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Determinants of socially-supported wild-catch fisheries and aquaculture in Australia

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Executive Summary

What the report is about

Australia's wild-catch fisheries and aquaculture are increasingly attentive to the importance of having support from communities and stakeholders to ensure their future sustainability and prosperity. This project aimed to identify determinants of socially-supported wild-catch fisheries and aquaculture in Australia. This project was developed collaboratively with the Human Dimensions Research Subprogram and relevant industry stakeholders and extends previous FRDC projects by examining differential definitions and assessments of societal support. It investigates determining factors beyond individual values and perceptions associated with 'sustainability' and seafood production practices, to factors and processes such as those associated with culture, relationships, participation, and trust, and whether/how these determinants contribute to societal support.

Background and Need

To secure the future of the Australian wild-catch fisheries and aquaculture industry, it is increasingly clear that, alongside effective and responsible management and production, building and maintaining societal support is vital. However, there is uncertainty around what is meant by societal support and what it looks like, how to address poor societal support at its root, who needs to be involved to address the problem, and effective pathways to improving societal support. There are gaps in knowledge in terms of 1) identifying the determinants of poor/high societal support; 2) identifying stakeholder groups to target who influence societal support and outcomes for wild-catch and aquaculture fisheries; and 3) appropriate, effective and innovative pathways to improve societal support through engagement strategies and other interventions.

There is a wealth of information about societal support and it is referred to using a variety of terms including social license to operate, community support, social acceptance. There is also research on the conditions required to achieve societal support. However, currently this information is not directly or easily transferable to the seafood industry. This project draws together this knowledge from existing literature and documentation and uses a survey and key informant interviews to address the gaps in knowledge.

Objectives

The key objectives of the *Determinants of socially-supported wild-catch fisheries and aquaculture in Australia* were:

1. To provide a definition of societal support for wild-catch and aquaculture fisheries in Australia
2. To identify determining factors (social, economic, environmental and political) affecting societal support for wild-catch and aquaculture fisheries in Australia
3. To identify means by which to detect, assess and monitor societal support for wild-catch fisheries and aquaculture in Australia using a risk-based approach

Methodology

This project used a mixed method approach. This involved iterative analysis of international and Australian-focussed academic and grey literatures, elicitation of expert and stakeholder knowledge through a survey and interviews, an in-depth case study analysis, and the development of a self-assessment tool.

Results/key findings

1. Definition of societal support for wild-catch and aquaculture fisheries in Australia

Based on the survey and the literature review, we developed a working definition of societal support:

Societal support is a state of acceptance, approval or assistance for fisheries and aquaculture activities granted by stakeholder groups. It is located on a gradient from a low to high level of support. More specifically, societal support:

- *Is rooted in the beliefs, perceptions and opinions of stakeholders about a fishery or aquaculture activity. Stakeholders are those who are impacted by, or who can impact a fishery or aquaculture activity*
- *Is perceived differently by different stakeholder groups, and different stakeholder groups can grant different levels of support for a fishery or aquaculture activity*
- *Is not necessarily consistent across geographical scales, and the level of societal support for a fishery or aquaculture activity may differ at local, regional and national scales*
- *Is dynamic and changes over time as beliefs, perceptions and opinions are subject to change as new information is acquired. Societal support can be slow to gain but lost quickly*
- *Is determined by the context that surrounds the fishery or aquaculture activity and the external circumstances at the time*
- *Is determined by the behaviours, practices and actions of the people within the fishery or aquaculture operation while fishing or farming*
- *Is determined by the building of trusting relationships and meaningful engagement with stakeholder groups*
- *Is determined by the ability of the people within the fishery or aquaculture operation to have influence with stakeholder groups*

This working definition synthesises the many and varied existing definitions. It has been refined, and as such, is more nuanced than many of the definitions provided in the peer-reviewed and grey literature to date. To fully understand the concept of societal support with regards to fisheries and aquaculture, it is important to take the definition in conjunction with the factors that determine the existence or non-existence of societal support.

2. Determining factors affecting societal support for wild-catch fisheries and aquaculture in Australia

We developed a working set of 16 determinants that affect the level of societal support relevant for the seafood industry, comprising aspects which (for the fishing or aquaculture activity) can be imposed by external actors, can be related to internally-held values, or can be based on behaviours, capacity and actions undertaken by the operation.

The determining factors of socially-supported fisheries and aquaculture included:

Determinant of societal support	**Description**
Understanding and consideration of the context	*Context is the circumstances that form the setting for the fishing/aquaculture activity. The context will be different depending on the location and scale of the fishing/aquaculture activity and the circumstances surrounding the fishing/aquaculture activity. For example, the types of context to understand might include: the socio-economics of the place and people, whether there are multiple users of the resource and space, whether stakeholders have lived or prior experience of a fishing/aquaculture activity or similar, the nature and type of media coverage, the political situation, and other outside influences that may indirectly be affecting support. It is important to understand context because it may change over time, place and cultures. Some contextual factors cannot be influenced but may be important to be recognised. However, some factors may be influenced (e.g. media coverage) to achieve a higher level of societal support.*
Belief in the strength of government oversight	*Strength of government oversight includes the clarity in government agencies roles and responsibilities, and their regulatory effectiveness as perceived by stakeholder groups. The more stakeholders believe there is government oversight of the fishing/aquaculture activity, the more trust there is that the activity is being regulated effectively and in line with societal expectations.*
Presence of fair decision-making processes by government	*Presence of fair and transparent decision-making processes by government includes the processes that resolve disputes and allocate resources, and which are in line with fisheries/aquaculture- relevant policy, process and legislation. Government refers to the relevant government ministries and agencies which legislate and regulate fisheries and aquaculture activities.*
Demonstration of the fishing/aquaculture activity acting in alignment with social norms	*Societal support builds when the fishing/aquaculture activity demonstrates that they act in alignment with social norms. Examples of social norms include: being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable.*
Evidence of sustainable and responsible fishing/aquaculture practices	*Sustainable and responsible practices relate to the internal operations and behaviours of the fishing/aquaculture activity. For example, practices which work towards to reducing environmental/ecosystem impacts and improving environmental/ecosystem health and having good governance systems. These may include actions beyond practices directly relating to seafood production, for example habitat restoration, or professional development within the industry.*
Level of visibility	*The level of visibility is how physically visible a fishing/aquaculture activity is to the public. Visibility can be beneficial or detrimental to building support. Types of visibility include 'seeing' the fishing/aquaculture activity and operators at work, visibility of the products they produce, and visibility in the media.*
Relationship building	*Relationship building is about engaging with stakeholder groups. It is based on finding ways for the fishing/aquaculture activity participants/advocates to work constructively together with stakeholder groups, collaborating and forming partnerships.*

Determinant of societal support	**Description**
Effectiveness of communication	*Communication at the minimum is sharing information about the fishing/aquaculture activity and having a clear and consistent message. Effective communication goes beyond this and involves creating consistent and open dialogue and active listening between the fishing/aquaculture activity participants/advocate and stakeholder groups to develop greater understanding of each other.*
Demonstration of shared vision	*Having a shared vision between the fishing/aquaculture activity participants and the stakeholders involves meeting expectations, needs, aspirations and finding common ground despite different worldviews. This is distinct from norms of behaviour and is more about 'what is important'. An example might be 'a shared vision of a healthy environment'.*
Demonstration of the generation and distribution of benefits	*A fishing/aquaculture activity can generate benefits to the environment (physical/biological benefits), or to society, stakeholder groups or individuals (socio-cultural benefits). Uncertainty of benefits, an inability to demonstrate/articulate benefits, and how benefits are distributed can influence support.*
Framing of the issue	*The way in which an issue or the fishing/aquaculture activity is framed (presented) can be influential and can change perceptions of stakeholder groups positively or negatively. Framing may be based on emotions and language, rather than expert information or facts.*
Connectedness to community	*Connectedness to community is the extent to which the fishing/aquaculture activity is perceived to be 'local' or 'integrated' into the community or society. The fishing/aquaculture activity participants in this case may be perceived to be 'one of us'.*
Presence of key influencers	*Key influencers might be individuals or groups. They may be within the fishing/aquaculture activity participants/advocates and/or within stakeholder groups. Influencers can play a large role in galvanising more or less support for a fishing/aquaculture activity. The presence of key influencers can result in power asymmetries, a lack of representation, inclusiveness and marginalisation.*
Level of collective action	*Collective action is people working together and building alliances. Collective action can have different purposes. It may be used to create a louder voice of protest or support, or it can be used to co-develop solutions to issues.*
Unity of fishing/aquaculture activity participants or industry	*Unity refers to the fishing/aquaculture activity participants or industry working together and speaking as one, especially in the face of challenges.*
Level of material and human resources	*Material and human resources include money, skills/capabilities and networks of the fishing/aquaculture activity participants and advocates, and/or stakeholder groups.*

The case study analysis found that the inferred determinants largely matched those identified by the literature review. The case studies also revealed differences in the nature of determinant of societal support for wild-catch fisheries and aquaculture activities, and differences between those case studies with higher and lower societal support:

Differences in determinants between wild-catch fisheries and aquaculture case studies:

- There were differences between the scale of activities analyses. The aquaculture cases were individual businesses, while the wild-catch fisheries cases consisted of a fisheries sector and a number of fishing businesses. Having to organise distinct and individualist operators to voluntarily work together, to have a common message and have capacity to influence stakeholder perceptions to improve societal support is challenging and requires leadership. However, for aquaculture farms, collective action is not always the norm, and not having industry-wide unity can be detrimental for building societal support for a whole sector.
- Demonstrating the 'the fishing/aquaculture activity was acting in alignment with social norms' (being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable) and demonstrating 'a shared vision between the activity and the stakeholder groups and community' (meeting expectations, needs, aspirations of stakeholders and finding common ground between stakeholder groups and the activity despite different worldviews) both appeared more clearly as determinants of societal support in the wild-catch fisheries cases than in the aquaculture cases. Wild-catch fishing is a more traditionally embedded industry in communities and of a stronger cultural importance to society, which may mean wild-catch fishing needs to have closer alignment with community expectations.
- There was a clear difference between the wild-catch fisheries and aquaculture cases in terms of the visibility of operations. For wild-catch fisheries, being physically visible in the community and having identifiable, traceable and locally available products were perceived to be important for building societal support. While for the aquaculture cases it appeared that there was a preference for operations to be hidden from view.

Differences in determinants between higher and lower levels of societal support in the wild-catch fisheries and aquaculture case studies:

- There were differences in every determinant between higher and lower levels of societal support.
- Where societal support was higher, the fishery/aquaculture operation had taken time to build support and it was shown through the cases of lower societal support that it was not possible for fishery/aquaculture operation to build support at a time of crisis
- The foundation of building societal support was the development of relationships with stakeholders. In the cases with higher societal support, engagement with stakeholders was genuine, deep and personalised, occurred across a broad range of stakeholder groups at different scales (local to state/national), and over a long period of time. Strong relationships also have cascading effects, with stakeholders spreading positive stories about the fishery/aquaculture operation.
- In the cases of higher societal support, a strong relationship and connection to community was present. This was generated through activities such as selling products locally, participating in and leading local events and projects
- Cases with higher societal support substantially contributed to and controlled the framing of their fishing/aquaculture activities through open and genuine communication and being proactive rather than reactive in communications. In the cases of lower societal support, communication was lacking which led to misinformation filling the gap and thus framed their activities negatively.
- The unity of the fishing/aquaculture activity participants in the cases was a critical determinant of societal support. This determinant was not foreshadowed in the literature review. Where fragmentation and open conflict was identified in cases, societal support was lower. In contrast in the cases where industry was cohesive, there was higher societal support.

3. *To identify means by which to detect, assess and monitor societal support for wild-catch fisheries and aquaculture in Australia using a risk-based approach*

We developed a self-assessment tool which comprises a list of indicator statements for each determinant of societal support. The intention is for the fishery/aquaculture industry (e.g. individuals, businesses, sector bodies/associations, industry stakeholders) to use the assessment tool to track their progress against each determinant of societal support. The tool uses a traffic light system which allows users to identify and prioritise determinants that may require action. It requires the user to challenge themselves and be honest in self-reflection but may also be useful for the fishery/aquaculture operation to seek the views of stakeholders.

Recommendations and further development

We believe that all sixteen determinants of societal support should be considered by those working in Australian wild-catch and aquaculture-related activities. However, some of the findings engendered recommendations specific to key groups, including: the fishers/aquaculture companies themselves, the fisheries/aquaculture associations and peak bodies, and the fisheries/aquaculture managers:

For fishers/aquaculture companies:

- Be aware that building societal support takes time, is difficult to build only in times of crisis, and is dynamic (can be lost quickly). It is now an important part of the job of fishing/aquaculture activities.
- Take time to understand the context within which the fishing/aquaculture activity is operating and how this may influence different stakeholders support for the activity. Determine what contextual factors can be influenced and what is outside control.
- Identify where there are synergies between the fishery/aquaculture operation's vision of the future (what is important) and the community's vision of the future and work towards having a shared vision and meeting the community's expectations.
- Undertake genuine, deep and personalised engagement with stakeholders; share experiences with others, participate in local events, build relationships even with those that may oppose the activity or can be difficult to work with.
- For wild-catch fisheries, be visible in the community but demonstrate responsible practices
- For aquaculture operations, consider how new or existing developments may affect the community and stakeholders' sense of place and work towards reducing any perceived negative impacts.
- Engage in communication (through traditional/social media and in forums) that is proactive rather than reactive, that is constructive and transparent and uses positive framing to shape and control the story that is told about the fishing/aquaculture activity.

For fisheries/aquaculture associations and peak bodies:

- Be aware that building societal support takes time, is difficult to build only in times of crisis, and is dynamic (can be lost quickly). It is now an important part of the job of fishing/aquaculture activities.
- Ensure a united public face and work on creating a unified position and cohesiveness between individual operators within the fishing/aquaculture activity.
- Identify and build industry champions who have influence with stakeholder groups (particularly government and decision-makers) and ensure they have the appropriate skills, capacity and resources.
- Identify all of the stakeholder groups that impact or are impacted by the fishery/aquaculture activity and have a strategy to engage with them.
- Build alliances and collaborations with stakeholder groups.
- Engage in communication (through traditional/social media and in forums) that is proactive rather than reactive, that is constructive and transparent and uses positive framing to shape and control the story that is told about the fishing/aquaculture activity.

For fisheries/aquaculture managers:

- Put in place decision-making processes that are transparent to stakeholders and enable fair consideration of all stakeholder values and interests.
- Demonstrate how fisheries/aquaculture activities are researched (including findings) and how they are managed to meet all stakeholder expectations.
- Engage in communication (through traditional/social media and in forums) that is constructive and transparent and ensure that communications equally and fairly present all fisheries and aquaculture sectors and stakeholders

We recommend that all three groups use the self-assessment tool to critically and honestly reflect on their role in achieving societal support for wild-catch fisheries and aquaculture. If done regularly, this will assist these groups in identifying and monitoring levels of societal support as well as enabling them to regularly address the relevant determinants of societal support. It may also mitigate against any complete loss of support. Evaluation and monitoring of the self-assessment tool would enable further development.

Keywords

Societal support, social license to operate, definition, determinants, perceptions, case studies

1. Introduction

1.1 Background

In recent years, the topic of societal support has been a high-priority and a regular topic of discussion for the wild-capture fishing and aquaculture industries and stakeholders. The seafood industry is acutely aware of the negative impacts of controversies as well as how societal judgement can influence access to resources.

However, within the seafood industry, there is uncertainty around what is meant by societal support and what it looks like. This is also reflected in the broader literature where societal support is a contested concept (Parsons et al., 2014). Firstly, it is referred to using a variety of terms including social license to operate, community support, social acceptance and social approval (amongst others). We use the term 'societal support' because it encompasses all societal and stakeholder groupings and includes ideas of acceptance and approval, as well as assistance. Secondly, societal support is variously stated to be vague and intangible (Prno and Slocombe, 2014, Colton et al., 2016) a metaphor (Bice, 2014, Parsons and Moffat, 2014), or conversely, a tangible tool (Kelly et al., 2017). Thirdly, the term has been linked to other frameworks such as Corporate Social Responsibility (CSR; Owen and Kemp, 2013, Parsons et al., 2014, Overduin and Moore, 2017), Free Prior and Informed Consent (FPIC; Parsons and Moffat, 2014, Overduin and Moore, 2017), Sustainable Development (Prno and Slocombe, 2012) and the Quadruple Bottom Line (Bice, 2014). It has also been suggested that its definition overlaps with the concept of legitimacy (that an operation is acting appropriately and in line with societal norms, values and expectations; Boutilier and Thomson, 2011, Cullen-Knox et al., 2017, Jijelava and Vanclay, 2017).

Also, societal support cannot be understood as a dichotomy; a presence or absence. Rather, it occurs on a gradient, and may be held by some groups at, but not by others and this may change over time. This makes the measurement of societal support challenging. Preference and perception surveys have been the standard practice for identifying and measuring societal support (e.g. Murray et al., 2017, Dalton and Jin, 2018, Shuve et al., 2009, Whitmarsh and Palmieri, 2009, Aslin and Byron, 2003), and as such, there has been a strong reliance on their results. However, it is problematic to rely solely on just one method, particularly given that in choosing who to interview and what to ask, the voice of the people is profoundly shaped by the decisions made by the survey authors (Berinsky, 2017). This may mean that surveys do not consider the differences between the perceptions of different communities within society. In addition, there are also method-related issues of variance, bias and nonresponse (Blair et al., 2013). As such, relying on surveys alone as a measure of societal support for aquaculture and fisheries may mean that a false finding influences industry or government decision-making in a way that goes against the population at large. Furthermore, preference and perception surveys often don't explore the 'how' and 'why' of societal support, leading to a gap in our understanding of the concept.

This project was developed in response to the clearly articulated Human Dimensions Research (HDR) Subprogram priority 4 'Effective engagement to achieve socially supported fisheries & aquaculture', which resulted in an HDR call for projects to identify the determinants of socially-supported fisheries and aquaculture. The project was developed collaboratively with the HDR Subprogram and relevant industry stakeholders and builds on FRDC projects *Let's Talk Fish* (2012-301) and *License to Engage*

(2015-300), which laid the foundations to understand the drivers of social acceptability and recommended approaches to build societal support in Australian fisheries. This project extends these works by examining different definitions and assessments of social acceptability. It also investigates determining factors beyond the social values and perceptions associated with 'sustainability' and seafood production practices, to factors and processes such as those associated with culture, capacity, relationships, participation, and trust; and whether/how these determinants contribute to societal support.

1.2 Need

To secure the future of the Australian wild-catch fisheries and aquaculture industry, it appears that, alongside effective and responsible management and production, building and maintaining societal support may be vital.

It is widely believed that a lack of societal support has, in part, been responsible for diminishing access to or even closure of wild-catch fisheries and aquaculture activities in Australia, even though clear definitions and indicators for societal support are lacking. Cited examples include: the 2016 closure of the Victorian small-scale Port Phillip Bay net fishery as a result of pressure from the recreational fishing sector (King and O'Meara, 2018); the environmental controversy over mid-water trawling ('super trawlers') for small pelagic species despite scientifically-determined healthy stock status (Tracey et al., 2013); and environmental non-governmental organisations (eNGOs) campaigns against Atlantic Salmon aquaculture farms, such as Tassal's proposed operation in Okehampton Bay on Tasmania's east coast (Vince and Haward, 2017, Murphy-Gregory, 2018).

The wild-catch fishing and aquaculture industries are increasingly aware of the need to garner societal support. But there is uncertainty around how to address poor societal support at its root, who needs to be involved to address the problem, and effective pathways to improving societal support. From an industry perspective, there are gaps in knowledge in terms of 1) identifying the determinants of poor/high societal support; 2) identifying stakeholder groups to target who determine societal support and outcomes for wild-catch and aquaculture fisheries (e.g. other resource user groups, eNGOs, decision-makers and government, consumers, other publics); and 3) appropriate, effective and innovative pathways to improve societal support through engagement strategies and interventions.

There is a wealth of information about societal support and the conditions required to achieve it, including learnings from other industries, international wild-catch fisheries and aquaculture, and historical case studies of successes and failures within Australia. However, until now the information has not been collated and synthesised to be transferrable and useable by the Australian seafood industry. This project draws together knowledge from existing literature and documentation and combines this with a survey and key informant interviews to examine the 'how' and 'why' of societal support.

2. Objectives

The key objectives of the *Determinants of socially-supported wild-catch fisheries and aquaculture in Australia* have been:

1. To provide a nuanced definition of societal support for wild-catch fisheries and aquaculture in Australia

2. To identify determining factors (social, economic, environmental and political) affecting societal support for wild-catch fisheries and aquaculture in Australia

3. To identify means by which to detect, assess and monitor societal support for wild-catch fisheries and aquaculture in Australia using a risk-based approach

3. Methods

Based on the objectives of this project, we asked three research questions:

i. How can societal-support be defined for wild-catch fisheries and aquaculture to improve understanding for those who seek to build societal support?
ii. Which determining factors (social, economic, environmental and political) predispose wild-catch fisheries and aquaculture to decreased or increased likelihood of societal-support (as defined), based on historical cases?
iii. How can societal-support be detected, assessed and monitored for Australian wild-catch fisheries and aquaculture, and if so, to what extent?

To answer these questions, we used a mixed method approach. This involved iterative analysis of international and Australian-focussed academic and grey literatures, elicitation of expert and stakeholder knowledge (Academics/researchers, Decision makers/ policy makers/ managers, Industry participants or representatives, NGO or community group participants) through a survey and interviews, and an in-depth case study analysis. These methods will now be presented in the context of the project and in the form of the steps taken throughout the process. In addition, as an output from the project analyses, a self-assessment tool of determining factors was developed and is described in the methods.

3.1. Establishment of Reference Group

To assist with expert elicitation, data validation, and guidance for the project, we established a Reference Group comprising industry representatives. The Group were selected from the jurisdictions of the case studies (described in further depth in section 3.3) and were comprised of the seafood peak bodies. Peak body representatives were asked to participate because of their broad knowledge of the seafood sector, their understanding of the case studies, and because they operate in an advocacy role that trades in societal support.

3.2. Development of draft definition of ‘societal support’ and list of determinants

Definitions of societal support exist, for example (Mazur et al., 2014) define social acceptability as:

“Social acceptability is made up of dynamic (changeable) judgements, which are held by identifiable parts of society. People make judgements about how the Industry’s activities compare to some desired alternatives/operations. These judgements exist at different degrees of approval and can influence the quality of relationships between relevant people with (direct and indirect) interest(s) in the Industry” (p11)

Given the juxtaposition of the identified need for the seafood industry to build societal support but the belief that there is misinterpretation by industry of what societal support means (Mazur and Brooks, 2018), the first challenge of this project was to develop a more detailed and nuanced understanding of societal support for wild-catch and aquaculture fisheries, looking at what it means to different stakeholder groups in Australia (e.g. industry, non-government organisations and community groups,

decision-makers), and the factors which comprise societal support. In the first stage of the research project, our aim was to derive a draft definition of 'societal support' and to identify an initial list of determinants of societal support. To do this, we used two methods i) a survey of fisheries and aquaculture specialists; and ii) a review of the academic and grey literature.

The use of surveys to measure opinions has become dominant practice in social science (Czaja and Blair, 2005). Surveys can be administered in many modes, including: online surveys, email surveys, social media surveys, paper surveys, mobile surveys, telephone surveys, and face-to-face interview surveys. We chose to undertake an online survey (for survey questions, see Appendix A), using the SurveyMonkey platform, for reasons of cost and time. We identified 52 fisheries and aquaculture specialists with an industry, decision-maker, research, or community/NGO perspective who we believed to have a broad and deep knowledge of the Australian seafood industry. We also expected them to have exposure to the challenges of, and conversations about, societal support. The survey was pre-tested and ran between July and August 2018. Survey results were analysed using descriptive statistics and a simple thematic coding procedure in Excel.

We also undertook a literature review of Australian and international academic literature (peer-reviewed papers and reports) about societal support, including on industries with similar societal support issues from resource sectors (e.g. mining, energy and forestry) animal production industries (e.g. dairy and red meat industry) as well as wild-catch fisheries and aquaculture. 64 documents were identified for analysis. For the list of papers included in the review, see Appendix B. The literature was analysed using the grounded theory method.

Grounded theory is a systematic research method used to build theory through the analysis of data (Strauss and Corbin, 1997, Charmaz, 2006). The grounded theory method was used in this study only for coding the literature as this study was exploratory, aiming to delve into the key issues in some depth, rather than to create theory. It is an inductive research method and using this approach for coding ensured that the codes related closely to, and remained grounded in, the data. Two steps were taken during the coding procedure: i) initial line by line coding of text relating primarily to definitions, determinants and indicators of societal support, and secondly to meanings, processes, influences, practices, behaviours and actions; ii) axial coding which allowed initial codes to be amalgamated into subcategories. iii) the coding was an iterative process and was conducted by two researchers who cross-checked codes. For the codebook, see Appendix C.

