MINISTRY OF FISHERIES
Te Tautiaki i nga tini a Tangaroa

Stock Strategies Consultation Document

10 December 2004

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EXECUTIVE SUMMARY

1 This is a consultation document outlining a further evolution in our approach to fisheries management.

2 The goal for New Zealand fisheries is to maximise the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment. The Ministry is consulting with stakeholders on how the Ministry proposes to contribute to this goal. The Ministry is proposing to employ stock strategies and fisheries plans to implement this approach.

3 Stock strategies and fisheries plans will outline Crown (established in statute), government and stakeholder objectives for managing fisheries resources. The management tools and services in respect of particular fisheries or fisheries complexes to realise the goal of maximising value and protecting the aquatic environment will also be described.

4 Crown objectives, which will be described in a stock strategy, will be founded in the purpose and principles of Fisheries Act 1996: "to provide for the utilisation of fisheries resources while ensuring sustainability". As such, the framework will enable stakeholders to provide for their well-being and will ensure sustainability of resources via applications of tools and services and monitoring of fishery performance.

5 Stock strategies will use a risk assessment approach to derive the optimal arrangement of tools and services to meet management objectives. A wide range of tools and services are available to address risk. Guidelines on the selection of tools and services will be based on several criteria, including cost effectiveness, and the effect on incentives for stakeholders to manage fisheries.

6 Fisheries plans will outline stakeholder objectives, and the proposed management tools and services to be delivered by the proponents of the plan. The scope of fisheries plans may vary considerably; a plan may deal with one or more stocks; it may focus on particular areas; and it may cover a number of years. Fisheries plans may address a limited number of the Crown's management objectives (e.g. sustainability), although their scope may grow over time.

7 An evaluation by the Ministry will be undertaken to determine what impact a fisheries plan will have on the Crown's management objectives (sustainability and enabling utilisation) and whether those impacts are acceptable, given the management measures that would be undertaken and the mandate held by those stakeholders. The Ministry of Fisheries proposes to employ the risk analysis and management approach created for the development of stock strategies to assess a fisheries plan. If the Minister of Fisheries then approves the fisheries plan, ongoing monitoring by the Crown will ensure that the Crown's objectives continue to be met.

8 This document focuses on the proposed design and analytical framework of stock strategies and fisheries plans. Consultation with stakeholders is an important step in the process before finalising this approach.

I. INTRODUCTION

Purpose and Rationale

9 This document details a proposed evolution of fisheries management outlined in the Ministry of Fisheries 2004-2008 Statement of Intent (SOI). This approach is a significant development in the management of New Zealand fisheries, and is designed to:

- Clarify Government and stakeholder roles and responsibilities for sustainability and utilisation of fisheries resources;
- Move to objectives-based fisheries management underpinned by the assessment and management of risk;
- Increase transparency by detailing management initiatives provided to each fishery, and their costs;
- Ensure regulatory interventions are justified, and remove those no longer required; and
- Monitor performance of management against objectives.

10 The adoption and implementation of a stock strategy and fisheries plan framework is an extensive and complex undertaking. Many of the details will be developed further, depending on the outcome of this consultation. This document sets out an important step in the overall process, detailing the proposed approach and timing for the development of stock strategies and fisheries plans.

Stakeholder Views

11 Consultation improves decision-making by providing the opportunity for individuals to participate in decisions that affect them. The Ministry of Fisheries wants to hear from you, and welcomes the opportunity to work with stakeholders. Your comments are requested on the proposed evolution of the fisheries management framework, including the matters specifically identifies later in Section VI of this document.

II. CONTEXT AND FRAMEWORK

Strategic Direction

12 The Statement of Intent outlines a single goal or outcome for New Zealand fisheries:

"Maximise the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment."

13 This goal is consistent with the Purpose of the Fisheries Act 1996, "to provide for the utilisation of fisheries resources while ensuring sustainability". This purpose statement guides decision makers. Specific obligations are derived from the provisions found within the Act (e.g. the maintenance of biomass at or above a level that can produce Maximum Sustainable Yield). The government must manage fisheries within the scope provided by the purpose, and bounded by all specific obligations contained within the Act.

14 The Strategic Plan 2003/08 (released January 2003) and Statement of Intent (SOI) 2004/08 (released April 2004) outlines the Ministry of Fisheries role in fisheries management:

- Ensuring ecological sustainability;
- Meeting Treaty of Waitangi obligations;
- Enabling efficient resource use; and
- Ensuring the integrity of management systems.

15 The Ministry alone cannot meet the goal for fisheries of "maximising value". Government does not have the information to make value judgements for individuals, each of whom may view or define 'value' differently. Therefore, stakeholders must be enabled to participate fully to meet this goal. This document outlines how the Ministry of Fisheries intends to use stock strategies to define its role and deliver on its objectives in managing fisheries.

16 The proposed change in fisheries management approach towards the implementation of stock strategies and fisheries plans is to better define the roles and responsibilities of the Ministry of Fisheries and stakeholders. It recognises the need to provide the flexibility for stakeholders to develop innovative ways of responding to fisheries management problems and managing fisheries. This approach also seeks to improve the way the Ministry helps the Crown meet its obligations to tangata whenua for input and participation into fisheries management.

17 In the past, the services the Ministry provided were based on meeting outputs, such as provision of advice papers. The proposed new approach is based on the creation of specific objectives for fisheries. Management performance can then be measured against the goal and objectives. These objectives will be founded in the purpose and principles of the Fisheries Act 1996, but also encompass the 1992 Deed of Settlement, the SOI and strategic plan, legislation such as the Marine Mammals Protection Act, Wildlife Act and Government initiatives such as the biodiversity strategy.

Fisheries Plans and Stock Strategies

18 The Ministry of Fisheries believes that objectives-based fisheries management delivered through fisheries plans or stock strategies will give the best effect to the Crown's statutory obligations and will best contribute to fisheries outcomes and goal outlined in the Statement of Intent.

19 Stock strategies and fisheries plans will establish objectives and propose measures to be undertaken to achieve those objectives to support the overall fisheries goal. Stock strategies establish Crown objectives (described below) and will determine tools and services that best meet those objectives. The process for identifying tools and services will be based on a risk assessment and risk management framework. A fisheries plan will detail the objectives and measures desired and delivered by the proponents of a plan.

20 Stock strategies and fisheries plans will need to meet performance standards and measures and process standards (as outlined below). Guidelines will inform fisheries managers (either Government or stakeholders) of fisheries management tools available and provide a non-limiting set of options for use of those tools.

- Performance standards and measures will provide transparency as to the performance expectations applicable to stock strategies and fisheries plans. They may include general standards applicable to more than one fishery, but most likely will be specific measures applicable to individual fisheries or fishery complexes. Performance measures might include such things as specific levels of biomass, below which stocks should not decline.

- Process standards will define the way the Ministry will go about its business. In most cases, there are two broad categories:

  - Analytical standards that define techniques that must be followed to develop specific fisheries management regimes (e.g. the risk assessment methodology).
  - Consultation process standards that define minimum requirements regarding with whom and how consultation should occur (e.g. consultation over stock strategies).

- Guidelines provide information and assistance on a particular aspect of the stock strategy or fisheries plan process, such as the way in which particular fisheries management tools could be most effectively used. They are a means of providing direction without necessarily binding the fisheries manager to a particular approach. Examples under development include guidelines on the application of various harvest strategies that could be followed to meet or exceed maximum sustainable yield, and guidelines on the most effective application of the deemed value regime.

21 There are several key relationships between fisheries plans and stock strategies:

- The Ministry of Fisheries considers that stock strategies form a useful foundation for the development of fisheries plans, and in many cases, stock strategies will exist in fisheries before fisheries plans. This does not, however, preclude the creation of fisheries plans prior to a stock strategy.
- The Ministry of Fisheries will continue to monitor the performance of a fisheries plan against standards, regardless of the extent to which the fisheries plan subsumes Crown management functions and services.
- Where a stock strategy exists, Government and fisheries plan proponents will need to coordinate management activities to avoid duplication or conflict. Once a fisheries plan is approved, any associated stock strategy will be updated to take the fisheries plan into account to avoid duplication or incompatibility of government services with stakeholder-delivered services.

III. FISHERIES PLANS

22 Fisheries plans are approved by the Minister of Fisheries under s.11A of the Fisheries Act 1996. The wording of s.11A is very permissive and the scope of fisheries plans may vary considerably; a plan may deal with one or more stocks, it may focus on particular areas, and it may cover a number of years. Fisheries plans may address a limited number of the Crown's management objectives (e.g. stock assessment), although their scope may vary over time.

23 The Ministry of Fisheries will help facilitate the development of fisheries plans by informing stakeholders of legislative obligations and discussing opportunities for stakeholder led

initiatives. The Ministry is already actively assisting in the development of several such activities.

24 Once a fisheries plan is submitted to the Minister of Fisheries for approval, the Ministry will evaluate the impact of the plan on the Crown's management objectives (sustainability and enabling utilisation). A key consideration is whether those impacts increase the risk of failing to meet those objectives to unacceptable levels. This evaluation will include consideration of whether the objective of the plan can be achieved given the mandate held by those stakeholders. The Ministry will employ the risk analysis framework (described below) created for stock strategies to evaluate a fisheries plan.

25 The nature and content of monitoring and evaluation will be determined on a case-by-case basis, depending on the management measures and services proposed in the fisheries plan. However, the Ministry will always ensure that the plan meets Crown management objectives by monitoring the fishery against performance standards and measures.

IV. STOCK STRATEGIES

26 A stock strategy will outline the objectives and management framework for each fishery necessary to achieve the Crown's contribution to fishery outcomes. The strategy will describe the proposed management framework for the fishery, based around use of fisheries management tools (e.g. Total Allowable Catch), supporting services, and cost of those services. .

27 It is proposed that stock strategies consist of two documents. The first document is called a "**Stock Analysis**", and will include the detailed rationale and analysis that supports the management framework for the fishery, consisting of:

Objectives: what the Crown wishes to achieve to meet its statutory obligations and any other applicable Government objectives.

Information Brief: a compilation of biological; economic, social and cultural; and managerial information relating to the stock that is relevant to analysing risk. In the past, fisheries management decisions have largely been founded on a single information source: stock assessments. This approach will widen the information base underpinning management decision-making.

Risk assessment: an analysis of the risk of not meeting objectives. This will yield an optimal arrangement of management tools and services that best mitigate risk and therefore best manage the stock or stock complex to meet the Crown's management objectives. The risk assessment will also develop fishery or complex specific performance measures to enable monitoring of the fishery against objectives.

28 Annex 1 summarises the process to develop the Stock Analysis. The risk assessment in the Stock Analysis outlines the optimal arrangement of tools and services. The draft Southern Blue Whiting case study attached as Annexes Three and Four is an example of a Stock Analysis.

29 The second proposed document is called a "**Stock Operational Plan**", and will describe those tools and services that have been selected for implementation and delivery. It will have the following sections:

a) A description of the objectives pertaining to the fishery; and

b) A description of the tools, services and performance measures that will be deployed in the management of the fishery to meet the objectives, and the costs of those services.

30 The next four sections describe the three components that make up the Stock Analysis component of a stock strategy.

Objectives

31 The Ministry of Fisheries proposes that each stock strategy contain objectives that set out what the Crown intends to achieve through the management of a fishery or fisheries grouping.

32 The purpose of the Fisheries Act 1996 is to provide for utilisation of fisheries resources while ensuring sustainability. Sustainability means maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and, avoiding remedying, or mitigating any adverse effects of fishing on the aquatic environment. Utilisation means conserving, using, enhancing and developing fisheries resources to enable people to provide for their social, economic and cultural well-being.

33 Given the purpose and principles of the Act, the Crown obligations of utilisation and sustainability become the objectives on which the stock strategy will be founded. The objectives therefore are:

- Provide for utilisation through:
  - Access to fisheries resources; and
  - Creation of a framework that enables people to provide for their social, cultural and economic well-being.
- Ensure sustainability:
  - Of all target species;
  - Of all non-target species;
  - Avoid, remedy or mitigate adverse effects of fishing on the environment, including:
    - Adverse impact on protected species, and
    - Adverse impact on benthos

Commercial-only fisheries

34 For some stocks there is currently only a commercial fishery, and rights are well specified. In such instances, the Government will not attempt to maximise value under stock strategies for the following reasons:

- Maximising value means different things to different "types" of fishers (e.g. vertically integrated companies as opposed to owner operators) and to different fishers within each "type". A decision on maximising value is an individual decision, not a Crown one, given that the value each fisher holds will be different. The Crown has insufficient information to make appropriate decisions about what might constitute maximum value overall.
- The purpose of providing for utilisation is to enable people to provide for their social, cultural and economic well-being. The Ministry of Fisheries interprets this as requiring it to establish an appropriate framework that creates the opportunity for stakeholders to provide for their own well-being, rather than requiring the Crown itself to attempt to maximise people's well-being in relation to the fishery.

35 Where no management is required, there exists an open access permitting regime for fisheries resources. When management action is required to meet sustainability or utilisation objectives, the Fisheries Act 1996 (s.17B) has established the Quota Management System (QMS) as the preferred management framework.

36 Once rights are allocated, any inappropriate impediments to collective action in the existing management framework should be removed or mitigated. Once these impediments have been addressed, rights holders are better able to act collectively to achieve fisheries outcomes, including maximising value via the exercising of their individual rights and interests, and/or through the development of fisheries plans. Fisheries plans, as the vehicle for achieving stakeholder-driven objectives, are the way for stakeholders to collectively act, and in so doing to achieve the maximising value objective.

Shared fisheries or recreational/ customary-only fisheries

37 Many of New Zealand fisheries are of interest to a range of stakeholders who utilise the fisheries resources (i.e. commercial, recreational and customary users). These are '**shared fisheries**'. The Ministry of Fisheries recognises that in shared fisheries or in fisheries where there is recreational or customary use only, the contribution towards 'maximising value' may vary between the sectors and users. In such fisheries, rights for recreational fishers (in particular) are poorly defined and it is, therefore, more difficult for participants to maximise value within and between sectors. In some cases, the Crown may need to improve the framework, possibly by supporting the formation of representative stakeholder groups to achieve desired utilisation objectives.

38 Establishing a policy on shared fisheries cannot be encompassed by the stock strategy development project alone. However, the stock strategy framework has the flexibility to incorporate a variety of objectives. There is, for example, room for the addition or modification of objectives as long as they stay consistent with the wider statutory purposes. In some instances, these modification may take the form of more specific performance standards (e.g. to manage specific environmental effects), while in others such as shared fisheries, utilisation objectives may incorporate the need for the Crown to manage more

directly (i.e. beyond a strictly enabling approach) to achieve the maximise value outcome. This in turn will influence the risk assessment and management process.

39 How objectives might be set to incorporate the need for the Crown to extend beyond a strictly 'enabling' approach, and manage to achieve value outcomes that are consistent with the Governments fisheries management goals more directly, is a subject for consultation. The Ministry of Fisheries welcomes stakeholder views on this issue.

