

Industry Consultation Paper

Options for the Reform of South Australia's Commercial Marine Scalefish Fishery

Commercial Marine Scalefish Fishery Reform Advisory Committee

August 2019

Table of Contents

1	Summary.....	3
2	About the Fishery	4
	2.1 Commercial licences.....	4
	2.2 Status of fish stocks	4
	2.3 Economic and social indicators.....	4
	2.4 Sharing the resource.....	6
3	The Need for Reform.....	7
4	The Reform Package.....	9
	4.1 Regionalise.....	10
	4.2 Unitise.....	15
	4.3 Rationalise.....	19
5	Other Considerations.....	23
	5.1 What will the cost of the ongoing management program be?	23
	5.2 Is the current scientific assessment methodology capable of providing reliable Total Allowable Catch estimates?	26
	5.3 How will units be allocated among licence holders?	27
	5.4 What is the current value of licences in the Fishery?.....	28
	5.5 Shared access of other commercial fisheries	28
6	Attachments	30
	6.1 The Marine Fishers Association (MFA) Forum – Principles of Reform	30
	6.2 Seven steps to fishery reform	32

1 Summary

South Australia's clean marine waters are home to some of the most sought after premium seafood in the world. The South Australian Government—through the Primary Industries and Regions SA (PIRSA) Fisheries and Aquaculture division—manages the sustainable development of marine resources and the balanced growth of fisheries in partnership with industry and the community.

Accessed by Indigenous, recreational and commercial fishers alike, many of SA's key coastal and marine species form part of the commercial Marine Scalefish Fishery (MSF). Unfortunately, as a legacy of the fishery's initial open access policy prior to the late 1970s when commercial fishing licences were issued to anyone who wanted to participate in the fishery, over-capacity, stock depletion, over-capitalisation, constant increases in fishing technology and catching efficiency, and poor economic performance has challenged the MSF over recent decades.

Put simply, there are too many commercial fishers and not enough fish to sustain a vibrant and profitable industry. To address this, the Government of South Australia is committed to investigating and implementing key reforms in the commercial sector of the MSF to ensure long-term resource sustainability and improve the industry's future viability.

This paper — developed by the Commercial Marine Scalefish Fishery Reform Advisory Committee (CMSFRAC) in consultation with the Marine Fishers Association (MFA) Forum and PIRSA Fisheries and Aquaculture — identifies options to achieve the reform and invites licence holders and key stakeholders to have their say on the changes required to bring about a more vibrant and profitable commercial fishery. Key features of the proposed reform include rationalisation of the fleet, regionalisation of the fishery, and unitisation of access to the resource through implementation of well defined, secure and transferable fishing rights.

Relevant documents relating to the CMSFRAC, including membership, terms of reference, Chair's Report on each of its meetings, and this Industry Consultation Paper, can be found at the following PIRSA web page: www.pir.sa.gov.au/marine-scalefish-reform

Based on its work to date the CMSFRAC acknowledges the current poor state of the fishery, despite decades of management, and the limited resultant financial capacity of licence holders in the fishery to achieve the required reforms without Government funding assistance. Whilst the current situation represents a sub-optimal use of the State's naturally renewable publicly owned fisheries resources, if the necessary management reforms are introduced and key fish stocks are recovered to deliver long-term fish stock sustainability, the increased production and yield from these important fish stocks will translate into increased value generated by the fishery that will flow on through the regional and State economies, providing benefits for all South Australians for years to come. These positive outcomes will translate into improved business opportunities for commercial fishers and seafood processors and regional tourism opportunities for South Australia linked to recreational and charter fishing activities throughout South Australia.

It is important to note that the options presented in this paper have been developed by the CMSFRAC for the purposes of consultation with industry. Any other feedback or written submissions should be emailed to msf.reform@sa.gov.au.

Following the consultation process, all feedback will be considered by the CMSFRAC and a formal proposal will be finalised by 31 October 2019 for the consideration by government and the Minister for Primary Industries and Regional Development.

2 About the Fishery

2.1 Commercial licences

The MSF currently consists of 307 licences with approximately 90 per cent of the licences being actively used. Approximately 40 per cent are considered 'part-time' operators, expending less than 90 days a year fishing, with 22 licences not having any recorded fishing effort in recent years.

There are 26 types of fishing gear (or devices) endorsed in the fishery, but their use differs depending on the location of fishing and the types of species being targeted. With the exception of fishing rods and handlines, all devices must be registered on a licence before they can be used to take fish for trade or business. The principal devices include handline, longlines, hauling nets and squid jigs.

Catch from the commercial MSF is mainly comprised of scalefish species, in particular King George Whiting, Snapper, Southern Garfish, Southern Calamari and Yellowfin Whiting. Other species such as Australian Herring, Sand Crabs, Blue Swimmer Crab, West Australian Salmon and Leatherjackets are also important.

The fishery also includes species such as Vongole, Australian Sardine, Australian Anchovy and Goolwa Pipi, which are currently limited by quota owned by a few specialised fishers and these species will not be included in the following discussion.

2.2 Status of fish stocks

Although more than 60 species can be harvested within the MSF, four primary species (King George Whiting, Snapper, Southern Garfish, and Southern Calamari) account for more than half of the state-wide total commercial catch over the last decade by value. Previous stock assessments for King George Whiting, Southern Garfish and Snapper have identified different levels of concern regarding the sustainability of some regional stock for each of these species. Consequently, levels of fishing effort and catches for these species have been restricted through a variety of management approaches that have included spatial closures, closed seasons, gear restrictions, size limits, and catch limits.

Declines in the catches of the primary finfish species have contributed to the diversification of the MSF fishing fleet, with many fishers in recent years switching their effort from Snapper, King George Whiting and Southern Garfish towards Southern Calamari, Yellowfin Whiting, and Snook. This is further compounded by the highly mobile nature of the commercial fishers who can fish throughout South Australian waters.

These changes have largely been economically driven, where it has become more cost-effective to target these secondary species based on their relative abundance, catchability, low set-up costs and increasing market value. Although the capacity of the fishing fleet to adjust their target species provides considerable flexibility and opportunities, there is a risk that increased fishing pressure on these secondary species may create additional sustainability issues.

2.3 Economic and social indicators

In retrospect, too many commercial licences were issued during the early stages of development of the MSF, when fishing technology levels and catching capacity of the fleet were relatively low. Subsequent to the introduction of limited entry licensing during the 1970s, catching capacity and effectiveness of the fishing fleet has been constantly improving through technological advancements in vessels, electronics and improved fisher knowledge and experience.

There has also been considerable latent effort in the fishery where idle or low activity licences have considerable capacity to fish harder given the opportunity and this tends to occur when licences are traded from latent fishers to active and motivated fishers.

To control this increasing effort and to reduce the pressure on fish stocks, a variety of reactive management measures have been introduced over past decades. These measures have become highly restrictive on business profitability and are becoming less effective at ensuring stock sustainability. The MSF is now at a point where there is significant regulatory burden on licence holders, fish stocks are under increasing fishing pressure and the fishery is becoming unprofitable for many licence holders.

The total Gross Value of Production for the MSF has followed a decreasing trend since 1998/99, principally due to a reduction in total commercial catch, from approximately 5,000 tonnes to a current catch of approximately 2,000 tonnes. Over this period, increases in the average costs of catching fish (83 per cent in real terms) has outstripped the average price paid for fish (63 per cent in real terms)(BDO EconSearch 2019¹).

All indicators of fishing profitability—including such measures as boat cash income and rate of return on total capital—are the lowest of all South Australian commercial fisheries. The MSF has not generated any economic rent since economic indicators were first measured by PIRSA in 1998/99, with a calculated value of -\$1.2 million in 2017/18. However, it should be noted that estimated economic rent has improved progressively from as low as -\$13 million in 1999/00, with much of the improvement related to a 50 per cent reduction in the number of licences achieved principally through the licence amalgamation scheme.

The combination of working harder for low or negative returns, declining fish stocks, increasing uncertainty of access, and greater restrictions and regulatory burden is taking its toll on industry members. A research report by King et al. (2018)² identified that the commercial fishing industry in Australia showed a higher level of psychological distress compared to the wider Australian population.

Of the almost 1,000 registered commercial fishers that were surveyed, South Australian fishers comprised around 10 per cent of these. The results showed a 19 per cent rate of depression among fishing industry workers compared to the estimated national diagnosis of 10 per cent. This indicated that high psychological distress was an occupation-related health issue. Furthermore, as men, in general, commit suicide at a higher rate than women, the high male representation in the fishing industry makes mental health of particular concern.

The top sources of stress were related to uncertainty about future in the fishing industry, changes to government regulations particularly relating to the security of access to fishing, and the high level of 'red tape' and complex regulations. Negative media and poor public image were also identified to compound stress levels. In contrast, factors such as isolation, physical danger of fishing, climate change, and succession were not perceived to be associated with stress.

Whilst the current situation represents a sub-optimal use of the State's naturally renewable publicly owned fisheries resources, if the necessary management reforms are introduced and key fish stocks are recovered to deliver long-term fish stock sustainability, the increased production and yield from these important fish stocks will translate into increased value generated by the fishery that will flow on through the regional and State economies, providing benefits for all South Australians for years to come. These positive outcomes will translate into improved business opportunities for commercial fishers and seafood processors and regional tourism opportunities for South Australia linked to recreational and charter fishing activities throughout regional South Australia.

¹ BDO EconSearch 2019. *Economic and Social Indicators for the South Australian Marine Scalefish Fishery 2017/18*, A report to PIRSA Fisheries and Aquaculture.

² King, t., Abernethy, K., Brumby, S., Hatherell, T., Kilpatrick, S., Munksgaard, K. and R Turner. 2018. *Sustainable Fishing Families: Developing industry human capital through health, wellbeing, safety and resilience*. Report to the Fisheries Research and Development Corporation, Canberra.

2.4 Sharing the resource

The MSF resource is shared with an active recreational fishing sector and is culturally significant to South Australia's Indigenous communities. The recreational fishery was estimated in 2013/14 to have approximately 277,000 participants (Giri and Hall 2015³). Most recreational fishing effort occurs in marine waters, including estuaries, with fishers permitted to use a variety of gear types. Given the shared nature of the fishery, the reform of the commercial MSF cannot occur in isolation and will need to consider other stakeholder groups.

Licence holders from other fisheries also have some level of access. These include the Northern and Southern Zone Rock Lobster fisheries, the Lakes and Coorong Fishery, the three Prawn fisheries, the Blue Crab Fishery, and the Miscellaneous Fishery. Access varies from the ability to retain some species as a by-product (Prawn fisheries) or for bait only purposes (Blue Crab Fishery), to targeting species within spatially restricted areas (Lakes and Coorong), or that are considered a lower valued species (annelids worms in the Miscellaneous Fishery), to having similar access to a full MSF licence (Rock Lobster fisheries).

South Australia is in a unique position, unlike other Australian jurisdictions, as it has legislative provisions outlined in the *Fisheries Management Act 2007* to enable formal resource sharing frameworks for the fishing sectors (commercial, recreational and Aboriginal Traditional) to be established in formal Management Plans. These legislated resource sharing arrangements are supported by a policy framework that formally recognises the shared nature of the fishery through the allocation of resource shares. The *Fisheries Management Act 2007* provides that a management plan must specify the share of the fishery to be allocated to each fishing sector. The policy addresses the question of allocation of access to aquatic resources between extractive user groups to include the commercial, recreational and Aboriginal traditional fishing sectors. Allocations between fishing sectors in the MSF were set on the basis of the best available information in 2009. They were quantified for a range of species at the state level through analysis of catches.

³ Giri, K and K Hall, 2015. *South Australian Recreational Fishing Survey 2013/14*, Fisheries Victoria Internal Report Series No. 62, Victorian Government.

3 The Need for Reform

The need for reform has, in recent years, been driven by a strategic review initiated in partnership between PIRSA Fisheries and Aquaculture and Industry in 2014 with a working group established by the former South Australian Fisheries Council.

This review concluded that the management arrangements were complex, inefficient and ineffective in controlling fishing effort and limiting the catch of primary species. There was broad recognition within the commercial sector that the current structure and management framework of the MSF needed reform in order to manage the over-capacity in the fishery and ensure its long-term sustainability and economic viability.

Key management options recommended by the working group included:

- Augmenting existing strategies such as the licence amalgamation scheme and the ‘owner-operator’ policy
- Assessing the feasibility of zoning the fishery and introducing Individual Transferable Quotas (ITQs) or Individual Transferable Effort (ITEs) units as key management measures to restrain the total catch of primary species, and
- Undertaking a critical review of existing controls to ease the regulatory burden on licence holders.

To address the issues relating to over-capacity and latent effort, the working group recommended a structural adjustment program to provide an opportunity for fishers who wish to exit the fishery to do so and surrender their licence, and for those who choose to remain, to improve their overall viability and profitability. A copy of the review – Report of the SA Marine Scalefish Fishery Strategic Review - can be found on the PIRSA website.

In simple terms, the working group recommended **‘what’** strategic action was required to secure the future of the fishery.