3.3 Exploratory case study research of Australian fisheries and aquaculture

In the second stage of the project we undertook exploratory case study research of four Australian wild-catch fisheries and aquaculture activities. We then compared the case study findings with the draft list of determinates identified from the survey and literature review. We deliberately did not 'test' the determinants list using the case studies, to allow for the emergence of previously unidentified determinants.

As a research method, case studies have been used in many situations to explore individual, group, and social phenomena. Case studies are particularly useful if the form of the research question is 'how' or 'why' and the purpose is explanatory (as is the case in this study; Yin, 2009). As with any other research method, there are strengths and limitations to case study research. Some of the limitations

include: large amounts of data, expense if attempted on a large scale, complexity is difficult to represent simply, and difficulty in numerical representation (Hodkinson and Hodkinson, 2001). However, case studies can also help us to understand complex inter-relationships, they are grounded in 'lived reality', they facilitate exploration of the unexpected and unusual, and they can facilitate rich conceptual development (ibid.). Furthermore, although not generalisable in the conventional sense, they can 'ring true' in other settings and theory arising from such studies can be transposed beyond the original sites of study (ibid).

We identified four cases where there has been either a perceived loss of, or a high level of societal support for the individual seafood sectors. We selected two Australian wild-catch fisheries and two Australian aquaculture activities. We used a paired comparative analysis approach to examine a lower level of societal support versus a higher level of societal support for wild-catch and aquaculture, selecting comparative case studies that operated under similar conditions. Case studies were selected based on a) representativeness/applicability to other wild-catch/aquaculture fisheries in Australia, b) accessibility to information and informants, and c) in consultation with HDR and the Reference Group.

The wild-catch case studies used in this study were the Victorian Port Phillip Bay and Inlet net fishery and the Western Australian Peel-Harvey Estuary net and trap fishery, which are both inshore small-scale fisheries using traditional methods including nets, are close to high-population metropolitan areas, operate in contested spaces, and face similar challenges. Inshore fisheries, particularly net fisheries like the Port Phillip Bay and Peel-Harvey fisheries, were selected because there are pressures on these types of fisheries around Australia to shift access to other sectors, including the recreational angling sector, yet the two fisheries have differed considerably in their level of support.

The aquaculture case studies were Tasmanian Atlantic salmon (*Salmo salar*) farming at Okehampton Bay and Northern Territory barramundi (*Lates calcarifer*) farming at Humpty Doo. These case studies were selected because they are both finfish culture operations (although one is sea-based, and the other is land-based) farming common aquaculture fish species for domestic consumption, are comparable in terms of processes and markets, are in regional areas where employment is limited, and yet there has been a clear difference in levels of support for the operation.

We collected qualitative data through the combination of a desktop review of academic literature (where available), grey literature including reports, campaign materials, traditional newspaper (print and online) and social media (Facebook and Twitter); and key informant interviews with stakeholders (e.g. industry, government agencies and decision-makers, representatives of influential interest groups such as recreational fisheries or eNGOs). Interviews were semi-structured and used a topic guide (see Appendix D). Topics of investigation included: the perceived level of societal support of the fishery/farm, and the social, economic, environmental and political factors that predisposed the fishery/aquaculture farm to that level of societal support; as well as any interventions undertaken. The questions were purposively not linked to the draft definition and determinants to identify any factors which may have been missed in step 3.2. Interviews were undertaken face-to-face (where possible), by Skype and by telephone and took between 30 minutes and 1 hour 30 minutes to conduct. All respondents were provided the opportunity to review the case study descriptions prior to submission of the final report.

Again, we used a process-oriented grounded theory approach to analyse the case study data and we refined the definition and determinants list from 3.2. incorporating new determining factors identified

through the case study findings and removing those which were not identified through the case study findings.

3.4 Synthesis of findings to provide a decision-support tool for enabling societal support

Initially, we had aimed to produce a risk-based (Klinke and Renn, 2002)/alternatives-based (Rossi et al., 2006) approach to understanding societal support with associated indicators to detect, assess and monitor societal support. However, it was not possible to develop a decision-support tool based on a risk-based or alternatives approach as no clear causal link between determinants and interventions (or lack of interventions) was found. It may be that with a larger number of case studies and a more quantitative approach, this would be possible.

As an alternative, we synthesised the findings from the list of determinants of societal support and developed a self-assessment tool for use by individual operations, industry associations or government agencies. This tool focuses on the perspective of the operation and has turned the definition of each determinant into a set of statements to be used to examine how the operation is tracking against each determinant of societal support. Using a traffic light system, the tool will assist anyone working in relation to a wild catch fisheries or aquaculture activity to undertake a gap analysis and identify areas for improvement. The tool is based on the final determinant list and includes statements derived from the case study findings.

4. Results

The results have been split into four sections: i) a definition of societal support based on the literature review and the survey of fisheries and aquaculture specialists; ii) a draft list of determinants of societal support; iii) detailed case study reports; and iv) a self-assessment tool to audit and monitor performance against each of the determinants.

4.1. Definition of 'societal support'

4.1.1. Survey results

Forty-three wild-catch fisheries and aquaculture specialists participated in the online survey (Figure 1). The majority of respondents had a wild-catch fisheries, or both a wild-catch fisheries and aquaculture background. There was good coverage of respondent experts from industry, governance and research roles, with only two respondents with an NGO or community role.

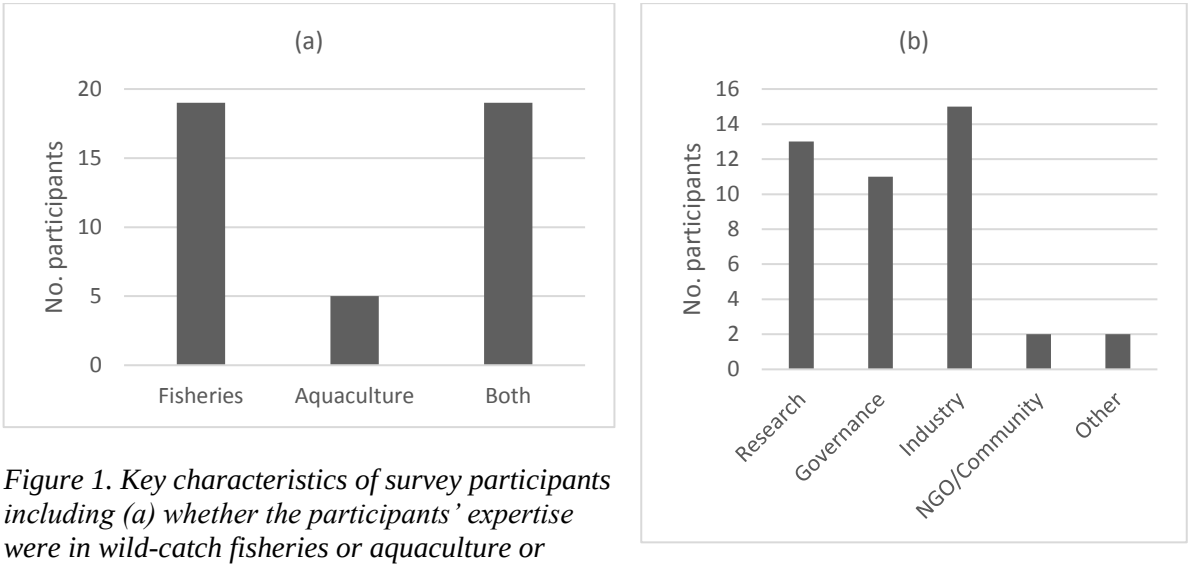

Figure 1. Key characteristics of survey participants including (a) whether the participants' expertise were in wild-catch fisheries or aquaculture or both; and (b) the role/work of the participants.

The results revealed that there is no common understanding of what societal support means for Australian fisheries and aquaculture industries. The most commonly provided response to the question *'what does having societal support/license in fisheries and aquaculture look like to you?'*, was *'support'* or *'acceptance'* which demonstrates how we go around in circles when thinking about what societal support is. From the survey, we identified a total of 44 'themes' of responses (Appendix E), of which only a few were common responses by five or more respondents. Themes raised by five or more respondents included '*open dialogue'*, *'engagement'* and *'participation'*; which are in line with the literature-based definition (see 4.1.2.). Other themes in line with the literature, raised by fewer than five respondents included *'perceptions'*, *'trust'*, *'relationships'* and *'negotiation'*. Responses also commonly included *'knowledge of industry'* and '*recognition of the benefits industry provide'*.

4.1.2. Literature review

Sixty-four articles were analysed in the literature review, comprising theoretical and empirical peer-reviewed articles and research reports (Appendix B). Based on the survey and the literature review, we developed the following working definition of societal support:

Societal support is a state of acceptance, approval or assistance for fisheries and aquaculture activities granted by stakeholder groups. It is located on a gradient from a low to high level of support. More specifically, societal support:

- *Is rooted in the beliefs, perceptions and opinions of stakeholders about a fishery or aquaculture activity. Stakeholders are those who are impacted by, or who can impact a fishery or aquaculture activity*
- *Is perceived differently by different stakeholder groups, and different stakeholder groups can grant different levels of support for a fishery or aquaculture activity*
- *Is not necessarily consistent across geographical scales, and the level of societal support for a fishery or aquaculture activity may differ at local, regional and national scales*
- *Is dynamic and changes over time as beliefs, perceptions and opinions are subject to change as new information is acquired. Societal support can be slow to gain but lost quickly*
- *Is determined by the context that surrounds the fishery or aquaculture activity and the external circumstances at the time*
- *Is determined by the behaviours, practices and actions of the people within the fishery or aquaculture operation while fishing or farming*
- *Is determined by the building of trusting relationships and meaningful engagement with stakeholder groups*
- *Is determined by the ability of the people within the fishery or aquaculture operation to have influence with stakeholder groups*

4.2. Determinants of 'societal support'

Based on the literature, we developed an initial working set of determinants that affect the level of societal support (Appendix F). These were then explored further in the wild-catch fisheries and aquaculture case studies described in section 4.3 and subsequently amended to make the set of determinants more relevant for the seafood industry. The final set of determinants are presented in Table 1 below. It is important to note that a few of the determinants are perceptions-related. When this is the case, it is important to understand that the perceptions of different stakeholder groups are likely to be different.

Table 1. Finalised list of determinants of societal support with a description of each.

Type of determinant	**Determinant of societal support**	**Description**
External influences (not fishing/aquaculture activity- or stakeholder-based)	Understanding and consideration of the context	*Context is the circumstances that form the setting for the fishing/aquaculture activity. The context will be different depending on the location and scale of the fishing/aquaculture activity and the circumstances surrounding the fishing/aquaculture activity. For example, the types of context to understand might include: the socio-economics of the place and people, whether there are multiple users of the resource and space, whether stakeholders have lived or prior experience of a fishing/aquaculture activity or similar, the nature and type of media coverage, the political situation, and other outside influences that may indirectly be affecting support. It is important to understand context because it may change over time, place and cultures. Some contextual factors cannot be influenced but may be important to be recognised. However, some factors may be influenced (e.g. media coverage) to achieve a higher level of societal support.*
	Belief in the strength of government oversight	*Strength of government oversight includes the clarity in government agencies roles and responsibilities, and their regulatory effectiveness as perceived by stakeholder groups. The more stakeholders believe there is government oversight of the fishing/aquaculture activity, the more trust there is that the activity is being regulated effectively and in line with societal expectations.*

Type of determinant	Determinant of societal support	Description
	Presence of fair decision-making processes by government	*Presence of fair and transparent decision-making processes by government includes the processes that resolve disputes and allocate resources, and which are in line with fisheries/aquaculture- relevant policy, process and legislation. Government refers to the relevant government ministries and agencies which legislate and regulate fisheries and aquaculture activities.*
Fishing/aquaculture activity: inward-facing	Demonstration of the fishing/aquaculture activity acting in alignment with social norms	*Societal support builds when the fishing/aquaculture activity demonstrates that they act in alignment with social norms. Examples of social norms include: being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable.*
	Evidence of sustainable and responsible fishing/aquaculture practices	*Sustainable and responsible practices relate to the internal operations and behaviours of the fishing/aquaculture activity. For example, practices which work towards to reducing environmental/ecosystem impacts and improving environmental/ecosystem health and having good governance systems. These may include actions beyond practices directly relating to seafood production, for example habitat restoration, or professional development within the industry.*
Fishing/aquaculture activity: stakeholder-facing	Level of visibility	*The level of visibility is how physically visible a fishing/aquaculture activity is to the public. Visibility can be beneficial or detrimental to building support. Types of visibility include 'seeing' the fishing/aquaculture activity and operators at work, visibility of the products they produce, and visibility in the media.*
	Relationship building	*Relationship building is about engaging with stakeholder groups. It is based on finding ways for the fishing/aquaculture activity participants/advocates to work constructively together with stakeholder groups, collaborating and forming partnerships.*

Type of determinant	Determinant of societal support	Description
	Effectiveness of communication	*Communication at the minimum is sharing information about the fishing/aquaculture activity and having a clear and consistent message. Effective communication goes beyond this and involves creating consistent and open dialogue and active listening between the fishing/aquaculture activity participants/advocate and stakeholder groups to develop greater understanding of each other.*
	Demonstration of shared vision	*Having a shared vision between the fishing/aquaculture activity participants and the stakeholders involves meeting expectations, needs, aspirations and finding common ground despite different worldviews. This is distinct from norms of behaviour and is more about 'what is important'. An example might be 'a shared vision of a healthy environment'.*
	Demonstration of the generation and distribution of benefits	*A fishing/aquaculture activity can generate benefits to the environment (physical/biological benefits), or to society, stakeholder groups or individuals (socio-cultural benefits). Uncertainty of benefits, an inability to demonstrate/articulate benefits, and how benefits are distributed can influence support.*
	Framing of the issue	*The way in which an issue or the fishing/aquaculture activity is framed (presented) can be influential and can change perceptions of stakeholder groups positively or negatively. Framing may be based on emotions and language, rather than expert information or facts.*
	Connectedness to community	*Connectedness to community is the extent to which the fishing/aquaculture activity is perceived to be 'local' or 'integrated' into the community or society. The fishing/aquaculture activity participants in this case may be perceived to be 'one of us'.*
Level of influence	Presence of key influencers	*Key influencers might be individuals or groups. They may be within the fishing/aquaculture activity participants/advocates and/or within stakeholder groups. Influencers can play a large role in galvanising more or less support for a fishing/aquaculture activity. The presence of key*

Type of determinant	Determinant of societal support	Description
		influencers can result in power asymmetries, a lack of representation, inclusiveness and marginalisation.
	Level of collective action	*Collective action is people working together and building alliances. Collective action can have different purposes. It may be used to create a louder voice of protest or support, or it can be used to co-develop solutions to issues.*
	Unity of fishing/aquaculture activity participants or industry	*Unity refers to the fishing/aquaculture activity participants or industry working together and speaking as one, especially in the face of challenges.*
	Level of material and human resources	*Material and human resources include money, skills/capabilities and networks of the fishing/aquaculture activity participants and advocates, and/or stakeholder groups.*

4.3. Case study analysis

Two paired-comparison (a case of lower levels of societal support and a case of higher levels of societal support) case studies were undertaken, one for wild-catch fisheries and one for aquaculture (Figure 2). The case studies for wild-catch included: Port Phillip Bay and Inlet net fishery and Western Australian Peel-Harvey Estuary net and trap fishery. The case studies for aquaculture included: Tasmanian salmon farming in Okehampton Bay and Northern Territory barramundi Farming at Humpty Doo.

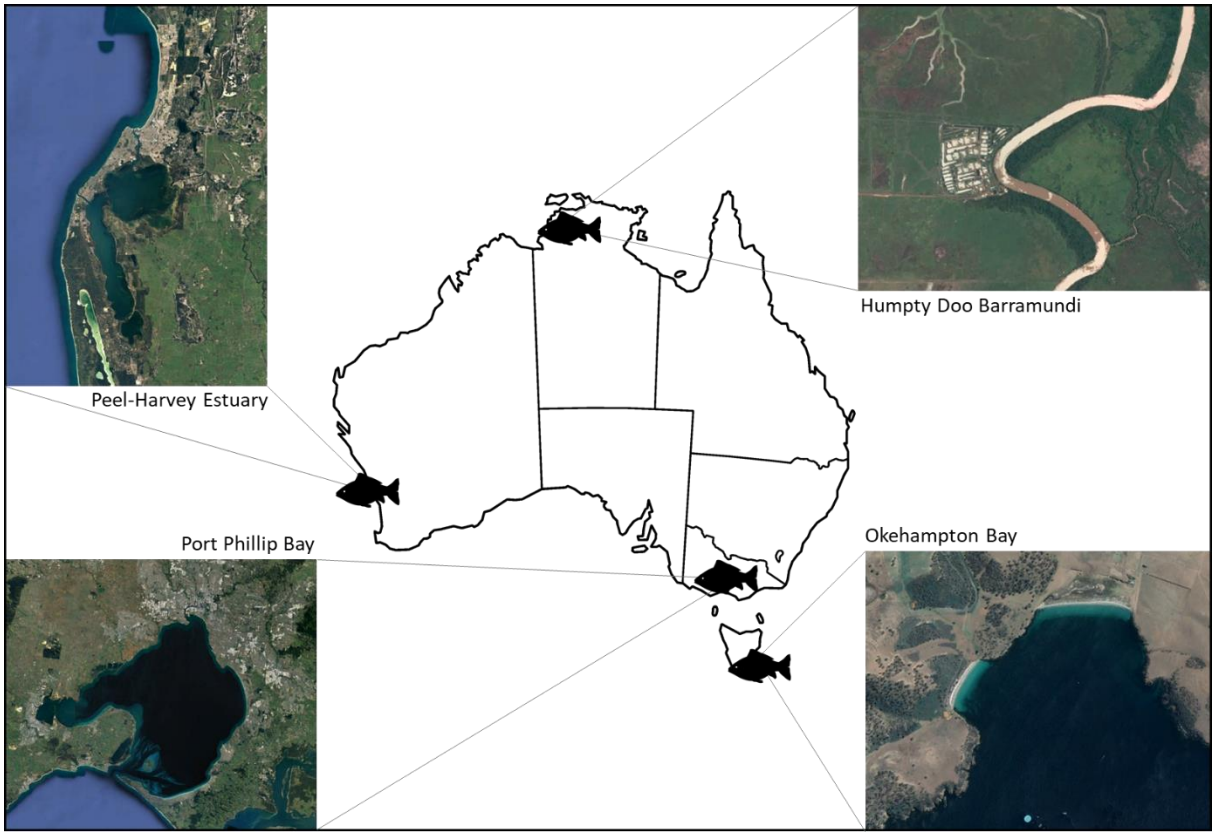

Figure 2. Map showing locations and aerial photographs of the case studies.

The case studies are written based on interviews undertaken to elicit the perspectives of a diversity of fisheries and aquaculture specialists relevant to each case study, and on traditional and social media articles. In many instances only one quote is provided to highlight a point, but the results presented are those which have been raised across various interviewees and media articles. What's more, as these case studies occur on a small geographical scale, with a small number of participants, interviewee quotes have been completely anonymised (i.e. no identifier of any sort) to preserve research participants' privacy. Critiques of initiatives to address declines in the level of societal support are based on synthesis of findings from the interviews and media analysis and are justified with reference to the identified determinants.

Port Phillip Bay and Inlet net fishery Case Study

Introduction

Port Phillip Bay, in southern Victoria, is the most densely populated catchment in Australia, covering an area of 1,930 square kilometres, a shoreline of 264km, and with an estimated 4.5 million people living around it including the cities of Melbourne and Geelong.

The Port Phillip Bay commercial fishery is one of Victoria's oldest, operating for more than 170 years. A range of fishing methods are used from small trailer boats (7-8 mt) to harvest a diversity of species. The main fishing methods are haul seine and mesh nets year-round which target King George whiting (Sillaginodes punctatus), Southern garfish (Hyporhamphus melanochir), Southern calamari (Sepioteuthis australis), Flathead (Platycephalus spp), among other (less valuable) species; and longlines which are used to primarily target snapper (Chrysophrys auratus) in the summer months. Small purse seines are also used to target sardine (Sardinops sagax) and anchovy (Engraulis australis). The Port Phillip Bay fishery is considered to have low environmental impacts and the stocks are considered ecologically sustainable (Government assessments and independent 3rd party certification by Australian Conservation Foundation). In 2014/15 there were 43 licence owners operating around the Bay with a total annual catch of 822 tonnes including 359 tonnes of sardine and anchovy. The fish from Port Phillip Bay was primarily sold locally including to the Melbourne markets. Port Phillip Bay-caught fish is considered premium quality fish, mostly sold to the wholesale market the same day it is caught.

Recreational fishing is a popular pastime in Port Phillip Bay although the figures are unclear about how many people regularly recreationally fish in Port Phillip Bay. In 2014/15, there were 356,555 Victorian fishing licences , and there are estimates of approximately 100,000 regular anglers in Port Phillip Bay (Winstanley, 2017). Recreational fishers in the Bay target many of the same species as the commercial sector, especially the iconic King George whiting, snapper and Southern calamari. They also fish the same grounds as the commercial netters, with Corio Bay, in the west of the Bay and on the doorstep of Geelong, a hotspot for both sectors.

In the lead up to the 2014 Victorian state election, Labor and the Coalition made election promises to ban commercial netting in Port Phillip Bay for the purpose of improving recreational fishing experiences. Labor won the State election and implemented their $46m 'Target One Million' plan, aiming to attract one million Victorians to recreational fishing and starting with the compulsory buy out of existing net licences operating in Corio Bay by 2018 and throughout Port Phillip Bay by 2022. With the compensation package offer dropping in value by 10% each year, 33 fishing licences were surrendered in the first round on 1 April 2016, and a further one licence was surrendered on 1 April 2018. After 2022, eight licences will remain as licences with the ability to fish using only non-net methods.

This case study focuses on societal support of the net fishery in the lead up to the 2014 election announcements and during its subsequent closure in 2016. Interviewees included experts from industry, decision-makers, and interest group members including recreational stakeholders, consumer and food service stakeholders, and independent researchers.

Understanding and consideration of the context

Key elements of the context identified during the analysis included: Community and consumer stakeholders and that their views were absent in the debate, the history of conflict between the recreational and commercial sectors, the politics at play, and the effect of previous experiences and unrelated events that were linked to commercial net fishing in the Bay.

Stakeholder groups in the Port Phillip Bay fishery, outside of industry themselves, included the recreational fishing sector and the policy decision-makers, and the debate (consultation) around access to and allocation of Bay fish resources occurred only among these stakeholder groups. A campaign to oppose the removal of commercial net fishing, 'Save the Bay', began in mid-2015 after the decision to close the net fishery occurred. This was led by the Melbourne post-harvest sector, and through this campaign another stakeholder group emerged - high profile Melbourne chefs. Who was missing from the debate, however, was a focal point in all key informant interviews. It was suggested that seafood consumers, local coastal fishing communities and the wider public stakeholder groups were absent. There were no protests or letters of complaint as the Port Phillip Bay net fishery disappeared, and these groups were silent on social media. As one interviewee pointed out: "*Whether or not the public has access to local fish is a minor issue for the public. The debate around fisheries and access is not a societal debate, it occurs at the coal face with the users of the resource themselves. Yet these stakeholders are the important ones, and where the support needs to be garnered and influenced*". One interviewee commented that "*this wouldn't happen in other places in the world, the community would be protesting outside government offices. It is very unusual for sustainable fisheries to be shut down*". Another said that in Australia, "*the closure of sustainable inshore fisheries frequently go unremarked*". This highlights the absence of a perceived role of 'the community' as a stakeholder group in reallocation processes. One interviewee felt "*the community stakeholder groups were not just absent from the debate, but they were purposively excluded by government*".

Interviewees offered potential reasons for a general lack of engagement from the public, such as a lack of cultural attachment to fishing among Australians, other pressing policy issues engaging the public, and a lack of knowledge and interest in understanding where local seafood comes from. Interviewees believed that the lack of engagement from consumer, community and wider public stakeholder groups, demonstrated that "*the cottage industry of Port Phillip Bay was not valued [by these groups]*". However, interviewees found it difficult to define whether the fishery had ever had societal support from this wider group of stakeholders although they did reflect on the high demand and prices for Port Phillip Bay fish: "*It is difficult to say if the fishery ever had support. It didn't used to have the vicious level of contestation from the recreationals until relatively recently…and in the past the only fish that was available was local fish I guess, but that changed in the 80s when fish started to be sourced from all over the world*".

The long history of conflict between recreational and commercial sectors in Port Phillip Bay was also an important contextual factor discussed by several interviewees. Recreational angling groups and the Victorian recreational peak body had been calling for the removal of commercial netting in the Bay for decades (noted by the Minister for Agriculture in a media release). Some interviewees suggested that the call to remove netting by the recreational sector was because Port Phillip Bay, and in particular Corio Bay (western part of Port Phillip Bay near the city of Geelong), were "*too important*" as a popular recreational fishing ground. One interviewee argued that netting and recreational fishing in the same space is not something that can be resolved "*One had to go*". Interviewees also noted that

in recent years, the conflict had escalated. "*There were a lot of interactions on the water between recreational and commercial fishers*".