Information Brief

40 The Information Brief for each stock strategy will provide supporting information relevant to assess risk. This will ensure that there is a single repository for information relevant to the management of the fishery. Biological; Social, Economic and Cultural; and Managerial information is required, and will be collected where it is available. The nature of the information collected depends on the objectives set; for a stock strategy in which objectives are founded on the Crown obligations to ensure sustainability and enable utilisation, the following information will be required:

<u>Biological</u>
Growth, reproduction and recruitment
Distribution and key areas (feeding, spawning, migration, etc.)
Non-QMS and QMS bycatch
Habitat issues
Environmental conditions
Trophic level interactions
Protected species interaction
Stock assessment

<u>Social, Economic and Cultural</u>
Commercial fishery, including fleet and product characteristics, fishing methods, estimated discount rate, etc.
Recreational fishery characteristics, fishing methods, etc.
Customary fishery characteristics, fishing methods, etc.

<u>Management</u>
Statutory Management

- QMS
- ACE and deemed values
- Aggregation limits
- Harvest strategy
- Existing input controls and technical measures
- Monitoring
  - Conversion factors
  - Fisheries-dependent reporting and record-keeping
  - Fisheries independent information verification
  - Research activities
  - Vessel, permit, data registries
- Education
- Enforcement
  - Surveillance, investigations and prosecutions

- Cost recovery

Existing Stakeholder Management

- Stakeholder organisations
- Voluntary agreements
- Individual industry-member actions

Performance

- Performance against management objectives
- Other sources of fishing-related mortality
- Compliance with rules

41 In addition to the information collected for individual stock strategies, there is generic information relevant to all New Zealand fisheries that will inform the risk assessment of several stock strategies. For example, information on an endangered species or sensitive habitat will be available to all stock strategies that will interact with them.

42 National research programmes to identify risk in relation to key environmental obligations (habitat and protected species interaction) are being developed to prevent duplication of research (see the section on Aggregate Effects for more detail). The Ministry of Fisheries and the Department of Conservation coordinated their research programs in this area for the first time for 1 October 2005. The results of this research will inform the stock strategy process, and assist in the evaluation of risk, in particular, to sustainability and environment objectives.

Risk Assessment

Background

43 A risk assessment will form the basis of each stock strategy. The risk assessment is the analytical framework that will be used to determine the optimal set of management tools and supporting services necessary to achieve the stated objectives for a fishery. The assessment is based on how management tools can reduce the risk to achieving the objectives of utilisation, sustainability and environment (and to any other objectives identified in the stock strategy). The process works systematically through the identification, analysis and management of risk.

44 The process will not aim to reduce risk to each objective to zero. Risk will be reduced to acceptable levels that meet the Crown's management objectives and legal obligations.

45 The Crown's obligations in relation to utilisation in commercial fisheries extends to providing access and creating an enabling framework. Under the concept of "enabling" rather than "maximising" utilisation, the Ministry of Fisheries envisages that higher levels of risk to utilisation will be acceptable under stock strategies, as long as the residual risk to the sustainability objective is considered acceptable.

46 The risk assessment process and choice of tools to mitigate risk is based on the existing core management framework for a stock (non-QMS/QMS), but not the existing tools. Species inside the QMS and outside the QMS are subject to different analyses. For QMS species, the outcome of the risk assessment is an optimal set of tools to meet the Crown's management objectives. For non-QMS species, the outcome of the risk assessment is whether risk to objectives warrants consideration of introduction of the species into the QMS, based on criteria outlined in s.17B of the Fisheries Act 1996, or other sustainability measures.

47 For QMS species, the risk analysis process provides the opportunity to identify tools and services that are not necessary to achieve the desired management objectives. For example, the risk analysis could identify a gear restriction that did not serve to reduce risk. If the tool or service is not required, then they could be removed. The identification of tools and services that can be removed from a fishery provides the opportunity for cost savings and removes unnecessary impediments to stakeholders developing fisheries plans to maximise value. Similarly, additional tools or services may be identified that are required to manage risk.

48 As required by the Australia/New Zealand Risk Management Standard,[1] there will be opportunity for consultation on the risk assessment with stakeholders.

49 Annex Two explains the evaluation scale to assist in the assessment of risk across stock strategies.

Basis of risk assessment

50 The basis of the assessment is three sets of risk analyses designed to examine how well core management frameworks and supporting services manage risk to objectives without additional management controls:

- **Non-QMS risk assessment** (provide for access). This risk analysis identifies the risk to management objectives for species within a stock strategy that are not managed within the QMS. If risk exceeds a level considered acceptable to the Ministry, then the species will be considered for introduction into the QMS. This risk analysis will form the basis of triggering the statutory process in the Fisheries Act 1996, whereby species with utilisation or sustainability concerns are considered for QMS introduction.

- **Rights-based system assessment**. This risk analysis examines a system in which those with rights are specifically identifiable (for example through a permit or customary management initiative) even if the quantum of that right has yet to be identified (i.e. no share yet determined).

  In the case of commercial permits, to ensure there is exclusivity in the nature of the right, a 'balancing regime' is established, which creates a financial disincentive (a penalty regime) to those who fish without a right. The right is tradeable and divisible, requiring a registry, and there is a reporting requirement to allow for baseline monitoring. This step in the risk assessment is to determined the degree to which the allocation of rights (and supporting services) alone align incentives for rights holders to manage stocks to achieve the Crown's management objectives.

  The stronger the alignment of incentives to manage the fishery to achieve the Crown's core obligations through the specification of rights and interests, the lower the risk to Crown objectives. Where incentives are thoroughly aligned, fewer tools will be required to be applied to a fishery (outside of those currently required by legislation). Since the risk to Crown objectives is less, greater flexibility could be provided to rights

1 Standards New Zealand and Standards Australia have published a Standard for Risk Management (AS/NZS 4360: 1999 Risk Management). It defines Risk Management as "the culture, processes and structures which are directed towards the effective management of potential opportunities and adverse effects." The standard provides a generic framework for establishing the context of risk and to identify, analyse, evaluate, treat, monitor and communicate risk relating to the activities or operations of any public, private or community enterprise or group.

holders within those tools required by statute (outlined in the next step of the risk assessment). The conclusion of this step is an assessment of risk to objectives remaining after application of a rights-based framework.

- **QMS risk assessment**. The Fisheries Act 1996 requires a series of management interventions, including QMAs, a Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC), aggregation limits, etc. This step in the risk analysis is designed to identify the extent to which the application of these tools and their supporting services reduces risk.

  The choice of how the statutory tools are applied is guided by criteria for tool selection, outlined later in this document. The approach being proposed is to use the set of tools required in legislation to reduce risk to the greatest extent possible. The application of a tool may reduce risk in one area but increase it in another (e.g. a very low TAC may result in sustainability risk being reduced to acceptable levels, but would result in the risk to utilisation objectives being increased). Residual risk is assessed following implementation of tools and associated services required by legislation.

51 If the level of residual risk remains unacceptable following the application of tools required by statute, then application of further management tools is required. This analysis is designed to indicate how effective the tool is at reducing risk. The risk assessment would be repeated for each additional management tool implemented, until risk reached an acceptable level as determined by the manager after consultation with stakeholders.

Managing aggregate environmental effects

52 The definition of sustainability includes maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding remedying or mitigating any adverse effects of fishing on the aquatic environment.

53 In addition, the Fisheries Act 1996 contains Environmental Principles that shall be taken into account when making decisions. These environmental principles are:

- Associated and dependent species should be maintained above a level that ensures their long term viability;
- Biological diversity of the aquatic environment should be maintained; and
- Habitat of particular significance for fisheries management should be protected.

54 Stock strategies will improve the Ministry's ability to manage the effects of fishing and meet the environmental principles by grouping individual fisheries and stocks into fisheries complexes: the larger the group of fisheries, the more likely the effect would be internalised within the complex.

55 Stock strategy complexes will be derived by geographic location, along with species and gear considerations (further detail on the selection criteria for stock strategies is provided below). The number and component species of stock strategies is flexible and will change with time, depending on the outcome of consultation and future information on risks.

56 Although the move to management under fisheries complexes will increase the potential for the effects of fishing to be managed within the complex, the extent to which this will occur

under the proposed stock strategy boundaries is unclear. Some effects of fishing will affect protected species or habitats that extend across a number of strategies. Examples of these effects are:

- Protected species interactions;
    - Seabirds;
    - Marine mammals;
        - Sea lions;
        - Hectors/maui dolphins;
- Benthic (seabed) impacts; and
- Ecosystem interactions.

57 These effects of fishing may not be able to be managed within particular stock strategies. For impacts that extend, or are likely to extend, across a number stock strategies, the Ministry of Fisheries considers that there may be efficiency gains in undertaking information gathering and research prioritisation at a national level. This national process will ensure co-ordination in information gathering and research and ensure that the distribution of research costs across fisheries is appropriate.

58 This type of national information gathering and research prioritisation process currently operates for marine mammals and seabird interactions. Cost recovery rules apply to those processes, which means that the cost of the project is evenly recovered from those fisheries having the effect. The same approach would be taken to similar national processes.

59 The Ministry of Fisheries notes that cost recovery on research projects to investigate ecosystem interactions such as trophic level issues will need to be considered carefully to ensure that cost recovery is directed only to projects addressing effects from fishing. Other funding for ecosystem and trophic level projects is available from such sources as the Foundation for Research, Science and Technology (FORST).

60 Where an aggregate effect occurs that is not adequately addressed through stock strategies, the Ministry proposes to undertake an impact assessment to identify how risk assessment and mitigation can be most efficiently undertaken. The national risk analysis and mitigation process would nonetheless need to be informed by information from the individual fisheries having the effect in order to reach optimal decisions around risk and mitigation. Mitigation would then be driven down into the individual strategies having the effect as a performance standard or performance measure depending on specificity of the mitigation measure.

61 The number of national co-ordination strategies will change over time as risk analysis undertaken as part of stock strategies identifies areas where further co-ordination of information gathering, risk analysis and or risk mitigation is necessary.

62 The proposed structure for national strategies is:

Objectives for management. As with the objectives within stock strategies, objectives for national strategies will be set at a high level around the obligations of the Act (e.g. adverse

effect). Any applicable performance standards (e.g. Population Management Plans) will be included as an objective.

Information gathering, which may involve the development of proposals to obtain baseline information (e.g. habitat types).

Risk assessment and risk mitigation plan. Where the risk cannot be efficiently assessed or mitigated by stock strategies, a national strategy would be used to assess and mitigate risk. Mitigation measures would be delivered through the stock strategies.

Ensuring robust analysis

63 The Ministry of Fisheries has proposed a process for conducting a risk assessment that is consistent with the Australia/New Zealand risk standard.

64 Who undertakes the assessment is a critical decision for the Ministry. The determination of risk around Crown obligations in relation to stock sustainability and environmental impact requires expert judgment and transparency. The alignment of incentives for management that the rights-based and regulatory framework creates with the characteristics of the fishery also requires critical analysis.

65 One possible approach towards improving quality and transparency of risk assessments is to use a panel of subject matter experts to validate the analysis. An expert advisory panel could provide independent advice to ensure consistent treatment of stocks.

66 This panel could validate the analysis to the point where risk is identified following the allocation of rights (step 4 in the process outlines in Annex 1). As noted above, this part of the analysis forms the basis for how subsequent management tools are applied, and therefore provides a level of guidance for later parts of the risk process and application of tools. Experts may be required in the following areas: ecological impacts of fishing, customary fishing, stock assessment, economics and fisheries management. Having a common panel will ensure consistency between stock strategies, and further ensure that aggregate effects are captured.

67 The Ministry is seeking stakeholder input on whether or not a panel would be appropriate, and if so, what the composition and mandate might be.

Tools

68 The Ministry of Fisheries has the option of employing a range of tools to address risk. The Ministry proposes that the following guidelines be applied when considering types and use of tools to mitigate risk. The application of tools according to these guidelines will enhance, where possible, incentives for stakeholders to manage fisheries.

- Consideration should be given to provide the **maximum discretion or flexibility** for rights holders to operate, within the constraints of the Crown's obligations. Rights holders are best able to determine efficient strategies for managing fisheries management problems and maximise value. Undue constraint as part of a management framework can inhibit rights holder's opportunities to maximise value.
- The Ministry of Fisheries wants to encourage **voluntary compliance**. With widespread support of the rules by stakeholders, voluntary adherence to the management system

will be encouraged. Crown compliance efforts (and their costs) can be minimised. Property rights increase the internalisation of the cost of fisheries management, and therefore provide incentives for compliance to achieve desired management objectives. The intent is to strengthen the incentives around existing rights and extend the rights based framework to internalise costs where possible. If rights cannot be extended or are already in place, then consideration should be given to the impact of any additional tools on incentives for stakeholder management.

- In determining the appropriate set of tools, it is fiscally prudent (and the responsibility of government) to implement the tools that are most **cost effective** in meeting the Crown's management objectives. The stock strategy will establish the objectives, and then seek out the most cost effective way of achieving that objective.

69 In some fisheries, this may result in reduction of utilisation opportunities if sustainability objectives can be achieved more cost effectively with lower TACCs. If commercial fishers desire higher levels of utilisation, with consequent cost implications, then fisheries plans provide the opportunity for those benefits to be obtained. The Ministry of Fisheries nonetheless recognises that in shared fisheries, or recreational/ customary only fisheries, the TACC is set to achieve allocative outcomes, and that intervening in such decisions may frustrate attempts by a particular set of stakeholders to maximise value. The SBW stock strategy outlines some of these issues.

70 This process of selecting tools and services does not use a cap on cost as a goal, nor does it use the current budget for management as its starting point. Some of the stock strategies may require more or less funding to manage risk than their current budget provides. The risk assessment and mitigation process will produce a list of mitigation strategies for the fishery that would need to be justified against the criteria for assessment of tools, including cost effectiveness.

71 The Ministry also intends to implement a process that will ensure consistency in how tools are considered and applied across strategies. This process involves establishing guidelines and is still under development, but will likely include the use of case studies and scenario modelling.

Services

72 Within the QMS, there are core functions that form the basis of the management framework. Beyond those basic functions, additional tools and services are added to mitigate risk. One of the objectives of the stock strategy process is to clearly outline the sets of services and costs that build from the core management frameworks. The specification of services and costing exercise will make transparent the costs associated with the management framework and tools chosen.

73 As the Southern Blue Whiting example illustrates, the current cost recovery regime does not provide the level of detail necessary to achieve the desired transparency at this time. A review of the cost recovery framework to be undertaken with the development of stock strategies will improve the alignment of cost identification and recovery to the stock strategy framework.

Performance and monitoring

74 Stock strategies will evolve and change as circumstances relating to the fishery change. The tools and services will be altered to respond to changing information, which in turn will alter risks on which the tools are based. Accordingly, an important part of each stock strategy will be a plan for evaluating performance and monitoring of tools and frameworks to ensure that they continue to best meet objectives.

75 To aid in this process, and as a basis for monitoring performance, stock strategies may develop a system of performance measures (e.g. biomass level), indicators (e.g. acoustic survey results), triggers (e.g. current biomass at x% of unfished biomass), and action points (e.g. reduce mortality). The monitoring regime will extend at this stage to the Crown's management responsibilities around stock sustainability and environmental impact issues.

