

Commercial Fisheries Business Adjustment Program Social and Economic Impact Monitoring Framework

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Executive Summary

This document recommends a Social and Economic Impact Monitoring Framework (Framework), designed to inform monitoring, management and mitigations of impacts of NSW commercial fisheries reforms and Business Adjustment Program. The Framework is designed to inform understanding of impacts on:

- Commercial fishers, with a particular focus on understanding how impacts differ for different groups of fishers, including large-scale, small-scale and Indigenous fishers
- The seafood industry, with a particular focus on downstream processors and sellers of catch from NSW fisheries
- Regional communities in which commercial fisheries operate.

The Framework is designed to be able to identify impacts on both social and economic dimensions, including health and wellbeing of fishers, and long-term viability and productivity of the industry. It is also designed to produce information in a timeframe that can inform managing and mitigation of impacts, with the goal of minimising negative and enhancing positive impacts, enabling rapid reporting to stakeholders about impacts, and triple bottom line reporting on impacts of the reforms.

As part of this report, we reviewed current assistance measures. The range of assistance measures being provided is wide ranging and covers a substantial range. We were not able to fully assess the effectiveness of assistance measures, something which requires implementation of the Framework, but identified that the assistance measures have good potential to assist in mitigating several of the potential negative impacts of reforms, particularly through assisting fishers to engage in achieving an outcome that enables continued operation of their fishing businesses. We recommend consideration of increased use of rapid evaluation of each measure; increasing pro-active use of the fisher care line where feasible, expanding the scope of retraining assistance to provide more comprehensive assistance for fishers who have exited the industry and seek new work; and expanding the scope of the community awareness program. We also recommend consideration of provision of ongoing training and assistance for fishers to engage in the share market and in online reporting systems, continuing work with financial institutions to ensure fishers can use fisheries shares as collateral for finance, and ensuring that staff involved in managing and implementing reforms have access to support services to assist them in coping with events such as stressful interactions.

The monitoring framework we propose is designed to examine the specific social and economic impacts identified in both the recent Inquiry into the reforms, and in previous studies. As a wide diversity of impacts have been identified, the Framework is similarly diverse, with a relatively large number of indicators proposed to be monitored over time in order to identify social and economic conditions in the commercial fishing industry. An impact is the 'lived experience of change': this means monitoring processes need to examine how people are experiencing the changes that have occurred as a consequence of the reform. When monitoring outcomes of reform, it is important to understand how perceptions of impact change as fishers shift from the 'anticipatory' phase of reform to the 'implementation' phase. It is also important to assess how factors unrelated to reform are affecting the ability of fishers and fishing-dependent businesses to adapt to reforms. Monitoring impacts therefore requires understanding not only the specific effects of the reforms, but the conditions in which adaptation to reforms is occurring. Finally, the Framework needs to identify and

examine whether assistance measures (often referred to as ‘mitigation’ measures) have influenced the impacts of reform, by reducing negative outcomes and enhancing positive outcomes.

The indicators we propose in this report enable understanding of impacts on:

- Current fishers and those who have exited the industry
- Fishing households
- Service and supply businesses
- Fishing cooperatives and other downstream businesses
- Communities in which commercial fishing operates.

We recommend monitoring of the following socio-economic indicators in the framework. They are designed to enable identification of how different members of the fishing industry, fishing communities, and fishers who have left the industry, are experiencing the changes that have occurred for them as a consequence of reforms. For each indicator, it is important to not only measure the current ‘condition’, but also to identify the extent to which fisheries reforms versus other factors may be contributing to that condition. All reporting should also examine whether different groups are experiencing different impacts: for example, are some types of fishing business reporting mostly positive impacts from reforms, while others are reporting mostly negative impacts? This report includes consideration of the methods that can be used to do this, within the limitations inherent in identifying cause-effect relationships when monitoring social and economic change over time:

- Measures of **certainty about the future**: these indicators identify if reforms are leading to an increased or decreased ability to invest and make decisions based on having a high level of confidence in and certainty about the future of the industry:
 - Confidence in the fishing industry (all fishing industry members including current fishers, fishing service and supply businesses, cooperatives, downstream processors and wholesales)
 - Confidence in future of fishing business (all fishing industry members)
 - Confidence in fisheries management (all fishing industry members)
 - Perceived stability of fisheries management (all fishing industry members)
- Measures of **ability to successfully manage business**: these indicators identify if reforms are leading to an improved or reduced ability to successfully manage businesses in the fishing industry:
 - Confidence in ability to manage fishing industry business (all fishing industry members)
 - Fisher confidence in engaging with share market (current fishers)
 - Confidence in ability to invest in business (all fishing industry members)
 - Investment in fishing business (current fishers)
 - Spending on fishing goods and service providers (current fishers, businesses providing goods and services to fishers)
 - Fishing business profitability (current fishers)
 - Fishing business change in debt level and ability to service debt (current fishers)
 - Fishing business equity (current fishers)
 - Fishing business debt collateral (current fishers; this indicator identifies whether provision of shares is increasing the collateral available to fishers for finance)

- Satisfaction with fishing activities (current fishers)
 - Downstream business performance (fishing cooperatives, other downstream businesses)
- **Change in fishing industry activity and local economies:** These indicators identify whether the total volume of activity occurring in the fishing industry is changing, or in specific areas of the industry, helping identify flow-on impacts through the industry and into the economies of local communities. Each indicator should be analysed by region to enable identification of impacts on different communities:
 - Fishing business revenue (current fishers)
 - Volume of catch (current fishers)
 - Number of employees working in fishing business (current fishers)
 - Employment in fishing service and supply businesses (fishing service and supply businesses)
 - Downstream business employment (fishing cooperatives, other downstream businesses)
 - Downstream business fluctuation in supply (fishing cooperatives, other downstream businesses)
 - Direct employment generated by fishing industry in different communities (fishing communities)
 - Indirect employment generated by fishing industry in different regions (fishing communities)
 - Demographic change in local communities (fishing communities)
 - Change in tourism revenue (fishing communities)
- **Social and economic wellbeing and distress** of fishing industry members:
 - Social wellbeing and distress (all fishing industry members, fishing households). We have included several measures of wellbeing and distress to ensure issues such as experience of psychological distress are adequately monitored.
 - Working hours in fishing and satisfaction with working hours (current fishers)
 - Working hours outside fishing industry and satisfaction with working hours (current fishers, exited fishers, fishing households)
 - Household income (current fishers, exited fishers)
 - Household financial wellbeing (current fishers, exited fishers)
 - Exited fisher employment status (exited fishers)
 - Exited fisher satisfaction with new employment (exited fishers)
 - Intra-fishing industry conflict (all fishing industry members)
 - Wellbeing of fishing industry managers (managers)
 - Interactions with recreational fishers (current fishers)
- **Maintaining fishing identity and cultural practices:** these indicators identify whether fishers are able to maintain cultural practices and activities that are central to their identity; their identity in turn has an important influence on overall wellbeing levels:
 - Ability to engage in cultural fishing practices (Aboriginal fishers)
 - Ability to pass on fishing knowledge (all fishers)
- **Experience of fisheries reform process:** The way a person experiences a process will affect the social and economic outcomes occurring as a result of that process, as well as their confidence to engage in the future, and these indicators identify how perceptions of the reform process and its outcomes change over time as fishers adjust to implementation of reforms:

- Perceptions of fisheries reform process and outcomes (all fishing industry members, exited fishers)
- Rating of fisheries management communication (all fishing industry members)
- Experience of cumulative reforms (all fishing industry members)
- Types of reform assistance applied for (all fishing industry members)
- Types of reform assistance received (all fishing industry members)
- Usefulness of assistance received (all fishing industry members who have accessed assistance)

We recommend monitoring outcomes starting in spring 2017, with the first wave of monitoring also collecting data that enables ‘backcasting’ of estimates, to produce estimates of social and economic conditions in early 2016 prior to substantive implementation of the current reforms and the Business Adjustment Program. This should be followed by subsequent monitoring in 2018, 2019, and 2021. We recommend annual monitoring in the first two years as this is when there is both opportunity to provide additional assistance measures if monitoring identifies significant difficulty amongst fishers in adjusting successfully to reforms, and when the most substantial phase of adjusting to reforms will be experienced by fishers. This period of implementation is also one in which the social and economic impacts of reform shift from ‘anticipatory impacts’ – the impacts anticipated by members of the fishing industry, which in many cases include significant stress and anxiety triggered during the period in which reforms have not yet been implemented but are anticipated – to implementation impacts. In the implementation phase, as fishers are able to adjust to the implementation of reforms, the nature of the impacts experienced may shift substantially, with past studies indicating an often large difference between anticipated impacts and those then actually experienced during implementation. For this reason, regulator monitoring during the first years of implementation is very important.

A lack of available existing data means that most of the indicators in the Framework can only be populated with data by using direct surveys of fishers (both current and those who have left the industry), and fishing cooperatives and other downstream businesses. Conducting these surveys, as well as an initial survey of service and supply businesses, provides the data needed to then monitor impacts on communities in which the fishing industry operates. We have provided indicative costings for conducting an initial wave of monitoring: this first wave is likely to be substantially higher cost than subsequent waves, as significant investment is needed to build trust of many in the fishing industry to engage in any form of social and economic monitoring. If this trust is successfully achieved in the first wave, subsequent waves of monitoring will be lower cost.

A key part of our recommendations is that the proposed Framework should be reviewed, modified as necessary, and the final version endorsed, in consultation with representatives of different parts of the NSW fishing industry. This is essential to ensure that (i) the Framework we have proposed adequately addresses all areas that require monitoring, and (ii) the process, methods and hence findings of the monitoring are trusted by members of the NSW commercial fishing industry.

1. Background

This report outlines a Social and Economic Impact Monitoring Framework (Framework), designed to inform monitoring, management and mitigations of impacts of NSW commercial fisheries reforms and Business Adjustment Program. The Framework is designed to inform understanding of impacts on:

- Commercial fishers, with a particular focus on understanding how impacts differ for different groups of fishers, including large-scale, small-scale and Indigenous fishers
- The seafood industry, with a particular focus on downstream processors and sellers of catch from NSW fisheries
- Regional communities in which commercial fisheries operate.

The Framework is designed to be able to identify impacts on both social and economic dimensions, including health and wellbeing of fishers, and long-term viability and productivity of the industry. It is also designed to produce information in a timeframe that can inform managing and mitigation of impacts, with the goal of minimising negative and enhancing positive impacts, enabling rapid reporting to stakeholders about impacts, and triple-bottom line reporting on impacts of the reforms.

The Framework has been developed based on review of submissions to the 'Commercial fishing in New South Wales' Inquiry¹, review of past studies both in NSW fisheries, in other fisheries that have experienced similar reforms, and in other industries dependent on natural resources. In addition, national and international published literature on best practice approaches to monitoring social and economic outcomes of changed management of natural resources was drawn on.

¹ Based on documents available at <https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=2425> as well as a summary of material provided in-camera provided to the research team.

2. Understanding social and economic impacts to be monitored

Impacts of reforms depend in large part on the way reform is designed and implemented, and in particular on the measures put in place to mitigate impacts. Successfully monitoring reforms requires understanding the diverse ways people will experience those reforms.

An impact is the 'lived experience of change' (Slootweg et al 2002; Vanclay 2002): this means monitoring processes need to examine how people are experiencing the changes that have occurred as a consequence of a reform. The distinction between 'change' and 'impact' is important: different people will experience the same social or economic change in different ways. For example, under the NSW commercial fisheries reforms two fishers might both have the same amount of shares in the same fisheries allocated to them, but experience very different impacts from that change. One may have been only just able to keep up with debt and mortgage repayments at their previous catch levels, and have little to no ability to take on additional debt to purchase enough shares to continue operating at the same level of catch. The other may be in a position in which they have high equity in both their fishing business and home, and are able to easily take on debt to purchase a large volume of additional shares, enabling them to expand their fishing business and experience net benefits overall. This brief example highlights the importance of understanding the distribution of both the experience of *change* and of *impacts of change* when monitoring the social and economic outcomes of reforms.

Impacts do not begin only after a change is implemented: they begin at the point at which a person begins to anticipate that change (Walker 2000, Ross and McGee 2006, Franks et al. 2010a, 2010b, Loxton et al. 2013). In the case of fisheries reform, this means that social and economic impacts of reform have already been experienced for many years as fishers and industry members experienced impacts associated with anticipated changes. These 'anticipatory impacts' have been found in past studies to often be the most acute of those experienced at any stage of a structural adjustment process, and can include not only frustration, stress and uncertainty but the tangible impacts of these experiences on things such as investment in a business or in making decisions in the household (Loxton et al. 2013). A household will make very different decisions regarding things such as purchasing a house, accepting a new job offer, or choice of schools for children (to name a few), based on their level of certainty in having a future income from the industry in which one or more in the household are employed. When monitoring outcomes of reform, it is important to understand how perceptions of impact change as fishers shift from the 'anticipatory' phase of reform to the 'implementation' phase.

The extent and nature of impacts also depends not only on the specific effects of fisheries reform, but on how these reforms interact with other factors affecting the ability of fishers and industry members to respond effectively to change. This means that monitoring processes need to take into consideration how other factors are affecting the ability of fishers and fishing-dependent businesses to adapt to reforms. Monitoring impacts therefore requires understanding not only the specific effects of the reforms, but the conditions in which adaptation to reforms is occurring – for example, fishers with a small turnover may have less capacity to take on debt to purchase additional shares, and therefore may be less likely to achieve positive outcomes from reforms compared to those with larger business turnover. 'Cumulative impacts' refers to the idea of interaction between multiple factors that influence how a person, household or business responds to a change such as implementation of fisheries reforms.

The measures put in place to assist fishers and fishing dependent businesses (e.g. cooperatives) to adapt to reforms will have an important influence on the type and extent of social and economic impacts experienced. Therefore the Framework needs to identify and examine whether these measures (often referred to as ‘mitigation’ measures) have influenced the impacts of reform.

Measuring, monitoring and mitigating social and economic impacts of change therefore require understanding:

- **Existing impacts:** What actions have fishers and industry members taken as part of the anticipatory impacts stage, and to what extent have they experienced common anticipatory impacts such as stress, anxiety, uncertainty, delaying investment, or electing to take anticipatory actions such as early purchase of shares prior to operation of the subsidised share trading market. This will influence subsequent adjustment to the effects of reform, and therefore be relevant to ongoing monitoring of the outcomes of reforms.
- **Socio-economic conditions that may influence impacts of reforms:** Extent to which fisheries and industry members have capacity to cope with change and to maximise positive outcomes and minimise negative outcomes. This requires understanding both their personal capacity (health, stress, wellbeing, skills to engage in and understand complex reform processes), household financial status (incomes, debt, mortgage stress, household structure including caring obligations), and business (size, operation, debt, revenue, employment, working hours)
- **Ability to engage with mitigation measures:** Are fishers and other industry members able to successfully access and use the mitigation measures put in place? What factors prevent some being able to successfully do this and what changes might be needed?

3. Potential socio-economic impacts of NSW commercial fisheries reform

The first step in developing the Social and Economic Impact Monitoring Framework was identifying the social and economic impacts to be monitored. This was done through review of existing documentation identifying potential social and economic impacts (both positive and negative), with specific reliance on the following in order of priority:

1. Submissions to the Inquiry and other documentation related to NSW commercial fisheries reform and the Business Adjustment Program
2. Previous studies examining the NSW commercial fishing industry
3. Previous studies identifying social and economic impacts of (i) reforms to commercial fisheries and (ii) changes in natural resource dependent industries more broadly
4. Published literature discussing the types of impacts to be assessed in social and economic impact assessments.

3a Changes associated with fisheries reform

A first step in understanding social and economic impacts is identifying the types of change being enacted as part of fisheries reform. 'Change' here means any way the reforms may create a change for a member of the industry. The key changes for the NSW fisheries reforms include:

- The reform process. The process of designing and enacting reform is in itself a change that affects fishers and members of the industry.
- Change in catch or effort that fishers can achieve with shares.
- Changes occurring as a result of the actions fishers and industry members choose to make in response to the allocation of shares received. These may include:
 - Purchasing additional shares prior to operation of the subsidised share trading market
 - Purchasing additional shares in the subsidised trading market
 - Selling additional shares either prior to or in the subsidised trading market
 - Exiting fishing

3b Potential social and economic impacts of fisheries reform

A wide range of potential social and economic impacts were raised in submissions to the Inquiry. Submissions were reviewed by the authors of this report to identify the different specific impacts discussed, and the circumstances in which they were most commonly raised as concerns. Table 1 on the following pages summarises the potential impacts identified, and the groups most often described as potentially being affected by these (positively or negatively). It also identifies some types of social and economic impact often described in previous studies examining impacts of changes in access to natural resources, even where these were not discussed in submissions. The principal studies reviewed to identify these impacts are listed at the end of Table 1. Note that the documentation in Table 1 is based on *potential* impacts. While it is expected each impact will be experienced by some fishers, they will not be experienced by all fishers or other businesses. While some initial identification of the groups most likely to be concerned about impacts is made, this initial identification is partial and incomplete, due to the partial and incomplete nature of available information. The purpose of documenting potential impacts is to identify which types of impacts need to be assessed to ensure a comprehensive socio-economic impact assessment.