The South Australian Government agreed, as one of its 2018 election commitments, to deliver reform to:

“...unlock industry’s potential, provide long-term sustainability and cost-effective management, and drive efficiencies in inshore and offshore operations to secure a future for the fishery”.

In December 2018, the Minister for Primary Industries and Regional Development established the Commercial Marine Scalefish Fishery Reform Advisory Committee (CMSFRAC) with the purpose to develop, in consultation with licence holders and key stakeholders, recommendations on a reform package for the fishery that may include the key elements of:

- Introducing zones of management within the fishery that recognise the economic, ecological and regional diversity within the fishery
- Achieving fleet rationalisation that secures a minimum of 30% reduction in the total number of licences, and
- Implementing key management reforms, including a system of regional individual transferable quotas that will achieve a more sustainable and commercially viable fishery and a mechanism to facilitate on-going autonomous adjustment.

These are described as the three pillars of reform: Regionalise, Unitise and Rationalise.

In simple terms, the CMSFRAC will develop recommendations on **‘how’** the reform should be undertaken and implemented.

The CMSFRAC reform objectives are as follows:

- To ensure the ongoing sustainability of fish stocks and the environment which supports them
- To foster a vibrant and profitable commercial MSF
- To provide an effective mechanism for the MSF to autonomously adjust in the future without the need for further government assistance
- To ensure that the commercial sector of the MSF maintains its current allocation of the resource so it can continue the ongoing supply of freshly caught seafood to SA consumers, and
- To foster long-term community support for commercial fishing activities as contributors to South Australian Food industry and broader economy.

The CMSFRAC also needs to ensure that the future management options for the MSF meet the requirements of the *Fisheries Management Act 2007* and are consistent with the principles of ecologically sustainable development stated in the Act - these being:

- Proper conservation and management measures are to be implemented to protect the aquatic resources of the State from over-exploitation and ensure that those resources are not endangered
- Access to the aquatic resources of the State is to be allocated between users of the resources in a manner that achieves optimum utilisation and equitable distribution of those resources to the benefit of the community
- Aquatic habitats are to be protected and conserved, and aquatic ecosystems and genetic diversity are to be maintained and enhanced
- Recreational fishing and commercial fishing activities are to be fostered for the benefit of the whole community, and
- The participation of users of the aquatic resources of the State, and of the community more generally, in the management of fisheries is to be encouraged.

The representative body of licence holders in the MSF, the Marine Fishers Association (MFA), has also developed key principles which it considers are critical to the reform process (see section 6.1). These principles have been adopted by the CMSFRAC and support the concept of establishing separate management zones, reducing the number of licences, and creating catch or effort-based units as the management tools most likely to achieve sustainability, economic and social objectives. First and foremost, however, is the principle that the sustainability of fish stocks is of paramount importance.

Based on input from the MFA and other stakeholders, the CMSFRAC acknowledges the current poor state of the fishery despite decades of management, and the limited resultant financial capacity of licence holders in the fishery to achieve the required reforms without Government funding assistance.

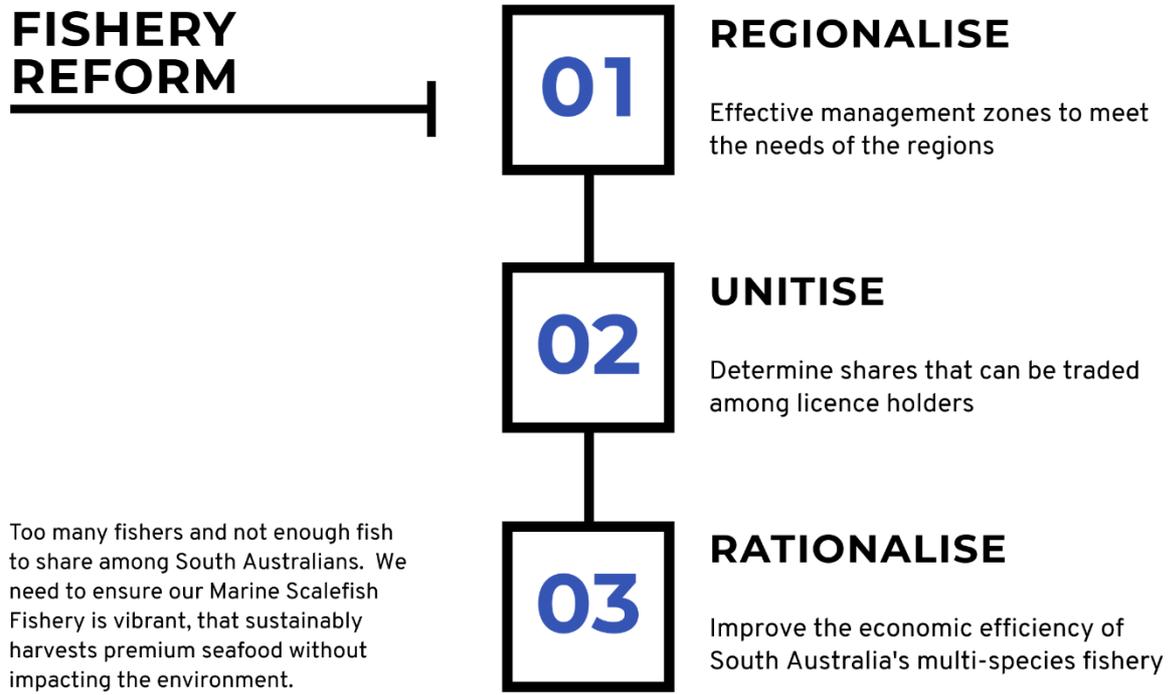
As such, the CMSFRAC needs to develop a compelling case for investment by Government in the proposed reform package. To build such a case, the reform package must be ecologically and economically sound, and socially just. The CMSFRAC also recognises the proposal must align with the Government's growth agenda, which is described in the "Joyce Review" (Joyce 2019).

Wider industry consultation and engagement with all licence holders is an important step in the process of developing a reform package that is to be delivered to the Minister for Primary Industries and Regional Development by 31 October 2019.

² Joyce, S. 2019. *Review of the South Australian Government's International and Interstate Engagement Bodies and Functions*.

4 The Reform Package

FISHERY REFORM



01

REGIONALISE

Effective management zones to meet the needs of the regions

02

UNITISE

Determine shares that can be traded among licence holders

03

RATIONALISE

Improve the economic efficiency of South Australia's multi-species fishery

Too many fishers and not enough fish to share among South Australians. We need to ensure our Marine Scalefish Fishery is vibrant, that sustainably harvests premium seafood without impacting the environment.

Key features of the proposed reform are to regionalise the fishery, unitise access to the resource through implementation of well defined, secure and transferable fishing entitlements, and rationalise the number of licences. These key pillars are described in the following sections with options of how these reform concepts can be implemented.

A depiction of a seven-stage process that provides a more concise and easy to understand summary of the reform options considered by the CMSFRAC is provided as an attachment to this paper in section 6.2.

4.1 Regionalise

Sustainable resource management is central to fisheries management design principles, particularly when it supports the setting of regional boundaries. Regional management of a fishery is common practice and boundaries typically align with either biological stock structure of the targeted species, defined jurisdictional boundaries, practical management areas, or a combination of these. However, regionalisation may have positive and negative flow-on consequences that may constrain patterns of established historical fishing activity, displace some licence holders and impact regional communities.

As such, they need to be carefully considered with industry and relevant stakeholders through the consultative processes.

To inform the proposed zoning options, consideration was given to the biological stock structure, current marine fishing area reporting systems, delineation of current fishing activity by area and cost effectiveness of management and compliance.

Four key factors were considered in design of the regions:

Biological stock structure of Snapper, King George Whiting and Southern Garfish

From a fisheries management perspective it is important to understand the biological stock structure of a species along with its underlying population dynamics, to ensure that harvest rates do not compromise their ecological function and sustainability **of any stock**. Different biological stocks may vary in abundance, growth and natural mortality rates, and may be influenced by contrasting environmental factors. Consequently, the amount of catch that can be sustainably harvested from one biological stock may differ from another. The biological stock structure of the key MSF species (Snapper, King George Whiting and Southern Garfish) is shown in Figure 1.

Marine Fishing Area reporting blocks

South Australia's MSF is divided into 58 Marine Fishing Areas (MFAs) for the purpose of statistical reporting and monitoring of commercial fishing activity. This MFA grid was used to shape the larger regional boundaries.

Spatial fishing activity and “natural” regional boundaries

Currently fishers can shift their effort to species or areas in response to changes in fish availability, market conditions, or inclement weather. While this provides operational flexibility, it also allows fishers to concentrate their fishing activity into areas which may negatively impact local stocks. The commercial fishery statistics were used to explore the “natural” regional boundaries of the fishing fleet to minimise any significant displacement of licences that may arise through the regionalisation process.

Cost-effective regulation, science, monitoring and compliance

Given the spatial structuring of the key stocks and natural fishing boundaries of the fishing fleet they support, regionalisation of the fishery allows the application of strategic and spatially specific management arrangements where different tools that are tailored more-specifically to the sustainability of local stocks.

Consideration of the above resulted in two regionalisation options (Figures 2.1 and 2.2). In both options the fishery was partitioned into four regions to capture the distinctive West Coast (WC), Spencer Gulf (SG), Gulf St. Vincent (GSV), and the South East (SE) stock structures and fleet dynamics. The area south of Kangaroo Island (KI) area was associated with GSV in Option I and the SE in Option II.

Table 1 on page 14 provides a representative summary of the 10-year average catch and effort statistics, including the number of licences and fishing activity in each zone. This information is provided purely as reference background material only.

The proposed regional structure could apply as state-wide licences with managed access to each zone, or a separately managed regional fisheries with licence holders having access to only one zone.

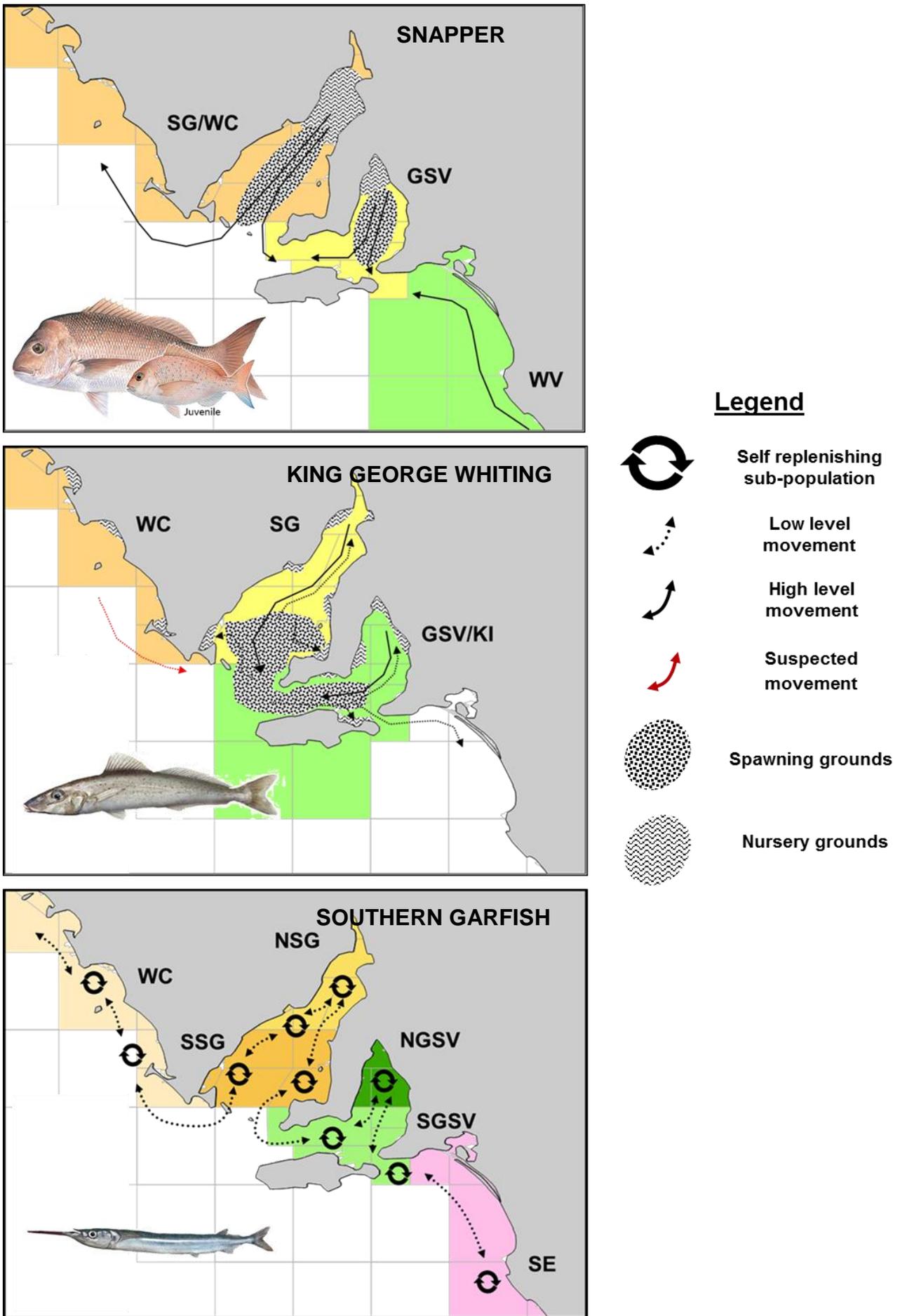


Figure 1. Biological stocks of three key MSF species (Snapper, King George Whiting and Southern Garfish)