V. STOCK STRATEGY PROJECT PLAN

76 The Ministry is undertaking initial development work on the stock strategy concept to further test the methodology and processes. The initial development work will consist of:

- Developing five stock strategies by August 2005 in order to test the key elements, such as the objectives-setting process and risk analysis framework;
- Testing and refining the content for stock strategies, including:
  - Stock Analysis document, with the objectives, information brief and risk assessment;
  - Stock Operational Plan, describing the objectives pertaining to the fishery, and a description of the tools, services and performance measures that will be deployed in the management of the fishery to meet the objectives, and the costs of the services;
- Ensuring that the stock strategies provide sufficient detail about the required fisheries management services; and
- Developing new operational systems and processes to underpin stock strategies and the wider fisheries management approach, including broader stakeholder involvement in decision-making.

Principles for Choosing Stock Strategies

77 The Ministry of Fisheries has also undertaken an initial scoping exercise to consider how fisheries could be grouped for the purpose of developing stock strategies. As part of this exercise, the Ministry has developed the following criteria that suggest that stock strategies should:

- Be aligned as far as possible with rights holders, how rights are allocated, how rights holders are organised, and how fisheries are utilised.
- Where possible, focus on the largest sensible geographical coverage.
- Encompass a logical grouping of stocks (species, areas, impacts, values, risks, methods) to enable effective fisheries management.

- Identify operational and biological interdependencies with other Stock Strategies.
- Group together, where possible, all fisheries taking the same stock into a single stock strategy.
- Group together, where possible, low value or low risk stocks into a single stock strategy.

78 An assessment against the criteria suggests a possible grouping. However, the Ministry nonetheless recognises that there are many ways to group species and stocks that meet the criteria, and note that should stock strategies proceed as proposed, the groupings would likely change as new information becomes available.

Type	Stock Strategy
MD	Southern Blue Whiting
MD	Hoki complex
DW	Orange Roughy complex
MD	Squid
DW	DW Long Lining (ling)
IS	Northern Flatfish, Grey mullet, Rig and School Shark
IS	Southland mixed finfish
IS	Challenger mixed finfish
IS	East Coast NI mixed finfish
IS	West Coast NI mixed finfish
IS	North East NI mixed finfish
DW/MD	Kermadec complex
P	Tuna Longline Species
P	Tuna Purse Seine
P	Mackerels
IS	Rock Lobster
IS	Paua
IS	Blue Cod

Type	Stock Strategy
FW	Eels
P	Kahawai
IS	Scallops – National
IS	Oysters – National
IS	Shellfish Target Hand Gathering
IS	Shellfish Dredge Target
IS	Potting/ Shellfish Trawl By-catch
IS	Fresh water general
IS	Blue Nose and Associated
P	Kingfish
MD	Scampi
P	Tuna Trolling
IS	Set Net Butterfish/Moki/ Wrasse
DW	Deep Water Crabs
IS	Kina
IS	Seaweed
P	Inshore Pelagic

Key to type: MD = Middle Depth; DW = Deep water; FW = Fresh water; IS = Inshore; P = Pelagic

79 Allocating individual fish stocks to specific strategies (of which many contain multiple species) is ongoing. A species register is being developed to ensure that all QMS species in each QMA are covered in the appropriate stock strategy. Where the stock strategy development process and consultation identifies more logical aggregations, the Ministry of Fisheries will adjust or amend the scope of these stock strategies, so changes are likely during the initial development process.

First Set of Stock Strategies

80 Five stock strategies were chosen to address the array of fishery management issues surrounding species, fisheries and species complexes. This will allow the Ministry to test and refine the process, and to provide concrete examples to stakeholders of how stock strategies will operate across a variety of situations. The selection of these five does not preclude the amendment of their ultimate spatial or species boundaries as a result of consultation. They are:

- Southern Blue Whiting complex;
- Paua;
- Hoki Complex;
- Orange Roughy Complex; and
- A multi species shared fishery, with multiple target stocks and environmental impact.

Southern Blue Whiting

81 The Southern Blue Whiting fishery, a single species commercial fishery, was chosen as a prototype to test the stock strategy process. The details of that strategy are attached in the Annexes.

Paua

82 The Paua stock strategy, composed of all paua stocks managed in the QMS, addresses the complex fishery management issues for a fishery of commercial, customary and recreational interest. There is an important customary non-commercial use of paua by Maori for food, and shells have been used extensively for decorations and fishing devices. Specific allocations for customary non-commercial fishing as well as recreational fishing show the complex nature of this fishery for compliance and management.

Hoki

83 Hoki is a significant target stock, and the most valuable stock in New Zealand. The strategy addresses target fishstocks and their associated bycatch stocks. Bycatch species are addressed to the extent that the target fisheries affect them, or require Ministry services to ensure management obligations in relation to non-QMS bycatch species are met. Target fisheries exist for some bycatch stocks, and those target fisheries are addressed in other stock strategies (e.g. ling will be addressed in the deep water long lining stock strategy).

Orange Roughy complex

84 The Orange Roughy Complex strategy addresses this fishery as a deepwater bottom trawl complex. Orange roughy (ORH) are the primary target species, followed by oreo (OEO) including smooth (SSO), black (BOE) and spiky (SOR)). The complex includes the target fisheries for cardinalfish (CDL) and alfonsino (BYX). Bycatch species of this deepwater bottom trawl complex include bluenose (BNS), rubyfish (RBY) and ribaldo (RIB). Target fisheries for these bycatch species will be addressed in other specific stock strategies (e.g. ribaldo will be addressed in the hoki complex strategy).

Mixed species shared fishery

85 This complex (the specific stock strategy has not yet been determined) will provide the opportunity to assess multi species fisheries issues (target and bycatch interactions), environmental impacts (bottom trawl) and important recreational fisheries. In particular, this will test the process for objective setting and risk assessment in important shared fisheries. Candidate stock strategies include the North Island mixed finfish strategies (which include snapper), or the Southland mixed finfish.

VI. CONSULTATION

86 The Ministry of Fisheries believes in robust consultation, and due consideration of issues and concerns raised: the SOI notes the Ministry requirement to enable New Zealanders to participate effectively in developing policies, processes, frameworks and standards. The requirement for consultation is based on administrative law, statutory obligations, and Treaty of Waitangi obligations. There are a number of initiatives underway to consult on various initiatives, including harvest strategies, the Statement of Intent, and the development of a deemed value policy. The stock strategy consultation is designed to build on and from these processes. Consultation processes will be confirmed with stakeholders in writing at a later date.

87 The Ministry wishes to consult on the four major sections of this document:

- Framework;
- Fisheries plans;
- Stock strategies; and
- Stock strategy project, including the Southern Blue Whiting case study.

88 This consultation document provides stakeholders with the opportunity to comment on the overall approach being proposed. In particular, the Ministry is seeking views on the following:

- The proposed approach to fisheries management utilising stock strategies and fisheries plans;
- The proposed framework for stock strategies (including their intent, risk framework, service specification);
- The development of objectives in fisheries shared between sectors;
- Appropriate consultation points, including fulfilling Crown responsibility for input and participation for tangata whenua, in the development of individual stock strategies; and
- The appropriateness of a risk evaluation panel.

89 With regards to the stock strategy project plan, the Ministry is seeking views on the plan itself, as well as:

- The proposed assignment of fish stocks to particular stock strategies; and

- The form and content of the information brief and risk and value assessment for the Southern Blue Whiting (SBW) case study (Annexes Three and Four). As key components to a stock strategy, they were completed by the Ministry as a draft case study and trial of the stock strategy process outlined in this document.

90 Once the framework is finalised, stakeholders will have input into the development of specific stock strategies. As noted above, the Ministry is seeking views on where the appropriate consultation points are. As a starting point, the Ministry proposes the following:

- To consult following completion of a draft information brief, to ensure that the subsequent risk assessment is based on the best, most complete information available; and
- To consult on a draft Stock Analysis of the stock strategy, providing for opportunity to comment on the appropriateness of the risk assessment and rationale around choice and effect of the proposed optimal set of tools to manage fisheries.

91 Once stock strategies are drafted, stakeholders will have ongoing input into the review of stock strategies. The nature and timing of input is yet to be determined, but future input into stock strategies, and the impact of stock strategies on the traditional processes operated by the Ministry (such as the twice yearly reviews of sustainability measures and management controls), will be needed.

Input and Participation by Tangata Whenua

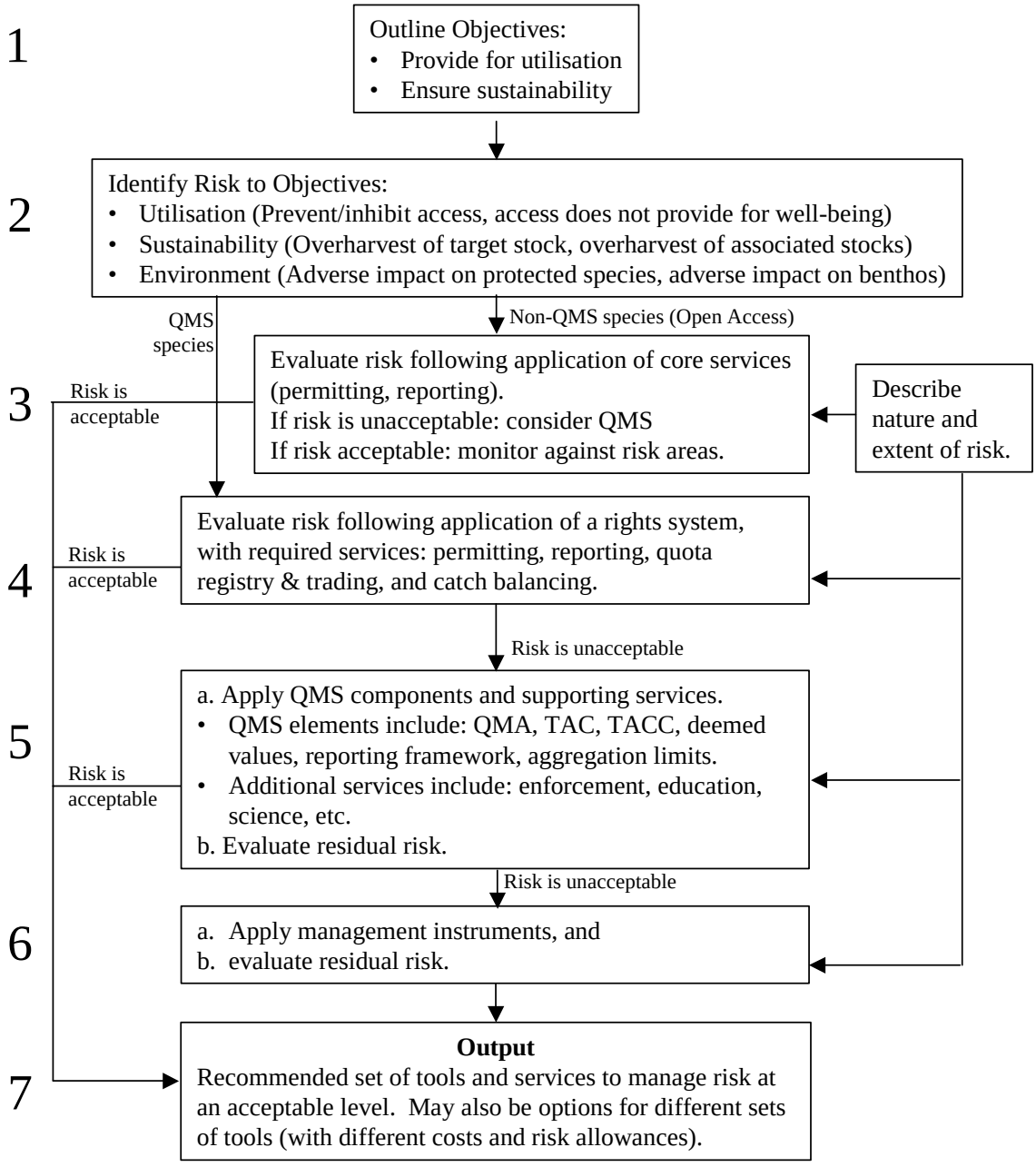
92 Under the Fisheries Act 1996 there is an obligation to provide for the input and participation of tangata whenua, having particular regard to Kaitiakitanga. The process for how the Ministry will meet its obligations to tangata whenua in regard to input and participation is being addressed in conjunction with the stock strategy development process. How the Ministry will interact with tangata whenua in the future will depend on the outcome of this consultation and the finalisation of the stock strategy and fisheries plan approach.

93 The development of regional iwi fora to discuss customary management issues will nonetheless provide a focus for interaction over management issues in the future. The recent appointment of Pou Hononga will help facilitate input and participation by tangata whenua.[2] The Ministry recognises that the process of establishing fora is incomplete, and that there will be a requirement for capacity building at the regional fora level. Stock strategies will provide a useful foundation for input and participation once the regional fora are up and running: they will allow transparent analysis of the full fisheries management framework for species of interest to customary Maori.

94 As a starting point, this draft stock framework document will be used as the basis for consultation with tangata whenua. In addition to meeting with iwi fora, tangata whenua will be provided with the opportunity to meet with Ministry of Fisheries staff, and the opportunity to provide feedback.

[2] The role of the Pou Hononga is to assist in the building of relationships between the Ministry and tangata whenua in support of the Ministry strategy. In particular, the Pou Hononga will focus on the development and maintenance of collective forums and the implementation of customary regulations through the appointment of kaitiaki.

ANNEX 1: RISK ASSESSMENT PROCESS



ANNEX TWO: RISK SCORING

The method employed here uses a simple evaluation scale, incorporating only the severity of the possible impact, and the likelihood that such an impact will occur. This is in line with the definition under the *Fisheries Act* of 'effect of fishing', which includes potential effects assessed against probability and impact.

Severity

High	The impact of occurrence is likely to be total failure of the associated objective – e.g. stock collapse, protected species extinction, serious and irreparable harm to habitat.
Medium	The impact of occurrence is likely to significantly compromise the associated objective – e.g. significant stock decline, reduced viability of protected species, considerable and long-term harm to habitat.
Low	The impact of occurrence is likely to be minor – e.g. stocks temporarily decline, recovery period of protected species extended, habitat temporarily disrupted

Likelihood

High	The risk of harm is highly likely or inevitable.
Medium	The risk of harm is likely.
Low	The risk of harm is unlikely.

