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# South Australian fisheries harvest strategy policy

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# SOUTH AUSTRALIAN FISHERIES HARVEST STRATEGY POLICY

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# 1. TITLE

South Australian fisheries harvest strategy policy.

## 2. PREFACE

The South Australian Government has developed fishery harvest strategies in the past; however, these have been developed on a case-by-case basis with no overarching policy. This policy describes what a harvest strategy is, where it fits within the broader fishery management context and outlines the core principles that must be addressed when one is being developed. It enables consistent harvest strategies to be applied for South Australia's diverse range of fisheries and should be read in conjunction with the *Guidelines for Implementation of the South Australian Fisheries Harvest Strategy Policy*. This policy is consistent with the *National Guidelines to Develop Fishery Harvest Strategies* (Sloan et al. 2014) and utilises text and information contained in the National Guidelines.

## 3. AIM

The aim of this policy is to provide an overarching framework for the development of consistent harvest strategies for South Australian fisheries, to further the objectives of the *Fisheries Management Act 2007*.

## 4. INTRODUCTION

### 4.1 Objectives of the *Fisheries Management Act 2007*

Under the South Australian *Fisheries Management Act 2007* it is a primary object to protect, manage, use and develop the aquatic resources of the State in a manner that is consistent with ecologically sustainable development, and to that end, a series of principles apply. The full set of principles outlined in the Act is provided at Appendix 1.

The *Fisheries Management Act 2007* provides for regulations and management plans to be developed for South Australian fisheries. Management plans must be consistent with the objects of the *Fisheries Management Act 2007* and set out the management objectives and strategies for achieving those objectives.

### 4.2 What is a harvest strategy?

In its simplest form, a harvest strategy provides a framework to ensure that fishery managers, fishers and other stakeholders consider and document responses to various fishery conditions (desirable and undesirable) before they occur. This provides greater certainty and avoids *ad-hoc* decision making (Sloan et al. 2014).

Harvest strategies offer an effective tool to integrate the ecological, social and/or economic dimensions of fisheries management into a single framework for fisheries management decision making. Harvest strategies are considered to represent a best-practice approach to fisheries management, as demonstrated by their wide use internationally and throughout Australian fisheries management jurisdictions (FAO 2011; McIlgorm 2013; Smith et al. 2013; Sloan et al. 2014).

### 4.2.1 Definition

To enable a common understanding among key stakeholders of the scope and purpose of harvest strategies in South Australia, the following national definition is adopted, based on Sloan et al. (2014):

**“A harvest strategy is a framework that specifies pre-determined actions in a fishery for defined species (at the stock or management unit level) necessary to achieve the agreed ecological, economic and social management objectives”.**

### 4.2.2 Benefits

The adoption of a consistent and harmonised approach to the development of a harvest strategy is expected to lead to well-managed and more profitable fisheries, as decisions on harvest levels will be made in a transparent, predictable and timely manner. This will lead to better support from fishers and stakeholders for harvest strategies and, will in turn, encourage responsible fishing. Harvest strategies will also provide sensitivity to social, economic and ecological constraints, as well as assisting with biological status reporting and fostering community confidence in fisheries management.

## 4.3 Where does a harvest strategy fit?

To understand the role of harvest strategies in fishery management, it is important to consider how they fit within the broader fisheries management framework. At the higher level, fisheries management is guided by:

- the United Nations (UN) Convention on the Law of the Sea (1982);
- the FAO Code of Conduct for Responsible Fisheries (FAO 1995);
- the *Fisheries Management Act 2007*;
- Commonwealth, State and Territory environment legislation, including the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*; and
- broad policy frameworks directed at addressing issues such as ecologically sustainable development (ESD), by-catch reduction and ecosystem-based fisheries management.

Sitting beneath these higher-level obligations, each fishery has a specific management framework, such as quota or effort control systems. These provide a set of management controls, which are usually described in regulations, a fishery management plan or a fishery management policy. The focus of these plans or policies is on the broader set of controls necessary to manage that fishery, including allocation arrangements, co-management arrangements, research strategies and compliance monitoring and surveillance strategies.