All interviewees talked about the political context, particularly the lack of political support for the commercial fishery, and the bipartisan support for the recreational sector. Prior to the election, there had been strong lobbying to both sides of government to remove netting from the Bay, by the recreational sector including by influential media personalities. The net ban was widely considered to be a political decision as opposed to being based on sustainability concerns. Interviewees discussed the influence of marginal seats around Port Phillip Bay particularly in the 'hot spot' of Corio Bay, and the influence of the perceived economic value of recreational fishing to the state. "*The perception at the ministerial level was that the value of the recreational sector far outweighed the commercial sector. It was believed to be ten times more valuable and a clear contributor, translating to power at the polls*." In contrast, interviewees from industry believed there was little political interest in the social and economic impacts of removing netting on the fishers, the related businesses and the supply of local fish to Victorian consumers: "*Historically the government hasn't valued the seafood industry*". There was also perceived to be little political interest in resource-sharing between commercial and recreational sectors. One interviewee referred to the presence of "*two previous Victorian all-party parliamentary reviews affirming fish resource sharing principles*" which had not been implemented. The government ignored the fact that both could be supported sustainably and that closing the net fishery would significantly reduce the overall economic and social benefits.

A number of previous experiences and events were also believed to have directly and indirectly influenced the ability to build societal support for commercial net fishing in Port Phillip Bay in the lead up to the net ban. Such experiences and events included a history of closing Bay and Inlet fisheries in Victoria. Six out of nine Bay and Inlet fisheries had been closed prior to Port Phillip Bay although five of these were not through a compulsory process. The closures of other fisheries in Port Phillip Bay (e.g. scallop dredge), and a pattern of closing inshore fisheries throughout Australia may have also influenced public perceptions of the sustainability of the Port Phillip Bay fishery. There had been low recent recreational catches of target species (King George whiting and snapper) in the Bay which was blamed on commercial fishing rather than natural recruitment variability "*which was not sufficiently countered or communicated by the management agency who had the recruitment monitoring data*". Interviewees also believed the high-profile campaign against super trawlers Abel Tasman and the Geelong Star ongoing during the Port Phillip Bay debate was influential: "*people were picturing Port Phillip Bay netters as big boats with big nets, perpetuating the story that all nets are bad*". Finally, there were fairy penguin deaths associated with commercial fishing nets in Port Phillip Bay three months before the 2014 election. This was cited by interviewees and in newspapers has having direct implications for the decision to remove netting: "*The move comes after 25 dead penguins washed ashore dead at Altona Beach in August last year after becoming entangled in nets*" (White, 2015).

Belief in the strength of government oversight

Five out of nine interviewees inferred that a weakness of government oversight was a reason for the lack of support for the Port Phillip Bay commercial fishery, although the discussion focussed on fisheries management rather than government ministries. Some interviewees believed that there were problems with Port Phillip Bay fishery management "*The science is good, but the management is poor*". A key reason provided for this perception were that there was no management plan or harvest strategy for the fishery and that there should be output controls such as quotas, as well as the existing

input controls. However this was resisted by industry, and management despite understanding the need (for societal support reasons), did not prioritise implementing management changes in the fishery. "*In hindsight, perhaps if the fishery had more advanced management [output controls] it might have helped to avoid the situation*". Secondly, interviewees highlighted that there was no policy put in place for resource sharing between commercial and recreational fisheries despite two parliamentary reviews recommending implementing resource sharing principles. Third, that the biology of the system had been the focus for management rather than socio-economics, and fourth, there had been no steps to demonstrate the sustainability of the fishery to the public by the management agency. There was little discussion of this determinant in the media, although one article focused on lack of enforcement (Star Weekly, 2014) and others related to a request for a parliamentary inquiry regarding the removal of nets in Port Phillip Bay (Di Nuzzo, 2015, McLennan, 2015c).

Presence of fair decision-making processes by government

A majority of the interviewees indicated that a lack of fairness of decision-making processes by government contributed towards the low level of societal support for the fishery. The non-use of science and evidence to inform policy, and the lack of consultation and engagement with the fishing industry, was considered to be unfair. Respondents believed that no scientific information had been released by the agency to counter misinformed arguments relating to sustainability and the practices of Port Phillip Bay fishers, which revealed a belief about whose role this should be. Some respondents also believed that any positive messaging by the management agency focused on recreational fishing rather than commercial fishing and argued that the agency's activities are unfairly weighted to growing and supporting the recreational sector compared to the commercial sector. Moreover, a small number of interviewees suggested that there was an issue with the management agency having to implement government policy rather than being politically neutral. "*This is contrary to the objectives of and balance prescribed in the Fisheries Act [1995]*" with interviewees believing the role of the agency was to focus on managing fisheries according to independent and scientific measures. One interviewee stated: "*There is too great a link between the politics and the regulator. The fairness extends to the messages they sent out [about Port Phillip Bay]. These were recreational-focussed, and no good news stories were put out about commercials, nor was any information to counter un-factual recreational arguments. They didn't engage at all*."

Print and social media also often referred to the unfairness of decision-making processes by government, also suggesting that no science was used to develop the policy to remove netting and that recreational anglers were given priority over the commercial fishing industry (McAdam, 2018, Thomsen, 2015, Cowie, 2014, Gray, 2015, McLennan, 2015b). One social media post, referring to a recreational fishing magazine article, did however suggest that the Port Phillip Better Bay Plan (the 2014 Coalition election promise which included buy backs of commercial net licences) would strike the right balance between recreational and commercial fishing.

Demonstration of the activity acting in alignment with social norms

Half of the interviewees referred to the importance of social norms, and how the values of the Port Phillip Bay fishery and the broader industry did not always align with those norms, or if they did align this was not demonstrated to stakeholders. It is interesting to note that these interviewees included those from industry indicating an acknowledgment and understanding of where industry failed to meet societal expectations. Some interviewees talked about a small number of fishers not behaving to the

expectations of society; "*there were a few renegades in the fishery…the industry needed to be squeaky clean and they weren't*". It was suggested that a few fishers did not demonstrate respect and responsibility towards other users of the Bay including recreational fishers, or the fisheries management agency, and did not always behave professionally. Two interviewees also talked about a lack of public trust in seafood traders, including the "*lack of traceability of fish to the consumer*" and that some seafood companies have been found to have behaved "*deceitfully which tarnishes everyone*".

Respondents also believed that those involved with the fishery did not make clear why their fishery was important to society and the values they hold. Instead, "*single rare incidents such as that of the fairy penguins killed in commercial nets, became influential talking points in the debate about the Port Phillip Bay fishery and what the people in the industry are like*". Positive values of the fishery and fishers were not heard, and "*arguments such as the economic growth potential of the fishery, which are especially important to policy decision-makers, were not made effectively by the commercials*".

Evidence of sustainable and responsible practices

Most interviewees discussed the sustainable and responsible practices of the commercial fishery and how these were debated despite scientific assessments which showed their sustainability (e.g. Knuckey et al., 2014). Interviewees said that vocal recreational campaigners perpetuated a myth that the Port Phillip Bay commercial fishery was acting unsustainability and did not have responsible practices. It was noted that "*it was not the view of the recreational peak body who steadfastly stuck to their policy of supporting commercial fisheries if they were sustainable, that is until both parties announced their proposals to ban netting*". However, there was a belief among recreational anglers that the commercial fishery was threatening fish habitat, namely seagrass beds. Vocal recreational campaigners also argued that netting meant the commercial fishers "*were taking everything and killing everything*", and "*if they couldn't catch the bag limit of fish every time, they blamed the commercial catch*". One interviewee discussed that fishing nets, in general, are perceived to be an unsustainable way to commercially fish, and there is a lack of understanding that there is a "*difference between the different types of netting*". Interviewees also noted that the widely circulated mainstream news of the dead fairy penguins washed onto Altona beach did not help with a perception of poor environmental practices.

In 2011 the Sustainable Australian Seafood Assessment Program (SASAP) accredited key Port Phillip Bay commercial fish species and recreational target species as sustainable. However, it was widely believed by interviewees that this fishery accreditation was not capitalised on by the seafood sector. It wasn't communicated to the community and wasn't well known like Marine Stewardship Council certification. The accreditation system was eventually dropped due to lack of support with one interviewee noting that now there are no marine conservation stakeholders who are interested in fisheries sustainability issues in Victoria.

The Port Phillip Bay commercial fishing industry did have a voluntary Code of Practice (CoP), through the industry-led Victorian Fishery Association into Resource Management (VFARM). However not all of the Port Phillip Bay fishers subscribed to the CoP. One interviewee suggested there had been an opportunity to extend the CoP to reduce conflict with recreational anglers in the Bay and demonstrate responsible practice but it was not taken up by industry: "*In 2013/14, VRFish [the Victorian recreational peak body] tried to work with the industry peak body to get the*

commercials to stop fishing on weekends and public holidays. But they would not compromise citing a legal right fish. The industry thought they were bulletproof because of sustainability."

A range of stakeholder perceptions about sustainable and responsible practices was reported in the media. The industry argued that their practices were some of the most sustainable in the world, arguing that "*Most anglers have known for a long time there is no scientific support for closing us down*" (McLennan, 2015a). The Victorian Green Party also argued that the fishery was sustainable, referencing stock assessments and asking the question, "*Is the amount of fish in the bay being limited by commercial fishing or is it limited by the fact that it's not that easy to catch fish?*" (Rawlinson, 2015). Chefs stated in the media that "*Both the Australian Conservation Foundation and the Department of Agriculture have found that fishing in Port Phillip Bay is sustainable and that commercial fishing and recreational anglers can happily co-exist*." (Food Service, 2015). On the other side, recreational fishers argued that fish stocks needed to be returned to sustainable levels in the Bay and that "*No business should operate in an unsustainably destructive way*" (Royall, 2015).

Level of visibility

Most interviewees discussed the influence of visibility on societal support for the Port Phillip Bay fishery. All talked about the lack of physical visibility of fishing operations in communities, and the lack of visibility and differentiation of the Port Phillip Bay product at the point of sale. This lack of visibility was believed to be a significant contributing factor to the lack of support for the fishery. Respondents noted that historically, Bay fishing boats were moored at the wharf in the small communities around Port Phillip Bay, that fishing families crewed the boats, nets were cleaned and mended on the wharf, and the community could buy fish straight from the boat. They pointed out that the fishing was done during the day, close to shore and the community could see how small-scale and sustainable the practices were. As the fishery became more efficient, they turned to using trailer boats and could travel to different fishing grounds around the Bay. The fishers also started to work at night when they found the fishing was better and interactions with recreational anglers were reduced. "*We were ghosts…the communities were no longer involved, and the fishing industry became invisible*". "*They hid themselves through using trailer boats and working at night, they became [perceived as] 'night-time thieves'*". The interviewees also believed that most of the Melbourne public didn't know there was a fishery operating on their doorstep. There was no traceability of Port Phillip Bay fish and this was considered to be a marketing failure. "*It was never differentiated in the marketplace as a premium product, sustainable or local*" and "*consumers including chefs didn't know there was a fishery in Port Phillip Bay, let alone whether it was sustainable or not. They had no clue, even though they would be serving calamari and King George whiting from Port Phillip Bay. So, they were unaware of what they could lose*".

However, respondents also noted that commercial netting was visible to recreational anglers in the Bay, especially in the 'hot-spot' of Corio Bay. Having this sort of visibility "*where recreationals could watch commercial fishers scooping up the fish they were trying to catch*" negatively influenced support building within this stakeholder group.

Relationship building

All but one interviewee talked emphatically about the role relationship-building played in the low levels of societal support for the commercial Port Phillip Bay fishery. All believed that there had been little effective engagement and relationship building by the industry (by both fishers and the peak body). In particular, there was little engagement with the general public, seafood consumers, tourism

stakeholders, recreational fishers, or decision-makers. "*We needed to be more engaging, personalise our stories, and relate to people. We should have been showing that small scale fisheries and the fish they provide is an honourable thing to do, that fishermen are custodians of the resource, and that a good fisherman can contribute to the economy*". Some interviewees suggested a reason for this, that fishers tend to stay out of the spotlight, both because of their 'nature' and because "*the industry, fishers and marketers, work hard and during unsociable hours*" which makes it difficult for them to spend time engaging. Some interviewees felt the peak body could have taken a bigger role: "*This was a lost opportunity. Engagement should have started years ago, and then maybe politicians would be proud of the fishery on the doorstep of Melbourne and even could have taken the credit for its sustainability.*"

If more resources had been spent on relationship-building, respondents believed that there could have been potential to collaborate with local chefs and regional tourism. For example, pairing seafood with the local wineries: "*look how well the Bay mussel growers have done this*". Interviewees also believed industry missed an opportunity to identify who seafood consumers are, and "*tell the story of the fishery directly to the consumer*" in order to build consumer awareness and support of the Bay fishery.

Respondents also believed that engagement and good relationships were lacking with both recreational stakeholders and the management agency. Respondents noted that while some fishers were engaging with angling groups (e.g. sponsoring clubs, having informal discussions), it would have helped if the industry peak body built upon these links to identify areas of common ground and opportunities for coexistence with the recreational sector. Most respondents also discussed the need to allocate time and effort to improve the relationship between industry and the management agency to build a respectful, healthier and more constructive working relationship between the two.

Effectiveness of communication

Interviewees believed that the commercial industry were not effective in communicating with stakeholders and that this negatively affected the level of support for the Port Phillip Bay fishery. Respondents suggested that there was little information provision prior to the 2014 election commitment announcements and that this enabled misinformation to fill the gap. Examples of misinformation included that there was a sustainability problem, juvenile and non-target species were being killed, commercial nets was damaging seagrass habitat, despite copious research to the contrary. There was "*not even an awareness that the fishery existed, that fishers are doing the right thing, there was none of that constant storytelling that was required*".

Interviewees proposed that when it came time to 'fight' to 'Save the Bay' in 2015, a lack of relationships outside of industry meant that there were "*few communication channels to capitalise on*".

Two interviewees also discussed the nature and effectiveness of communication between the industry peak body and decision-makers: "*The industry would come out 'guns blazing' and ready to fight. The Ministers Office, of course is not receptive to this approach, especially with the new generation of Ministers who are more interested in two-way discussions, listening and collaboration, and being provided with solutions that can be beneficial [to the Minister], it's a 'What can you do for me?' approach, and industry didn't communicate that way"*.

Demonstration of shared vision

Over half of the interviewees perceived mismatches of vision between industry and other stakeholder groups, as well as within the industry. These mismatches were also reflected in media reports, articles and posts. Whilst it was noted that the recreational sectors vision was to have better fishing experiences and healthy activities for kids and families, for the commercial industry the perceived vision was about sustaining fish stocks and a way of life. In the media, the industry "*argued with science and data to prove the fishery's sustainability, which was much less captivating [than getting kids outside fishing]*". Indeed, it was suggested that the Victorian fishing industry, historically, "*had not sold itself on providing 'fish as food' for Victorians, instead the focus had been on lobster and abalone which are both export fisheries*". Moreover, a few interviewees spoke about a mismatch of worldviews within the industry and a lack of a united vision. "*There was a 'right to fish' worldview and a 'resource sharing' worldview. The commercials needed to look like they were taking only their fair share.*"

Demonstration of the generation and distribution of benefits

Interviewees believed that there was a "*failure to demonstrate the benefits of the industry and present the environmentally benign image of the fishery. This was fatal*." Therefore, it "*was difficult to show people what they might lose if Port Phillip Bay closed and people didn't understand that nets can be sustainable…that fishermen are custodians of the resource, and that a good fisherman can contribute to the economy*." Seafood consumers were a key stakeholder group who potentially would see the benefits of the Port Phillip Bay fishery, but they were unable to differentiate Port Phillip Bay fish as premium, sustainable or local. One interviewee said, "*the benefits of the fishery were not understood, and now there are impacts. The diversity of fish available has been removed, species have gone from the market including the affordable ones, there is now inconsistency of fish from Victoria, which is impacting on the other two remaining Bay and Inlet fisheries and on other states whose fish are now sold in Melbourne instead of locally*.".

The analysis of media in the lead up to the 2014 election and the 2016 licence buy-out, revealed that the media presented the industry perspective as the set of impacts of the closure rather than the multiple benefits of the fishery. Those impacts were then countered, often within the same article and often by government. For example, a key industry argument was that there would be a substantial reduction in the availability of local fish for consumers, this was countered by an argument that less than 1% of seafood eaten by Victorians was from Port Phillip Bay. At the same time the perspectives of the recreational sector its supporters were reported as the set of benefits to recreational fishing and society from the net removal, none of which were then countered by industry.

Framing of the issue

Seven of the nine interviewees discussed how the commercial Port Phillip Bay fishery was framed by both the supporters of the industry and opponents of the net fishery (recreational sector, government), and the importance of framing for how the fishery was perceived. Firstly, interviewees suggested that there wasn't a consistent and clear framing or argument in support of the commercial fishery. There were too many "*micro-arguments, which were all important but too many*". Secondly, interviewees proposed that the industry relied on science and facts, as opposed to the positive and relatable human story of the fishery which could have "*tugged on heartstrings*". Thirdly, arguments and framing were negative. They were all about the negative impacts of removing net fishing in Port Phillip Bay - less

fish, increased prices, decreased quality, increased imports, loss of livelihoods and jobs, loss of tradition and maritime history. Very few arguments were made which demonstrated positively what the fishing industry contributed to society, the social and economic value of the fishery, or framed the industry and the people involved as, for example, passionate small-scale, family businesses operating responsibly. Furthermore, some of the pro-industry arguments were perceive to not be thought through or strategic. One example related to the impact the net ban would have on the availability of local seafood. Melbourne chefs united in their protest against the net ban and their key message was the loss of local seafood. However, their focus tended to be on high value species (e.g. King George whiting), instead of the diversity of species including affordable species (e.g. sardines). Therefore, the industry supporters were perceived to be elite, with recreational fishers responding that "*only the rich could afford to eat Port Phillip Bay fish. Industry and its supporters could then be tagged as elitist*".

In contrast, the framing by the supporters of the net ban (recreational fishers, government) was clear and simple: there were benefits of recreational fishing for the anglers themselves (more fish), for families (healthy activity) and communities (tourism and economic flows).

Connectedness to community

This determinant was discussed in relation to the lack of visibility of the industry in the community (discussed earlier). It was also believed that the industry had little connection to consumers. One interviewee said this was evidenced by the "*lack of letters of complaint to decision-makers about the closure of Port Phillip Bay to netting. There was nothing from local mayors, or regional constituencies, or from the general public from local Port Phillip Bay regions or wider*". On the other hand, the recreational fishing sector "*had a very strong community-driven campaign to get rid of netting*" indicating a close connection with community. One interviewee also discussed that the recreational sector may have had a closer connection to community because "*there was maybe 100,000 anglers in Port Phillip Bay compared to 43 commercial fishers who were unable to connect to the millions of Victorian consumers.*"

Presence of key influencers

Most interviewees believed that key influencers played a large role in the low level of support for the Port Phillip Bay commercial fishery, particularly with the policy decision-makers (government) and there was a power and influence asymmetry between the commercial and recreational sectors. On the one hand there were key influencers who galvanised support among the recreational sector and decision-makers but on the other hand, there was a lack of effective influencers or champions in support of the fishing industry.

Interviewees notes that there were supporters of the commercial fishing industry (the peak body, the post-harvest sector, chefs, the Greens Party MPs, MP Fiona Patten) but suggested that they had little influence and only emerged after the election promises had been made. Interviewees felt that the peak body could have played a more pro-active role but recognised there were reasons for this: "*it looked like there had been no preparation for this outcome. They [peak body] were silent until after the announcement during the election. There needs to be voices to influence the conversation before things go south. There was a change of personnel at SIV just before the election. It was a complete failure.*"

In contrast, all interviewees agreed the recreational fishery had clear champions and pathways for influencing policy decision-makers. Well-known recreational fishing TV and radio personalities Rex

Hunt and David Kramer became involved; "*Rex Hunt and David Kramer were the architects of the net ban and had influence to get what they wanted. The evidence for this influence was when Minister Pulford thanked Rex Hunt for teaching her everything she knew about fishing in the Parliamentary debate that ended in the legislation change*". David Kramer, quoted as the chairman of the Future Fish Foundation and a partner in Victoria's biggest fishing retail outlet, "*The recreational anglers said, 'enough's enough'," he said. "We lobbied as the Future Fish Foundation, lobbied both sides of politics — we went to them with the same ideas, both parties, and said, 'these are some of the ideas we want to improve recreational fishing'. Commercial netting banned in Port Phillip Bay was only one of many initiatives that we suggested, but the public won*" (Murphy, 2016b). It was also suggested that the recreational lobby group had substantial political and financial power.

Alongside these champions was a grassroots and very active recreational angling lobby group 'Friends of Corio Bay Action Group' (FOCBAG). Interviewees identified FOCBAG as a key influencer who also got the support of local government; "*FOCBAG was very organised and gained support at the grassroots and local businesses. They were able to tap into recreational fishing groups, personalities, the tackle industry, were able to build alliances, and were active in meeting with local politicians…The recreationals had power. They had access to politicians and I think were surprised by how effective they were in the end*." "*The bottom line was that they [recreational sector] played the political process perfectly, while the commercial sector, poorly-led, dithered*".

Level of collective action

All interviewees discussed the lack of alliance building by the industry with other stakeholder groups. The peak body "*weren't building coalitions of support. There were some discussions with VRFish, but not with tourism, shires, food and wine groups, chef ambassadors*." Interviewees also believed that "*There were people ready and willing to help, including independent scientists, but the industry didn't make contact and people aren't prepared to stick their necks out alone*". All interviewees discussed the campaign to 'Save the Bay' which started in 2015. Fishers worked with the Melbourne Seafood Centre who rallied the wider industry, the fish merchants, buyers, and retailers and were supported by chefs and the hospitality sector, some academics, the Victorian Greens party and MP Fiona Patten. However, the 'Save the Bay' campaigners were "*all perceived to have vested interests, weakening their effectiveness*" and it was perceived to be too late by that time, because it was such a "*short a time frame to educate and activate supporters*". "*It should have happened in advance, but it was all done too late. The politics happened quickly and the industry wasn't prepared*." In contrast the recreational sector successfully built alliances and generated collective action against the commercial fishery, starting with the Friends of Corio Bay Action Group at the grassroots and ending with key influencers having direct relationships with politicians who made the decision to remove netting from the Bay (see 'presence of key influencers' determinant).

Unity of activity participants or industry

All interviewees perceived the industry to be fragmented and believed this was influential for not building the societal support that was needed. They believed there were several reasons for this, such as the heterogeneity across the industry (those who wanted a licence buy-out, those who didn't; full-time and part-time fishers having different attitudes to their livelihood). They also suggested that fishers have a tendency toward individualistic, competitive behaviour, because of the nature of the job: "*It is the nature of fishermen that they are divided, and only come together in a crisis*." They also

suggested that there was a lack of unity and collaboration within the wider industry, along the market chain or with the secondary sectors.

Respondents believed that there was a lack of leadership required to unite the fishers. Some suggested this was due to the lack of cohesion within the cohort of fishers. They believed that there was not one strong voice for the fishery but recognised there are potential role models "*There were no industry leaders from the fishers, no one like Damien Bell [from WA Peel Harvey] who has been relentless in engaging.*"

Level of material and human resources

Finally, the lack of material and human resources of the fishing industry (among the fishers and the industry peak body) to be able to effectively build support from stakeholders was discussed by all interviewees. Respondents noted that Port Phillip Bay fishermen didn't have the capacity or skillset required to build community and stakeholder support. "*Fishermen and the industry flies under the radar. They fish at night, they are quiet and humble people and want to be left alone, they are not interested to tell the world what they do or promote their own products, they stick to what they do and what they know, and they just want to produce food for people*." Interviewees also said the industry is made up of an older generation who are not necessarily prepared for change and who are "not tech savvy, good at social media, or have relationships with the traditional media". Respondents also suggested that "*There is a lack of innovation or ability to adapt to change. They want to stay doing the same thing even though there was a storm brewing. So, when the storm came, they were gone*." It was revealed that there was a reliance on the peak body to effectively lobby for the Port Phillip Bay fishers, but respondents explained that the peak body didn't have the human resources, the cash resources, the lobbying or promotion expertise, and had a recent change of executive officer three months before the election announcement. In the absence of effective lobbying by the industry, the Melbourne Seafood Centre initiated the campaign 'Save the Bay' in 2015. They raised money from the industry (fishers and post-harvest) and matched the funding raised. They employed a lobbyist and worked on engaging stakeholder groups. However, this was after the election and six months before the legislation change was debated in parliament. Interviewees also talked about the management agency also being under-resourced and reduced in capacity to be able to effectively manage the fisheries and enable effective relationships "*It was sheared of staff in 2010, from 120 to 30 scientists and managers.*" "*Nevertheless, Fisheries did have the policy and management resources, and the statutory responsibility to provide objective advice to government about the merit of their decision*."