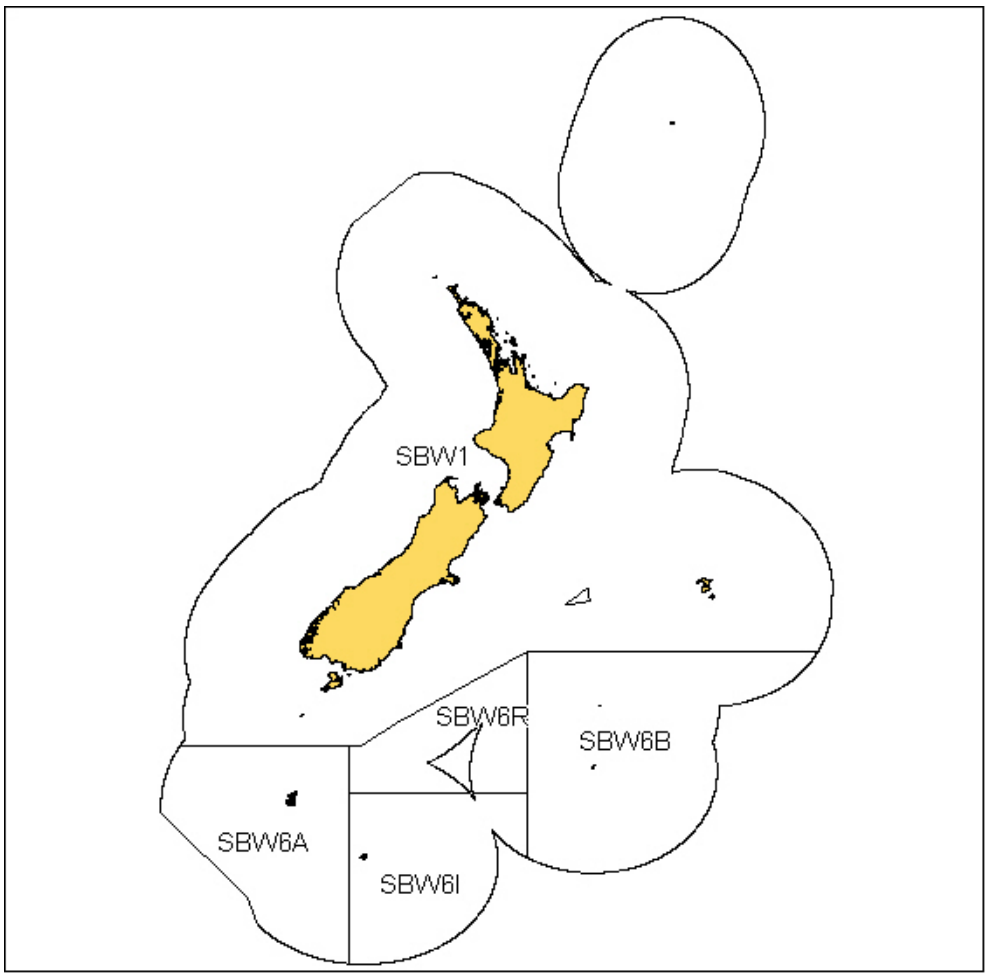
The severity and likelihood aspects of risk are assessed independently; these are then united on a common metric to determine an overall risk ranking of 1 to 9. The most severe risk is 9 (highly likely or inevitable risk of severe harm), and the least is 1 (risk is unlikely and impact would be minor).

Severity	High	6	8	9
	Medium	3	4	7
	Low	1	2	5
		Low	Medium	High
Likelihood				

This system imposes a hierarchy between severity and likelihood. A moderate likelihood of a low risk receives a score of 2, whereas a low likelihood of a moderate risk receives a score of 3. This suggests a predisposition to caution, or the desire to avoid higher severity risks even if the related likelihood of occurrence is lower.

In many cases, having a number implies a level of precision unwarranted by the detail of the supporting data. A detailed description of the nature of the risk, and what is driving it there is essential. This is, in effect, the 'story behind the number'. It will be different for each fishery, depending on available information, the certainty of that information, and the nature of the fishery.

ANNEX 3: SOUTHERN BLUE WHITING INFORMATION BRIEF



Biological Information

1 Southern blue whiting (*Micromesistius australis*) are members of the Family Gadidae (the cods and haddocks). Like the northern blue whiting, they are found exclusively at high latitudes and are the dominant finfish species in the pelagic ecosystem in sub-Antartcic waters.

Distribution

2 SBW are confined to sub-Antarctic waters, and are dispersed throughout the Campbell Plateau and Bounty Platform for much of the year, except during spawning. There is strong evidence that fish return to spawn on the grounds to which they first recruit.

3 There are four distinct stocks, based on the presence of separate spawning grounds, morphometric differences and patterns in year class strength observed over the last 20 years. No genetic studies have been completed, but it is considered unlikely that there are detectable genetic differences between these areas.

- Bounty Platform (6B);

- Pukaki Rise (6R);
- Auckland Islands (6A); and
- Campbell Island (6I).

Growth, Reproduction and Recruitment

4 They attain a length of 20 cm (fork length - FL) after one year and 30 cm after two years. During most years, fish in the spawning fishery range between 35-50 cm. Growth slows after five years and virtually ceases after ten years. Ages have been validated up to at least 15 years by following strong year classes, but ring counts from otoliths suggest individual fish may reach 25 years of age.

5 SBW can experience marked inter-annual changes in recruitment, and subsequent biomass levels even in the absence of fishing. The longevity of the species means that there are several year classes in the fishery: recruits to the fishery contribute to the biomass for several years. Natural mortality is low after maturity. Ageing studies have shown that SBW has very high recruitment variability. Recovery of a depleted stock will be strongly dependent on the relatively unpredictable occurrence of strong year classes.

6 The majority of SBW mature at age three or four. During August and September, SBW aggregate to spawn near the Campbell Islands, on Pukaki Rise, on Bounty Platform, and near Auckland Islands in depths of 250-600 m.

Non-QMS and QMS bycatch

7 Data from the SBW fishery shows that little bycatch is taken in association with target fishing operations (98.2% SBW). The main QMS bycatch species include hake (57%), ling (21%) and hoki (4.5%). Non-QMS bycatch species is made up primarily of rat-tail.

8 There are no known sustainability concerns for the species noted above that are caught in the SBW fishery. There is no evidence of adverse effects of the SBW fishery on the maintenance of biodiversity. However, this has not been fully investigated.

Habitat Issues

9 There are few habitat issues in the SBW fishery, as this is considered a mid-water species. Mid-water trawl methods predominate, with only 2% of the catch caught using bottom trawling. There is currently no information on the bottom type over which bottom trawling occurs.

Environmental Conditions

10 There is no information on the relative importance of environmental conditions (eg. temperature) on the SBW stocks. No anthropogenic environmental impacts are known to affect these stocks.

Protected Species Interaction

11 All fishers are required to report the incidental capture of marine mammals. Both seals and, to a lesser extent, NZ sea lions, can be incidentally captured in the SBW fishery.

12 There are no Population Management Plans for the species affected by the SBW fishery.

13 In 2000-01, observers recorded 64 fur seals captured and landed dead. Total estimate of fur seal captured based on these figures is 88 animals. In 2002, an estimated 277 seals were caught, of which an unknown number died. Although overall numbers are low, the catch rate of seals is considered high. The estimated population level for fur seals is presently 50 000. There is no information on the impact of the SBW fishery on rookeries.

14 There is no estimate of capture of NZ sea lions in the SBW fishery. MFish observers report an annual average of 1.75 sea lions taken in non-squid fisheries since 1991-92. Reports include captures in fisheries around the Auckland Islands, including SBW. The estimate of 1.75 animals is regarded as an absolute minimum in view of likely by-catch from unobserved vessels.

15 Sea birds may also be taken incidentally. Although the SBW 6I fishery was observed to capture two male grey petrels in the 1999-00 fishing year, there is low incidence of mortality from fishing and therefore there is little known threat to grey petrel populations.

Trophic Interactions and Ecosystem considerations

16 SBW are prey to a range of seabirds, pinnipeds, and larger demersal species in the area. SBW feed mainly on various invertebrate species and small fish. Young of SBW may form a major part of the diet of seabirds such as penguins and albatross. One-year-old SBW may also be important for other commercial species such as hoki, hake, ling and stargazers. Adult SBW form a part of the diet of furseals and larger hake and ling.

Stock Assessment

17 Acoustic surveys have been undertaken in the SBW fishery since 1993. Target strength work continues using mainly *in situ* measurements but also other methods such as swim bladder modelling. Although CPUE analysis has also been completed, the indices are not used in stock assessments due to the highly aggregated nature of the fishery and the associated difficulty in finding and maintaining contact with the highly mobile schools in some years. For the purposes of stock assessment it is assumed that there are four separate stocks of SBW with little to no mixing between them. Other sources of fishing-related mortality are not accounted for in the stock assessment model.

18 A summary of the status of each of the stocks follows this information brief.

19 Campbell Island Rise (SBW 6I) was heavily fished from the early 1980s until 1993, and the biomass showed a steady decline. After 1993, there was a large biomass increase due to the very strong 1991 year class recruited to the fishery. This year class still makes a large contribution to the commercial catch, and has been joined by the moderately strong 1995, 1996 and 1998 year classes.

20 Projections were made assuming fixed catch levels from 10 000 to 30 000 tonnes per year, and assuming a catch of 25 000 tonnes in 2003-04. Two base case runs assessed the probability that the mid-season biomass will be less than the mid-season 1991 biomass (B_{1991}). The probability of dropping below B_{1991} is 10% at a 10 000 to 15 000 catch, depending on the base case used. The probability rises to 18% (base case 1) to 34% (base case 2) if the catch is maintained at 25 000 tonnes. Biomass is expected to decline at a catch level of 20 000 tonnes or greater (both base case 1 & 2). A further acoustic survey was completed in September 2004 and the results will

be available for a new stock assessment in early 2005.

21 No new assessment of Bounty Platform (SBW 6B) is available. Estimates of 2002 biomass and yields were reported in 2002 from two alternative models; both suggested that biomass was at its lowest observed level. Biomass had declined since 1993 with poor recruitment to the stock. The reported catch in 2002 suggests that the minimum possible biomass in 2002 was underestimated.

22 An assessment of the Pukaki Rise Stock (SWB 6R) was carried out in 2002. The best estimate of unfished biomass is 22 000 tonnes (range of 18 000 to 54 000 tonnes), and of current biomass is 13 000 tonnes (range 8 000 to 48 000 tonnes). Based on the flat trajectory of stock biomass over the period modeled in the assessment, recent catch levels do not appear to have had any impact on the biomass. Catches from this stock have been well below the 5 500 tonne TACC level for many years.

23 Although no estimate of current biomass is available for the Auckland Island stock (SBW 6A), the acoustic estimate of adult biomass in 1995 was 7 800 tonnes. Catches from this stock have been well below the 1 640 tonne TACC level for many years.

Social, Cultural and Economic Information

Commercial Fishery

24 The fishery is exclusively commercial, and the TAC equals the TACC. Fishing occurs on spawning aggregations from August to October. The quality of the fish declines after spawning, which indicates that value may be maximized during the spawning season and may be a driver for the fishing season in addition to biological factors. A year round fishery has been tried previously without much success.

25 Table one below outlines the TACCs and catch limits for the SBW fishery. This information is represented graphically in the Annex.

	SBW1 Catch	SBW1 TACC	SBW6A Catch	SBW6A TACC	SBW6B Catch	SBW6B TACC	SBW6I Catch	SBW6I TACC	SBW6R Catch	SBW6R TACC
1989/90			2		4 430		16 542		1 393	
1990/91			7		10 897		21 314		4 652	
1991/92			73		58 928		14 208		3 046	
1992/93			1 143		11 908	15 000	9 316	11 000	5 341	6 000
1993/94			709		3 877	15 000	11 668	11 000	2 306	6 000
1994/95			441		6 386	15 000	9 492	11 000	1 158	6 000
1995/96			40		6 508	8 000	14 959	21 000	772	3 000
1996/97			895		1 761	20 200	15 685	30 100	1 806	7 700
1997/98	3		0	1 640	5 647	15 400	24 273	35 460	1 245	5 500
1998/00	58	8	750	1 640	8 741	15 400	30 386	35 460	1 049	5 500
2000/01	9	8	19	1 640	3 997	8 000	18 049	20 000	2 864	5 500
2001/02	1	8	10	1 640	2 261	8 000	29 999	30 000	230	5 500
2002/03	16	8	734	1 640	7 564	8 000	32 749	30 000	712	5 500
2003/04	2.2	8	48	1 640	3 812	3 500	23 715	25 000	97	5 500

Source: Report for the Fishery Assessment Plenary, May 2004: stock assessments and yield estimates.

Commercial Fleet

26 The majority of SBW catch is taken by large (>46m; average is 90m) chartered foreign factory processing vessels. Approximately 15 vessels were involved in the SBW fishery in 2003-04, a drop of three from the previous year. This may reflect the TACC decrease of 5 000 tonnes between those two years.

27 The majority of the SBW fishery is conducted in the period August to October when spawning aggregations occur. If SBW cannot be taken in sufficiently high volumes, the fishery may not be economical.

28 Industry has noted that the limited duration of the season, coupled with long distances between fishing areas and significant search times to locate fish, works against the ability of the industry to fish effectively in all four SBW6 QMAs, and against all four TACCs in any one season. Even in years of high fish abundance, fleet managers recognize that they lose some fishing time due to poor weather and to exploration in search of suitable fish aggregations.

Discount Rate

29 The implicit discount rate has been estimated for SBW using observed economic behaviour. Rates were calculated as the ratio of one-year quota lease price to the market price of the underlying harvest right (ACE price divided by quota price).[3] The discount rate has been calculated for each of the four main stocks.

QMA	Discount Rate
SBW 6A	21%
SBW 6R	20%
SBW 6B	7.6%
SBW 6I	8.6%

Product Characteristics

30 The SBW fishery is characterized by high volumes of catch and relatively low per unit raw product values. Relatively high value is added during at-sea processing, producing fillet, head and gut, and surimi products for the export market. The FOB export value for SBW in 2002 totalled $29.3 million, representing (by value) surimi (69%), fillets (14%), H&G (12%), and whole (5%). Primary SBW exports markets exist in Japan, China, Australia, and Europe.

31 SBW products compete in global commodity markets with limited opportunity for differentiation. Demand for various product forms is subject to high year-to-year variability, further leveraged by changes in the exchange rate over which New Zealand operators have little control. Port prices for SBW have varied significantly in recent years, ranging from $0.59/kg in 2002, to $0.10/kg in 2003. However, the vertical integration of company structures means that port price may not be a true indicator of the value of the harvest.

The Broader Commercial Context

32 The vessels involved in the SBW fishery typically move in and out of three core middle depth fisheries throughout the year – hoki, squid and SBW. The availability of SBW sequenced over the year with other fisheries allows companies to augment harvest capacity with charter vessels. Since

[3] The calculation is based on one quota trade and several ACE trades in 2003/04.

hoki is the dominant fishery by both value and volume, there are particular consequences for the SBW (and squid) fishery when hoki abundance is at cyclical lows.

Fishing Methods

33 Mid-water trawl methods predominate the commercial fishery, with only 2% of the catch caught by using bottom trawl.

Recreational Fishery

34 There is no known recreational fishery for SBW.

Customary Fishery

35 No Maori customary take is known to have occurred in SBW.

Management Information

Statutory Management

Quota Management System

36 All fishers must have a fishing permit.

37 The SBW stocks were introduced into the QMS in 1999, with a season that runs from April to March. There are five QMAs.