In South Australia, the process for preparing a harvest strategy is incorporated into the process for developing a fishery management plan. Fishery management plans focus on the broader set of controls needed to manage a fishery, which may include quota or effort management systems, allocation arrangements, co-management arrangements, education and extension strategies, compliance and surveillance strategies, etc. A harvest strategy is an integral component of the management plan.

To ensure their effectiveness at achieving the wider objectives that relate to ESD and other objectives in legislation, such as, ecosystem-based fishery management, profit maximisation, and/or social welfare, harvest strategies should integrate the full set of biological, economic and/or social objectives relevant to a fishery, where they relate to harvest.

A representation of how a harvest strategy fits within the broader fishery management context is provided in Figure 1.

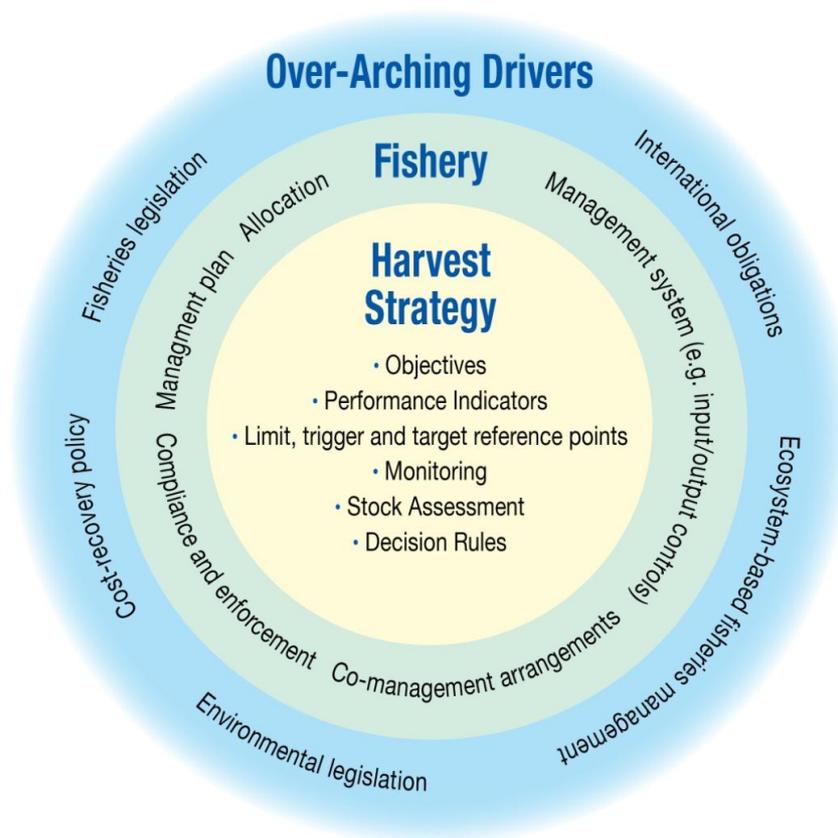


Figure 1 A schematic representation of how a harvest strategy fits within the overall fishery management framework (as a central component of the fisheries management process) (Sloan et al. 2014).

## 5. CORE POLICY PRINCIPLES

Harvest strategies must be developed and adapted to suit an individual fishery (or individual species at the fishery level). This policy outlines several core policy principles that must be addressed when a harvest strategy is developed for an individual fishery under the *Fisheries Management Act 2007*.

### 5.1 Defined operational objectives

A set of clear and concise operational ecological objectives must be established for a fishery that are consistent with overarching legislation (see *Guidelines for Implementation of the South Australian Fisheries Harvest Strategy Policy*). Under the *Fisheries Management Act 2007*, ecological objectives such as protecting aquatic resources from over-exploitation and ensuring they are not endangered have primacy over economic and social objectives. Depending on the individual fishery circumstances, a set of clear and concise economic and/or social objectives should also be established for the fishery. The objectives chosen will vary depending on the individual fishery and its characteristics. These operational objectives must be precise and formulated so as to measure fishery performance (i.e. linked to the performance indicators and reference points of the harvest strategy). When developing this set of objectives, the trade-offs between the ecological, economic and/or social outcomes being sought must be considered and all objectives are achievable.