Peel-Harvey Estuary net and trap fishery Case Study

The Peel-Harvey Estuary in Western Australia lies approximately 80km south of Perth and covers an area of around 130 square kilometres. The shallow waters of the Estuary support extensive macroalgae and seagrass, high phytoplankton productivity, and large populations of small invertebrates. These in turn support several fishes, invertebrate, bird and mammal species (Wildsmith et al., 2009, Potter et al., 2016, Valesini et al., 2019). The opening of a second artificial entrance channel in 1994 increased water exchange throughout the estuary, which improved water quality and made the conditions more favourable for marine species over estuarine species. The estuary was listed as a Ramsar Wetland of International Importance in 1990 and is internationally significant habitat for water birds (Department of Fisheries, 2015a). Mandurah is the main town on the bank of the Estuary and is the fastest growing city in Australia. It has grown from a small fishing town and a holiday destination to be the state's second largest city, almost an extension of Perth.

The Peel-Harvey commercial fishery is one of Western Australia's oldest, operating since the mid-1800s. Originally operating as a net fishery targeting a variety of finfish, commercial fishers started to target blue swimmer crabs (*Portunus armatus)* in the 1950s. Fishers used gillnets to catch crabs until the 1990s when the gear changed to using crab traps (Department of Fisheries, 2015a). There are currently 11 licensed fin-fishers in the Peel-Harvey Estuary operating out of small aluminium trailer boats. Haul seine and gill nets are used to catch sea mullet (*Mugil cephalus)* and yellow-eye mullet (*Aldrichetta forsteri)*, cobbler (*Cnidoglanis macrocephalus)*, yellowfin whiting (*Sillago schomburgkii)*, Australian herring (*Arripis georgianus)* and other species. In 2015, the effort was reported to be stable with total annual finfish catches of between 100-130 tonnes, with the majority for human consumption (Department of Fisheries, 2015b). Finfish is sold locally for food and some for bait. 10 of the 11 fishers are also allowed to use traps to fish for crabs. The annual catch of blue swimmer crabs has varied from 45-105 tonnes since 2000, with abundance and catch strongly related to annual recruitment (Department of Primary Industries and Regional Development, 2018).

The easily-accessible waters of the Peel-Harvey mean that the Estuary is one of the most popular recreational fishing areas in south west Western Australia. Recreational fishing is one of the most popular past times in Western Australia with an estimated one third of the population participating (752,000 recreational fishers) (Department of Fisheries, 2016). Blue swimmer crab fishing is extremely popular, with crabs caught from boats (using drop nets) and from the shore (using scoop nets). Estimates of the recreational crab catch were 349 tonnes in 1998/99, 165 tonnes in 2007/08, and 80 tonnes in 2011/2012 (Department of Fisheries, 2015a). There have, however, been concerns about the habitat impacts of scoop nets related to wading in shallow areas of the estuary (less than 1m), bird interactions, and the catch of undersize crabs.

In June 2016, the Marine Stewardship Council certified the recreational and commercial Peel-Harvey blue swimmer crab fishery (a world first to certify a recreational fishery, and to certify both), and the commercial Peel-Harvey sea mullet fishery. The certification of Peel-Harvey was part of a wider West Australian Government initiative that provides the opportunity for all the State's wild-catch commercial fisheries to be assessed against the Marine Stewardship Council (MSC) sustainable fisheries standard. The program was initiated and funded ($14.5m) by the Government in 2012. By 2014 all fisheries had been pre-assessed (mandatory) and full assessment (non-mandatory) began in late 2014 with three fisheries passing full assessment in 2015/16, including Peel-Harvey, and more since then. Since attaining MSC accreditation, there have been three significant and relevant developments which impact the Peel-Harvey fishery, and potentially its level of support.

The first was soon after certification, in 2016. There have been large increases in yellowfin whiting catches by Peel-Harvey commercial netters since 2015. Scientific research shows the spike is due to high recruitment (and flow-on recruitment) into the fishery in 2013 due to favourable environmental conditions (heat wave, temperatures increased by 5°) during spawning in 2010-11. The yellowfin whiting stocks are considered to be sustainable and in good condition (Department of Fisheries, 2017). However, the catches were above the target and threshold levels as laid out in the Peel-Harvey finfish Harvest Strategy, developed as part of the MSC assessment process. Yellowfin whiting is a recreational target species and the increased commercial catch has been a cause of concern from the recreational fishing sector and peak body, Recfishwest. However anecdotal reports showed the recreational sector was also enjoying the increased abundance of yellowfin whiting yet this was not taken into consideration by the recreational sector in its critique of the commercial sector.

The second development, in 2018, occurred when the McGowan Labor government announced $1.5 million would be spent on a voluntary buyout of Peel-Harvey commercial fishing licences, honouring a 2017 election commitment. The buyout was for the purpose of reducing conflict between commercial and recreational sectors and "*ensuring the future health of the Peel-Harvey Estuary and improve recreational fishing experience*" (Government of Western Australia, 2018). It was supported by both the recreational and commercial sectors. Also, in 2018, the Department of Primary Industries and Regional Development (formally Department of Fisheries) released an anticipated fisheries management paper 'Protecting breeding stock levels of the blue swimmer crab resource in the southwest: A review of management arrangements' (Department of Primary Industries and Regional Development, 2018). The closure of the Cockburn Sound Crab Fishery in 2006 and 2014, coupled with declining catches in the southwest of WA, had called into question the resilience of the blue swimmer crab breeding stock and the need to review management. The paper identified that existing management arrangements are too localised when the populations of crabs in the southwest are linked. The paper set out five management change options and their key considerations. The paper was released in October 2018 for stakeholder comment with outcomes not yet released at the time of writing.

This case study mainly focussed on the lead up to Marine Stewardship Council certification and onwards until the present day. The interviewees included experts from industry, decision-makers, and interest group members including recreational stakeholders, environmental stakeholders, and independent researchers. The following is the analysis of seven key informant interviews (nine participants) and both print and social media, focusing on the determinants of the level of societal support for the Peel-Harvey fishery.

Understanding and consideration of the context

Three key relevant contextual circumstances that affected societal support were raised through the analysis. The lack of knowledge and understanding of the commercial sector by the community was one aspect. Several interviewees discussed the general lack of awareness about fisheries, sustainability and management among the public, including seafood consumers. Some lack of knowledge was attributed to Australian cultural attitudes towards fishing and that fishers are *"not revered like farmers as food producers in Australia"*. Interviewees referenced a survey of the West Australian public conducted by the peak body for commercial fishing, the Western Australian Fishing Industry Council (WAFIC) to understand what people understood about fishing and sustainability (*unpublished internal survey, April 2011*). The results showed that while 90% of the WA fisheries were scientifically determined to be sustainable, only one third of people said they thought WA

fisheries were sustainable. and around half of the people surveyed didn't believe that commercial fisheries were managed well or didn't understand how they were managed.

The political context was a second and related aspect raised by respondents. "*The [fisheries] minister at the time was working with WAFIC and they decided to do something about this [the survey results]. They were driven by the need to grow social licence in local fisheries – the sustainability story wasn't getting out to where it needed to go. The minister was also being threatened by marine parks at the time and the commercials were losing*". The fisheries minister, Norman Moore, was perceived by interviewees to be highly supportive of commercial fishing and small businesses. *"He saw the industry getting kicked around…he loved to eat local seafood and wanted to save 'fish of the day'".* Moore then *"charged the Department, WAFIC and commercial fishermen to go to Europe and find out the best eco-label out there"*. A group went to Europe and spent a week in discussions before coming to the decision that Marine Stewardship Council certification was the *"gold standard"*. The Liberal government then funded every West Australian fishery to go through MSC pre-assessment as well as the full assessment and first annual audit for those that volunteered to go through the process. Recently, in 2018 there has been a change of government to Labor, and two interviewees felt the recreational sector and recreational peak body "*have more traction with Labor",* citing an example of *"forcing an election promise to buy out commercial licences".*

A third contextual factor was the complex and dynamic relationship between recreational and commercial sectors. Most interviewees felt that there has always been tension, suspicion and conflict between the two users of the resource. Although media reports at the time suggest otherwise (e.g. Mandurah Mail, 2015, Murphy, 2016), the underlying tension between the sectors did not disappear after the joint Marine Stewardship Certification (MSC) of the Crab fishery in 2016, some of which has played out in the media (e.g. Schmitt, 2018). While the commercial industry widely publicised and celebrated MSC certification, the recreational sector partner and peak body, Recfishwest, was relatively quiet in the media; *"the [recreational sector] can use the blue tick to its advantage if under criticism, it can be used to fall back on, but it is not used too actively".* Since certification, the recreational sector have been critical of the Peel-Harvey commercial fishery of their recent high catches of yellowfin whiting (RecFishWest, 2016). On the other hand, the commercial industry has highlighted the lack of recreational catch data as an issue, and some recreational fishing practices including taking undersize crabs and stolen/damaged fishing gear has been reported in the media (e.g. Fitzgerald, 2015, Findlay, 2016, Hondros, 2016).

Reasons were provided by interviewees as to why the recreational and commercial sectors can (and do) work together and were able to collaborate to achieve MSC. Respondents suggested that both the commercial and recreational sectors had incentives to achieve MSC to build societal support. The commercial sector had implemented a voluntary Environmental Management System (EMS) to prove their sustainability and to protect themselves from criticism on sustainability grounds. However, *"it was quickly recognised that the EMS was not enough. We thought it could shield us, but it wasn't a living document"*. When the opportunity to attain MSC was made available by the government, the Peel-Harvey fishery took it. It is less clear why the recreational sector agreed to be jointly assessed for MSC. Several interviewees suggested there was a common desire by both sectors for better data *"because there was a question whether the estuary could support the level of fishing"* and the MSC process was seen as a way to improve the data. Three interviewees suggested the *"recreational sector had its own social licence issues, there has been a lot of issues around compliance, so that may be why they were driven to collaborate"*.

Outside of yellowfin whiting, the other mixed finfish caught by the commercial fishery using haul seine nets did not come under pressure from the recreational sector. Sea mullet (which was also MSC certified) is the largest finfish catch in the fishery but is not an important target species for recreational anglers. This lack of common target finfish species was a reason given by interviewees for the lack of conflict over commercial netting in Peel-Harvey. Furthermore, unlike in Victoria and other places in Australia where 'netting' *per se* is problematic and often used by the recreational sector to suggest unsustainable practices, recreational fishers also have limited access to using nets in the Peel-Harvey.

Belief in the strength of government oversight

A few interviewees referred to the strength of government oversight as a determinant of societal support. There was a belief that the fishery has been well-managed to maintain stocks in Peel-Harvey, especially since MSC certification which *"forced the hand of the Department to have greater oversight and be more proactive about managing the fishery"*. It was believed that the MSC certification process resulted in more research conducted by DPIRD on both the commercial and recreational catches and implementation of a harvest strategy.

One interviewee also discussed the long history and culture of the West Australian government (of both sides) to make difficult decisions about fisheries when needed; *"they will reduce catches to recover stocks or even close a fishery. This is different to other states where I believe that culture isn't there. There is political will in WA, and there is trust between the politics and DPIRD to use the best available science to make decisions"*.

Presence of fair decision-making processes by government

Five of the seven interviewees talked about fairness in decision-making as a determinant for support for the commercial fishery. Some aspects of the management and resource allocation processes between commercial and recreational sectors of the Peel-Harvey fishery were perceived to be fair, others were not. Two interviewees discussed the presence of the fisheries resource sharing process as fair. It is based on taking an integrated approach to fisheries management which involves setting an allowable (sustainable) harvest level for a fish resource, and determining the allocations between various user groups, with *"solutions worked out between commercials and recreationals"*. With the MSC certification, this resource-sharing and fairness argument was capitalised on and the *"commercial fishers convinced the DPIRD and MSC, that recreationals [RecfishWest] had to be involved. They take 50% of the catch"*.

However, interviews also revealed that both the recreational and commercial sector perceive the other is favoured by the management agency. The commercial sector believed the "*Department doesn't want to aggravate the recreationals*", while the recreational sector believed "*the Department are more supportive of commercials than recreationals… they defended the commercial catch of yellowfin whiting because of biology, they are not interested in the recreational position about increasing abundance and improving recreational fishing experiences. They are biologists and only interested in stock assessments. I think the Department has now lost the trust of the recreational fishing community locally".*

Demonstration of the activity acting in alignment with social norms

Four of the seven interviewees discussed how the commercial Peel-Harvey fishers act in alignment with societal expectation and norms, and how this has led to support from the local community and stakeholder groups.

Almost all interviewees discussed the transparency of the Peel-Harvey commercial fishery and the steps taken to demonstrate this. The MSC process was an opportunity to "*demonstrate transparency to the public and that the fishery had nothing to hide. All the information is publicly available, and stakeholders were given the chance to comment during the process*".

Interviewees also perceived that the commercial fishery and the recreational sector have mutual respect and an honest relationship; *"We are honest [with each other] and we know Damien [former President of Mandurah Licenced Fishermen's Association] keeps his promises. He is responsive, and our relationship allows for different points of view which has all led to compassion and trust. We are clear about each other's position. It doesn't mean we have to agree though"*.

About half of the respondents said the Peel-Harvey fishers also demonstrated professionalism and a commitment to their industry; *"The formation of the Mandurah Licenced Fishermen's Association and getting all the fishermen together to form a professional body has been important and shows they are serious, you can see it with the pride of the logo t-shirts they wear".*

Interviews also revealed a responsiveness to stakeholders from the Peel-Harvey fishers. The MLFA implemented a code of practice *"which responded to some sensitive issues with other users".* Respondents also noted that since commercial fishers don't fish weekends (in legislation), this reduces potential conflict with recreational anglers.

Evidence of sustainable and responsible practices

All interviewees discussed the demonstration of sustainable and responsible practices by the Peel-Harvey commercial fishery; *"they practice what they preach, it's a very clean fishery and their heart is in the right place"*. Respondents noted the importance of MSC certification to show stakeholders the level of sustainability of the fishery and the improvements in management. Marine Stewardship Council certification was driven by the need to demonstrate sustainability to stakeholders and to *"give people confidence that the fishery is in good hands, with the rigour of the process"*. It has been *"an engagement and communication tool"* and *"shone a spotlight on the fishery"*. Although *"some people in the rec sector challenge the fishery and the MSC standard"* and two interviewees mentioned that more accurate data on the level of recreational catch is needed: *"the elephant in the room is the recreational catch".*

The harvest strategy which was implemented because of MSC certification process was believed to be the most important element that has changed since MSC, with transparent recording of bycatch and catch limit setting. Although this was also challenged by the recreational sector who have "*now lost faith in the harvest strategy*". However, the MSC process has conditions of certification on the fishery to demonstrate the effectiveness of the Harvest Strategy which is a key opportunity for stakeholders to work through adjustments and influence the outcomes of the Harvest Strategy. Four interviewees also discussed the importance of the industry-led voluntary code of practice. Media also noted that the commercial industry has worked with local environmental organisations to improve the quality of the

Peel-Harvey estuary and responding to issues such as dredging and new developments (e.g. Martin, 2014).

Level of visibility

Most interviewees discussed that commercial fishing is very visible to the community of Mandurah and that this visibility is positive; "*people drive past and see them fishing*", they can buy their produce, and there is the large crab festival in Mandurah every year. There is an enhanced awareness and visibility of the commercial fishery, especially with MSC certification and the fishers *"are definitely a part of the town and way of life there"*. One interviewee said that despite this visibility, the fishers *"have enough of a clue to give the recreationals space, they don't fish weekends, are not in the face of recs or pulling nets right in front of the them"*.

Relationship building

The results revealed that deep and broad engagement by the Peel-Harvey fishery was perceived to be one of the most important determinants in building societal support for the commercial Peel-Hervey fishery.

Despite the complexity of the relationship between the recreational and commercial sector (see determinant 'understanding and consideration of the context'), both sectors worked together to achieve MSC certification. Damien Bell, the president of the MLFA (at the time) was believed to be instrumental in building the relationship *"[Damien] and Andrew Rowland who heads up Recfishwest have a good one-to-one relationship. They find common ground, and in this case, it is the desire for better data"*. The MSC process applied a different and expanded standard of consultation process that was present before, and now non-fishing stakeholders are included in the management agency's consultation processes and these were consulted during the MSC assessment process. During the MSC process public forums were held to spread the message about sustainability and the marine environment, and speakers from commercial, recreational and the management agency shared a stage. Interviewees suggested that *"MSC was a galvaniser"* and that *"people should be more aware of the importance of the partnerships formed to get to MSC"*.

Furthermore, respondents noted that the commercial Peel-Harvey fishers, particularly Damien Bell, *"have been relentless in engaging with community stakeholders"* starting years prior to the MSC certification process. Prior to Damien, Bruce Tatham (the previous president of the MLFA) spent significant time working to build rapport with the local community. *"[Bruce] told [Damien] to make sure the fishery was supported by the community"* and so the fishery continued to build relationships with a diversity of stakeholders including local community groups, environment and conservation groups, the mayor and council, local MPs, the tourism body, local businesses and chamber of commerce, local radio station, and local journalists. The fishery understands that *"the most important thing is engagement, fishermen catching fish is not enough"*. One key relationship is with the Peel-Harvey Catchment Council (PHCC), who are an influential local natural resource management organisation. Respondents explained that the MLFA and PHCC talk regularly, work together, and form coalitions with other environmental organisations (e.g. Birdlife International). For example, they are united in their protest against dredging of the estuary which stirs up black silt, reduces dissolved oxygen concentration in the water (causing hypoxia) and releases heavy metals. Interviewees suggested that there had been a cascading effect, where PHCC regularly talk about the importance of wild fisheries sustainability in the Peel-Harvey with other community groups such as schools, Rotary and Lions, and the Development Commission.

Effectiveness of communication

Most of the interviewees discussed the importance of communication and believed that the Peel-Harvey fishery have been effective communicators with stakeholders and the media. Despite the belief that fishers are not always the best communicators, respondents believed that the Peel-Harvey fishers, in particular Damien Bell, *"has been media savvy and always been conscious of the power of the media. He [Damien] has sought opportunities and presented himself through the MLFA as highly professional".* The fishery has taken and sought opportunities to promote the good stories and professionalism of the commercial Peel-Harvey fishery in local, state and national media. Damien is also perceived as someone who listens and creates open dialogue with stakeholders.

Four interviewees also discussed the importance of MSC certification as a communication tool that has been used well by the Peel-Harvey fishers, and other stakeholders, noting that it has been used well by industry to communicate the fishery's story of sustainability, talking to stakeholder groups, at festivals, schools, and through traditional and social media.

Demonstration of a shared vision

Five of the seven interviewees discussed shared vision. The Peel-Harvey fishers appear to be meeting community expectations, but there are differences in the vision of the fishery between commercial and recreational fishers. While common ground can be found, the fundamental difference in worldviews and vision may not be able to be resolved.

Interviewees discussed the cultural alignment between the Peel-Harvey fishers and the community, particularly with seafood consumers. *"There is a cultural identity associated with Mandurah crabs in the community". "The community have an expectation of eating crab and having it available to buy. There is such a big demand".* The Peel-Harvey fishers also align with the community along environmental lines. In addition to being very clear about the industry's values around sustainability, the commercial fishers are "*very visible and vocal about environmental concerns in the estuary"*.

Interviewees also discussed that despite finding common ground to form the partnership for MSC certification, the commercial and recreational sectors have different visions in terms of what should be the goal for the Peel-Harvey fishery. The commercial fishers have a strong view that sustainable stocks and good practices should be the goal, whereas the recreational fishing vision (Recfishwest) is for abundant stocks to improve recreational fishing experiences. These two visions are subtly different. For the recreational sector, sustainability isn't enough. This difference was recently played out with the conflict about yellowfin whiting which has now *"dented the relationship a bit between the commercial and recreational sectors".*

Demonstration of the generation and distribution of benefits

Six interviewees discussed the importance of the Peel-Harvey fishery and the benefits it brings to a range of stakeholder groups. Resource sharing is an expectation of the community; *"eating blue swimmer crab is really important to the community, it's a 'rite of passage'"*, therefore, crab continuing to get to local markets is important. The selling of fresh finfish locally is also an important and recognised benefit to the community.

Respondents felt that the MSC certification process had delivered recognised benefits to industry, recreational fishing, environmental and government stakeholders, with the increased and improved

research leading to the publication of the harvest strategy; *"there has been a huge benefit of increased spending and attention on management and research for the fishery".* The forum providing for non-fishing stakeholders to have a voice was also a recognised benefit, and for the management agency, there were perceived increases in opportunities for researchers, and improved relationships between the agency and industry. *"It's improved relationships between the Department and WAFIC. It's helped with pragmatic discussions and conservation, priority setting, getting stuff done, and given them an international reputation…it's also forced industry to confront their weaknesses and improve their practices".*

Interviewees believed that while the MSC certification has not brought direct market benefits, there have been associated economic and social benefits for the commercial industry such as increasing investment in the fishery and licence value security. The process has provided a forum for fishers, continuing and improving relationships with stakeholders, a sense of collective action as a fishery as well as a sense of pride in their fishery.

Framing of the issue

Four interviewees talked about the framing of the fishery. Largely, the commercial Peel-Harvey fishery is presented as sustainable with a focus on the crab fishery rather than the net fishery. However, interviewees felt that the recreational sector have tried to influence this perception by suggesting the commercial netting sector are taking too many fish (yellowfin whiting in particular). On the other hand, the recreational sector had not been presented as a benign fishery, and there was an awareness that there are non-compliance issues with the recreational crab fishery (e.g. taking of undersize individuals and females, exceeding bag limits).

The framing becomes clear when analysing the traditional and social media. Three issues were prominent in the media, including the attainment of MSC certification, the 2018 election announcement to buy-back some commercial Peel-Harvey licences, and the increase in yellowfin whiting catch (only debated in social media, not traditional print media). The commercial Peel-Harvey fishery was framed positively, with sustainability and responsibility of the fishery being the clear message presented. The 'face' of the industry was also presented in the media with the fishers portrayed as passionate, hardworking family businesses, small-scale, with good leadership and providing benefits and a close connection to the community. 19 per cent of all print media articles analysed were positive stories about the commercial fishery. In contrast, the recreational sector was not framed in such a positive light (outside of the MSC certification), with most articles about poor compliance and illegal activities, poor data and responsibility for the pressure on the resources. 24 per cent of all print media articles analysed were about the recreational sector.

The MSC certification of both the recreational and commercial Peel-Harvey crab fishery was framed in a positive light, and 38 per cent of all print media articles analysed were about the process and achievement of MSC accreditation. Media articles and social media posts reinforced the sustainability message about the fishery, and the collaboration between the two sectors was strongly highlighted.

The 2018 announcement of the voluntary buy-out of commercial licences was framed as a way of improving recreational fishing experiences and that recreational fishing is a family activity. It was also framed as a means to reduce commercial and recreational conflict, with the fishery emphasised as a shared resource that provides benefits to the community in terms of seafood and recreational experiences. The process of consultation with industry was portrayed as a positive one with fairness

and equity as the basis for discussions. The commercial fishery response in the media was also positive, and they acknowledged the rights of recreational fishers, and the need to ease some pressure.

The increased catch of yellowfin whiting was an issue which only played out in social media, and only the recreational sector were vocal. The recreational sector claimed that the commercial fishery was unsustainable and poorly managed.

Connectedness to community

All interviewees discussed the connection between the commercial fishery and the local community of Mandurah. Despite the large growth and increasing urbanisation of Mandurah, the commercial fishery were perceived to be an important part of community life with *"the fish staying in the community"* and that *"the commercial fishermen are locals and from established families in the community"*. Crab is culturally important for West Australians and the Mandurah community. It is part of the way of life and *"eating crab is a rite of passage whether you catch it yourself or buy it"*. Recreational fishing for crab is a tourism drawcard for the city, but people also go to Mandurah for a "*feed of crabs"*. Most of the crab (and fish) caught by the commercial sector stays local, with an estimated 40 per cent sold in Mandurah including by two fishers who sell to the public direct from their homes. The remainder is transported to Perth 80km away. The MSC certification has increased awareness of the commercial fishery, and more people are aware there is a commercial fishery in Peel-Harvey that supplies the local community.

Respondents pointed out that there is a large annual seafood festival, called Crab Fest. *"Crab Fest is huge."* It is the largest free community event in Western Australia, has won awards, and attracts more than 100,000 people. *"Crab Fest is a celebration of the commercial fishery, the commercials are embedded in the festival",* providing crabs and other fish species, and having educational stalls.

The commercial fishers also volunteer their time and provide donations to the community. They have *"worked to connect the fishery to the community leaders and groups"*. One example provided by interviewees was the work done to share knowledge with local students and youth. The industry was involved in a course that ran for three years with local 'at risk' youth, teaching them about fishing, how to fish, drive a boat, and other activities and this program was reported in the local print media.

Presence of key influencers

Four out of seven interviewees discussed the importance of individual influencers for building support for the commercial fishery. Damien Bell, who was the president of the MLFA until late 2018 was widely acknowledged to be an excellent leader and *"gave a huge amount of time to building community support for the fishery". "Damien has been tireless in working on issues. He hits it at 100 miles an hour and won't take no for an answer. He has set the bar for other fisheries".*

Two interviewees also discussed the influence of the then Fisheries Minister (2008-2013), Norman Moore, who supported the rights of seafood consumers and the commercial industry. *"He dug his heels in about the marine parks, accessed money for the MSC initiative and supported it".*

Several interviewees discussed the political influence of Recfishwest, the peak recreational fishing body. They are a *"powerful and a skilful lobby group",* are sophisticated and well-resourced, and are able to connect to a large number of anglers with 80,000 readership of their newsletter. *"They can get support easily because there are 700,000 rec fishers compared to 11 fishermen. They don't talk about*

science, their argument is an emotional one. The concern is that the discussion can become one-way, uninformed or misinformed". However, unlike Victoria, *"there isn't the personalities like Rex Hunt in WA"*.

