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Management Plan for the South Australian Commercial Marine Scalefish Fishery

2025



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Management Plan for the South Australian Commercial Marine Scalefish Fishery (2025)

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1 Fishery to which this plan applies

This plan applies to the commercial Marine Scalefish Fishery (MSF or “the Fishery”), which is formally constituted under the *Fisheries Management (Marine Scalefish Fishery) Regulations 2017* (the Regulations).

The Regulations define the Fishery as:

- the taking of aquatic resources specified in Schedule 1 Part 1 in coastal waters; and
- the taking of aquatic resources specified in Schedule 1 Part 2 in coastal waters for the purpose of bait.

Schedule 1 of the Regulations is included in this management plan at Appendix A.

Coastal waters include all of South Australia’s gulfs, bays and estuaries (excluding the Coorong) and extend from the Western Australian border (129°00’00.03” E longitude) to the Victorian border (141°00’00.02” E longitude).

2 Consistency with other management plans

This management plan has been developed so that it is consistent with other formal South Australian fishery management plans.

Access arrangements to the aquatic resources prescribed within the MSF are complex. Ten separate commercial fisheries (see Section 4) have some level of access to marine scalefish species within the area of the Fishery, and the recreational fishing sector, including the Charter Boat Fishery (CBF)¹ have access to all MSF species as well as the Aboriginal traditional fishing sector. Management plans have been developed pursuant to the *Fisheries Management Act 2007* (the Act) for nine of the ten commercial fisheries as well as a management plan for the recreational fishery and the CBF. This MSF management plan has been developed to be consistent with these other fishery management plans.

This management plan has also been developed so that it can be integrated with any Aboriginal traditional fishing management plans that are made in the future that apply to the waters of this Fishery.

3 Term of the Plan

This management plan applies from 1 July 2025 for a period of 10 years. Part 5 of the Act prescribes the requirements for replacing or extending this management plan upon expiry. Further details regarding the process for reviewing the management plan are described in section 13.

4 Description of the Fishery

4.1 Overview

The commercial MSF is a multi-species, multi-gear, shared-access Fishery. The Fishery provides for the commercial harvest of commercially available aquatic resources as described in Appendix A and

¹ The Charter Boat Fishery is formally constituted as a commercial fishery, yet is referred to here as part of the recreational fishery.

Schedule 1 of the Regulations. The Fishery includes all South Australian coastal waters including gulfs, bays and estuaries (excluding the Coorong estuary) from the state border with Western Australia to the Victorian border (Figure 1).

There are over 60 species of marine 'scalefish' taken commercially, however the majority of fishing effort is traditionally concentrated on the four primary species: King George Whiting, Southern Garfish, Snapper and Southern Calamari. Based on the 10-year period from 2014/15 to 2023/24 these four species account for approximately 45% of the total fishery production (by weight and all permitted species) and 76% of the fishery value (based on the 20 species assessed in Dennis et al., 2024). The majority of catches of these primary species comes from Spencer Gulf (SG) and Gulf St Vincent (GSV), with the exception of King George Whiting, where the West Coast (of Eyre Peninsula, WC) accounted for 43% of the total commercial catch of King George Whiting in 2023/24 (cf. 42% SG, 14% GSVKI). In addition, since 1 November 2019 all landings of Snapper have come from the South East (SE), due to the fishery closures for SG/WC and GSV stocks.

The MSF is a valuable social and economic contributor to South Australian communities. Commercially caught fish is an important food source for South Australian and interstate consumers, and the availability of fresh seafood contributes to regional tourism as well as providing health benefits to consumers and contributes towards Australia's food security. The Fishery contributes to the economies of many South Australian regional communities, through generation of jobs, processing and retail of fresh fish products, and the purchase and maintenance of boats, fuel, tackle, bait and equipment. The Fishery is also an important part of South Australia's heritage and contemporary culture, particularly for regional coastal communities.

The fish processing sector is an important partner of the MSF. Regionally based fish processing businesses provide fishers with the ability to sell their catch locally and support the supply of locally caught fish direct to communities throughout South Australia.

Access to the Fishery is complex with several separate commercial fisheries having some level of access to marine scalefish species within the area of the Fishery. In addition to the MSF, licence holders from the Miscellaneous, Rock Lobster, Lakes and Coorong, Prawn, Sardine, Vongole and Blue Crab fisheries all have some level of access. Access varies from the ability to retain some species taken as byproduct (prawn fisheries), to bait only (Vongole, Sardine and Blue Crab fisheries), to relatively open access for holders of a Rock Lobster licence endorsed with Option C access. The numbers of commercial licences with some form of access to marine scalefish species is provided in Appendix B. Access to marine scalefish species is also shared with recreational fishers, including the CBF and supports a significant amount of recreational fishing activity both in terms of participation and catch.

An MSF licence holder may operate in any waters of the Fishery, subject to any species or device specific restrictions, such as quota or catch cap arrangements, temporal, spatial or device specific closures, or aquatic reserves made under the Act, or restrictions in place under the *Marine Parks Act 2007* or other legislation. A list of the main legislative acts that may impact on the operation of an MSF licence is provided in Appendix C.

The Fishery has a diverse range of gear types and fishing methods which have been developed to target the broad range of permitted species within the Fishery. There are a total of 25 different gear types that are registered on MSF licences, in addition to hand collection, handlines and rod and lines, which do not require registration. The dominant gear types used (as percentage of effort) are handlines, haul nets, squid jigs, dab nets and long lines.

The use of nets in the MSF is subject to a range of restrictions. As a result of various buy-backs and licence surrender programs, the number of licences endorsed to use nets has reduced by over half in the last 20 years, with 35 MSF licences remaining that can use nets in 2024. Extensive spatial

restrictions are also in place, including more than 40 netting specific closures across the coastal and internal waters of South Australia. A ban on netting² in all waters greater than 5 metres depth has also been in effect since the 1970s. Netting, along with other forms of fishing, is also prohibited in Marine Park Sanctuary Zones, implemented under the *Marine Parks Act 2007*.



Figure 1: Area of the commercial Marine Scalefish Fishery

4.2 Commercial fishery

Commercial marine scalefish fishing commenced almost simultaneously with the arrival of European settlers, initially as a means of providing food for the new colony. Fish became the first export of the new colony when three barrels of salted fish were shipped to Tasmania by the South Australian Company in 1836 (Noell et al. 2006). Fishing for scalefish increased with the demise of the whaling industry in the 1840s, with the nature of the Fishery and the gear types being influenced by the arrival of immigrants from the United Kingdom and Scandinavia, and during the 1870s and 1880s from Greece and Italy. Licensing in South Australia was first introduced in 1904, with 476 people receiving licences. During the Depression in the 1930s, further fishing licences were issued to address rising unemployment, and in 1934 a total of 1463 licences were issued.

The capacity of the fishing fleet has not only been influenced by the number of licences issued, but also by technological advances in powered boats (engines), refrigeration, marine electronics, processing and social media. The introduction of engines began in the early 1900s and came into general use by the 1930s. Ice boxes were also an innovation that altered the way fish were kept and brought to market.

² Some exceptions apply

Between the early to mid-1900s ice boxes replaced wells, carrying capacity increased and catches could be stored at sea for longer. The first fish cannery opened in the 1890s on Kangaroo Island, where King George Whiting was the main fish processed. Further canneries were opened in Port Lincoln and other West Coast towns during the mid-1900s to preserve catches of Western Australian Salmon and Australian Herring (Tommy Ruff). The Port Lincoln cannery was still in operation in the early 1960s, however production had switched from marine scalefish species to Southern Bluefin Tuna managed by the Australian Government (Noell et al. 2006).

Modern fisheries management began in the late 1970s with a freeze on issuing new licences and entry into the Fishery capped. Since this time there have been continued increases in fishing capacity through technological advances, particularly in fish location through the use of echo sounders, global positioning systems, social media, and computer software packages that integrate and store data from these devices.

Since the late 1970s there have been continual management changes aimed at reducing overall effort in the Fishery to counter effort creep (Table 1). In some cases, these management changes have resulted in the development of separately managed fisheries such as the Blue Crab Fishery (BCF), the Sardine Fishery and the Vongole Fishery (VF).

The licence amalgamation scheme introduced in the early 1990s has achieved a significant and permanent reduction in the number of licences within the Fishery. In conjunction with licence buybacks associated with reducing netting effort, the reform and the introduction of marine parks, the number of MSF licences has reduced from over 500 in the 1990s, to 197 in 2025.

From July 2021, major reforms to the MSF were introduced, including:

- a government funded voluntary licence surrender program resulting in the removal of 100 licences from the Fishery (305 to 205 – at the time of development of this plan there were 197 MSF licences);
- establishment of four fishing zones – West Coast Fishing Zone (WCFZ), Spencer Gulf Fishing Zone (SGFZ), Gulf St Vincent and Kangaroo Island Fishing Zone (GSVFZ), and South East Fishing Zone (SEFZ) (Figure 2);
- establishment of individual transferable quota (ITQ) and total allowable commercial catch (TACC) management for the ‘Management Tier 1’ stocks for the MSF and the Rock Lobster Fisheries (RLF) as follows –
 - King George Whiting in GSVFZ, SGFZ, WCFZ (a catch cap without ITQ was applied in the WCFZ)
 - Snapper in the SEFZ, GSVFZ, SGFZ, WCFZ,
 - Southern Garfish in the GSVFZ, SGFZ,
 - Southern Calamari in the GSVFZ, SGFZ;
- separation of the commercial taking of Vongole and Sardine from the MSF and the creation of the new fisheries under their own regulations;
- various amendments to management arrangements to reduce unnecessary rules and regulations (“red tape”) to improve efficiencies and flexibility for MSF licence holders.

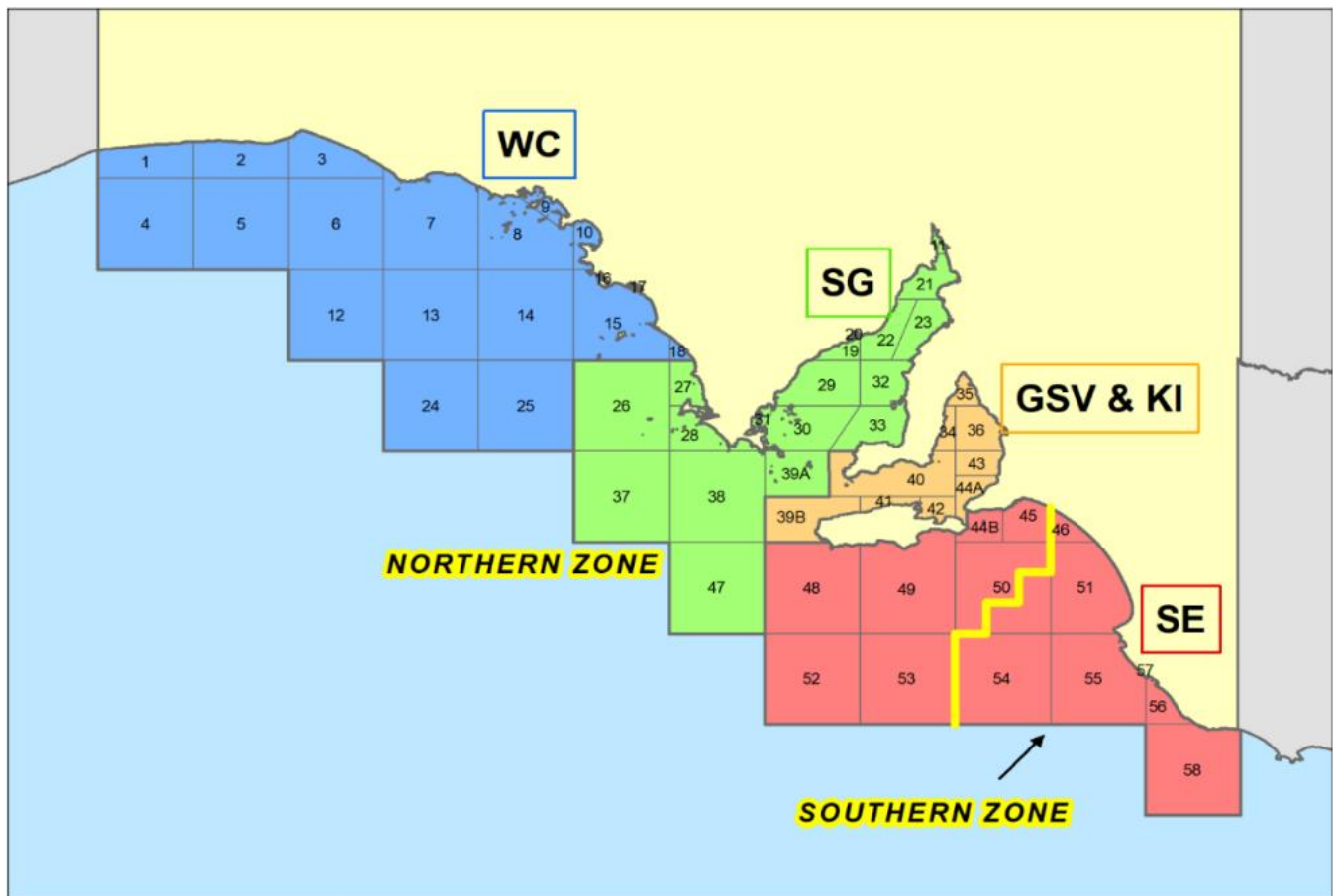
The reform also developed a Tiered Management Framework (TMF) for the MSF. The TMF is a simple decision-making framework to guide the management strategy and science needs of species in the Fishery. Under the framework, Management Tier 1 stocks represent the top tier of management with TACCs which can be unitised with ITQs, and require quantitative analyses. Management Tier 2 stocks represent stocks that are managed without TACC's but require estimates of Recommended Biological Catch to determine whether the levels of exploitation are appropriate. Management Tier 3 is the lowest of the framework and includes management of stocks via input controls and assessments using fishery dependent performance indicators. The management tier associated with each of the MSF species is further described in the report *Informing the structural reform of South Australian's Marine Scalefish Fishery* (Smart et al. 2023) and as updated in the *Implementation Plan for the Marine Scalefish Fishery Harvest Strategy Framework*. The TMF has largely superseded references to species classes ('primary', 'secondary', 'tertiary', 'other' species) made in the 2013 management plan except in describing sector allocations in Section 6.2.

Following the reform a review of licence fees was undertaken, noting 100 licences had been removed and ITQ management introduced for four MSF species. Subsequent to the review a new fee structure was implemented removing net fees and introducing quota unit fees.

To support the quota management system, in 2022 a transition to electronic reporting commenced with the introduction of electronic catch disposal record reporting. Introduction of electronic reporting of catch and effort information is also being developed with planned implementation in 2025.

In response to market disruptions caused by COVID-19, in 2020 management arrangements were implemented across all quota-managed fisheries enabling carry-over of un-caught quota entitlements and allowing for a proportion of over-catch to be taken and subsequently deducted from the following year's entitlements. At that time, quota management was not in place for most species in the MSF except for species included in separate fisheries such as Blue Swimmer Crab, Pipi, and (at that time) Sardine and Vongole.

In 2022, these arrangements were implemented across all quota-managed fisheries with guidelines described in the Policy Paper *Managing of under-catch and over-catch in South Australian fisheries* allowing carry-over and over-catch up to a prescribed proportion of quota entitlements or a greater amount in exceptional circumstances (PIRSA 2021).



*Northern Zone and Southern Zone refers to Northern Zone Rock Lobster Fishery and Southern Zone Rock Lobster Fishery; yellow line delineates boundary between the two Rock Lobster fisheries.

Figure 2: Fishing zones and Marine Fishing Areas in the Marine Scalefish Fishery

Table 1. A chronology of major management milestones in the commercial MSF of South Australia since 1878.

Year	Major management milestone
1878	First Fisheries Act prohibiting the use of certain devices, limiting species that can be taken.
1904	New Fisheries Act commenced. Licensing introduced with 476 Class A licences granted
1917	<i>Fisheries Act 1917</i> , implemented incorporating oyster fisheries legislation.
1930s	Fishing licences issued to address unemployment during the Depression with 1463 licences in the MSF in 1934.
1967	Amendments to the <i>Fisheries Act 1917</i> making special provision for the regulation of a particular Fishery.
1971	<i>Fisheries Act 1971</i> commences include powers to prescribe schemes of management.
Early 1970s	Minimum legal lengths in place prior to 1970s for most primary MSF species; State-wide ban on netting in water greater than 5 m water depth and mesh sizes for nets introduced.