## 5.2 Fishery performance indicators related to operational objectives

Performance indicators must be established for each objective. These performance indicators will be used to measure fishery performance with respect to achieving the objectives (by comparing where the indicator sits in relation to a reference point) (see Figure 2).

## 5.3 Reference points for performance indicators

Three types of reference points are used to assess the biological, economic and/or social performance of the fishery:

1. **Limit Reference Points** define the values of a performance indicator for a stock or management unit that are not considered acceptable and when a stock or management unit has become recruitment overfished. Limit reference points are generally based on biological performance indicators<sup>1</sup>.
2. **Trigger Reference Points** define the values of a performance indicator for a fish stock or fisheries management unit at which a change in the management is considered or adopted. Trigger reference points may be used to determine staged management responses to different stock levels or to define when a stock or management unit is transitional-depleting or transitional-recovering. Trigger reference points may be based on biological, economic and/or social performance indicators.
3. **Target Reference Points** define the values of a performance indicator for a fish stock or management unit that are desirable or ideal and at which management should aim. Target reference points may be based on biological, economic and/or social performance indicators.

An appropriate limit, trigger and target reference point should be considered for each performance indicator, to ensure appropriate management responses are implemented in response to changes in fish stock abundance or changing economic/social conditions.

### **Box 1: Framework used to classify fish stock status(see Flood et al. 2012: 2014):**

**Sustainable stock** – Biomass (or biomass proxy) is at a level sufficient to ensure that, on average, future levels of recruitment are adequate (i.e. not recruitment overfished) and that fishing pressure is adequately controlled to avoid the stock becoming recruitment overfished.

**Transitional-recovering stock** – A recovering stock – biomass is recruitment overfished, but management measures are in place to promote stock recovery, and recovery is occurring.

**Transitional-depleting stock** – A deteriorating stock – biomass is not yet recruitment overfished, but fishing pressure is too high and moving the stock or management unit in the direction of becoming recruitment overfished.

**Overfished stock** – Spawning stock biomass has been reduced through catch, so that average recruitment levels are significantly reduced (i.e. recruitment overfished). Current management is not adequate to recover the stock, or adequate management measures have been put in place but have not yet resulted in measurable improvements.

**Environmentally limited stock** – Spawning stock biomass has been reduced to the point where average recruitment levels are significantly reduced, primarily as a result of substantial environmental changes or disease outbreaks (i.e. stock is not recruitment overfished). Fisheries management has responded appropriately to the environmental change in productivity.

**Undefined stock** – Insufficient information exists to determine stock status.

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<sup>1</sup> The framework used to classify fish stock status in this policy is the same as that used nationally (Flood et al. 2012; 2014) and is based on assessments against the definition of 'recruitment overfished', which is the point at which the spawning stock biomass has been reduced by fishing so that average recruitment levels are significantly reduced. The six classification categories of this framework are defined in Box 1.