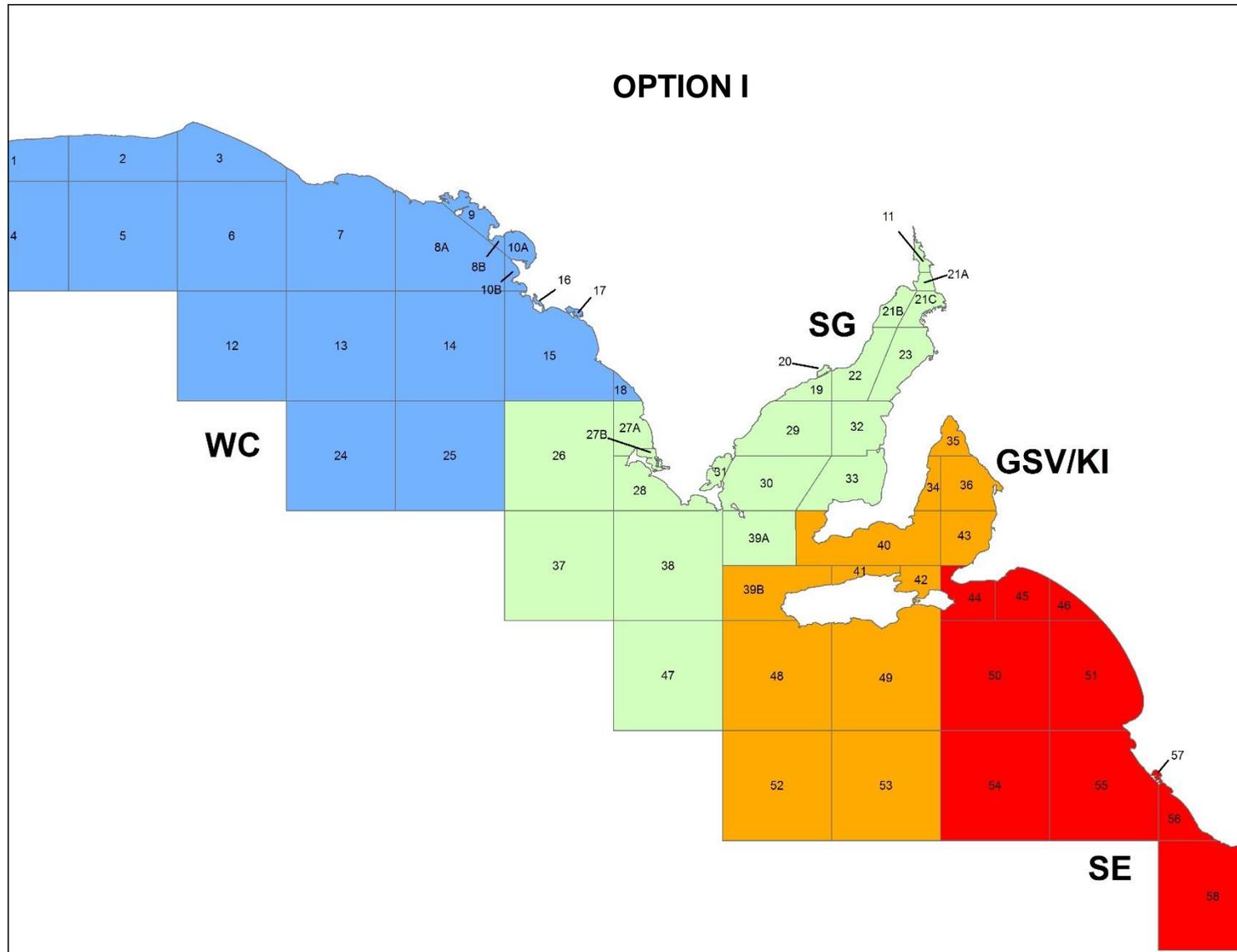


Figure 2.1 Two regional options – Option 1

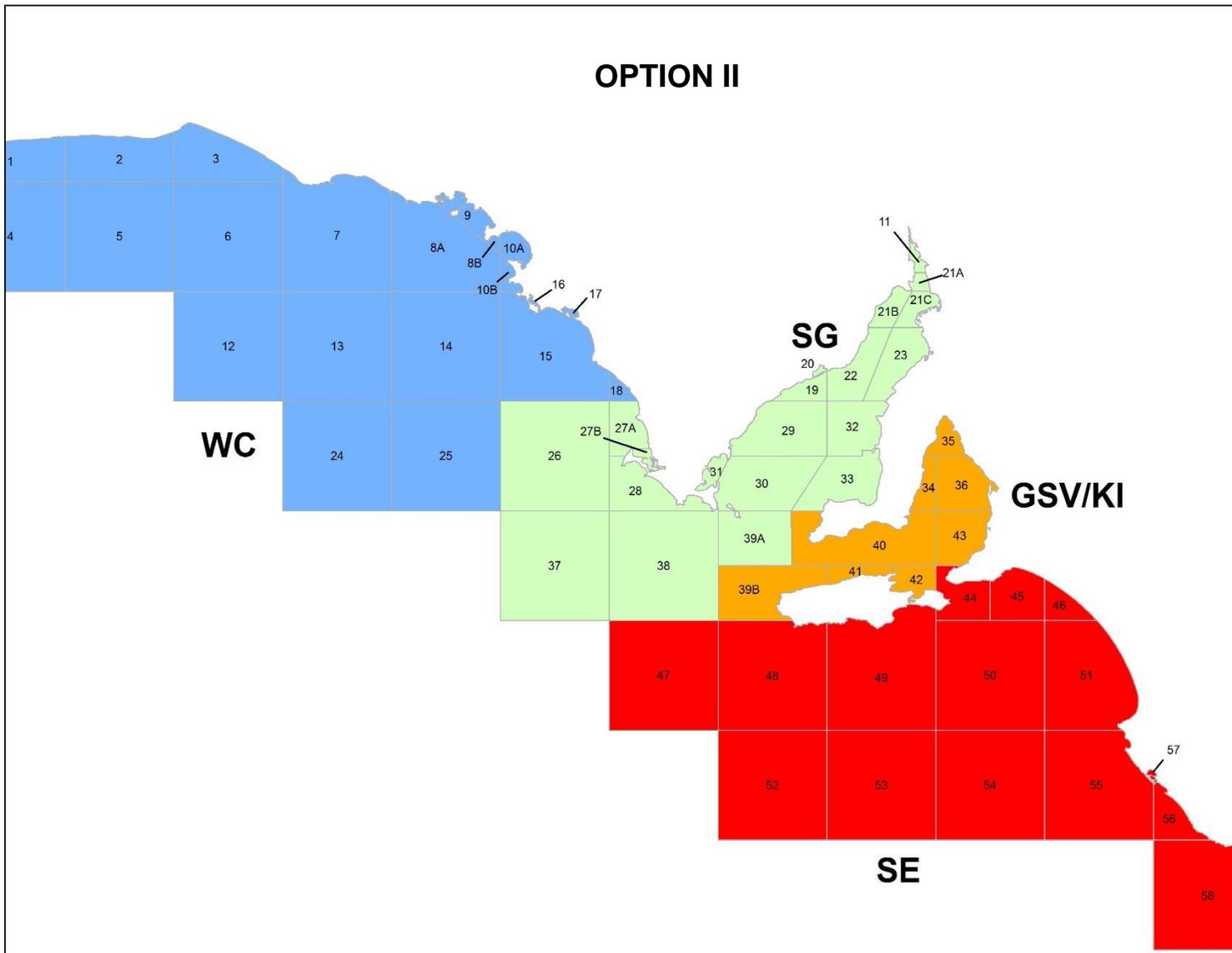


Figure 2.2 Two regional options – Option 2

Table 1. Representative summary of information for both regional options

	West Coast	Spencer Gulf	KI/GSV	South East	Total
Number of MSF licences^{1,2}					
Net licences	4	24	26	0	54
Line licences	52	114	67	20	253
Total licences	56	138	93	20	307
Unamalgamated licences²					
Net licences	2	14	13	0	29
Line licences	20	31	23	12	86
Number of licences and Fishing Activity¹					
> 120 days	28	53	44	7	132
90 - 120 days	7	17	10	2	36
1-90 days	19	54	33	11	117
0 days	2	14	6	0	22
10-year average catch of principal species (tonnes)³					
King George Whiting	124.5	116.8	57.6	0.4	299.3
Snapper	22.9	173.7	333.6	22.9	553.1
Southern Calamari	10.2	198.6	130.6	44.9	384.3
Southern Garfish	2.8	130.7	97.3	2.1	232.9
Total	160.4	619.8	619.1	70.3	1469.6
10-year average effort targeting principal species (boat days)³					
King George Whiting	4176	3549	1868	22	9615
Snapper	453	843	1493	685	3473
Southern Calamari	322	3879	2571	997	7770
Southern Garfish	32	550	599	56	1238
Total	4983	8821	6532	1760	22095
10-yr average target catch rate (kg/boat day)³					
King George Whiting	27.60	27.90	22.50	9.00	
Snapper	44.60	152.70	205.90	121.80	
Southern Calamari	31.00	43.00	43.40	44.70	
Southern Garfish	74.70	118.30	91.70	32.50	

¹ based on 3-year fishing activity 2015/16-2017/18

² source PIMMS @ 30 June 2019

³ based on total commercial catch & targeted effort 2008/09 to 2017/18

4.2 Unitise

Unitisation is about defining specific units or shares in the fishery that can be traded among licence holders. The CMFRAC established key principles of unitisation to be that:

- Units provide the principal management instrument to achieving sustainable fishing of key fish stocks in the Marine Scalefish Fishery
- Units denote a secure property right in the fishery that can be defined in regulation
- The management and administration of units, including ensuring the integrity of the units, is cost-effective and does not impose an unfair burden on the industry and government, and
- Units can be traded within the fishery to facilitate structural adjustment, allowing fishers to invest and build their business, and provides an on-going mechanism for autonomous adjustment.

Under any system of unitisation, the specific tradeable unit must be well defined. Unitisation can be based on inputs or effort (such as fishing days), or output (catch). The choice of effort or catch constrained management systems subsequently depends on the specific fishery.

4.2.1 Input units

Input controls regulate how fishing occurs, such as limiting vessel size, gear restrictions such as length of nets, number of hooks, or the amount of time that can be spent fishing etc. They are an **indirect means of limiting the catch** of fish through the management of fishing effort.

One of the major problems of controlling the exploitation of fish through managing fishing effort is that it is extremely difficult to control every facet of fishing effort. Restrictions placed on particular inputs to fishing tend to still allow fishers to expand their use of other uncontrolled dimensions of fishing effort in order to maintain or increase their catch. For example, if we limit the number of days fished, then fishers can get around it by fishing harder each day; if we limit the length of a net then there is nothing stopping the net being set more often. This is commonly referred to as “effort creep” and is one of the biggest challenges in trying to limit catch using effort controls.

Effort controls indirectly present opportunities and, in some cases, incentives for the uncontrolled components of the fishery to expand into subsequent gaps, such as adoption of new fishing methods and technologies, shifting displaced effort into other areas, and targeting other species. Further difficulty arises with input controls when effort units need to be regulated for different gear types, vessel classes, and areas fished. This is because effort units are not equal across fishing fleets, as a day fished with one particular gear type can be completely different in its effective fishing power compared with another gear type, or even a different vessel using the same gear type. There have been attempts to capture these differences by adjusting effort units.

Applying unitisation in an input control system would require setting the Total Allowable Commercial Effort (TACE) that could be specified in various ways, such as a limit on the total number of days that can be fished regardless of what species are being targeted, the total number of fishing days that apply to an individual species, or a maximum number of nets or other gear that can be used in a fishery, or other units that limit the total fishing capacity of a fleet. These effort limits would be unitised (for example, as individual fishing days) and apportioned amongst the licence holders in the form of individual transferable effort (ITE) units, usually as a percentage or share of the TACE, thus providing flexibility in fishing operations and an opportunity for a licence holder to adjust their fishing business from year to year.

4.2.2 Output units

In contrast to input controls, output controls require setting of a Total Allowable Commercial Catch (TACC) to directly control the amount (normally weight) of fish that can be caught **regardless of the effort used to catch them**. Using the best available information on a stock, TACCs are set in line with the sustainable harvest strategy objective, often the maximum sustainable yield (MSY) or equivalent biomass target.

Acquiring the level of information to set a TACC can be challenging, particularly in multi-species, multi-sector, community-shared fisheries like the MSF, where many of the targeted species are data limited. In these situations, designing and implementing an ITQ system to meet specific ecological, economic and social objectives is best considered through a sensible co-management approach with the appropriate mix of stakeholder representation and broad consultation.