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Year	Major management milestone
1977	Freeze on issue of new commercial licences (limited entry Fishery); conversion call – B class licence holders able to convert to A class licences if they met certain criteria.
1977-1982	Show cause provision – licence holders required to demonstrate a minimum level of involvement to qualify for licence renewal.
1979-1980	Some employees of MSF licence holders given opportunity to apply for licences under Remote employee conversion call.
1980	Limit on total net length to 600 m for A class licence holders and 400 m for B class licence holders; Net could not be joined, with the exception of a drain-off shot; net endorsements made non-transferable; Freeze on issue of additional permits for use of nets; B class licence holders no longer entitled to use nets other than bait nets; restrictions on use of nets by Northern Zone Rock Lobster Fishery licence holders.
1981	Experimental blue crab trawl fishery commences in upper SG.
1982	<i>Fisheries Act 1982</i> approved but did not commence operation until 1984. A and B class licences become Marine Scalefish and Restricted Marine Scalefish respectively. Separate schemes of management for each Fishery.
1980	Restricted B class MSF licences became non-transferable; owner-operator policy announced; family transferability introduced for A class net and line licences.
1982	Licences became transferable (any endorsement for the use of nets could not be retained with the transfer except in the case of family transfer).
1983	Aquatic Reserves and restricted netting areas introduced; Inshore Fisheries Advisory Committee established.
1983	Establishment of experimental Blue Swimmer Crab Pot Fishery with a call for expressions of interest from MSF licence holders.
1984	New Western Australian Salmon net fishing arrangements commenced with general quota and special quota for taking of Western Australian Salmon by net.
1986	Experimental Blue Swimmer Crab Pot Fishery ceases for West Coast.
1987	New management controls introduced for Snapper; Offshore Constitutional Settlement (OCS) agreement signed between Commonwealth and South Australia for some species.
1988	No further longline endorsements; limit on the number of hooks that can be used in SG, GSV and Investigator Strait introduced. Limit of 1000 kg for Mulloway on West Coast introduced.
1989	Introduction of new management arrangements for Ocean Jacket Fishery.
1990	Green paper for the review of the Fishery released.

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Year	Major management milestone
1990's	Introduction of marine scalefish access options A, B or C for Rock Lobster Fishery licences.
1991	Supplementary Green Paper for the review of the Fishery released.
1992	White Paper for a review of the Fishery released; freeze on transfers to allow a restructure of the Fishery.
1992	New management controls introduced for Snapper, King George Whiting and Southern Calamari.
1993	Ban on net fishing for Snapper; introduction of a separately management for Blue Swimmer Crabs Fishery in SG and GSV.
1993	Initial access to Sardine (Pilchard) Fishery finalised (14 granted access through Ministerial exemption).
1994	Licence amalgamation scheme introduced. Transfers of licence recommence under the amalgamation scheme. Requirements for attendance of longlines introduced with a restriction of 400 hooks on any set line; minimum size introduced for Sand Crabs, minimum size limits for Flounder and sweep increased.
1995	Total allowable catch for Sardine (Pilchard) introduced.
1995	King George Whiting minimum legal length increased from 28 to 30 cm.
1995	Revised management arrangements introduced for Ocean Jacket Fishery.
1995-1996	Net review conducted and further netting restrictions introduced.
1996	BCF within the gulfs formally constituted. Amalgamation Scheme amended to require 26 points, down from 29 points Daily bag limit for Razorfish introduced with restriction on use for bait only for commercial fishing.
1997	Jurisdiction transferred to Australian Government for some species under Offshore Constitutional Settlement (OCS) agreement replacing 1987 OCS agreement.
1997	Restrictions on the use of fish traps in water deeper than 60 m introduced.
1998	First Cuttlefish closure of SG spawning aggregation area implemented .
1999	Split Snapper closures implemented in August and November.
2000	Discussion Paper of Recommendations for Fishery released by the MSF Restructure Committee.
2000	OCS jurisdiction for School and Gummy Shark transferred to the Australian Government. Trip limits introduced for SA MSF licence holders.
2000	Introduction of regulations for the management of Sardines (formerly Pilchards) and endorsement of quota on licences.

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Year	Major management milestone
2001	Changes to legal minimum lengths and recreational bag and boat limits for several MSF species as recommended in the South Australian Recreational Fishing Management Strategy including Snook and Southern Garfish.
2002	Coffin Bay Sand Crab Pot Fishery approved by Minister; Scallop dredges prohibited. Maximum number of agents that can be used on a boat whilst fishing introduced.
2003	November closure for Snapper introduced.
2004	Change in legal minimum length to 31 cm for King George Whiting taken east of 136°E longitude. Amendments to the licence amalgamation scheme from 26 to 24 points and Restricted MSF licences can be amalgamated under the amalgamation scheme.
2005	Voluntary net buyback scheme announced by the State Government to reduce fishing effort using nets (gill nets <15 cm mesh and hauling nets). This buyback removed 24 licences and 61 net endorsements; new areas closed to net fishing. Charter Boat Fishery commenced requiring participants to obtain licence under a separate scheme of management.
2007	Introduction of the <i>Fisheries Management Act 2007</i> .
2007	Fisheries Council of South Australia established, and Government appointed Fishery management committees abolished.
2008	Quota management system introduced for Vongole in three zones: Port River (the Section Bank), Coffin Bay and the West Coast (including Smoky Bay, Venus Bay and Streaky Bay).
2008	Daily bag limit for Razorfish reduced to 50 razor fish for commercial fishers.
2012	Seasonal Closure for take of Southern Garfish in SG and GSV. Hauling net pocket mesh size increase from 30 mm to 32mm and use of a modified bunt in a hauling net.
2012	Extension of Snapper closure and introduction of daily catch limits and restriction on the number of hooks to be used in the gulfs.
2014	State-wide Snapper closure from 1 November to 15 December 2014; Southern Garfish size limit increase from 23cm to 25 cm and hauling net pocket mesh size increased from 32 mm to 35 mm.
2015	Temporary Southern Garfish closures implemented in SG and GSV.
2016	Introduction of Wrasse maximum legal length.
2016	Fisheries Council abolished.
2017	Implementation of spawning spatial closures for King George Whiting.
2018	Limit on licence transfers to one transfer in every five years Reduction of bycatch limit for School and Gummy shark from 10 to 5 on a fishing trip of one day or less and 10 on a multi-day trip.

Year	Major management milestone
2018/19	Temporary gear restrictions implemented in SG and GSV Region from 400 hooks to 200 hooks on set lines when Snapper are on board a registered boat over long weekends.
2019	Total ban of Snapper fishing in the waters of the West Coast, SG and GSV regions from 1 November 2019 to 31 January 2023; King George Whiting spawning spatial closures removed. Hauling net pocket mesh size increase from 35 mm to 36 mm knotted mesh.
2020	Snapper fishing permitted in the South East Region from 1 February to 31 October 2020.
2021	Introduction of ITQs for Snapper, King George whiting, Southern Garfish and Southern Calamari with Olympic quota for King George whiting in WCFZ; Separation of the Sardine and Vongole Fisheries from the MSF; Voluntary licence surrender program removed 100 licences (pre-reform 307 licences); Southern Garfish minimum legal length reverted to 23 cm and temporary closures removed (GSV and SG).
2022	Snapper closure in WCFZ, SGFZ and GSVFZ extended to 30 June 2026
2023	Permanent Giant Australian Cuttlefish closure implemented in the waters of Upper Spencer Gulf. 2013 management plan extended until 30 June 2025.
2023/24	Marine Park net buy-out resulted in the removal of 7 commercial MSF licences with net entitlements operating in the Bay of Shoals and Clinton Marine Parks.
2025	35 licences remained in the MSF that were endorsed with fishing nets with a total of 197 commercial MSF licences. Wrasse maximum legal length removed. Restriction on carriage of other devices when using sand crab pots removed.
2025	Policy on the use of multiple licences from one boat released.

4.3 Aboriginal traditional fishing

Fishing for marine scalefish species in South Australia preceded the establishment of the colony of South Australia. Aboriginal communities fished the coastal waters for at least 6,000 years before European settlement (Nance and Speight 1986). The types of fishing gear used included nets made from animal and vegetable fibers by the Kurna community during summer months along the Adelaide coastline (Ellis 1976) and Encounter Bay (Whitelock 1985), fish spears, fish traps and snares by southern Eyre Peninsula communities (Mountford 1939; Berndt 1985), and the gathering of inter-tidal molluscs and gastropods (Turbo Shells) (Cann et al. 1991).

The State Government, Native Title parties and the commercial fishing industry are currently involved in negotiations of Indigenous Land Use Agreements (ILUAs) with a view to resolving native title claims. The future involvement in existing commercial fisheries by Aboriginal traditional fishers or communities may be considered in this process. Further information about traditional fishing activities and practices will be described in Aboriginal traditional fishing management plans that are made in the future that apply to the MSF.

4.4 Recreational fishing

Recreational fishing contributes significantly to the well-being of many South Australians as well as State and regional economies through tourism, the purchase of fishing equipment, boats, bait supplies and fuel. The 'National Social and Economic Survey of Recreational Fishers' (Moore et al. 2023) estimated the South Australian recreational fishing economic contribution to the State to be \$1 billion, including both direct and flow-on contribution from recreational fisheries and included both South Australian and interstate visitors undertaking fishing activities. In recognition of the importance of recreational fishing to the community of South Australia, a management plan for Recreational Fishing was adopted in 2020 (PIRSA 2020).

The recreational fishing sector accounts for a significant proportion of the total catch of several marine scalefish species, including Management Tier 1 species, and formal allocations are provided to the recreational sector for a range of species (see [section 6](#) – Allocation of access between sectors).

The CBF catch is considered as recreational catch and the allocation of shares of marine scalefish species for the CBF is included as part of the broader recreational fishing sector (see Section 6). A discrete allocation of Snapper and King George Whiting has been recognised for the CBF component of the recreational sector.

Marine scalefish species are taken by both South Australian resident and non-resident (i.e., interstate and overseas visitors) recreational fishers. The 2021/22 South Australian Recreational Fishing Survey (noting that survey data does not include interstate and overseas visitor catches) estimated a recreational harvest of 305 tonnes of King George Whiting, 251 tonnes of Blue Swimmer Crab, 219 tonnes of Southern Calamari and 82 tonnes of Western Australian Salmon by South Australian recreational fishers. It was estimated that 356,708 individuals undertook recreational fishing in 2021/22 with an average of four days per person per year. An estimated 2.7 million marine finfish were retained and 1.8 million released during the 2021/22 survey period (Beckmann et al. 2023).

4.5 Ecosystem and habitat

South Australia's coastal regions support a diverse range of ecosystems, marine habitats and aquatic resources. An inventory of coastal fisheries habitats by Bryars (2003) identified 12 important habitats in South Australia: reef, surf beach, seagrass meadow, un-vegetated soft bottom, sheltered beach, tidal flat, tidal creek, estuarine river, coastal lagoon, mangrove forest, saltmarsh, and freshwater spring. Many of these habitats are found within GSV and SG where the majority of commercial fishing is undertaken.

Both gulfs contain significant areas of seagrass meadows, saltmarshes and mangroves which are recognised nursery areas for key commercial fish species such as King George Whiting, Southern Garfish, Blue Swimmer Crabs and Western King Prawns. The range of habitats throughout South Australia's coastal regions provide important habitat for all life cycles of each of South Australia's primary marine scalefish species (Table 2).

The more southern waters of the gulfs are of oceanic character, whilst salinity increases reaching 48 parts per thousand in the most northern reaches. This rising salinity is brought about by the decreasing water depth and higher summer water temperatures causing high evaporation rates (PIRSA 2007). These environmental conditions are optimal for some species with distributions that include tropical regions (e.g., Blue Swimmer Crabs and Western King Prawns).

Primary production in the more sheltered parts of the gulfs, as well as embayments off the west coast of Eyre Peninsula and the north coast of Kangaroo Island, is dominated by a number of seagrass species that occur at depths to about 20 metres in clearer waters and about 10 metres in the gulfs.

Natural and artificial reefs in the gulfs provide habitat for a number of species including juvenile and adult Snapper, which form spawning aggregations during the summer spawning season between November and January each year.

Understanding ecosystem function and the potential impacts of the Fishery on these functions is a key aspect of fisheries management. Managing the MSF as part of the broader ecosystem is a goal of this plan. A risk-based approach to identifying risks of impacts to the ecosystem has been undertaken and is considered in more detail in Section 8.

South Australia has marine parks that are managed by the State Government and Federal Government. The South Australian marine parks network prescribed under the *Marine Parks Act 2007* came into full operation in 2014. There are 19 Marine parks located in state coastal waters. Marine Parks cover 45% of state waters with 5% of state waters designated as sanctuary zones. There are 85 sanctuary zones in total, most of which prohibit commercial and recreational fishing (EPA 2023).

Earth’s climate has changed considerably over the past century. The atmosphere and oceans have warmed, sea levels have risen, and glaciers and ice sheets have decreased in size. The implications for marine habitats and ecosystems continue to be considered, in particular, the contraction and changes in the carbon footprint and compression of habitats and their impacts on the MSF.

Table 2. Key habitat types associated with life cycle stages of primary MSF species updated from Noell et al. (2006)

Life stage	King George Whiting (Jackson and Jones 2000; McGarvey et al. 2003)	Snapper (Fowler 2023)	Southern Garfish (Noell 2004)	Southern Calamari (Triantafillos 2001; Steer et al. 2007)
Early juveniles	Sheltered bays, tidal creeks, with seagrass patches	Fine mud substrate, semi-protected waters	Sheltered bays, shallow inshore waters, tidal creeks, seagrass beds	Low relief seagrass beds adjacent spawning grounds, inshore waters
Sub-adults	Seagrass beds (patchy to dense)	Low relief biogenic habitats, including natural and artificial structures	Sheltered bays, shallow inshore waters, seagrass beds	Bare sand substrate in deeper waters of both gulfs
Adults, i.e. spawning or feeding areas	Offshore low profile reefs, sponge/bare sand	Diversity of habitats from shallow bays to the continental shelf, aggregate near medium to high profile structures, such as natural and artificial reefs	Seagrass and algal beds	Migrate at ~2 months of age to inshore spawning grounds characterised by seagrass, algal beds, low profile reefs

4.6 Biology

The production and value of the MSF is driven predominantly by four primary (Management Tier 1) species including King George Whiting, Southern Calamari, Southern Garfish and Snapper, however other species such as Australian Herring, Australian Salmon, Yellowfin Whiting, Ocean Jackets and Shark (Management Tier 2 and 3) also play an important role for the MSF. The following provides a

description of the four primary species in the MSF. Further information regarding the biological characteristics of MSF species is described in the annual stock assessment reports for the MSF which is prepared by the South Australian Research and Development Institute (SARDI) (see Dennis et al. 2024). All completed reports are available on the SARDI website at [Publications and reports - PIRSA](#).

King George Whiting

King George Whiting (*Sillaginodes punctatus*) is a shallow-bodied, elongate demersal marine fish species in the Sillaginidae family. This species is endemic to coastal waters of southern Australia. It is distributed from Jurien Bay in Western Australia, along the southern coast of Australia including around Tasmania, and as far east as Sydney in NSW. It is common in bays and coastal waters areas with seagrass, macroalgae, sand and low profile reefs to depths of up to 200 m (Kailola et al. 1993). SA is the geographical centre of this distribution and supports the highest abundances and most significant fishery for King George Whiting.

King George Whiting has a bipartite life history that is characteristic of many demersal marine fish species. In SA, spawning occurs between March and June in the offshore waters of Investigator Strait, southern Spencer Gulf and along western Eyre Peninsula (Fowler and Jones 2008). The developing eggs and larvae disperse, before the larvae settle to shallow, subtidal beds of the seagrass *Zostera* species in protected bays on the west coast of Eyre Peninsula, Kangaroo Island and within Gulf St Vincent and Spencer Gulf during winter and spring (Rogers et al. 2019). Juveniles develop and reside in nursery areas for up to two years, and eventually move into adjacent deeper water, before migrating southwards as young adults to replenish the offshore spawning biomass after 3–4 years (Fowler et al. 2000). Adults form mixed length and age populations in the spawning areas where they remain resident for the rest of their lives (Fowler and Jones 2008). These movement patterns influence population structure. In those source areas from where fish move and where fishing is generally concentrated (e.g., the northern parts of the gulfs, the bays on the west coast), population structure is generally truncated, involving small fish from a few young age classes (Fowler et al. 2000). By contrast, at destination locations, older fish can be well represented with some up to 22 years of age (Noell 1998). The relationships between reproductive maturation and fish length, age and location have not been systematically addressed for King George Whiting in SA. Analyses of gonads revealed that females and males as young as 3 years and as small as 328 and 317 mm total length (TL) can mature and spawn, respectively (Fowler et al. 1999).