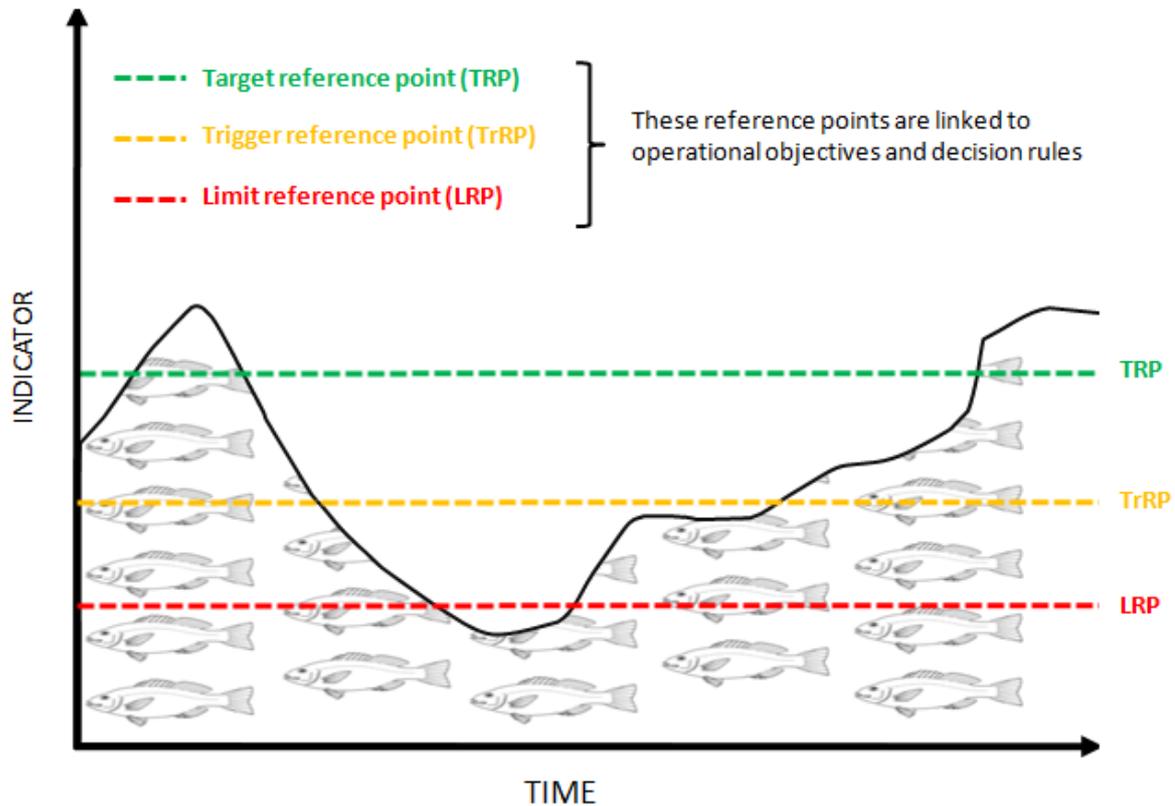


Figure 2 The relationship between a performance indicator (shown as dark grey line), the different types of reference points, operational objectives and decision rules (Sloan et al. 2014).

#### 5.4 A statement defining acceptable levels of risk

Regardless of the level of uncertainty in assessments, all harvest strategies must ensure that there is a high likelihood that the biological objectives will be achieved, particularly those that are designed to avoid a stock or management unit becoming overfished or recruitment overfishing occurring (i.e. those that are linked to biological limit reference points). This is an explicit recognition of the need for precaution in the face of uncertainty. In practice, this means that there should be a 'high likelihood' that the stock or management unit will not fall below the established biological limit reference point under the application of the harvest strategy.

The term 'high likelihood' is used to allow for either qualitative or quantitative evaluation and means greater than or equal to a 90% probability that the stock or management unit will be above its biological limit reference point over a period of time. This translates to no more than one year in 10 that it would fall below this limit. This is consistent with the risk standard applied in the Commonwealth Harvest Strategy Policy (Australian Government 2007).

For any fish stock or management unit that is classified as overfished, there should be a high probability of stock recovery to levels above the limit reference point, within specified timeframes related to the generation time of the species. Depending on the fishery data and assessment available, the probability of achieving objectives could be determined by various quantitative, qualitative or empirical methods available to evaluate a harvest strategy and show if it will meet the risk criterion. Further information on these methods is provided in the section titled 'Testing the robustness of the harvest strategy' in the accompanying Guidelines.

## 5.5 Monitoring strategy to collect data to assess fishery performance

A monitoring strategy must be developed to collect the biological, economic and/or social data that will inform how the performance indicators are tracking relative to the operational objectives and reference points. The form of monitoring required will depend on the choice of indicators and reference points used in the harvest strategy, as well as the scale and intensity of the fishery. The costs of different monitoring strategies will be relevant to the choice of performance indicators. The level of acceptable risk determined, in relation to breaching reference points, will also influence the extent of monitoring and data required.