A TACC can apply across a fishery without unitisation, in which case all fishers can keep catching until the TACC is reached. This is commonly called an Olympic Quota system as it gives an incentive for fishers to 'race to catch' the fish before other fishers get them and the fishery is closed. These Olympic TACC management systems can be accompanied by a daily catch limit for fishery participants to reduce the 'race to fish'.

Unitisation under an output control system for a species requires the assigning of the TACC amongst the licence holders in the form of Individual Transferable Quota units or ITQs. These individual shares provide flexibility in fishing operations and an opportunity for a licence holder to adjust their fishing business. They create opportunities for fishers to concentrate on catching their own quota allocation in the most cost-effective manner, rather than racing to catch fish. Fishing activity can become more market driven with a greater emphasis on improving the quality of catch to get a better price, in order to maximize the return from quota. ITQs essentially give fishers their own exclusive right to a proportion of the TACC.

If ITQs are to work for the MSF they need to be applied to the key species at the right regional spatial scale and be part of a broad management system that safeguards the sustainable and equitable use of the fishery resources and ecosystems that support them. How they are to be implemented is thought to underpin their success and, in most cases, cannot be considered in the absence of other input control measures (i.e. seasonal closures, gear restrictions).

4.2.3 Determining sustainable catch limits

Given the diversity of information, determining the sustainable catch limits for each of the multiple species should adopt a step-wise approach driven by the availability of supporting information.

When sophisticated fisheries models exist, key parameters including biomass, recruitment and exploitation rates are derived and can be used to set a Recommended Biological Catch (RBC) based on the Maximum Sustainable Yield (MSY) of the stock. These are relied upon to set Total Allowable Commercial Catches (TACCs). In the absence of this information there are various second-tier methods that can be used to estimate MSY on the basis of historical trends in total catch and an understanding of the species resilience. These methods are often limited in their application as they do not account for biological parameters (i.e. age, length and growth), recruitment measures, or broad-scale population dynamics (i.e. movement) that are known to influence fish stocks. Given the lack of data and inherent uncertainty in the assessment, a more precautionary approach is usually taken in setting TACCs.

Determining sustainable levels of catch become even more precautionary in situations where data are limited, particularly for secondary species where only commercial catch data are available. In these situations, using average catch history over a prescribed reference period can be used to set RBCs; but these present a simplified approach and are best supported by expert judgement by representative stakeholders.

4.2.4 Establish management strategies

Three principal management strategies can be implemented within the reform package with varying levels of application. Each strategy would be designed around an established TACC for the stock of interest and applied using a tiered management approach, descending from:

- TIER I** – highly regulated individually transferable catch or effort quota system (ITQ/ITE)
- TIER II** – based on total allowable commercial catches or effort (TACC/TACE)
- TIER III** – monitored against prescribed performance indicators

The underlying metrics that inform the management strategy decisions need careful consideration to sufficiently address biological, ecological, social and economic concerns. The establishment of a Management Advisory Committee (MAC) that consists of relevant stakeholders to inform the process and routinely assess the management approaches would be highly beneficial. The decision-making framework should be flexible enough to adjust the management strategies when required. For example, a developing fishery may need to transition from a Tier III to a Tier II management strategy to minimise its sustainability risk. This approach can be applied to all MSF permitted species.

The proposed framework consists of eight criteria that are divided into three quantitative or qualitative ranks to align with the three tiers. Tier I criteria have a corresponding score of 3 points, descending to 1 point for Tier III criteria. The maximum achievable score using this framework is 24 points (i.e. 8 criteria * 3 points). It is suggested that fish stocks that score 18+ points would require an ITQ/ITE management system; 15 to 17 points a TACC/TACE-based system; and those scoring <15 points may only require monitoring against prescribed performance indicators.

The application of this framework can be demonstrated for two MSF stocks with different priorities and supporting information; Spencer Gulf/ West Coast (SG/WC) Snapper stock and South Australia’s Snook stock. The SG/WC Snapper stock would score highly (18+ points) on the basis of its currently depleted stock status and high level of resource sharing with the recreational sector along with the fact that it is a specialised fishing target, of high value, and supported by an integrated fisheries assessment model. Consequentially, a Tier I ITQ/ITE-based management strategy would be most appropriate for this stock. Conversely, Snook would yield a low score (<15 points) due to its sustainable state-wide status, that it is largely a by-product species with low economic value and is currently assessed through trend analysis of fishery-dependent catch and effort statistics. Managing this species through monitoring performance indicators through a Tier III approach would therefore be more appropriate than submitting it to an ITQ/ITE-based management system. For those stocks that score within the 15-17 point range (e.g. Western Australian Salmon), an ‘Olympic’ style TACC/TACE management system may be considered to be appropriate. Each stock would need to be reassessed on a regular basis.

MSF MANAGEMENT STRATEGY DECISION MAKING FRAMEWORK										
TIER	POINTS	STATUS	TACC SETTING (CONFIDENCE)	RESOURCE SHARE	SPECIALISE	ECONOMIC VALUE (GVP)	DEVELOPMENT POTENTIAL	ECOSYSTEM EFFECTS	FISHERY ASSESSMENT	MANAGEMENT STRATEGY
I	3	Depleted	HIGH	>30%	SPECIALISED TARGET	>10%	FULLY UTILISED	HIGH	FULL INTEGRATED PROGRAM	ITQ (18+ POINTS)
II	2	Recovering / Depleting	MEDIUM	10-30%	GENERAL TARGET	5-10%	UNDER-UTILISED	MEDIUM	CATCH SAMPLING	TACC (15 - 17 POINTS)
III	1	Sustainable / Undefined	LOW	<10%	BY-PRODUCT	<5%	INCIDENTAL	LOW	FISHERY-DEPENDENT	PERFORMANCE INDICATORS (<15 POINTS)

4.2.5 Assessment of options

In considering unitisation options to reform the MSF, the CMSFRAC referred to its terms of reference which directs it to “examine the practicality of implementing individual transferable catch quotas as a preferred method of managing the fishery unless it can be shown that another form of management is more effective at achieving the objectives of the reform program”.

The CMSFRAC considered five unitisation concepts for the MSF to achieve sustainable fishing of key fish stocks, three of which establish units (catch and effort units), with two alternative management arrangements proposed by the Southern Yorke Peninsula Professional Fishers Association and the West Coast Professional Fishers Association.

In summary, these options can be described as:

1. ITQ x Key Species - Establishing Total Allowable Commercial Catch (TACC) for each of the key species, with allocations through Individual Transferable Quotas units (ITQ). This would restrict a fisher to only take their allocation of each key species. This catch allocation can be traded.
2. ITE x total boat days - Establishing Total Allowable Commercial Effort (TACE) for the fishery, with Individual Transferable Effort units (ITE) in terms of total boat-days available for fishing. This would restrict a fisher to only use their allocation of the number of boat-days. This effort allocation can be traded.
3. ITE x Species - Establishing Total Allowable Commercial Effort (TACE) that apply to fishing for individual species, with Individual Transferable Effort units (ITE) in terms of total boat-days available for fishing that species. This would restrict the number of boat days a fisher can target and take species for which they have as ITE.
4. Individual Weekly Allowable Commercial Cap x Species – Establishing TACC for species and restricting all fishers with an equal and non-transferable weekly catch cap for the four primary species (similar to the trip limit for Snapper). A licence holder can increase their individual weekly allowable catch by purchasing another licence.
5. Individual Seasonal Allowable Commercial Cap - Establishing TACC for species and restricting all fishers with an equal and non-transferable seasonal catch cap for each species, with regular monitoring and adjustments to the cap throughout the year. A licence holder can increase their individual seasonal allowable catch by purchasing another licence.

The CMSFRAC assessed each option against ecological sustainable development (ESD) principles – ESD is the main objective of the *Fisheries Management Act 2007*. A summary of this assessment is illustrated in Table 2.

Overall, an ITQ management system was assessed as the option which best met the ESD principles listed through removing the incentive to race to fish and effort creep. This approach restricts the activation of latent effort on primary species providing greater flexibility to fishers to adjust their business activities and driving economic benefits over the longer term.

This assessment is consistent with the findings of the Australia’s Productivity Commission Inquiry Report into the regulation of Australian marine fisheries (Productivity Commission 2016⁴) that recommended that ITQ systems should be the ‘default’ management technique for commercial wild-caught fisheries. The report suggests that this system will provide greater confidence on stock sustainability, more scope for innovation and efficient fishing practices, and facilitate structural adjustment.

⁴ Productivity Commission 2016, *Marine Fisheries and Aquaculture, Final Report*, Canberra

Table 2. Framework for Assessing Management Options

ESD Principles		ITQ x species	ITE x total	ITE x Species	IWACC	ISACC
Ecological / Biological						
	Contribute to any stock rebuilding and recovery	✓✓✓	✓	✓✓	✓✓✓	✓✓✓
	Directly control or constrain the total catch or effort levels within an agreed precautionary range	✓✓✓	✓	✓✓	✓✓✓	✓✓✓
	Address the expansion in effective fishing effort	✓✓✓	✓	✓	✓✓✓	✓✓
Social Values						
	Equity between and within each sector and security of resource shares	✓✓✓	✓	✓	✓✓✓	✓✓✓
	Industry stewardship and co-management	✓✓	✓	✓	✓✓	✓✓
	Social licence to fish / pride	✓✓✓	✓	✓✓	✓✓✓	✓✓✓
	Compliance and enforceability	✓	✓✓	✓✓	✓	✓✓
	Safety and wellbeing of fishers	✓✓	✓	✓	✓	✓✓
Economic Development						
	Positive impacts for regional communities and regional development	✓✓✓	✓	✓✓	✓	✓
	Relative strength of the access right provided	✓✓✓	✓	✓✓	✓	✓
	Autonomous adjustment in the fishery	✓✓✓	✓✓	✓✓	✓	✓
	Vibrant and profitable commercial fishery	✓✓✓	✓	✓✓	✓	✓✓
Business Development						
	Level of operational flexibility provided	✓✓✓	✓✓✓	✓✓✓	✓	✓✓
	Ability to maximise the return from the available fish stocks	✓✓✓	✓✓	✓✓	✓	✓
	Reduced regulatory burden / red tape	✓✓	✓	✓	✓	✓
	Cost and affordability	✓	✓✓	✓	✓	✓

4.3 Rationalise

Rationalisation is principally about the removal of licences out of the fishery to address excessive effort and latent effort issues. If everyone fished with the current stock status and access arrangements, there would be too much effort being exerted on stocks that are already under pressure and, in some cases, classified as depleted. The key principles of rationalisation proposed by CMSFRAC are that it:

- Achieves the voluntary surrender of at least 100 commercial fishing licences in the Marine Scalefish Fishery
- Is supported by co-funding by government and industry, with the industry contribution to be through the associated unitisation and autonomous adjustment process, including re-investment into the fishery, and
- Provides a mechanism to rationalise other commercial fisheries that have some level of shared-access to marine scalefish species.

The CMSFRAC considered a number of options to achieve the above objectives on the premise that an ITQ-based system is used to manage key species in the reform. Four alternative approaches were considered that involved a voluntary surrender of licences and a government supported quota trading

system (that could also include the further voluntary surrender of licences). Variations were based on when ITQs were allocated and whether any units that were removed through a voluntary licence surrender process were redistributed across the fleet or purchased by remaining licence holders in the fishery.

4.3.1 Voluntary licence surrender program

The CMSFRAC considers there is an urgent and compelling need to provide an opportunity for licence holders to exit the fishery through a Government-funded and voluntary licence surrender program prior to any allocation of ITQs within the fishery.

This option recognizes the high levels of anxiety and financial stress within the fishery that would be assisted through an immediate licence buy-out program. There are a number of licence holders within the fishery that are unable, or unwilling, to endure the reform process which is likely to extend over multiple years. Given rationalisation is a key pillar of the reform process, it would be beneficial to accommodate these licence holders through a voluntary buy-out program at the outset.

There are three ways this can be achieved:

Government offer at a set price

The value of licences is determined through an independent evaluation process. The government offers a set price for particular categories of licences. Licence holders choose to accept this offer and surrender their licence, until the licence removal target is met, or until available funds are exhausted.

Competitive tender process

Individual licence holders nominate their surrender price. The government purchases licences from the lowest offer price until the rationalisation target is met, or until the budget is exhausted. This program is more cost-effective than a simple buy-out at fixed values as licence holders receive their nominated price. The risk is that nominated prices are too high (beyond market value) and few offers are accepted. This can be mitigated against by having multiple rounds allowing licence holders to reconsider their offers. This process may cause friction within the industry if identical licences are bought by government for different prices.

Clearing price auction

First, individuals nominate their surrender price. The government assesses the range of offers against the rationalization target and budget, then determines the 'clearing' price. Those licence holders who have nominated an equal, or lower value to the clearing price will be successful. This means that all offers below the clearing price will receive a price higher than they offered. To be effective, it is usually necessary to have more than one round of this auction before "closing the market" as bidders often start out with unrealistic expectations about the value of their licences. Although this process is not necessarily the most cost-effective for the government, a uniform price mitigates against community conflict.