Table 1 Social and economic impacts to be assessed

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
Uncertainty about the future	Adverse mental health impacts (e.g. stress, anxiety, depression). Uncertainty is a recognised factor that can have adverse effects on mental health.	Inquiry submissions Previous studies	Reform process; length of reform process	Fishers – particularly smaller fishing businesses
	Inability to invest in business (e.g. delaying decisions regarding investing in new equipment, hiring workers, experiencing workers leaving due to uncertainty, inability to make future business plans due to uncertainty about outcomes of subsidised share market process).	Inquiry submissions Previous studies	Reform process; length of reform process	Fishers – particularly smaller fishing businesses; fishing cooperatives
	Inability to make major household decisions (e.g. to purchase a house, send child to private school, purchase major goods).	Inquiry submissions Previous studies	Reform process; length of reform process	Fishers
	Concern about future change in fisheries access rights and regulations (concern that current reforms will be followed by more and that there will not be adequate certainty to support a viable fishing business). This is related to a lack of trust in government decision makers.	Inquiry submissions Previous studies	Reform process; length of reform process	Fishers
	Uncertainty about future viability of business due to uncertainty about material effects of changes in how fisheries access rights work (e.g., several fishers identified that they feel uncertain about future of their business depending on how share market processes operate).	Inquiry submissions Previous studies	Share allocation process and subsequent share trading market operation	Fishers – particularly smaller fishers
	Uncertainty about outcomes of subsidised share trading market. In particular, concern that lack of knowledge of prices and share availability results in lack of ability to confidently place bids that are based on an appropriate market valuation.	Inquiry submissions	Subsidised share market	Fishers
	Uncertainty about market access/share availability in near to medium future. This includes concern about that market speculation will inflate share prices above a true market value, and the impact this will have on market access for current active fishers.	Inquiry submissions	Reform process	Fishers – particular fisheries
Certainty	Improved ability to invest in business. Positive impacts are	Inquiry submissions	Share allocation process	Large operators; Lobster

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
about the future	expected by some fishers who feel the quota arrangements offer them greater certainty and provide a better basis on which they can structure and plan investment in their business.	Previous studies		and Abalone fishers
	Greater confidence in future. Once a reform is implemented, if it remains stable it can increase a fisher’s certainty about the future, and their ability to confidently make decisions about things such as their household (e.g. buying a car or house, children’s education), and business.	Previous studies	N/A	N/A
	Positive mental health impacts. If a reform successfully increases certainty and stability, it can result in improved mental health in the longer term due to reduced stress. However, this is a longer-term impact that eventuates only after the effects of changes have been experienced.	Previous studies	N/A	N/A
Impacts on customary/ cultural fishing by Aboriginal people	Impacts on cultural practice and access. Concern that reforms do not enable Aboriginal people to practice customary fishing using cultural practices, and does not accommodate diversity and complexity of Aboriginal fishing practices. Concerns also raised about ability to pass on cultural knowledge, tradition and experience, and about potential for Aboriginal people to be prosecuted for carrying out customary fishing activities that have been part of practice for generations. Note: no perceptions of positive impacts were identified, and past studies have not examined cultural fishing rights in adequate detail to provide insight.	Inquiry submissions	Reform process	Aboriginal fishers
Reduced business profitability/ viability	Reduced business profitability due to decreased revenue and/or increased costs, particularly (i) reductions in share rights, (ii) revenue loss due to reduction in share rights (iii) increase in debt due to need to buy additional shares, (iv) increases in labour costs due to changes affecting ability to employ unendorsed crew, (v) increases in other business operating costs with some mentioned in submissions including licence fees, reporting costs, and quota-leasing costs. Multiple submissions raised specific concerns about	Inquiry submissions Previous studies	Share allocation process, decisions made regarding buying additional shares	Smaller fishing businesses; Smaller fishers who feel unable to access additional shares to retain existing catch levels; younger fishers with less business or personal equity and less capacity to obtain and

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	impacts of the share trading that occurred prior to the operation of the subsidised share trading market, particularly concerns about impacts on share availability and prices.			service additional debt
	Reduced profitability due to reduced access/reduced catch. Reduction in profitability due to having to adjust to reduction in allowable catch resulting from share allocation process. Particularly a concern for smaller fishing businesses; small diverse fishers (defined as those owning shares across multiple fisheries and/or using multiple fishing methods); cooperatives; fishers who feel unable to ‘afford to exit’ due to inability to cover debts with exit package while also feeling unable to remain viable in fishing.	Inquiry submissions	Share allocation process	Smaller fishing businesses; cooperatives; those with higher business debt
	Reduced capacity to adapt to seasonal and market changes, due to the effect of the reform on ability to operate across multiple fisheries.	Inquiry submissions	Share allocation process	Smaller fishing business who are diverse (operate in multiple fisheries or using multiple methods)
	Reduced employment, closure of fishing businesses due to downsizing of businesses and exit from fishing by some fishers.	Inquiry submissions Previous studies	Share allocation process	Smaller fishing business
Increased business profitability/viability	Improved profitability/viability from business expansion due to ability to purchase additional shares for business, particularly for those who had done so prior to operation of the subsidised share trading market.	Inquiry submissions	Share allocation process	Mostly reported by larger operators
	Increased ability to invest in business due to greater certainty leading to increased revenue and profitability.	Inquiry submissions Previous studies	Share allocation process	Large operators; Lobster and Abalone fishers
	Increased employment, particularly through changes to unendorsed worker requirements. Some larger operators in particular viewed this as having potential to create jobs for younger fishers.	Inquiry submissions	Unendorsed worker provisions	Larger operators
	Increased ability to invest as able to borrow against shares. While not raised in submissions, the ability to borrow against more clearly delineated and tradeable property rights has been noted as a positive outcome of similar reform processes in past studies.	Previous studies	N/A	N/A
Reduced	Reduced business value or equity. Concern about an adverse	Inquiry submissions	Share allocation process,	Smaller fishing businesses;

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
business value or equity	impact to business equity from devaluation of overall value of fishing business.		decisions made regarding buying additional shares	fishers in previously effort-based managed fisheries; fishers nearing retirement whose were relying on equity in their business for superannuation
Increased business value or equity	Increased business value or equity. Positive impact for some who expect quotas will increase the value of their shares, and tradeable share market will increase prices and hence business value.	Inquiry submissions	Share allocation process; decisions made regarding buying additional shares	Large operators
Fisher working hours	Increased working hours. Concern that reforms result in increased working hours, due to adverse impacts on business finances, greater difficulty employing workers, higher administrative complexity of managing fishing business requiring additional labour time, and need to work longer hours to achieve revenue sufficient to cover debt repayments. This was also reported as a likely outcome of some of the restrictions placed on fishing days/periods. Working longer hours is associated with safety concerns about higher rate of injuries, accidents, and mental health.	Inquiry submissions Previous studies	Share allocation process	Smaller fishing business operators and those with less confidence in their capacity to cope with administrative requirements
	Reduced working hours – negative impacts. Some reported concerns they would not be able to work desired hours due to lacking enough shares to provide full-time work.	Inquiry submissions Previous studies	Share allocation process	As immediately above
Justice and fairness of the process – negative impacts	Concern that reform process has not been fair or just. Concerns about lack of justice were reported in relation to (i) fishers feeling they are being asked to ‘buy their own business back’, (ii) concerns by some scientific evidence does not justify the decisions made, (iii) perceived lack of avenues of independent appeal of decisions, (iv) concerns about which fishers were consulted and had a say in reform design and which did not, (v) concern about fairness of treatment of latent versus active effort, and (vi) concern about relative impacts of the reforms on different types of fishers.	Inquiry submissions Previous studies	Reform process	A diverse range of fishers and some cooperatives, but particularly by smaller operators who operate across diverse fisheries

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	Impacts of concerns about injustice include (i) a sense of loss of control which reduces self-efficacy, a key driver of mental health and ability to adapt to change; (ii) stress; (iii) anxiety; (iv) depression; (v) difficulty making positive decisions due to consequences of any adverse mental health impacts.			
	Concern about low transparency and poor communication. Several fishers reported negative impacts resulting from what they feel has been poor and unclear communication about the reform process, and difficulty understanding different components of reform and actions they should take. Several reported that training they participated in did not answer their questions or increase confidence in being able to engage in processes such as the subsidised share trading process. This was associated with concerns about lack of ability of some fishers to engage in the process to achieve best possible outcomes.	Inquiry submissions Previous studies	Reform process – communication	Wide range of fishers and fishing businesses, particularly those with limited IT literacy, and with concerns about their overall literacy and numeracy skills
	Concern about inequitable impacts. Concern that small fishers are impacted disproportionately negatively compared to larger businesses; and that the design of reforms does not adequately address needs of different types of fishers or those using different fishing methods.	Inquiry submissions Previous studies	Share allocation process, decisions made regarding buying additional shares	Smaller fishers; Active fishers
Justice and fairness of the process – positive impacts	Increased equity. Those designing the reform, and a small number of fisher submissions, felt the reforms will create a more ‘even playing field’ with better and more transparent processes of access.	Inquiry submissions Previous studies	Reform process	Reform proponents, larger fishers
	Increased transparency. Those designing the reform report the new system will result in more transparency in terms of understanding value of fisheries resources and ensuring that value is available to fishers in the form of property rights.	Inquiry submissions	Reform process	Reform proponents
Identity	Loss of identity. Many fishers have a strong identity related to fishing, which is central to their psychological wellbeing. Many submissions identified that the reform process impacts on this sense of identity and related sense of being able to fulfil an	Inquiry submissions Previous studies	Exit of fishing businesses from industry; reform process	A diverse range of fishers and some cooperatives, but particularly by smaller operators who operate

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	important social purpose through provision of seafood while earning a livelihood. Loss of identity has important mental health impacts which can include stress, anxiety, depression, reduced self-efficacy and difficulty adapting successfully to change. Note: no evidence available suggests the reforms are likely to reinforce/increase fishing identity, although it is possible that if the reforms provide long-term stability they will in future support maintenance of fisher identity.			across diverse fisheries who feel they will be ‘forced to exit’ despite preferring to remain in commercial fishing
Poorer mental health, reduced wellbeing	Negative impacts on mental health and wellbeing. As noted in other impacts, multiple aspects of the reform process have been reported by fishers to be associated with poorer mental health outcomes, including stress, anxiety, depression and reduced self-efficacy. This has been associated with concern about high risk of self-harm and suicide, as well as other adverse outcomes. This is particularly a concern during the reform process and immediately after implementation (for the first years of operation). This is an impact also reported in most previous studies.	Inquiry submissions Previous studies	Reform process, uncertainty about the future	Smaller fishing business operators and those with less confidence in their capacity to cope with impacts of reforms
Improved mental health, wellbeing	Positive impacts on mental health and wellbeing. In the longer term, if the reform process is managed successfully, there is potential for positive longer-term impacts on mental health and wellbeing. This will occur if those who remain in fishing experience greater certainty in their future and improved business viability, and if those who exit fishing are able to access new livelihoods (or a retirement) that they find fulfilling. Previous studies have found this to have occurred if reform processes provided support and were implemented stably over a longer period. These positive impacts did not occur if there was continuing change in management.	Previous studies	N/A	N/A
Viability of fishing cooperatives	Reduced viability of cooperatives. Concern that some cooperatives may close or substantially reduce operational capacity due to (i) overall reduction in catch or (ii) changes in timing of catch, with particular concern that a shift to a smaller	Inquiry submissions	Restructuring of businesses and exit of some fishing businesses	Fishing cooperatives, fishers

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	number of large operators will result in irregular large catches and gaps in supply.			
Increased viability of fishing cooperatives	Increased viability of cooperatives. In the longer term, the outcomes of the reform process may better support ongoing viability of the fishing cooperatives through ensuring ongoing sustainable catch levels. Additionally, assistance provided to cooperatives to plan business adjustment may enable cooperatives to improve overall business outcomes.	Inquiry submissions	Share allocation process and reform process	Proponents of reform
Reduced viability and availability of fishing service industries	Reduction in fishing service industries and associated availability of services and supplies. Concern about negative impact on service industries (e.g. freight and product processing) based upon a concern about changes to fishing effort and nature of fish supply flow.	Inquiry submissions	Share allocation process	Smaller fishing businesses; cooperatives; fish processing businesses; fish wholesalers/retailers
Increased viability of fishing service industries	Increased viability of fishing service industries. If reforms support a more stable and sustainable fishing industry into the future, this will likely support the viability of fishing service industries. This will be a longer term impact dependent on the success of the reform process.	Inquiry submissions	Share allocation process and reform process	Proponents of reform
Reduced household income	Reduced household income. Concern that impacts on fishing businesses and cooperatives will result in reduced household income and associated financial stress for families of those affected. This can occur both for those who remain in the industry but earn a lower income from fishing (due to either reduced revenue or increased business costs), and for those who exit the industry.	Inquiry submissions Previous studies	Reduction in revenue for some fishing businesses; exit from fishing industry for others	Smaller fishing business operators and those with less confidence in their capacity to cope with impacts of reforms
Increased household income	Increased household income. For those fishers who benefit from the reform process, and are able to invest in their business, increased household income may result.	Inquiry submissions	Increased ability to invest in business	Larger fishing businesses, reform proponents
Increased household working hours	Increased working hours for fishing household members. Concern that working hours will increase for members of the household other than fishers, who take on additional work outside fishing to cope with effects of reforms. Fishers may also do this (described in	Inquiry submissions Previous studies	Reduction in revenue for some fishing businesses; exit from fishing industry for others	Smaller fishing business operators and those with less confidence in their capacity to cope with

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	the 'Fisher working hours' impact category earlier in this table).			impacts of reforms
Reduced wellbeing and mental health of fishing households	Negative impacts on mental health and wellbeing of members of fishing households. Multiple submissions reported concerns about effects not only on mental health of fishers, but of their households, including partners and children who experience high uncertainty about their own futures as well as distress resulting from observing the significant distress experienced by the fisher/s in the household. Some reported high levels of stress, potential for marital break-up, and strained relationships.	Inquiry submissions Previous studies	Reform process	Smaller fishing business operators; those with dependent children; those with less confidence in their capacity to cope with impacts of reforms.
Improved wellbeing and mental health of fishing households	Positive impacts on mental health and wellbeing of members of fishing households. If reforms provide a more stable and sustainable fishing industry into the future, this will have positive impacts on mental health and wellbeing of those living in households in which one or more people are working in the fishing industry.	Previous studies	N/A	N/A
Exiting fishing – negative impact on employment	Difficulty gaining employment outside the fishing industry. Many fishers lack confidence they can obtain employment outside the industry if they exit, due to (i) lack of experience outside fishing, (ii) lack of formal education and perceived lack of skills, and (iii) lack of available employment opportunities in local area.	Inquiry submissions Previous studies	Fishing exit	Fishers considering potential for exiting fishing as a result of reform
	Poor conditions in jobs gained outside fishing industry. Past studies have found that some fishers (and others who leave natural resource dependent industries) often find it difficult to find satisfying jobs in a different industry, particularly because they highly value independence and being 'their own boss'.	Previous studies	Fishing exit	N/A
Gaining new employment	Positive impacts associated with gaining new employment. Those who do in future gain employment successfully outside the fishing, and find a job they enjoy, may experience positive impacts (this was identified as occurring for many forestry workers in northern NSW who shifted to jobs in new industries after the Regional Forest Agreement, for example).	Previous studies	Fishing exit	N/A
Loss of fishing	Loss of fishing knowledge. Concerns that exit of fishers and	Inquiry submissions	Fishing exit	Aboriginal fishers as well

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
knowledge	consolidation of fishing businesses will result in loss of fishing knowledge which has previously been passed from one fisher to another.	Previous studies		as some fishing businesses
Retention of fishing knowledge	Retention of fishing knowledge. If reforms are successfully in improving sustainability of the fishery and reducing exit of fishers in future, they may contribute to longer term retention of knowledge and more stable transfer of that knowledge.	No evidence identified in submissions or previous studies; this was identified based on idea of reforms providing longer-term stability	N/A	N/A
Community economic impacts – negative	Reduced economic activity in fishing communities. Concerns about flow-on impacts of any reduction in fishing activity for jobs and economic activity in local communities, particularly in industries that provides goods and services to the industry, or which transport, process and sell catch.	Inquiry submissions Previous studies	This is a concern if reforms result in substantially lower numbers of fishing businesses and catch	This was raised by a range of stakeholders, including all types of fishers and fishing cooperatives.
Community economic impacts – positive	Stable economic activity in fishing communities. If the reforms provide more certainty in the future and stability, this will support fishing making an ongoing contribution to fishing communities.	No evidence identified in submissions or previous studies; this was identified based on idea of reforms providing longer-term stability	N/A	N/A
Tourism industry impacts (community identity)	Negative impacts on tourism. Concerns that changes will result in (i) less availability of locally caught produce, something that contributes to coastal tourism; and (ii) reduced visibility of fishing activities that form part of the identity and attraction of many coastal towns.	Inquiry submissions	This is a concern if reforms result in substantially lower numbers of fishing businesses and catch	Several different stakeholders, including fishers and fishing cooperatives.
Tourism industry impacts (community identity)	Positive impacts on tourism. If the reforms provide more certainty in the future and stability, this will support fishing making an ongoing contribution to the identity of fishing communities and to the tourism industry through that contribution.	No evidence identified in submissions or previous studies; this was identified based on idea of reforms providing longer-term stability	N/A	N/A
Conflict	Increased conflict and tension. Several submissions raised	Inquiry submissions	Reform process	Range of fishers

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
between fishers	<p>concerns about heightened levels of conflict and disagreement between different groups as a result of the reforms.</p> <p>Fear of bullying or conflict, reducing confidence to speak publicly. Some submissions were kept confidential and there has been reference to concerns that some people feel unable to openly discuss their views about reforms due to fear of how others would react. Anecdotally (according to fisheries stakeholders contacted as part of this review), this was most commonly an issue for some fishers who supported reforms and were not confident to state this publicly.</p>	Inquiry submissions, discussions with fisheries stakeholders	Reform process	Fishers who supported reform
Impacts on those involved in process	Potential for stress and poorer wellbeing. Staff involved in delivering fisheries reforms can themselves experience negative impacts such as higher stress and poorer wellbeing as a result of reform if the process of delivery involves substantial amounts of negative interaction or conflict. This is highly likely given the controversial nature of reforms, and may affect those providing assistance to fishers and the industry, as well as those involved in managing the reform process.	Inquiry submissions, discussions with fisheries stakeholders	Reform process	N/A
Interaction with recreational fishers	<p>Increase in negative interaction with recreational fishers. Some concerns were raised that limits on fishing days could cause crowding and queuing at key locations, causing delays and problems for both commercial and recreational fishers.</p> <p>More positive image of commercial fishing amongst recreational fishers. If the reforms are viewed as increasing sustainability of fisheries, they may improve the reputation of commercial fishing amongst recreational fishers (and the general public).</p>	Inquiry submissions	Fishing period limits	Fishers operating in fisheries where there are restrictions on fishing days
Community social impacts	Increased anti-social behaviour in local communities. While not typically identified in submissions to the Inquiry, past studies examining effects of structural adjustment have raised concerns about potential for increased anti-social behaviour in affected	Previous studies	Flow-on effects to communities of job losses/ reduced business viability	Range of stakeholders