The population dynamics and stock structure of King George Whiting in SA has been investigated using a variety of different approaches. Genetic studies determined that populations in SA were genetically homogenous and similar to those in Victoria (Haigh and Donnellan 2000; Kent et al. 2018), but distinct from those in Western Australia and Tasmania (Jenkins et al. 2016). While understanding of the connectivity between SA and Victoria populations is limited, it has been suggested the two State-based populations may be connected by an intermediate population along the south-east of SA (Jenkins et al. 2000; Rogers 2019). Within SA, multiple studies suggest that King George Whiting larvae are advected over relatively short distances and there exist relationships between particular spawning locations and nursery areas separated by 100-200 km (Fowler et al. 2000b; Rogers et al. 2021). These findings suggest that the biological stock in SA is comprised of multiple small, self-recruiting regional populations. Nevertheless, the genetic homogeneity of the regional populations indicates that there must be at least some degree of mixing between them (Haigh and Donnellan 2000; Kent et al. 2018; Rogers et al. 2019).

Snapper

Snapper (*Chrysophrys auratus*) is a large-bodied, demersal, marine fish species in the Sparidae family. It has a broad geographic distribution throughout temperate and sub-tropical waters of the Indo-Pacific

region, which includes a continuous distribution around the southern coastline of mainland Australia and northern Tasmania (Kailola et al. 1993). Throughout its distribution, Snapper occupy a diverse range of habitats extending from shallow, coastal bays to the edge of the continental shelf (1–200 m depth). It is a long-lived species, estimated to live up to 36 years in SA (McGlennon et al. 2000).

Snapper conforms to a bipartite life history, i.e., it has a pelagic egg and larval phase followed by a demersal juvenile and adult phase. It is a multiple batch spawning species with indeterminate fecundity and asynchronous oocyte development (McGlennon 2003, Saunders 2009). In SA, Snapper has a protracted spawning period that extends from November to February, peaking in December and January (McGlennon 2003, Saunders et al. 2012). Mature fish form dense aggregations prior and during the spawning period and can spawn repeatedly over consecutive days. In general, spawning commences in the evening and continues into the night (Saunders 2009, Wakefield 2010). The resultant eggs hatch after ~36 hours and release larvae of ~2 mm body length (McGlennon 2003). The larvae reside in a mixed planktonic community for 20-25 days until they undergo settlement to the demersal environment and become juveniles at 10-12 mm standard length (Fowler and Jennings 2003, Hamer and Jenkins 2004). Nursery areas for Snapper are characterised by soft, silty, benthic substrate that supports appropriate planktonic prey. Juveniles initially remain in the vicinity of their nursery areas for several months after settlement and then transition to more complex habitats as they develop. Snapper reach sexual maturity at 3–4 years of age and 25–35 cm fork length (Fowler 2023).

The population dynamics and fishery productivity for Snapper in SA are fundamentally driven by highly variable inter-annual recruitment, i.e., the number of age-0 juveniles that enter the population each year (Fowler and Jennings 2003, Fowler et al. 2017). This episodic recruitment is manifested in the age structure of the population and results in cyclic trends in biomass and fishery production through time. That is, strong recruitment leads to an increase in biomass in the following 4-10 years, and declines in biomass are associated with extended periods of poor recruitment and continued exploitation.

There are three biological stocks of Snapper in South Australia: the Spencer Gulf / West Coast stock (SG/WC), the Gulf St Vincent stock (GSV), and the Western Victoria Stock (WVS) which extends into the South-East Region of SA (Fowler et al. 2017). Each stock is dependent on recruitment into a primary nursery area. This conceptual model of stock structure is based on numerous data sources including population length and age structures (Fowler 2023), otolith chemistry analysis (Fowler et al. 2005, 2017), and population genomics (Bertram et al. 2023).

The three stocks have demonstrated different trends in fishery productivity and stock status. The SG/WC and GSV stocks were classified as 'depleted' in 2018 and 2020, respectively, which resulted in the complete closure of the two stocks to fishing from 1 November 2019. A recent stock assessment in 2022 identified that the closures had arrested the declines in biomass, but there was not yet evidence of sufficient recovery (Drew et al. 2022). Consequently, the stocks remained classified as depleted and the closures were extended to 30 June 2026. The WVS has been classified as sustainable and consequently the SE Region has remained open to fishing under a total allowable catch (TAC).

Southern Garfish

Southern Garfish (*Hyporhamphus melanochir*) is a surface-associated marine teleost species in the Hemiramphidae family. It has an elongated body shape and a distinctive lower jaw that forms an extended beak which is much longer than the upper jaw. This species is endemic to coastal waters of southern Australia. It is distributed from Shark Bay in Western Australia, along the southern coast of Australia including Tasmanian waters, and as far east as Eden in NSW (Kailola et al. 1993). The species forms schools in sheltered bays and shallow, inshore, marine waters to depths of around 30 m, and are often associated with seagrass beds (Robertson and Klumpp 1983; Earl et al. 2011). They are particularly abundant throughout SA's gulf regions (Noell 2005; Noell and Ye 2008; Fowler 2019).

Southern Garfish has a bipartite life history. It is a multiple batch spawner that has a protracted spawning period from October to March (Ye et al. 2002). During the spawning period, only a small proportion (10–20%) of the population are in spawning condition at any given time (Giannoni 2013). The eggs are negatively buoyant and are adapted for attachment to substrate such as seagrass and macroalgae (Jordan et al. 1998; Noell 2005). Although it is possible that the eggs are moved through attachment to drifting substrate, there is assumed to be greater potential for large-scale transport during the pelagic larval stage. The developing larvae remain near the surface and their movement is likely to be heavily influenced by the physical environment (i.e., tides and wind-driven currents) until the completion of fin formation at around 20 days post-hatch (Noell 2005; Fowler 2019). Thereafter, the late-stage larvae and juveniles can actively influence their dispersal. The juvenile fish develop quickly and, like the adults, are considered largely sedentary in their movement. It is possible that the limited movement of adult fish is a consequence of their obligate relationship with the intertidal seagrass *Zostera* spp. which constitutes a significant component of the adult diet (Earl et al. 2011). The estimated total length (TL) and age at which 50% of the female population is mature is 215 mm total length (TL) and 17.5 months, respectively (Ye et al. 2002).

The sex ratio of inshore populations of Southern Garfish in SA, Victoria, Western Australia and Tasmania have been consistently biased towards females, with males generally more abundant in offshore waters (Fowler 2019). In SA, females tended to form large schools in shallow inshore waters (<5 m deep), where they are easily targeted by commercial haul net fishers, while males were relatively dispersed and patchier in distribution, with higher proportions occupying deeper, offshore waters (>5 m deep) (Jones et al. 2002; Fowler 2019). The uneven dispersion of fish by sex at different localities likely reflects differences in active habitat selection and spawning behaviour between the sexes.

An otolith-based study identified at least five biological stocks of Southern Garfish in SA: West Coast, Northern Spencer Gulf, Southern Spencer Gulf, Northern Gulf St. Vincent and Southern Gulf St. Vincent (Steer et al. 2009). Given the level of spatial separation of Southern Garfish observed between the gulfs, it is assumed that Southern Garfish from the South East also comprised a separate biological stock.

Southern Calamari

Southern Calamari is cephalopod endemic to temperate waters across southern Australia and northern New Zealand, with a distribution spanning from Dampier in Western Australia to Moreton Bay in Queensland, including Tasmania. This species thrives in shallow coastal habitats such as seagrass beds and sandy substrates, which serve as critical spawning and nursery grounds (Pecl et al. 2004).

In SA, Southern Calamari exhibits distinct seasonal distribution patterns. Adults and juveniles predominantly inhabit inshore waters, while sub-adults migrate to deeper offshore areas up to 70 meters (Winstanley et al. 1983). Seasonal shifts in water temperature and clarity influence abundance, following an anti-clockwise regional progression (Triantafillos 2002, Steer et al. 2007). Growth, maturation, and recruitment dynamics are closely linked to variability in environmental variables such as sea surface temperature, food availability, and habitat conditions (Jackson 2004, Pecl 2004, Moltschanivskyj et al. 2003). The species matures rapidly, reaching sexual maturity within 3–6 months at mantle lengths of 150–200 mm, with individuals capable of attaining sizes up to 550 mm and weights of 3–4 kg (Pecl 2001, Triantafillos 2004).

Studies reveal a complex stock structure for Southern Calamari. Using allozyme markers, Triantafillos (2004) identified three genetic types across Western Australia, South Australia, New South Wales, and Tasmania, though data for Victoria were lacking. Further studies suggest high connectivity (Smith et al. 2015), with evidence of localised structuring driven by environmental and spawning behaviours (Triantafillos 2002, Pecl et al. 2011). A single biological stock is considered across southern Australia for assessment purposes, although regional dynamics can occur at finer scales (Dennis et al. 2024).

4.7 Stock assessment and research

Stock status for the main MSF species are assessed regularly to meet the requirements of the harvest strategy (See section 9). Stock assessment reports are published by SARDI at [Publications and reports - PIRSA](#).

Data collection

To achieve the research and monitoring needs for the Fishery, a variety of data are collected and analysed by SARDI on an annual basis. These are:

- Fishery-dependent data
 - Commercial catch and effort data
 - Wildlife interaction data
 - Length and age structure market sampling
 - Recreational data collected to inform the harvest strategy (see section 9) through appropriate methods
 - Voluntary West Coast Blue Swimmer Crab catch sampling data.
- Fishery-independent data
 - Fishery-independent estimates of biomass of Snapper. Methods may include the Daily Egg Production Method (DEPM), hydro acoustics or other methods as considered appropriate.
 - Fishery-independent sampling of length and age structure during Snapper fishery closures.

Commercial catch and effort logs

The collection of the catch and effort data is facilitated by a logbook program, which requires all commercial fishers to compulsorily record daily information on catch and effort and other details on their fishing operations.

Information collected through the logbook program is periodically reviewed to accommodate changes in the Fishery and ensure data collection meets management and research needs. The MSF is working towards the transition to electronic catch and effort returns (e-logs) which are expected to be in use by the end of 2025 including improvements to data collection and addition of reporting capabilities for key bycatch species. Analysis of trends in catch and effort data is summarised and published in Fishery stock assessment reports on the SARDI website.

Wildlife interaction logs

PIRSA implemented a logbook in 2007 for recording wildlife interactions including Threatened, Endangered and Protected Species (TEPS) for all South Australian commercial fisheries. The TEPS logbook ensures consistent reporting of interactions with TEPS in fulfilment of the requirements of the *Environment Protection and Biodiversity Conservation Act 1999*. SARDI analyse records of wildlife interactions published in an annual TEPS summary report on the PIRSA website.

The Wildlife Interaction logbook is also scheduled to be incorporated into the e-log which is expected to be implemented by the end of 2025 to enable real-time monitoring and data collection of interactions with TEPS.

Length and age sampling

Sampling of fish at the SAFCOL fish market and occasional sampling traps with commercial fishers provides important information on population structure of key MSF species. Fish are measured and a sub-sample are collected to determine their age and reproductive stage. The size and age structure information are important inputs to the fishery model.

Fishery independent biomass estimate

The DEPM has been used to estimate the spawning biomass of Snapper in South Australia using an underlying principle that spawning biomass can be estimated from the relative abundance of eggs in the water column and the number of eggs produced by spawning fish. The DEPM, together with alternative methods, such as hydroacoustics, are being trialled and may be used to obtain future estimates of Snapper spawning biomass.

4.8 Strategic monitoring and research plan

A 5-year strategic monitoring and research plan will include the following components:

- Data collection requirements as outlined in Section 4.7 together with the anticipated assessment schedule. This is the regular monitoring program considered and described in the Cost Recovery Implementation Statement (CRIS) for the MSF.
- Tactical research – this research focuses on short-term, specific, and immediate actions to address immediate issues or implement a strategy.
- Strategic research – this research delves into long-term goals, broader contexts, and fundamental understanding to guide overall direction.

The latter two are likely to require additional funding from various sources, including the FRDC. The strategic monitoring and research plan will clearly identify the relative priorities and potential timelines.

The Marine Scalefish Fishery Management Advisory Committee (MSFMAC) will oversee the development of this plan and report on the delivery of the key priorities.

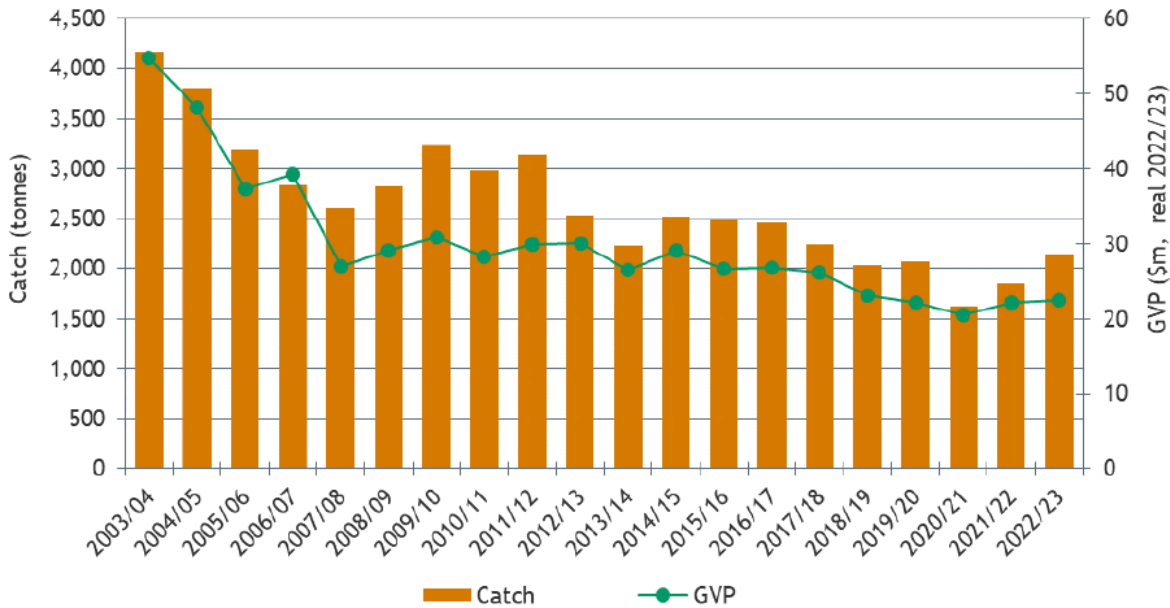
4.9 Economic characteristics of the MSF

Detailed economic information for the MSF has been collected regularly since 1996/97, providing a valuable reference regarding the economic status and trends of the commercial MSF. These assessments are presented in an annual report 'Economic Indicators of the Marine Scalefish Fishery' prepared by BDO EconSearch Pty Ltd on behalf of PIRSA.

The MSF is an important and valuable commercial fishery in South Australia with an estimated Gross Value of Production (GVP) in 2022/23 of \$22 million (Figure 3). In 2022/23, total MSF related contribution to Gross State Product (GSP) in South Australia was \$40.8 million (Figure 4). In 2022/23, there were an estimated 339 full time equivalent jobs generated, directly and indirectly (Econsearch

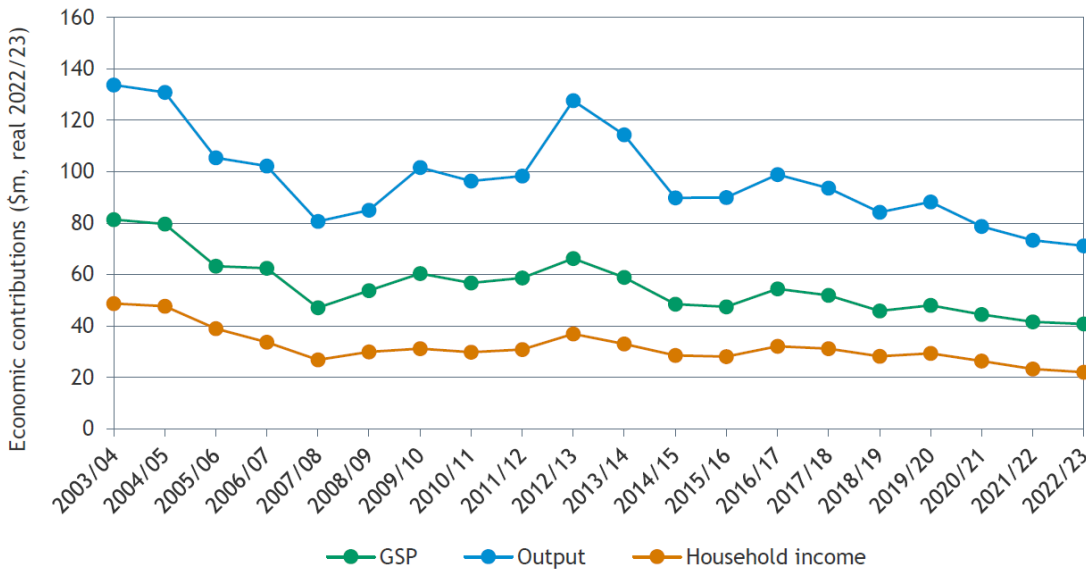
2024). Net Economic Return (NER)³ has been estimated to be mostly negative in the fishery over the period 2003/04 to 2022/23 (Figure 5). However, NER in 2021/22 and 2022/23 indicates signs of improvement.