At the community level, the Peel-Harvey Catchment Council (PHCC) was noted to be influential and to provide support as an environmental organisation for the commercial sector. PHCC is *"well-respected with a lot of community reach and community trust, and a good reputation. It's the bigger eNGO in the region. Having PHCC involved as a trusted, non-government, non-industry organisation in the community has been beneficial for building support [for the commercial fishery], especially with those who care about the environment".*

Level of collective action

The commercial Peel-Harvey fishery is collaborative and has been successful in building alliances with different stakeholders. Respondents noted that the MFLA built alliances with environment and conservation organisations to form a coalition against environmental damage to the estuary. Six of the seven interviewees also discussed the MSC certification process as a form of collective action. It was suggested that MSC galvanised stakeholder groups, and in particular the recreational and commercial sectors were able to find common ground and unite to achieve joint MSC certification for the crab fishery. *"The recreational and commercial sectors are encouraged to work together to figure out how to solve problems".*

Unity of activity participants or industry

Four interviewees discussed the unity of the Peel-Harvey fishery. They are a *"cohesive group of fishers under Damien's leadership, and he has worked very hard to make sure of this"*. As such, the MLFA are a strong fishermen's association, with 100 per cent membership and complete adherence to the Code of Practice. *"Over time the fishery has shrunk from 150 down to 11 fishers. They are fishermen who are passionate and dedicated, understanding that if they don't work together, there is no job".* While the fishers are competitive on the water, there is no gear conflict and they have respect for each other's markets. *"The competition between them stays healthy and doesn't get personal".* However, this unity is perceived to be because of Damien Bell's work and leadership.

Level of material and human resources

Six of the seven interviewees discussed the importance of resources for building societal support. Respondents suggested that there were three critical forms of resourcing: the MSC certification that was financially backed by government; the management agency that are financially well-resourced so staff can be maintained for scientific research, management and compliance expertise; and the human resources of the Peel-Harvey fishery which has been important for leadership, engagement and for seizing opportunities. As an example, respondents cited Damien Bell, whose background was diverse, included expertise and experience working as a scientist, in fisheries management, as a lecturer, as well as a fisherman. This gave him the set of skills required for engagement, for talking to different stakeholders, for negotiating difficult situations, and to understand the complexities of science and management as well as the requirements of the MSC certification process.

Okehampton Bay Case Study

Introduction

In 2017, an Australian salmon farming company based in Tasmania, Tassal, received approval to farm a lease at Okehampton Bay, located on Tasmania's east coast, near the communities of Triabunna, Orford and Spring Bay. The area is a relatively shallow bay bounded on the north and west by the main Tasmanian coastline, and in the east by Freycinet Peninsula, Schouten Island, and Maria Island. There are two National Parks adjacent to the area, the Freycinet National Park and the Maria Island National Park. On the west coast of the northern section of Maria Island, there is a marine component of the park which prohibits commercial and recreational fishing and provides a sanctuary for a range of aquatic species.

As in many other parts of rural Tasmania there has been a decline in the traditional activities of fishing, forestry and agriculture. This decline has corresponded with a decline in employment opportunities, particularly for younger people, and a greater dependence on casual and part-time contracts. This is often provided from the increased reliance on tourism. The area has also seen increased demand for recreation and holiday living, with holiday homes in most cases owned by people living outside the area. The location has high recreational value and is a popular destination for those undertaking activities such as sailing, boating, diving, surfing and recreational fishing. It attracts a high level of recreational use (boating and fishing) during the summer months when the local population is swollen with holiday makers.

The lease area was already set aside for aquaculture purposes in the Great Oyster Bay and Mercury Passage Marine Farming Development Plan 1998 (subsequently reviewed in 2007 and 2010). The lease was to be located around 7km from Spring Beach and more than 8km from Maria Island and would have 28 salmon cages over 80 hectares. The lease site was proposed as an experimental integrated multi-trophic aquaculture site, also growing mussels and seaweed within the area. Tassal also proposed to lease a purpose-built shore base from Spring Bay Seafoods to support their operations in Okehampton Bay. Independent economic modelling had indicated that the Okehampton Bay operation, once at full capacity, would provide an economic contribution to Tasmania of more than $80 million, and generate over 250 jobs throughout the economy.

However, Tassal's proposed expansion provoked controversy and mobilised opposition (and some support) from environmental non-government organisations (eNGOs), recreational fishers and sailors, tourism operators and local residents. This case study focuses on the determinants of the level of societal support for the Okehampton Bay aquaculture development, an example of an operation that, at least in the early stages, suffered from a lack of societal support. The following is the analysis of key informant interviews, traditional media and social media. Interviewees included experts from industry, decision-makers, and environmental/community interest group members. Quotes are not attributed for confidentiality reasons.

Understanding and consideration of context

Context was a large focus of the informant interviews. Firstly, respondents pointed out the historical legacy and controversy around natural resources in the area. One respondent noted the issues relating to changes in the forestry industry: *"Lived there through the closure of the woodchip facility which decimated the town. One school went from 100 kids to 60. Another from 160 to 100. Some of the Dads*

had to fly in fly out. The people who went FIFO were the people who cared, who volunteered in the clubs. That had a dramatic effect on the community, and a psychological effect on the kids and the families." Another pointed out that "*Triabunna has a history of controversy, the forest industry, a lot of controversy when the industry began to close down."* In addition, *"There was controversy around the Supertrawler, partly to do with the fishmeal processing plant that was quite an eyesore and quite polluting and did some not so great stuff*." This quote referred to the Seafish fish processing plant which was located at Triabunna, which was associated with several concerns, particularly odour and wastewater issues. Another respondent explained "*The community were already being a little bit polarised against salmon because of the association with Seafish*."

At the same time as the announcement of the Okehampton Bay farm, several other events were also taking place "*The company was being judged by things that were happening outside of Triabunna too.*" Firstly, it was identified that another salmon farming area, Macquarie Harbour, was suffering from declining environmental health, believed to be caused by the level of production within the area. Dissolved oxygen levels in the harbour were at record lows, and there had been a significant decline in the abundance and diversity of organisms at the bottom of the harbour. One particular lease site, also owned by Tassal and located near to a world heritage area, was ordered by the Environmental Protection Agency to be destocked and fallowed: "*The Greens said the impact of fish farms in Macquarie Harbour and the Channel had people worried about how it would affect the local ecosystem.*"

Secondly, the ABC's 4Corners program had released an episode titled 'Big Fish' on 31 October 2016, which investigated the business of salmon farming in Tasmania "*4Corners came up and that was the weirdest piece of journalism I ever saw.*" In the program, there was a focus on intensive salmon farming, chemical colouring, salmon under stress and the suffering of pristine waterway ecosystems. The program was perceived as an attempt to make a case against Tassal in particular, and the Tasmanian salmon industry in general.

Belief in the strength of government oversight

Belief in the strength of government oversight was a determinant which played out mostly in the media. However, one respondent did note that: "*Uncertainty in policy, uncertainty in regulation, it pointed to the uncertainty that you have without a national aquaculture Act around the EPBC [Environment Protection and Biodiversity Conservation Act 1999]*."

Much of the focus in the media revolved around the decision made by Primary Industries Minister Jeremy Rockliff to undertake a review of the marine farming zone on the east coast (in which the Okehampton Bay development was situated): "*Community and environmental groups have taken the state government and Primary Industries Minister Jeremy Rockliff to task in the past year over a controversial development at Okehampton Bay*" (Jarvis, 2017).

When, after review, approval was given to continue with the development, the media began to regularly report on those (particularly the Tasmanian Green Party) who were questioning the ability of the government to regulate the industry correctly. One media article noted that "*Greens senator Peter Whish-Wilson said he was "bitterly disappointed" by the federal approval. "Given the mess that the Hodgman Government has created in regulating Macquarie Harbour, why would anyone trust them to get it right in pristine coastal areas like east coast Tasmania?" he said.*" Another wrote "*You have to wonder why we've also got the bottom of the class and a complicit government that can't seem to tell the difference.*" *On Thursday, Greens Leader Cassy O'Connor said Mr Rockliff was responsible of*

"ignoring scientific advice, decisions to allow overstocking, extensive marine pollution and impacts on threatened species." (Whiting, 2017*).* Some articles were also written by the government to advise the public that what they were doing was world class regulation of the industry.

Presence of fair decision-making processes by government

Decision-making processes around the approval of salmon farming leases were a key focus for almost all sources analysed in this case study. These were not always focused on the fairness of the decisions per se, but on occasion, rather on what was perceived as the incompetence of the government when making decisions. "*It skirts his own responsibility for the failure of governance that has allowed damaged inshore farms to become a reality.*" (Kelly, 2017). One source suggested that in deciding to re-review the zoning of the Okehampton Bay area for fish farming, government were operating outside of their own processes "*it was a foolish move, it was outside of process, it wasn't going to deliver what the critics wanted and it was a kneejerk reaction*". Another pointed out that "*the approval goes against the federal government's own management plan for the species.*" On social media, one post argued "*The Tasmanian Government needs to go they are incapable of making decisions.*"

Some respondents pointed out problems with the decision-making process such as a lack of understanding about how the process works "*People go to great efforts to put in a submission, essentially they are flying blind, they may read the guidance but by and large they don't, so they just put in their complaints about it, which are the same as everyone else's complaints about it.*" And "*Often those people who don't want something have a very different idea of what consultation should be and often think it should be from the ground-up.*"

Other sources noted a lack of transparency in the decision-making process. "*They wouldn't even release the public submissions. Our integrity commission has never had a public hearing and has never had a public prosecution. [The Marine Farming Review Panel] are not an independent body, they answer to the Minister, they don't have to release their findings.*" Indeed, the independence of the Marine Farming Review Panel was questioned by many sources. For example, "*The Marine Farm Planning Review panel is not independent. It reports to the Minister who has the final say. What absolute bullshit.*" It was also noted that this issue was raised in submissions against the development, for example: "*Issues raised in the submissions include: LACK of independence on the panel. LIMITED powers for the panel.*" (Smith, 2016).

Concerns were also raised by those who supported the salmon industry about undue influence in the decision-making process by wealthy and well-connected individuals. "*It became political with the Liberals and the Sandy Bay set.*", with one respondent explaining that there are "*Too many self-interested politicians*." Another source explained "*There are some rich shack owners, quite wealthy and quite well-connected*." However, a similar argument was made by those against fish-farming "*Tasmanians don't want our beautiful marine environment to be surrounded by rings of industrial fish farms, and they don't want big companies calling the shots in our parliaments.*"

Demonstration of the activity acting in alignment with social norms

This determinant was not a key point of focus. A few sources raised questions around transparency of company practice and noted that a lack of this had led to a loss of trust. "*There is no trust. At the heart of the community concern, it comes back to transparency, show us the data, more is more*." Some

sources explained that it didn't matter what was said, the conflict had escalated to the point that nobody believed the company "*At that point, nobody believed anything Mark said*."

Evidence of sustainable and responsible practices

Much of the campaign against the Okehampton Bay development was framed around sustainable and responsible practices, often linking previous experiences of salmon farming with the new development, "*I've got footage from farms taken down in Dover which just show dead-zones. They have never been fallowed. It is just greed. If they had kept it small and sustainable... it's just not in line with the Tasmanian brand. At its peak it's going to have 28 pens and so that is quite a lot of effluent into what is a shallow bay*." Some of the issues that were raised in relation to the development included pollution from the farms, impacts on fish and shellfish species important for commercial fishing, impacts on giant kelp forests, and impacts on marine mammals such as seals and Southern Right Whales: "*The commercial fishers get worried about it because when rock lobsters, when they are tiny, if there is any sediment in the water, or the water is not clean then they just die. Same with the abalone. The other issue is seals. Fish farms are like fast food for seals. You speak to people who work with seals and they tell you that the seals remember where the farms are and they tell their mates*." However, others countered this, for example by pointing to what has happened in other salmon farming locations "*People say look at what happened down the Huon, but the Huon started 30 years ago, and not by Tassal. Things have moved on! We don't want to harm the environment, but let's have a look at the science here*."

Proponents of the Okehampton Bay development argued that the practices of Tassal were sustainable and responsible: "*Tassal had put a lot of effort into gaining Aquaculture Stewardship Council (ASC) certification for all of its salmon farming operations and making sustainability reports public.*" The site was to be established at Okehampton Bay as an integrated multi-trophic aquaculture site, believed to be a more sustainable form of aquaculture practice, one which uses the waste outputs from finfish as inputs to grow shellfish or algae species alongside the pens. However, the "*Environment Tasmania strategy director Laura Kelly said the trials would not come close to addressing concerns about the waste from the 800,000 salmon. The tiny amount (of seaweed) they have there will be as useless as tits on a bull when it comes to 920 tonnes of (fish) faeces a year, she said*." (Denholm, 2017).

The Marine Farming Planning Review Panel supported the development at Okehampton Bay, suggesting that Tasmania as a whole, and this development particularly, were using world's best practice. However, the lack of trust in the Panel indicated by the decision-making determinant would suggest that this did not help the cause. In fact, some of those against the development were arguing that fish farming in inshore marine areas was not world's best practice: "*Shooters and Fishers Party Tasmanian vice chairman Ken Orr said estuarine fish farming was an outdated practice. "We are 20 years behind the rest of the world in the way salmon farming is being approached," he said.*" (Whitson, 2017). This was despite Tassal working to make progress around sustainability, creating a partnership with WWF Australia and achieving Aquaculture Stewardship Council accreditation, one of the first salmon companies in the world to achieve this.

Level of visibility

Despite concerns that any environmental impacts may affect tourism little was said about the physical visibility of the site at Okehampton Bay and this determinant was raised by only a few sources. One source noted that: "*It is a beautiful location, white sand. It was farmland and there was a flat space and people used to go camping there, so there was a camping fraternity. There were real concerns*

that this was the thin end of the wedge and that the industry was trying to get their foot in on the east coast. "I'd be fine with it if it was on the other side of Maria Island" - that came out quite a few times." Another source pointed out "*People will openly say that they support the industry, but as soon as it gets near to their back yard everything changes, and Okehampton brought it to their back yard*." As noted in the introduction, the Okehampton Bay lease site was within an area that had seen increased demand for recreation and holiday living.

Relationship building

Tassal undertook a lot of engagement work during the development stage of the Okehampton Bay proposal, particularly with local council. They consulted with councillors and created booklets and pamphlets and put them in council offices. They spoke to local service groups such as Rotary, Chamber of Commerce and University of the Third Age. They were also working with the local school to develop partnerships. Tassal put up posters at local meetings and had planning to use the annual festival of the sea, SeaFest, to introduce the development to the community. They also took interested parties on tours of another site. Despite this, the depth of engagement was perceived to be a failing for Tassal. One respondent noted that "*When the initial debate was taking place, they took the softly, softly approach - don't say anything and you won't get shot down. But it just provides airspace for the other side to provide their argument and nobody abuts it, then it becomes fact.*" Another explained that "*They could have been more forthcoming about how they would manage the impacts. They probably weren't as open as they could have been*." Another source perceived that the company wanted to control the process "*The salmon companies hold the community meeting, but they control the meeting. If they don't want to answer something, they won't. When the community invite the companies to come to their meetings, they won't come*."

Some of the sources focused on the perceived role of government in engagement about salmon farming in Tasmania and the Okehampton development, and this was viewed as a failure. "*WWF Australia chief executive Dermot O'Gorman said the Okehampton Bay debate showed government and industry needed to engage with the community over fish farming. It's a proxy for a larger conversation that needs to happen around the expansion in the salmon industry, he said*." On social media, comments were posted such as "*Anti onshore fish farming groups say the State Government's "silence" over community opposition to Tassal's Okehampton Bay plans is 'stunning*'"

Effectiveness of communication

Several sources pointed out the ways in which communication attempts by the industry had failed. Some of those focused on communication in general. For example, "*We could have done a better job of explaining things to the general population of Tasmania like we had done with the local community, but we didn't see it coming!*" and "*Tasmanian salmon producer Tassal did not communicate its sustainability practices well…" We didn't bring people along the journey, we didn't communicate it terribly well locally, we didn't explain what those things meant," Ms Sams said. "We were transparent, but people didn't know where to find it or what they were looking it.*" (Griffin, 2017). Sources also explained that there were particular issues on which Tassal had failed to effectively communicate. For example, "*The industry has failed to communicate inadequately why they are not onshore, and why they are not offshore. There are good reasons for both, but if it was going to be onshore it wouldn't be in Tasmania, it would be on the mainland*."

Sources noted the pivotal role of social media platforms, such as Facebook, in communication relating to Okehampton Bay, particularly its ability to quickly spread misinformation "*Social media became*

the tool for Okehampton. I was dealing with it at the industry level, correcting misinformation. I was personally petitioned myself up on the east coast. It grew legs and it became a topic and became a focal point for the community." Several Facebook groups were established to campaign against the development "*What was obvious was that there was a lot of misinformation being spread amongst various channels - either deliberately or people just exaggerating concerns, either directly or indirectly related to the shore base. There was a lot of exaggeration, misinformation, circulating through social media channels in the main. A lot of aggressive comments, it was amazing what some people would post on Facebook about Council, about Tassal*".

Demonstration of shared vision

This determinant did not arise in this case study.

Demonstration of the generation and distribution of benefits

The generation of benefits in the form of jobs did appear to be a factor which was perceived to be beneficial to the local community: "*I think people can see the benefits of the industry to the town, the jobs that it's... and the flow on effects*." Tassal had proposed that when the development was operational, it would employ 25 full time equivalent positions as well as creating jobs in the construction phase. However, the level of benefits, in terms of jobs, provided by the development was contested. One noted "*When Tassal talked about coming to Okehampton Bay, I just saw the opportunity for all these jobs for the Dads who had gone away. The people in the area, who had kids in the school, supported it and the people who didn't live in the area, didn't rely on the area for income, didn't have kids in the school, they didn't support it. There are 57 full-time jobs now, that's 25 families say, it's another 50 kids in the school. Out of the 57, 56 of them live in the area*." However, this was clearly not believed by all. Another source stated that "*They said there was going to be 12 jobs, I think there is 2. Most of the staff who work on that farm came up from Nubeena. So, they are not new jobs. It's just industry trying to make a quick buck.*"

Framing of the issue

The debate around the Okehampton Bay development was framed in various ways by opponents, each appealing directly to human concerns about the developments.

In regards to the location and size of the development, some perceived that this was an attempt by the aquaculture industry to gain a foothold on the east coast of Tasmania, and area which had not yet been farmed for salmon: "*it is expected that Tassal will move immediately into Mercury Passage after they get into Okehampton, we were going to have fish farms in Wineglass Bay apparently. It will be the gold rush up the east coast*". Tassal had a map drawn up of the location and the site, yet there was still confusion about the size of the proposed development: "*she said, "OMG that's going to be massive" and I said no, that's not our lease…[she]came back and asked if she could take a photo. Of course, that was it, "CONFIRMED by Tassal staff, the farm is going to be in Mercury Passage in this lease!*"" In an attempt to address this, the government banned finfish farming in the Mercury Passage but this was dismissed as election spin by groups opposed to the Okehampton Bay development.

The anti-fishfarm group Let's Grow Tasmania's Future aired an advertisement on television and social media that included shock factor. They claimed that adding 800,000 salmon to Okehampton Bay would pollute the bay to the equivalent of 10,000 humans defecating in the water and the ad featured a fisherman going to the toilet off the side of a boat "*We calculated that it was about 10,000 people*

pooing every day, no e-coli, but phosphorous and nitrogen." This became a key focus of the conversation, particularly in the media reporting. This led to comments on social media such as "*TA$$AL's Poo Pens being installed*".

Finally, framing appealed to people's concerns for the future of their children. One source noted "*I feel that it's important for our kids and their futures and the community to stand up and be counted.*" Another said "*Any Tasmanian that wants their children to grow up in a world where there are whales should be dismayed...*"

Tassal attempted to address these concerns with facts. For example, they noted that "*it was incorrect to compare fish waste with human sewage because the spread of human disease and contaminants was not a factor with fish waste*". However, presenting scientific facts did not have the same effect as those framings which appealed to human emotion.

Connectedness to community

This determinant did not present clearly in the case study analysis. However, a couple of important points were made. Tassal was not viewed as being connected to the community, but rather as a large greedy multinational. "*Distrust of big industry played a big part and the media fed that, particularly 4Corners. Because they are an ASX listed company, they are all for the shareholders. Profits all go out of the state and it is all about Tassal making money for their shareholders*." In social media it was noted that "*Tasmanians do not support corporate greed".* Interestingly, *"There was a lot of chat on FB about 'we are the little guys fighting the behemoth' but for [Tassal] it felt the other way, we felt like the little guys*".

Presence of key influencers

Key influencers were very important in the Okehampton Bay case study and could be found at a range of levels and were largely operating on the side of the protestors against the Okehampton development.

It was perceived that Tassal made use of champions at the local level: "*Neil Edwards who owns the gravel quarry, they go into the community and find those people for whom it works and they hold a meeting and bring those people to the meeting.*" However, there were also influential local figures working with the opponents of the development: "*We had a unique scenario where people like Jane Cameron and Graham Wood who owned the pulp mill were trying to have influence on the community about the development*."

When Okehampton Bay became a national issue, the role of key influencers really became important, particularly for those who did not want the development to proceed. This started to happen with the involvement of Bob Brown, former Parliamentary Leader of the Australian Greens and founder of the Bob Brown Foundation which promotes environmental awareness "*Bob Brown and others then made it a national issue. He had been relatively quiet, he had a period when he wasn't involved in the public domain, he was getting drawn into issues around the south east and salmon farms*."

The opposition campaign was then joined by high-profile former Tasmanian and now AFL footballer Nick Riewoldt "*Meanwhile, the significance of the emergence of Nick Riewoldt as an opposing voice to Okehampton Bay cannot be underestimated. His is not a political voice, but that of a long-term East Coast resident and a passionate supporter of Tasmania. When he talks, people listen*. (Hobart

Mercury, 2017)" In addition, "*Prominent fishing identity Steve Starling described the Okehampton Bay expansion as "an absurd proposal" that would hurt Tasmania's "brand*"."

Existence of collective action

Collective action was very evident in this case. It was perceived that collective action by opponents was an important determinant which reduced societal support for the Okehampton development: "*It was a grass-roots movement… It wasn't run by the Greens or Environment Tasmania. It is a really broad grass-roots community…There is now an alliance of all these groups, there are fishermen, there are wealthy shack owners from Orford. Because it is Tasmania, everyone is really connected, and everyone talks to one another*." Indeed, groups which had traditionally been opposed, such as environmentalists and recreational fishers, joined forces to campaign against the development.

The Government also received nearly 6000 submissions as part of the public consultation process and an online petition against the Tassal proposal for Okehampton Bay attracted more than 1500 signatures. Perhaps the most high-profile event occurred when Tasmanians crowded into Sullivans Cove in Hobart to protest the development in an event called 'FloatMo' (a pun on the Tasmanian Festival Dark MoFo which was occurring around the same time). "*Hundreds of Tasmanians crowded into Sullivans Cove any way they could to send a message to the State Government stop Tassals planned Okehampton Bay salmon farm or risk the wrath of voters. Hundreds on paddle boards, kayaks, jetskis, runabouts and yachts converged on Hobarts waterfront yesterday as about 1000 more lined the docks to voice their concerns about the aquaculture development, which at its height would hold 800,000 fish and 28 pens in the bay near Triabunna*." (Humphries, 2017a).

On the other side, collective action consisted of a rally of 150 salmon industry workers and family members gathered on Parliament House lawns to hear those employed in aquaculture speak of its importance for regional communities.

Unity of the activity participants or industry

The Okehampton Bay development took place at a time when the salmon farming industry was not unified and this was a point that was raised by several sources. One source explained that "*Other companies in the industry chose to come out and support the position of those who weren't thinking it was a favourable decision to farm in that area. When we had the fracturing between the companies and the open dialogue in the media, both radio, print and TV, it created a unique situation where Okehampton became the issue that divided the salmon industry*." Another noted that "*Huon decided to take a piece out of Tassal at the same time. Tassal was put forward as the bad corporate citizen and it just built on that*." This meant that the Tasmanian Salmon Growers Association (TSGA) was unable to support the Okehampton development due to a split in the TSGA board caused by the disunity, and so Tassal had to face the opposition without the support of the key industry body.