The CMSFRAC acknowledges that it will be up to government to determine a fair and reasonable method to conduct a voluntary licence surrender program and to ensure essential probity and strong administrative processes are developed.

4.3.2 Supported quota trading system

A Supported Quota Trading system provides an efficient option to further rationalize the fleet as it facilitates trades between willing sellers and buyers using government funding assistance. Those who want to exit the fishery are encouraged to set a price on their quota holdings.

Buyers who are keen to develop their business are encouraged to offer a purchase price. The timeframe of the nomination process will be restricted within a set 'trading round' period. The market matches up all willing buyers and sellers and uses government funding assistance to optimise the trade of quota units and to buy-out licences.

These supported trades would depend on the size of the available budget and rationalisation target. If the government's objectives cannot be met in the first trading round another trading round can be carried out which would encourage licence holders to adjust their offers. Trading rounds can be repeated until the Government's objectives are met. This process offers the best value for government and industry as it provides a rationalisation platform while assisting licence holders remaining within the fishery.

In summary, this trading system assumes there are willing buyers and sellers of ITQs. The process could be as follows:

- Sellers submit an offer sell price for their quota units, and buyers submit an offer buy price for quota units. Both buyers and sellers are encouraged to make realistic offer prices.
- Government support is used to facilitate (subsidise) quota unit trades in order to match as many buyers and sellers as possible, and "pay" licences that may be offered for surrender in this process.
- When the trading round closes, an evaluation is made to see whether objectives have been met within budget. If they are not met, buyers and sellers are provided information on what the clearing price would have been to meet objectives and whether their offers would have been accepted at that price. Both buyers and sellers are then invited to adjust their offers for a subsequent trading round.
- The sell and buy offer process may be repeated in several rounds until the objectives are met within budget. Experience in other markets shows that buyers and sellers make more realistic bids once they get an idea of likely clearing prices. Often first to second round bids are overly optimistic and bidders are discovering what prices of quota/licences are.
- When the market closes:
 - Buy and sell bids are matched. Government support facilitates more matches. The market matches up all willing buyer and sellers (market clearing price) and then increases the number of trades with government support.
 - All successful sellers receive the same price (uniform) for their units and/or licence.
 - All successful buyers pay the same price (uniform) price for quota units.

Industry's contribution to this rationalisation approach is through individual licence holders choosing to invest and accelerate an adjustment through purchasing quota units from others in the fishery. Government's contribution would be through subsidising the initial trading of quota units (thereby providing an incentive for individuals to trade) and in providing payments to individuals willing to surrender a licence, which would otherwise have limited value.

4.3.3 Further options

There may be some licence holders who may choose not to participate in the initial voluntary licence surrender program and are prepared to wait until quota shares are allocated to make an informed decision regarding their future business. The CMSFRAC considers other options to exit the fishery could be available that include a secondary voluntary licence buy-out that includes the surrender of associated quota shares attached to the licence. The quota shares that are removed through this "post allocation" government buy-out could then be redistributed among the remaining licence holders prior to the commencement of a supported quota trading process. The supported quota trading process may or may not include the option for government to further buy-out licences that are offered for surrender.

While on-going autonomous adjustment to fishing businesses would occur with the trading of quota units between licence holders thereafter, any further reduction in the number of licences would be limited if there are no further incentives or mechanisms to surrender a licence.

4.3.4 Autonomous adjustment

A successfully reformed fishery, characterised by an economically viable fleet that sustainably harvests premium species without unduly impacting the environment and is responsibly managed, should have the capacity to autonomously adjust.

This will transition the fishery into a positive market-driven business environment that support: profitable fish production and value adding; business specialisation and proficiency; a confident investment climate; creation of employment opportunities; efficient management and administration; stewardship of shared resources; a secure social licence to operate; and succession opportunities.

5 Other Considerations

5.1 What will the cost of the ongoing management program be?

Implementing any reform in the MSF is likely to impact on the management program and associated costs of services in a number of ways. The fishery will continue to be managed in accordance with the PIRSA Cost Recovery Policy that requires licence fees to fund services related to commercial fishery management costs.

Segmenting the fishery into zones, implementing quota management systems for species that may differ between zones, and reducing the number of licences and rationalizing the shared-access to the fishery by other commercial sectors will have the primary objectives of preventing future overfishing and increasing the profitability of individual fishing operations over time. It will also fundamentally impact on the licence fees that apply to licence holders that remain in the fishery.

Table 3 summarises the costs of managing the MSF in 2019-20 and the recovery of these costs from the commercial fishing sectors that have access to the fishery.

As licence numbers are removed through any voluntary licence surrender process, individual fees are expected to rise (as overall costs are recovered from fewer licences) unless management and research costs are reduced and/or some of the costs of management are met by government. Management and research programs and their associated costs will be reviewed towards the end of the reform process.

In relation to the potential impact on licence fees and affordability of fishing associated with the proposed reforms, the CMSFRAC agreed to include information in the consultation paper relating to assisting the transition of the fishing industry through the reform process, such as keeping licence fees constant, adopting and adapting to new technologies, and restructuring business operations. Specifically the government assistance package should include any direct upfront and marginal costs associated with the implementation of catch quota management for at least a three-year period.

It is recognized that proposed reforms must be affordable to industry in the short and longer term and this will likely require that the reform package delimits that average individual licence fees should not increase from approximately their present (2019/20) levels, at least in the initial years after implementation. Given that the required management and research program is likely to represent a higher figure than this as a result of reduced licence numbers (30%) and the likely need to invest in an ITQ catch monitoring system, government assistance to provide licence fee relief will be required especially in the early years of reform.

The net impact of the reform on future management costs will depend on a number of factors such as the change in the fisheries research and assessment services resulting from a shift to a quota management system, the type of quota monitoring regime implemented, and the extent to which existing regulations and licence conditions can be reduced. While it is expected that there will be savings in the longer term through the progressive removal of inefficient input controls and associated red tape it is likely that management costs in the shorter term will increase.

Advice from PIRSA Fisheries Compliance is that moving to a digital based catch disposal record system is likely to be more costly in the initial stages due to investment in necessary hardware and software systems but less expensive in the longer term compared to a paper-based system. The approximate marginal cost per annum associated with the implementation of a quota management scheme on the four primary species for 200 licence holders across all regions will be discussed as part of this consultation process.

Should CMSFRAC's agreed position be adopted by government there would be approximately \$2.4 million plus the marginal cost of the quota management system over three years provided by government as part of the industry assistance package to maintain current individual licence fees as licences are removed from the fishery. This assumes 2019-20 management costs remain constant over

this period. While there would be CPI related cost increases during this period there is also expected to be an offset reduction in compliance costs associated with the gradual removal of regulations and licence conditions.

It is anticipated that a combination of improved profitability levels and management efficiency increases will ensure that management reforms are affordable to industry participants three years after implementation of the reforms.

In addition to the above, CMSFRAC has supported the design principles developed by the MFA Forum (see section 6.1) that states “in the future, commercial licence fees should be based on a user-pays principle; with lower base licence fees and the remainder paid on amount of catch/effort shares”.

Clearly there is a need to cost the implementation of the reform process in some detail to determine the level of government support required to achieve the objectives of the reform.

The South Australian Research and Development Institute’s (SARDI) Fisheries Program that currently assesses the status of South Australia’s finfish stocks, addresses key knowledge gaps in fisheries science and informs the development of management strategies will need to be renewed in line with the reformed fishery.

The overall objectives of this program will remain the same, with a requirement to monitor the catches amongst the shared sectors, routinely acquire biological samples, and undertake fisheries-independent research to support stock assessment. However, the program’s scope is likely to increase to specifically address the research and management needs of the four zones.

The cost structure of the research program will depend on the relevant harvest strategies. Clearly established harvest strategies, developed through a co-management approach, will clarify the role and nature of the supporting research program and associated service costs. There are also likely to be significant opportunities to improve its cost-effectiveness through the adoption of advancing data collection technologies, industry and community supported biological sampling programs, and the availability of more sophisticated fisheries assessment tools.

Regardless of these changes the science program will continue to support the responsible and effective management of the MSF and will need to be agile to meet the expectation of government, relevant stakeholders and the South Australian community.

In addition to providing licence fee relief over the first three years and providing cost effective and affordable management services the State and Federal Governments can potentially assist the reform process through other means such as –

- Low interest loans
- Business advice and small grants
- Taxation treatment/concessions on reforms

These and other avenues need to be investigated to the fullest extent as part of the proposed reform to reduce the financial and social impact on operators.

Table 3. Summary of costs of managing the MSF

Management Costs	2019-20	
Research costs		
Stock assessment and monitoring	770,947	
Economic assessment	25,055	
Other research	13,796	
		809,798
PIRSA related costs		
Policy and management	211,200	
Legislation	10,300	
Licensing	68,040	
Directorate	15,056	
Compliance	1,236,793	
Vessel costs	45,984	
		1,587,373
Other costs		
FRDC	53,570	
Co-management services	208,880	
		262,450
	TOTAL	2,659,621
Cost Recovery	2019-20	
MSF/RMSF	1,910,606	
		1,910,606
NZRLF	200,313	
SZRLF	435,248	
L&C	34,622	
Sardines	78,832	
		749,015
	TOTAL	2,659,621

5.2 Is the current scientific assessment methodology capable of providing reliable Total Allowable Catch estimates?

Sophisticated fisheries models are commonly relied upon to support TAC setting and the development of fisheries performance indicators. The level of sophistication is generally proportional to the quality and quantity of data available for a managed stock. In many cases, fisheries are considered data-poor where there is a limited time series of catch and effort data, or distinct information gaps in the species' life-history processes and population dynamics. This is typical of low value, small-scale fisheries, and although this lack of information may present additional management challenges it is not considered a reason to avoid developing harvest strategies.

Fisheries management relies on the best scientific information available at the time and will subsequently need to be responsive when new information arises. There are a range of simple, pragmatic, empirical options that can be applied to data-poor fisheries. These approaches are generally enhanced by positive stakeholder engagement, embracing the precautionary principle and adaptive management.

The multi-species and multi-method MSF clearly demonstrates the variation in available information that can be used to support the development of harvest strategies and estimate TACs. The assessment of three of the primary species - King George Whiting, Southern Garfish and Snapper - are supported by sophisticated fisheries models that integrate multiple fisheries-dependent and –independent data sources and population biology metrics across different spatial scales.

Fishery-independent methods also exist to estimate spawning biomass for Snapper and King George Whiting, which can contribute in TAC setting and fishery assessment. The subsequent assessment of the remaining secondary and tertiary species predominantly rely on the interpretation of commercial catch and effort data.

Given the diversity of information, the development of TACs for each of the multiple species should adopt a cascading approach driven by the availability of supporting empirical data. When sophisticated models exist, key parameters including fishable biomass, recruitment and exploitation rates are derived and can be used to determine the maximum sustainable yield (MSY) of the stock and set precautionary TACs. In the absence of this information there are various second-tier 'catch-only' models that can be used to estimate MSY on the basis of historical trends in total catch and an understanding of the species resilience.

These models are often limited in their application as they do not account for biological parameters (i.e. age, length and growth), recruitment measures, or broad-scale population dynamics (i.e. movement) that are known to influence fish stocks. Using average catch history over a prescribed reference period can also be used to set TACs. However, these present a relative base-case approach and are best supported by expert judgement by representative stakeholders.

Determining TACs from average catches in isolation in an already depleted fishery is only going to perpetuate stock decline, so it is increasingly important that all available information is considered when determining catch limits.

5.3 How will units be allocated among licence holders?

Allocating quota to individual fishers in an established fishery, particularly a multi-species fishery and one that is as diverse as the MSF is probably the most contentious issue facing managers and industry when introducing a quota management system. It is a question that is upper-most in the minds of licence holders who will be affected and thus is a major factor in their acceptance to the adoption of a quota management system approach (Kaufmann et al. 1999⁵).

Regardless whether ITQ or ITE unitisation is implemented, there is a need to establish explicit and sound principles underlying the method of allocation of units to fishers. Associated with this is the need for independence in determining a fair and reasonable allocation formula, and removing the management agency (PIRSA) and licence holders from direct involvement in developing a recommended allocation formula.

The establishment of an independent allocation panel to investigate and determine the most appropriate allocation formula is crucial. In carrying out their function, allocation panels are expected to consult widely with stakeholders and relevant parties and any person or organisation with appropriate knowledge of or experience with the fishery to gain a full appreciation of the particular circumstances of the fishery.

Typically, an independent allocation panel makes recommendations on eligibility, how units are allocated (i.e. catch history, licence status, gear endorsements), and enables consideration of exceptional circumstances (e.g. new entrants). Each fishery has its own specific circumstances that determine how units are best allocated among fishers. In some fisheries, equal allocations could be provided to all participants, while in others allocations may be based solely on catch history or various combinations of catch history, fishing days, vessel size, gear endorsement, level of investment; others may provide a minimum base quantity of quota to all individuals. While the method chosen endeavours to be fair and equitable across the fishery there are inevitably perceived individual winners and losers.

