NO
Response: is the biomass indicator in the RED zone?

YES
Response: Reduction in exploitation rate required.
Minimum 15% effort reduction in unit value.
Other measures as deemed necessary including:
- Gauge control
- Closed season
- Further reduced unit value
Examples of how DR1 would be applied

![Diagram showing breeding stock as a % of unfished biomass over time (fishing seasons).]

**Green** = healthy

**Orange** = consider stock status

**Red** = unsustainable

**Example 1** Solid line. Indicator of breeding biomass clearly in the green zone, with no indication of a downward trend – no remedial action required, increased freedom for industry to pursue a harvest strategy or management change to optimise economic or social objectives. If the indicator trended downwards, preventative measures to ensure indicator remains in the green zone are also relevant.

**Example 2** Dotted line. Indicator of breeding biomass has fallen from the green zone and is within the orange zone. RLIAC will initiate expanded studies to determine cause of downward trend and develop advice on reducing exploitation rate.

**Example 3** Dashed line. Indicator of breeding biomass clearly in the red zone having fallen from healthy levels. Expanded work will be conducted from previous biological reference zones. A reduction in exploitation rate is required and will be achieved by a minimum 15% reduction in unit value plus the possible inclusion of other remedial measures. Consultation will be brief and focussed on informing industry of required change and circulation of evidence that the red zone has been entered rather then seeking comment on what should be done.
Decision Rule No.2

The formal application of the second decision rule, designed to ensure other indicators of sustainability are not ignored, follows confirmation through DR 1 that the indicator is in the **green** zone. Application of this rule needs to occur annually and be based on a formal stock status report provided by the Department of Fisheries Research Division. In the case of western rock lobster this is likely to be in February or March. For simplicity this rule is broken into five parts. Each part must be addressed.

**DR 2a - Trends in Breeding Biomass**

- Is the biomass indicator trending towards the **ORANGE** zone?

  **YES**
  - Response: Consider options to stabilise or reverse trend:
    - Gauge control
    - Closed season
    - Reduced unit value

  **NO**
  - Response: Consider DR 2b

**DR 2b - recruitment**

- Has there been a recruitment failure?

  **YES**
  - Response: is the failure linked to low egg production?

  **NO**
  - Response: Consider DR 2c

  **YES**
  - Response: Consider options to restore egg production:
    - Gauge control
    - Closed season
    - Reduced unit value

  **NO**
  - Response: Assess ability to correct through intervention