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	<p>communities including domestic violence, alcohol and drug abuse, and aggressive or anti-social behaviour. This is particularly in the periods during and immediately after reforms are implemented. Note that positive impacts on community interaction have not been identified in previous studies, with most focused on how to reduce potential for negative impacts.</p>			
Cumulative impacts	<p>Negative impacts of past reform processes. Multiple submissions referred to concerns that these reforms follow many years of experiencing change in fisheries management, with the impacts of these changes accumulating to cause overall greater impact. This included raising of concerns about how these reforms add to effects of measures such as recreational fishing havens, marine protected areas. Other cumulative impact concerns related to concerns about illegal fishing, with some submissions raising concerns about illegal fishing. Note that no evidence was found that the cumulative effect of ongoing reform processes would have positive impacts.</p>	Inquiry submissions Previous studies	Reform process	Range of fishers
Difficulty accessing assistance measures	<p>Difficulty accessing assistance. Some submissions identified difficulty applying for and using assistance measures offered, including a lack of training and knowledge by counselling phone line staff, high administrative burden in applying for some types of assistance, and difficulty meeting eligibility requirements for some forms of assistance.</p>	Inquiry submissions Previous studies	Reform process	Range of fishers
	<p>Lack of available assistance. Previous studies have identified that failing to provide some forms of assistance can have negative impacts. A detailed review of assistance offered in reforms, and identification of gaps, is provided in subsequent sections of this report.</p>	Inquiry submissions Previous studies	Reform process	Range of fishers
Positive impacts of assistance measures	<p>Positive impacts of assistance. Providing effective assistance measures can enable fishers and fishing industry dependent businesses to achieve positive outcomes from reform. Whether this occurs depends on how well assistance measures are designed</p>	Inquiry submissions Previous studies	Reform process	Reform proponents

Impact – general category	Impact – sub-category & brief description	Source of information on potential impact	Aspects of fisheries reform identified in Inquiry submissions as resulting in this impact	Which groups most often identify this as a potential impact in Inquiry submissions?
	and implemented, discussed in the Section 4.			
	<p>Previous studies reviewed to identify potential impacts relevant to fisheries reform: Arce-Gomez et al. 2015; Barclay 2012; Bradshaw 2004; Bradshaw et al. 2001; Breman and Shelton 2001; Bremon and Shelton 2001; Britton and Coulthard 2013; Brooks 2010; Brooks et al. 2015; Cinner et al. 2009; Clay et al. 2014; Copes 1996; Coulthard 2012; Coulthard et al. 2011; Curtis and Squires 2008; Dare et al. 2011; Esteves et al. 2012; Franks et al. 2013; GHD 2014; Holland et al. 1999; Jentoft 2000; Kaplan and McCay 2004; Loxton et al. 2012; Loxton et al. 2013a,b; Loxton et al. 2011; Loxton et al. 2014; Macintosh et al. 2010; Marshall 2007; Marshall et al. 2007; Marshall and Marshall 2007; Newby et al. 2004; Nielsen 1992; Pascoe et al. 2014; Pascoe et al. 2015; Pollnac and Poggie 1988, 2006; Pollnac et al. 2006; Ross and McGee 2006; Schirmer 2005, 2011; Schirmer and Casey 2007; Schirmer and Pickworth 2005; Schirmer et al. 2004; Schweinsberg 2007; Singer 1994; Sootweg et al. 2001; Smith and Clay 2010; Symes and Philipson 2009; Triantafillos et al. 2014; Vanclay 2002; Vanclay and Esteves 2011; Vanclay et al. 2013; Vanderpool 1987; Vieira et al. 2009, 2010; Voyer et al. 2016, Walker et al. 2000; Williams and Schirmer 2012.</p>			

4. Reviewing what has been done: effectiveness of existing measures implemented to manage and mitigate potential negative socio-economic impacts

The Business Adjustment Program and a range of other measures are being implemented to reduce potential negative impacts and enhance positive impacts of commercial fisheries reform. The breadth and range of support measures offered is large and this has ensured options are available both for fishers who wish to exit and who wish to stay. Provision of a combination of fishing business buyouts (exit grants), low interest rate loans, grants for advice, coaching sessions, reduced costs for those involved in fishing (management fee caps and boat licence fees suspended for one year), and retraining assistance, as well as access to various forms of assistance such as Rural Financial Counselling, represents a comprehensive package of assistance measures. This section examines the likely effectiveness of these measures, and based on this, recommends amendments to existing assessment measures and potential additional measures to further support fishers, fishing households, and fishing-dependent businesses and communities, adapt to fisheries reforms.

4a Review of current assistance measures

In a desk top review it was not possible to fully assess the effectiveness of current assistance measures, as a full assessment requires data that will be assessed as part of the Framework, such as:

- **Ease of access:** Have fishers/businesses found it easy to understand/apply for/access each measure? What factors have made it easier or harder to do this (e.g. literacy, eligibility criteria, provision of support for preparing applications, timeframes for applying for assistance)
- **Rates of access:** Have fishers/businesses used the measure? What factors have influenced rates of access (e.g. rates of success in bids, reluctance to apply, perceptions of ineligibility)
- **Usefulness of support received:** How useful have fishers/businesses found support they have received? What factors increased/reduced usefulness?

Some of these things could be partially assessed through discussions with those managing the programs and data identifying rates of application for each assistance measure and rates of success of those applications. However, this initial information provided a limited assessment only. We therefore focused on examining, based on the evidence available and findings of previous studies, which impacts each measure may potentially be able to address, and the types of conditions that would need to be in place for it to succeed in doing so. Table 2 summarises this initial assessment, including recommendations for improving practice, and for monitoring whether current measures can be improved. This is followed by:

- A summary of key recommendations for actions that could be taken in the short term to ensure assistance measures achieve the best possible outcomes for those impacted by fisheries reforms
- Recommendations for rapid assessment of participants to ensure there is rapid feedback on success or otherwise that can be used to adjust provision of assistance
- Additional measures that could be implemented to assist in achieving successful outcomes from fisheries reform.

Section 5 then provides indicators that can be used to assess ongoing effects of assistance.

Table 2 Key considerations for evaluating effectiveness of different assistance measures

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
Commercial Fisheries Business Adjustment Hotline	Direct – Fishers, businesses reliant on fishing	<ul style="list-style-type: none"> • Uncertainty, anxiety • Difficulty accessing support • Negative financial impacts (via assisting uptake of assistance measures that reduce financial impacts) 	<ul style="list-style-type: none"> • Rates of access to and uptake of Business Adjustment measures 	<p>Hotlines are effective when they can rapidly and effectively direct people to information that answers their questions, reduces uncertainty, and reduces the complexity often associated with understanding and access supporting measures.</p> <p>To be effective, the Hotline therefore needs to provide rapid and accurate information to fishers and industry businesses that enable them to easily identify how to access Business Adjustment Program measures. Ideally, the Hotline staff also should be able to provide rapid assistance with actions such as completing application forms, either directly or through providing contact information for others who can provide this assistance.</p>	<ol style="list-style-type: none"> 1. Continue using the Hotline. 2. Consider implementing evaluation in which those who have called the Hotline are asked to provide a simple evaluation of the effectiveness of the Hotline in directing them to information they require, shortly after they contact the Hotline.
Fisher Care Line (telephone-based coaching session)	Direct – Commercial fishers Indirect – Fishing households	<ul style="list-style-type: none"> • Stress, depression • Difficulty identifying sources of support • Difficulty applying for assistance 	<ul style="list-style-type: none"> • Rates of uptake of Business Adjustment Program measures • Ability to enhance positive outcomes from fisheries reform through 	<p>To be effective, this measure needs to be (i) trusted by fishers, (ii) delivered using a method fishers are likely to be willing to engage in, and (iii) delivered effectively in terms of being able to provide support to fishers. Our assessment is that fishers are likely to be similar to farmers, forest industry workers and other natural resource-dependent workers, who are often both reluctant to seek counselling overall or to cold-call a person they do not know to seek support. This is consistent with evidence tabled in the NSW Parliament that, as of 31 March 2017, 12 fishers had called the Care Line.² To be effective:</p> <p>(i) It is essential that Care Line staff have adequate knowledge of fisheries related issues to be able to provide effective counselling and advice: if fishers receive advice they find unhelpful, this has potential to compound rather than mitigate negative impacts.</p>	<ol style="list-style-type: none"> 1. Continue provision of Care Line. 2. Ensure Care Line is always clearly advertised as being open to all members of fishing households, not just fishers. 3. Evaluate whether staff have adequate knowledge of specific challenges faced by fishers and invest in building this knowledge if needed. 4. Identify options for more proactive contact with fishers in which Care Line workers

² <https://www.parliament.nsw.gov.au/la/papers/Pages/qanda-tracking-details.aspx?pk=235424>

Impact management/ mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
			making optimal decisions regarding shares	<p>(ii) Ideally, Care Line staff would be able to actively contact fishers to ask if they would like to talk, rather than waiting for fishers to contact them. This is particularly important for reaching those fishers who are highly stressed and, due to that stress, may be particularly unlikely to feel able to initiate a new social interaction with a stranger. Several rural counselling services have used this type of active contact strategy to provide support to workers affected by changes in natural resource industries with high effectiveness (e.g. for reaching farmers affected by drought and forest workers facing redundancy). However, privacy constraints may reduce ability to do this.</p> <p>(iii) Care Line staff need to have the ability to assist fishers in both counselling for stress/anxiety, and in accessing the practical forms of support available to them through the Business Adjustment Program. This means staff need to be able to link fishers to the various support measures that may be useful in helping them adjust to fisheries reform, rather than restricted to providing mental health counselling only.</p> <p>(iv) Provide a face-to-face assistance service rather than phone only. Other services have found that farmers, foresters and other workers in primary industries often respond more to face-to-face than phone interactions³. However, delivering this type of service does require having suitably trained staff able to either travel to regions or based in local areas, which can be challenging.</p>	<p>establish contact with fishers and other members of their households, introducing themselves and identifying themselves as a source of assistance for either the fisher, or others the fisher may feel need assistance. This requires assessing privacy constraints for accessing contact details, and considering enabling counsellors to spend time in places such as co-operatives where they can introduce themselves to fishers.</p> <p>5. If possible, enable face-to-face visits rather than advice by phone only. Face-to-face assistance is typically more effective than phone line assistance, and does not necessarily require full-time staff members in a region: it can be achieved through methods such as enabling some travel time for counsellors.</p>

³ The following websites and reports provide information on support services provided by groups such as Rural Alive and Well in Tasmania, who provide similar types of assistance and have used proactive approaches successfully: <http://www.rawtas.com.au/>; <http://www.health.gov.au/internet/publications/publishing.nsf/Content/suicide-prevention-activities-evaluation~Appendices~appendixa~project32>; Dare et al. (2011).

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
Fishing business buyout (part of Adjustment Subsidy Program, up to \$20,000 or \$40,000)	Direct – fishers & their households	Inability to exit industry	Ability to exit industry successfully	Provision of exit grants has been a challenging type of support in many structural adjustment programs. Small exit grants have had very low rates of uptake in programs offered in the past in natural resource dependent industries such as agriculture. This is not the case with this reform, with 169 fishing business buy outs at the time this report was written. In response to the Inquiry, buy outs applications will continue to be considered post closure of the subsidised share trading market. Exit grants are typically useful if they enable a small business owner to clear debts or increase the funds they have after exiting to support them in accessing a new job or starting a new business. Further assessment is needed to identify if the buyout, in combination with sale of shares and assets, achieves this. The grants should be assessed through evaluation of those who have sought advice on them, asking them why they did or didn't choose to proceed to seeking an exit grant, and for those who did, identifying the outcomes. Some submissions to the Inquiry also suggest that some fishers misunderstood the buyout amount as being suggested as representing the entire value of the business (rather than being in addition to the sale of shares and assets). This was associated with a sense of inequity and lack of justice as those who misunderstood the buyout this way felt the buyout amount suggested their businesses had little value. In future communication, this should continue to be clarified to ensure the buyout grant is understood as a grant provided in addition to the returns a fishers obtains from sale of shares, assets etc in their business.	<p>6. Design simple evaluation that asks those who receive assistance to rate how useful they find that assistance shortly after receiving it.</p> <hr/> <p>1. Review all communication about buyout, to ensure it is clear that the amount of the buyout is additional to the return achieved from sale of shares etc. This will reduce the perception that fishing businesses are being undervalued or not recognised as having value.</p> <p>2. Ensure those who received buyout are followed up to assess outcomes (this forms part of our recommended monitoring process).</p> <p>3. Identify if any who wished to exit did not apply for the buyout and, if so, why not (this forms part of our recommended monitoring process).</p>

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
Professional advice grants up to 2,000	Direct – fishers & their households	Difficulty making financial and legal decisions; difficulty navigating share market	Financial outcomes – assisting positive outcomes through informing decision making	Advice grants are typically effective if they are easy to access and rapidly approved. This has been an assistance measure with high uptake, with 160 applications for assistance and the majority of these approved. This type of grant will be less effective if it is difficult or complex to apply for, and approval takes a long time, as fishers may be unable to afford to pay for advice and then wait for reimbursement via the grant, or may not receive advice in the timeframe needed to inform their decision making. The available evidence suggests relatively rapid approval of grants has occurred, although the three week turnaround aimed for in the approval process should be assessed relative to the timeframes within which fishers required advice. Continuation of the grants until 2018 (a measure announced in response to the Inquiry) will enable fishers to use this assistance to assess effects of outcomes of the subsidised share trading market on their business.	<ol style="list-style-type: none"> 1. Ensure those who applied for advice grants are followed up to assess outcomes (this forms part of our recommended monitoring process). 2. Identify if any who wished to access advice did not apply for a grant and, if so, why not (this forms part of our recommended monitoring process).
Retraining assistance up to \$10,000	Fishers, fishing households	Unemployment, underemployment post exiting fishing	Positive employment outcomes post fishing	The training assistance package currently appears to provide reimbursement only, with fishers having to first successfully identify training opportunities. It has had very low rates of uptake which, while not surprising as this is likely to be more relevant post the closure of the subsidised share market. Past studies on exited workers have identified that to successfully gain new employment, training is just one part of the assistance that is often useful. In particular, for training to be effective, retrenched workers often need assistance in identifying potential new career pathways and the types of training they may be able to access. Providing access to careers counsellors who can help the worker identify potential opportunities, provide training in skills such as curriculum vitae (CV) preparation and job interview skills, and help worker identify whether current skills could be formally recognised with Certificate III or IV vocational qualifications and what industries they may be applicable to, can	<p>We recommend that the retraining assistance be redesigned with consideration given to including the following actions:</p> <ol style="list-style-type: none"> 1. Provision of staff who provide customised assistance to fishers to have left the industry and are seeking new work. This includes assistance in skills such as writing CVs, interview skills, identifying existing skills, and identifying potential training and employment opportunities. 2. Provision of financial

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
				improve rates of success. For example, in the Tasmanian forest industry, Forestworks successfully assisted 95% of workers seeking employment in other industries after losing employment in the forest industry to find new jobs in what was a depressed regional economy, principally through use of 'Workers Assistance Coordinators' who provided one-on-one support to retrenched workers ⁴ . Additionally, partnering with registered training organisations (RTOs) to provide a rapid response skills program in which existing tickets/skills can be formally recognised through rapid training courses that 'round out' the skills to the point where they can be given formal accreditation could improve success of retraining assistance. Ideally, assistance provided should be in the form of an upfront grant and requiring evidence of expenditure, ensuring that fishers experiencing significant financial hardship are not prevented from utilising this form of assistance by a lack of ability to pay for expenses prior to seeking reimbursement.	assistance for a wider range of aspects of seeking new employment. This might include for travel to job interviews, purchase of suitable clothing for interviews, as well as training. 3. Ensure fishers are aware they can access Business Connect support if they wish to develop a new business after leaving fishing (see next row of this table) 4. Design rapid evaluation to ensure any provision of assistance is rapidly evaluated to identify whether it is useful and effective.
Access to Business Connect for exited fishers for whom retraining not useful for gaining new employment	Exited fishers	Difficulty finding new employment after leaving fishing	Finding new employment that is satisfying and provides a good standard of living	As one of the responses to the Inquiry, fishers who wish to exit the industry have been provided access to the Business Connect program. This program is focused on assisting people to start or grow their small business. This can be of use to those exited fishers who wish to run a business after leaving fishing. This provides a wider range of support to fishers post exit beyond retraining, which is positive.	No action recommended.
Workshops	Fishers	Difficulty engaging	Ability to	In response to the Inquiry, the Office of the NSW Small Business	No action recommended.

⁴ See <http://www.forestworks.com.au/publications/workers-assistance-service/> which includes links to publications and reports assessing the effectiveness of this scheme, one of the most successful of its kind delivered in a case of industry structural adjustment in an industry which, similar to commercial fishing, had many workers with relatively low levels of formal educational attainment combined with strong but often informal technical and trades skills.