Further information about the economic characteristics of the MSF is available in Economic Indicators reports published regularly. These reports are available from the PIRSA website.⁴



^a Estimates are expressed in real 2022/23 dollars.

Figure 3: Catch and GVP of all MSF Species 2003/04 to 2022/23 (BDO EconSearch 2024)



^a Figure 4: Total GSP, output and household income contribution of the MSF to the South Australian Economy, 2003/04 to 2022/23 (BDO EconSearch 2024).

³ Net economic return is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (BDO EconSearch 2024)

⁴ https://pir.sa.gov.au/primary_industry/commercial_fishing/commercial_fisheries/marine_scalefish_fishery

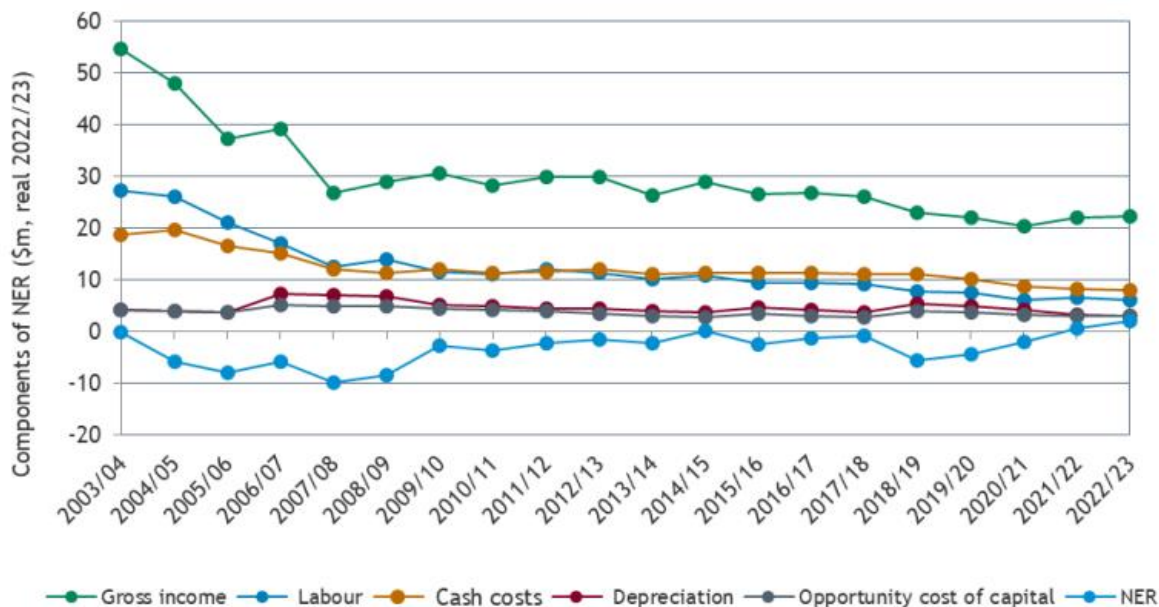


Figure 5: Estimates of the NER (and its components) in the MSF between 2003/04 and 2022/23 (BDO EconSearch 2024).

5 Co-management arrangements

Co-management is an arrangement whereby responsibilities and obligations for sustainable fisheries management are negotiated, shared and delegated between government, the commercial fishing industry, recreational fishers, Aboriginal traditional fishers and other key stakeholders such as conservation groups (Neville 2008).

Co-management is designed to achieve efficient regulatory practice (among many other things) and is not considered a mechanism for stakeholders avoiding regulatory scrutiny and influence.

PIRSA has adopted a *Policy for the Co-Management of Fisheries in South Australia* (PIRSA 2013) to inform discussion with the wider commercial fishing industry and other stakeholder groups as to how best to promote and implement co-management arrangements. The policy proposes that implementation of a preferred co-management model should be through a phased approach through which industry and key stakeholders build their capacity over time and which allows for a government audit process to measure performance and success.

Co-management arrangements have been established between PIRSA Fisheries and Aquaculture and two representative industry bodies for the MSF - the Marine Fishers Association Incorporated (MFA) and the South Australian Professional Fishers Association (SAPFA)⁵. These arrangements recognise the MFA and SAPFA as the representative bodies for MSF licence holders. Through these arrangements the MFA and SAPFA undertake co-management services on behalf of PIRSA in relation to communicating, educating and consulting with industry members on fisheries policy related to the administration of the Act.

Opportunities to improve the co-management arrangements for the MSF will continue to be pursued in accordance with the principles provided by the *Policy for the Co-Management of Fisheries in South Australia 2013*, in an effort to deliver sound management outcomes in an effective and efficient manner.

⁵ Noting that the peak bodies representing MSF licence holders may change during the term of this management plan.

Marine Scalefish Fishery Management Advisory Committee

In 2021, the MSFMAC was established under Section 20 of the Act, to provide advice to the Minister for Primary Industries and Regional Development (the Minister) to guide the management of the shared-access MSF. The MSFMAC⁶ is the lead advisory body for the shared-access MSF and includes expertise-based positions from across the key sectors with an interest in the fishery, including the commercial MSF, Aboriginal traditional fishing, recreational fishery, CBF, and Rock Lobster Fishery. Additionally, membership includes independent experts in fisheries science, conservation science, fisheries economics and fisheries management, and an Independent Chair. Committee support is provided by PIRSA. The MSFMAC terms of reference, membership and meeting reports are published on the PIRSA website⁷.

6 Allocation of access between sectors

The Act requires that a management plan must specify the share of the fishery to be allocated to each fishing sector. The Act also requires that, in determining the share of aquatic resources to be allocated to a particular fishing sector under the first management plan (under the Act) for an existing fishery, the share of aquatic resources to which that fishing sector had access at the time the Minister requested the plan to be prepared (based on the most recent information available to the Minister) must be taken into account.

The Minister formally requested preparation of the first management plan for the MSF under the Act on 17 June 2010. Therefore, the 2013 management plan (being the first plan under the Act) took into account the share of aquatic resources that the commercial MSF, other commercial fisheries, the recreational sector and the Aboriginal traditional sector had access to at that time. The best available information regarding sector shares at that time was the catches from 2007/08, the year in which the most recent recreational catch information was available. Following the “Allocation Policy (PIRSA 2011) relevant at the time of plan preparation⁸, shares were calculated from estimates of the total tonnage of a species taken by a sector in 2007/08 divided by the total tonnage taken by all sectors combined. The recreational catch information did not include catch estimates from interstate or overseas fishers, therefore the resulting shares were based on recreational catch from SA residents only.

The information used to allocate the shares is further described in the 2013 management plan for the Fishery (PIRSA 2013a).

6.1 Sectors with access to marine scalefish species

Commercial fishing sector

Commercial fishing sector licences that provide some form of access to marine scalefish species include the MSF, RLF, Miscellaneous Fishery (MF), Lakes and Coorong Fishery (LCF), prawn fisheries, BCF, Vongole Fishery (VF) and Sardine Fishery (SF). All fisheries with access were considered in the initial allocation process, with the exception of the Vongole and Sardine fisheries which were formally separated from the MSF in 2021. The MSF only has access to species relevant to these fisheries for the purpose of bait and there is no specific MSF allocation that applies to Sardine or Vongole.

⁶ Or alternative such lead advisory body as recognised by the SA Government during the term of this management plan.

⁷https://pir.sa.gov.au/primary_industry/commercial_fishing/commercial_fisheries/marine_scalefish_fishery/management_advisory_committee

⁸Note, the PIRSA Allocation Policy was updated in 2023 and published on the PIRSA website (PIRSA 2023) https://pir.sa.gov.au/_data/assets/pdf_file/0003/254523/allocation-policy.pdf

Whilst some marine scalefish species are taken by the Southern and Eastern Scalefish and Shark Fishery (SESSF) managed by the Commonwealth Australian Fisheries Management Authority (AFMA), this commercial fishery is outside the jurisdiction of the South Australia Government and as such, an allocation has not been provided to this fishery noting that bycatch limits apply to some State managed species as outlined in the Offshore Constitutional Settlement (OCS).

Recreational fishing sector

Recreational fishing of MSF species has primarily been managed through minimum legal length and recreational bag and boat limits.

Any catch taken by the CBF is considered to be recreational catch and is allocated as part of the broader recreational fishing sector with the exception of Snapper and King George Whiting where a CBF allocation has been made. The CBF is managed through legal minimum lengths and individual passenger limits, which have been refined in many cases to be less than recreational bag limits to maximise the individual passenger experience.

The 2021/22 South Australian Recreational Fishing Survey⁹ estimated the recreational catch of a wide range of species caught by SA residents. Recreational catch information for non-residents is not currently collected nor available. The estimated harvest of King George Whiting was 305 tonnes (64% of the total commercial and recreational catch), Blue Swimmer Crabs 251 tonnes (29%), Southern Calamari 219 tonnes (40%) and Western Australian Salmon 82 tonnes (21%). The total number of fishers was 356,708 who fished an average of four days per year. Nearly 5 million finfish were estimated to have been taken and just over 6 million invertebrates (Beckmann et al. 2023).

Aboriginal traditional fishing sector

Access to aquatic resources in South Australia by Aboriginal communities can be managed through Aboriginal traditional fishing management plans under the Act. These plans can help to codify and protect Aboriginal fishing rights and may only be developed when an ILUA, agreed to resolve a native title claim, is in place in relation to a native title claim area. The State is currently engaged in ILUA negotiations with native title claimants and other stakeholder groups including the fishing industry.

It is also possible that fishing agreements may be made with Aboriginal communities and the Department in relation to traditional fishing arrangements before an ILUA is finalised. The agreements arising from these negotiation processes may inform the way that access to fisheries resources by Aboriginal communities is defined and implemented.

Currently, management arrangements for and in support of Aboriginal traditional fishing under the Act are only possible through the State negotiated ILUA process. Aboriginal people also have rights as recreational fishers outside of these arrangements. There is little available information on the take of MSF species by the Aboriginal traditional fishing sector; however, the small number of claims with Fishery-related interests and negotiations to date has informed the share that has been allocated for this fishing sector.

Consistent with the 2013 MSF management plan, a share of access has been allocated and set aside for the purpose of resolving native title claims. A nominal share of 1% has been made to the Aboriginal traditional sector which has been deducted from the recreational share. This is because Aboriginal traditional fishing is considered as non-commercial fishing. Where the estimate of the recreational share

⁹ The latest survey available at the time of the development of this management plan

for a particular species is less than 1%, the Aboriginal traditional allocation has been set at half of the recreational share.

If a traditional fishing related agreement is negotiated within the timeframe of this management plan, at the appropriate time of review of this management plan, any difference between the nominal share allocated and the actual share agreed through the agreement can be calculated. Any difference would then be re-apportioned to or from the recreational sector.

Signed in February 2018, the Buthera Agreement¹⁰ provides capacity-building support for the Narungga Nation Aboriginal Corporation to drive development, economic enterprise and collaborative engagement with government agencies on Guuranda (Yorke Peninsula). A key achievement of the Buthera Agreement is the drafting of a Traditional Fishing Strategy, the first of its kind in South Australia.

6.2 Species allocated

The list of permitted fish species and fish families for the commercial MSF is extensive, with over 60 species recorded as landed in logbooks annually. There are also a significant number of 'scalefish' species taken by the recreational sector that cannot be taken for commercial purposes. Only those species permitted to be taken for commercial purposes have been allocated in this management plan.

Only species for which there is an identified need were allocated in the 2013 management plan based on a number of factors including:

- Importance to the fishery (both commercial and recreational)
- Production (total catch)
- Commercial value
- Level of exploitation
- Inter-annual variability in catches
- Reliability of catch estimates.

Applying the above factors, species were classed as either 'primary', 'secondary', 'tertiary' or 'other' in the 2013 management plan to inform the sector allocations made in the 2013 management plan and to prioritise management and research. Only 'primary' and 'secondary' species were allocated in the 2013 management plan and only these allocations are included in this management plan.

Some species that were classed as tertiary or 'other' species for the MSF in the 2013 management plan have been subsequently allocated in management plans for other sectors, for example, the *Management Plan for Recreational Fishing in South Australia 2020*.

King George Whiting, Snapper, Southern Calamari and Southern Garfish have discrete allocations between different commercial fisheries that may access these species in recognition of the importance of these species to those fisheries. Discrete allocations between commercial fishing sectors are not made for other species reflecting the lower importance of maintaining the shares between the different commercial fisheries for these species, while retaining allocation of resources between the commercial, recreational and Aboriginal traditional fishing sectors.

¹⁰ <https://www.agd.sa.gov.au/aboriginal-affairs-and-reconciliation/aboriginal-land-and-business/buthera-agreement>

Not all species allocated below are individual species, some include a number of similar species grouped together. This is because some species are difficult to identify and there may be misreporting, or non-differentiation by species by both commercial and recreational fishers. Where multiple species are included within a single species, the species name is followed by the abbreviation 'spp', e.g. Mullet spp.

6.3 Spatial scale of allocation

Shares for a species may be allocated in a number of ways including fishery boundaries, management regions, biological or stock boundaries or state-wide allocations.

Initial allocations of shares of MSF species included in the 2013 management plan were predominately allocated at the state-wide level (PIRSA 2013a). However, in some cases allocations were determined at the fishery level to better reflect management arrangements and stock boundaries. For example, for some species two separate allocations have been made; one for the MSF and one for the LCF.

The allocations for Mullet spp. and Mulloway have been split, as follows (Table 3):

- Marine waters – This allocation includes all marine waters including the ocean beach area of the Lakes and Coorong. The commercial allocation includes all commercial catch.
- Inland waters of L&C – This allocation only includes the inland waters component of the Lakes and Coorong (referred to as L&C inland). The commercial allocation here reflects catches that are exclusively from commercial LCF licence holders only.

For the purposes of the allocations provided in this management plan, the MSF allocation includes the ocean beach area of the Lakes and Coorong.

The Blue Swimmer Crab allocation provided in this management plan is for the waters West of 135 degrees East and outside of the BCF quota zones. The MSF fishery for Blue Swimmer Crab is managed separately to the dedicated BCF.

6.4 Sector allocations

The shares allocated to each fishing sector in the MSF as first set out in the 2013 management plan are set out in Table 3.

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Table 3. Allocated shares of primary and secondary species for the MSF. (Rec: Recreational)

PRIMARY SPECIES							
Species		Commercial		Recreational		Aboriginal traditional	Total
King George Whiting	MSF	49.5%	Rec	45.5%	1%		
	SZRL	0.0%	Charter	3.0%			
	NZRL	1.0%					
Total		50.5%		48.5%		1%	100%
Snapper	MSF	79%	Rec	8%	1%		
	SZRL	1.45%	Charter	10%			
	NZRL	0.55%					
	LCF	0.03%					
Total		81%		18%		1%	100%
Southern Garfish	MSF	79.33	19.5		1%		
	SZRL	0.13					
	NZRL	0.04					
Total		79.5%		19.5%		1%	100%
Southern Calamari	MSF	56%	37.4		1%		
	NZRL	0.45%					
	GSVP	0.45%					
	SGP	4.6%					
	WCP	0.1%					
Total		61.6%		37.4%		1%	100%
SECONDARY SPECIES							
Vongole (Mud Cockle) spp.		99.7%*	0.15%		0.15%	100%	
Yellowfin Whiting		78%	21%		1%	100%	
Australian Herring		56.5%	42.5%		1%	100%	
Snook		49.5%	49.5%		1%	100%	
Mullet spp.	Marine waters	54.2%	44.8%		1%	100%	
	Inland waters of L&C	98.9%	0.55%		0.55%	100%	
Mulloway	Marine waters	19.9%	79.1%		1%	100%	
	Inland waters of L&C	71.4%	27.6%		1%	100%	
Bronze & Dusky Whaler		73.7%	25.3%		1%	100%	
Sand Crab		85%	14%		1%	100%	
Blue Swimmer Crab (West Coast)		81.7%	17.3%		1%	100%	

*Note, the formal separation of the VF from the MSF in 2021 means this commercial allocation is now primarily attributed to the commercial VF.