Particular decisions that will need to be made relating to allocation in the MSF include:

- What species should be allocated by quota, individually or collectively, and whether all species need to be included in a catch quota system
- If the fishery is to be regionalised based on the biological distribution of key fish stocks, how are straddling stocks (and straddling fishing activity) managed under a quota system? What are the considerations for varying quota management arrangements that may apply to the same species in different regions?
- If fishing history (effort and/or catch) is to be used in an allocation formula:
 - What years, or period, of years are considered?
 - What consideration should be given to the investment warning issued by PIRSA in December 2017, and the policy that the history of fishing activity remains with the licence holder and not with the licence?
- What consideration is given to fishers who may not qualify for catch history as a result of recent licence transfers or a new entrant?
- What consideration is given to the spatial distribution of fishing activity and its relevance to the management of catch quotas, particularly if separate zones of management are introduced?

⁵ Kaufmann, B., Geen, G. and S Sen. 1999, *Fish futures: Individual transferable quotas in fisheries*, Report to the Fisheries Research and Development Corporation, Canberra

5.4 What is the current value of licences in the Fishery?

Options to achieve a reduction in the number of licences in the MSF and rationalise access in the fishery include a voluntary licence buy-out and (following unitization) a market-based trading program in which licence holders can restructure their fishing business and invest in additional unit entitlements. This should also enable those who decide to exit the fishery to sell their entitlements and receive a fair reparation upon the surrender of their licence.

An independent valuation of current licences, prior to implementing any reform in the fishery will provide guidance to industry and the CMSFRAC about the potential price of various licence categories ahead of a restructure or licence surrender program.

This will assist CMSFRAC to develop a reform package that includes the estimated expenditure required to reduce the number of licences in the fishery by 100 and to provide information that would assist licence holders to make an informed decision on whether to remain in the fishery, or to surrender their licence and leave the fishery.

5.5 Shared access of other commercial fisheries

An important principle of rationalisation proposed by the CMSFRAC is the development of a mechanism to integrate other commercial fisheries that have some shared access to marine scalefish species that address issues to do with latent effort and on-going access. To date, the CMSFRAC has focussed on options to remove at least 30% of the 307 licences in the MSF, described in this Consultation Paper.

Discussions have commenced with the industry associations of the rock lobster and prawn fisheries to consider some options of how those fisheries could be integrated into the reform package. These discussions will continue throughout the consultation process, facilitated by the MFA and PIRSA. Consultation will also be undertaken with the Sardine and Lakes and Coorong fisheries to address issues related to their shared access to the MSF, bearing in mind the existing allocated shares of the commercial allocation for specified species, formalised in the Management Plan for the South Australian Commercial Marine Scalefish Fishery.

The level of access and restrictions on access varies between each fishery, with these restrictions implemented through a mix of regulations, licence conditions and other legal instruments.

Rock Lobster fisheries

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 concession to each rock lobster licence.

- Option A: allows the take of incidental bycatch of MSF species (other than snapper) for bait purposes.
- Option B: allows the take of MSF species for bait purposes only using a bait net or as incidental bycatch in pots (not including Snapper).
- Option C: allows the take of permitted MSF for trade and business.

In the Northern Zone Rock Lobster Fishery, there are two (2) licences with Option B, and 60 licences with Option C.

In the Southern Zone Rock Lobster Fishery, there are nine (9) licences with Option B and 148 licences with Option C.

Lakes & Coorong Fishery

There are 36 Lakes and Coorong licence holders who have restricted access to some of the same species as MSF licence holders. These fishers operate in coastal waters between Goolwa Beach Road

to the jetty at Kingston, out to three nautical miles from the low water mark. The main species targeted are Mulloway, Western Australian Salmon, Black Bream, Yellow-eye Mullet, and Greenback Flounder.

Prawn fisheries

All prawn fisheries (Gulf St Vincent (10 licences), Spencer Gulf (39 licences) and West Coast (3 licences) are permitted to retain for trade and business Southern Calamari that are incidentally taken during prawn fishing operations. Licence holders in the West Coast Prawn Fishery are also permitted to retain Octopus and Scallop.

Sardine Fishery

The Sardine Fishery has evolved directly from within the MSF. There are 14 MSF licences authorised to use a sardine (purse seine) net to harvest Australian Sardine and other small pelagic species, including Anchovies, Blue Sprat, Sandy Sprat and Maray. These licence holders retain access to all species permitted under a MSF licence.

6 Attachments

6.1 The Marine Fishers Association (MFA) Forum – Principles of Reform

The Marine Fisheries Association (MFA) Forum Principles of Reform

Background

The South Australian Government established the 'Commercial Marine Scalefish Fishery Reform Advisory Committee' (the Committee) to guide the development and implementation of a reform package for the South Australian commercial Marine Scalefish Fishery. Guided by their principal vision of having an economically optimal and sustainable industry that supports profitable, small scale and regionally-focused fishing operations, the Committee has a three-pillar approach to reforming the fishery, incorporating regionalisation, rationalisation (commercial licence reduction) and unitisation. They recognise that reform requires an inclusive process that engages all licence holders and listens to their concerns. As a key part of the consultative process, the Marine Fisher's Association established a forum to consider requests from the Committee and develop an industry position on different matters before the Committee.

Following three meetings of the MFA Forum during the first half of 2019, we provide the following key principles which it believes are critical to the reform process.

Sustainability of stocks is paramount

Recognising that management of the fishery includes ecological, economic and social objectives, sustainability of stocks is paramount. Regardless of the proportion of the stock taken by each sector (commercial, recreational – including indigenous), the total fishing mortality (from all sectors) on each stock must not exceed sustainable levels.

Integrated cross-sectoral management

The MFA Forum advocates that any reform mechanism should explicitly include both the commercial and recreational (including Indigenous) sectors in future management arrangements.

In order to achieve sustainable management, annual total allowable catch (TAC) limits must be determined and applied to the four key MSF stocks (Snapper, King George Whiting, Southern Calamari, Southern Garfish) as a minimum. This will be applied in the form of a Total Allowable Commercial Catch (TACC) and a Total Allowable Recreational Catch (TARC).

Costs of management (monitoring, research, assessment, compliance) must be paid by each sector in proportion to their cross-sectoral catch shares. In the future, commercial licence fees should be based on a user-pays principle; with lower base licence fees and the remainder paid on amount of catch/effort shares.

Each sector should have appropriate and adequate monitoring and compliance systems in place to ensure sectoral catches do not exceed annual sectoral limits. Real-time reporting and fish tags may be a component of such systems. We recognize that these systems may be different for each sector and for different regions of the fishery.

Regionalisation

In addition to supplying fresh fish for Adelaide markets, commercial MSF fishers recognize the importance of their industry in providing for and supporting coastal communities across South Australia.

We recognize the diversity of fishing operations in the MSF as they have evolved to reflect spatial differences in regional fish stocks, coastal habitats, infrastructure and pressures placed on fishery resources through growing coastal populations. We desire to maintain a regional base for our industry and the communities it supports in any future management.

There is a high level of support for regionalisation of the fishery to meet the various sustainability, economic and social objectives of cross-sectoral fisheries management. Most industry options suggest development of regional licences as the best way to achieve this, but recognize that different management mechanisms may be applied in the different regions.

There is currently a state-wide allocation of the TAC to different extractive sectors (commercial, recreational, indigenous); this needs to be reconsidered on a regional basis. We want this to be a key component of ongoing discussions.

Rationalisation

In order to have a sustainable Marine Scalefish Fishery that supports economically viable and profitable fishing businesses into the future, the MFA recognizes the need for rationalisation of the ~300 commercial licences that currently have access to the fishery.

Any rationalisation of the fishery must acknowledge the fishing entitlement of current licence holders and provide a fair reparation for those choosing to surrender their licence and leave the fishery. We support the use of economic data to inform the future composition of the MSF fleet so that it consists of viable businesses for both full-time and part-time operators.

Given the preference for regional management in the future and the different commercial and recreational fishing pressure in the different regions, we recognize that some regions require more rationalisation of commercial fishing licences than others.

Despite the fishery having operated under various Management Plans since the 1970s, the current fishery is not ecologically sustainable and the commercial sector is not economically viable. We believe that there is a positive business case to be made for the SA Government to assist in funding a once-off reform of the fishery so that it can achieve its ecological, economics and social objectives into the future.

Unitisation

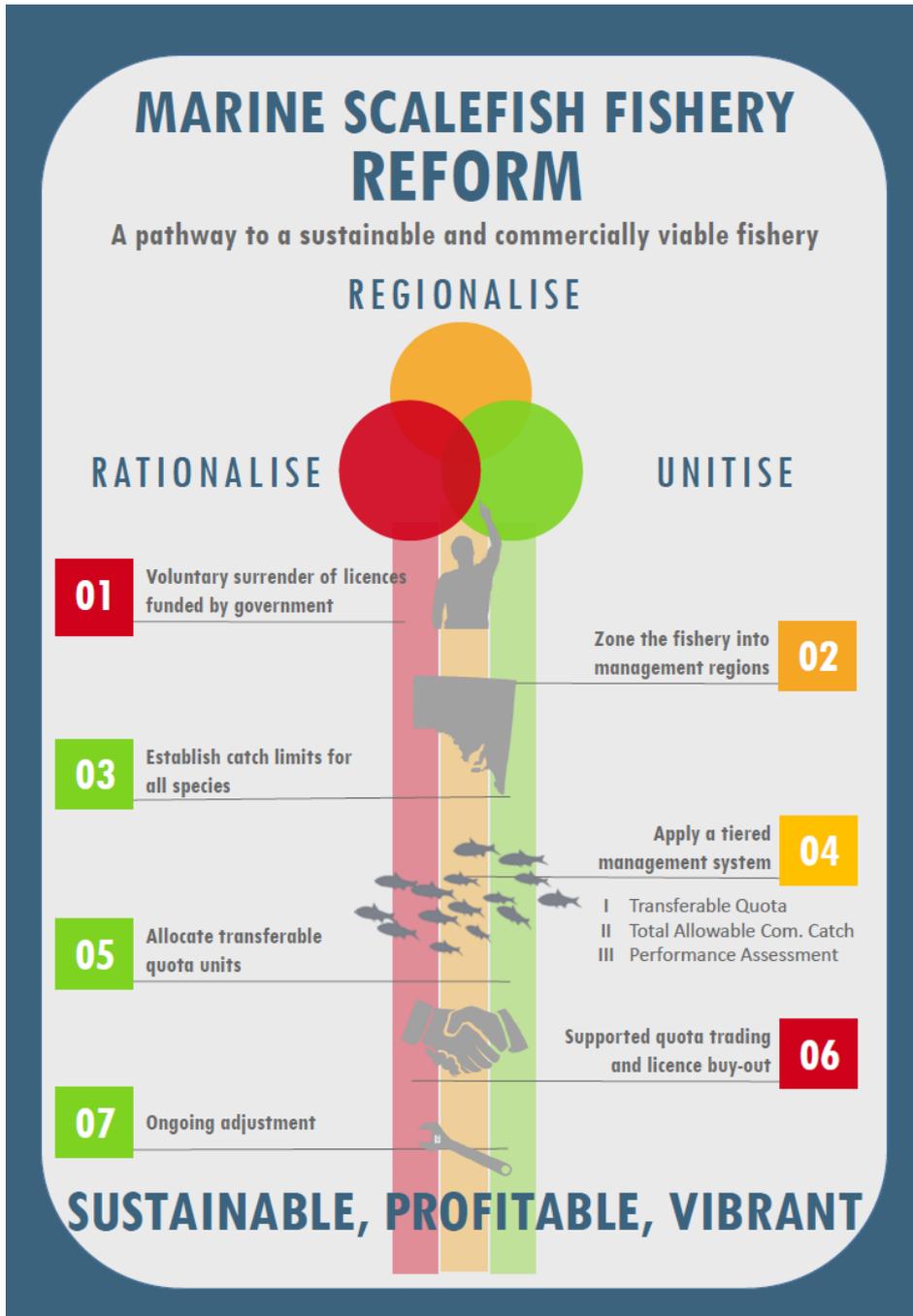
Either following or as part of rationalisation, we recognize that future unitisation of the fishery (catch- and/or effort-based) is the management tool most likely to achieve the sustainability, economic and social goals of cross-sectoral management.

Allocation of the units must be fair and equitable across all those currently involved in the commercial and recreational fishery. There may be a need for transitional arrangements to be implemented for groups of operators in specified circumstances.

Although unitisation may be focused on key species in the fishery, future management arrangements must ensure that catches of secondary byproduct species and bycatch are not detrimental to the overall ecological sustainability of the fishery.