38 The only significant bycatch species outside the QMS is rat-tail.

ACE and Deemed Values

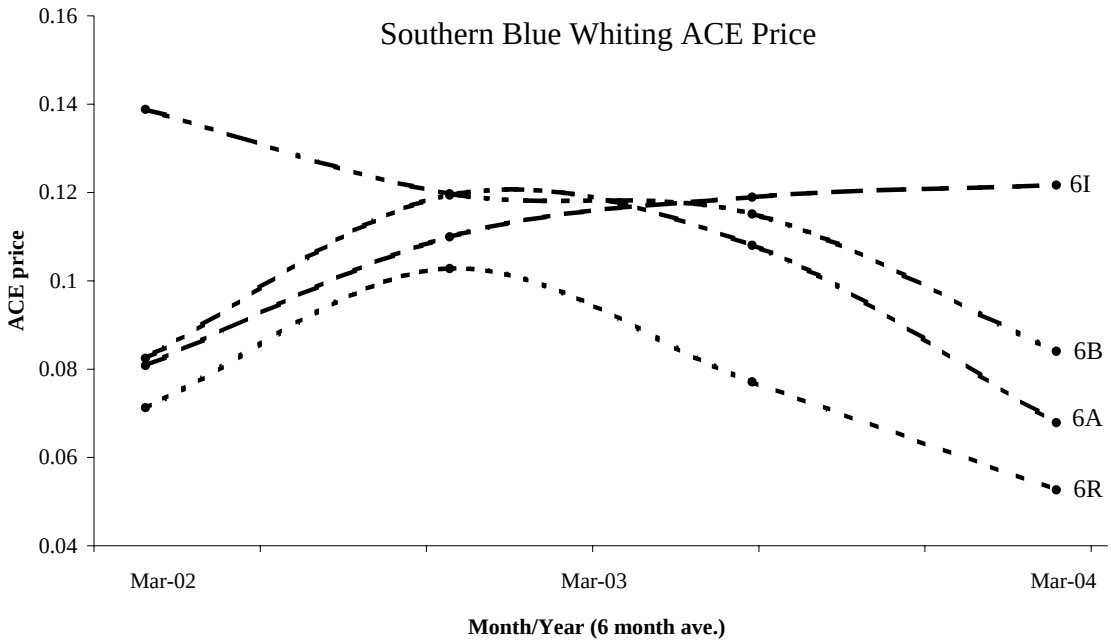
39 Deemed values are set at a level that encourages all reported catch to be balanced with ACE. In order to encourage balancing at the level of the individual fisher, deemed values are ramped by 20% for every 20% increment in excess of the catch over ACE held.

	SBW1	SBW6A	SBW6B	SBW6I	SBW6R
Interim	0.29	0.29	0.29	0.29	0.29
Annual	0.30	0.30	0.30	0.30	0.30

40 Deemed Values Paid vs Uncaught ACE, 2001-02 Fishing Year

QMA	DV quantity (kg)	Unused ACE (kg)	Annual DV ($)	ACE price ($)	DV amount paid ($)	ACE cost ($)
SBW1	735	5,030	0.30	0.08	221	57
SBW6A	2,561	1,377,154	0.30	0.11	768	284
SBW6B	1,172	7,175,537	0.30	0.12	352	136
SBW6R	60,829	5,048,560	0.30	0.10	18,249	6,235

41 ACE price over the past three years has been as follows.



Aggregation Limits

42 There are 11 quota holders in the SBW 6 QMAs, none of whom exceed the aggregation limit or hold exemptions in relation to SBW quota.

Harvest Strategy

43 Currently the Campbell Island stock is managed under a CAY strategy. The Bounty stock was also previously managed this way with two-yearly updated biomass estimates. However, since the quota cut on 1 April 2003, the biomass estimate has not been updated (it was considered that the value of the fishery was too low to justify a survey). The other stocks have constant quotas.

Existing Input Controls and Technical Measures

Reporting all catch

44 The rules are that all SBW caught must be reported and landed. Dumping of fish can only occur under specified conditions that would otherwise endanger the vessel and crew.

Gear Restrictions

45 In order to facilitate retention of SBW a minimum cod-end mesh size is set at 60 mm for the Southland and Sub-Antarctic FMAs. Elsewhere the MLS is 100 mm unless a fishing permit condition authorises the use of smaller mesh.

46 Fishing vessels must not use nets with more than one layer of mesh, or use liner, sleeves or flappers. Any net strengthening must not have centers of less than 1 metre.

47 The use of net-sonde monitor cables is prohibited on all vessels.

Closed Areas

48 Trawling is prohibited within five seamount areas in the main SBW fisheries (358, 375, Christable, 401 and Ballons A).

49 There is a 12 nautical mile perimeter marine reserve surrounding the Auckland Islands.

Monitoring

Conversion Factors

Product State	Conversion factor
Dressed DRE	1.70
Skin Off, Trimmed Fillets TSK	3.25
Mince, Skin Off Fillets MKF	3.10
Surimi SUR	5.40

50 There are currently no vessel-specific conversion factor certificates issued to vessels operation in the SBW fishery.

Fisheries Dependent Reporting and Record-keeping

51 Monitoring of catch is based on fishery-dependent reporting. Commercial fishers are required to report landings monthly through the Catch Effort and Landing Returns (CELR), unless a specified catch return applies. Reports also record area of harvest (at a specified level) and effort information, and include TCEPR, CLR and Monthly Harvest Return (MHR) forms. Logbooks are maintained. Processors submit LFRs, which are reconciled with MHRs and CELRs.

Fisheries Independent Verification

52 A Vessel Monitoring System (VMS) provides vessel location, and is required on all vessels participating in the fishery.

53 Observer coverage in the SBW fishery is outlined in the table below:

Year	Observer Sea Days
1999	231
2000	221
2001	294
2002	219
2003	250
2004	250

54 The annual number of observed tows in the SBW fishery ranged from 144-723 during the period 1990-2002. The number of observed vessels in the SBW fishery ranged from four to 12 in a season. The percentage of the fishery observed was greater than 10% from 1991-2002 (mostly between 20-60%), and three of the 11 years had observer coverage of 80% of the catch of the SBW. 35 different vessels have been observed in 11 years and the full range of vessel sizes and QMAs have been covered.

Research Activities

55 In order to support the CAY-based TACs, a medium-term research strategy has been set in place and is implemented by MFish after consultation. Recent research projects include:

Year	Research project
1999/2000	Acoustic biomass estimates
2000/2001	Stock assessment for all SBW stocks Acoustic biomass estimates Update stock Assessment Methods
2001/2002	Stock assessment for all SBW stocks Acoustic biomass estimates Acoustic survey winter 2002 (Campbell)
2002/2003	Stock assessment SBW 6I Establish performance indicators
2003/2004	Stock assessment SBW 6I, 6B Acoustic survey winter 2004 (Campbell)
2004/2005	Stock assessment for all SBW stocks

56 Current projects include:

Project	Stock(s)	Description	Project Cost
SBW2003-01	6B, 6I	Stock Assessment	$10,000
SBW2003-02	6I	Biomass estimation	$1.5 million
SBW2004-01	6B, 6I, 6R	Stock Assessment	$98,000

Education

57 There are no education initiatives specific to SBW.

Enforcement

Surveillance, Investigations and Prosecutions

58 The Ministry maintains an enforcement capacity for monitoring fishing activities, detecting and investigating potential offending across all fisheries, including SBW. The capacity is not, as a rule, directed at enforcing rules that are specific to the SBW fishery.

Cost Recovery

59 Current cost recovery charges (2004/05 levy) for the SBW fishery are as follows:

	Output	SBW1	SBW6A	SBW6B	SBW6I	SBW6R	TOTAL
MFish Research							
Env	21	$0.47	$97.93	$208.99	$1 492.83	$328.42	$2 128.64
Stock Assessment	21	$0.66	$135.32	$34 552.55	$1 591 689.50	$10 355.10	$1 636 733.13
DoC Research							
INT		$0.00	$85.05	$181.51	$1 296.47	$285.22	$1 848.25
MIT		$0.00	$92.70	$197.83	$1 413.07	$310.88	$2 014.48
MFish Departmental							
Statutory decision-making	41	$1.56	$320.55	$684.09	$4 886.38	$1 075.00	$6 967.58
Registry Services	42	$22.58	$4 628.03	$9 876.89	$70 549.22	$15 520.83	$100 597.55
Enforce commercial fish rules	51	$29.29	$6 004.44	$12 814.36	$91 ,531.15	$20 136.85	$130 516.09
MFish Observers							
Research/Enforcement	26	$27.37	$5 609.90	$11 972.34	$85 516.72	$18 813.68	$121 940.01
DoC Observers							$0.00
Research/Enforcement		$0.00	$2 238.02	$4 776.25	$34 116.10	$7 505.54	$48 635.91
Total		$81.93	$19 211.94	$75 264.81	$1 882 491.44	$74 331.52	$2 051 381.64

Existing Stakeholder Management

Stakeholder Organisations

60 No stakeholder group specific to SBW exists. Quota holders are generally also members of the Hoki Fishery Management Company (HFMC) and the Squid Fishery Management Company. Pan-fishery organizations such as SeaFIC and NGOs such as Forest & Bird Society, WWF and Greenpeace, all have an interest in SBW.

Voluntary Agreements

61 No stakeholder-driven codes of practice or management initiatives exist.

Individual Industry-member Actions

62 There are no known individual actions from industry members (such as company observers, company codes of practice, etc.) that contribute to the management of the SBW fishery.

Performance

Performance against management objectives

63 The utilisation and sustainability target (TACC) is the only explicit performance measure for this fishery. In the past ten years, the TACC was exceeded only twice: in SBW6I in 2002-03, and in 6B in 2003-04. In both instances, the TACC was exceeded by approximately 9%.

Other Sources of Fishing-Related Mortality

64 NIWA estimated discards in the 1994-95 and 1995-96 fishery at 1.5% of total SBW catch.

65 Scientific observers have reported discards of juvenile fish and accidental loss from torn or burst codends. There is no quantitative estimate of this mortality and no estimates of discards have been considered in the stock assessments.

66 Juvenile fish passing through the trawl net body or codend may be killed. As these are not landed, no assessment of the extent of this mortality is possible.

67 Currently there is no allowance for Other Sources of Fishing-Related Mortality made as part of the SBW TAC on the basis that the level of other sources of mortality is insignificant relative to overall catch. Estimates are likewise not included in the stock assessments.

Compliance with Rules

68 MFish does not, at this time, have information on levels of compliance with rules. Given that the fishery is a commercial-only, distant-water fishery, the types of offending that could occur in the SBW fishery would be:

- Misreporting area and quantity; and
- Illegal transhipment.

Summary information for information brief

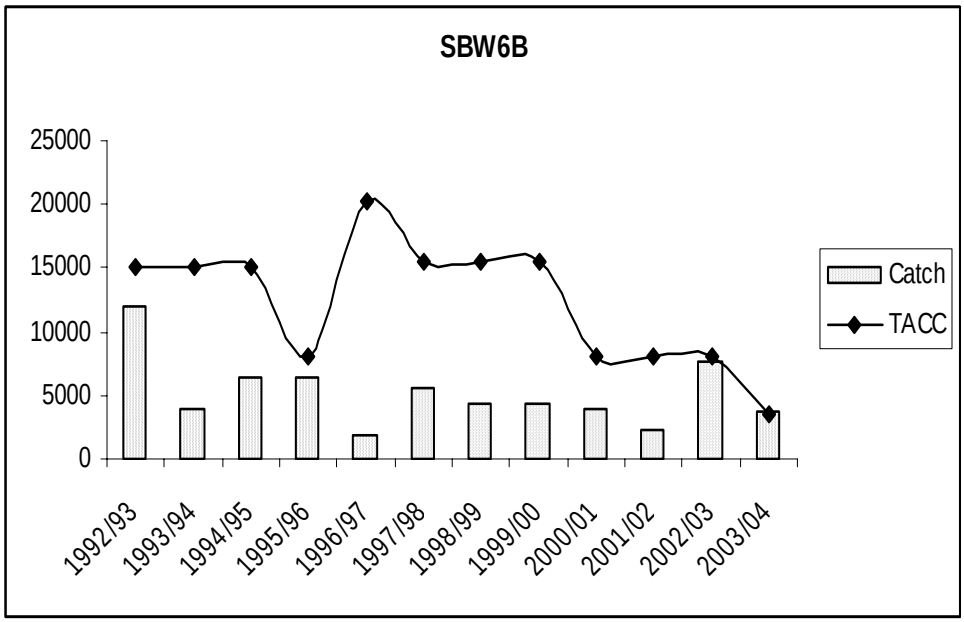
Stock Unit	Harvest Strategy	TACC	Catch	Most Recent Assessment Yield estimates	B_0 (tx1000) Variable in SBW	$B_{current}$ / B_0 (%)	Current Status	Likely to be above B_{MSY}?	Reference
2002-2003									
SBW1	-	0.008	0.016	-	–	–		–	–
SBW6I Campbell Isl.	CAY	30.0	32.7	2001 CAY=27.8 (14.2-55.2)	215 (157-262)	65 (44-114)	Biomass double 1991	Yes 180% B_{may}	Hanchet 2002/31
SBW6B Bounty	CAY	8.0	7.6	2000 CAY=8.0t (3.0-14.0)	106 (87-120)	33 (17-50)	Lowest observed	No 92%B_{may}	Hanchet 2000/44
SBW6A Auckland Isl.	CAY	1.64 (Note 1)	0.7	Never	–	–	uncertain	–	–
SBW6R Pukaki Rise	CAY	5.5 (Note 2)	0.7	2001 CAY=2.7 (1.7-10.9)	22 (18-54)	58 (44-88)	Above B_{MAY}	Yes 161%B_{may}	Hanchet 2002/31
2003-2004									
SBW1	-	0.008	0.002	-	–	–		–	–
SBW6I Campbell Island	CAY	25.0	23.77	2003 Decision table only	242 (205-308) 238 (199-285)	57% 47%	Expected to decline	118%B_{may} 94%B_{may}	Hanchet 2003/59
SBW6B Bounty Platform	CAY	3.5	3.8	2002 CAY=5.0	108	21%	Low	No 92%B_{may}	Hanchet 2002/53
SBW6A Auckland Island	CAY	1.64 (Note 1)	0.048	Never	–	–	uncertain	–	–
SBW6R Pukaki Rise	CAY	5.5 (Note 2)	0.097	2001 CAY=2.7 (1.7-10.9)	22 (18-54)	58 (44-88)	Above B_{MAY}	Yes 161%B_{may}	Hanchet 2002/31

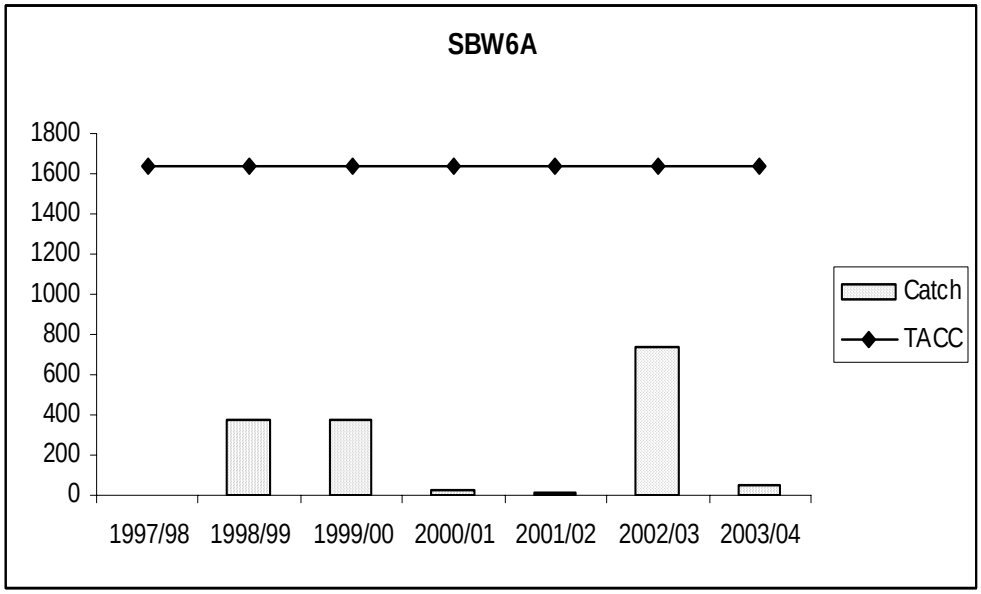
2004-2005									
SBW6I Campbell Island	CAY	25.0	–	2003 Decision table only	242 (205-308) 238 (199-285)	N/A –	Decline expected	Probably not	Hanchet et al 2003/59
SBW6B Bounty Platform	CAY	3.5	N/A	2004	86 (70-111)	30 (15-46%)		No (79%)	Hanchet et al, in prep.