Level of material and human resources

There was little discussion of this determinant for this case study. However, it was perceived that financial resources contributed to the success of campaign against the Okehampton development, in terms of raising awareness of the issue, as opposed to preventing the development. There was much debate regarding who was funding the campaign and there were calls for that information to be made clear: "*Lyons Liberal MHA Guy Barnett has called on the organisers [of the campaign against the Okehampton development] to reveal themselves and their financial backers while the Australian*

Workers Union said Tasmanians deserved to know exactly who was behind the advertisements and what their motives were. The financial backers of these advertisements should come out of the shadows and put their hands up. Hiding behind a so-called front group is not just cowardly, its deceitful, AWU National Secretary Daniel Walton said." (Humphries, 2017b). One media article reported "*Mr Barnett said it would be better if Mr Wood spent his money on his long promised proposed development at Triabunna rather than funding mistruths to support the Greens and stop jobs.*" On social media it was suggested that "*A shadowy lobby group with links to Environment Tasmania funds a controversial television ad about salmon farming on the state's east coast.*" (ibid.).

It is also believed that this case has meant that protest groups will be able to continue with their campaign against the salmon farming industry: "*The anti-fish farm movement in Tasmania has now become mature and financed as a result of Okehampton Bay.*"

Humpty Doo Barramundi Case Study

Introduction

Situated on the edge of the Adelaide river floodplain in the Northern Territory, halfway between Darwin and Kakadu, Humpty Doo Barramundi (HDB) is Australia's largest producer of farmed saltwater Barramundi (*Lates calcarifer*). A privately owned and operated family business, growing barramundi since 1993, HDB produced over 1700 tonnes in 2016/2017.

The site of the HDB operation is approximately 58km to the south-east of Darwin, a city that is within four hours flying time from a market of 23 million people to the south, and 485 million to the north. The Northern Territory government is increasingly looking towards economic development which fosters agribusiness export relationships with its northern neighbours.

HDB operates a pond-based recirculation system on the site of the failed Territory Rice Ltd project at Middle Point. The farm includes a nursery, production and harvesting ponds and packing facilities across 60ha of land. The production ponds operate in conjunction with a constructed wetland water treatment system which treats waste-water discharged from the ponds and supplies clean water. Water is drawn from the Adelaide River occasionally to combat evaporation.

This case study focuses on the determinants of the level of societal support for the HDB operation, an example of an operation that appears to have substantial societal support. The following is the analysis of key informant interviews, traditional media and social media. Interviewees included experts from industry, decision-makers, and environmental/community interest group members. Quotes are not attributed for confidentiality reasons.

Understanding and consideration of context

Few contextual details arose in this case study. Those sources that did identify the context focused on 'Developing the North'. 'Developing the North' is the strategy of the Northern Australia Development Office to develop the area above the Tropic of Capricorn, underpinned by the Federal Government's White Paper 'Our North Our Future'. As one of the respondents explained "*It's across the whole top of Australia and because there's a push to develop the North they've looked at it and gone 'Hey look we are so close to Asia, Asia is growing massively, and there's stuff all development across the top and all these open spaces and nothing going on, and hardly any people out there, but get some industry going on and some people moving up there'*." This development strategy includes aspirations for "*aquaculture developments on a large-scale incorporating world's best environmental practices*" (Australian Government, 2015. p.57). This was further identified in the media "*Aquaculture is identified as one of the Territory's key economic growth areas, especially in remote communities*." (Industry Capability Network, 2017).

Belief in the strength of government oversight

This determinant did not arise in this case study.

Presence of fair decision-making processes by government

This determinant arose in relation to funding that HDB had received from a government organisation. In May 2018, HDB became the first Northern Territory recipient of a Northern Australia Infrastructure Facility (NAIF) loan. The $7.18 million loan is to be used to fund the first of a three-stage expansion program which will include construction of new ponds, wetland system and fish nursery, taking HDB's production from 3000 tonnes per year to 6,000 tonnes. One source noted: "*A very small minority says 'Well, look at all the money you get from government!*". Another pointed out that: "*They have attracted support from the government in terms of loans and grants and that is seen by the wild-catch sector as an unfair advantage.*" It was noted that HDB spent some time explaining that they have: "*been approved for a loan in a 3-stage project, but have to pay it back, with interest.*"

Demonstration of the activity acting in alignment with social norms

In this case, a couple of points were made which related to this determinant: the iconic nature of the Barramundi, and the importance of being honest and genuine.

In regard to the importance of being honest and genuine, one source explained that *"[HDB] sat down a couple of years ago and identified what was important: family, health, environment and sustainability generally came out as part of that… [the public] are looking for someone they can trust and if their values align with [HDB's], that's great.*" It was perceived as important that people saw HDB as genuine, that they are who they say they are. Respondents further noted the importance of substantiating claims behind the scenes, every day, throughout the organisation, the staff, and through management.

Evidence of sustainable and responsible practices

This determinant was a key focus of discussion for almost all sources relating to this case study. Key foci included the use of learning opportunities by the organisation, certification and their work on wetland rehabilitation.

In 2002 HDB owner Bob Richards was awarded a Churchill Fellowship to study pond farming systems that minimised effluent releases to the environment. Based on this fellowship, HDB introduced biological filtration and recirculated water treatment into their farming system. In 2016 Dan Richards (HDB CEO) was awarded a Nuffield Scholarship to "*look at the global aquaculture industry and what the successful ingredients required are to make an industry really work. Then of course bring those lessons home for the Australian barramundi farming industry*." (Brann, 2016a). HDB appear to see the value of investing in learning and promote themselves actively as a dynamic organisation at the forefront of technology. One source noted that they are "*big on trying new things, consider themselves a learning organisation*". Another source pointed out HDB's development of the world-first feeder technology using sound. The technology releases some feed then uses sound dictation software to listen for the very distinctive noise that barramundi make when eating. If the fish are consuming the feed, then more food is released. "*We learn - we make lot of mistakes, but we learn from them ... We encourage people to try things and that's how we've - it's been - the learning has been really what's underpinned our success*."

Related to the learning opportunities used by HDB, many sources noted their work on wetlands. One source explained "*They won an award for their wetland rehabilitation system where they pumped the water from their ponds into this artificial wetland, designed as a water purification system before*

being discharged back into the river. This creates a positive image for the public about the sustainability of the operation." Another pointed out that "*They have communicated really well their work around wetlands… I do know that quite a lot of their land is wetland area for part of their water treatment that attracts a lot of birdlife.*" Another respondent pointed out that this had an indirect social acceptability effect "*They claim to have a really good recirculation system with little discharge back into the river… The fact that they aren't impacting the Adelaide river means that they are not impacting a popular fishing spot… I think all the local fishermen are pretty happy with them*." In addition to HDB's work on wetlands, sources referred to the NAIF loan and what it was to be used for "*They are looking at solar power to offset their carbon footprint, so they are really trying to tackle that themselves and are leading the way rather than being dragged*."

Several sources also noted the various certifications held by HDB. In 2014, HDB achieved the Australian Sustainable Barramundi Certification. In 2017, HDB became the first aquaculture facility in the Northern Territory to achieve Best Aquaculture Practices (BAP) certification. They are also members of Sedex (a collaborative platform for sharing responsible sourcing data on supply chains). One responded pointed out that "*This is probably more important for processors… From the end user point of view, it backs up what [HDB] are saying*."

Level of visibility

Visibility was a strong focus of the data in this case study and was believed to be a strength for HDB, both from the promotional visibility perspective and the physical locational perspective.

Promotional visibility is something that HDB are believed to be very proficient at. One respondent explained "*When they do take steps forward, they are quite vocal and don't let it go unheard. They really try to get out there in the media and share the story. They make sure everyone knows about the successes they are progressing*." Another respondent noted that "*They've got a really good website and they are always pushing the sustainability case*." HDB view media as a way of inviting people onto the farm, but in a controlled way. As one example of HDB's use of the media, a respondent explained *"[HDB] had floods earlier in the year and got a helicopter to get the fish out and thought let's get the news on board. It's an interesting story, it's a good news story, it got huge. People really appreciated the length [HDB] went to get them their fish. Videos were shared, pictures were shared, and people are still talking about it*."

Physical visibility was also believed to be a positive factor for HDB. One respondent explained "*Humpty Doo have been able to operate on a not so iconic piece of land that doesn't really have any interactions with any other sectors. It's kind of on marsh land. They are not in a significant area, it is quite isolated, it's back from the river so there is no visual impact, it's a good location*." Another pointed out that the farm site is based on the site of a failed rice plantation, a site that was already majorly disturbed "*And that was converted into something good that is sustainable. I think that probably really helped their case. They're not bulldozing mangroves to do it either. It doesn't have a visual impact on coastal systems. It's not like it's a big eyesore for the community either*." The fact that the site is located at the end of a road, not in full view, where they have no interactions with other sections, is perceived to be beneficial for their social acceptability.

Relationship building

HDB expends time and energy on engaging and creating relationships. HDB host many different groups at the farm site - government, media, and schools and training organisations -where they

explain how the farm works, harvesting and packing. One respondent noted that "*They host a hell of a lot of tours from visiting politicians or delegations or industry groups. They have pretty good relationships with the Minister's offices and agencies. That interaction helps to foster better communication. They invest time in networking and they invest time in sharing their experiences in a positive way*." Another respondent explained that "*Our students were undertaking a certificate 3 in aquaculture, they would take students out there for practical experiences. They were always really happy to help students to come out on placements*." One media article noted that "*I had the pleasure of going out to the Humpty Doo barra farm and I'll tell you one thing, its impressive*." (Lansley, 2015). It was also noted that they are not open to the public although they get a lot of people wanting to come out to visit. That is harder to manage as they are an operating farm. In addition to the farm visits, HDB have "*put people on the ground in the last 12 months in major centres to be a point of contact, to go out and speak to people, to spread stories*".

HDB also bring chefs onto the farm to show them first hand where the fish comes from as part of an arrangement they have with their middle customer. "*We give them a territory experience, they come to the farm, we take them on a croc experience, we take them out for dinner and they get to try our product in a few different ways. They really appreciate the effort we go to do that, they like getting to meet the family.*" They do note, however, that for a corporate company it may not be sustainable for them to undertake such a commitment.

Effectiveness of communication

Related to the visibility determinant, HDB are perceived as being very effective at communication. One participant noted that "*They have really created a culture around their people, around the way that they work. They are really telling stories about the pride in the product - the NT barramundi - and they employ local people. Maybe the family aspect that they apply to the communication may be different. They have an openness to sharing their stories*." Another explained that "*They should get credit for the way they communicate with the media. They've been very proactive, their messaging is very clear, they've had training. They are co-ordinated and have good direction. They have been on the front foot*."

HDB's main social media platforms are FB, Twitter and Instagram. They use Instagram to communicate with chefs and people interested in food and health. They use Facebook to share bigger stories. Twitter is used to communicate with mostly media and politicians. HDB also use LinkedIn to communicate with industry people, where they share stories about innovations in industry and sustainability. As one source noted: "*It would be several hours a day… It is time consuming… Social media is a channel you manage that you want people to keep coming back to. If you only talk about yourself it's boring. You need to know who your engaged people are and what they are interested in.*"

Demonstration of shared vision

Several sources pointed out that the Northern Territory, and the Australian nation in general, had a real love for Barramundi. One source explained that "*We are quite proud of the things we have and do, Barramundi has a lot of emotional connotations for indigenous people, for tourism, for amateur fishers, it's a lifestyle thing, and it's good to eat.*" Another suggested that this was the reason for a great consumer market for Barramundi in Australia. One media article even reported that this was the reason for receiving the NAIF loan "*NT chief minister Michael Gunner said it was appropriately iconic that the fish farm receive the funds, given the nation's love for barramundi*." (Australian Associated Press, 2018).

Demonstration of the generation and distribution of benefits

Benefits was not a huge focus of the discourse around HDB. The main benefits discussed in relation to HDB were employment, 'Growing the North' and other community benefits such as donations.

Employment often arises as an important benefit of aquaculture, particularly in regional locations. As one source noted "*Of course, they are a big employer too, I think they have 60 permanent staff at the moment. So that's important for those regions where there is not a lot of employment.*" A couple of sources also noted the importance for HDB of employing local people "*They have really tried to employ people with the right attitude, they want to employ locals where they can*."

Linked to the context determinant, a couple of sources noted the contribution that HDB are making towards the policy of 'Growing the North'. As one respondent pointed out "*I know the Northern Territory governments love them because they are a growing industry and they are pumping all this money into the economy and it's working well.*" Another source explained "*So there's a huge opportunity just domestically to grow the Northern Territory share of the market, and again, with the global demands for seafood increasing, there are very real opportunities for Northern Territory product I think to start exploring niche markets.*" To assist in development of the Barramundi industry itself, another source pointed out that HDB has also always committed to all the Australian Barramundi Farming Association research and development funding as well as the Industry Betterment Scheme.

Finally, a few sources identified benefits HDB had provided to local communities. One respondent explained that "*The other thing they do is they work closely with the Palmerston fishing club and they have junior fishing days out there. So, kids come out and they throw lures into the Barramundi pond and catch fresh Barramundi. So, they use that to teach kids how to fish and I think that's all donations from Humpty Doo. They invite fishing clubs in to do clinics and things like that*." As another example, HDB donated 20 whole barramundi to a free family event at Anbangbang Billabong.

Framing of the issue

Framing as a determinant did not present clearly in this case study. What was discussed by a couple of sources was HDB's ability to frame the conversation in a way that was beneficial to them.

In one example, HDB had an animal rights activist on the farm posing as an employee. He was found out because he was filming, and so another employee looked him up on Facebook, discovering that he was affiliated with an animal rights group Animals Australia. This group are developing an activist toolkit of photos and video of farms around Australia, including aquaculture. "*We weren't too worried about things, but we had a lot of wildlife after the floods, including pigs which eat the food and can be dangerous. We had to do a cull of the pigs, we know he was filming the piles of dead pigs which wasn't great. That was the worst thing they could get us on. So, we went to the media and told them that we had lots of wildlife out here and that we had to cull the pigs but that we gave them to the Croc farm for feed. We had footage of the pigs being picked up by the Croc farm and taken away for food. We put it out in the press and didn't hear anything from these people*." Another respondent explained "*That storytelling was really good. It's a really interesting narrative, it's wild, but it's a company with really good business practices, good production practices, but operating in that wild NT environment*."

The advice was that if you can see something that is going to be detrimental to you, beat them to it and then the conversation dies.

Connectedness to community

HDB are perceived as very connected to their community. Interview respondents and media pointed out that HDB is a family-based business and that the owners are 4th and 5th generation Territorians. To clarify the family connections, one media article explained that Dan Richards is a part owner in the farm with his step mum Julii Tyson and his dad Bob Richards, who bought into the business in 1994. One of the founding shareholders was a man named Max Williams whose daughter Tarun met Dan Richards at college and they are now married with three children Isabel, 13, Cameron, 11 and Alex, 8. One respondent pointed out "*The owners of the farm are 5th generation Territorians, they are local, everyone knows them, they employ locals and so they are fairly widely accepted*."

As noted by another respondent, this has a number of aspects "*Humpty Doo started small and have grown over 20 years. They have a connection with the people, they are a local company, they are not a foreign investor or big multi-national coming in.*" Indeed, corporatisation of aquaculture companies often has negative connotations "*Because [HDB] are family owned and operated [HDB] are able to overcome that a little. Family values still apply whether you have 6 staff or 60 staff. It gives an edge over the largest competitors. People don't trust big companies or corporations. Community has strong connection to family farms*".

Presence of key influencers

The presence of key influencers was only identified in traditional and social media sources and all related to top chefs. For example, "*But it's in the kitchen the fish really flourish. Chef James Kidman is turning the barra into fine cuisine*." (O'Brien, 2016). Other examples were tweets from HDB: "*Check out Head Chef Scott at Chophouse with his fabulous team (and some Humpty Doo Barramundi). Our Seafood Specialist Ian Stewart looks after these guys, with the help of Humpty Doo Barra rep Michael. Have you tried this beautiful Barra from the NT?*" and "*Saké Restaurant & Bar Hamer Hall have created some beautiful dishes with our Humpty Doo Barramundi Sashimi*". However, it was not clear how influential these chefs are.

Level of collective action

This determinant did not arise in this case study.

Unity of activity participants or industry

For HDB, a key element of their success has been the unity of their organisation. "*We all eat from the same table, if the business does well then everyone does well. An example of his staffs' commitment was their reaction to being cut off when the river flooded between harvest and dispatch, with tonnes of fish stuck on the farm, in early 2014. The trucks couldn't get in, he said. So, we got a helicopter and set up a logistics base 5km up the road to send the fish straight out. Everyone has a can-do attitude and I try to let (individuals) run their own show."* Bob Richards recognises the team when things go well. For example, "*It processed more than 50 tonnes of barramundi last week, including 34 tonnes in one day, which is a record for the farm. Managing director Bob Richards said it was a massive team effort.*" (Brann, 2016b). Another example is that the HDB workers, responsible for

running various operations, join forces to harvest and pack the fresh saltwater fish each week for distribution.

HDB have also contributed to the unity of Barramundi farming as an industry. As noted in the benefits determinant, HDB have contributed towards funding research and development for industry improvement. In addition, Bob Richards has been on the Australian Barramundi Farmers Association committee for many years.

Level of material and human resources

The main point arising in relation to this determinant focused on the personalities of those who managed HDB. The public-facing representatives of the company are believed to have a number of positive personality traits, all of which are believed to help their social acceptability. One participant noted that "*They are quite flamboyant and loud and happy. They create a positive interaction and they try to maintain that with everyone that they talk to. That really helps with public acceptance of them as individuals. You don't hear much about the company*." Another noted that "*Dan is such a lively character who is constantly putting out positive messages.*" Yet another was of the opinion that "*Julie would be really well known in the area, and they are known as fair dinkum NT people*".

4.4. Determinants self-assessment

Based on the findings detailed in the sub-sections 4.1 to 4.3, we have developed a self-assessment tool against the identified determinates, each with a list of indicator statements (Table 2).

The intention is for the fishery/aquaculture industry (e.g. individuals, businesses, sector bodies/associations, industry stakeholders) to use the assessment tool to track their progress against each determinant of societal support.

The self-assessment takes the user through a series of statements attached to each determinant. Users are asked to tick whether they 'always', 'sometimes' or 'not really'/'don't know' whether their fishery/aquaculture operation is achieving what is said in the statement. Using the traffic light system allows users to identify and prioritise determinants that may require action. The self-assessment tool requires the user to challenge themselves and be honest in self-reflection. It may also be useful for the fishery/aquaculture activity/operation to seek the views of stakeholders.

Note that three determinants (from the list in 4.2) are missing, including: 'Understanding and consideration of context', 'Belief in the strength of government oversight', 'Presence of fair decision-making processes by government') because these determinants are unlikely to be influenced by the work and actions of operations.

Table 2. Self-assessment tool for determinants of societal support

Determinants	**Indicator statements**	**Always**	**Some-times**	**Not really**	**Don't know**
Demonstration of the fishing/aquaculture activity acting in alignment with social norms *E.g. being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable*	We do what we say we will do (we keep our promises).				
	We take responsibility for our mistakes.				
	We respond to stakeholder concerns positively.				
	We show respect to other stakeholders.				
	We act professionally.				
	We are open and transparent about our operations.				
Evidence of sustainable and responsible fishing/aquaculture practices	We have evidence of sustainable practice (e.g. certification, scientific reports, third party endorsement)				
	We have evidence of responsible practice (e.g. code of practice, charters, voluntary measures).				
	We are improving our technology/practices to reduce our impact and improve science.				
	We are improving our knowledge and understanding to reduce our impact (e.g. learning from others regarding best practice).				
	We communicate about our sustainable and responsible practices.				
	We communicate about how we are managed and regulated.				
Level of visibility	When we are visible in our community (i.e. our operations and practices can be seen), it is viewed as positive.				
	Our products are available locally and differentiated.				
	Our operation and practices are regularly positively reported in the media.				
	We attend industry conferences and meetings.				
	We hold regular community meetings.				
Relationship building	We know who our stakeholder groups are.				
	We have a plan for long-term engagement with stakeholder groups.				

	We work with stakeholder groups on common issues and projects.				
	We aim to reduce conflict with stakeholder groups.				
	We emphasise the human aspect (the people and what they do and care about) of our operation and practices.				
	We go further than simple information provision and attendance at compulsory meetings, by working towards collaboration with stakeholders.				
Effectiveness of communication	We are proactive rather than reactive in our communications.				
	We have a clear and consistent message about our operation and practices.				
	We use several channels of communication (e.g. media releases, social media, public meetings, website).				
	We communicate with a range of audiences.				
	We listen to our stakeholders by means of two-way open conversations.				
Demonstration of shared vision	We have identified our expectations, needs and aspirations.				
	We have identified the expectations, needs and aspirations of our stakeholders.				
	We have identified common ground, and this forms a key part of our engagement.				
Demonstration of the generation and distribution of benefits	We have evidence of generating benefits (to the environment, to society, stakeholder groups or individuals).				
	We communicate with stakeholder groups about the benefits we generate.				
Framing of the issue	We have a clear strategy to address misinformation.				
	We have a clear and consistent positive message about our operation and practices.				
	We frame our operations and practices in terms of what is important to people (e.g. family, children's' futures, health, community well-being).				
Connectedness to community	We live in and/or are active in the community (e.g. involved in Rotary, community clubs, community projects).				
	We employ local people.				
	We sell our seafood locally.				
	We take steps to build community pride in our operation (e.g. running local festivals)				

Presence of key influencers	Our operation has strong leadership and voice.				
	We have external champions for our operation linked to different stakeholder groups.				
	We encourage the representation of all stakeholder groups in natural resource decision-making to enable all voices to be heard.				
Level of collective action	We have alliances in place to build a campaign when needed.				
	We have a strong network of supporters.				
	We have a network of engaged supporters who will actively participate in campaigns.				
Unity of fishing/aquaculture activity participants or industry	We have mechanisms in place to address inter-industry conflict.				
	We do not let inter-industry conflict play out in the public arena.				
	We stand together with a united voice.				
	We put competition aside and work together for the benefit of the whole operation/sector/industry.				
Level of material and human resources	We have the financial resources available to address the determinants of societal support.				
	We have the skills and capabilities available to address the determinants of societal support.				
	We have the networks in place to address the determinants of societal support.				

5. Discussion

5.1. Definition of societal support

The meaning of the term societal support, or variants such as social licence to operate, is contested (Parsons et al. 2014), said to be intangible (Prno and Slocombe, 2014, Colton et al., 2016) and "*is often taken for granted [by industries in management discourse] with little reflection*" (Parsons and Moffat, 2014). The literature review conducted as part of this project, considered research from a broad range of industries, and revealed that there was no standard definition of 'societal support' for the activities or policies of industries or organisations, although there was often overlap across the various definitions. The survey results from this project reflected this ambiguity and clearly revealed that there are multiple definitions and a lot of confusion regarding what the term 'societal support' means amongst those who work in, or with, the seafood industry in Australia.

There are implications of the Australian seafood industry not having a clear understanding of what 'societal support' means. The seafood industry is aware that activities and practices can lose local community and broader societal acceptance, even if they are profitable and supported by sound science (Shindler et al., 2004). Without a sound understanding of what societal support is and how to build trust in fishing and aquaculture activities among stakeholders, it is difficult for the seafood industry to determine how to proactively build societal support (Mazur and Brooks, 2018).

Thus, the first objective of this research project was to answer the question: Can societal-support be defined across wild-catch and aquaculture fisheries, and if so, how? In response, this study has proposed a working definition of societal support across wild-catch and aquaculture fisheries:

Societal support is a state of acceptance, approval or assistance for fisheries and aquaculture activities granted by stakeholder groups. It is located on a gradient from a low to high level of support. More specifically, societal support:

- *Is rooted in the beliefs, perceptions and opinions of stakeholders about a fishery or aquaculture activity. Stakeholders are those who are impacted by, or who can impact a fishery or aquaculture activity*
- *Is perceived differently by different stakeholder groups, and different stakeholder groups can grant different levels of support for a fishery or aquaculture activity*
- *Is not necessarily consistent across geographical scales, and the level of societal support for a fishery or aquaculture activity may differ at local, regional and national scales*
- *Is dynamic and changes over time as beliefs, perceptions and opinions are subject to change as new information is acquired. Societal support can be slow to gain but lost quickly*
- *Is determined by the context that surrounds the fishery or aquaculture activity and the external circumstances at the time*
- *Is determined by the behaviours, practices and actions of the people within the fishery or aquaculture operation while fishing or farming*
- *Is determined by the building of trusting relationships and meaningful engagement with stakeholder groups*
- *Is determined by the ability of the people within the fishery or aquaculture operation to have influence with stakeholder groups*

This working definition is not ground-breaking and does not necessarily depart hugely from many of the existing definitions - indeed, it synthesises them. However, the working definition has been compared with the case study findings, reviewed by the Steering Committee and HDR, and further refined. As such, the definition is more nuanced than many of the definitions currently provided in the peer-reviewed and grey literature to date. The definition covers the key elements of what societal support is (it is based on perceptions, differs amongst stakeholder groups and geographies, is dynamic, and is determined by the context, behaviours and capacities of the fishery/aquaculture operation in their ability to build trust and influence outcomes), but the definition is also necessarily general as pathways to building societal support will vary depending on the fishery/aquaculture activity in question. The tension between perceptions, relationships and environments indicates that the concept of societal support is complex and is not easily defined. We would argue that for it to be useful, users of this report accept the complexity of the societal support phenomenon and use the definition as a guide and in conjunction with those identified factors that determine the level of societal support (section 4.2) through applying these to their specific fisheries/ aquaculture activity.