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
for fishers to assist in registering for subsidised share trading market		with the subsidised share trading market process	achieve good outcomes from the subsidised share trading market	Commissioner developed a program to assist fishers with the registration process for the subsidised share trading market, assisting fishers complete registration forms and access support. This type of workshop can be very useful if held locally and at times all fishers are able to attend.	
Adjustment subsidy program – (subsidisation of buying and selling shares)	Fishers	Inability to sell shares/exit fishing; inability to purchase shares	Certainty in the future	The provision of subsidies in the subsidised share market is an important form of assistance that is intended to assist fishers in achieving viable businesses. This type of assistance is generally positive if the basis on which it is provided is clear and transparent. While guidance on the criteria used to apply subsidies to buying and selling of shares is available publicly, and a probity auditor was appointed (in response to Recommendation 3 of the Inquiry), the way this has been applied in the subsidised trading market had not yet been described in publicly available documents at the time of writing this report. To evaluate the extent to which the subsidies mitigate potential negative impacts of commercial fisheries reforms requires evaluating the extent to which fishers are able to access the market at desired prices for buying or selling, and resultant overall outcomes for their business. The ability of fishers to successfully access and use the scheme needs specific evaluation, particularly whether advice helplines, grants for professional assistance, and other processes enabled all fishers to successfully access and use the adjustment subsidy program. It can be challenging to balance the needs of privacy for those who participate in often highly specific trades of shares, versus providing information publicly to ensure trust in the process and increased certainty for participants.	<ol style="list-style-type: none"> 1. Ensure those who applied to buy or sell shares are followed up to assess their views of outcomes after closure of round 3 (this forms part of our recommended monitoring process) 2. Clearly communicate what subsidies were applied and how as part of the 3 rounds of the subsidised share market, to ensure transparency and clear communication; reports by the probity auditor appointed as part of the response to the Inquiry will provide independent advice on the process used.
Fishing Cooperatives Assistance	Fishing cooperatives, fishers,	Difficulty maintaining business	Ensuring economically sustainable	The assistance grants currently provided are described as being for business advice only, although Fisheries NSW advised the interpretation of this is broad and includes actions such as	<ol style="list-style-type: none"> 1. Consider broadening criteria for assistance so funds can be used by cooperatives

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
	consumers	operations	seafood based businesses	business plans, or detailed advice on innovative products and services. Despite being interpreted broadly, they represent a relatively limited form of assistance in this regard; a broader form of assistance enabling businesses to apply for assistance to enact measures identified as likely to assist them in adjusting (as well as to receive advice) would likely provide a wider range of useful support as it would provide resources for structural adjustment.	for a wider range of actions that go beyond business advice, particularly for investment in actions to improve business viability.
Low interest loans of up to \$80,000	Fishers, fishing households	Difficulty accessing finance to purchase additional shares	Ability to restructure business	Low interest rate loans are an effective way of providing assistance to fishers who may not be able to either access mainstream finance or afford repayments of standard interest loans. The effectiveness of low interest loans will depend on the ease of fishers applying for and accessing the loans, and their subsequent ability to repay loans using business revenue. This should be assessed by evaluation of fishers who applied for loans, including both successful and unsuccessful applicants. A significant proportion of fishers (more than 100) have applied for loans and just over 70% of these received loans. This indicates high potential usefulness of this assistance measure, but further assessment is needed to identify (i) how useful those who received loans found them, (ii) whether some fishers did not apply, or were unsuccessful in their application, due to barriers or ineligibility despite wishing to access a loan.	<ol style="list-style-type: none"> 1. Ensure those who received loans are followed up to assess outcomes (this forms part of our recommended monitoring process). 2. Identify if any who wished to access a loan either did not apply for a loan (and, if so, why not), or were unsuccessful, and the effects of this (this forms part of our recommended monitoring process).
Caps and waivers on fisher management, share transfer and other fees	Fishers	Short term financial stress	Enabling fishers to adjust to reform	Temporary reduction in and waiving of fishing management and other fees can assist fishers adapt in the short term during periods of stress.	None.
Two year rent waiver and negotiation of	Fishing cooperatives	Short term financial stress	Enabling cooperatives to adjust to	Temporary waiving of rent can assist cooperatives in coping with any reduction in catch and to invest in actions that assist adjusting to change. Negotiating of a long-term lease can	None.

Impact management/mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
long-term leases for cooperatives on public land			reform	improve certainty in the future related to land that is of high value for other development, assisting in enabling cooperatives to invest in their business.	
Community awareness campaign	Fishing industry – all	Loss of market share for fish caught in NSW	Stable economic returns from fishing, profitability of fishing	The \$400,000 community awareness campaign funding aims to ‘fund the implementation of programs to build community support for the NSW fishing industry and improving local seafood demand ... (to) ... help build a strong and valued reputation for a viable and productive commercial fishing industry in NSW’. This is a useful initiative, however the amount allocated for this is relatively small. Building community support for the fishing industry and increasing demand requires ideally a sustained campaign over several years, and may require investment in initiatives that go beyond community awareness to investing in actions that help build community trust in and demand for NSW caught seafood products. Ideally, the funds available should be able to be used for actions that can increase demand beyond awareness raising, for example they may be used to identify approaches to achieving sustainability certification that addresses consumer concerns about sustainability of catch.	We recommend increasing funding for this initiative and the length of time the initiative is run from two years to five years. We also recommend ensuring the funding can be used for actions beyond raising community awareness.
Introduction of electronic catch recording systems	Fishers, fishing co-operatives, fisheries managers	Lack of information; difficulty submitting catch information	Rapid and easy reporting of catch	This is a measure being implemented in response to Recommendation 12 of the Inquiry. Introduction of electronic catch recording systems can be positive as long as all fishers have the capacity to successfully engage with the new form of catch recording. As many fishers have low IT experience and low literacy, consideration should be given to providing further support for fishers in the forms of workshops and training, as well as ensuring easy formats for reporting catch such as use of phone apps.	Evaluate need for workshops or training for fishers.
Establishment of CommFish	Fishers, fishing industry	Difficulty representing all people in the	Improved representation of people from	The establishment of the Commercial Fishing NSW Advisory Council, meeting Recommendation 14 of the Inquiry, will ideally provide improved representation of commercial fishers in the	Once CommFish has operated for adequate time, ask members of the fishing

Impact management/ mitigation measure	Who will be assisted by this measure	What negative impacts can this measure help mitigate?	What positive impacts can this measure enhance?	Conditions required for measure to successfully mitigate negative and/or enhance positive impacts of reforms	Recommended actions
		fishing industry in decision making processes	across the fishing industry in decision making processes	process of determining resource access issues.	industry to evaluate its effectiveness.
Aboriginal Fishing Trust Fund and associated measures	Aboriginal fishers	Lack of ability to engage in cultural fishing and in income-generating fishing activities by Aboriginal fishers	Ability to achieve income generation and jobs, and engage in cultural fishing practice	Commitment of funding of \$1.5 million toward an Aboriginal Fishing Trust Fund (together with a \$5 million grant announced by the NSW Government in June 2017 to the NSW Aboriginal Land Council for purchase of fishing licences), has potential to provide improved access to fisheries resources for Aboriginal fishers. Further evaluation will be needed to identify if it successfully does so, and to evaluate issues such as concerns about prosecution of Aboriginal fishers raised by South Coast Aboriginal fishers in particular ⁵ .	As recommended in Section 5, consult with Aboriginal representatives to identify the best process for assessing social and economic impacts; as part of this process, conditions for ensuring this funding successfully supports Aboriginal fishers should be identified.

⁵ See for example <http://www.naroomanewsonline.com.au/story/4757111/nsw-aboriginal-fishing-rights-group-starts-petition/>

4b Recommended actions to increase effectiveness of current assistance measures

Based on our initial assessment, all the assistance measures currently in place are relevant and likely to be assisting in reducing potential negative impacts and assisting fishing businesses to adjust to fisheries reforms. There is scope to amend some of the support measures that will be ongoing beyond operation of the subsidised share trading market, to improve their effectiveness. Specifically, in addition to monitoring outcomes (discussed in Section 5), in the shorter term we recommend:

- **Rapid evaluation (high priority):** Putting in place simple evaluations undertaken soon after a person contact the (i) Business Adjustment Hotline, (ii) Fisher Care Line, or (iii) any assistance provided as part of a re-designed retraining assistance program. This involves asking the person to rate how useful the information and assistance provided was, on a scale from 1 (not at all useful) to 5 (very useful), and asking them to identify what was least useful and what was most useful. Including this evaluation provides information that can be used to improve each service based on feedback received.
- **Fisher Care Line (high priority):** We recommend making amendments if possible to the Fisher Care Line service to improve its reach to fishers and fishing households. The specific changes recommended are:
 - Shift to increased use of proactive ‘reaching out’ rather than reactive ‘waiting for a call’ approaches. Reaching out here means enabling staff to contact members of fishing households. If privacy requirements do not enable this use of contact databases, enabling counsellors to spend time at locations like fishing co-operatives to introduce themselves to fishers may assist. Establishing this initial contact will be more likely to result in identification of fishing households requiring assistance than waiting for a member of that household to call.
 - Enable some face-to-face contact with fishers; fishers and members of fishing households are more likely to reach out to someone they have met personally for assistance. However, with a lack of local services often an issue, this may be difficult to implement; a process of enabling some counsellors to visit local areas and spend time introducing themselves in locations such as fishing cooperatives may assist.
 - Ensure Care Line is understood to be open to all members of fishing households, to ensure that all members experiencing stress can access support.
 - Evaluate knowledge Care Line staff have of fisheries reforms and ensure they have adequate knowledge to provide meaningful support.
- **Fishing business buyout (lower priority):** Review communication to ensure that it is clear that the amount of the buyout is additional to the return achieved from the sale of shares etc. This will reduce the perception that fishing businesses are being undervalued or not recognised as having value.
- **Retraining assistance (higher priority):** Expand the assistance to provide a more comprehensive package of assistance, which ideally includes staff who provide customised assistance to fishers who have left the industry and are seeking new work, assisting them in finding new work, in skills such as preparing for interviews and writing a CV and job applications, and in identifying appropriate training opportunities. Expand scope of activities eligible for funding to include things such as travel to job interviews, and potentially grants to assist fishers prepare a business plan if they plan to start a new business.

- **Adjustment subsidy program (lower priority):** Clearly communicate what subsidies were applied and how as part of the three rounds of the subsidised share trading market, to ensure transparency and clear communication. As this is likely to occur in large part through review by the probity auditor, this action has been given lower priority.
- **Fishing Cooperatives Assistance (higher priority):** Consider broadening criteria for assistance so funds can be used by cooperatives for a wider range of actions that go beyond business advice, particularly for investment in actions to improve business viability.
- **Community awareness campaign (medium priority):** Expand funding available and ensure it is available for a longer period of time to enable a sustained campaign. Also ensure that this funding can be used to all types of activity that may increase community support and demand for NSW seafood, rather than being proscribed to only awareness campaigns.

4c Gaps and potential additional assistance measures

Moving forward into the implementation phase of shares, there is scope to implement some additional forms of assistance. In particular, content of some submissions to the Inquiry as well as findings of studies into previous structural adjustment programs suggest that the following may be useful in mitigating potential negative impacts:

- ***Work with financial institutions to ensure fishers can use shares as property rights for financing (medium priority):*** Work with financial institutions to ensure there is clarity regarding whether loans can be made against shares. When new or different property rights are created, there can be a lack of clarity regarding whether they are an asset that can be a basis for obtaining finance. Financial institutions unfamiliar with the new type of asset class may be unwilling to loan against it, or may simply lack knowledge of it at loan officer level and hence may reject applications that put up an under-recognised property right as collateral for a loan. A key recent example is the Murray Darling Basin Plan, where direct discussions with financial institutions, and preparation of information that could be disseminated within financial institutions, assisted in ensuring irrigators could obtain loans against water entitlements in the Basin (source: personal communication with staff of the Murray Darling Basin Authority). While this work has already begun with regard to NSW fisheries shares, with an information sheet developed and provided to financial institutions, we recommend investing in continuing this work. The focus should be on ensuring that all financial institutions have ensured their loans approval staff and loans officers are aware of and trained in understanding when and how shares can be considered as collateral for finance. In addition to information sheets, this may require providing training for loans officers or other forms of appropriate communication and building of skills and awareness within financial institutions.
- ***Investment in ongoing skills and training for fishers and businesses to engage with market trading and online systems (high priority once electronic catch reporting put in place):*** Fishers have already had opportunities for workshops and training to assist them in building skills and knowledge needed to successfully engage with market trading and online systems. The ongoing shift to online reporting of catch, use of online systems for other management and reporting, and share trading, means there will be an ongoing need for this type of skills building. This is important given the known low level of existing skills of many fishers in these areas. Commercial fishers have typically had low uptake of online systems until recent years: to give an example, in

the 2011 Census, only 82.8% of NSW households with one or more commercial fishers had internet access, compared to 92.3% of all households with an employed person⁶. Fishers have also been noted as having lower levels of formal literacy and numeracy, and in 2011 only 22.7% of NSW commercial fishers had completed Year 12 or equivalent of high school, compared to 61.9% of the employed labour force of NSW⁷. This means that engaging successfully in online reporting and market trading can be assisted through providing ongoing skills assistance in the areas of IT literacy. Design of this type of training should be done in consultation with fishers, to identify what types of training and skills building are likely to be most effective.

- ***Ensure staff involved in implementing reform have access to support (high priority)***. Staff involved in the process of managing and implementing fisheries reforms are engaged in a process that has involved high levels of contention in some cases, and in many cases are likely to have been asked to regularly engage in challenging interactions in which they may be experiencing aggression, anger and criticism from those expressing concern about reforms. It is important to provide support for staff who are managing this process, and providing services such as counselling and training to increase skills in managing challenging situations can assist in maintaining both their wellbeing overall, and their ability to successfully manage and implement the reform process.

⁶ Data source: ABS TableBuilderPro 2011 Place of Enumeration database, using data from the 2011 Census of Population and Housing, accessed 28 May 2017

⁷ Data source: ABS TableBuilderPro 2011 Place of Enumeration database, using data from the 2011 Census of Population and Housing, accessed 28 May 2017

5. Proposed process for assessing impact: Socio-economic impact monitoring framework

This section provides recommendations on monitoring the outcomes of the reform process over time:

- a. First, we recommend a process for building trust in the monitoring process, through ensuring stakeholder involvement in the design of monitoring methods such as surveys, and ensuring stakeholder involvement in oversight of monitoring processes.
- b. Secondly, we review available data sources for monitoring social and economic outcomes, finding that there are few available data sources and monitoring will require collection of data via direct surveys of fishers and fishing-dependent businesses, in addition to some use of existing data collected by the NSW Government about fisheries licence holders and fishing catch.
- c. We then recommend specific methods for monitoring socio-economic outcomes. We recommend using the following methods to collect data, however these should be reviewed by relevant fisheries stakeholders, modified as appropriate based on their input, and agreed to by those stakeholders, before being implemented:
 - Survey of all current NSW commercial fishers. Key challenges are identifying survey methods that will enable a high response rate, with low trust meaning fishers are reluctant to participate in surveys (Voyer et al. 2016 achieved <10% response from fishers in 2014-15)
 - Survey of exited NSW commercial fishers who have left fishing since 2014. The key challenge will be identifying contact details for exited fishers.
 - Survey of cooperatives and of other key downstream processors and sellers of catch from NSW commercial fisheries.
 - Use of licence data, catch data and data from fisher and cooperative surveys to identify the extent of regional community dependence on commercial fishing prior to and post implementation of the reforms.
- d. Finally, we describe the specific indicators we recommend be monitored. These indicators are designed to examine each of the social and economic impacts (positive and negative) identified as potentially resulting from reform processes in Section 4. Due to a lack of existing data suitable for monitoring the outcomes of fisheries reforms, the indicators we recommend include many questions intended to be included in surveys. In addition to being described in this section, a summary of survey questions is provided in Appendix 1. Indicative costings for a first wave of monitoring are then provided in Appendix 2.

5a. Building trust in social and economic monitoring: ensuring stakeholder involvement and oversight

For any monitoring of socio-economic outcomes of reforms to be effective, the monitoring findings need to be robust and trusted by all stakeholders involved in fisheries reform, including fishers, industry participants, regulators, and fishing communities. This is only possible if these stakeholders trust the processes and methods used to monitor outcomes. Achieving this trust can be challenging in an environment in which available evidence suggests there is very low trust in government

agencies by many fishers, as well as in some cases low trust between different groups within the fishing industry.

Our first recommendation on social and economic monitoring of the outcomes of fisheries reforms is therefore to establish appropriate processes for involving stakeholders representing the diverse interests of the NSW fishing industry in design and oversight of the monitoring process. This means that the methods and indicators we recommend in Section 5c and 5d should not be implemented unless they are first (i) discussed with stakeholders representing different groups across the industry and government, (ii) amended as appropriate based on discussion with those stakeholders, and (iii) explicitly endorsed by those stakeholders. Without this process, it is unlikely that any attempt at conducting surveys will successfully collect adequate data to be effective, or that the results of socio-economic monitoring will be trusted by and used by different groups involved in fisheries.

A key part of this initial consultation and amendment is involving the staff who have been directly working with fishers, as well as representatives of all types of fishers. This should include staff of DPI Fisheries, particularly those who have worked on the Hotline and who therefore have very good knowledge of the types of impacts different fishers believe may occur as a result of reform, and those who have been engaged in consulting with fishers previously. It should also involve CommFish, and representation from fishers in (i) different sized fishing businesses (including representatives of smaller and larger businesses), (ii) fishers operating in the full range of NSW fisheries, (iii) representation of Aboriginal fishers, (iv) seafood processors, particularly cooperatives, and (v) potentially businesses supplying goods and services to the fishing industry. This is not an exhaustive list and other relevant groups may be identified that should be incorporated. This can in part be determined based on discussing with Hotline staff whether some of the calls they have received are from groups whose views will not be represented by the stakeholders already identified, as well as asking the same question of CommFish members. It should also be reviewed by checking that those who are asked to consult represent the full range of views expressed in the Inquiry.

Social and economic assessment, including monitoring of outcomes of reforms, is best understood as a process, not an outcome: the best monitoring processes have limited use if their findings are not trusted or used by many of the people involved. International best practice strongly emphasises the importance of this type of assessment involving genuine stakeholder engagement and participation (see, for example, Vanclay and Esteves 2011; Esteves et al. 2012; Vanclay et al. 2013; Prenzel and Vanclay 2014). This is critical for any socio-economic monitoring of NSW commercial fisheries reform. A lack of trust in the reform process, and conflict between different groups within fisheries, means that it is likely to be difficult to achieve high engagement by fishers and other industry members in ongoing monitoring of outcomes unless they are encouraged to engage by leaders they trust from within the fishing industry; similarly, unless stakeholders affected by reform have the opportunity to meaningfully contribute to the design of monitoring processes and to endorse proposed data collection and analysis methods, the results of any socio-economic monitoring are unlikely to be readily trusted by fisheries stakeholders.

To be effective, data collection processes conducted as part of monitoring should be preceded by an appropriate process in which key stakeholders who represent different groups within the NSW fishing industry explicitly inform design of data collection, and endorse those methods. This can assist in achieving response from fishers who otherwise are unlikely to participate. One challenge in

achieving this is that many fishers feel unrepresented and do not necessarily have an organisation they trust to represent their interests. However, many of these are members of cooperatives in which they have higher levels of trust.

The socio-economic monitoring methods we recommend should be tested and revised through:

- Consultation with all organisations representing professional fishers, fishing supply and processing businesses (including all fishing cooperatives), asking for their feedback. This can occur via phone discussions, or ideally through workshops involving multiple people attending and discussing assessment methods
- Revision of socio-economic monitoring methods (for example, survey instruments) based on this consultation
- Endorsement of revised methods by consulted organisations, who are asked to sign a letter encouraging fishers, fishing and seafood service and processing businesses, and other stakeholders, to participate in surveys and other data collection processes. This letter will be included in all communications with fishers and other stakeholders asked to participate in socio-economic monitoring.