## 5.6 Assessing fishery performance relative to operational objectives

An assessment is required to assess fishery performance. Fishery performance is measured by comparing where the performance indicator sits in relation to a reference point and achieving the operational objectives. Assessments will have different levels of precision and accuracy and it is important that this is factored into the selection of the performance levels that are used as limits, triggers and targets. It is also important for an assessment to be able to estimate or describe the uncertainty in an assessment to inform the decisions made. For example, the more uncertainty in the assessment of biological stock status, the more precautionary the biological reference points and decision rules should be to meet the acceptable level of risk to achieve the objectives.

## 5.7 Decision rules that control the intensity of fishing activity/catch

All harvest strategies must contain decision rules, which are designed to achieve the ecological, economic and/or social objectives by specifying pre-agreed actions that will be taken to control the intensity of fishing activity or catch that may be removed. Decision rules are intended to ensure good governance and enable all participating stakeholders to adopt consistent decisions using an agreed framework. These decision rules should be linked to performance indicators and reference points.

When a stock or management unit is classified as overfished or transitional-recovering, the decision rules must enable the stock or management unit to rebuild towards a sustainable level within specified timeframes. When a stock is classified as transitional-depleting, the decision rules shall be determined in a way that considers an appropriate balance between short term losses and longer term gains.

In some circumstances, a graded management response is appropriate as stock size reduces or increases. For the former, this may involve a series of progressively more stringent actions as trigger reference points are exceeded. The intent of a graded response is to ensure appropriate actions are taken before there is a need for drastic management action.

## 5.8 Cost-effective and feasible

Analysis of the costs and benefits of alternative approaches and the explicit recognition of the ongoing and future data and monitoring requirements associated with a particular approach (i.e. the catch/cost/risk trade-offs) must be considered during the development process of a harvest strategy (Sainsbury 2005). This analysis should involve fishers and key stakeholders as it will allow choices to be made about the level of required investment in monitoring and assessment. In general, higher investment in monitoring and assessment will allow higher catch levels to be maintained because the biological stock status and its response to management changes will be monitored with greater precision.

## 5.9 Multiple jurisdictions

In cases where trans-boundary stocks exist, effort will be made to ensure harvest strategies in other jurisdictions are harmonised and consistent with South Australian fishery harvest strategies.

## 5.10 Transparent, inclusive and easy to understand

The process used to develop a harvest strategy and the steps involved in its implementation and ongoing application must involve fishers and key stakeholders. Having a transparent and inclusive process to inform the development, implementation and application of a harvest strategy will give all stakeholders a better understanding and ownership of the harvest strategy and decisions made. This is likely to result in harvest strategies that are respected and complied with willingly, leading to improved trust between stakeholders and efficiency in decision making that result from application of the harvest strategy (Matic-Skoko et al. 2011; Sloan et al. 2014).

## 5.11 Unambiguous

Harvest strategies must avoid being ambiguous, particularly when it comes to the development of operational objectives and decision rules. A balance must be struck between the harvest strategy being too rigid and providing for a level of flexibility necessary to allow for adaptation to issues that are not anticipated and for new information to be considered. One way to achieve this balance is to identify “exceptional circumstances” that may trigger a review, or a departure from, or even suspension of the harvest strategy such as a major mortality event through a disease outbreak.

## 5.12 Adaptive

Harvest strategies need to be flexible enough to accommodate any adjustments to improve their effectiveness. The flexibility required to accommodate improved information, or to deal with exceptional circumstances, should not be confused with flexibility in interpreting the results of assessments and applying the harvest decision rules, particularly when fishing intensity needs to be reduced, both of which can undermine the application of a harvest strategy (Smith et al. 2008). The key point is that harvest strategies need to be adaptive enough to address deficiencies, exceptional circumstances and allow for improvements.