5.2. Deriving the determinants of societal support

The second objective of this project was to answer the question: Which determining factors (social, economic, environmental and political) predispose wild-catch fisheries and aquaculture to decreased or increased likelihood of societal-support (as defined), based on historical cases? This study identified sixteen factors which contribute towards societal support (section 4.2), comprising aspects which (for the fishery/aquaculture activity) can be influenced by the context and government processes that surrounds the fishery/aquaculture activity and external circumstances, by internally-held values and practices of the fishing/aquaculture activity/actors, by stakeholder-facing behaviours and actions of the fishing/aquaculture activity actors, and the capacity of the fishery/aquaculture actors to have influence.

The initial list of determinants, based on a review of the societal support literature, also identified sixteen factors (Appendix F). However, upon comparing with the case study findings, one determinant was removed (Understanding and management of power asymmetries) and another was added (Unity of operation or industry). The former determinant was included in the initial list as the literature review revealed the importance of factors such as ‘empowerment’ and ‘inclusiveness’ (e.g. Falck and Spangenberg, 2014, Moffat and Zhang, 2014, Mease et al., 2018). However, these terms were often used in relation to other industries where it was perceived that marginalised communities were being excluded from participation in development of operations (e.g. mining developments in developing countries). In the case studies used for the purposes of this study, this issue did not arise except in the context of the determinant ‘Presence of key influencers’, however, that is not to say that this is always the case, and this determinant should, perhaps, be kept in mind. The latter determinant was added as discussions around unity of operation or industry arose frequently in the case study expert interviews and the media articles, and as such was clearly of importance for wild-catch fisheries and aquaculture in Australia. A lack of industry unity can weaken its standing in crucial fora, damage its reputation for coherent and purposive action, or delay the adoption of best practice (Marsh and Shaw, 2000, Williams, 2004), all of which are likely to affect societal support. This determinant is also linked directly to ‘key influencers’ which may include leadership, who can help to unite the industry.

5.3. Determinates of societal support of fisheries and aquaculture activities

This section critically analyses the determinants of societal support using the case study research and includes a cross-case study comparison. It examines differences in the nature of determinants of societal support for wild-catch fisheries and aquaculture activities, and the difference in determinants of fisheries/aquaculture activities with higher and lower levels of societal support. For the purposes of analysis, we have summarised the four case studies for each determinant in Table 3.

This study identified three external influences on societal support for wild-catch fisheries and aquaculture: the context, belief in the strength of government oversight, and perception of fair governmental decision-making processes. In the case studies, several contextual factors were clear, for example a history of conflict, government support for certification, national-level negative media, and a push for economic development. That context emerged as a determinant is unsurprising. The context-specific nature of societal support has been recognised within the academic literature (e.g. Prno and Slocombe, 2012, Lesser et al., 2017). This does, however, make it difficult to identify specific pathways to achieve societal support. An intervention by a fisheries/aquaculture activity in one context, may not have the same result as it would under another. Perhaps more surprising, was the clear role of government in increasing/ decreasing societal support for industry. Where stakeholders perceived the decision-making processes and management of the fishery/aquaculture activity to be poor/weak or unfair, the activity was less likely to have societal support; the converse was also true. Similarly, if government engagement with stakeholders was perceived to be poor and vice versa. In fact, it has been suggested that formal institutions, such as government, can shape societal support because they set the 'rules of the game' and as such can have enormous influence on social behaviour (Lee, 2011).

Two sets of internally-held values emerged as relevant to societal support during this study: demonstration of alignment with social norms, and sustainable and responsible practices. Some researchers have linked conformity to, or alignment with, social norms with the notion of legitimacy (Weber, 1978, Suchman, 1995, Boutilier and Thomson, 2011). It is likely that responsible practices also link to the concept of legitimacy, particularly if we take Suchman's (1995: 574) definition of legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions". Responsible practices associated with sustainability such as certifications and technologies are part of the paradigm in the desirable operation of fishing and aquaculture activities. We should note, however, that although the findings presented here suggest differently, some have proposed that legitimacy is more linked to an activity's right to exist than its fit with social norms (Parsons et al., 2014).

The largest category of determinants was that of stakeholder-facing behaviours. These included: physical and virtual visibility, relationship-building, communication, shared vision, generation and distribution of benefits, the framing of issues, and connectedness to community. There are clear intersections between some of these determinants. For example, connectedness to community, sharing a vision of the future, and generating benefits enables relationship-building, and there are clear links between relationship building and effective communication. Fishing and aquaculture activities operate within a complex web of stakeholder relationships; the need for a stakeholder approach (formulating and implementing processes which satisfy stakeholders' needs) is not unexpected when it comes to societal support. Indeed, the relationships between business and society have been studied for a long time (Kakabadse et al., 2005). Stakeholders are likely to develop differing understandings of what they

expect from an organisation or activity (ibid.), but this study has revealed clear expectations in the form of the determinants in this category. A fishing or aquaculture activity can no longer have relationships which are purely transactional but must consider them truly relational. Furthermore, stakeholder-facing behaviours should be approached with an emphasis on participation and not merely to secure societal support (Reed, 2008).

Lastly, this study has revealed four determinants which relate to the capacity for a fishing or aquaculture activity to have influence to build societal support: presence of key influencers, level of collective action, unity within industry, and level of material and human resources. These determinants link directly to the concept of power and the ability of one agent to exert influence on another (see: Simpson et al., 2015). The results presented here identified that well-resourced fishing and aquaculture activities with industry champions and industry cohesiveness realised higher societal support, whereas those with influential opponents, and a lack of stakeholder alliances and resources found that their societal support was lower. The rapid expansion of social media channels can have significant power over the perceptions of fishing and aquaculture activities, particularly through the emerging new influencer community (Booth and Matic, 2011) and the shaping of collective action (Margetts et al., 2015). As with many of the determinants listed, we can see clear intersections between these determinants. For example, key influencers with significant resources - such as money, time and education - can sway public opinion through local initiatives (Billing, 2018).

Table 3. Summary of the four case studies across each determinant of societal support

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
Understanding and consideration of the context	Little engagement of seafood consumers, communities or wider public; history of conflict with recreational sector; political support for recreational fishery; history of net fishery closures; recent lower catches of key recreational species; opposition to the supertrawler; fairy penguins killed in nets; little favourable media coverage of the fishery	Lack of public understanding about the sustainability and management of commercial fisheries and a fisheries minister supportive of commercial fisheries led to government funded MSC certification initiative including certification of Peel-Harvey commercial and recreational fishery; complex and dynamic relationship between commercial and recreational sectors, with conflict over resource access to shared species, but incentives to work together as well and a number of species not common target species; recreational fishers are able to use nets	Context important in this case. At same time as the Okehampton proposal, industry failures were under investigation in Macquarie Harbour on east coast of Tasmania. A damning ABC 4Corners report was aired presenting Tasmanian salmon aquaculture in a negative light. Locally, a woodchip facility in area of operation had closed leading to need for more jobs; fishmeal processing plant was associated with bad odour and wastewater issues	'Developing the North' government program in the Northern Territory considered to be important context for this operation. NT economy currently small, and there is government support to develop new business.
Belief in the strength of government oversight	Perception that fisheries management was poor; no harvest strategy, or management plan; perception that input controls were not restrictive enough; no resource sharing policy in place; management focus on biology; no demonstration by the management agency that the fishery was sustainable	The fishery is perceived to be well-managed especially with a harvest strategy and more research prompted by the MSC process; history, culture and political will of both sides of government to make difficult decision about fisheries to maintain stocks and prioritise sustainability	Media articles suggested little belief in government oversight. Much uncertainty regarding regulation and policy of aquaculture development in Tasmania. A government-led marine farming zone review undertaken to review aquaculture planning processes.	Determinant not present

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
Presence of fair decision-making processes by government	Science and evidence perceived as not used in decision-making processes; perceived lack of consultation and engagement with commercial fishers; perception of management agency weighting activities and communications to grow/support recreational fishing over commercial fishing; management agency perceived to not be politically-neutral	Formal resource-sharing processes in place between commercial and recreational sectors; joint MSC certification was perceived as fair by commercial sector; both recreational and commercial sectors believe the management agency favours the other	Many perceived problems with decision-making processes including a lack of transparency, government operating outside of their own decision-making processes, problems with the consultation process, a lack of independence by the Marine Farming Review Panel and the influence of wealthy and well-connected individuals on the process.	Government support in the form of a development loan considered unfair advantage by few stakeholders including wild-catch sector, largely due to a lack of understanding that it is a loan not a grant.
Demonstration of the fishing/aquaculture activity acting in alignment with social norms	A minority in the fishery did not demonstrate respect, responsibility and professionalism toward recreational fishers and management agency, and the industry did not respond accordingly to rectify; lack of public trust in seafood traders; the industry did not demonstrate how they did act in alignment with social expectations and values	Fishers are considered to be acting transparently and honestly with the public and recreational sector; the fishery is considered to be professional and committed to their industry; implementation of voluntary code of practice has shown responsiveness to potential conflict with recreational fishers	Perceptions of lack of honesty and transparency from Tassal.	HDB is perceived to be honest and genuine.
Evidence of sustainable and responsible fishing/aquaculture practices	Despite scientific evidence of sustainable and responsible practices, these were not effectively demonstrated or publicised; recreational fishing stakeholders perceived that the fishery was unsustainable and destructive; general public perception of nets as unsustainable; fairy penguins killed in nets was widely	The Peel-Harvey fishers are perceived to be responsible and sustainable; MSC and resulting harvest strategy important for demonstrating and communicating sustainability although this has been challenged by recreational fishing stakeholders; good practices in commercial fishery demonstrated through code of practice implemented; industry	Tassal have ASC certification and working with WWF, and have invested in new technology, but there are perceptions that salmon farming is unsustainable. Concerns regarding the size of the operation, waste and pollution impacts on habitat, commercial fisheries species and seals.	HDB is perceived as sustainable and responsible. Owners of operation have obtained scholarships to identify cutting-edge methods of production and are 'a learning organisation'. Production system has been set up to contribute towards local wetland rehabilitation.

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
	publicised in media; no code of practice to reduce conflict with recreational fishers	working with eNGOs on estuary environmental issues; more accurate data on recreational fishing is required		
Level of visibility	Lack of physical visibility of fishery in communities meant little community connection; no traceability or branding of PPB fish; highly visible commercial fishing to recreational fishers resulting in conflict	Fishery is physically visible in the community, people can see fishers operating, buy their fish, and there is an annual crab festival; publicity about MSC has enhanced visibility; commercial fishers are perceived to be a part of the town; commercial fishers give space to recreational fishers to avoid conflict	The operation would be physically visible, located in a scenic area of high recreational value, and close to the Maria Island National Park, visibility was perceived to be negative.	Not physically visible as operation is located far from local community and other water users which is perceived as positive. Visibility online and in promotion of HDB was perceived as positive, sharing their stories and showing sustainable practices.
Relationship building	None or little effective engagement by industry with seafood consumers, tourism industry, recreational sector and decision makers. Poor and damaging relationship between industry and the management agency	History of deep and broad engagement with a diversity of local stakeholder groups by industry; recreational and commercial sector working relationship has been perceived to be good and based on common ground; MSC process helped to galvanise stakeholders and include non-fishing stakeholders	Tassal undertook substantial engagement with local councils and communities during development stage but the community felt they were not open or that the relationship was one-way. The debate became important at the national level.	HDB undertakes substantial engagement with a diversity of stakeholder groups including government, students, supply chain and chefs. HDB do tours of the operation in addition to student placements and local competitions. HDB also take opportunities to go out and build relationships
Effectiveness of communication	Ineffective communication from industry with stakeholders including a lack of information provided about the fishery and its practices with opinion and misinformation filling the gap; few open communication channels; combative communication style of	Industry has been effective communicators with stakeholders; industry is media-savvy; industry engage in open dialogue with stakeholders; MSC was seen as a communication tool and used well by industry	Company communicated substantially at local level about its sustainability practices and reasons for its location. Substantial miscommunication by opposition groups.	Invested time in communication, particularly on social media, and perceived to be pro-active, clear and effective in telling their story (pride of product, employing local people, family business). Use a variety of social and traditional media platforms promoting HDB.

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
	industry with decision-makers and management agency			
Demonstration of shared vision	Industry did not demonstrate a shared vision nor met expectations of stakeholders; mismatch of vision between industry (sustainability, way of life) and recreational sector (better fishing experiences, healthy activity for families); industry did not promote 'fish as food' for Victorians; mismatch of visions within the industry (right to fish v resource sharing)	Cultural alignment between industry and community on providing seafood consumers with crab; Industry are perceived to be in environmental alignment with community on fisheries sustainability, as environmental stewards; commercial and recreational sectors have slightly different visions of sustainability (industry) versus abundance (recreational) creating conflict	Determinant not present	Cultural alignment between industry and community regarding the iconic Barramundi.
Demonstration of the generation and distribution of benefits	Failure to demonstrate the benefits of the industry to the environment and society (environmentally benign, good stewardship, local, fresh, sustainable seafood source, providing a diversity of species including affordable fish, contributing to the economies of communities)	Benefits of the industry are demonstrated to a range of stakeholder groups, including the community (resource sharing, food provision); MSC has brought benefits to recreational fishing, environmental and government stakeholder groups (research, non-fishing consultation, improved relationships); industry has benefited economically and socially from MSC	Local job creation was perceived to be a benefit by some but questioned by others who live in the local community. The benefit of jobs was not seen as important to people who didn't live locally	Clear benefits of providing jobs in low-employment region, contributing to 'Growing the North' policy, direct local community contributions (e.g. donations, fishing days)
Framing of the issue	No consistent or clear and simple framing of the industry that was relatable to stakeholders; no 'human story' or portrayal of positive social or economic benefits of industry, only negative	The industry is largely framed positively (sustainable, responsible practices, collaborative, passionate, hard-working, small-scale, good leadership, providing benefits and connection to	Opposition groups were successful at framing the operation in a negative light and used emotional arguments and misinformation (expanding aquaculture throughout the east coast, pollution is	Skilled communicators at HDB positively frame stories. For example, turning a potentially negative story about pig culling into a positive story about

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
	impacts; argument on impacts of net closure to consumers was perceived to be elitist;	community); the recreational sector is often framed negatively (non-compliance with regulations, poor data, putting pressure on resources); MSC frames both commercial and recreational fisheries positively	equivalent to human waste, children future is bleak). Tassal attempts to address concerns did not have effect.	abundant wildlife and feeding the crocodile farm.
Connectedness to community	Little connection to communities and seafood consumers (see visibility determinant)	Fishery connected to the community; eating crab is culturally important to the community; most of the catch is sold locally; MSC has enhanced connection; industry involvement in Crab Fest, working with kids in the community, providing donations	Tassal was perceived to not be connected to community. They were perceived as greedy multinational, and big industry. Belief that all profits leave the state.	HDB is perceived to be connected to the community. They are a local, multi-generational 'Territorians', family-based business, who employ locals and are well known throughout the area. They also grow an iconic native species which the community value.
Presence of key influencers	Lack of industry champions; lack of influential leaders in fishery; industry peak body had little influence; attempts to influence politicians by industry campaigners unsuccessful; in contrast powerful and influential personalities and grass roots community lobby group for recreational fishing had influence with decision-makers	Key influencer and leader for industry is present; supportive fisheries minister of the industry (until 2013); influential local natural resource management organisation supports the industry; recreational peak body is also influential but sometimes in opposition of the industry	Perception that Tassal tried to use influential community figures at local level but overall lack of industry champions. In opposition, several key influencers were effective at the state/national level including former Greens leader Bob Brown and AFL footballer Nick Riewoldt.	Some high-profile supporters for HDB identified in media, all top chefs. Unclear on how influential these chefs are.
Level of collective action	Lack of alliance building by industry with potentially supportive stakeholder groups; 2015 'Save the Bay' campaign did build alliances but was too late for building enough support; In	Alliances built by industry with local stakeholder groups, including environmental organisations; MSC built alliances and unity with stakeholders, particularly between	Well-orchestrated collective action by opposition groups from grass roots up, alliances built between environmentalists, fishers, recreational anglers, second-home owners. Many public protests held	Determinant not present

Determinants	Port Phillip Bay	Peel-Harvey	Okehampton Bay	Humpty Doo
	contrast the recreational sector was effective at alliance building and collective action against the commercial fishery	the recreational and commercial sectors although not on all issues	and effective social media campaign.	
Unity of fishing/aquaculture activity participants or industry	The industry was not united for a number of reasons including some fishers wanting a buy-out from net ban while others wanted to continue to fish, different levels of dependence on the fishery, and the nature of fishers being individualistic and competitive; lack of unity and collaboration along the market chain/secondary sector; lack of leadership required to unite the fishery	Cohesive and united fishermen's association with 100% membership; strong fishery leadership; no internal conflict	At the time of the proposed development, the salmon industry was in open public conflict, particularly between the two largest producers of salmon in Tasmania.	Unified operation - all employees work together and are recognised by owners for their work. HDB have also contributed to unifying the Barramundi farming industry through research and industry association
Level of material and human resources	Fishers did not have capacity or skillset for building societal support and were unprepared to change; there was a reliance on the peak body to effectively lobby but it did not have human or financial resources, or lobbying and promotion expertise, and had a recent change of EO before the 2014 election; while the 'Save the Bay' campaign had raised resources it was after the election; management agency was under-resourced and reduced in capacity to enable effective relationship-building and management	MSC certification resourced by government; management agency well-resourced to provide science, management and compliance; fishery has human resources required for leadership, engagement, and open to taking new opportunities	Not a determinant raised about Tassal. Financial resources in opposition were perceived to be important for success of opposition campaign.	High level of human resources for HDB and positive personality traits of owners perceived to be good for building support.

5.3.1. Differences in determinants between wild-catch fisheries and aquaculture

The case studies revealed differences between the determinants of societal support for wild-catch fisheries and those of aquaculture activities. These differences may be a feature of the case studies selected and as such inferences for wider fisheries and aquaculture sectoral differences should be treated with caution.

Firstly, results revealed a difference between the case studies regarding the scale of the activity analysed. This may affect a direct comparison between wild-catch fisheries and aquaculture. The two fisheries case studies selected were bounded by a fisheries sector or licence type, made up of several fishing operations/businesses. In comparison, the aquaculture case studies were an analysis of individual business operations rather than a species sector (e.g. the salmon sector). This may have affected the nature and importance of the set of determinants which relate to the capacity to influence; particularly key influencers, unity, and material and human resources. For wild catch fisheries, societal support is often required at the fishery sector level, yet organising many distinct individual (and individualistic) operators (who may be geographically disparate) to voluntarily work together and to have a common goal and message so as to have influence is difficult (Hart and Pitcher, 1998, Sutton and Rudd, 2016). This is where leadership and having the human (and potentially financial) resources available becomes particularly important. The role of key influencers and the capacity to lead and engage was clear in the Peel-Harvey fishery which had a strong and cohesive industry association and industry leader, especially when compared to Port Phillip Bay where these determinants were perceived by interviewees as lacking. While the determinants relating to the capacity to influence were also evident in the aquaculture case studies, they were often referenced to in terms of groups which were in opposition to the activity (also often a collection of individuals/groups), rather than within the farming activity itself. This suggests that we more often perceive influence to affect societal support within the frame of 'interest collectives'. Indeed, it has been suggested that influence originates in collectives (King, 2008). Unlike fisheries, where collectives are common even if they are not cohesive (see e.g. Ovando et al., 2013), this is not the norm for large-scale commercial aquaculture producers such as those analysed in this study. Building on this idea, when there was a lack of unity in the industry (i.e. Tasmanian salmon sector not acting as a collective but in opposition), this was perceived to negatively affect societal support.

Secondly, the results revealed that demonstrating that 'the activity was acting in alignment with social norms' (being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable) and demonstrating 'a shared vision between the activity and the stakeholder groups and community' (meeting expectations, needs, aspirations of stakeholders and finding common ground between stakeholder groups and the activity despite different worldviews) both appeared more clearly as determinants of societal support in the wild-catch fisheries cases than in the aquaculture cases. Firstly, it should be noted, that a shared vision appeared to be difficult to resolve in wild-catch fishing when there is a competing recreational sector. In the wild-catch case studies, the commercial fishery vision was to have a sustainable harvest of the resource (for everyone), while the recreational vision was to have better angling experiences through abundant fish stocks. These are subtly different visions but there is distinction.

A reason for the differences between wild-catch fisheries and aquaculture in the determinants about aligned social norms and vision with stakeholders may be due to wild-catch fishing being a more traditional and established or embedded industry in communities (e.g. through being historically important or providing fish directly from the boat). Indeed, it is reported that many of the iconic

coastal villages of Australia have a close association with fishing (both commercial and recreational) (Clark, 2017, Knuckey et al., 2014). Aquaculture, however, is a modern industry which leans more towards industrial-scale production (at least in the cases examined) and is often viewed as 'big business' (Vince and Haward, 2017); entities that many feel have taken over the world to the detriment of people and the environment (Doane and Abasta-Vilaplana, 2005). For this reason, it may be that stakeholders assume that aquaculture businesses will not fit in with their wants and needs and do not even consider whether they do. This difference was also reflected in the determinants 'demonstration of the generation and distribution of benefits' and 'connection to community' which for the wild-catch fisheries cases had a focus on food provision and being 'part of the town' compared to aquaculture where the focus was more on providing employment opportunities. Thus wild-catch fisheries may be perceived to have stronger cultural importance to society (indeed the cultural importance of fishing has been noted elsewhere; see e.g. Urquhart and Acott, 2014) and therefore must have a closer alignment to community visions and expectations.

A final clear difference between the wild-catch fisheries and aquaculture cases related to the visibility of operations. For wild-catch fisheries, being physically visible in the community and having identifiable, traceable and locally available products were perceived to be important for building societal support. Visibility was also recognised as important for maintaining the connection of the fishery to community which may link directly to the cultural importance aspect discussed earlier., as However, if visible, the fishery's practices needed to be perceived to be responsible as well and was particularly important for potential opponent stakeholder groups such as recreational anglers and environmental groups. In contrast, it appeared there was a preference that aquaculture operations are hidden from view. These findings may be explained using the concept of 'place attachment', where individuals develop bonds with a place based on specific features of that place. Many studies have found that the physical presence of fishing contributes to a sense of place for individual and community identities (see e.g. Urquhart and Acott, 2014, Urquhart and Acott, 2013, Worster and Abrams, 2005). Linked to the visibility of the act of fishing are the romantic sights of picturesque harbours and boats, harbourside work such as net-mending, and infrastructure such as fishing huts and markets, all of which contribute to place identity. Development proposals that are perceived to be 'industrial' or cause environmental degradation, such as aquaculture, can lead to a disruption to place attachment (Devine-Wright and Howes, 2010, Spyce, 2009), although this is not always the case (Broto et al., 2010).

5.3.2. Differences in determinants between higher and lower levels of societal support

The case studies revealed differences in every determinant between higher and lower levels of societal support suggesting it is important to consider all determinants when seeking to build societal support. However, the determinants with significant differences and those which may not have been previously considered by the fishing and aquaculture industries are the focus of this section.

In those cases where societal support was higher, it was clear that it takes time to build support and that support cannot be achieved (and should not only be considered) at the point of crisis. The foundation of building support is in the development of relationships with stakeholders. This has been identified in other FRDC-funded research in relation to building societal support (e.g. Mazur and Brooks, 2018, Mazur et al., 2014, Ogier and Brooks, 2016) and was highlighted in the literature review (e.g. Olsen et al., 2012, Mercer-Mapstone et al., 2018). In those case studies where engagement was genuine, deep and personalised, occurred across a broad range of stakeholder groups

at different scales (local to state/national) and over a long period of time, higher societal support was evident. For example, in the Peel-Harvey fishery, even with stakeholder groups that were traditionally opponents of the fishery (i.e. recreational sector), the personal, one-to-one relationships were respectful and honest. In the case of Humpty Doo Barramundi the relationships with stakeholders were also considered genuine and there was an appreciation for the time they invested in sharing their experiences with others. Furthermore, strong relationships can have cascading effects. In the Peel-Harvey case, building relationships with community stakeholders (e.g. PHCC, local families) resulted in these stakeholders spreading positive stories about the fishery including about their sustainable practices and behaviours. In contrast, in the Okehampton Bay case study, relationship building was limited to the affected community and because Tassal was identified as a large multinational company, engagement was perceived to be superficial. In the case of Port Phillip Bay, there was little effective engagement or relationship building with stakeholder groups particularly with those that may have supported the industry (e.g. consumers, communities), and in fact there were poor and damaging relationships with government, caused in part by a *"guns blazing and ready to fight'* approach. Therefore, when the crisis point arrived (the election promise to ban netting) the relationships with stakeholders, which were necessary for the 'fight to Save the Bay' to be effective, were not in place.