To increase trust in outcomes of the socio-economic monitoring process, it is important that the Framework be fundamentally based on ensuring a monitoring process that is conducted using a transparent, independent process. Given current low levels of trust in the NSW Government by many fishers, we recommend that initial monitoring be undertaken by an independent organisation, and be governed by an advisory committee that includes representatives from different fishing organisations, cooperatives, and government (including DPI Fisheries). Representation needs to include people who can represent the interests of smaller multi-fishery fishing businesses, larger fishing businesses, fishers from different NSW fisheries, Aboriginal fishers, fishing cooperatives, fishing supply businesses, and government. After establishment of this independent oversight process, and production of an initial set of monitoring results by an independent organisation, subsequent monitoring could be undertaken by appropriately skilled staff within the NSW Government, as long as processes of independent oversight that include representatives of different fisheries interests were maintained.

To summarise, we recommend as part of the Framework that socio-economic monitoring should be conducted based on the following principles, with clear communication about how this is being ensured:

- Assessment methods agreed to by wide range of stakeholders with differing perspectives about the potential impacts of fisheries reforms
- Assessment process subject to oversight by an independent advisory committee composed of a range of stakeholders representing different interests in fisheries reform, which ensures assessment is carried out using agreed methods. This committee should have oversight of ensuring methods are robust, but not the ability to alter results or to refuse publishing results.
- Results made publicly available
- Advisory committee members having an opportunity to read and respond to findings of socio-economic monitoring, which may be released together with findings of monitoring.

This process of governance is intended to build trust in the findings of socio-economic monitoring, and to ensure that monitoring examines issues of concern to all stakeholders involved in and experiencing change as a result of fisheries reform processes.

5b. Existing sources of data on social and economic conditions in the NSW commercial fishing industry

We reviewed existing sources of data on social and economic conditions in the NSW commercial fishing industry that could potentially be used as part of socio-economic monitoring processes. We identified few current information sources that can form an effective part of a monitoring framework. The potential sources of existing data we reviewed are each described briefly below.

- **ABS Census of Population and Housing.** The ABS Census records detailed data about factors including industry of employment, household income, age and other socio-demographic information. In October 2017, data on employment by industry from the 2016 Census will be released that will enable analysis of commercial fishers. However, inspection of 2011 Census data suggests that the Census significantly under-samples fishers. In 2011, only 488 NSW residents were identified as working in the ‘fishing’ industry, a further 281 in ‘seafood processing’ and a further 579 in ‘aquaculture’. Given that at the time there were well over 1,000 registered fishing businesses in NSW (and some fishers who operate in Commonwealth fisheries would also live in NSW), this suggests the Census captures less than half of those, or potentially even fewer, who work in fishing. This is likely a consequence of multiple factors, including (i) some fishers working more than one job, with the other job entered on the Census form, (ii) low literacy rates amongst fishers reducing Census completion (see earlier notes in Section 4c on low levels of high school completion even amongst those fishers who did complete the Census), and (iii) fishers being reluctant to complete surveys, a noted issue amongst many commercial fishers (see Voyer et al. 2016). Census data also do not distinguish fishers by the fishery in which they operate, and are collected only every five years (next in 2021), meaning that overall Census information is of very limited use.
- **NSW DPI licence, catch and other commercial fisheries records.** Information on seafood catch of commercial fishers recorded by the NSW Government represents one of the only forms of information available on NSW fishers, including basic data such as number of licence holders living in different locations, which can help identify total employment generated by fishing in different communities. This information, however, does not include data on key economic and social characteristics of fishers. It can be used to identify how catch per business changes, and to identify the typical size, type and location of businesses choosing to continue fishing versus exiting the industry as a consequence of reforms. It cannot be used to identify factors such as financial viability of businesses or social impacts on fishers.
- **Previous social and economic studies of fishers.** As noted by Voyer et al. (2016), previous studies of fishers have been generally small, covering only a small proportion of fishers. Voyer et al’s attempts at surveying fishers achieved a very small response rate despite using best practice approaches to the survey design and data collection methods, likely due to high rates of suspicion of surveys at the time of surveying and also high rates of stress and uncertainty about reforms amongst fishers. Previous studies do not form a reliable baseline, although they do provide guidance on the types of survey and assessment methods likely to be more versus less

successful in assessing social and economic impacts amongst fishers. However, some studies do provide a limited amount of baseline information, in particular:

- **GHD (2014)** provides useful baseline information on NSW fishing cooperatives that can be followed up over time; any study of cooperatives should repeat measures used in the GHD study to enable identification of change
- **Voyer et al. (2016)** provide useful qualitative data that should be drawn on to inform design of subsequent surveys. However, the sampling is not large enough to be able to provide a baseline from which rates of change over time can be estimated (and was not intended for this purpose)

As existing data sources are very limited in scope, and do not involve regular data collection that meets the needs of a robust and thorough social and economic monitoring process, it is necessary to design specific data collection methods that can support robust and in-depth socio-economic monitoring. There are examples of such data collection occurring on a regular basis in other Australian fisheries. Key amongst these is South Australia's commercial fisheries, in which regular data collection on economic performance has occurred since 1998, and has been accompanied in some cases by collection of data on social performance of the fisheries (for a full list of reports and links to each report, see <http://www.econsearch.com.au/pages/completed-projects/fishing-aquaculture/fish10.php>). Of particular relevance is economic and social evaluation of the Marine Scalefish Fishery, which has characteristics similar to many NSW coastal fisheries (EconSearch 2016). In addition, several past studies involving surveys, interviews and workshops with commercial fishers that have examined social and economic characteristics, or sought to assess social or economic effects of structural adjustment programs or other fisheries reforms, were drawn on to inform recommendations on an appropriate socio-economic monitoring methods described in Section 5c (in particular, Schirmer et al. 2004; Schirmer and Pickworth 2005; Schirmer and Casey 2007; Vieira et al. 2009; Brooks et al. 2015).

5c Recommended methods for monitoring socio-economic outcomes

Given the lack of data available from existing sources, we recommend using the following methods to collect data (as noted in Section 5a, these should be reviewed by relevant fisheries stakeholders, modified as appropriate based on their input, and agreed to by those stakeholders, before being implemented):

1. **NSW DPI data analysis:** Analysis of data reported by fishers to NSW DPI to identify the nature and extent of change in number of fishing businesses, catch quantity, catch timing and catch location. This provides a picture of key changes occurring in the fishing industry
2. **Current fisher survey:** Survey of all current NSW commercial fishers to identify how socio-economic conditions are changing for fishers and their households, and the extent to which these changes are the result of fisheries reform processes versus other factors.
3. **Exited fisher survey:** Survey of exited NSW commercial fishers who have left fishing since 2014, identifying how their socio-economic conditions are changing and the effects of exiting fishing on these fishers and their households.
4. **Assessment of outcomes for Aboriginal fishers:** Aboriginal fishers have identified specific impacts on cultural fishing practices. These should be assessed using specific consultation with Aboriginal representatives to identify the most appropriate approaches to assessment effects of reforms.
5. **Survey of cooperatives and other processors and wholesale sellers of catch:** Interviews with all fishing cooperatives to identify how their business operations, including revenue, employment and business activities, are changing as a result of implementation of reforms versus other factors. Interviews with a sample of other key downstream processors and sellers of catch from NSW commercial fisheries, to identify if business operations are changing as a result of implementation of reforms.
6. **Survey of fishing supply and service businesses:** A brief survey of businesses that provide goods and services to the fishing industry, providing an understanding of their level of dependence on commercial fishing, to enable analysis of likely impacts of any changes in spending on goods and services identified based on NSW DPI data analysis or surveys of current fishers and cooperatives/downstream processors/wholesalers.
7. **Assessment of impacts on regional NSW communities:** Economic input-output modelling that draws on data generated by NSW DPI data analysis and surveys, together with economic and demographic models of local communities, to identify how fisheries reforms have impacted population, employment and economic activity in NSW fishing communities.

i. Analysis of NSW DPI data

Data collected on fish catch and fishing businesses by NSW DPI provides an information source of data that can be used to identify the current structure of fishing businesses operating in NSW, and to track the extent to which the number and size of fishing businesses is changing over time. This is an important source of information that can inform identification of the different groups that should be analysed separately when surveying commercial fishers (for example, it may identify that there are 450 small businesses that operate across three or more fisheries versus 100 large businesses that concentrate in a single fishery). As this information includes historical databases, it can be analysed over time to identify rates of change prior to and post implementation of the current reforms.

NSW DPI data should be analysed to identify, as far as possible within limitations of available data:

- Change in the structure of fishing businesses, particularly:
 - Change in total number of commercial fishing businesses over time
 - Change in structure of licences held by fishing businesses over time, particularly
 - How many businesses hold licences in multiple fisheries
 - How many businesses concentrate on a single fishery
- Change in number of fishing businesses located in different regions over time, to the smallest geographic region possible (ideally local government area)
- Proportion of businesses catching different volumes over time; this enables identification of fishing businesses by catch volume size, and identification of which types of businesses have increased catch over time versus which have maintained or reduced catch.

This information can be combined with available data on catch prices to estimate changes in fishing revenue occurring for (i) different types of fishing business, and (ii) different fishing regions. While available fish price data are not always locally accurate (available data often provides information on the Sydney Fish Market, whose prices may differ to those received in local markets), they do provide a useful indication of how overall revenue from fishing is likely to have changed in different fisheries and regions over time.

This analysis will provide an initial picture of change. Because data are available for a period of time prior to the current reforms being implemented, they will be able to be used to identify how business structure, catch volume, and estimated fishing industry revenue, changed both pre, during, and post implementation of reforms.

ii. Survey of current fishers

Commercial fishers currently operating in NSW fisheries should be surveyed as soon as possible to establish an initial assessment of the effects of reforms processes to date, and identify data on business and household conditions prior to fishers adjusting to changes after the close of the subsidised share trading market process. Practically, it is unrealistic to survey fishers prior to spring 2017, as fishers are unlikely to be willing to participate in a survey immediately after finalisation of the share market process, as they will be adjusting to the outcomes of that process. A survey in spring 2017 would enable time for an appropriate process of fisheries stakeholder involvement in survey development and design, and for fishers to make initial decisions about the actions they will take post closure of the subsidised share trading market.

However, there are several key challenges in achieving a successful survey of current fishers. These include:

- A large sample of the approximately 1,000 commercial fishers is needed, to enable explicit assessment of impacts of reforms on different sub-groups of fishers, particularly small, diverse fishing businesses versus larger businesses, and those operating in different combinations of fisheries, and to ensure a robust assessment of which businesses experience positive versus negative impacts. Ideally, at least 500 surveys should be completed, however this may be an unrealistic target given the issues noted in the next dot point.
- Low trust in decision makers and authorities, combined with very high levels of stress, means most fishers are very reluctant to participate in any data collection processes such as surveys

- Many fishers will not complete online surveys and some may need assistance completing paper surveys.

Achieving the large sample required can only occur through (i) strong endorsement of the Framework and encouragement given to fishers to participate in the monitoring process by organisations they trust, e.g. fishing cooperatives, representative organisations; (ii) use of intensive survey methods that reduce the time, stress and difficulty involved in participating for fishers, particularly through actively contacting fishers face to face and by phone; and (iii) ensuring fishers receive rapid feedback about results, helping ensure they are able to see that their participation had an outcome, and increasing likelihood of their participation in future data collection efforts.

Survey content

Fisher surveys need to collect information on the following to enable assessment of the extent to which the different impacts listed in Table 1 have or have not occurred, and to assess the effectiveness of support measures and identify potential changes needed:

- **Use of support/assistance measures:** Which of the Business Adjustment Program and other support measures (e.g. Care Line, Hotline) has the fisher/business accessed/not accessed
 - For those they accessed, how useful was the support?
 - Was it accessible (how easy/hard was it to access or apply for, views about appropriateness of eligibility criteria or methods for approving/rejecting applications)
 - What effects did it have in terms of financial impact (benefit/cost for business), time required to access and use assistance (e.g. time required to apply, administration/reporting requirements)
 - Overall, how useful did they find the support/assistance measure
 - For those they did not access, why didn't they access it? (e.g. it wasn't applicable for them, they weren't aware of it, they felt they wouldn't be successful in application, low literacy)
- **Other actions taken to adapt to reforms:** Actions other than accessing support measures business has taken as part of preparing for implementation of reforms and as part of implementation (e.g. purchase of additional shares prior to subsidised share market, decisions made regarding bids in subsidised market)
- **Business information** including debt, revenue, capital, employment, work hours. Ideally data should include a history of financial performance for up to 5 years, however this is likely to be overly onerous and we recommend asking about the minimum possible number of indicators for a maximum of 3 years history
- **Fisher health and wellbeing** using standardised health and wellbeing measures including measures of psychological distress, stress, wellbeing and physical health that can be benchmarked against other national studies to enable comparison of fishers to rest of the population
- **Fisher socio-demographic characteristics** including age, gender, formal educational attainment, employment experience within and outside fishing
- **Fishing household health and wellbeing**, examining the wellbeing of those in the household other than fishers, using appropriate measures that identify the extent to which changes in the

fishing industry may be affecting those in fishing households who are not directly employed in fishing

- **Household socio-economic conditions** including household structure, household income sources, financial stress, caring responsibilities
- **Views about existing and potential future impacts of fishing reform** based on structured questions that ask fishers if they have specifically experienced any of a number of social or economic changes and, if they have, the extent to which they feel fisheries reform contributed to these. These will include both positive and negative changes and impacts

Sample size

Ideally, a minimum sample size of approx. 500 fishers would be achieved (based on a total size of approx. 1,000 commercial fishers in NSW, figures obtained from Voyer et al. 2016). This sample would be large enough to have reasonable statistical confidence in responses, and to be able to compare experiences of different subgroups of fishers.

As noted above, this is an optimistic sample size, given evidence of difficulty obtaining participation of NSW commercial fishers in past surveys. A more realistic expectation is, in ideal circumstances, to achieve 300-400 responses. This will only occur if the survey is delivered using the methods recommended below.

Note that current fishers include Aboriginal fishers; in addition to the questions asked in this survey, Aboriginal fishers will be asked about the effects of reforms on their ability to engage in cultural fishing practices and pass on cultural knowledge.

Survey delivery to maximise response

Normally, a survey is delivered by mail or email, and best practice survey techniques involve sending multiple reminders to achieve a higher response rate (Dillman et al. 2014). This approach has been used in multiple studies of natural resource managers such as fishers in Australia in the past (e.g. Schirmer and Pickworth 2005, EconSearch 2016). However, the experiences reported by Voyer et al. (2016) suggest this will not be effective for NSW fishers. To maximise survey response we recommend:

- Initial communication about the survey should be via a letter sent to fishers that includes explicit signed endorsement of the survey by organisations trusted by fishers, such as cooperatives and representative organisations. If possible, these organisations should send communication to their memberships separately to those conducting the socio-economic monitoring, encouraging participation in the survey
- If initial evaluations identify this is appropriate, recruiting and training people with in-depth knowledge of fishing (including ex-fishers or family members of fishers) to conduct surveys. This is used in the ABARES farm survey process, in which most survey interviewers are themselves farmers from local communities, and substantially increases participation by farmers in this survey
- After sending initial information about the survey by mail (including a letter of support signed by cooperatives and fisher representative organisations), researchers actively contact fishers by phoning them, and identifying the survey method the fishing household wishes to engage in, with options of phone, mail, internet or face-to-face survey completion provided. This enables the fishing household to select both the survey mode and the survey time and location they

prefer. However, this requires having access to phone contacts, something which may not be possible using NSW Fisheries databases depending on privacy constraints. To overcome this, a range of methods can be used: for example, an initial letter can include a postcard fishers can return in which they provide their contact details if they are willing to participate in the survey

- Researchers to be based at cooperatives and other appropriate locations during survey period, enabling them to make personal contact with fishers to increase likelihood of participation
- Sending of multiple reminders about the survey to fishers, with option provided at every reminder point for fisher to opt out of receiving additional reminders
- Sending of a summary of initial findings to those who have not yet participated to enable them to see the types of outputs they can contribute to generating.

Timing

Most impact assessment literature suggests that the most significant impacts of reforms are experienced (i) prior to their implementation, and (ii) in the first 1-2 years of implementation. Given this, but also recognising reluctance of fishers to participate in surveys, it is recommended that surveys be conducted:

- Survey Wave 1 2017 – post finalisation of the third round of the subsidised share trading market, ideally in Spring 2017 or at a time when fishers have been able to make initial decisions about their future post closure of the share market.
- Survey Wave 2 2018 – 12 months after first survey
- Survey Wave 3 2019 – 12 months after second survey
- Survey Wave 4 2021 – 24 months after third survey
- Survey Wave 5 2026 – 5 years after fourth survey to follow up on effects.

This timing will enable identification of effectiveness of assistance measures and adaptation strategies in the initial period following finalisation of the subsidised share trading market. Note that not all surveys need to ask the same level of detail: after the first survey ‘wave’ a shorter survey can be administered that updates key information rather than re-collecting existing data.

iii. Survey of exited fishers

It is important to survey exited fishers, however there are important practical constraints to doing so. The principle constraint is identifying accurate contact details for exited fishers. We propose attempting to survey up to 200 exited fishers using last available contact details, updated where possible based on asking existing fishers to pass information about surveys on to friends, family and acquaintances who have exited fishing since 2014.

Survey content

Surveys of fishers who have exited the NSW commercial fishing industry need to collect information on the following to enable assessment of the extent to which the different impacts listed in Table 1 have or have not occurred, and to assess the effectiveness of support measures and identify potential changes needed:

- **Motivations for exiting fishing:** What factors triggered the decision to exit, including both fisheries reform processes and other factors?

- **Use of support/assistance measures:** Which of the Business Adjustment Program and other support measures (e.g. Care Line, Hotline) relevant to exited fishers did the fisher/business accessed/not access
 - For those they accessed, how easy/hard was it to access, and how useful was it?
 - For those they did not access, why didn't they access it?
- **Employment, education and other changes occurring since exit:** What changes have occurred since exit in terms of employment, skills/training, sale of assets, household income and other relevant factors
- **Fisher health and wellbeing** using standardised health and wellbeing measures including measures of psychological distress, stress, wellbeing and physical health that can be benchmarked against other national studies to enable comparison of fishers to rest of the population
- **Fisher socio-demographic characteristics** including age, gender, formal educational attainment, employment experience within and outside fishing
- **Fishing household health and wellbeing,** examining the wellbeing of those in the household other than the exited fisher, using appropriate measures that identify the extent to which changes in the fishing industry may be affecting those in fishing households who were not directly employed in fishing
- **Household socio-economic conditions** including household structure, household income sources, financial stress, caring responsibilities
- **Fisher evaluation of the benefits and costs of the decision to exit fishing** based on structured questions that ask ex-fishers if they or their households have specifically experienced any of a number of social or economic changes due to exit (positive and negative)

Sample size

Our rough estimate of a sample size of 200 fishers is based on anecdotal information in submissions and information in Voyer et al. (2016) about rates of decline in numbers of NSW fishers.