## 5.13 Technical evaluation of a harvest strategy

All harvest strategies should be tested for their robustness prior to implementation in order to demonstrate that they are likely to meet the core principles of the policy. Methods such as management strategy evaluation can be used to test both model-based and empirical harvest strategies (Butterworth and Punt 1999). Such testing of management strategies is particularly important when information is incomplete and imprecise, and when the relationship between the decisions rules and management arrangements is complex.

## 5.14 Reporting and periodic review

All harvest strategies should be periodically reviewed, particularly in their early implementation, to ensure they are up to date and take into account the best available information, knowledge and understanding of a fish stock or fishery. The frequency of review will be stipulated in the management plan for that fishery. A formal review of a harvest strategy should be planned and undertaken on an agreed time frame with fishers and key stakeholders (for example, every three to five years).

## 6. ROLES AND RESPONSIBILITIES

The Department of Primary Industries and Regions South Australia (PIRSA) is the lead government agency responsible for the implementation of this policy. The commercial, recreational and traditional fishing sectors, along with other key stakeholder groups, have a role to play in implementing the policy, through co-management arrangements.

## 7. IMPLEMENTATION

The South Australian fisheries harvest strategy policy comes into effect from the time of its approval by the Minister for Agriculture, Food and Fisheries. Harvest strategies consistent with the policy will be implemented in all key South Australian fisheries through management plans developed under the *Fisheries Management Act 2007*.

The harvest strategies of management plans recently developed under the *Fisheries Management Act 2007* will be refined over time to ensure they are consistent with the South Australian fisheries harvest strategy policy when their respective management plan is next reviewed.

The *Guidelines for Implementation of the South Australian Fisheries Harvest Strategy Policy* and the *National Guidelines to Develop Fishery Harvest Strategies* (Sloan et al. 2014) will provide direction on how to implement the policy.

## 8. REVIEW OF POLICY

A review of the South Australian fisheries harvest strategy policy will be conducted after five years of its operation. If new ideas and initiatives become available during these five years, they will be considered for incorporation into the policy.

## 9. ACRONYMS or ABBREVIATIONS

ESD	Ecologically Sustainable Development
FAO	Food and Agriculture Organization of the United Nations
FRDC	Fisheries Research and Development Corporation
MEY	Maximum Economic Yield
MSY	Maximum Sustainable Yield
PIRSA	Department of Primary Industries and Regions South Australia
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TEPS	Threatened, Endangered and Protected Species
UTAS	University of Tasmania

## 10. GLOSSARY

**Aboriginal traditional fishing:** Fishing engaged in by an Aboriginal person for the purposes of satisfying personal, domestic or non-commercial, communal needs, including ceremonial, spiritual and educational needs, and using fish and other natural marine and freshwater products according to relevant Aboriginal custom.

**Allocation:** Distribution of the opportunity to access fisheries resources, within and between fishing sectors.

**Biomass (B):** Total weight of a stock or a component of a stock; for example, the weight of spawning stock biomass is the combined weight of sexually mature animals.

**Biomass limit reference point ( $B_{LIM}$ ):** Stock biomass below which the risk to the stock is regarded as unacceptably high. This is usually expressed as a fraction of the average adult biomass before the commencement of fishing.

**Biomass at maximum economic yield ( $B_{MEY}$ ):** Average biomass corresponding to maximum economic yield.

**Biomass at maximum sustainable yield ( $B_{MSY}$ ):** Average biomass corresponding to maximum sustainable yield.

**Co-management arrangements:** An arrangement in which responsibilities and obligations for sustainable fisheries management are negotiated, shared and delegated between government, fishers, and other interest groups and stakeholders.

**Commercial fishing:** Fishing undertaken for the purpose of trade or business.

**Compliance and enforcement:** Enforce the provision of the *Fisheries Management Act 2007* through the detection and investigation of illegal fishing activity in South Australia waters.

**Cost of management:** Commercial fishery management services will generally include biological monitoring and reporting; policy, regulation and legislation development; compliance and enforcement services; licensing services and research.

**Cost recovery policy:** A framework for consistent, transparent and accountable cost recovery arrangements, which promote the efficient allocation of resources.