6.5 Review of allocations

Allocations between sectors may be reviewed periodically in accordance with the criteria set out in the *Allocation Policy* (PIRSA 2023). The Allocation Policy prescribes the process to review allocations under specific scenarios, and includes two-stages:

- Initial assessment undertaken by stakeholder assessment committee / working group
- Second stage / full evaluation undertaken by an Allocation Review Committee (ARC).

The Allocation Policy sets out that allocations are expressed as the proportional share of each fishing sector against the sustainable yield. Considering this, in 2024, the Minister approved for assessments of allocations to be assessed based on the catch of a fishery and/or sector against the Recommended Biological Catch (RBC) (or proxy) if available, to inform the need for a full evaluation.

Following the completion of the 2021/22 Recreational Fishing Survey (Beckmann et al. 2023), catch estimates of several species were identified to have potentially breached allocation, triggering initial reviews of the allocations for these species consistent with the process described in the Allocation Policy.

A review of allocations may be triggered under scenarios described in the Allocation Policy including:

- Evaluation undertaken in accordance with the process outlined in this management plan
- Outcomes of a resource assessment that trigger fisheries management decisions made primarily to ensure sustainability of the fishery
- The declaration of a marine park and associated closures of areas that may have the effect of displacing fishing effort.

An important component of the allocations is monitoring to identify a change in the relative value of those shares over time. Catch will be used as the indicator to monitor changes in the value of shares. In order to detect a potential change in share value, catch thresholds have been determined for each sector's allocation (as a percentage of total catch). Exceeding this threshold may trigger a review of the relevant allocation.

Estimates of recreational catch of MSF species are to be available approximately every five years¹¹. Without recreational catch data, it is not possible to undertake an accurate assessment of all sector allocations in years when recreational survey data are unavailable. Therefore, comprehensive reviews of all sector allocations will only be undertaken following the publication of recreational catch information.

Catch information for commercial sectors is available annually and provides the opportunity to monitor allocations between the commercial sectors.

Allocation triggers are specified for the commercial sectors, and only within the areas of the MSF. Trigger levels for a review of allocations are in place for primary and secondary species. Allocation triggers and methods for calculating these triggers are described in Appendix D. Commercial LCF and recreational triggers will be described within their respective management plans.

¹¹ Additional and more frequent estimates of recreational catch of some species may also be obtained to support application of the harvest strategy and stock assessment.

Assessment outcomes

The outcomes of a full assessment may include:

- manage each sector within the existing allocated shares; or
- proceed to adjust shares.

In 2024, the Minister approved that an outcome of a full assessment could also be that 'no action is required'.

Managing within existing shares

If shares are to be maintained it may be necessary, depending on the circumstances, to alter the catch of one or more sectors to maintain the existing shares between all sectors. To determine the appropriate mechanism to re-establish initial allocations, the existing co-management arrangements will be used to develop a preferred option.

Adjusting commercial shares may be achieved through controls such as:

- seasonal and area closures
- gear restrictions
- minimum legal lengths for the MSF
- catch limits.

Recreational adjustments may be achieved through alterations to:

- existing bag and boat limits
- seasonal closures
- size limits.

Adjusting allocation of shares

Any future adjustment of shares will be consistent with the requirements of the Act and guided by the Allocation Policy. Adjustment may be from the commercial sector to the non-commercial sector, or between commercial sectors, in which case a voluntary process would be pursued in the first instance. If a voluntary adjustment scheme is not able to be implemented, a second voluntary option/step may be considered, including an incentive-based scheme for share adjustment. The adjustment of shares from the commercial sector to a non-commercial sector can be summarised by the following options:

- purchase commercial access to the resource (i.e., quota units) on the open market
- create incentives for the commercial sector to trade access to the resource
- a process of compulsory acquisition (through regulations) if necessary. Any compulsory acquisition of entitlements would include compensation to the commercial sector in accordance with the provisions of the Allocation Policy. Adjustments must be finalised within two years.
- where possible, market mechanisms will be used to give effect to adjustments in shares.

To accommodate an adjustment of shares which has been approved by the Minister as part of a full allocation assessment undertaken consistent with this management plan and Allocation Policy, changes to the shares specified in Table 3 may be made pursuant to section 46(1)(d) of the Act, without a review of the management plan being undertaken (See section 13 for further information).

Future Allocations

Future consideration may be given to determining allocations for those species yet to be allocated. The shares of the resource at the time the species is incorporated or requested to be incorporated into the allocation framework of the management plan, will be used in determining the initial allocation of shares between fishing sectors and guided by the Allocation Policy.

Furthermore, a need may arise to adjust the spatial scale of an allocation for a particular species. This may come about as a consequence of new and robust scientific information such as information regarding stock structure. In the event of a spatial allocation adjustment, the 'new' determination of shares needs to reflect the pre-existing shares, as well as taking into consideration the most recent information within the new spatial areas to which the allocation applies. A spatial allocation adjustment should not be undertaken in such a manner that broadly re-allocates the resource from one sector to another. Any such re-allocation should be done explicitly in line with the Allocation Policy and the processes outlined within this management plan.

The process to consider the establishment of new shares, or to adjust the spatial scale of existing shares is to be guided by the Allocation Policy, relevant advice from the MSFMAC¹² and stakeholder consultation. Subsequent to this process, the Minister may approve new shares or a spatial adjustment of existing shares. To accommodate these outcomes, changes may be made to Table 3 pursuant to section 46(1)(d) of the Act, without a review of the management plan being undertaken (See section 13 for further information).

7 Ecological impacts

The Act specifically requires that the following ecological impacts be identified and assessed as the first step in developing a management plan:

- current known impacts of the Fishery on the ecosystem
- potential impacts of the Fishery on the ecosystem
- ecological factors that could have an impact on the performance of the Fishery.

These impacts must be assessed to determine the most serious risks and strategies for addressing those risks must be developed.

The ecological impacts associated with the MSF were considered through an ecologically sustainable development (ESD) risk assessment conducted in 2024. The assessment was guided by the *National ESD Reporting Framework for Australian Fisheries* developed by Fletcher et al. (2002) and Fletcher (2014). The ecological, economic and social factors that affect the management of the MSF were prioritised by stakeholders using risk ratings from negligible to high. A report describing the outcomes of the 2024 ESD risk assessment (PIRSA 2024) is available on the PIRSA website.¹³

¹² Or alternative such lead advisory body as recognised by the SA Government during the term of this management plan.

¹³ https://pir.sa.gov.au/primary_industry/commercial_fishing/commercial_fisheries/marine_scalefish_fishery

8 Goals and objectives

The Objects of the Act are to protect, manage, use and develop the aquatic resources of the State in a manner that is consistent with ESD principles. The Act also requires that management plans must be consistent with the Act's objects. The Act identifies a number of biological, social and economic factors that must be balanced in pursuing ESD; however, the principle of avoiding over-exploitation of resources and ensuring that those resources are not endangered is specified as the primary consideration.

The four key goals for the MSF are set out below and are linked to the operational objectives of the Fishery. Performance Indicators (PIs) and trigger reference points for each objective are provided to inform assessment of the management plan in meeting the identified goals.

The key goals for the Fishery are implemented through operational objectives and management strategies contained within this management plan, these key goals are:

Goal 1 – Marine Scalefish Fishery resources are harvested within biologically sustainable limits.

- a) Maintain biomass of fish stocks at sustainable levels
- b) Monitor the biological performance of the fishery

Goal 2 – Marine Scalefish Fishery resources are utilised optimally and distributed equitably.

- a) Sector allocations provide for optimum utilisation and equitable distribution
- b) Optimise economic performance within biologically sustainable levels
- c) Fishery management is responsive to external impacts on the Fishery
- d) Improve the flow of economic and social benefit from the Fishery to the broader community

Goal 3 – Impacts on the ecosystem are minimised.

- a) Minimise Fishery impacts on bycatch species, (including TEPS), habitat and ecosystems

Goal 4 – Management of the Fishery is collaborative, cost effective and participatory.

- a) Management of the Fishery is cost-effective, and efficient
- b) Management arrangements are developed in a participatory and collaborative manner
- c) Effective Compliance program for the Fishery

Table 4: Objectives, strategies, performance indicators, and trigger reference points (trigger reference points reflect non-desirable performance)

Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
Goal 1 – Marine Scalefish Fishery resources are harvested within biologically sustainable limits					
1(a): Maintain biomass of fish stocks at sustainable levels	<p>1(a)(i) Management arrangements (input and output controls) applied for Management Tier 1-3 stocks consistent with the harvest strategy and supports sustainable use of the resource.</p> <p>1(a)(ii) Rebuilding strategies are implemented for stocks that are considered depleted.</p> <p>1(a)(iii) Management arrangements are considered and applied for stocks not assigned a management tier where necessary.</p>	<p>Stock status classification for MSF stocks</p> <p>Spawning biomass</p> <p>Fishing mortality / harvest fraction</p> <p>Total catch</p>	<p>Biomass or proxy of Management Tier 1 stocks, are not on average, at B_{TARG}</p> <p>Management Tier 2 and Tier 3 stocks are not as close to B_{TARG} (or proxy), as practicable.</p> <p>All target stocks are not above B_{LIM} (or proxy) at least 90% of the time.</p> <p>Catch of species not assigned a management tier are not monitored.</p>	<p>Biomass reference points are set as a proportion of unfished biomass (or proxy) in the harvest strategy.</p> <p>The default limit reference point is 20% of the unfished biomass (B_{LIM}).</p> <p>The default target reference point is 50% of the unfished biomass, or its proxy (B_{TARG}).</p> <p>The trigger reference point is 40% of the unfished biomass, or its proxy (B_{TRIG}).</p> <p>Fishing mortality is controlled in relation to the biomass reference points as described in the harvest strategy (section 9).</p>	<p>Fishery impacts on retained species</p>
1(b): Monitor the biological performance of the fishery	<p>1(b)(i) Collect necessary fishery information</p> <p>1(b)(ii) Assess the sustainability of fish stocks</p> <p>1(b)(iii) Strategic monitoring and research plan regularly maintained in consultation with stakeholders</p> <p>1(b)(iv) Consider opportunities for cost-effective fishery independent monitoring where appropriate, including catch validation processes</p>	<p>Commercial licence holders complete catch and effort returns</p> <p>Recreational catch and effort information is regularly collected and monitored approximately every five years</p> <p>Stock assessment and stock status reported annually in line with HSF</p> <p>Fishing industry \ participation in research projects as appropriate</p>	<p>Stock status for management Tier 1, 2 and 3 stocks is not reported annually.</p> <p>Recreational data are not available or monitored approximately every five years</p> <p>Total catch of retained species is not included in stock status reports</p> <p>Strategic research plan not developed/maintained</p>	<p>Collection of fishery data is essential for on-going monitoring of performance of the fishery as a whole and for monitoring individual fish stock status</p> <p>Monitoring methods that deliver cost-effective, robust, verifiable fishery information.</p>	<p>Fishery impacts on retained species</p> <p>Fishery impacts on non-retained species</p> <p>External factors impacting on the fishery</p> <p>General ecosystem impacts of fishing</p>

Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
Goal 2 – Marine Scalefish Fishery resources are utilised optimally and distributed equitably.					
2(a) Sector allocations provide for optimum utilisation and equitable distribution	<p>2(a)(i) Monitor and manage allocated shares consistent with the Allocations specified in this Management Plan and consistent with the Allocation Policy.</p> <p>2(a)(ii) Robust data collected from all sectors regularly to estimate catch and effort</p> <p>2(a)(iii) Manage total catch within described regional shares where appropriate</p>	<p>Total sector catches when available</p> <p>Sector catches as a proportion of total species catch</p>	<p>Allocation reviews are not undertaken when required under the Allocation Policy or the outcomes of the review are not implemented</p>	<p>The Allocation Policy guides monitoring, review and adjustment to allocation shares if required</p> <p>Application of the harvest strategy requires RBCs to be divided amongst sectors based on regional shares.</p>	<p>External factors affecting performance of the fishery</p> <p>Governance – Government / Industry</p>
2(b) Optimise economic performance within biologically sustainable levels	<p>2(b)(i) Economic performance is monitored</p> <p>2(b)(ii) Management framework allows for economic efficiency, flexibility and/or diversification where appropriate</p> <p>2(b)(iii) Changes to management arrangements consider economic implications</p>	<p>Economic indicator report is published annually</p> <p>Economic efficiency: net economic return, licence value and quota value</p> <p>Biomass of fish stocks</p>	<p>Declines in local/regional economic performance indicators over three years in five.</p> <p>Management of stocks not undertaken consistent with the HSF</p>	<p>The economic indicators report, published annually, provides economic information on the MSF including these economic efficiency and economic contribution indicators.</p> <p>Biomass targets in the HSF have been selected to also provide improved economic performance for commercial fishers</p>	<p>External factors impacting on the fishery</p> <p>Governance – Government / Industry</p>
2(c) Fishery management is responsive to external impacts on the Fishery	<p>2(c)(i) Monitor, report and influence other external processes impacting on ecologically sustainable development of the Fishery where possible and appropriate</p> <p>2(c)(ii) Ensure that environmental factors (e.g. water quality and climate change) are given appropriate consideration when</p>	<p>External impacts on the Fishery are monitored and considered where possible</p>	<p>External impacts on the Fishery are not considered and evaluated when developing new management strategies</p>	<p>External processes impacting the fishery include environmental impacts such as climate change, energy developments, mining - directly or indirectly. PIRSA and the Fishery may not have direct influence on these processes.</p>	<p>Governance – Government / Industry</p> <p>External impacts on the Fishery</p>

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Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
	new management strategies are being developed				
2(d) Improve the flow of economic and social benefit from the Fishery to the broader community	<p>2(d)(i) Positively influence fisheries related socioeconomic benefits for regional communities</p> <p>2(d)(ii) Fishery information of relevance to the community is maintained and easily accessible</p> <p>2(d)(iii) Industry maintain positive relationships with the regional communities in the area of the fishery</p> <p>2(d)(iv) PIRSA and Fishery stakeholders promote stewardship of the Fishery and communicate this to the community</p>	<p>Level of community support activities</p> <p>Contribution of Fishery to local/regional economic activity measured as: employment (direct and indirect), household income and gross regional product</p> <p>Employment (direct and indirect) in regions dependent on the Fishery Fishery webpage content and other communication channels</p>	<p>Declines in local/regional economic performance indicators over three years in five.</p> <p>Fishery content not maintained or promoted through webpages and other communication channels</p>	<p>The economic indicators report provides detailed regional information on the economic activity generated by fishers' expenditures including data on employment, household income, and gross regional product</p> <p>Community support activities include non-paid work such as attending meetings, conservation activities and community service. This is reported in the economic indicators report every 3 years when other social indicators are also reported</p> <p>The value of the MSF and what it contributes to the community is demonstrated to the wider community</p>	<p>Governance – Government / Industry</p> <p>Community</p>

Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
Goal 3 – Minimise impacts on the ecosystem					
3(a) Minimise Fishery impacts on bycatch species, (including TEPS), habitat and ecosystems	<p>3(a)(i) Regulate gear used in the MSF to minimise bycatch</p> <p>3(a)(ii) Monitor discarded bycatch through catch and effort returns, targeted research and on-going monitoring</p> <p>3(a)(iii) Monitor fishery interactions with TEPS</p>	<p>Estimates of bycatch associated with key gear types and operations</p> <p>TEPS interactions by species reported annually</p> <p>Number of reported breaches of relevant regulations</p>	<p>Significant increase in non-retained bycatch over three consecutive years</p> <p>ESD risk rating for byproduct, bycatch, habitat and ecosystems are not within acceptable/ 'Moderate' levels</p>	<p>Bycatch mortality can affect population dynamics of the species and/or result in ecosystem change</p> <p>Recording of TEPS interactions is facilitated through Wildlife Interaction forms</p>	<p>Fishery impacts on retained species</p> <p>Fishery impacts on non-retained species</p> <p>General ecosystem impacts of fishing.</p>