Survey delivery to maximise response

To achieve the sample size requires successfully contacting exited fishers. Further work is needed to identify optimal methods for achieving this, including the potential to:

- Ask NSW Government agencies who have provided exited fishers with assistance to send survey information to those ex-fishers, e.g. Rural Assistance Authority
- Ask NSW DPI to send information about the survey to exited fishers' last known address
- Ask current fishers to pass information on to exited fishers
- Advertise at shops and other appropriate locations in fishing communities regarding the survey.

Following this, a similar process to that used for current fishers should be followed to maximise response.

Timing

Surveys should be conducted:

- 2017 – in spring, to coincide with surveys of current fishers (who will be asked to pass on the survey for exited fishers to those they know who have left the industry)

- 2018 – including both those who exited by 2017 and new ‘exits’ since 2017
- 2019 – including both those who exited by 2018 and new ‘exits’ since 2018
- 2021 – following up only those who exited by 2019, unless there is evidence that fisher exits since 2019 were commonly triggered by fisheries reform processes.

iv. Assessment of outcomes for Aboriginal fishers

The outcomes of fisheries reforms for Aboriginal fishers should be assessed using methods developed in consultation with representatives of Aboriginal communities and fishers. This is in addition to asking Aboriginal people involved in commercial fishing to participate in the current and exited fisher surveys as appropriate, and focuses on identifying impacts of reforms for cultural practices and passing of knowledge about these practices. This involves first discussing the proposed monitoring Framework with Elders and others in Aboriginal communities who have the ability to identify the most appropriate methods for requesting information from Aboriginal fishers. This should be followed by developing data collection content and methodology that is appropriate based on these consultations.

Content

The content of surveys, interviews or other data collection methods decided in consultation with Aboriginal representatives should include content asked in surveys of current fishers, but also ask appropriate questions about the impacts of reforms on customary/cultural fishing practices.

Sample size, delivery, timing and costing

These factors are currently unknown and should be identified based on further consultation with Aboriginal stakeholders.

v. Survey of fishing cooperatives and other key downstream processors and sellers of catch from NSW commercial fisheries

Fishing cooperatives should be surveyed to identify impacts of reform on business viability. As there are a relatively small number of cooperatives, it is important to include all cooperatives, and surveys can be conducted by phone with scope for capturing qualitative and quantitative data. In addition, this survey should include a sample of other key downstream processors and sellers of catch from NSW commercial fisheries, determined based on consultation with members of this sector.

Content

Cooperatives and other downstream businesses should both be interviewed to discuss the types of business strategies they are putting in place to adapt to reforms, as well as asked to complete a survey in which they rate the extent to which they have been affected by different factors, including both fisheries reforms and other pressures. The survey should repeat some of the questions asked by GHD (2014) to enable comparison of change over time. These questions are listed in Appendix 1.

Delivery method

Direct phone contact with cooperatives and other businesses, with survey participants able to complete the survey by phone or online, is recommended. This is recommended as past studies indicate reasonably high willingness and ability of cooperatives to engage using these methods.

Timing

We recommend surveying in 2017, 2018, 2019, 2021, 2026 (the same periods as for current fishers).

v. Survey of fishing supply and service businesses

Some submissions to the Inquiry identified potential impacts on fishing supply and service businesses. These impacts can be captured by asking fishing businesses and fishing cooperatives how their spending has changed. However, it is also useful to capture an initial snapshot of the employment and business activity of these supply and service businesses, which can be used to identify factors such as:

- Extent of dependence on commercial fishing for their business activity (versus recreational boating, recreational fishing, tourism etc)
- Total amount of employment generated
- Overall business conditions

As businesses that operate 'down the supply chain' are often unwilling to complete a detailed survey, the most appropriate method for surveying these businesses would be through a short 5-6 minute phone survey asking key questions. We recommend this be done in 2017, to establish an initial snapshot. If subsequent surveys of commercial fishers identify a substantial decrease in expenditure on supplies and services, a second phone survey may be conducted in later years.

v. Assessment of impacts on regional NSW communities

Social and economic impacts of change in a specific industry on a community can be hard to assess, as most communities are experiencing multiple forms of social and economic change at any given time (for a detailed discussion of this, see Schirmer 2011, Williams and Schirmer 2012). It is particularly difficult to assess impacts of change in an industry at the community scale when that industry represents a relatively small proportion of total jobs in the community (in most NSW fishing communities, it is likely that less than 5% of local jobs depend directly on commercial fishing, based on our initial analysis of available data and past studies).

Assessing the impacts of fisheries reforms on NSW regional communities is possible, but requires careful consideration of appropriate methods. Different methods are needed for understanding the social and the economic impacts of change on communities.

Social impacts of change on communities

Social impacts of change can be assessed through qualitative workshops and interviews with community organisations and leaders, as well as local support services. These can identify if there have been changes such as an increase in demand for key types of support services from those impacted by changes resulting from fisheries reform processes, and whether there are observable changes at the community scale. Additionally, survey responses from fishers and cooperatives can be analysed to identify likely flow-on social impacts into communities, for example resulting from changes in the amount of volunteering and community organisation involvement of fishers. Examples of this type of analysis can be found in EconSearch (2016), who identified how factors such as hours spent engaging in community activities were changing for South Australia's commercial fishers.

Economic impacts of change on communities

The data collected via surveys of fishers and cooperatives, as well as analysis of NSW DPI data on fishing businesses and catch, will be designed to be able to be used to inform appropriate economic modelling of the economic impacts of reforms for different NSW regional communities. We

recommend using a regional input-output (I-O) modelling process to identify the economic impacts of reforms. As this is relatively expensive, and relies on collecting data via the surveys we recommend, it would be advisable for this to be undertaken in 2017 and 2026. If data from surveys undertaken between 2018 and 2025 indicate large changes in fishing business activity in some regions, consideration should be given to undertaking this type of modelling earlier than 2026.

This type of approach can identify the total value of change in economic activity within defined local regions, enabling analysis of impacts on specific communities in NSW coastal regions. It can also enable estimation of both change in the numbers of direct and indirect jobs in these regions. Useful examples of the approach we recommend can be found in EconSearch (2016). Appendix 3 provides further detail on economic modelling that can be used to estimate impacts of changes on regional communities.

5d. Indicators to be monitored

Indicators are measures that provide an indicator of an underlying condition: in this case, the social and economic wellbeing of fishers, fishing households, fishing cooperatives and fishing communities. To understand the socio-economic impacts of fisheries reform requires two things: (i) measuring the socio-economic indicator (for example, fishing income, or levels of stress being experienced by the fisher), and (ii) understanding the extent to which the state observed is likely to be a result of fishing reform versus other factors. For example, if a fisher reports that their fishing income has increased or decreased, to what extent has this resulted from fisheries reform or other factors such as improved or declining market conditions? The challenge of assigning cause and effect is the most significant one to be addressed when monitoring social and economic impacts, because social and economic conditions are commonly the result of multiple factors that all interact, rather than a simple consequence of one factor such as fisheries reform (Schirmer 2011). Table 3 summarises indicators we recommend be monitored. It also identifies what can be done to distinguish between effects of fisheries reform versus other factors. For each indicator, we identify the relevance of the indicator, how it can be measured, how the effect of fisheries reforms versus other factors can be assessed, and data sources to be used to measure the indicator (usually direct surveys of different groups).

Table 3 Recommended socio-economic indicators to be monitored

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Confidence in fishing industry	Current fishers; fishing cooperatives	Certainty about the future	<p>Relevance: Confidence in the fishing industry is an important indicator of likelihood of fishers both investing in their business and remaining in the industry.</p> <p>Measure: This indicator is measured using two survey items, each with a 7-point ‘disagree-agree’ response scale and a ‘don’t know’ option.</p> <p><i>Item 1: I feel confident in the long-term future of the NSW commercial fishing industry</i></p> <p><i>Item 2: NSW fisheries reforms implemented in 2017 have reduced my confidence in the future of the fishing industry</i></p> <p>Assessing role of fisheries reform: The presence of a correlation between answers to the two survey items indicates reform processes are influencing confidence in fishing industry future. If there isn’t, it is likely factors other than reform are driving levels of confidence.</p>	Survey
Confidence in future of fishing business	Current fishers; fishing cooperatives	Certainty about the future	<p>Relevance: Confidence in the future of their business is an important indicator of likelihood of fishers both investing in their business and remaining in the industry.</p> <p>Measure: This indicator is measured using two survey items, each with a 7-point ‘disagree-agree’ response scale and a ‘don’t know’ option.</p> <p><i>Item 1: I feel confident in the long-term future of my fishing business</i></p> <p><i>Item 2: NSW fisheries reforms implemented in 2017 have increased my confidence in the future of my fishing business</i></p> <p>Assessing role of fisheries reform: The presence of a correlation between answers to the two survey items indicates reform processes are influencing confidence in future of the fishing business. If there isn’t, it is likely factors other than reform are driving levels of confidence.</p>	Survey
Fisher distress	Current fishers; exited fishers; fishing cooperatives	Wellbeing	<p>Relevance: A person’s level of psychological distress is an important measure of wellbeing. High levels of distress are associated with a range of adverse outcomes ranging from negative impacts on personal relationships to difficulty making decisions and managing the fishing business. Understanding levels of distress provides insight into whether fishers are experiencing higher rates of distress than is usual for the population as a whole, and whether this may either result from reform, or affect their ability to continue adjusting to implementation of reforms.</p> <p>Measure: The Kessler Psychological Distress Scale (‘K6’ measure) of psychological distress should be used. This is a standardised measure that is relatively easy to answer, and well validated and used across multiple studies. ABS (2012) describes recommended use of this measure in Australia. It asks people to rate how often they have experienced six symptoms of distress in the last four weeks.</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Fisher wellbeing	Current fishers; exited fishers; fishing cooperatives	Wellbeing	<p>Assessing role of fisheries reform: Many things can contribute to distress, and care is needed in attempting to identify the contribution of fisheries reform to distress levels, as people in higher distress are likely to find it more difficult to cope with fisheries reform and vice versa, meaning that a correlation between views about fisheries reform and levels of distress is not necessarily a result of reform causing distress. Because of this, we would recommend that the survey also include questions identifying other key factors likely to be contributing to distress, particularly asking about a person's overall satisfaction with their standard of living, health, relationships, community, safety and security (measured as part of 'fisher wellbeing'). This can then be analysed to identify whether experiences of reform versus other factors are predicting the wellbeing of fishers. We also recommend comparing levels of distress amongst fishers to levels of distress in the broader population: this is possible by comparing results to those from other surveys such as the Household, Income and Labour Dynamics in Australia survey, which also measure K6 distress levels.</p> <p>Relevance: Wellbeing measures how satisfied people are with their quality of life and different domains. It is affected by many things, of which fisheries reform is only one, but provides a useful overall picture of whether fishers are more likely to be experiencing poor (or good) wellbeing compared to the general population.</p> <p>Measure: We recommend using two measures: the 'General Life Satisfaction' measure (overall, how satisfied are you with your life as a whole' and the 'Personal Wellbeing Index' set of seven items which measures satisfaction with different domains of life. See http://www.acqol.com.au/iwbg/wellbeing-index/ for detailed description of these measures.</p> <p>Assessing role of fisheries reform: Similar to psychological distress, we recommend (i) measuring satisfaction with different domains of life to enable identification of whether fisheries reform is a significant contributor amongst other factors also affecting wellbeing. We also recommend (ii) comparing fisher wellbeing to the wellbeing of the broader population, and have chosen measures that enable this comparison to occur as they are used in several general population surveys in Australia.</p>	Survey
Confidence in fisheries management	Current fishers; fishing cooperatives	Certainty about the future Fairness and justice of	<p>Relevance: Confidence in fisheries management is an important indicator of the extent to which fishers are adjusting successfully to fisheries reform and feeling certain in their future.</p> <p>Measure: This indicator is measured using two survey items, each with a 7-point 'disagree-agree' response scale and a 'don't know' option.</p> <p><i>Item 1: I am confident in the management of commercial fishing in New South Wales</i></p> <p><i>Item 2: I trust the managers of NSW commercial fisheries</i></p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
		fisheries management processes	Assessing role of fisheries reform: While trust in fisheries management results from a range of factors, the dominance of fisheries reform processes means this item is likely to in large part reflect satisfaction with outcomes of fisheries reform. To check whether other factors are causing issues, the survey could include an open-ended question asking what is currently working (i) well, and (ii) poorly, in NSW fisheries management. Answers would provide insight into the role of reform versus other factors in driving confidence and trust in fisheries management.	
Confidence in ability to manage fishing industry business	Current fishers; fishing cooperatives	Certainty about the future Identity Business profitability/viability	Relevance: Confidence in their ability to manage their business is a key measure of fishers' certainty about the future. Measure: This indicator is measured using a set of survey items, each with a 7-point 'disagree-agree' response scale and a 'don't know' option, that examine overall confidence and confidence in being able to manage different aspects of the fishing business. <i>When I think about my fishing business over the next few years, I am confident I can ...:</i> ... achieve the things I want to in my fishing business ... meet my business goals, e.g. revenue, profit ... handle changing market conditions ... buy and sell fisheries shares on the market if I need to ... meet regulatory and reporting requirements of fisheries management ... invest in my business to maintain or increase my business viability ... cope with potential changes that could occur in allowable catch Assessing role of fisheries reform: By asking about confidence in different aspects of managing their fishing business, it is possible to identify whether levels of confidence are being driven by outcomes of reform or of other factors such as market conditions.	Survey
Fisher confidence in engaging with share market	Current fishers	Business profitability/viability Certainty about the future	Relevance: Being able to engage in the share market is an indicator that fishers are successfully adapting to fisheries reform. Measure: The relevant measure was described above, and asks fishers how much they agree or disagree that they can ' <i>... buy and sell fisheries shares on the market if I need to</i> '. Assessing role of fisheries reform: As a tradeable share market is a key element of reform, this is a direct measure of outcomes of fisheries reform.	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Confidence in ability to invest in business	Current fishers; fishing cooperatives	Business profitability/viability Certainty about the future	<p>Relevance: Having high confidence to invest occurs if fishers are confident in their future and feel that, amongst other things, regulatory conditions are stable enough to support investment.</p> <p>Measure: The relevant measure was described above, and asks fishers how much they agree or disagree that they can ‘... invest in my business to maintain or increase my business viability’.</p> <p>Assessing role of fisheries reform: To help assess whether it is the outcomes of fisheries reform or other factors affecting a fisher’s confidence in their ability to invest in their business, it is important to ask screening questions that identify whether a fisher has been experiencing any of a number of challenges in their business, one of which is fisheries reform. We recommend the inclusion of the following questions to achieve this:</p> <ul style="list-style-type: none"> (i) <i>How have business conditions been for your fishing business in the last year? Response options: ‘More challenging than usual’, ‘About the same as usual’, and ‘Better than usual’.</i> (ii) <i>Fishers will be asked: In the last year, have any of the following been a barrier to you running your fishing business the way you would like to? (Response options: 7-point scale from ‘Not a barrier (1)’ to ‘Big barrier (7)’:</i> <ul style="list-style-type: none"> a. <i>Fuel costs</i> b. <i>Cost of supplies other than fuel, e.g. bait, ice</i> c. <i>Changes to the ways NSW fisheries are managed</i> d. <i>Changes to fisheries management or licence fees</i> e. <i>Weather conditions</i> f. <i>Difficulty obtaining or keeping on workers in my business</i> g. <i>Reduced catch quota</i> h. <i>Difficulty accessing finance for my business</i> i. <i>Falling market prices</i> j. <i>Lack of markets to sell my catch into</i> k. <i>Too many regulations</i> l. <i>Changing business reporting requirements</i> m. <i>Poor health of myself or others involved in my fishing business</i> n. <i>Difficulty accessing good fishing locations.</i> 	
Investment in fishing business	Current fishers	Business profitability/viability	Relevance: As well as asking about confidence to invest in the business in general, asking whether fishers have invested in their businesses provides an indication of whether fishers are translating confidence into actual investment actions.	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Fishing business revenue	Current fishers	Business profitability/viability	<p>Measure: This will be measured by asking fishers: <i>Have you invested in any of the following in the last 12 months:</i></p> <ol style="list-style-type: none"> a. <i>New IT equipment e.g. computers, software</i> b. <i>New fishing equipment other than boats</i> c. <i>New boat</i> d. <i>Purchasing additional shares in one or more fisheries</i> e. <i>Other major investment in your business.</i> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be making investments in their fishing business.</p> <p>Relevance: Understanding how the costs and revenue of fishing businesses is changing is an important part of monitoring the outcomes of fisheries reform. However, asking questions about revenue and spending is highly sensitive and many fishers prefer not to answer specific questions about revenue and spending. To address this, measures will include non-specific measures about whether revenue and costs are increasing or decrease, as well as questions asking about the category into which the revenue and spending of a business fall.</p> <p>Measure: Changes in revenue can be measured in three ways:</p> <ol style="list-style-type: none"> a. Revenue can be estimated based on catch data held by NSW DPI, with revenue estimates using economic modelling in which catch prices are assigned using existing price indexes such as Sydney fish market information. This has limitations in that many local fish markets may have prices different to those of the Sydney Fish Market. b. Fishers will be asked which category of fishing business revenue they earned in the last financial year, and will be provided a set of pre-determined categories to select from (e.g. less than \$30,000, \$30,000-\$49,999, \$50,000-\$74,999, \$75,999-\$99,999, \$100,000-199,999 ... up to \$2 million or more). Asking fishers to select a category reduces the sensitivity of the revenue question, as it does not ask for a precise figure and reduces the risk of privacy invasion associated with the question. c. Fishers will be asked if their fishing revenue has (i) increased, (ii) stayed about the same, (iii) decreased in the last 12 months compared to the previous year. They will then be asked an open-ended question in which they can identify the top three reasons for any increase or decrease in revenue. 	NSW DPI data Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Spending on fishing goods and service providers	Current fishers; fishing goods and service providers	Viability of fishing service and supply businesses Business profitability/viability	<p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting high/low revenue, or particular types of revenue change, in their fishing business.</p> <p>Relevance: Assessing spending on providers of goods and services to fishers enables monitoring of the effects of reforms on the businesses that supply the fishing industry.</p> <p>Measure:</p> <ul style="list-style-type: none"> (i) Fishing businesses are asked whether their spending on different types of goods and services (bait, ice, fuel, boat and equipment maintenance and repair) has increased, stayed the same, or decreased in the last year. (ii) Fishing service and goods providers are asked if demand for their goods or services from commercial fishers has increased, stayed the same, or decreased in the last year. <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting reducing/increasing spending on goods and services, or are reporting more/less difficulty accessing key goods and services.</p>	Survey
Fishing business profitability	Current fishers	Business profitability/viability Household financial wellbeing	<p>Relevance: Changes in revenue and costs should be assessed to identify their overall impact on fishing business profitability (returns made by the fishing business net of expenditure). There are several different ways to measure profitability, which treat actions such as capital investment in the business and payment of wages to owner-operators differently. Therefore care is needed in defining profitability when measuring it. We recommend a measure of profitability relevant to fishers be defined in consultation with fishers. The measures below will then be based on this definition.</p> <p>Measure: This can be measured in several ways:</p> <ul style="list-style-type: none"> (i) Fishers are asked to self-rate how profitable their business was in the most recent financial year, choosing from categories ‘Making a large loss, making a moderate loss, making a small loss, breaking even, making a small profit, making a moderate profit, making a large profit, Don’t know’. In similar surveys (this question is repeated from the Regional Wellbeing Survey, www.regionalwellbeing.org.au), this question is answered by a large majority of respondents, however it is difficult to interpret what different people believe represents a small, moderate or large loss or profit. (ii) Fishers are asked to nominate how much profit or loss they made from a set of pre-determined categories (e.g. loss of \$200,000 or more; loss of \$100,000-\$199,999; ... profit 	