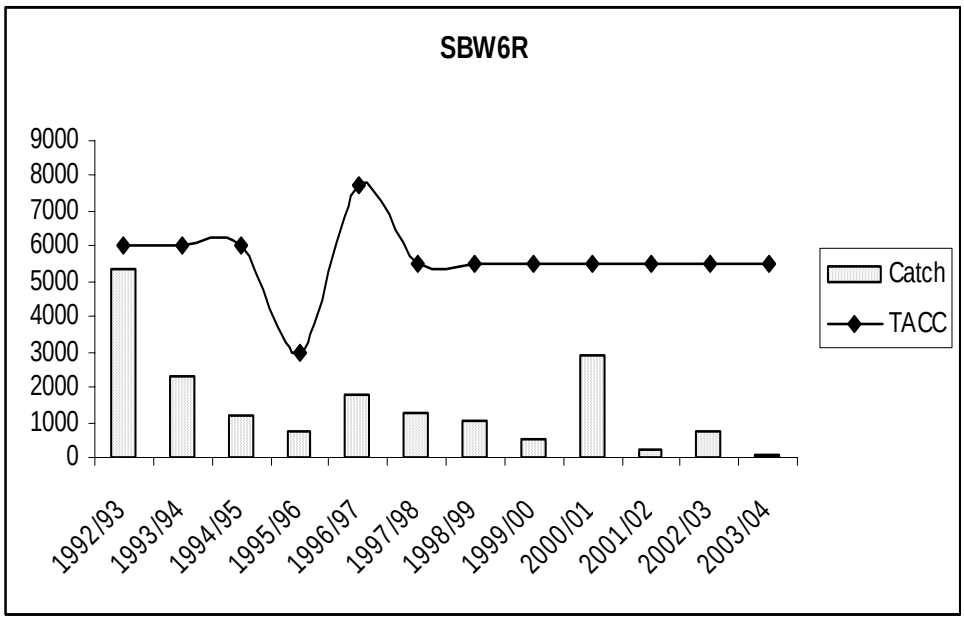
Note 1: There has never been a documented assessment of Auckland Islands shelf. The 'CAY' estimate came from multiplying the acoustic estimate of 7800 t in 1995 by u_{CAY} (the exploitation rate of 0.21), which gave 1650 t. It hasn't been changed since then.

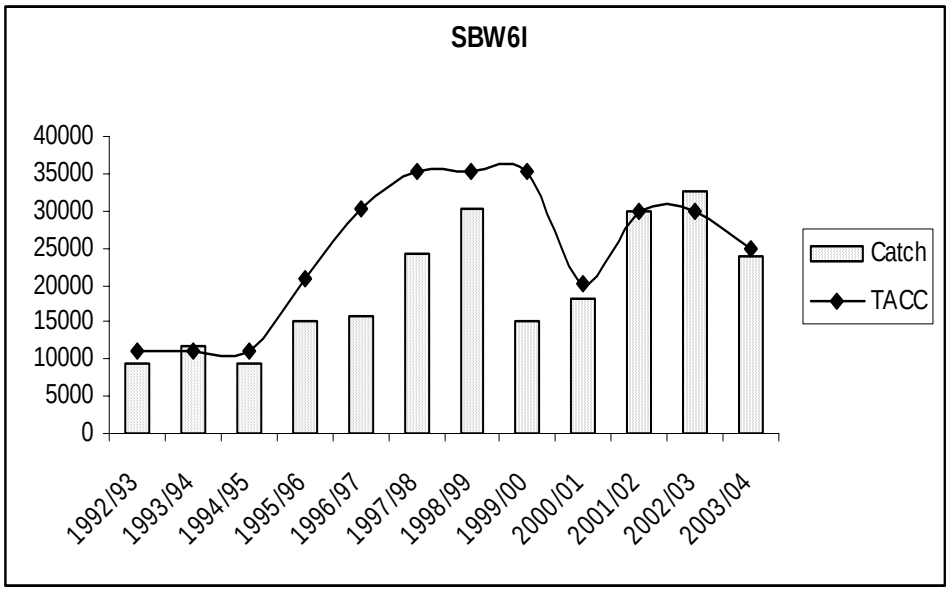
Note 2: The Pukaki catch limit was originally based on the CAY estimate from the 1996 assessment (see 1996 Plenary document and FARD 96/12), and included the Auckland Islands shelf fishery. After the Auckland Islands stock was separated in 1997-98, the new Pukaki Rise catch limit simply excluded the new Auckland catch limit. Although the estimated CAY from the 2001 assessment was much lower than the TACC, no attempt to change the TACC downwards on the assumption that fishing pressure on Pukaki was low.

69 Catch against TACC




SBW6A
1800
1600
1400
1200
1000
800
600
400
200
0
1997/98
1998/99
1999/00
2000/01
2001/02
2002/03
2003/04
Catch
TACC


SBW6R
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
1999/00
2000/01
2001/02
2002/03
2003/04
Catch
TACC


SBW6I
40000
35000
30000
25000
20000
15000
10000
5000
0
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
1999/00
2000/01
2001/02
2002/03
2003/04
Catch
TACC

ANNEX FOUR: SOUTHERN BLUE WHITING RISK ASSESSMENT

Objectives

Ensure sustainability within a framework that enables stakeholders to maximise value.

Identify Risk

The risks for this stock include:

Utilisation

Provide access that enables social, cultural and economic well-being.	**Risk**: Access is prevented or inhibited; access does not provide for well-being.

Sustainability

Maintain the potential of the stock(s) to meet the reasonably foreseeable needs of future generations.	**Risk**: Overharvest of QMS target or QMS bycatch species. Overharvest is a decline to a point where the species may not meet reasonably foreseeable needs.

Environment

Avoid, remedy or mitigate any adverse effects of fishing on the aquatic environment.	**Risk**: Adverse effects on protected species; adverse effects on benthos.

Risk for non-QMS species

Risk against objectives must be assessed for those species outside the QMS, but within the SBW stock strategy. Non-QMS species operate under an open-access regime, although certain baseline services exist, described below.

Where risk is acceptable, ongoing monitoring is required to ensure that this continues to be the case. If risk is unacceptable, then consideration should be given to managing the species within the QMS. In this event, a separate process from the Stock Strategy would be initiated.

SBW, the target species in this stock strategy, is managed within the QMS, as are the main bycatch species (hake, ling, and hoki, which comprise 82.5% of bycatch). Of the minor non-target species that have historically been taken as bycatch, only rat tail is outside the QMS.

Risk: Utilisation (Access is prevented or inhibited; access does not provide for well-being)
Analysis: Non-QMS species in the SBW fishery are taken as a bycatch. In the context of the SBW fishery risk of access being inhibited or not providing for well-being would be high in this category if utilisation of the non-QMS species was inhibited by the management framework for the non-QMS stock or for SBW. MFish provide for access to non-QMS species via an open access management regime. The only fetter to access is the requirement to obtain a fishing permit if the species is to be taken for the purposes of sale. Accordingly, the management framework does not prevent or unduly inhibit access nor inhibit the ability for permit holders to provide for their well-being.
Risk Score: 1 (low severity; low likelihood) **Acceptable Risk Level? YES**

Risk: Sustainability (overharvest)
Analysis: The percentage of the catch for non-QMS species taken in the SBW fishery is small in relation to their total catch. There is no information to indicate that total catch of rat-tails is leading to a sustainability concern (ie there is a risk that the species is not being maintained above the level that ensures their long term viability), or that catch levels or abundance in areas where SBW fishing occurs are a cause for concern in relation to sustainability. As low-value species, the non-QMS species are not likely to be targeted in this fishery.
Risk Score: 1 (low severity; low likelihood) **Acceptable Risk Level? YES**

Risk Summary, non-QMS by species:

Risk Area	**Score**	**Recommended Action**	
		Monitor	**Apply QMS**
Utilisation	1		
Sustainability	1		

Services required to support management: Non-QMS

Service	Description	SOI Output location	Comment
Establishment & removal of rules	Stock strategy framework Policy advice Utilisation and sustainability reported International fisheries utilisation and sustainability	11, 12, 31, 32	
Provision of Access	Commercial harvest permit	42	Note 1
	Customary permission	None	No cost for SBW
	Commercial vessel registration	Devolved service	Devolved cost directly recovered
	Reporting framework • Release of forms • Receipt of furnished forms • Validation of forms against standards • Data entry • Return of non-validated forms • Follow up of non-validated forms • Identify reporting breaches	21 and 42 and 51 and devolved service	Note 1
	Compliance with rules • Discrepancy reporting • Surveillance • Investigations	42 and 51	Note 2
	• Independent verification	26 and DOC	Note 2
	Performance measures • Monitor performance of non-QMS fisheries against performance objectives (standards include specification of performance measures, indicator, trigger and action for each stock taken)	31	Cost yet to be determined
Enforcement	Investigation and decision Prosecution	61	

Note 1: Registry Services are delivered to support all commercial fishing activities. Costs for this service are not broken down by stock, or attributed specifically to non-QMS species.

Note 2: The cost of compliance with rules for non-QMS species are not broken down by fishery. The total cost of these items currently allocated to SBW (through the port price index) is available. SBW quota holders currently pay $130k for the enforcement of rules, $121.9k for MFish Observer coverage (independent verification, Output 26), and $48.6k for DoC Observers.

Rights-based system assessment

This step assesses the degree to which the rights based framework system, with the associated baseline services, diminishes risk against utilisation, sustainability and environment.

This risk analysis examines a system in which those with rights are identifiable (in this instance through a permit) even if the quantum of that right has yet to be identified (i.e. no share yet determined). To ensure there is exclusivity in the nature of the right, a 'balancing regime' is established, which creates a financial disincentive (a penalty regime) to those who fish without a right. The right is tradeable and divisible, requiring a registry, and there is a reporting requirement to allow for rudimentary monitoring.

Services required to support the rights based framework

Proposed Service	Description	SOI Output location	Comment
Establishment /removal of rules	Stock strategy framework Policy advice Utilisation and sustainability reported International fisheries utilisation and sustainability	11, 12, 31, 32	
Provision of Access	Commercial harvest permit	42	See Note 1
	Customary permission	None	None
	Commercial vessel registration	Devolved service	Devolved cost directly recovered
	Other Special Approvals	42	See below
Administer Rights	Administer trading systems	Devolved service	Devolved cost directly recovered
		Minor Ministry costs	See Note 1
	Catch balancing regime • Manage and collect deemed values • Manage Overfishing thresholds	Devolved service	Devolved cost directly recovered
		Minor Ministry costs	See Note 1
	Reporting framework • Release of forms • Receipt of furnished forms • Validation of forms against standards • Data entry • Return of non-validated forms • Follow up of non-validated forms • Identify reporting breaches	21 and 42 and 51 and devolved service	See Note 1
	Fishery independent reporting	26	
	Compliance with rules • Discrepancy reporting • Surveillance	42 and 51	See Note 2
	• Investigations • Independent verification	26 and DOC	See Note 2
Enforcement	Investigation and decision Prosecution	61	
	Enforcement of Deemed values (permit suspension, Overfishing thresholds)	42	See Note 2

Note 1: Registry Services are delivered to support all commercial fishing activities. Costs for this service cannot be broken down by stock.
Note 2: The cost of compliance with rights based framework rules for SBW cannot be determined. The total cost of these items currently allocated to SBW (through the port price index) is available. SBW quota holders currently pay $130.5k for the enforcement of rules, $121.9k for MFish Observer coverage (independent verification, Output 26), and $48.6k for DoC Observers.

The basis for this risk assessment is to determine the degree to which the rights based framework, based around ending open access and allocation of rights, aligns incentives for rights holders to manage risks to the Crown's management objectives to acceptable levels. The degree to which the incentives are aligned will drive the amount of freedom available for use of legislative tools, and the extent to which additional management controls are required and how those additional tools might be used. The greater the incentives for stakeholder management, the lower the level of residual risk after introduction of the rights based framework, and therefore the more degrees of freedom are available and less intervention by the Crown is required.

Risk Category: Utilisation **Specific Risk:** Unnecessary inhibition of access	
Analysis There is no restriction on access under the QMS framework. Fishers can obtain a permit and go fishing. There is a statutory restriction on the ability of foreign vessels and/or companies to become involved in the fishery. It is not known if this restriction inhibits access. Recreational and customary fishers are free to enter the fishery. Based on the ability of commercial fishers to enter the fishery via a fishing permit, and no restriction on recreational and customary access, MFish considers the risk of unnecessarily inhibiting access to SBW to be low.	
Risk Score: 1 (low severity; low likelihood)	**Acceptable Risk Level? YES**

Risk Category: Utilisation

Specific Risk: Inhibited ability for stakeholders to provide for current and future well-being

Analysis

If SBW was managed under an open access regime, the fishery would be subject to race for fish incentives. Such a regime would not enable well-being as it would lead to fishers unnecessarily competing away the value of their catch.

Constraining harvest via application of rights provides incentives for rights holders to manage SBW to provide for both short and long term well-being. It substantively removes the incentives to race for catch and provides the opportunity for collective action to protect the value of the fishery by right holders.

SBW is currently utilised solely by commercial stakeholders. The characteristics of southern blue whiting (entirely restricted in distribution to sub-Antarctic waters and fished as a discrete stock with very little intermixing with other species (98.2% of SBW is target catch)) mean that very little of this species is taken in other fisheries as bycatch. Rights to the SBW fishery are fully allocated. As a result, the incentives around allocation of rights in the fishery are likely to be strong because there is little risk of non-rights holders undermining these incentives.

Rights holders in SBW are also involved in the hoki and squid fisheries. Southern blue whiting is a six-week spawning fishery, which forms only a small (but likely to be valuable) component of a company's fishing plan. Fishing for SBW is likely to be influenced by the fishing patterns in this wider complex of fisheries. The effect of these wider incentives on the SBW fishery is not known.