**Decision rule:** Pre-determined actions, linked directly to performance indicators and information about current status, and designed to maintain fishery performance in line with operational objectives. These management actions may also be linked to reference points.

**Ecologically sustainable development (ESD):** Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased. ESD principles require that:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations
- if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- the principle of inter-generational equity: that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making and
- improved valuation, pricing and incentive mechanisms should be promoted.

**Ecosystem:** A dynamic complex of plant, animal, fungal, and micro-organism communities and the associated non-living environment interacting as an ecological unit.

**Environmentally limited stock:** Spawning stock biomass has been reduced to the point where average recruitment levels are significantly reduced, primarily as a result of substantial environmental changes/impacts or disease outbreaks (i.e. the stock is not recruitment overfished). Fisheries management has responded appropriately to the environmental change in productivity.

**Fishery:** A term used to describe the collective enterprise of taking fish. A fishery is usually defined by its purpose (commercial, recreational or Aboriginal), a combination of the species caught (one or several), the gear and/or fishing methods used, and the area of operation.

**Fishing mortality (F):** The instantaneous rate of fish deaths due to fishing a designated component of the fish stock. F reference points may be applied to entire stocks or segments of stocks and should match the scale of management unit. Instantaneous fishing mortality rates of 0.1, 0.2 and 0.5 are equivalent to 10 per cent, 18 per cent and 39 per cent, respectively, of deaths of a stock due to fishing. See also Mortality, Natural mortality (M).

**Fish stock:** A discrete population of a fish species, usually in a given geographical area and with negligible interbreeding with other biological stocks of the same species.

**Fishery management unit:** Defined in terms of the area of water or seabed that is fished, the jurisdictional boundaries that exist, the people involved in the fishery, the species caught, the fishing methods and the types of boats used.

**Harvest strategy:** Framework that specifies pre-determined actions in a fishery for defined species (at the stock or management unit level) necessary to achieve the agreed ecological, economic and social management objectives (Sloan et al. 2014).

**Limit reference point:** Defines the values of a performance indicator for a fish stock or fisheries management unit that are not considered acceptable.

**Management plan:** Document created under *Fisheries Management Act 2007* to manage a fishery.

**Management strategy evaluation:** Qualitative or quantitative procedure, whereby alternative management strategies are evaluated and compared before implementation.

**Maximum Economic Yield (MEY):** The sustainable catch level for a commercial fishery that allows net economic returns to be maximised. For most practical discount rates and fishing costs, MEY implies that the equilibrium stock of fish is larger than that associated with maximum sustainable yield (MSY).

**Maximum Sustainable Yield (MSY):** The maximum average annual catch that can be removed from a stock over an indefinite period under prevailing environmental conditions.

**Operational objective:** An objective that has a direct and practical interpretation in the context of a fishery and against which performance can be evaluated (in terms of achievement) (Fletcher et al. 2002).

**Overfished stock:** Spawning stock biomass has been reduced through catch, so that average recruitment levels are significantly reduced (i.e. recruitment overfished). Current management is not adequate to recover the stock, or that adequate management measures have been put in place but have not yet resulted in measurable improvement.

**Performance indicator:** A quantity that can be measured and used to track changes in an operational objective.

**Precautionary principle:** Approach to fisheries management where the lack of full scientific certainty should not be used as a reason for postponing measure to conserve target species, associated or dependent species and non-target species and their environment.

**Protected:** A species of aquatic resource declared by the regulations to be a protected species for the purposes of the *Fisheries Management Act 2007*.

**Recreational fishing:** Fishing other than commercial fishing or Aboriginal traditional fishing, where the catch is released or used for personal consumption or taken for sport.

**Recruitment overfished:** The point at which a stock is considered to be recruitment overfished is the point at which the spawning stock biomass has been reduced through catch, so that average recruitment levels are significantly reduced.