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Fishing business change in debt level & ability to service debt	Current fishers	Business profitability/viability Household financial wellbeing	<p>of \$200,000 or more). This provides a way of identifying whether different fishers have differing interpretations of what constitutes small, medium or large profit/loss. The categories proposed were based on those that were used in the 2016 Regional Wellbeing Survey (www.regionalwellbeing.org.au), which were successfully answered by 4,500 farmers including those with a similar range of business sizes to fishers.</p> <p>(iii) Fishers are asked if their overall profitability has reduced or improved during the last year (by asking an 'agree/disagree' question such as 'The profitability of my fishing business has improved in the last year').</p> <p>(iv) Fishers could also be asked to provide an exact profit/loss figure. We do not recommend asking this as most fishers are likely to refuse to answer this, and those who answer are likely to use different methods to assess profitability that are not always comparable.</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting high/low profit, or particular types of profit change, in their fishing business.</p> <p>Relevance: One of the potential effects of reform identified was impacts on fishing business debt. Measuring the extent of debt owed, and whether fishers are finding it easy or difficult to service debt, can provide insight into whether implementation of reforms is associated with changes in either debt levels or ability to service debt.</p> <p>Measure: Fishers are asked:</p> <p>(i) To nominate their overall level of fishing business debt, from a set of pre-determined categories (this reduces sensitivity of asking the question, as fishers are not asked to provide a precise figure).</p> <p>(ii) If they have applied for additional finance in the last year and, if they applied, whether they were successful. This needs to be asked regarding low-interest loan measures versus other forms of finance.</p> <p>(iii) How easy or difficult they find it to service their current debt.</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting greater or lesser debt or ability to service debt.</p>	Survey
Fishing business	Current fishers	Business profitability/	Relevance: Assessing the level of equity fishers hold in their business is an important measure of business viability. It can, however, be challenging to assess as it requires a consistent approach to	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
equity		viability	<p>measuring the total value of the assets versus liabilities of the fishing business, and fishers may differ in their estimates of value of assets and liabilities.</p> <p>Measure: Two measures were considered:</p> <ul style="list-style-type: none"> (i) Fishers are asked to estimate the value of the total assets of their fishing business (including fisheries shares, fishing equipment, boat/s), and select the value from a range of pre-set categories. They are then asked to estimate total liabilities (money owed to others, including any unpaid wages, short- and long-term loans). Equity is then estimate based on the ratio of assets to liabilities. This is complex and we do not recommend inclusion of this measure. (ii) Fishers are asked if their overall equity in their business (total value of assets, such as shares, boat, equipment, minus liabilities, such as debt) has increased, stayed about the same, or decreased in the last year. We recommend inclusion of this measure. <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting higher/lower levels of equity.</p>	
Fishing business debt collateral	Current fishers	Business profitability/viability	<p>Relevance: Providing fishers with shares that can be treated as property rights creates potential to use these shares as collateral for finance. This indicator identifies how many fishers are using shares as collateral for finance.</p> <p>Measure: Fishers are asked what assets they use as collateral for their debt, including boat, fishing equipment, own home, fisheries shares.</p> <p>Assessing role of fisheries reform: Increasing use of fisheries shares over time indicates that the reform has successfully created a more secure property right that is being used to enable investment in the industry.</p>	Survey
Change in volume of catch	Current fishers; fishing cooperatives	Business profitability/viability Impacts on cooperatives/processors	<p>Relevance: A key topic raised in discussions of impacts of reforms is how reforms will affect the overall volume of catch, but also the timing and location of catch in different fisheries.</p> <p>Measure:</p> <ul style="list-style-type: none"> (i) NSW DPI data will be analysed to identify changes in catch volumes, by location and business type (ii) Fishers will be asked whether their volume of catch in each fishery they operated in increased, stayed about the same, or decreased in the last year. They will then be asked to nominate the top three reasons why it increased, stayed the same, or decreased/ 	NSW DPI data Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
			<p>(iii) Cooperatives will be asked to identify what changes in supply they have experienced in the last year, including changes in volume and timing of catch, and to describe the factors they believe caused any changes identified.</p> <p>Assessing role of fisheries reform: Identifying if fisheries reform is nominated as a reason contributing to change in catch volumes will be used to identify likely impact of fisheries reform.</p>	
Number of employees working in fishing business	Current fishers	<p>Business profitability/viability</p> <p>Employment impacts</p>	<p>Relevance: Changes to rules regarding nominated fishers, as well as fisheries reform, have been raised as potentially impacting on the amount of employment in the industry. To assess this, fishers will be asked to identify current numbers of workers in their business, and how this has changed.</p> <p>Measure: Fishers are asked</p> <p>i) How many employees work in their business (full time and part time)</p> <p>ii) How many employees worked in their business one year ago (full time and part time)</p> <p>iii) What factors led to change in the number of employees working in their business, if there was change</p> <p>Assessing role of fisheries reform: Identifying if fisheries reform is nominated as a reason contributing to change in employment will be used to identify likely impact of fisheries reform.</p>	Survey
Satisfaction with fishing activities	Current fishers	<p>Identity</p> <p>Wellbeing</p>	<p>Relevance: Not all fishers will experience changes such as an increase or decrease in catch, revenue or profitability the same way. One fisher may deliberately decrease catch because they are downsizing their business preparatory to retire, while another may do so because they have no other option. To help assess the impact of changes in revenue, catch etc, it is helpful to ask how satisfied a fisher is that they are achieving their fishing objectives.</p> <p>Measure: Fishers are asked the extent to which they agree or disagree that 'I am satisfied with how my fishing business is going at the moment'</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting greater or lesser satisfaction with fishing activities.</p>	Survey
Working hours in fishing & satisfaction with working hours	Current fishers; exited fishers	<p>Working hours</p> <p>Wellbeing</p>	<p>Relevance: A key concern identified in many of the submissions to the Inquiry related to the potential effects on reforms on working hours, with potential for unwanted (i) increase, and (ii) decrease, both identified as potential outcomes.</p> <p>Measure: Fishers and exited fishers are asked (i) how many hours a week they worked on average during the last month (the month-long period is selected to help even out variation due to weather variability); (ii) whether the hours they work has overall increased, stayed about the same, or decreased</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Ability to engage in cultural fishing practices	Aboriginal fishers	Identity Ability to maintain cultural practices	<p>in the last year and the factors contributing to any change in hours; and (iii) whether they would prefer to be working more, about the same, or fewer hours if they had the choice.</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting changes in working hours that they are dissatisfied with.</p> <p>Relevance: The effects of fisheries reforms on the ability of Aboriginal fishers to maintain and engage in cultural fishing practices was raised in submissions to the Inquiry.</p> <p>Measure: Aboriginal fishers are asked to rate the extent to which they are able to engage in cultural fishing practices, and whether changes made to fisheries management have changed this ability to engage. If appropriate, they will be asked to identify the types of cultural practices they are and aren't able to engage in. The way this measure is asked will be determined based on consultation with Aboriginal representatives.</p> <p>Assessing role of fisheries reform: Aboriginal fishers will be asked to identify the effects reforms have on their ability to engage in cultural fishing practices. Note that Aboriginal fishers who are operating as commercial fishers will also be asked the questions asked of all current fishers.</p>	Likely to be interview or survey – determine based on initial discussion with representatives of this group
Ability to pass on fishing knowledge	Current fishers	Knowledge transfer Identity Ability to maintain cultural practices	<p>Relevance: Fishing knowledge is typically passed on through fishing businesses, either through generations of a family, or from older to younger fishers. Several submissions to the Inquiry raised concerns that the effects of reforms may result in loss of fishing knowledge. This was particularly a concern for Aboriginal fishers seeking to pass on or to learn knowledge of cultural fishing practices.</p> <p>Measure: Fishers will be asked whether they agree or disagree that fisheries reform processes have reduced ability to pass on knowledge and skills in the industry. If they feel this has occurred, they will be asked to describe how this has occurred.</p> <p>Assessing role of fisheries reform: This item is designed to directly assess perceptions of effects of reforms.</p>	Survey
Perceptions of fisheries reform process & outcomes	Current fishers; exited fishers; fishing cooperatives	Justice and fairness of the process	<p>Relevance: Perceptions of fisheries reform process, particularly how just and fair reform processes have been, affect how a person experiences change, and particularly the extent to which the reform causes stress, anxiety or other negative wellbeing impacts.</p> <p>Measure: Fishers/cooperatives are asked the extent to which they agree or disagree that (i) Fisheries reform processes have been fair to all people involved in commercial fishing, (ii) All fishers and people</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Rating of fisheries management communication (transparency and effectiveness)	Current fishers; fishing cooperatives	Justice and fairness of the process	<p>dependent on fishing have had their voices heard in the reform process, and (iii) They feel they have been treated fairly as part of the reform process</p> <p>Assessing role of fisheries reform: This item is designed to directly assess perceptions of effects of reforms.</p> <p>Relevance: Feeling able to easily understand fisheries management changes and to communicate with fisheries management is a useful measure of whether fishers feel able to understand and engage with reform processes, and hence how just and fair they find them.</p> <p>Measure: Fishers are asked the extent to which they agree or disagree that (i) They have been able to easily access information explaining how fisheries reforms affect their business, (ii) Fisheries management provides rapid updates on changes that may affect their fishing business, and (iii) Outcomes of reform processes are communicated</p> <p>Assessing role of fisheries reform: This item is designed to directly assess perceptions of effects of reforms.</p>	Survey
Working hours outside fishing industry	Households of current fishers; household of exited fishers	Wellbeing Working hours Household financial wellbeing	<p>Relevance: One potential impact of reforms identified in submissions to the Inquiry was a change in the hours worked outside the fishing industry.</p> <p>Measure: Fishers and exited fishers are asked (i) how many hours a week they and others in their household worked on average during the last month outside the fishing industry (the month long period is selected to help even out variation due to weather variability); (ii) whether the hours they work outside the fishing industry have overall increased, stayed about the same, or decreased in the last year and the factors contributing to any change in hours; and (iii) whether they would prefer to be working more, about the same, or fewer hours outside the fishing industry if they had the choice.</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting changes in working hours outside the fishing industry that they are dissatisfied with.</p>	Survey
Fishing household distress	Households of current fishers; household of exited fishers	Wellbeing	<p>Relevance: Reforms to fisheries affect all members of households that have one or more members working in the fishing industry. Understanding effects on their wellbeing is challenging as it is impractical to ask all members of fishing households to participate in survey. Instead, wellbeing needs to be examined by asking fishers to report on any changes in wellbeing of other household members resulting from change to fishing; this is most easily asked in the negative by asking about distress or stress. While this is problematic – fishers may not always be aware of the effects of reform on others in their household – it is the only practicable measure that is likely to successfully capture data on this</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Household income	Households of current fishers; household of exited fishers	Household financial wellbeing	<p>important issue. If resources allow, a small number of direct interviews with members of fishing households to understand their experiences of reform would be a useful addition to this measure.</p> <p>Measure: Fishers completing the survey are asked to rate the extent to which they believe their 'household as a whole' has experienced stress in the last year as a result of changes occurring in their fishing business. They are then asked to rate the extent to which they believe their 'household as a whole' has experienced stress in the last year as a result of changes implemented as part of the NSW Government's Commercial Fisheries Business Adjustment Program.</p> <p>Assessing role of fisheries reform: This question is designed to examine effects of fisheries reform. It will be most relevant when examined over time, to identify whether the proportion of fishers reporting household stress resulting from fisheries reform is decreasing.</p>	Survey
Household financial wellbeing	Households of current fishers; household of exited fishers	Household financial wellbeing	<p>Relevance: Effects of fisheries reforms on overall household income were raised in several submissions to the Inquiry. This indicator identifies household income levels.</p> <p>Measure: Survey respondents are asked to identify the category their household income fell into in the last financial year from a set of pre-determined categories that align with those of the ABS Census. This enables comparison of household incomes of fishers to household incomes reported by other types of households. They are then asked if their household income is higher, about the same, or lower than it was in the previous year. ABS Census data categories can be seen by examining Census results at www.abs.gov.au.</p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting changes in household income or particular levels of household income.</p> <p>Relevance: Household income is not the only indicator of household finances that matters: the same amount of household income will mean very different things for different people depending on factors such as the number of people in the household, living costs in the local area, and obligations such as mortgage debt repayments. Because of this, it is useful to also ask for a rating of overall household financial wellbeing.</p> <p>Measure: Two measures are used, both of which are used in a range of surveys, including the 'Household Income and Labour Dynamics in Australia' (HILDA) survey (see http://melbourneinstitute.unimelb.edu.au/hilda which provides links to manuals for survey measures), and the Regional Wellbeing Survey (www.regionalwellbeing.org.au contains links to report that use these measures). One is a measure of overall household financial wellbeing; the second a measure of</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
<p>household financial stress:</p> <p>i) The survey respondent is asked ‘Given your current needs and financial responsibilities, would you say that you and your family are ...’ with response options of <i>very poor, poor, just getting along, reasonably comfortable, very comfortable, prosperous</i>. This item is used in several Australian surveys, providing data against which fisher responses can be compared.</p> <p>ii) The survey respondent is asked about the following financial stress measures, asked in some Australian surveys like this: ‘In the last year, did any of the following happen to you because you didn’t have enough money?’, with response options of (i) <i>Had to delay or cancel non-essential purchases, e.g. holiday, going to a restaurant or movie, buying clothes;</i> (ii) <i>Could not pay bills on time, e.g. electricity, rent, gas;</i> (iii) <i>Went without meals, or was unable to heat or cool home;</i> and (iv) <i>Asked for financial help from friends or family;</i> (v) <i>None of these</i></p> <p>Assessing role of fisheries reform: The role of fisheries reform will be assessed by identifying whether fishers who report experiencing different effects of reform are more or less likely to be reporting particular levels of household financial wellbeing or stress.</p>				
Downstream business performance	Fishing cooperative/ downstream businesses	Fishing cooperative/ downstream businesses	<p>Relevance: Fishing cooperatives and other downstream businesses have reported that fisheries reform may change their business performance. This indicator identifies if business performance is changing.</p> <p>Measure: Fishing cooperatives and other downstream businesses are asked to report on how their business performance is changing, and the factors influencing business performance in the last year. Specifically, they are asked to identify how revenue, supply of catch (volume and timing), labour costs, rent/lease costs, electricity costs, other operating costs, and overall profits have changed in the last year, and to identify the three biggest factors affecting their overall business performance.</p> <p>Assessing role of fisheries reform: Asking downstream businesses to discuss all the changes occurring enables identification of whether business performance is changing due to implementation of reforms.</p>	Survey
Downstream business employment	Fishing cooperative/ downstream businesses	Fishing cooperative/ downstream businesses	<p>Relevance: Changes to rules regarding nominated fishers, as well as fisheries reform, have been raised as potentially impacting the jobs generated in cooperatives.</p> <p>Measure: Cooperatives and other downstream businesses are asked:</p> <p>i) How many employees work in their business (full time and part time)</p> <p>ii) How many employees worked in their business one year ago (full time and part time)</p> <p>iii) What factors led to change in the number of employees working in their business, if there</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Downstream business fluctuation in supply	Fishing cooperative/downstream businesses	Fishing cooperative/downstream businesses	<p>was change</p> <p>Assessing role of fisheries reform: Identifying if fisheries reform is nominated as a reason contributing to change in employment will be used to identify likely impact of fisheries reform.</p> <p>Relevance: Concern about potential for changes in timing and volume of catch, and potential implications of this for fishing cooperatives and other downstream businesses, was raised in some submissions.</p> <p>Measure: Cooperatives/downstream businesses will be asked to identify if the volume of catch being delivered into the cooperative is changing in terms of either timing or total volume and, if so, in what ways. They will be asked to discuss the factors causing any changes.</p> <p>Assessing role of fisheries reform: Asking downstream businesses to discuss all the changes occurring enables identification of whether volume or timing of supply is changing due to implementation of reforms.</p>	Survey
Employment or other status	Exited fishers	Wellbeing Household financial wellbeing	<p>Relevance: Monitoring socio-economic outcomes requires understanding whether fishers who exit the fishing industry as a consequence of the reform process are able to achieve desired outcomes outside fishing. This indicator examines what exited fishers have done since leaving fishing. The categories suggested are ones which align with reporting of ABS Census data (see www.abs.gov.au) and other surveys such as the Regional Wellbeing Survey (www.regionalwellbeing.org.au).</p> <p>Measure: Exited fishers are asked:</p> <ul style="list-style-type: none"> (i) What they aimed to do when they left fishing, with options including studying to gain new qualifications, gaining new employment within the fishing industry, gaining new employment outside the fishing industry, retiring, or other (ii) Whether since leaving fishing they have enrolled in a program of study, gained new part-time, full-time or casual employment, retired, or had other outcomes <p>Assessing role of fisheries reform: This measure is descriptive and identifies what a fisher has engaged in since exiting fishing, identifying what has happened as a result of an exit from fishing motivated due to fisheries reform. Note that exited fishers will also be asked the extent to which fisheries reform processes versus other factors motivated their exit from fishing.</p>	Survey
Exited fisher satisfaction with new employment	Exited fishers	Wellbeing Identity Household financial	<p>Relevance: For many fishers who leave fishing, wellbeing will be maintained only if they find fulfilling employment in a new industry. It is therefore important to ask not only whether a fisher has found new employment (if they were not planning to retire), but also how satisfied they are with their new employment.</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
		wellbeing	<p>Measure: Fishers are asked to rate the extent to which ‘I am happy with what I am doing now since leaving fishing’; for those who are employed, this acts as a measure of satisfaction with their new employment.</p> <p>Assessing role of fisheries reform: This measure is descriptive and identifies what a fisher has engaged in since exiting fishing, identifying what has happened as a result of an exit from fishing motivated due to fisheries reform.</p>	
Direct employment generated by fishing industry in different communities	Current fishers, fishing cooperatives	Impacts on fishing communities	<p>Relevance: This indicator identifies the total employment generated by commercial fishing in different regions of NSW, based on analysing NSW DPI catch data and results of the current fisher survey. This enables estimation of how total employment in the industry is changing over time in different regions. Employment should be broken down by the stage of the fishing industry supply chain in which it is generated, to enable tracking of change in employment in (i) businesses supplying goods and services to fishing industries, (ii) businesses engaged in fishing, (iii) fishing cooperatives, and (iv) other businesses engaged in downstream processing and wholesale sale of catch.</p> <p>Measure: Data from surveys of current fishers, cooperatives, fishing supply businesses, and NSW DPI catch data are analysed to identify total employment in the fishing industry by local government area. Initially, this will be ‘backcast’ to produce an estimate of employment in 2016, as well as an estimate of employment in late 2017. This can then be updated over time as new data are collected. Current fishers, cooperatives, and fishing supply businesses will be asked to identify the number of people who were employed full-time, part-time and on a casual basis in their business in (i) 2016, and (ii) at the time of completing the survey, as well as how many people worked for a share of returns of the business versus being paid a wage/salary.</p> <p>Assessing role of fisheries reform: Assessing the role of fisheries reform requires assessing the role of reforms in contributing to changes identified in employment over time. To help assess this, in all surveys fishers, cooperatives and fishing supply businesses will be asked to identify whether different factors have contributed to change in their business.</p>	Survey
Indirect employment generated by fishing industry in different	Current fishers Cooperatives Fishing supply businesses Economic	Impacts on fishing communities	<p>Relevance: The impacts of any changes occurring in fishing industry employment will have flow-on effects for other parts of the economy in a given region. For example, a decline in fishing industry jobs will result in lower demand for goods and services by not only the industry but by the households who have lost fishing income.</p> <p>Measure: This indicator identifies how the indirect, or flow-on, number of jobs generated by the fishing industry is changing in different regions. It is based on economic modelling, which in turn requires data</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
regions	modelling		<p>on current employment in the fishing industry (which will be generated through surveys of the fishing industry).</p> <p>Assessing role of fisheries reform: Assessing the role of fisheries reform requires assessing the role of reforms in contributing to changes identified in employment over time. To help assess this, in all surveys fishers, cooperatives and fishing supply businesses will be asked to identify whether different factors have contributed to change in their business.</p>	
Demographic change in local communities	<p>Current fishers</p> <p>Exited fishers</p> <p>Cooperatives</p> <p>Fishing supply businesses</p> <p>Economic modelling</p>	<p>Impacts on fishing communities</p>	<p>Relevance: The impacts of any changes occurring in fishing industry employment will have flow-on effects for local communities. This indicator examines likely changes in the number of people living in a community as a consequence of changes to fishing</p> <p>Measure: Exited fishers are asked if they have shifted to a new community as a consequence of leaving fishing, or if they are likely to. Current fishers are asked how likely they are to shift to a new community in the next year. Those who are intending to shift to a new community, or who have recently, are asked what factors motivated the migration. These data are analysed to identify likely changes in population living in different communities.</p> <p>Assessing role of fisheries reform: Assessing the role of fisheries reform requires assessing the role of reforms in contributing to changes identified in population of communities over time.</p>	Survey
Change in tourism revenue		<p>Impacts on fishing communities</p>	<p>Relevance: The fishing industry contributes to the identity of many NSW coastal towns, and changes to fishing can affect this identity, and in turn can affect the tourism industry that is often in part built around the identity of a town or community as a 'fishing community'.</p> <p>Measure: To measure change in tourism revenue, the quarterly reports of Destination NSW are a useful source of data (available at http://www.destinationnsw.com.au/tourism/facts-and-figures/state-tourism-statistics). These produce data on total estimated value of tourism in multiple NSW regions. They can be analysed over time to identify if there are regional changes in tourism revenue. At a more local scale, assessing change in tourism revenue due to fisheries reform can be further investigated through consultation with local governments to obtain a more localised understanding of change.</p> <p>Assessing role of fisheries reform: Data from Destination NSW should be analysed to identify if tourism is changing in regions where fishing has changed, in ways that are different to tourism revenue trends in other NSW regions.</p>	<p>Analysis of Destination NSW tourism statistics</p>
Intra-fishing industry conflict	<p>Current fishers; exited fishers; fishing</p>	<p>Impacts on fishing communities</p>	<p>Relevance: Conflict and disagreement between members of the fishing industry has been referred to in some discussions of fisheries reform. Experiencing negative interactions and conflict can have important and substantial impacts on a person's wellbeing. This indicator examines whether reform has</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
	cooperatives	Wellbeing Conflict	<p>been associated with reduction in positive interactions, for example through increased conflict, or fear of speaking openly with others about some topics.</p> <p>Measure: Fishers and fishing cooperatives are asked the extent to which they agree or disagree with the following statements:</p> <ul style="list-style-type: none"> (i) The process of fisheries reform in NSW has caused disagreement or conflict between members of the fishing industry in my local area (ii) I feel comfortable to talk openly with others about my views of the fisheries reform process <p>Assessing role of fisheries reform: This indicator is designed to directly examine the effects of the reform process.</p>	
Wellbeing of fisheries managers	Fisheries managers and agency staff	Wellbeing	<p>Relevance: The staff involved in managing and implementing fisheries reform can often experience substantial stress, particularly where reforms are controversial. Supporting the wellbeing of these staff is important; high levels of stress or anxiety can reduce the effectiveness of these staff in managing and implementing reform, as well as having important impacts on their lives more broadly.</p> <p>Measure: This can be measured via a short survey of fisheries managers and staff involved in fisheries reform, delivered via email. However, we would recommend that rather than measuring this indicator, directing funding to providing counselling support for staff experiencing stress may be a more useful investment, as an in-depth understanding of wellbeing of fisheries managers and factors influencing it may be costly.</p> <p>Assessing role of fisheries reform: The wellbeing of fisheries managers and agency staff will be influenced by many factors; if any survey is done, it should explicitly ask about experience of different factors likely to cause stress, of which one is the fisheries reform process.</p>	We recommend providing support to these staff rather than monitoring wellbeing outcomes
Interactions with recreational fishers	Current fishers	Impacts on fishing communities Conflict	<p>Relevance: Some Inquiry submissions identified concern that reforms may increase negative interactions between commercial and recreational fishers.</p> <p>Measure: Fishers are asked the extent to which they agree or disagree with the following statements:</p> <ul style="list-style-type: none"> (i) The amount of negative interactions I have with recreational fishers has increased in the last year (ii) Most of the interaction I have with recreational fishers is positive (iii) Changes to management of commercial fishing have increased problems I experience with recreational fishers <p>Assessing role of fisheries reform: Many factors can cause negative interactions between recreational</p>	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
Stability of fisheries management	Current fishers; fishing cooperatives	Certainty about the future Justice and fairness	<p>and commercial fishers. Identifying whether reform processes have increased negative interactions is done by analysing answers to the third statement and comparing them to answers to the first two statements, which identify how significant an issue negative interactions with recreational fishers are overall.</p> <p>Relevance: The perceived stability of fisheries management is likely to have a significant influence on the extent to which fishers and fishing cooperatives feel able to invest in their business, and that they have the ability to plan for their future.</p> <p>Measure: Fishers and fishing cooperatives are asked the extent to which they agree or disagree that:</p> <ul style="list-style-type: none"> (i) The way NSW commercial fisheries are managed (e.g. rules, regulations, share system) is unlikely to change substantially in the next few years <p>Assessing role of fisheries reform: This indicator is designed to directly examine the effects of the reform process.</p>	Survey
Experience of cumulative reforms	Current fishers; fishing cooperatives	Certainty about the future Justice and fairness	<p>Relevance: In Inquiry submissions, many fishers pointed to the cumulative effects of experiencing changes to fisheries management, as well as having large changes proposed, over a long period of time. The experience of past changes can change how easily members of the fishing industry are able to cope with further change. Understanding the extent to which fishers are better or less able to cope with current change due to the cumulative effects of multiple reforms is therefore important.</p> <p>Measure: Fishers are asked the extent to which they agree or disagree with the following statements:</p> <ul style="list-style-type: none"> (i) Changes to fishing management over the last decade have been significant, but have been relatively easy to adjust to (ii) Ongoing changes over the last decade in how NSW fisheries are managed has made it difficult to manage my fishing business (iii) It has been difficult to cope with uncertainty caused by the changes to how commercial fishing is managed in NSW over the last decade <p>Assessing role of fisheries reform: This indicator directly examines the extent to which fishers feel experiences of ongoing reform affect management of their fishing business. Answers can also be analysed to identify whether those who have found the impact of fisheries reforms since 2007-08 more difficult to cope report different fishing business performance and personal wellbeing compared to those who report less negative impacts of past reforms.</p>	Survey
Types of reform	Current fishers, exited	Effectiveness of assistance	Relevance: To assess the effectiveness of assistance measures requires asking whether fishers applied to receive any of the different types of assistance offered.	Survey