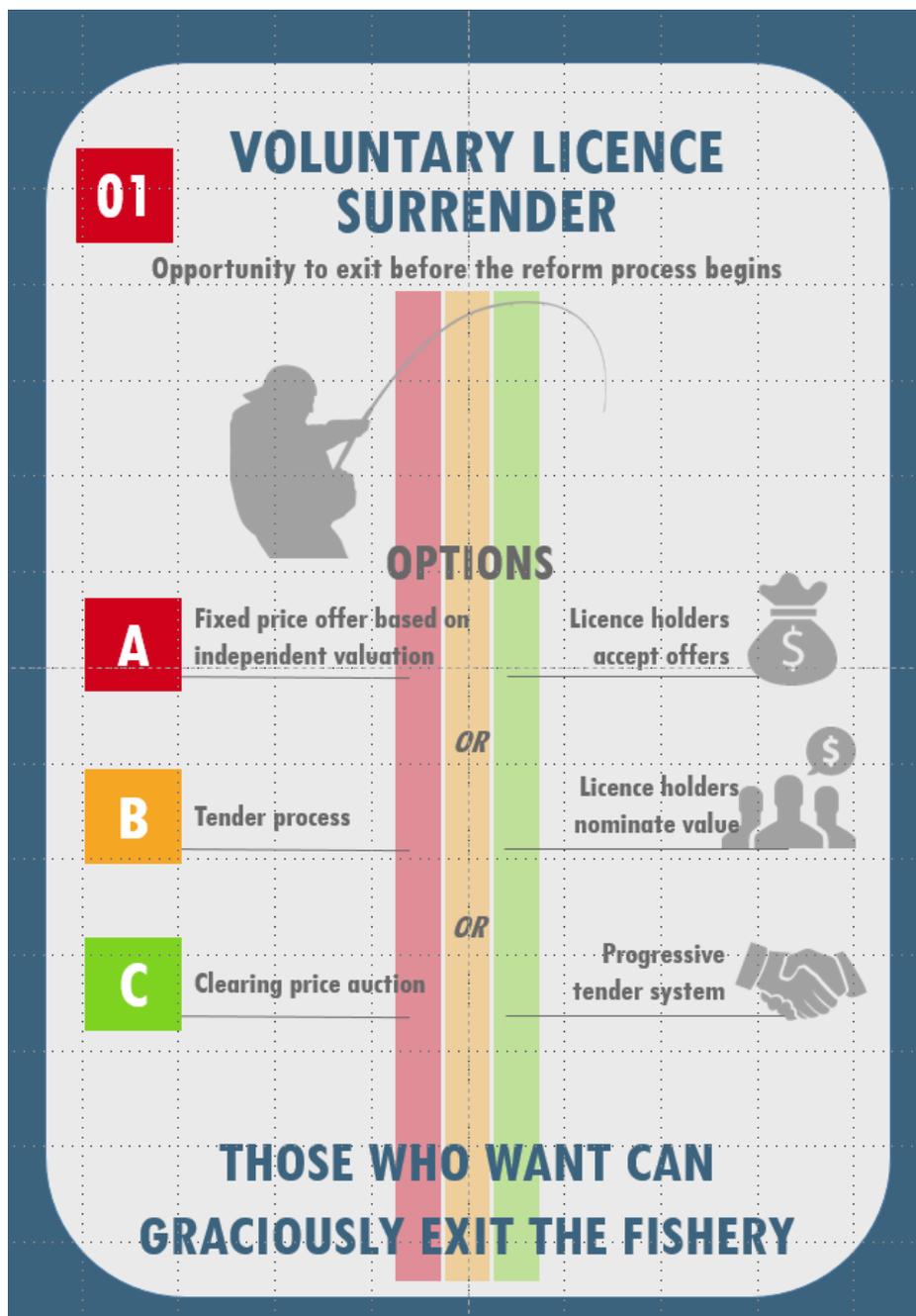
6.2 Seven steps to fishery reform

There are too many commercial fishers and not enough fish to sustain a vibrant and profitable industry. To address this, the Government of South Australia is committed to investigating and implementing key reforms in the commercial sector of South Australia's Marine Scalefish Fishery to ensure long-term resource sustainability and improve the industry's future viability. Consistent with the CMSFRAC's Terms of Reference, the following seven step infographic summarises options for rationalising, regionalising and unitising the fishery based on the premise that a TACC and ITQ-based system is used to manage primary species.



1. VOLUNTARY SURRENDER

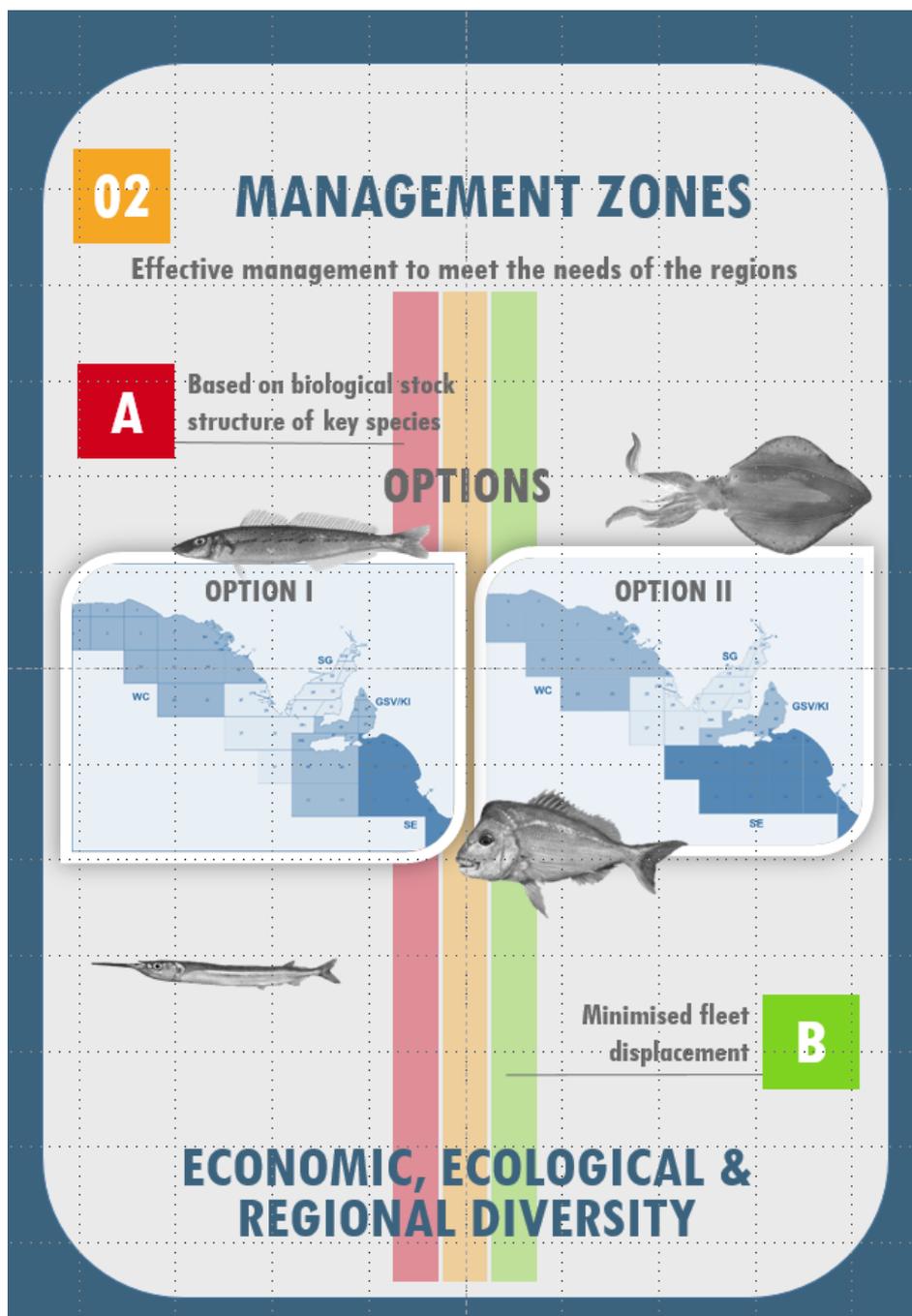
There are a number of licence holders within the fishery that are unable or unwilling to endure the reform process which is likely to extend over multiple years. Given rationalisation is a key pillar of the reform process, it would be beneficial to offer the opportunity for an early voluntary licence buy-out program.



2. MANAGEMENT ZONES

To inform the proposed zoning options, consideration was given to the **biological stock** structure, current **marine fishing area** reporting systems, delineation of current **fishing activity** by area and cost effectiveness of **management and compliance**.

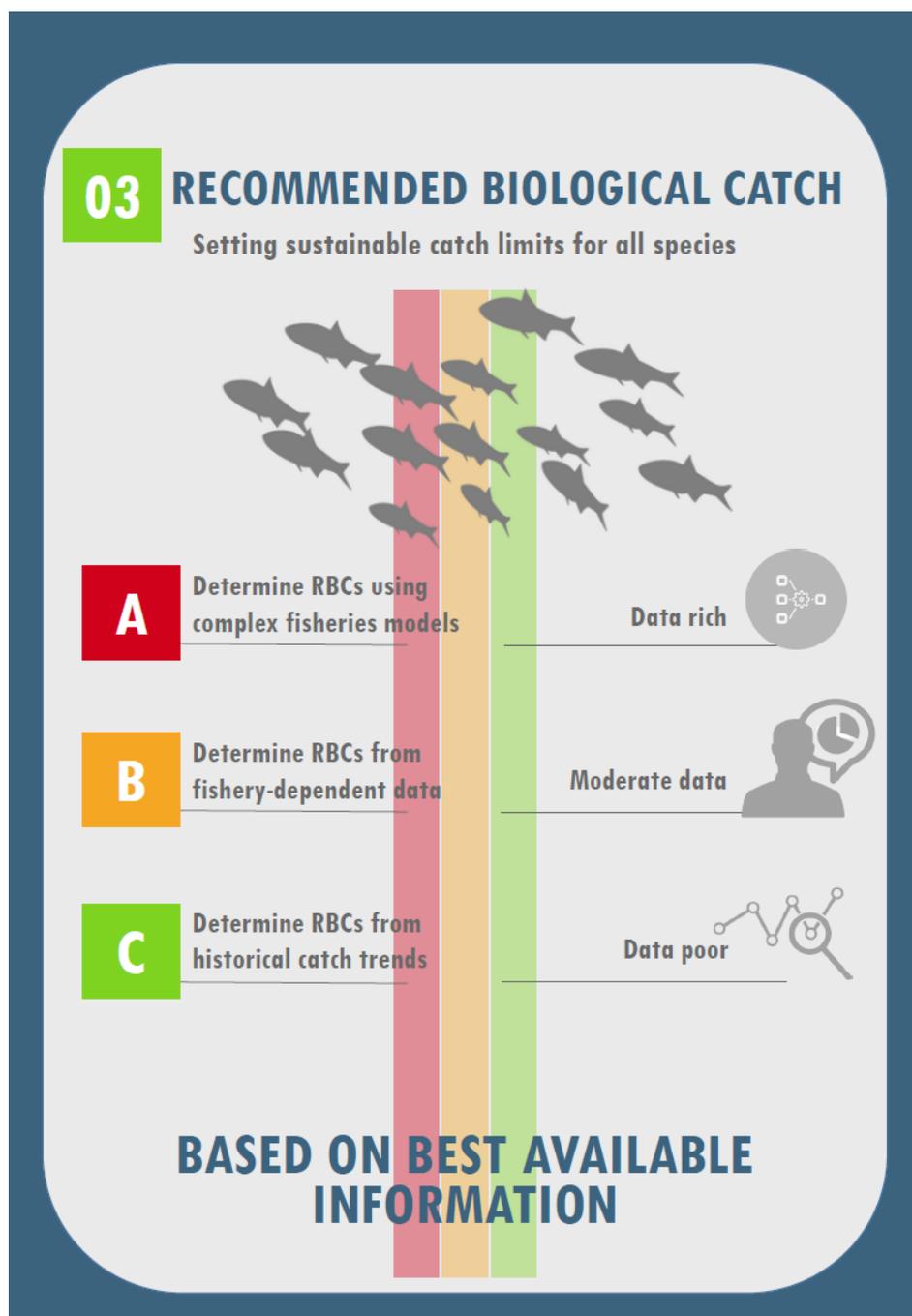
Consideration of the above resulted in two regional options. In both options the fishery was partitioned into four regions to capture the distinctive West Coast (WC), Spencer Gulf (SG), Gulf St. Vincent (GSV), and the South East (SE) stock structures and fleet dynamics. The area south of Kangaroo Island (KI) area was associated with GSV in Option I and the SE in Option II.



3. RECOMMENDED BIOLOGICAL CATCH

Given the diversity of information, the development of a Recommended Biological Catch (RBC) for each of the multiple species should adopt a step-wise approach driven by the availability of supporting information. When sophisticated fisheries models exist key parameters including biomass, recruitment, exploitation rates are derived and can be used to determine the **Maximum Sustainable Yield (MSY)** of the stock and set precautionary **Total Allowable Commercial Catches (TACCs)**.

In the absence of this information there are various methods to estimate MSY on the basis of historical trends in total catch and an understanding of the species resilience.