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Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
	<p>3(a)(iv) Changes to gear regulations consider impacts on fisheries habitat and ecosystems</p> <p>3(a)(v) Codes of practice developed by industry addressing ecosystem risks or promote environmentally friendly fishing practices if appropriate</p> <p>3(a)(vi) Conserve key habitats utilised by Fishery resources through closed areas</p> <p>3(a)(vii) Monitor large mesh net usage and Australian Sea Lion mitigation measures where necessary</p>	<p>Estimates of non-retained species catch</p> <p>Risk ratings in ecological risk assessment reports</p> <p>Large mesh net effort usage</p>	<p>Trends in TEPS interactions significantly increase over a five year period</p> <p>ESD risk rating for TEPS increases</p> <p>Large mesh net effort triggers</p>	<p>Effort trigger limits (number of days) are in place for the use of large mesh nets in areas considered high risk and low risk to Australian Sea Lions.</p>	

Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
Goal 4 – Management of the Fishery is collaborative, cost-effective and participatory					
4(a): Management of the Fishery is cost-effective, and efficient	<p>4(a)(i) Management arrangements effectively achieve management objectives and optimise cost effectiveness</p> <p>4(a)(ii) Determine annual real cost of management, research and compliance for the Fishery on an annual basis and recovered through licence fees consistent with Government's cost recovery policy</p> <p>4(a)(iii) Undertake regular compliance risk assessment in consultation with industry</p>	<p>Cost recovery process undertaken with relevant representative co-management bodies</p> <p>Management cost indicators for the fishery:</p> <ul style="list-style-type: none"> • Aggregate Licence fees • Licence fees / GVP • Licence fee / Catch • Licence fees / licence holder 	<p>Annual cost recovery process not undertaken and delivered, and implementation statements not published on the PIRSA website</p> <p>Management cost indicators are not monitored and evaluated when economic reports are published</p>	<p>Management arrangements are efficient and effective whilst meeting the expectations of the Cost Recovery Policy</p> <p>The management cost indicators are provided in the economic indicators report which is delivered annually.</p>	<p>External factors affecting the performance of the Fishery</p> <p>Governance – Government / Industry</p>

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Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
	<p>4(a)iv) The TMF is applied to guide the management and science needs of the Fishery</p> <p>4(a)v) The harvest strategy adopts tiers and applies a pragmatic approach to assessments and decision rules commensurate with the value of the Fishery.</p>	<p>Delivery of half-yearly and annual compliance report.</p> <p>Management applied to different stocks reflects their assigned Management Tier</p>	<p>Compliance report not developed and distributed to industry bodies</p> <p>Compliance risk assessment not done in conjunction with Industry bodies</p>		
4(b) Management arrangements are developed in a participatory and collaborative manner	<p>4(b)(i) Industry bodies and relevant stakeholders are provided the opportunity to, and participate within the co-management framework of the Fishery and PIRSA Co-management Policy</p> <p>4(b)(ii) Fisheries information is publicly available in a timely manner</p> <p>4(b)(iii) Government administers the recognised advisory body for the Fishery¹⁴</p> <p>4(b)(iv) Government undertakes effective stakeholder consultation on proposed management changes to the Fishery</p>	<p>Fishers and other relevant stakeholders', including recreational, commercial, conservation and Aboriginal traditional fishing sectors, participation in Fishery advisory groups, workshops and working groups</p> <p>Communication of management decisions to stakeholders and community</p> <p>Membership on the MSFMAC or other relevant advisory body are communicated and maintained</p> <p>Fishers perceptions as reported in socio-economic survey</p>	<p>Stakeholders do not participate in Fishery advisory groups, workshops and working groups</p> <p>Fishers and other relevant stakeholders are not provided the opportunity to participate in the co-management of the Fishery</p> <p>Information related to management of the fishery including management arrangements, membership on Fishery advisory groups and Notice to Fishers are not available on the PIRSA website in a timely manner</p> <p>Co-management agreements are not fulfilled.</p>	Management arrangements developed in a participatory manner with input from relevant stakeholders and communicated adequately are likely to be more effective in meeting their objectives	Governance – Government / Industry
4(c) Effective Compliance	4c(i) Undertake regular compliance risk assessment in	Compliance risk assessment reviewed annually or in accordance with the CRIS	Compliance risk assessment not undertaken regularly or in accordance with the CRIS	An effective compliance program is necessary to ensure management objectives for the fishery are achieved. Fostering a culture of	Governance – Government / Industry

¹⁴ MSFMAC or other recognised body

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Objective	Strategies	Performance Indicators	Trigger Reference Point	Description	ESD Risk
program for the Fishery	<p>consultation with industry and address those risks</p> <p>4(c)(ii) Regulatory rules are easy to understand and comply with and where appropriate, consistent with other fisheries, and informed by the compliance risk assessment</p> <p>4(c)(iii) Foster positive relationships between licence holders and government</p>	Level of compliance with regulatory rules	Decline in compliance below agreed performance levels	voluntary compliance is recognised as a key component of this.	

9 Harvest strategy

9.1 Overview

The MSF Harvest Strategy Framework (HSF) describes the performance indicators for measuring the performance of the MSF stocks, and the use of these indicators and their associated reference points in management decisions through the application of decision rules, consistent with the objectives of this management plan. The aim of the framework is for robust, transparent, and defensible mechanisms to maintain species within the MSF at sustainable levels and the fishery is managed consistent with the Act and the *South Australian Harvest Strategy Policy* (PIRSA 2015a).

The HSF is to consider all forms of fishing mortality where data are available, including catches from the commercial sectors (MSF, RLF, Prawn, and LCF), as well as the recreational, charter boat and Aboriginal traditional sectors.¹⁵

A multi-category approach to deal with different levels of information and uncertainty in assessments of stocks is adopted. The different assessment categories reflect increasing uncertainty with stock status and ways to reduce the risks associated with this uncertainty.

Assessment Category 1 represents stocks with the most information (i.e., data-rich) and integrated model-based stock assessments (i.e., Snapper, King George Whiting and Southern Garfish). Assessment Category 6 represents stocks with the least information (i.e., data-poor), where only catch data and/or raw catch rates are available. Decision rules were selected for each category to inform the appropriate management response.

The HSF is accompanied by an Implementation Plan (IP) which outlines the specific details about how the harvest strategies are to be applied, including assessment approaches and decision rules for individual stocks. The IP is separate to the management plan and provides some flexibility for refinements to be made at the individual stock level as additional data are obtained and stock assessments improved over time.

The stocks covered by this framework are the assessed Management Tier 1, 2 and 3 stocks as outlined in the IP and based on the TMF developed by Smart et al. (2022a). Under the framework, Management Tier 1 stocks represent the top tier of management with TACCs which can be unitised with ITQs, and require quantitative analyses. Management Tier 3 is the lowest of the framework and includes management of stocks via input controls and assessments using fishery dependent performance indicators.

9.2 Objectives of the harvest strategy framework

The objectives of the MSF HSF are:

1. To ensure that target species are biologically sustainable by:

- 1.1. maintaining Management Tier 1 stocks, on average, at the biomass target reference point (or proxy), and maintaining Management Tier 2 and Tier 3 stocks as close to the biomass target reference point (or proxy) as practicable.

¹⁵ It is acknowledged that several MSF stocks are shared with the recreational fishing and other sectors, and that relevant objectives of this HSF should be consistent with the respective management plans for other sectors with access to marine scalefish species.

- 1.2. maintaining all stocks above the biomass limit reference point (or proxy) at least 90% of the time.
 - 1.3. recovering depleted stocks to above the limit reference point within specified timeframes.
- 2. To support economic, and social benefits to the community by:**
- 2.1. setting the target biomass reference point (or proxy) for Management Tier 1 stocks at a level that supports improved economic returns for commercial fisheries.
 - 2.2. recovering and maintaining stocks at levels that support healthy recreational, charter, and Aboriginal traditional fishing sectors.
- 3. To contribute to cost-effective management by:**
- 3.1. adopting a tiered approach to harvest strategy categories based on stock assessment type.
 - 3.2. applying pragmatic assessment approaches and decision rules commensurate with the value of the fishery.

In achieving these objectives, the HSF supports the goals of this management plan, in particular Goal 1 - ***MSF resources are harvested within biologically sustainable limits***. The objectives are consistent with ESD objects of the Act and adopt a precautionary approach to managing risk. Objective 1 explicitly seeks to ensure stocks are biologically sustainable which is recognised as an important component of achieving wider ecological sustainability of the fisheries accessing marine scalefish species.

9.3 Reference points

The over-arching reference points are:

- **Target reference point** – biomass target reference point is B_{TARG} with 50% of the unfished biomass, or its proxy, denoted as B_{50} . The appropriate/corresponding fishing mortality reference point is F_{50} .
- **Trigger reference point (B_{TRIG})** – 40% of the unfished biomass, or its proxy (B_{40}).
- **Limit reference point** – biomass limit reference point is B_{LIM} with 20% of the unfished biomass, or its proxy, as the default value denoted as B_{20} . The appropriate/corresponding fishing mortality¹⁶ reference point is F_{LIM} .

The above default for B_{LIM} is commonly used and the default for B_{TARG} is within the range of typically used target reference points and have a sound basis (see for example Smith and Smart 2022, Department of Agriculture and Water Resources 2018).

The reference points above are the defaults, unless alternative reference points are identified that are scientifically defensible to be more appropriate, and are specified within the IP.

For many stocks in the MSF, where data are limited, it is not possible to estimate biomass and/or fishing mortality. For these stocks, empirical indicators are used together with proxies for the reference points as outlined in the IP.

¹⁶ Reference points relating to exploitation rate are provided in terms of the instantaneous fishing mortality rate (F), as opposed to estimates of harvest fraction. This does not preclude harvest fractions from being calculated and communicated for specific species/stocks.

The HSF applies to the assessed Management Tier 1, 2, and 3 stocks, however in multi-species fisheries, it is challenging to maintain all species at a target reference point due to technological and ecological interactions. Consequently, whilst Management Tier 1 stocks are to be maintained, on average, at the biomass target (B_{TARG}), Management Tier 2 and Management Tier 3 stocks are to be maintained as close as practicable to the biomass target reference point (or proxy). All Management Tier 1, Tier 2 and Tier 3 stocks are to be maintained above their biomass limit reference point (B_{LIM}) at least 90% of the time.

9.4 Monitoring

Data used to assess the status of fish stocks in the MSF include:

Commercial fisheries statistics – fishers in South Australia are required to complete detailed logbooks recording catch and effort by gear and area, as well as Catch Disposal Records (CDRs) for the ITQ managed Management Tier 1 species.

Biological sampling – a sub-set of species are sampled at Adelaide and regional markets. Fish are measured, weighed, sexed and the stage of reproduction recorded. Otoliths are removed for ageing using standard and validated methods. Sample numbers are sometimes augmented from research cruises or industry surveys.

Fishery independent data – Reliable and cost-efficient methods may be used to provide a fishery independent estimate of spawning biomass.

Recreational fishing surveys – to obtain catch and effort statistics for the recreational fishing sector, state-wide recreational fishing surveys (telephone/diary surveys) have been undertaken at approximately five year intervals since 2000/01. The latest survey was undertaken in 2021/22 (Beckman et al. 2022). In addition, specific research projects are undertaken to address biological and ecological uncertainties.

Data used to monitor social and economic objectives include:

Annual economic and social indicator reports – each year reports are published for South Australian commercial fisheries, including the MSF, outlining performance against economic and social indicators.

9.5 Assessment categories

The HSF comprises six assessment categories defined below. Assessment Category 1 can be described as data-rich, Categories 2-4 data-moderate, and Categories 5 and 6 data-poor (Table 4).

Assessment Category 1 represents stocks with the most information and integrated model-based stock assessments. Assessment Category 6 represents stocks with the least information, where only catch data and/or raw catch rates are available. Decision rules are specified for each assessment category to inform the appropriate management response.

Stocks are allocated to a particular assessment category based on data availability and quality and the type of assessment that is applicable to the stock. Not all categories are currently being used but have been included to accommodate species moving between Management Tiers and for a greater range of assessment methods to be used, should additional data become available.

Table 5. Summarising the assessment categories and assessment type

Assessment category	Assessment type
1	Robust integrated stock assessment model with fishery independent/dependent biomass indices
2	Integrated stock assessment model with fishery independent/dependent biomass indices – less certain or preliminary assessment
3	Biomass dynamic, surplus production models Stock reduction analysis
4	Empirical estimation of fishing mortality (size/age data) Spawner biomass per recruit
5	Trends in standardised CPUE
6	Weight of evidence e.g., catch only methods, raw catch rates, species composition, risk assessments

9.6 Decision rules

There are two over-arching types of decision rules depending on the management tier of the stock and the need to set catch limits for Management Tier 1 stocks versus input controls used for other stocks:

- **Management Tier 1 stocks** – An RBC is estimated. The RBC is the total catch that can be taken from the stock, as determined by the harvest strategy, and is shared between sectors (commercial, recreational, charter boat and Aboriginal traditional) based on the regional distribution of state-wide allocations. For those species with ITQ management arrangements implemented for a fishing region, a TACC will be set for relevant commercial sector/s annually and a corresponding quota unit value determined. For species in zones for which ITQs are not in place (e.g., West Coast King George Whiting) a commercial catch cap may be implemented.
- **Management Tier 2 and Tier 3 stocks** – If the assessment of a fish stock indicates the biomass (or proxy) is declining and/or current fishing mortality is estimated to be greater than the fishing mortality to give F_{50} (as specified in the relevant assessment category), the decision rule would be triggered. If the decision rule is triggered, additional analyses and a species/sector specific workshop are required from which management options are considered and monitoring and research needs identified and reported to the MSFMAC.

Decision rules for corresponding assessment categories

A “hockey stick decision rule” (Figure 6) applies to **Assessment Category 1** and **Assessment Category 2**¹⁷ stocks whereby the fishing mortality is reduced proportionate to the size of the biomass below the biomass trigger (B_{TRIG}). The fishing mortality is:

- stable when the biomass (B) is at or above the trigger reference point (B_{TRIG}),

¹⁷ In some limited situations (e.g., where a stock assessment applies to only part of a stock), and where scientific evidence supports an alternative approach, a hockey stick decision rule may not be applied for this category.

- reduced when B falls below the trigger reference point (B_{TRIG}) but is at or above B_{LIM} , and
- zero when B falls below the limit reference point (B_{LIM})¹⁸

For other stocks (**Assessment Categories 3-6**), alternative empirical approaches are applied to reduce fishing mortality proportionate to the size of the biomass. Further details about the assessment approaches and decision rules that apply to the different assessment categories and individual stocks, including calculation of RBCs, are set out in the IP.

The performance indicators (i.e., fishing mortality, biomass or proxies) for each stock may need to consider commercial-only data, if data on recreational catch and effort are not available (or at an appropriate spatial scale). However, catches from other sectors should be included where possible and decision rules should consider each sector.

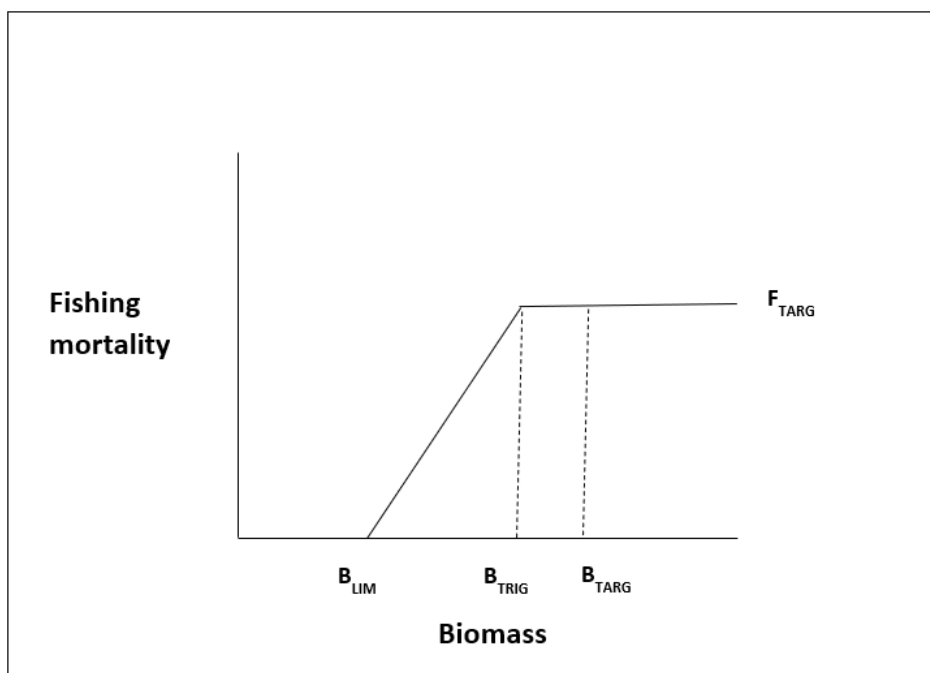


Figure 6: The “hockey stick” decision rule with associated reference points.