Indicator	Group/s for which this indicator is relevant	The socio-economic impacts the indicator monitors	Description of the indicator, relevance of the indicator, and assessment of likely contribution of fisheries reform to the indicator	Data source/s
assistance applied for	fishers, fishing cooperatives	measures	<p>Measure: Fishers are asked which of the reform assistance measures they applied for. Those who didn't apply are asked to identify if they didn't apply because they didn't need to, or for other reasons including feeling they would be ineligible, difficulty of the application process, or other factors. Those who did apply are asked how easy or difficult they found the process of applying.</p> <p>Assessing role of fisheries reform: This indicator directly identifies if there were any barriers to accessing assistance, and how easy or difficult fishers found it to apply for assistance.</p>	
Types of reform assistance received	Current fishers, exited fishers, fishing cooperatives	Effectiveness of assistance measures	<p>Relevance: To assess the effectiveness of assistance measures requires asking whether fishers received assistance.</p> <p>Measure: Fishers are asked which of the reform assistance measures they applied for were granted.</p> <p>Assessing role of fisheries reform: This indicator enables assessment of how many fishers have received different types of assistance.</p>	Survey
Usefulness of assistance received	Current fishers, exited fishers, fishing cooperatives	Effectiveness of assistance measures	<p>Relevance: This is a direct assessment of the effectiveness of different assistance measures</p> <p>Measure: For each assistance measure they have accessed, fishers/exited fishers/cooperatives are asked to rate its usefulness to them on a scale from 1 (not at all useful) to 7 (very useful). They are then presented with an open-ended question asking what made it not useful or useful.</p> <p>Assessing role of fisheries reform: This question directly assesses the extent to which assistance measures have helped mitigate impacts of reform.</p>	Survey

6. Conclusions: recommended social and economic monitoring framework

This report has examined and proposed a framework for monitoring social and economic impacts of NSW commercial fisheries reforms and the Business Adjustment Program. The Framework we proposed is designed to examine the specific social and economic impacts identified in both the recent Inquiry into the reforms, and in previous studies. As a wide diversity of impacts has been identified, the Framework is similarly diverse, with a relatively large number of indicators proposed to be monitored over time in order to identify social and economic conditions in the commercial fishing industry. The indicators we propose enable understanding of impacts on:

- Current fishers and those who have exited the industry
- Fishing households
- Service and supply businesses
- Fishing cooperatives and other downstream businesses
- Communities in which commercial fishing operates.

We recommend monitoring of the following socio-economic indicators in the framework. For each, it is important to not only measure the current 'condition', but also to identify the extent to which fisheries reforms versus other factors may be contributing to that condition. This report has identified the methods that can be used to do this, within the limitations inherent in identify cause-effect relationships when monitoring social and economic change over time:

- Measures of **certainty about the future**: these indicators identify if reforms are leading to an increased or decreased ability to invest and make decisions based on having a high level of confidence in and certainty about the future of the industry:
 - Confidence in the fishing industry (all fishing industry members, including current fishers, fishing service and supply businesses, cooperatives, downstream processors, and wholesales)
 - Confidence in future of fishing business (all fishing industry members)
 - Confidence in fisheries management (all fishing industry members)
 - Perceived stability of fisheries management (all fishing industry members)
- Measures of **ability to successfully manage business**: these indicators identify if reforms are leading to an improved or reduced ability to successfully manage businesses in the fishing industry:
 - Confidence in ability to manage fishing industry business (all fishing industry members)
 - Fisher confidence in engaging with share market (current fishers)
 - Confidence in ability to invest in business (all fishing industry members)
 - Investment in fishing business (current fishers)
 - Spending on fishing goods and service providers (current fishers, businesses providing goods and services to fishers)
 - Fishing business profitability (current fishers)
 - Fishing business change in debt level and ability to service debt (current fishers)
 - Fishing business equity (current fishers)

- Fishing business debt collateral (current fishers; this indicator identifies whether provision of shares is increasing the collateral available to fishers for finance)
- Satisfaction with fishing activities (current fishers)
- Downstream business performance (fishing cooperatives, other downstream businesses)
- **Change in fishing industry activity and local economies:** These indicators identify whether the total volume of activity occurring in the fishing industry is changing, or in specific areas of the industry, helping identify flow-on impacts through the industry and into the economies of local communities. Each should be analysed by region to enable identification of impacts on different communities:
 - Fishing business revenue (current fishers)
 - Volume of catch (current fishers)
 - Number of employees working in fishing business (current fishers)
 - Employment in fishing service and supply businesses (fishing service and supply businesses)
 - Downstream business employment (fishing cooperatives, other downstream businesses)
 - Downstream business fluctuation in supply (fishing cooperatives, other downstream businesses)
 - Direct employment generated by fishing industry in different communities (fishing communities)
 - Indirect employment generated by fishing industry in different regions (fishing communities)
 - Demographic change in local communities (fishing communities)
 - Change in tourism revenue (fishing communities)
- **Social and economic wellbeing and distress** of fishing industry members
 - Social wellbeing and distress (all fishing industry members, fishing households). We have included several measures of wellbeing and distress to ensure issues such as experience of psychological distress are adequately monitored.
 - Working hours in fishing and satisfaction with working hours (current fishers)
 - Working hours outside fishing industry & satisfaction with working hours (current fishers, exited fishers, fishing households)
 - Household income (current fishers, exited fishers)
 - Household financial wellbeing (current fishers, exited fishers)
 - Exited fisher employment status (exited fishers)
 - Exited fisher satisfaction with new employment (exited fishers)
 - Intra-fishing industry conflict (all fishing industry members)
 - Wellbeing of fishing industry managers (managers)
 - Interactions with recreational fishers (current fishers)
- **Maintaining fishing identity and cultural practices:** these indicators identify whether fishers are able to maintain cultural practices and activities that are central to their identity; their identity in turn has an important influence on overall wellbeing levels
 - Ability to engage in cultural fishing practices (Aboriginal fishers)
 - Ability to pass on fishing knowledge (all fishers)
- **Experience of fisheries reform process:** The way a person experiences a process will affect the social and economic outcomes occurring as a result of that process, as well as their confidence

to engage in the future, and these indicators identify how perceptions of the reform process and its outcomes change over time as fishers adjust to implementation of reforms

- Perceptions of fisheries reform process and outcomes (all fishing industry members, exited fishers)
- Rating of fisheries management communication (all fishing industry members)
- Experience of cumulative reforms (all fishing industry members)
- Types of reform assistance applied for (all fishing industry members)
- Types of reform assistance received (all fishing industry members)
- Usefulness of assistance received (all fishing industry members who have accessed assistance)

We recommend monitoring outcomes starting in spring 2017, with the first wave of monitoring also collecting data that enables ‘backcasting’ of estimates, to produce estimates of social and economic conditions in early 2016 prior to substantive implementation of the current reforms and the Business Adjustment Program. This should be followed by subsequent monitoring in 2018, 2019, and 2021. We recommend annual monitoring in the first two years as this is when there is both opportunity to provide additional assistance measures if monitoring identifies significant difficulty amongst fishers in adjusting successfully to reforms, and when the most substantial phase of adjusting to reforms will be experienced by fishers. This period of implementation is also one in which the social and economic impacts of reform shift from ‘anticipatory impacts’ – the impacts anticipated by members of the fishing industry, which in many cases include significant stress and anxiety triggered during the period in which reforms have not yet been implemented but are anticipated – to implementation impacts. In the implementation phase, as fishers are able to adjust to the implementation of reforms, the nature of the impacts experienced may shift substantially, with past studies indicating an often large difference between anticipated impacts and those then actually experienced during implementation. For this reason, regulator monitoring during the first years of implementation is very important.

A lack of available existing data means that most of the indicators in the Framework can only be populated with data by using direct surveys of fishers (both current and those who have left the industry), and fishing cooperatives and other downstream businesses. Conducting these surveys, as well as an initial survey of service and supply businesses, provides the data needed to then monitor impacts on communities in which the fishing industry operates. We have provided indicative costings for conducting an initial wave of monitoring: this first wave is likely to be substantially higher cost than subsequent waves, as significant investment is needed to build trust of many participants in the fishing industry to engage in any form of social and economic monitoring. If this trust is successfully achieved in the first wave, subsequent waves of monitoring will be lower cost.

A key part of our recommendations is that the Framework should be reviewed, modified as necessary, and the final version endorsed, in consultation with representatives of different parts of the NSW fishing industry. This is essential to ensure that: (i) the Framework we have proposed adequately addresses all areas that require monitoring, and (ii) the process, methods, and hence findings, of the monitoring are trusted by members of the NSW commercial fishing industry.

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