The management framework applicable to other stocks, including non-QMS species, do not inhibit the ability to provide for well-being derived from SBW.

Given these factors MFish does not consider there is a significant risk to the utilisation objective of enabling stakeholders to provide for their social, cultural and economic well-being.

Risk Score: 1 (low severity; low likelihood) **Acceptable Risk Level? YES**

Risk Category: Sustainability

Specific Risk: Overharvest of target stock

Analysis

SBW can experience marked inter annual changes in recruitment and subsequent biomass levels. The longevity of the species means that there are several year classes in the fishery -- recruits to the fishery contribute to the biomass for several years. Natural mortality is low after maturity, so after strong recruitment, the biomass can be fished down progressively over time. Recovery of a depleted stock will be strongly dependent on the relatively unpredictable recruitment.

The 2003/04 implicit discount rates for SBW6B is 7.6% and 8.6% for SBW6I. There is insufficient information to conclude if this rate is relatively high or low relative to similar stocks.

The catches in SBW6A and SBW6R are small compared to the other two stocks. The high discount rates associated with these stocks seem to reflect the uncertainty and variability in the catch in these fisheries.

SBW is a commercial stakeholder only fishery. 98.2% of the catch is taken as the target species fished. Allocating harvesting rights to commercial fishers is therefore likely to be successful in limiting catch to rights holders. It also provides the opportunity for alignment of incentives to manage and collective action to achieve desired management outcomes. However, there is no apparent co-operative organisation in the SBW fishery at this time.

SBW forms only a small part of rights holders overall fishing plans. SBW is currently a six week spawning stock fishery. The condition and therefore value of SBW outside the spawning is poor. SBW rights holders are also significantly involved in the hoki and squid fisheries. The same vessels are used to fish all three fisheries.

There are four biological populations within the fishery that vary in biomass size. In the absence of further controls or robust co-operative arrangements between rights holders there is a risk that the smaller of these populations may be overfished. The high discount rate calculated for these smaller stocks supports this analysis.

Also, given that SBW is a fishery based on spawning aggregations there is a risk that rapid declines in biomass could occur as the result of overfishing before significant declines in catch indicated sustainability concerns.

MFish consider on balance that although SBW is a commercial fishery only, and there is likely to be some alignment of incentives to manage sustainably, the incentives associated with application of the rights based framework elements are not sufficiently aligned to reduce residual risk of sustainability concern to acceptable levels.

Risk Score: 4 (medium severity; medium likelihood) **Acceptable Risk Level? NO**

Risk Category: Sustainability

Specific Risk: Overharvest of non-target QMS stocks

Analysis

This midwater trawl fishery has very little bycatch (98.2% of harvest is of the target SBW species). The main QMS bycatch species include hake, ling and hoki. Therefore, even at considerably elevated levels of harvesting, the catch of non-target QMS stocks will not be at a level that would jeopardize their sustainability as a result of target fishing for southern blue whiting.

The percentage of the catch of non-target QMS species taken in the SBW fishery is small in relation to their total catch (ie. the catch of hake, ling and hoki in the SBW fishery is small in relation to the catch in the directed hake, ling and hoki fisheries). The catch levels are not such that sustainability is a concern. The SBW stock strategy is unlikely to increase risk to the objectives in the stock strategies of the major bycatch QMS species.

Sustainability concerns regarding SBW are likely to arise well before sustainability concerns are raised regarding non-target QMS stocks. MFish consider the risk to sustainability of non-target QMS stocks to be low in the southern blue whiting fishery.

Risk Score: 1 (low severity; low likelihood) **Acceptable Risk Level? YES**

Risk Category: Environment

Specific Risk: Adverse impact on protected species

Analysis

The SBW fishery is a midwater trawl fishery that does have protected species interactions. There are occasional interactions with sea lions, fur seals, and seabirds (information suggests interaction with grey petrels, although other species would also be affected). No Population Management Plans have been established for the relevant protected species.

The catch rate of fur seals is high, however information on the fur seal population indicates that impact of fishing is unlikely to be adverse, given the current population of fur seals.

The fishery is distant from the main seabird populations in the area, reducing the risk of interaction. The level of risk to viability is dependent on seabird species. Grey petrels are identified as low risk given the low incidence of mortality from fishing and no known threat to populations.

At this time, mortality levels of each protected species resulting from the SBW fishery are not at a rate that is thought to threaten their long-term viability or be considered adverse. That said, the information to support protected species interaction assessment is not comprehensive, and therefore incomplete information is available to fully assess extent of risk.

Despite the likelihood that interaction of protected species with the SBW fishery is not likely to be adverse, MFish consider that this lack of information poses a degree of risk. There is the potential that if interaction in respect of those seabirds most at risk, did occur, the severity of interaction would be likely to be medium.

Risk Score: 3 (medium severity; low likelihood) **Acceptable Risk Level? No**

Risk Category: Environment **Specific Risk:** Adverse impact on benthic environment	
Analysis	
The SBW fishery is a midwater trawl fishery, with only 2% of catch taken by bottom trawl. Therefore, any contact with the bottom is likely to be minimal, and although bottom type under trawl areas is not known, interaction with the benthic environment is unlikely to be at a level to cause concern. Should the fishery shift to target SBW using other catch methods, then risk would need to be re-evaluated. There is a marine reserve around the Auckland Islands and bottom trawling is prohibited on five seamounts in the SBW fishing areas.	
Risk Score: 1 (low severity; low likelihood)	**Acceptable Risk Level? Yes**

Residual risk Summary, post application of Property Rights:

By introducing property rights to the commercial fishery, risk is diminished considerably in several key areas. However, rights alone are insufficient to manage all risks as rights are not aligned sufficiently to realize all Crown objectives.

Risk Area	Score	Recommended Action	
		Monitor	**Apply QMS Mitigation tools**
Utilisation			
Access	1		
Provide for Well-being	1		
Sustainability			
Target	4		
Non-target	1		
Environment			
Protected species	3		
Benthos	1		

Apply QMS tools and evaluate residual risk.

There are a series of legislated components of the QMS (establishment of QMAs, TAC/TACC, aggregation limits, reporting, catch balancing). These are management tools that give form to the property rights system. These are supported by an array of supporting services (reporting, compliance, research, education). Together, they ensure the smooth, predictable and equitable functioning of the QMS.

In this step, the residual elements of the QMS are applied to SBW, and the degree to which they diminish the outstanding risk post application of rights based framework is assessed. The assessment of the application of the proposed treatments includes an analysis of the supporting services (such as level and cost of research, compliance, etc.) required to support the QMS elements.

The goal is to deploy the individual QMS elements in such a way that the cumulative impact of each measure reduces risk to the greatest extent possible. A detailed description of residual risk is provided after the optimal arrangement of QMS elements is designed.

Risk Category	Sustainability (overharvest)
Treatment:	Quota Management Areas (QMAs) Defines the unit of management to enable sustainability and utilisation objectives to be met.
Options Considered:	1. One QMA for all stocks. 2. Multiple QMAs based on biological and administrative boundaries.

Analysis

There are four distinct populations of SBW, of which only one (6I, Campbell Island) is currently able to sustain a significant level of catch. The Bounty Platform (6B) has a smaller fishery. The other two populations are smaller again, and have catch of less than a thousand tonnes. Although there is likely to be no genetic distinction between the populations, there is assumed to be little intermixing between them.

MFish consider two basic options are available when considering QMAs for southern blue whiting.

Single QMA

A single QMA would provide maximum flexibility to allow rights holders to manage catch within the fishery. However, MFish considers that incentives around allocation of rights are not currently sufficiently aligned to reduce risk surrounding unsustainable harvesting of some or all of the populations with the SBW fishery. In the absence of a governance structure to manage catch separation, the sustainability risk is borne by the Crown.

A single QMA could address the sustainability concern by ensuring that the TAC/TACC was set at a level low enough to match the sustainable yield from the smallest population. However, this would likely represent a dramatic drop in TAC/TACC from current levels. As a result access would be inhibited and ability to provide for economic well-being would be undermined.

Multiple QMAs

MFish considers that given the current level of incentives operating in the SBW fishery the use of multiple QMAs provides the best balance between sustainability risk and not unduly inhibiting access and well-being.

There are costs associated with managing separate QMAs, one for each of the four stocks (plus one additional QMA for the balance of the EEZ).

Given that there is little catch of SBW in SBW1, it may not be essential to impose the cost (to the Crown for management, and to industry for reporting) it represents. It would be preferable to amalgamate SBW1 with one of the other SBW management areas, and in so doing, simplify reporting requirements. This would require legislative amendment to allow QMA boundaries to be amended by the Minister for reasons of administrative efficiency. In the interim, we consider the level of residual risk is best mitigated by QMAs that manage the four biological populations separately.

The effect of multiple QMAs may be to marginally increase the level of risk associated with inhibiting access (need to hold quota/ACE in different management areas) and reduces ability to provide for economic well-being, but best manages risk of overfishing.

Preferred Option:	Multiple QMAs based on biological and administrative boundaries

Risk Category:	Sustainability (overfishing)
Treatment:	Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC) Balances sustainability risk with utilisation objectives.
Target Level Options:	• Section 13 (MSY) • Section 14 (other than MSY)

Analysis:

The Crown must establish a Total Allowable Catch to move the level of a stock at or above the level that can produce the maximum sustainable yield, or a level other than MSY if the purpose of the Act would be better achieved (s.14). To employ s.14, specific criteria must be met, including if biological characteristics of a stock makes it impossible to estimate MSY, a catch limit for NZ has been determined as part of an international agreement, or the stock is managed on a rotational or enhanced basis.

MSY can be estimated for southern blue whiting. There are no international agreements relating to this stock, nor is it managed on a rotational or enhanced basis. Therefore, the fishery does not currently meet statutory criteria for management under s. 14. Accordingly, the Act requires that the stock be managed to achieve the biomass that would support the MSY.

Harvest Strategy Options:	• Frequent TAC adjustments; TAC set at current annual yield (CAY) • Fewer TAC adjustments; TAC set using a constant catch strategy (MCY/PCY) • Multi year TAC with tolerance threshold

Background:

The Guide to Biological Reference Points for Fishery Assessment Meetings (Annala et. Al 2004) operationalised MSY by suggesting harvest strategies to define MSY for particular stocks.

A range of harvest strategies are applicable to southern blue whiting. MFish note some examples below**.**

CAY

CAY employs a constant fishing mortality rate. A CAY harvest strategy is currently employed for all stocks in the SBW fishery. A CAY strategy results in higher utilisation levels than MCY or PCY (than do other harvest strategies considered below). However, this strategy requires more information to support the assessment of the TAC. Research in the SBW fishery has traditionally been biannual acoustic surveys in the Bounty and Campbell fisheries, costing approximately $1.5 million.

MCY

MCY is the maximum constant catch that is estimated to be sustainable, within an acceptable level of risk (usually probability of falling below 20% of virgin biomass is less than 10%), at all probable future levels of biomass. Information requirements are less costly under an MCY strategy when compared to a CAY strategy because research might be required less often.

PCY

Precautionary constant yield (PCY) employs a constant catch level (as does MCY), but at a much lower harvest level, and hence generates a substantially lower risk of stock decline than does other harvest strategies. Research costs would be lower than under an MCY strategy.

However, the lower harvest level under this strategy also results in substantially lower yield (utilisation level). Accordingly, this strategy may raise the risk reducing levels of utilisation to unacceptable levels.

Analysis

The Crown's focus is to ensure sustainability, and to create a framework that enables stakeholders to maximise value. Each of the possible harvest strategies can achieve MSY and can meet sustainability objectives. Further guidance is required to select amongst the possible harvest strategies. The strategies produce different levels of yield and have different sets of services and risk parameters. As such, they each have different costs, and different degrees to which they enable rights holders to provide for their well-being.

In considering a harvest strategy it is important to consider which strategy is likely to be the most cost effective or least cost in reducing risk. Even though cost of mitigation of risk has been fully cost-recovered from quota owners, the Crown will not impose this cost, except at quota holder's request, if a lower cost option is available that still lowers risk to an acceptable level.

The characteristics of the fishery and management within 4 separate management areas provides a basis for consideration of different harvest strategies for different populations to best achieve the Crown's management objectives.

Bounty and Campbell Island

Campbell Island and Bounty (to a lesser extent) are the largest of the four SBW fisheries. These stocks are currently managed under CAY strategies. As noted, the information costs required to support these strategies are significant ($1.5 million per survey, required every year in alternating areas). The benefit of the CAY strategy is in allowing stakeholders to maximise yield when recruitment variability results in a pulse of fish recruiting to the fishery.

CAY is primarily about maximising utility from the fishery. The Crown's focus is on ensuring sustainability.

MFish intend to undertake an investigation of possible harvest strategies in the SBW fishery which will best meet the Crown management objectives for the fishery. The investigation will consider whether there is a more cost effective strategy available that would not reduce levels of utilisation to levels considered unacceptable levels by MFish and Government.

The intent under this strategy would be to consider the trade-off between research, yield and sustainability risk. Various TAC levels will need to be considered with associated levels of research necessary to manage risk to determine the most cost effective option that still enables "reasonable" levels of utilisation.

Pukaki Rise and Auckland Islands

These populations are smaller, and subject to less frequent and less intensive exploitation. The ability of stakeholders to provide for well-being would not be unduly compromised if the Crown adopted a PCY strategy in these fisheries, with the commensurate cost savings in terms of research. Stakeholders could propose an alternative strategy to increase utilisation of these stocks if desired through a fisheries plan.

Preferred option:	Bounty and Campbell Island-commence a process to identify and evaluate alternative harvest strategies to determine the optimal management strategy to meet the Crowns management objectives for the fishery. Pukaki and Auckland Islands- MSY with a PCY harvest strategy.

Risk Category:	Sustainability (overfishing)
Treatment:	Catch balancing (deemed values)
Options:	• DV as is (0.30/kg) • DV established by ACE market • No DV with overfishing thresholds

Analysis

Deemed values must taken into account the need to encourage fishers to acquire ACE to balance holdings with actual catch. Deemed values may take into account the desirability of encouraging fishers to land their catch. As such, the purpose of the deemed value is related to catch limits and sustainability, and hence is set to defend the integrity of the established TAC/TACC. The Crown does not have the necessary information to establish the DV at a rate that pursues utilisation objectives.

Given the characteristics of the fishery (distant, sub-Antarctic fishery of six week duration), non-ACE holders are unlikely to enter, and depend on payment of DV. Hence the need for the tool itself in respect of entry of non-rights holders is diminished.

As incentives for management are not fully aligned to Crown objectives (sustainability) there is a risk that rights holders will overcatch their entitlement. To prevent the potential over-exploitation of the resource by the rights-holders themselves, a range of tools including not only deemed values, but also minimum ACE holdings or overfishing thresholds, could be effectively deployed.

Since there is currently no collective action in this fishery, the Crown assumes that participants will act as individuals, hence the incentive for each individual may be to overfish as the costs of such actions will be borne by the collective, not the individual. Accordingly, the TACC does require defending. Deemed values, although not the only tool available to prevent overfishing the TACC by rights holders, do remove the financial incentive on the individual to overfish. Deemed values set according to ACE price ensure that the incentive is to balance catch through the ACE market, and thus defends the TACC. Over the long run, scenarios to examine the available tools (DV, overfishing threshold, minimum ACE holdings, etc.) may be developed to determine the most effective choice.