9.7 Determining the total catch from the RBC

The HSF will be applied to determine an RBC for a stock/region for Management Tier 1 stocks. The RBC is considered to be the recommended total catch, less the buffer (see Section 9.8), for a stock or region including take of all extractive sectors.

A Total Allowable Commercial Catch (TACC) (or catch cap) is the adjusted RBC less the regional distribution (“regional share”) of state-wide allocations to the recreational, charter boat and Aboriginal traditional fisheries. Regional shares may be outlined in the IP. If the RBC changes in response to application of the harvest strategy, the TACC is to be adjusted accordingly. Management arrangements for each fishing sector on a case-by-case basis, would aim to maintain all sectors to their regional share of the RBC.

Note - the term ‘stock[s]’ is used throughout the HSF. In most cases the biological stock aligns with the management unit (e.g., Spencer Gulf Fishing Zone). However, in some cases, the biological stock straddles multiple management units. Whilst stock assessments are undertaken and reference points

¹⁸ Pending applicable bycatch provisions, exceptional circumstances or transitional arrangements.

applied at the most appropriate level, the HSF is applied at the management unit level, and where, necessary RBCs are distributed from the biological stock level to the management zone.

9.8 Buffers

Consistent with the PIRSA Harvest Strategy Policy, which sets out a more precautionary approach to assessments with less certain information, buffers are applied to the RBC to account for this increasing uncertainty at the lower categories. This is an application of the catch-cost-risk framework described in the Guidelines for implementing the *South Australian Harvest Strategy Policy* (PIRSA 2015b).

The following buffers are default unless scientific evidence supports a more suitable value than the one specified, as documented in the IP:

- Assessment Category 1 – No buffer
- Data moderate categories (Assessment Categories 2-4) a 10% buffer is applied
- Data poor categories (Assessment Categories 5-6) a 20% buffer is applied.

9.9 Multi-year RBCs for Management Tier 1 stocks

The stock assessment program needs to be commensurate with the scale of the fishery. Consequently, it may not be possible or feasible to undertake stock assessments for Management Tier 1 stocks each year. In such circumstances the assessment could be used to recommend a multi-year RBC (i.e., the RBC each year for a maximum of three years) providing:

- the current biomass is greater than B_{LIM} or proxy unless the fishery is closed or an approved rebuilding plan is in place and the RBC is sufficiently conservative to allow rebuilding.
- to account for uncertainty, a multi-year RBC may be stable or decreasing but not increasing.
- the projections (if available) demonstrate the multi-year RBC does not increase any risk to the stock.
- in some circumstances, depending on the stock and its status, an additional buffer may be required if an assessment is not undertaken for several years.

During the years when a formal stock assessment is not undertaken, basic fishery indicators such as catch per unit of effort (CPUE) and where possible size/age composition must be examined. If there are very significant differences in the performance of the fishery indicators compared with the previous stock assessment, the arrangement must be re-evaluated. For example, if an assessment is based on increasing CPUE, but CPUE declines between assessments, this would act as a trigger for examination of the arrangement. The guidance on what is considered a significant departure will be species/stock specific and described in the IP.

9.10 Departures from the decision rule

If there is low risk to the stock, in some cases, it may be appropriate to set a total catch and resulting TACC that is different from that given by the decision rule. The following meta-rules would apply:

- By-catch provisions when the RBC is zero (i.e., stock is in a depleted state) – this would account for incidental catches of a stock due to the multi-species nature of the MSF. This

could be considered when the level of targeting can be reduced and the ability of fishers to avoid the stock is clear. Any incidental catch must not stop the stock rebuilding.

- A minimum/maximum change rule may be applied to avoid very small or very large changes to the catch limits from year to year, as long as there are no trends in the RBCs that could lead to an increased risk to the stock.
- In some cases, it may be recommended that the catch limit be at a lower level than that derived from the RBC, due to, for example, market constraints, consideration of a precautionary multi-year TACC, or availability/access of the fishery to the stock.
- Step up/step down total catch – this may be applied such that a total catch is increased or reduced over several years rather than in one year as determined by the RBC. The aim would be to minimise, for example, impacts on the fishery due to large episodic recruitment and provide the best means of managing this recruitment. However, the intent of the harvest strategy policy still needs to be met and risks to stock sustainability by adopting such an approach will be assessed on a case-by-case basis.

9.11 Rebuilding depleted stocks

Where a fish stock is classified as depleted (or 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.

The specified time frames are typically between T_{MIN} and $2xT_{MIN}$, where T_{MIN} is defined as the time for recovery to the limit reference point in the absence of fishing. Where it is not possible to estimate this, the mean generation time plus 10 years or 3x the mean generation time can be used.

Depending on the species and level of depletion, a rebuilding plan or strategy will be required. An additional buffer can also be applied to the RBC to increase confidence that rebuilding occurs.

By-catch provisions may be considered in a rebuilding plan for a particular stock on a case-by-case basis. These plans should consider if bycatch can be avoided, and levels of post-release mortality. These plans should consider management across all sectors that take a depleted stock.

9.12 Exceptional circumstances

While harvest strategies need to be unambiguous, they also need to be adaptive. One way to build in flexibility is to identify the 'exceptional circumstances' that may trigger departure from or even suspension of a harvest strategy. However, having flexibility to vary from the harvest strategy under certain clearly specified circumstances should not be seen as broad flexibility in interpreting the results of assessments and applying the harvest decision rules, which would undermine the harvest strategy. Section 9.10 provides some flexibility given considerations of risks to the stock.

Where credible information becomes available indicating that an RBC or resultant catch limit or other management arrangement derived from this HSF are not consistent with the objectives of the HSF, the MSFMAC may consider recommending a departure from the harvest strategy. Application of these exceptional circumstances need to be evidence-based. Examples that may warrant the use of exceptional circumstances provisions are:

- An assessment is rejected through technical and/or peer review, or an assessment has not been completed because of unforeseen reasons.

- Where there has been a major change to the fishery that, for example, indicates that mean catch and effort statistics no longer provide a reliable index of relative abundance.
- Where there has been a demonstrable change in the ecological environment of the fishery or stocks that is unrelated to impacts of fishing (e.g., a climate induced regime shift).

9.13 Transitional arrangements

Stocks below the biomass limit (B_{LIM}) – Apart from those stocks for which recovery management measures are already in place, stocks that are assessed to be below B_{LIM} when the HSF is implemented, will be subject to a 2-year period of transitional arrangements. These will be identified in the proposed IP. During this transitional period, the take of these stocks will not be reduced immediately to zero; however, management actions shall be directed to rapid rebuilding of these stocks. These transitional arrangements will apply for no more than two years. The HSF will apply to all stocks in full following this transitional period, which means that fishing of species below B_{LIM} will then cease.

Stocks at or above B_{LIM} and below the biomass trigger (B_{TRIG}) – To support the transition to this HSF and accompanying new stock assessment methods, for stocks that are assessed to be at or above B_{LIM} yet below the biomass trigger (B_{TRIG}), a step-down approach may be applied to the fishing mortality (F), and resultant RBCs and TACCs derived from this HSF, for a period of three years from the commencement of this HSF.

9.14 Application and stakeholder input

The HSF will be applied by PIRSA and the MSFMAC¹⁹ in developing recommendations for RBCs, catch limits and other relevant management arrangements. As the MSFMAC is the advisory body for the shared-access MSF, stakeholder input into the application of the HSF will be through the MSFMAC. The MSFMAC includes positions from key sectors that have an interest in the MSF, and relevant peak bodies will also be invited to input into MSFMAC business and meetings that will apply the HSF.

9.15 Decision making process

Process for setting annual catch limits for Management Tier 1 stocks

Step 1 – SARDI undertakes stock assessment (or evaluation of latest fishing statistics where no new stock assessment undertaken) including assessment of performance indicators.

Step 2 – SARDI applies the HSF and IP to prepare draft stock summary reports, including draft RBCs for Management Tier 1 stocks.

Step 3 – PIRSA provides the stock summaries to the peak representative bodies for the MSF and the Science Subcommittee²⁰ of the MSFMAC.

Step 4 – SARDI/PIRSA provide industry and other stakeholders with an opportunity to receive a presentation of the stock assessment outcomes and stock summary reports.

Step 5 – The Science Subcommittee meets to discuss and agree RBC recommendations to the MSFMAC.

¹⁹ Or any such replacement advisory body for the shared-access MSF

²⁰ Or any such replacement subcommittee of the MSFMAC

Step 6 – The MSFMAC meets no later than May each year to consider the Science Subcommittee recommendations, stakeholder feedback and other information related to the application of the HSF. The MSFMAC agrees recommendations on RBCs and subsequent catch limits for the Tier 1 stocks.

Step 7 – The MSFMAC recommendations are provided to the Minister for Primary Industries and Regional Development. Catch limits and quota unit values are set prior to 30 June each year and MSF licence holders and peak representative bodies are then notified of the outcomes.

The Minister or their delegate has responsibility for determining the value of a quota unit on an annual basis under relevant fisheries regulations.

Process for developing other management arrangements for Management Tier 2 and 3 stocks

Step 1 – SARDI undertakes annual stock assessment (or evaluation of latest fishing statistics where no new stock assessment undertaken) including assessment of performance indicators.

Step 2 – Where a decision rule has been triggered, i.e. if the assessment of a fish stock indicates the biomass (or proxy) is declining and/or current fishing mortality is estimated to be greater than the fishing mortality to give F_{50} , PIRSA will arrange a species/sector specific workshop[s] as soon as is practicable to discuss the results and potential management options and monitoring and research needs. The outcomes from the workshop[s] will be reported to the MSFMAC for either noting or discussion.

Step 3 – Depending on the management options, PIRSA may arrange further workshops or stakeholder consultation or seek further advice from the MSFMAC.

Step 4 – Any proposed changes to management arrangements will be provided to the Minister or the Executive Director, Fisheries and Aquaculture, for approval, as appropriate.

9.16 Implementation Plan

The HSF is accompanied by an IP which is a separate document maintained outside of this management plan. The IP is intended to provide finer-scale complementary guidance for the application of the HSF. The IP may be periodically reviewed and updated as relevant new information becomes available. Amendments to the IP will be considered by the MSFMAC, with recommendations provided to the Minister or the Executive Director, Fisheries and Aquaculture, for approval, as appropriate.

The IP and any amendments to the IP should not deviate from the HSF in this management plan.

9.17 Evaluation and review

While the HSF and assessment categories have not been tested explicitly for the MSF, all categories and assessment types have been shown to be robust in other fisheries and jurisdictions (Smith and Smart 2022). The HSF, including buffers, shall be formally tested and evaluated to assess performance against the objectives of the harvest strategy and management plan by using Management Strategy Evaluation (MSE) or other methods where applicable.

Section 13 of this management plan outlines the provisions for reviewing a management plan, including the harvest strategy.

10 Compliance and monitoring

PIRSA Fisheries and Aquaculture runs a compliance program that has dual objectives to:

- maximise voluntary compliance with fisheries rules.
- create effective deterrence to breaching fisheries rules.

These objectives are consistent with the 'National Fisheries Compliance Policy'.

PIRSA coordinates compliance activities to build awareness and behavioral outcomes that have long-term beneficial impact in the Fishery. The objectives of the compliance activities are to minimise the risks to aquatic resource sustainability, resource allocation, access rights, and ultimately commercial economic viability.

The coordination of the compliance outputs is guided by an industry specific compliance plan which is developed and updated in consultation with the MSF industry. These outputs are aimed at educating fishers, deterring opportunistic and financially motivated offences, enforcing the rules and regulations, and reducing overall compliance risks to resource sustainability.

Voluntary compliance is maximised through ensuring that fishers are aware of the rules that apply to their fishing activities, understand the rules and the purpose of those rules, and operate in a culture of compliance.

Effective deterrence is created through the presence of Fisheries Officers and awareness of compliance operations, as well as through detection and prosecution of illegal activity. Compliance activities are undertaken to monitor, deter and reduce illegal activity (e.g. poaching) to minimise the risks to aquatic resource sustainability.

11 Tactical and strategic research

The large reforms to the MSF in 2021 were implemented with the goals of increasing the long-term sustainability of fish stocks and the profitability of fishers that depend on them. Whilst the reforms implemented were substantial, there remain ongoing and upcoming changes and considerations for the Fishery to fully realise these goals, and the goals and objectives set out in this management plan. The following reflect the strategic priorities for the Fishery to be progressed:

- Implementation of actions derived from the *Future Directions for the South Australian Marine Scalefish Fishery: An Industry Blueprint 2025-2030*. The Blueprint is an industry-led initiative which has been prepared to guide the future direction of the MSF and focusses on high-level strategic issues to foster and progress the strategic development of the Fishery.
- The removal of "red tape" to improve operational flexibilities for MSF licence holders was an important part of the 2021 reform of the fishery which has become an ongoing program of work, noting the complex regulatory framework and shared-access nature of the fishery. There are several industry red tape reduction proposals to be considered by PIRSA and, where appropriate, implemented. Whilst some proposals may only affect a small number of licences, other proposals may affect all licences in the Fishery as well as other sectors that access marine scalefish species.
- Completion of the Snapper Science Program (FRDC 2023-085, FRDC 2023-091, FRDC 2024-087).
- Development and implementation of a Snapper Rebuilding Plan for depleted Snapper stocks.

- Completion and application of the Southern Calamari stock assessment project (FRDC 2021-118)
- Improvement of stock assessments:
 - Transition to the new HSF and ongoing stock assessment model refinement for Management Tier 1 stocks.
 - Improvement of stock assessments to progress Assessment Category 6 stocks to Assessment Category 5 or better.
- Improving estimates of recreational catch of marine scalefish species for stock assessment and management purposes, including application of the HSF. Including collection of catch data from non-residents of South Australia.
- Improvement of by-catch information from the MSF to better quantify by-catch of the fishery.
- Consideration of development of further socio-economic indicators for a further iteration of the management plan.
- Consideration of climate change on the effectiveness of management arrangements including the harvest strategy framework.
- Review and consideration of the effectiveness and relevance of the licence Amalgamation Scheme.
- Consideration of the 'owner operator' provisions of the fishery.
- Formal evaluation of the harvest strategy.
- Consideration of data collection and other opportunities to support and encourage the traditional fishing sector in relation to species of the MSF.

12 Resources required to implement the plan

South Australia's fisheries resources are managed in accordance with the Act which has been established to protect, manage and develop the aquatic resources of the State in a manner that is consistent with ecologically sustainable development to the benefit of the community, and management should occur in an efficient and cost-effective manner with targets set for the recovery of management costs.

The recovery of costs associated with the management of the commercial fisheries as required by the Act has been intended to ensure specific industry sectors fund the government products and services required as a direct result of their commercial activities derived from access to the State's community-owned aquatic resources. The cost for the provision of these services is recovered by PIRSA Fisheries and Aquaculture through the administration of annual fees applied to regulated licences, or fee for service work applied on a per-transaction basis if required.

The fundamental principle applied to cost recovery of management costs is that the beneficiaries of the services (commercial licence holders, Government on behalf of recreational fishers and the community) are required to bear the cost of delivering the services required to manage their activities.

In determining the level of cost recovered from the commercial sector, PIRSA is guided by relevant cost recovery policies and reviews.

Management costs of the commercial MSF are recovered through licence fees which are determined on an annual basis. The total costs of management include biological and economic research, compliance, policy and management, licensing, legislation and co-management services. In addition, a levy paid to the FRDC based on the GVP of the fishery is also included.

13 Review of plan

A review of this management plan may be conducted at any time by the Minister. A review of this management plan must be conducted as soon as practicable after the five year anniversary of its commencement as set out in Section 49 of the Act. Section 49 of the Act prescribes the process of reviewing a management plan. Amendments to this management plan may also be considered under section 46 of the Act.