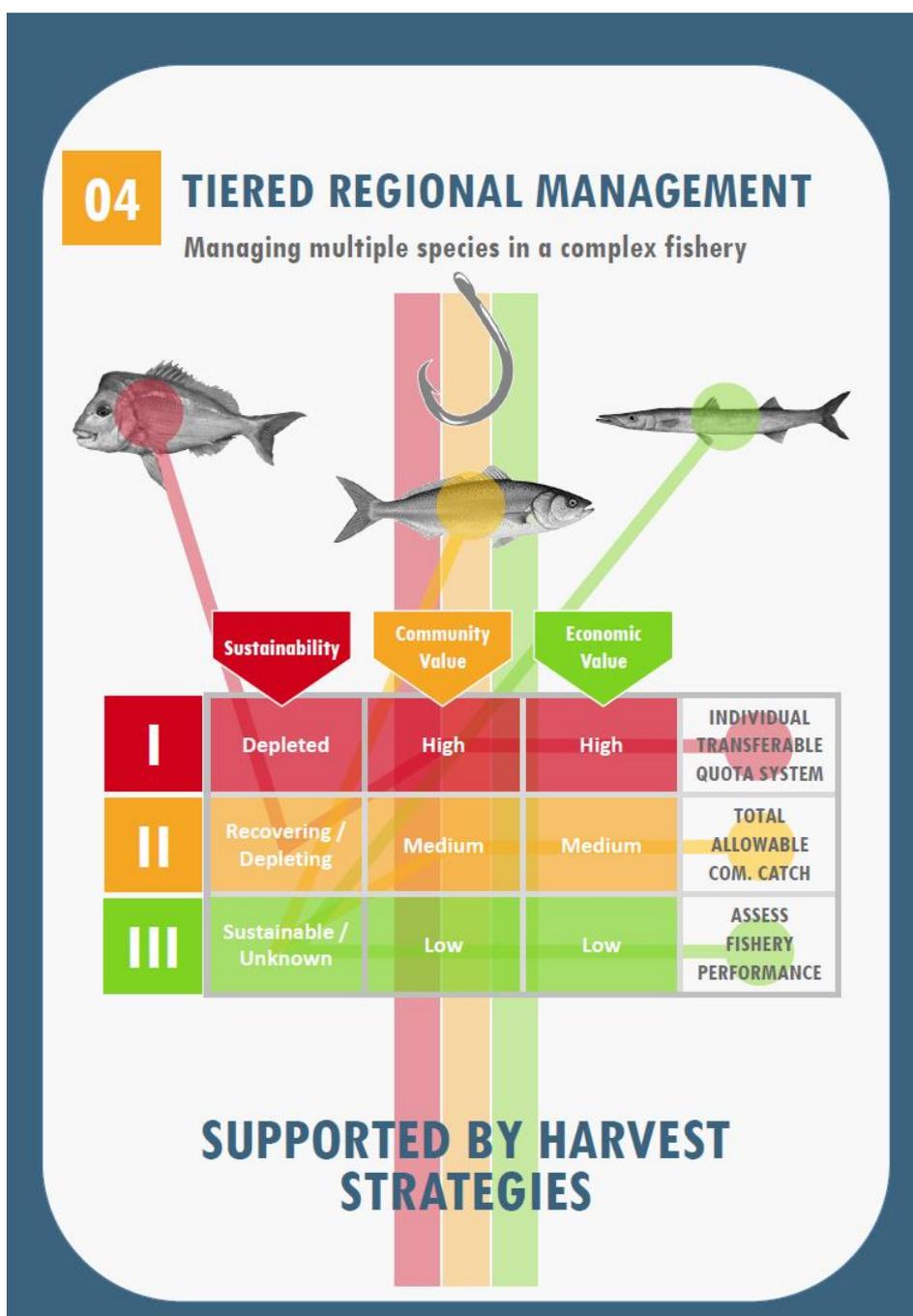


4. TIERED REGIONAL MANAGEMENT

Three principal management strategies can be implemented within the reform package with varying levels of application. Each strategy would be designed around an established TACC (Stage 3) for the stock of interest and applied using a tiered management approach, descending from:

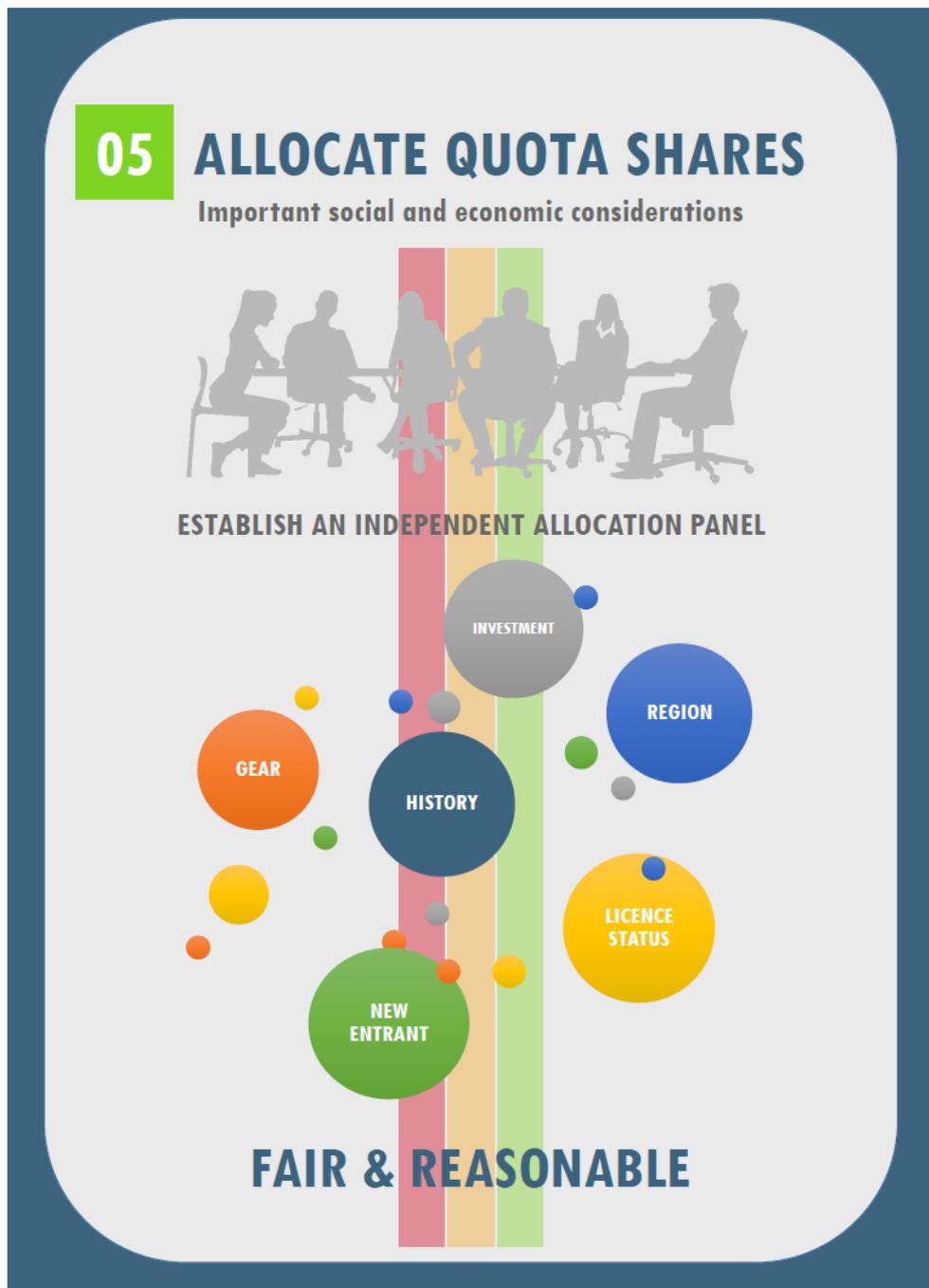
- TIER I – HIGHLY REGULATED TRANSFERABLE QUOTA SYSTEM (ITQ)**
- TIER II – BASED ON TOTAL ALLOWABLE COMMERCIAL CATCHES**
- TIER III – MONITORED AGAINST PRESCRIBED PERFORMANCE INDICATORS**

The decision-making framework should be flexible enough to adjust the management strategies when required. For example, a developing fishery may need to transition from a Tier III to a Tier II management strategy to minimise its sustainability risk. This approach can be applied to all MSF permitted species.



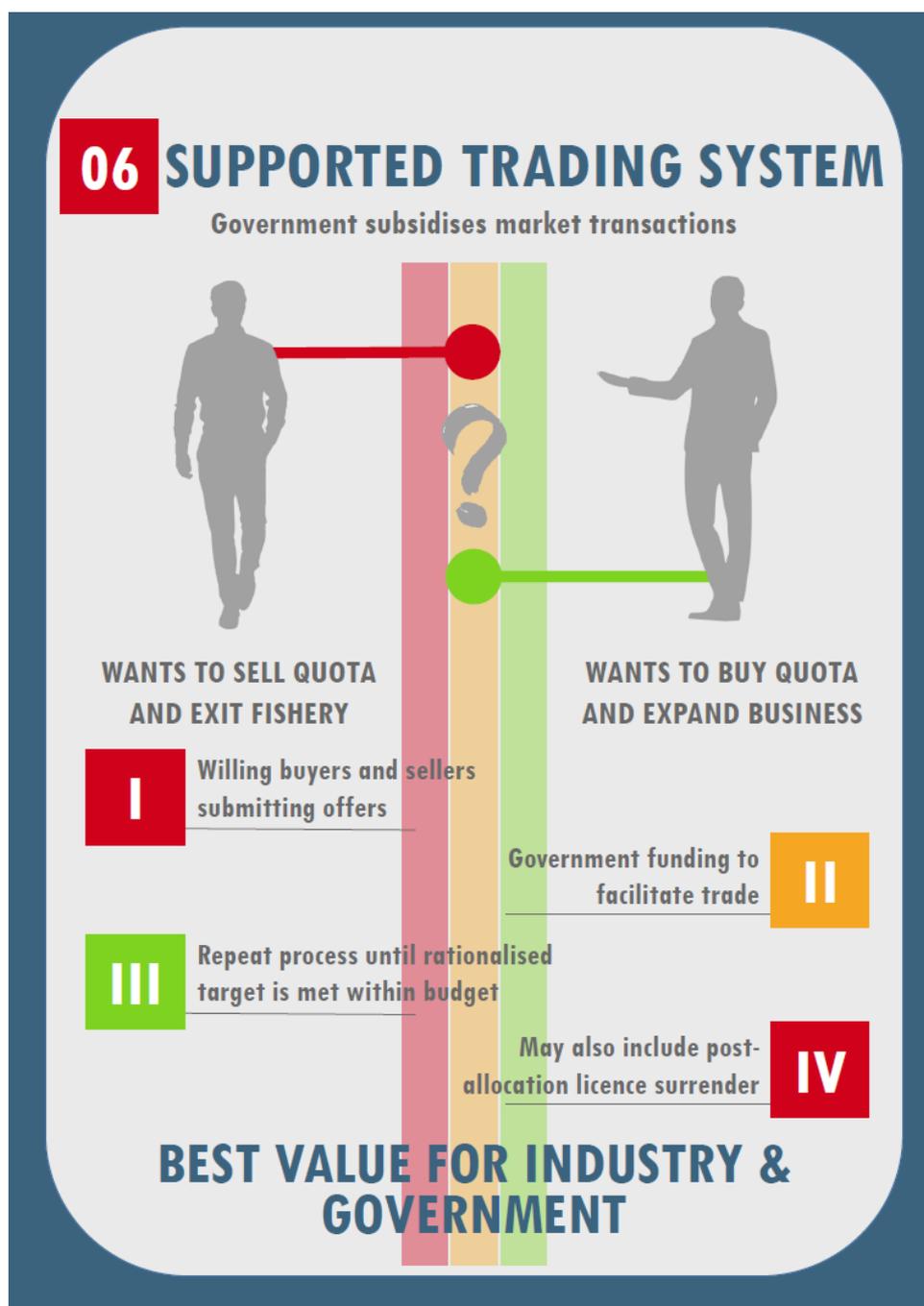
5. ALLOCATE QUOTA SHARES

The need to establish explicit and sound principles underlying any allocation method is paramount. Associated with this is the need for independence in recommending a fair and reasonable allocation formula. The establishment of an **independent allocation panel** to investigate and recommend the most appropriate allocation formula is crucial. Typically an independent allocation panel makes recommendations on eligibility, how units are allocated (i.e. catch history, licence status, gear endorsements), and consideration of exceptional circumstances (e.g. new entrants).



6. SUPPORTED TRADING SYSTEM

A supported quota trading system provides an option to further rationalise the fleet following the allocation of quota shares. It facilitates trades between willing sellers and buyers using government funding assistance. Sellers set a selling price on their quota holdings. Buyers, who are keen to develop their business, set a purchase price. Government funding facilitates (subsidises) the trading to match as many buyers and sellers as possible, and purchases licences that are offered for surrender in this process.



7. AUTONOMOUS ADJUSTMENT

A successfully reformed fishery, characterised by an economically viable fleet that sustainably harvests premium species without impacting the environment and is responsibly managed, should have the capacity to autonomously adjust. This will transition the fishery into a positive market-driven business environment that supports: profitable fish production; business specialisation and proficiency; a confident investment climate; create employment opportunities; less regulation; efficient management and administration; stewardship of shared-resources; a secure social licence to operate; and succession opportunities.