The level at which the deemed value is set may also need to consider the harvest strategy adopted; hence affect the incentive for rights holders to overfish SBW.

Preferred option: DV established based on the ACE market.

Risk Category:	Sustainability (overfishing)
Treatment:	Reporting framework
Options:	

Analysis

Monitoring of the fishery is important to assess performance against required management targets (MSY). Monitoring can be either fishery dependent or fishery independent, or a combination of both.

The Act currently requires a level of fisheries dependent reporting by obliging certain persons to keep records and returns and provide those records and returns to the Chief Executive.

In addition, relying solely on fisheries dependent reporting, in the absence of strong alignment of incentives, may create risks around accuracy of the information supplied. Also, some information necessary to support monitoring/ stock assessment activity is best undertaken by specifically skilled independent verifiers.

Accordingly, in the SBW fishery a combination of fishery dependent and fishery independent reporting and monitoring is proposed.

Fishery independent monitoring

The current level of independent observer coverage for the 2004-05 financial year in the SBW fishery is 330 days. The majority of this time (260days) is focused on gathering information to support stock assessment. 70 days is focused on protected species work under the CSL. Coverage projected under the three year observer forward plan to remain at the current level.

The amount of observer coverage should be aligned to the level of risk in the fishery and research needs. It is proposed to review both the amount of independent verification and focus of independent verifiers in the fishery over the 2004-05 year to ensure that the level of coverage and tasks assigned to observers in the fishery are commensurate with risks and information needs.

Fishery dependent monitoring

The Act requires that all references to weight of fish are in green weight in order to accurately monitor catch. This creates a base obligation to report all catch in greenweight or meat weight. The regulatory framework that underpins the Act creates an implied obligation to land greenweight by requiring licensed fish receivers to record produce in greenweight. The requirement to land greenweight would inhibit rights holders ability to provide for well-being in that it prevents fishers from processing catch at sea.

The implication of this requirement in southern blue whiting is significant. The FOB value for southern blue whiting in 2002 totalled $29.3 million representing by value surimi (69%), fillets (14%), head and gutted (12%) and whole (5%). Although the requirement to record weight in greenweight would not prevent processing after landing to a Licensed Fish Receiver, given the short timeframe of the SBW fishery in ability to process onboard could potentially reduce catch and value of product.

Regulations currently specify a generic reporting framework for fisheries. The reporting framework is currently under review to ensure that it best meets fisheries management outcomes and objectives. One of the issues under consideration is the degree to which the reporting framework can be driven by the characteristics of individual fisheries. Such a review may promote different reporting frameworks for different species in order to ensure the optimal management framework for each fishery. However, in the interim MFish propose to retain the generic reporting framework for SBW.

Preferred option:	Maintain current reporting framework. During 2005 review the level of independent verification to ensure the number of observers and tasks assigned are commensurate with risks and information needs.

Risk Category:	Utilisation (well-being)
Treatment:	Aggregation Limits
Options:	• Existing limits • No limits
Analysis The Fisheries Act allows aggregations limits to be set at 35 or 45% of all stocks combined (although exceptions may be granted). The current aggregation limit for SBW is 35%. In the SBW fishery, there are few quota holders, all of whom are well below current aggregation limits. There is no risk of market power issues effecting consumers because quota holders are unable to influence the market price for SBW given internationally available substitutes. Removal of aggregation limits will remove impediments to providing for the well-being of rights holders. The fishery is based around a single target stock, not a multi-species fishery, hence removal of aggregation limits will not undermine the ability to balance catch in proportion to catch ratios of different species.	
Preferred option:	Aggregation limits could be removed for the SBW fishery. This will require legislative amendment. As an interim step, the aggregation limit in SBW could be increased to 45%.

Assessment of residual risk, following application of legislative QMS elements

Risk Category:	Utilisation
Specific Risk:	Undue inhibition of access
Analysis:	MFish does not consider that application of the legislatively required tools will inhibit access to the southern blue whiting fishery. Non-rights holders remain free to purchase rights from existing fishers to gain access.
Risk Score: 1	**Acceptable Risk Level? YES**

Risk Category:	Utilisation
Specific Risk:	Access does not provide for current and future well-being.
Analysis:	The requirement to report greenweight and by implication land catch to a licensed fish receiver in a form that allows greenweight to be estimated will impact on the ability of rights holders to utilise the resource. Added value is obtained by processing of SBW. Currently this processing occurs prior to landing. The Crown's core obligation is to ensure sustainability and provide for utilisation. Utilisation is provided to enable people to provide for their well-being. The Crown should not significantly affect the ability of rights holders to provide for their well being through utilisation of fisheries resources. There is no defined threshold to determine when the ability of rights to enable their well-being is affected to the point it is unacceptable. The threshold should therefore be considered on a case-by-case basis. The extent of the risk to providing for well-being as a result of the requirement to land greenweight and therefore unprocessed fish is unclear. 95% of the current value of fishery comes from processed states. The cost implications of requiring processing after landing are unknown. Given the characteristics of the fishery, and the current value added from processed states, MFish considers that there is a significant risk that rights holders opportunity to enable well-being will be unacceptably effected. As a consequence, the risk in this category resulting from application of the legislative requirements of the reporting framework is considered unacceptable.
Risk Score: 4	**Acceptable Risk Level? No**

Risk Category:	Sustainability
Specific Risk:	Overharvest of the target stock
Analysis:	The risk of the smaller of the four populations being overfished is reduced with a QMA for each stock, and a separate TAC. The risk to sustainability is reduced further with the accompanying harvest strategy and application of deemed value to protect the TACC. Application of the reporting framework ensures monitoring to assess performance of the fishery.
Risk Score: 1	**Acceptable Risk Level? YES**

Risk Category:	Sustainability
Specific Risk:	Overharvest of QMS stocks (bycatch)
Analysis:	Recommended application of QMS elements doesn't directly affect risk to overharvesting associated stocks. No change in risk parameters resulting from application of QMS tools.
Risk Score: 1	**Acceptable Risk Level? YES**

Risk Category:	Environment
Specific Risk:	Adverse impact on protected species
Analysis:	No direct mitigation effects result from application of QMS tools. Reduction in harvest levels (& fishing effort) may lower risk of impacts on protected species, but any reduction has not been quantified. Due to knowledge gaps, there is still considerable uncertainty around the precise risk to protected species in this fishery. The information available suggests that risk isn't high, but there is insufficient knowledge to know if the concern is high enough to warrant management action.
Risk Score: 3	**Acceptable Risk Level? No**

Risk Category:	Environment
Specific Risk:	Adverse impact on benthic environment
Analysis:	The risk of impact on the benthic environment was considered acceptable prior to application of legislatively required QMS tools. The application of these tools doesn't directly affect risk of adverse impact on benthic environment. However the impact of application of QMAs, TAC, and TACCs act to limit fishing effort in particular areas. This would reduce risk associated with benthic impacts to the extent that the SBW fishery has any impact on the benthos. However given low residual risk associated with the SBW fishery prior to application of required QMS tools there is no change in risk parameters resulting from application of QMS tools.
Risk Score: 1	**Acceptable Risk Level? Yes**

Risk Summary, post QMS

The application of QMS tools has reduced residual risk down to levels considered acceptable for all risk areas except for utilisation (well-being) and protected species interactions.

Risk Area	Score	Recommended Action	
Non-QMS		**Monitor**	**Consider QMS**
Utilisation	1		
Sustainability	1		
QMS		**Monitor**	**Apply Additional Mitigation tools**
Utilisation			
Access	1		
Provide for Well-being	4		
Sustainability			
Target	1		
QMS Bycatch	1		
Environment			
Protected species	3		
Benthos	1		

Services required to support management, QMS tools

Proposed Service	Description	SOI Output location	Attributable cost
Establishment /removal of rules	Stock strategy framework Policy advice Utilisation and sustainability reported International fisheries utilisation and sustainability	11, 12, 31, 32	
Provision of Access	Commercial harvest permit	42	See Note 1
	Customary permission	None	None
	Commercial vessel registration	Devolved service	Devolved cost directly recovered
	Other Special Approvals	42	See Note 1
Administer Rights	Administer trading systems	Devolved service	Devolved cost directly recovered
		Minor Ministry costs	See below
	Catch balancing regime • Manage and collect deemed values • Manage Overfishing thresholds	Devolved service	Devolved cost directly recovered
		Minor Ministry costs	See Note 1
Education	Provide education support on operation of QMS	Many outputs	
Management	Establishment of TAC/TACC	31	

Proposed Service	Description	SOI Output location	Attributable cost
Services	Aggregation Limits	31 and 42	
	Consultation	31	
	Evaluation and standard setting	31	
Monitoring	Collect Research information		
	• MFish Research projects		
	o Environment costs	21	See Note 3
	o Acoustic survey	21	
	o Stock assessment	21	
	• DOC Research		
	o INT	DOC	
	o MIT	DOC	
	Reporting framework	21 and 42 and 51 and devolved service	See below
	• Release of forms		
	• Receipt of furnished forms		
	• Validation of forms against standards		
	• Data entry		
	• Return of non-validated forms		
	• Follow up of non-validated forms		
	• Identify reporting breaches		
	Fisheries independent reporting	26	
	Compliance with rules		
	• Discrepancy reporting	42 and 51	See Note 2
	• Surveillance		
	• Investigations		
	• Independent verification	26 and DOC	
	Performance measures	31	
	• Monitor performance of non-QMS fisheries against performance objectives (standards include specification of performance measures, indicator, trigger and action for each stock taken		Yet to be determined
Enforcement	Investigation and decision		
	Prosecution	61	
	Enforcement of Deemed values (permit suspension, overfishing thresholds)	42	See Note 1

Note 1: Registry Services are delivered to support all commercial fishing activities. Costs for this service cannot be broken down by stock.

Note 2: The cost of compliance with QMS rules specifically for SBW for cannot be determined. The total cost of these items currently allocated to SBW (through the port price index) is available. SBW quota holders currently pay $130.5k for the enforcement of rules, $121.9k for MFish Observer coverage (independent verification, Output 26), and $48.6k for DoC Observers.

Note 3: The research costs to support the management proposed in this stock strategy have not yet been determined. The costs incurred by the current SBW research program (100% recovered from industry) are available.

Apply further management tools

This section is designed to consider application of additional management tools to reduce outstanding areas of residual risk down to acceptable levels. Each tool is accompanied by an analysis of the impact of the tool on residual risk in order to transparently indicate rationale for application of the tool and effectiveness. As with other risk assessment sections each tool requires identification and costing of required supporting services.

Risk Category:	Utilisation (well-being)
Treatment:	Conversion factors
Options:	• No conversion factors: report greenweight • Multiple landed state factors

Analysis

The Act requires that catch be reported in greenweight. The requirement to report greenweight best meets the monitoring requirements for the sustainability objective. However, landing of greenweight will inhibit the opportunity for rights holders to provide for their well-being in the SBW fishery.

Processed forms of SBW equate to 95% of value of the fishery. Managing utilisation risk to acceptable levels is not the core management objective of the Crown. However, when the risk that a particular measure or outcome will inhibit utilisation (access or well-being) beyond acceptable levels (as determined by the Ministry and/or Government) then the Government could consider intervention.

Conversion factors provide industry with the opportunity to select the processing state that best maximises utility. Monitoring of the TACC relies on an accurate estimate of greenweight to assess performance of the fishery. The risk with conversion factors is that they have the potential to create uncertainty in the reporting framework around measurement of greenweight (conversion factors may be inaccurate in calculating the conversion from processed state to greenweight), there is also the potential for conversion factors and associated product flow to be abused.

There are a number of options for addressing the potential or realised risk associated with use of conversion factors. The options range from:

- Status quo;
- Requiring greenweight to be calculated before processing;
- Allowing for conversion factors but increasing independent verification of reporting; and,
- Allowing for conversion factors but ensuring that cost associated with inaccurate reporting are internalised via the TACC using the allowance for other sources of mortality.

The option chosen should be commensurate with the level of risk to sustainability posed by inaccurate reporting around the conversion factor and associated product flow. In the case of the SBW fishery the are a limited number of processed states (four). While a risk remains in this fishery that some inaccurate reporting of catch may result from use of conversion factors there is no information to suggest that the use of conversion factors would create a significant risk of inaccurate reporting leading to a sustainability concern in the SBW fishery.

Preferred option: Existing conversion factors remain in the SBW fishery

Residual risk, following application of conversion factors:

Risk Category	
Utilisation:	The utilisation risk is decreased by application of conversion factors because fishers will be able to better utilise the resource. In the southern blue whiting fishery there is no information to suggest an increase to sustainability risk as a consequence of less accurate reporting.
Sustainability:	In some fisheries, application of conversion factors may increase the sustainability risk as a consequence of the potential for less accurate reporting of catch. There is no information to suggest that risk of overfishing would increase as a consequence of application of conversion factors in the SBW fishery. However, independent verification of the accuracy of reporting should be undertaken on an occasional basis. Any risk that does occur will be mitigated by the proposed harvest strategy to the degree that it exposes the stock to less risk through lower annual yields.
Environment:	No change.
Risk score:	Acceptable

Risk Summary, post application of conversion factors:

Risk Area	Score	Recommended Action	
Non-QMS		**Monitor**	**Consider QMS**
Utilisation	1		
Sustainability	1		
QMS		**Monitor**	**Apply Additional Mitigation tools**
Utilisation			
Access	1		
Provide for Well-being	1		
Sustainability			
Target	1		
QMS Bycatch	1		
Environment			
Protected species	3		
Benthos	1		

Risk Category	Environmental Risk: protected species
Treatment:	Monitoring to mitigate residual risk of protected species interactions
Options:	• Increase level of knowledge of protected species interaction
Analysis	The level of residual risk around interaction with protected species in the SBW fishery has remained unknown and has therefore remained unacceptable. Currently, there is insufficient information to determine to the level of interaction with protected species and therefore assess risk. Any additional measures required to ensure environmental objectives are met will be determined once level of interaction has been assessed.
Preferred option	MFish proposes to ensure independent verification in SBW fleet in year one (first year of stock strategy implementation) is sufficient to get statistically accurate information about protected species information for use in subsequent risk assessment.

Residual risk, following application observer coverage

Risk Category	
Utilisation:	Moderate increase in cost to fishers. Actual cost to be determined. No change in risk.
Sustainability:	No change
Environment:	Requirement for independent verification of interaction between the SBW fishery and protected species will enable an improved risk assessment of environmental impacts. The level of risk will not change until information confirms the level of interaction. No additional mitigation is required until risk is better assessed.

Risk Summary, post application of observer coverage:

Risk Area	Score	Recommended Action	
Non-QMS		**Monitor**	**Consider QMS**
Utilisation	1		
Sustainability	1		
QMS		**Monitor**	**Apply Additional Mitigation tools**
Utilisation			
Access	1		
Provide for Well-being	1		
Sustainability			
Target	1		
QMS Bycatch	1		
Environment			
Protected species	3		Dependent on results of monitoring
Benthos	1		