Consistent with the Terms of Reference, the MSFMAC, as part of their processes, will monitor the performance of the management plan regularly. Where the MSFMAC identifies one or more of the objectives of the plan are not being met, a review of the plan may be recommended by the MSFMAC. This process will be undertaken prior to the fifth anniversary of the management plan.

Change of a specified kind

Section 46(1)(d) of the Act provides for the Minister to make a change of a specified kind to a management plan by notice in the Government Gazette, without a review of the management plan being undertaken. For the purpose of this provision, the following changes may be made to this management plan:

- To accommodate an adjustment of allocated shares which has been approved by the Minister as part of a full allocation assessment undertaken consistent with this management plan (in particular Section 6) and the Allocation Policy, changes to the shares specified in Table 3 (Section 6) may be made.
- To accommodate the establishment of new allocated shares, or spatial adjustment of existing shares which have been approved by the Minister as part of the process consistent with this management plan (in particular Section 6) and the Allocation Policy, new or adjusted shares specified in Table 3 (Section 6) may be made.

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15 Acronyms and abbreviations

B ₂₀	20% of unfished biomass
B ₄₀	40% of unfished biomass
B ₅₀	50% of unfished biomass
B _{LIM}	Biomass limit reference point
B _{TARG}	Biomass target reference point
B _{TRIG}	Biomass trigger reference point
BCF	Blue Crab Fishery
CBF	Charter Boat Fishery
CPUE	Catch Per Unit Effort
DEPM	Daily Egg Production Method
DEW	Department of Environment and Water
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
F	Fishing Mortality
F ₂₀	Fishing mortality associated with B ₂₀
F ₅₀	Fishing mortality associated with B ₅₀
F _{CUR}	Estimated current fishing mortality
F _{LIM}	Fishing mortality associated with B _{LIM}
FRDC	Fisheries Research and Development Corporation
F _{TARG}	Fishing mortality associated with B _{TARG}
HSF	Harvest Strategy Framework
ILUA	Indigenous Land Use Agreement
ITQ	Individual Transferable Quota
LCF	Lakes and Coorong Fishery
M	Natural mortality
MFA	Marine Fishers Association
MSE	Management Strategy Evaluation
MSF	MSF
MSFMAC	MSF Management Advisory Committee
MSY	Maximum Sustainable Yield
PIRSA	Department of Primary Industries and Regions
RBC	Recommended Biological Catch
RLF	Rock Lobster Fisheries
SAPFA	South Australian Professional Fishers Association
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TARC	Total Allowable Recreational Catch
TEPS	Threatened, Endangered and Protected Species
The Act	The <i>Fisheries Management Act 2007</i>
TMF	Tiered Management Framework
TRP	Target Reference Point

Appendices

Appendix A – Aquatic resources prescribed for the MSF

Permitted species for the MSF as provided in the *Fisheries Management (MSF) Regulations 2017*

Schedule 1—Aquatic resources prescribed for the MSF²¹

<p>Part 1—Aquatic resources prescribed for the purposes of regulation 4(2)(a)</p> <p>Anguilliformes Conger Eel (Family Congridae)</p> <p>Annelids Beachworm (Class Polychaeta) Bloodworm (Class Polychaeta) Tubeworm (Class Polychaeta)</p> <p>Crustaceans Blue Crab (Portunus armatus) Rock Crab (Nectocarcinus integrifons) Sand Crab (Ovalipes spp) Spider Crab (Family Majidae) Velvet Crab (Nectocarcinus tuberculatus)</p> <p>Molluscs Southern Calamari (Sepioteuthis australis) Cockle Cuttlefish (Sepia spp) Mussel (Mytilus spp) Octopus (Octopus spp) Oyster (Family Ostreidae) Pipi (Donax spp) Scallop (Family Pectinidae) Gould's Squid (Notodarus gouldi)</p> <p>Scalefish Barracouta (Thyrsites atun) Black Bream (Acanthopagrus butcheri) Cod of all marine species (Family Moridae) Dory (Family Zeidae) Flathead (Family Platycephalidae) Flounder (Family Bothidae or Pleuronectidae) Southern Garfish (Hyporhamphus melanochir) Bluespotted Goatfish (Upeneichthys vlamingii) Australian Herring (Arripis georgianus) Yellowtail Kingfish (Seriola lalandi) Knifejaw (Oplegnathus woodwardi) Leatherjacket (Family Monacanthidae) Pink Ling (Genypterus blacodes) Blue Mackerel (Scomber australasicus)</p>	<p>Common Jack Mackerel (Trachurus declivis) Morwong (Family Cheilodactylidae) Mullet of all species (Family Mugilidae) Mulloway (Argyrosomus japonicus) Redfish (Centroberyx affinis) Bight Redfish (Centroberyx gerrardi) West Australian Salmon (Arripis truttaceus) Sergeant Baker (Latropiscis purpurissatus) Snapper (Chrysophrys auratus) Snook (Sphyraena novaehollandiae) Southern Sole (Aseraggodes haackeanus) Sea Sweep (Scorpiis aequipinnis) Silver Drummer (Kyphosus sydneyanus) Swallowtail (Centroberyx lineatus) Blue-eye Trevalla (Hyperoglyphe antarctica) Trevally (Carangidae spp) Western Striped Grunter (Pelates octolineatus) Whiting (Family Sillaginidae) Blue Weed-Whiting (Haletta semifasciata) Wrasse (Family Labridae) (other than Western Blue Groper (Achoerodus gouldii))</p> <p>Sharks Rays of all species (Class Elasmobranchii) Shark of all species (Class Elasmobranchii) other than White Shark (Carcharodon carcharias) Skate of all species (Class Elasmobranchii)</p> <p>Part 2—Aquatic resources prescribed for the purposes of regulation 4(2)(b)</p> <p>Molluscs Razorfish (Pinna bicolor) Vongole</p> <p>Scalefish Australian Anchovy (Engraulis australis) Maray (Etrumeus teres) Australian Sardine (Sardinops sagax) Blue Sprat (Spratelloides robustus) Sandy Sprat (Hyperlophus vittatus)</p>
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²¹ Species included reflect the species in schedule 1 at the time of the development of this management plan. Note that the Regulations, including this Schedule may be periodically amended.

Appendix B – Licences with some level access to MSF species

The table reflects those commercial fisheries that have some level of access to MSF species in the waters of that Fishery, noting that some fisheries have limited access. Information below reflects the licences in the respective fisheries as of 27 February 2025.

Fishery	Number of licences
Marine Scalefish Fishery	Total = 197
Northern Zone Rock Lobster Fishery	Total = 62 Option A = 1 licence Option B = 2 licences Option C = 59 licences
Southern Zone Rock Lobster Fishery	Total = 180 Option A = 33 licences Option B = 8 licences Option C = 139 licences
Blue Crab Fishery	9
Spencer Gulf Prawn Fishery	39
Gulf St Vincent Prawn Fishery	10
West Coast Prawn Fishery	3
Lakes and Coorong Fishery	36
Miscellaneous Fishery	1 * (Western Australian Salmon) 3* (Blood, beach and tube worms)

The level of access to marine scalefish species by both the Southern and Northern Zone Rock Lobster fisheries is dependent upon one of three options fixed by licence condition to each rock lobster licence.

- Option A: Allows the take of Southern Rock Lobster, Octopus and Giant Crab for trade and business. Incidental bycatch in the rock lobster pot of permitted species (MSF species) for bait purposes. All devices except rock lobster pots are removed from the licence when selecting this option, and only rock lobster pots are allowed onboard the vessel
- Option B: Allows the take of Southern Rock Lobster, Octopus and Giant Crab for trade and business. Allows the take of permitted species (MSF Species) for bait purposes only i.e. means for use as bait in a licence holder's own fishing operations and does not involve selling or transferring those fish. All devices except rock lobster pots and bait nets are removed from the licence when selecting this option
- Option C: Allows the take of Southern Rock Lobster, Octopus and Giant Crab for trade and business as well as the take of permitted species (MSF Species) for trade and business. Permitted to use all devices endorsed on licence subject regulations and conditions

A licence holder may 'downgrade' their marine scalefish option (i.e. shift from Option C to Option B), but cannot upgrade or increase their level of access.

Appendix C – Other legislative acts that may impact MSF activities

Key legislative acts, other than the *Fisheries Management Act 2007*, that may impact upon activities undertaken pursuant to an MSF licence are listed below, noting the list may not be exhaustive, and some Commonwealth acts may only have relevance to MSF licences when fishing is undertaken in Commonwealth waters pursuant to the Offshore Constitutional Settlement:

Biosecurity Act 2015 (Commonwealth)
Environment Protection (Sea Dumping) Act 1981 (Commonwealth)
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
Offshore Electricity Infrastructure Act 2021 (Commonwealth)
Offshore Minerals Act 1994 (Commonwealth)
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Commonwealth)
Underwater Cultural Heritage Act 2018 (Commonwealth)

Aboriginal Heritage Act 1988
Adelaide Dolphin Sanctuary Act 2005
Aquaculture Act 2001
Biodiversity Act 2025
Coastal Protection Act 1972
Energy Resources Act 2000
Environment Protection Act 1993
Harbors and Navigation Act 1993
Historic Shipwrecks Act 1981
Hydrogen and Renewable Energy Act 2023
Landscape South Australia Act 2019
Livestock Act 1997
Marine Parks Act 2007
Mining Act 1971
National Parks and Wildlife Act 1972
Native Title Act 1993
Native Vegetation Act 1991
Offshore Minerals Act 2000
Planning, Development and Infrastructure Act 2016
Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987

Appendix D – Allocation trigger limits

Allocation Trigger Limits

Primary Species

Three trigger limits have been determined for primary species (Tables B1 and B2). These triggers have been designed to reflect the high importance of these species to the MSF and as such allow limited ability for sectors to exceed allocations without triggering a review. Trigger limits have also been set at a level that is commensurate with the initial allocation and allows for variability in catches. Where a sector has been allocated over 91%, no trigger limits (trigger 1) have been set as any shares greater than this amount are considered to be within normal fluctuation ranges. Similarly where a commercial sector has been allocated above 95% no commercial trigger limits (triggers 2 and 3) have been set. See next section for trigger limit calculations (Tables B3-B5).

Primary Trigger 1: Exceed fishery sector allocation by relevant percentage in the assessment year (the year following the availability of recreational data).

Primary Trigger 2 (Commercial shares only): Exceed commercial sector allocation by relevant percentage in three consecutive years or in four of the previous five years.

Primary Trigger 3 (Commercial shares only): Exceed commercial sector allocation by relevant percentage in any one year.

Table B1. Allocation triggers (percentages – portion of harvest) for primary species of the MSF

		MSF	SZRL	NZRL	MISC	LCF	GSVP	SGP	WCP	REC	CHTR	ABT
King George Whiting	Fishery Allocation	49.5	0.0	1.0	-	-	-	-	-	45.5	3.0	1.0
	Trigger 1	54.45	0.75	2.5								
	Commercial Allocation	98.1	0.0	1.9	-	-	-	-	-			
	Trigger 2	na	0.5	2.97								
	Trigger 3	na	0.75	3.96								
Snapper		MSF	SZRL	NZRL	MISC	LCF	GSVP	SGP	WCP	REC	CHTR	ABT
	Fishery Allocation	79.0	1.45	0.55	-	0.03	-	-	-	8.0	10.0	1.0
	Trigger 1	84.0	2.9	1.65		1.0						
	Commercial Allocation	97.5	1.78	0.68	-	0.04	-	-	-			
	Trigger 2	na	2.68	1.3		0.75						
	Trigger 3	na	3.58	2.0		1.0						
Southern Garfish		MSF	SZRL	NZRL	MISC	LCF	GSVP	SGP	WCP	REC	CHTR	ABT
	Fishery Allocation	79.3	0.13	0.04	-	-	-	-	-	19.5	-	1.0
	Trigger 1	84.0	1.0	1.0								

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	Commercial Allocation	99.79	0.16	0.05	-	-	-	-	-			
	Trigger 2	na	0.75	0.75								
	Trigger 3	na	1.0	1.0								
Southern Calamari		MSF	SZRL	NZRL	MISC	LCF	GSVP	SGP	WCP	REC	CHTR	ABT
	Fishery Allocation	56.0	-	0.45	-	-	0.45	4.6	0.1	37.4	-	1.0
	Trigger 1	61.6		1.0			1.0	7.5	1.0			
	Commercial Allocation	90.91	-	0.73	-	-	0.73	7.47	0.16			
	Trigger 2	92.7		1.46			1.46	8.2	0.75			
	Trigger 3	95.4		2.19			2.19	11.2	1.0			

Secondary Species

Secondary triggers have only been developed for catches outside of the L&C region of the LCF. These triggers have been designed to reflect the relative importance of these species to the MSF and as such allow greater fluctuations in sector allocations without triggering a review. Trigger limits have also been set at a level that is commensurate with the initial allocation and allows for inter-annual variability in catches. Where a sector has been allocated over 91%, no trigger limits have been set as any shares greater than this amount are considered to be within normal fluctuation ranges. See next section for trigger limit calculations (Tables B3-B5).

Secondary Trigger: Exceed sector allocation by relevant percentage in the assessment year.

Table B2. Allocation triggers for secondary species of the MSF

Species		Commercial	Recreational	Aboriginal traditional
Vongole (Mud Cockle) spp.	Allocation	98.7%	0.15%	0.15%
	Trigger limit (%)	na	-	-
Yellowfin Whiting	Allocation	78%	21%	1%
	Trigger limit (%)	88%	-	-
Australian Herring	Allocation	56.5%	42.5%	1%
	Trigger limit (%)	70.6%	-	-
Snook	Allocation	49.5%	49.5%	1%
	Trigger limit (%)	61.9%	-	-
Mullet spp.	Allocation	54.2%	44.8%	1%
	Trigger limit (%)	67.8%	-	-
Mulloway	Allocation	19.9%	79.1%	1%
	Trigger limit (%)	39.8%	-	-
Bronze & Dusky Whaler Shark	Allocation	73.7%	25.3%	1%
	Trigger limit (%)	88.%	-	-
Sand Crab	Allocation	85%	14%	1%
	Trigger limit (%)	93.5%	-	-
Blue Swimmer Crab (West Coast)	Allocation	81.7%	17.3%	1%
	Trigger limit (%)	89.9%	-	-

Trigger limit calculation

Trigger limits have been set based on an allowable percentage increase in allocation.

The percentage increases have been determined for allocation ranges, with a total of seven ranges (Tables B3-B5). As a consequence of the use of ranges, without adjustment, the upper allowable increase of one range may be higher than the allowable increases of the next range. To counter this, lower and upper limits have been determined for some ranges.

In specifying the allowable percentage increases for a range, the lower the original allocation, the higher the allowable percentage increase and vice versa, this recognises that catches associated with low percentage allocations are generally highly variable and this needs to be accounted for.

Percentage increases have not been determined for 0 and 0.01 – 0.49 allocations, rather an absolute increase has been specified for each of these.

Different percentage allowances have been determined for the primary and secondary species. The different allowances account for the variability in catches and the management need to minimise variability in sector shares. The tables below outline the allowable increases, absolute increases and the upper and lower limits for the different triggers:

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Table B3. Allocation trigger calculation table for triggers 1 and 3 for primary species.

Allocation range	Allowable % Increase	Absolute increase to	Lower limit	Upper limit
0	-	0.75	-	-
0.01 - 0.49	-	1	-	-
0.5 - 0.99	150	-	-	2.5
1.0 - 4.99	100	-	2.5	7.5
5.0 - 39.99	50	-	-	-
40 - 79.99	10	-	60	84
80 - 99.99	5	-	-	-

Table B4. Allocation trigger calculation table for trigger 2 for primary species.

Allocation range	Allowable % Increase	Absolute increase to	Lower limit	Upper limit
0	-	0.5	-	-
0.01 - 0.49	-	0.75	-	-
0.5 - 0.99	100	-	-	-
1.0 - 4.99	50	-	2	-
5.0 - 39.99	10	-	7.5	-
40 - 79.99	5	-	44	-
80 - 99.99	2	-	84	-

Table B5. Allocation trigger calculation table for secondary species.

Allocation range	Allowable % Increase	Absolute increase to	Lower limit	Upper limit
0	-	0.75	-	-
0.01 - 0.49	-	1	-	-
0.5 - 0.99	200	-	-	3
1.0 - 4.99	150	-	-	9
5.0 - 39.99	100	-	-	50
40 - 79.99	25	-	-	88
80 - 99.99	10	-	-	-