**Quantitative model-based stock assessment:** An assessment that produces information on the biological status of a stock using a mathematical model of the population to make inferences from data. Common examples include the estimation of biomass and egg production, which are not usually measured directly but can be inferred through modelling observed patterns in catch rate, size structure, growth, etc.

**Stock assessment:** An assessment that produces information on the biological status of a stock.

**Stakeholder:** An individual or a group with an interest in, or connection with, the conservation, management and use of a resource.

**Sustainable stock:** Biomass (or biomass proxy) is at a level sufficient to ensure that, on average, future levels of recruitment are adequate (that is, not recruitment overfished) and for which fishing pressure is adequately controlled to avoid the stock becoming recruitment overfished.

**Target reference point (BTARG):** The desired biomass of the stock.

**Target reference point:** Defines the values of a performance indicator for a fish stock or fisheries management unit that are desirable or ideal and at which management should aim.

**Total Allowable Commercial Catch (TACC):** For a fishery, a catch limit set as an output control on fishing. Where resource-sharing arrangements are in place between commercial and recreational fishers, the term total allowable commercial catch (TACC) applies. The term 'global' is applied to TACs that cover fishing mortality from all fleets, including Commonwealth, state and territory fleets.

**Transitional-depleting stock:** A deteriorating stock—biomass is not yet recruitment overfished, but fishing pressure is too high and moving the stock in the direction of becoming recruitment overfished.

**Transitional-recovering stock:** A recovering stock—biomass is recruitment overfished, but management measures are in place to promote stock recovery, and recovery is occurring.

**Trigger reference point:** Defines the values of a performance indicator for a fish stock or fisheries management unit at which a change in management is considered or adopted.

**Undefined stock:** Insufficient information exists to determine stock status.

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## 12. APPENDIX 1

The objects of South Australia's *Fisheries Management Act 2007* are as follows:

### 7—Objects of Act

(1) An object of this Act is to protect, manage, use and develop the aquatic resources of the State in a manner that is consistent with ecologically sustainable development and, to that end, the following principles apply:

- (a) proper conservation and management measures are to be implemented to protect the aquatic resources of the State from over-exploitation and ensure that those resources are not endangered;
- (b) access to the aquatic resources of the State is to be allocated between users of the resources in a manner that achieves optimum utilisation and equitable distribution of those resources to the benefit of the community;
- (c) aquatic habitats are to be protected and conserved, and aquatic ecosystems and genetic diversity are to be maintained and enhanced;
- (d) recreational fishing and commercial fishing activities are to be fostered for the benefit of the whole community;
- (e) the participation of users of the aquatic resources of the State, and of the community more generally, in the management of fisheries is to be encouraged.

(2) The principle set out in subsection (1)(a) has priority over the other principles.

(3) A further object of this Act is that the aquatic resources of the State are to be managed in an efficient and cost effective manner and targets set for the recovery of management costs.

(4) The Minister, the Director, the Council, the ERD Court and other persons or bodies involved in the administration of this Act, and any other person or body required to consider the operation or application of this Act (whether acting under this Act or another Act), must—

- (a) act consistently with, and seek to further the objects of, this Act; and
- (b) insofar as this Act applies to the Adelaide Dolphin Sanctuary, seek to further the objects and objectives of the Adelaide Dolphin Sanctuary Act 2005; and
- (c) insofar as this Act applies to the River Murray, seek to further the objects of the River Murray Act 2003 and the Objectives for a Healthy River Murray under that Act; and
- (d) insofar as this Act applies to areas within a marine park, seek to further the objects of the Marine Parks Act 2007.

(5) For the purposes of subsection (1), ecologically sustainable development comprises the use, conservation, development and enhancement of the aquatic resources of the State in a way, and at a rate, that will enable people and communities to provide for their economic, social and physical well-being while—

- (a) sustaining the potential of aquatic resources of the State to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of the aquatic resources of the State; and
- (c) avoiding, remedying or mitigating adverse effects of activities on the aquatic resources of the State, (taking into account the principle that if there are threats of serious or irreversible damage to the aquatic resources of the State, lack of full scientific certainty should not be used as a reason for postponing measures to prevent such damage).