Linked to relationship building at the local level, a strong connection to community and relationships with community groups also arose as a key determinant in the cases with higher societal support. In Peel-Harvey, the fishers are connected to the community through their activities and promotion but also through selling their fish locally, participating in local events such as Crab Fest, and volunteering their time on community projects. Similarly, Humpty Doo Barramundi are involved and well-known in their local community as a family-business with local values, providing jobs for local people. This need for connection to community has been identified elsewhere, perhaps most importantly in a study on support for the wild catch commercial fishing industry in Southeast Queensland (Baldwin et al., 2019), but also in mining in Australia and Africa (Kemp and Owen, 2013, Brueckner et al., 2013).

The importance of effective and consistent communication over time was also a clear determinant for building societal support and again is supported by the wider literature (Cole, 2017, Hall and Jeanneret, 2015). Cases with higher societal support communicated in a way which was perceived to be open and genuine, proactive rather than reactive, and they substantially contributed to the framing of their activity and issues as they arose. Both the Peel-Harvey fishery and Humpty Doo Barramundi prioritised generating opportunities to spruik a clear and consistent message in the media and in local and broader forums, talking about the benefits of their activities, their core values (which included sustainability), and presenting their story and 'human face'. This helped to maintain their visibility in the community, and it could be argued that it has meant they have been able to control the framing of their activity. These operations have been mature and proactive, particularly in addressing potentially difficult issues and minimising the effects of misinformation. For example, when Humpty Doo Barramundi was infiltrated by an animal rights activist filming a cull of pigs on the farm, they approached the problem with transparency, contacting the media to tell their story of why they needed to cull the pigs, effectively circumventing a potentially negative media story through being open and honest. In contrast, Tassal and the Port Phillip Bay fishery and advocates were perceived to be poor communicators. In fact, there was a lack of public knowledge regarding the existence of the Port Phillip Bay fishery. This lack of communication allowed the opinions of opponents and misinformation about the fishery/aquaculture activity to fill the gaps and frame their activities.

Finally, the case study research revealed that unity of the fishing/aquaculture activity participants or industry is a critical determinant of societal support. This determinant was not foreshadowed in the literature review but was clearly emphasised by case study interviewees. Where non-unity and open conflict was identified, societal support was lower, whereas industry appeared to be cohesive in those cases with more societal support. One interviewee suggested that wild-catch fishers are not united because of the nature of the job, that it is competitive and individualistic. Whilst fishers may be characterized as 'uncooperative individualists' (Jentoft and Davis, 1993), the Peel-Harvey fishers appear unified in their dedication to the fishery and in their understanding that if they do not work together, their future may be compromised. The difference in unity between the two wild-catch fisheries may be due to the wide dispersal of the larger group of Port Phillip Bay fishers compared to fewer Peel-Harvey fishers who all live in the same community. Proximity in social space does not automatically lead to unity but it does provide the potential for being part of a 'group' (Bourdieu, 1996). However, the difference was also attributed to the existence of strong industry leadership, which in the Peel-Harvey case was a strong uniting force, and in Port Phillip Bay did not exist. In the cases of the aquaculture companies, unity of the broader industry (i.e. the salmon farming and barramundi farming industry) appeared important especially when it came to crisis point. It was believed that the open conflict (in the media) that occurred between Tassal and Huon Aquaculture contributed to reducing the level of societal support for Tassal's Okehampton Bay development.

5.4 Detecting, assessing and monitoring societal support

The third and final objective of this study was to identify how societal-support can be detected, assessed and monitored for Australian wild-catch and aquaculture fisheries, and if so, to what extent.

The review of the literature revealed few methods for detecting, assessing and monitoring societal support beyond perceptions elicited through surveys (e.g. Moffat and Zhang, 2014, Sajid, 2014, Zhang et al., 2015), discourse analysis (e.g. Bice, 2014, Lefsrud et al., 2015) or risk assessment-type methods which focus on how a company handles its environmental and social risks (Schäfer, 2016). It may be that this is because social license pressures are inherently imprecise and malleable (Gunningham et al., 2004). A key method which deviates from those was that developed by Boutilier (n.d), the SocialLicense™ method – a method more similar to the self-assessment tool provided in this report. This method uses twelve agree/disagree statements to measure the social license of a mining operation as granted by stakeholder group leaders who have had direct dealings with the mine (Table 4).

As Table 4 shows, there is some overlap between the twelve statements developed by Boutilier and the self-assessment tool presented in section 4.5. However, in many instances, the statements developed by Boutilier are further defined by the statements proposed in this study. Four of the statements used in the SocialLicense™ method are not included in the self-assessment tool in this study: We're satisfied with our relationship with [Company]; We can gain from a relationship with [Company]; The presence of [Company] is a benefit; and [Company] gives more help to those who it affects more. The first three statements are normative statements (value judgements) from a stakeholder's perspective. The final statement relates to equity.

It should be noted that the tool developed in this study is an inward-facing or self-assessment as opposed to Boutiler's outward-facing tool intended to be completed by stakeholders. As such, the two approaches have different audiences and aims. However, it may be that a combination of the two approaches could provide an even more nuanced understanding of the level of societal support an

operation holds, or that the outward facing approach could validate the inward-facing one. Alternatively, given that the tool developed in this study is substantially more comprehensive and nuanced, it may be that using this self-assessment tool both for internal critical reflection and as one which can be completed by stakeholders may provide an even deeper understanding.

We must note that the self-assessment tool provided here is not an 'objective' assessment tool. It relies on the person using it to make judgements about their own performance (just as Boutilier's tool relies on the stakeholder to make judgements about an industry's performance). People tend to hold overly favourable views of their abilities in many domains and this can lead to erroneous conclusions and unfortunate choices, as well as an inability to recognise it (Kruger and Dunning, 1999). We all have varying capacity for self-reflection, especially when it requires a willingness to recognise the things we are not doing well and may need to do better. As such, it may be too easy to go through the assessment and tick 'yes' for every question without really taking time to reflect.

Table 4. Comparison of indicator statements used in Boutilier's SocialLicense™ method and those indicator statements proposed in this study

SocialLicense™ indicator statements	**Proposed indicator statements**
[Company] shares information on matters that affect us	We are open and transparent about our operations.
	We have a clear and consistent message about our operation and practices.
	We frame our operations and practices in terms of what is important to people (e.g. family, children's' futures, health, community well-being).
[Company] contributes to regional well-being	We have evidence of generating benefits (to the environment, to society, stakeholder groups or individuals).
	We live in and/or are active in the community (e.g. involved in Rotary, community clubs, community projects).
	We employ local people.
	We sell our seafood locally.
[Company] takes account of our interests	We emphasise the human aspect (the people and what they do and care about) of our operation and practices.
	We go further than simple information provision and attendance at compulsory meetings, by working towards collaboration with stakeholders.
	We have identified common ground, and this forms a key part of our engagement.
[Company] respects our way of doing things	We show respect to other stakeholders.
We have similar vision for future as [Company].	We have identified the expectations, needs and aspirations of our stakeholders.
[Company] treats everyone fairly	We encourage the representation of all stakeholder groups in natural resource decision-making to enable all voices to be heard.
[Company] listen to us	We respond to stakeholder concerns positively.
	We listen to our stakeholders by means of two-way open conversations.
[Company] shares decision-making on matters that affect us	We work with stakeholder groups on common issues and projects.
	We do what we say we will do (we keep our promises).

Statements not included in SocialLicense™	We take responsibility for our mistakes.
	We act professionally.
	We have evidence of sustainable practice (e.g. certification, scientific reports, third party endorsement)
	We have evidence of responsible practice (e.g. code of practice, charters, voluntary measures).
	We are improving our technology/practices to reduce our impact and improve science.
	We are improving our knowledge and understanding to reduce our impact (e.g. learning from others regarding best practice).
	We communicate about our sustainable and responsible practices.
	We communicate about how we are managed and regulated.
	When we are visible in our community (i.e. our operations and practices can be seen), it is viewed as positive.
	Our products are available locally and differentiated.
	Our operation and practices are regularly positively reported in the media.
	We attend industry conferences and meetings.
	We hold regular community meetings.
	We know who our stakeholder groups are.
	We have a plan for long-term engagement with stakeholder groups.
	We aim to reduce conflict with stakeholder groups.
	We are proactive rather than reactive in our communications.
	We use several channels of communication (e.g. media releases, social media, public meetings, website).
	We communicate with a range of audiences.
	We have identified our expectations, needs and aspirations.
	We communicate with stakeholder groups about the benefits we generate.
	We have a clear strategy to address misinformation.
	We have a clear and consistent positive message about our operation and practices.
	We take steps to build community pride in our operation (e.g. running local festivals)
	Our operation has strong leadership and voice.
	We have external champions for our operation linked to different stakeholder groups.
	We have alliances in place to build a campaign when needed.
	We have a strong network of supporters.
	We have a network of engaged supporters who will actively participate in campaigns.
	We have mechanisms in place to address inter-industry conflict.
	We do not let inter-industry conflict play out in the public arena.
	We stand together with a united voice.

	We put competition aside and work together for the benefit of the whole operation/sector/industry.
	We have the financial resources available to address the determinants of societal support.
	We have the skills and capabilities available to address the determinants of societal support.
	We have the networks in place to address the determinants of societal support.

6. Recommendations and further development

We believe that all sixteen determinants of societal support should be considered by all those working in Australian wild-catch fisheries and aquaculture-related activities. However, some of the findings of this study engender recommendations specific to three key groups: the fishers/aquaculture companies themselves, the fisheries/aquaculture associations and peak bodies, and the fisheries/aquaculture managers.

For fishers/aquaculture companies:

- Be aware that building societal support takes time, is difficult to build only in times of crisis, and is dynamic (can be lost quickly). It is now an important part of the job of fishing/aquaculture activities.
- Take time to understand the context within which the fishing/aquaculture activity is operating and how this may influence different stakeholders support for the activity. Determine what contextual factors can be influenced and what is outside control.
- Identify where there are synergies between the fishery/aquaculture operation's vision of the future (what is important) and the community's vision of the future and work towards having a shared vision and meeting the community's expectations.
- Undertake genuine, deep and personalised engagement with stakeholders; share experiences with others, participate in local events, build relationships even with those that may oppose the activity or can be difficult to work with.
- For wild-catch fisheries, be visible in the community but demonstrate responsible practices
- For aquaculture operations, consider how new or existing developments may affect the community and stakeholders' sense of place and work towards reducing any perceived negative impacts.
- Engage in communication (through traditional/social media and in forums) that is proactive rather than reactive, that is constructive and transparent and uses positive framing to shape and control the story that is told about the fishing/aquaculture activity.

For fisheries/aquaculture associations and peak bodies:

- Be aware that building societal support takes time, is difficult to build only in times of crisis, and is dynamic (can be lost quickly). It is now an important part of the job of fishing/aquaculture activities.
- Ensure a united public face and work on creating a unified position and cohesiveness between individual operators within the fishing/aquaculture activity.
- Identify and build industry champions who have influence with stakeholder groups (particularly government and decision-makers) and ensure they have the appropriate skills, capacity and resources.
- Identify all of the stakeholder groups that impact or are impacted by the fishery/aquaculture activity and have a strategy to engage with them.
- Build alliances and collaborations with stakeholder groups.
- Engage in communication (through traditional/social media and in forums) that is proactive rather than reactive, that is constructive and transparent and uses positive framing to shape and control the story that is told about the fishing/aquaculture activity.

For fisheries/aquaculture managers:

- Put in place decision-making processes that are transparent to stakeholders and enable fair consideration of all stakeholder values and interests.
- Demonstrate how fisheries/aquaculture activities are researched (including findings) and how they are managed to meet all stakeholder expectations.
- Engage in communication (through traditional/social media and in forums) that is constructive and transparent and ensure that communications equally and fairly present all fisheries and aquaculture sectors and stakeholders

Furthermore, we recommend that all three groups use the self-assessment tool to critically and honestly reflect on their role in achieving societal support for wild-catch fisheries and aquaculture. If done regularly, this will assist these groups in identifying and monitoring levels of societal support as well as enabling them to regularly address the relevant determinants of societal support. It may also mitigate against any complete loss of support. We are, however, aware that addressing the determinants is likely to be challenging because a) it requires taking on activities such as engagement and communication which may not traditionally considered to be part of the job; b) it requires a high level of leadership; and c) it may require different financial and human resources and capacity/skills to those traditionally present.

It would be particularly useful if, where the self-assessment tool is used, and where interventions are undertaken to address the determinants of societal support based on the self-assessment, this is recorded to allow researchers to test and further refine the tool. Given the self-reflective nature of the self-assessment tool (and the limitations associated with that), evaluation and monitoring of the use of the tool would also enable further development.

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Appendix A: Survey Questions

1. Tell us about you, do you work in wild-catch fisheries or aquaculture?

2. Do you consider yourself one or more of: a) academic/research; b) decision-maker/policy-maker/manager; c) industry; d) NGO or community group; or e) other?

3. What does having societal support/license in fisheries and aquaculture look like to you? Please identify indicators or factors that would be present if support/license existed.

4. What does a lack of societal support/license in fisheries and aquaculture look like to you? Please identify indicators or factors that would be present if support/license did not exist.

5. Are there differences between societal support/license for wild-capture fisheries and societal support/license for aquaculture?

6. If you answered 'Yes' to 5, please describe how societal support/license is different between wild-capture fisheries and aquaculture.

7. Who are the stakeholders (i.e. those affected by or interested in fisheries and aquaculture)? And, who are the key influencers (i.e. those that have an impact on social license/acceptability)?

Appendix B: Literature included in literature review

Authors	Year	Title	Journal
Anderson C et al.	2012	Exploring CCS community acceptance and public participation from a human and social capital perspective	Mitigation and Adaption Strategies for Global Change
Baines J & Edwards P	2018	The role of relationships in achieving and maintaining a social licence in the New Zealand aquaculture sector	Aquaculture
Barben, D	2009	Analyzing acceptance politics: Towards an epistemological shift in the public understanding of science and technology	Public Understanding of Science
Bice, S	2014	What Gives You a Social Licence? An Exploration of the Social Licence to Operate in the Australian Mining Industry	Resources
Boutilier RG & Thomson I	2011	Modelling and measuring the social license to operate: fruits of a dialogue between theory and practice	N/A
Boutilier RG et al.	2012	From metaphor to management tool: How the social license to operate can stabilise the socio-political environment for business.	International Mine Management 2012 Proceedings
Colton J et al.	2016	Energy projects, social license, public acceptance and regulatory systems in Canada: A white paper	N/A
Cullen-Knox C et al.	2017	The social licence to operate and its role in marine governance: Insights from Australia	Marine Policy
Dare M et al.	2014	Community engagement and social licence to operate	Impact Assessment and Project Appraisal
Falck WE & Spangenberg JH	2014	Selection of social demand-based indicators: EO-based indicators for mining	Journal of Cleaner Production
Flechard M et al.	2007	The changing relationships between forestry and the local community in rural northwestern Ireland	Canadian Journal of Forest Research
Ford RM & and Williams KJH	2016	How can social acceptability research in Australian forests inform social licence to operate?	Forestry
Fox E et al.	2013	Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process	Ocean and Coastal Management
Gall SC & Rodwell LD	2016	Evaluating the social acceptability of Marine Protected Areas	Marine Policy
Gopnik M et al.	2012	Coming to the table: Early stakeholder engagement in marine spatial planning	Marine Policy
Hall N et al.	2015	Social licence to operate: understanding how a concept has been translated into practice in energy industries	Journal of Cleaner Production
Hanna P	2016	The social impacts of large projects on Indigenous Peoples: Procedures, processes and protests	N/A
Harvey B	2014	Social development will not deliver social licence to operate for the extractive sector	The Extractive Industries and Society

Haward M et al.	2013	Small fish in a big pond: lessons from the Abel Tasman controversy	Australian Journal of Maritime & Ocean Affairs
Heikkinen HI et al.	2016	Challenges in acquiring a social licence to mine in the globalising Arctic	Polar Record
Hestres LE	2014	Preaching to the choir: Internet mediated advocacy, issue public mobilisation and climate change	New Media Society
Jijelava D & Vanclay F	2017	Legitimacy, credibility and trust as the key components of a social licence to operate: An analysis of BP's projects in Georgia	Journal of Cleaner Production
Kelly R et al.	2017	Social licence in the marine sector: A review of understanding and application	Marine Policy
Koivurova T et al.	2015	'Social license to operate': a relevant term in Northern European mining?	Polar Geography
Lacey J et al.	2012	Exploring the concept of a Social Licence to Operate in the Australian minerals industry	N/A
Lacey J et al.	2016	Social licence as social contract: procedural fairness and forest agreement-making in Australia	Forestry
Larson DL et al.	2011	A framework for sustainable invasive species management: Environmental, social, and economic objectives	Journal of Environmental Management
Leith P et al.	2014	Science and Social License: Defining Environmental Sustainability of Atlantic Salmon Aquaculture in South-Eastern Tasmania, Australia	Social Epistemology
Lester L	2016	Media and social licence: on being publicly useful in the Tasmanian forests conflict	Forestry
Litmanen T et al.	2016	Refining the preconditions of a social licence to operate (SLO): reflections on citizens' attitudes towards mining in two Finnish regions	The Extractive Industries and Society
Martinez C & Franks DM	2014	Does mining company-sponsored community development influence social licence to operate? Evidence from private and state-owned companies in Chile	Impact Assessment and Project Appraisal
Mazur N	2012	Let's Talk Fish: Assisting industry to understand and inform conversations about the sustainability of wild-catch fishing	N/A
Mease LA et al.	2018	Engagement takes a (fishing) village to manage a resource: Principles and practice of effective stakeholder engagement	Journal of Environmental Management
Mercer-Mapstone L et al.	2017	Conceptualising the role of dialogue in social licence to operate	Resources Policy
Mercer-Mapstone L et al.	2018	Company-community dialogue builds relationships, fairness, and trust leading to social acceptance of Australian mining developments	Journal of Cleaner Production
Michell G & McManus P	2013	Engaging Communities for Success: social impact assessment and social licence to operate at Northparkes Mines, NSW	Australian Geographer
Moffat K et al.	2016	The social licence to operate: a critical review	Forestry
Nysten-Haarala S et al.	2015	Law and self-regulation – Substitutes or complements in gaining social acceptance?	Resources Policy

Olsen CS et al.	2012	Public Acceptance of Disturbance-Based Forest Management: Factors Influencing Support	ISRN Forestry
Overduin N & Moore M	2017	Social license to operate: Not a proxy for accountability in water governance	Geoforum
Owenn JR & Kemp D	2012	Social licence and mining: A critical perspective	Resources Policy
Paragreen, Nigel & Woodley, Alan	2013	Social licence to operate and the coal seam gas industry: lessons fromnsocial issues in established mining operations?	Rural Society
Parsons R & Moffat K	2014	Constructing the Meaning of Social Licence	Social Epistemology
Parsons R et al.	2014	Maintaining legitimacy of a contested practice: How the minerals industry understands its 'social licence to operate'	Resources Policy
Prno J & Slocombe DS	2014	A Systems-Based Conceptual Framework for Assessing the Determinants of a Social License to Operate in the Mining Industry	Environmental Management
Prno J	2013	An analysis of factors leading to the establishment of a social licence to operate in the mining industry	Resources Policy
Richert C et al.	2015	Measuring the extent of a Social License to Operate: The influence of marine biodiversity offsets in the oil and gas sector in Western Australia	Resources Policy
Rooney D et al.	2014	Doing the Social in Social License	Social Epistemology
Stankey GH & Shindler B	2005	Formation of Social Acceptability Judgments and Their Implications for Management of Rare and Little-Known Species	Conservation Biology
Sterling B & Charlebois, S	2017	Building Social License to Operate within the Food System (Learning from the Lessons of Others)	N/A
Syn J	2014	The Social License: Empowering Communities and a Better Way Forward	Social Epistemology
Tracey S et al.	2013	Super Trawler Scuppered in Australian Fisheries Management Reform	Fisheries
Voyer M et al.	2015	Obtaining a social licence for MPAs – influences on social acceptability	Marine Policy
Voyer M et al.	2015	'It's part of me'; understanding the values, images and principles of coastal users and their influence on the social acceptability of MPAs	Marine Policy
Wilburn KM & Wilburn R	2011	Achieving social license to operate using stakeholder theory	Journal of International Business Ethics
Wilson E	2016	What is the social licence to operate? Local perceptions of oil and gas projects in Russia's Komi Republic and Sakhalin Island	The Extractive Industries and Society
Winn MI et al.	2008	Managing Industry Reputation: The Dynamic Tension Between Collective and Competitive Reputation Management Strategies	Corporate Reputation Review
Wright S & Bice S	2017	Beyond social capital: A strategic action fields approach to social licence to operate	Resources Policy
Wustenhagen R et al.	2007	Social acceptance of renewable energy innovation: An introduction to the concept	Energy Policy
Wyatt S	2016	Aboriginal people and forestry companies in Canada: possibilities and pitfalls of an	Forestry

		informal ‘social licence’ in a contested environment	
Yates BF & Horvath CL	2013	Social License to Operate: How to Get It, and How to Keep It	N/A
Zhang A et al.	2018	Preconditions for social licence: The importance of information in initial engagement	Journal of Cleaner Production

Appendix C: Codebook

Code	Description
Accountability	Taking responsibility for actions
Adaptability	Ability to respond to the changing nature of societal support
Agency	Capacity of an actor
(Best) practices	Type of practices used by the operation, including demonstration of best/good and responsible practices to society
Building understanding	Building understanding of the 'operation' among stakeholders and vice-versa - the operation needs to understand the stakeholders
Collaboration	Bringing together and working with stakeholder groups to discuss issues and solve problems
Collective/divided action	Building/withholding support can be enhanced by people working together and building alliances, either within a group or between Groups
Competing resource users/access	Presence/absence of multiple competing users of a resource, or restriction of access
Communication	Beyond information provision, communication is clear, open, two-way and consistent dialogue and active listening
Context	Circumstances outside of the immediate situation, e.g. poor previous experience with the industry
Credibility	Doing the right thing, operating to standards, creating and fulfilling expectations, keeping promises
Dialogue/lack of	A two-way conversation, an exchange of ideas between industry and others
Differing/matched expectations	Industries and stakeholders/communities often have different worldviews, different values, and different ideas of how a process should be undertaken
Education	Increased awareness, knowledge and understanding of the operation
Effective negotiation	Requires reaching agreement with stakeholders on issues of concern
Emotion	Use of emotion in arguments for/against an operation
Empowerment	Empowering and capacity building in stakeholders to contribute to decision making/understanding of 'operations'
Engagement	Associated with relationships, what actors and 'operations' do and the interactions they have to build good relationships with/ between stakeholders
Environmental benefits/impacts/risks	Being perceived to be environmentally sustainable or maintaining aesthetic/scenic beauty
Expectations	Fulfilling expectations of stakeholders produces credibility
Fairness	Whether the procedures or outcomes are considered fair by stakeholders
Framing of the issue	If issue is framed in a positive or negative way

Government policy/management	Government policy can drive societal support e.g. bypassing evidence and/or public participation in issues and decision-making through their policies or by use of power such as compulsory acquisition
Government support	Government (level) encouragement for an 'operation' to act to gain societal support
Honesty	Free of deceit and untruthfulness
Human capital	Skills, capabilities and education can influence effectiveness in influencing a process or outcome, e.g. lobbying, use of media, use of political contacts, responding to expectations
Inclusiveness	Providing all stakeholders with an opportunity to participate or be involved
Individual benefits/impacts/risks	How an 'operation' may affect individuals positively or negatively
Industry initiation	'Operations' must initiate participatory processes and relationship building early
Information sharing	Providing timely and clear information
Integrated in community	Supporting local culture and events, being part of the 'fabric' of the community
Image	The image/overall practices of the 'operation' and how it is perceived by people
Influence	Level of influence of particular groups or individuals on the process or outcomes of an 'operation'
Information	Whether and how information and messaging from an actor is provided, is exchanged between actors/stakeholders, and how/whether it is accessed
Issue awareness	Awareness of the issue that may surround an 'operation', or whether people care
Language	The use of language
Leadership	The role of leaders in galvanising stakeholders to support/oppose an 'operation'
Legitimacy	Seeing values, concerns, processes, actions, and actors, as reasonable and justifiable
Links to outside influences	How outside issues/changes can influence the support for the 'operation'
Lived experience	Whether the stakeholders have or had positive/negative experiences with industry/similar industry previously
Localism	Local ownership/base/staff as compared to outside or foreign ownership/control. Localised context, issues and impacts/benefits
Marginalisation	Treating an individual or group as insignificant or peripheral, not of interest to the operation
Media use and reporting	How media reporting of issues or an 'operation's use of media can influence actions and support
Meeting needs/aspirations	What are the goals of the community and what forms of development do they aspire towards?
Participatory processes	Presence and level of processes to meaningfully engage stakeholders, build relationships, and influence understanding

	and support
Power relations	Important to recognise that there are differences in the levels of power held by operations and stakeholder groups/communities
Quality and type of relationships	How people relate to each other (relational relationships as opposed to transactional relationships)
Reciprocity	Looking after each other, having a reciprocal relationship, not just one way
Regulatory effectiveness	A strong and trustworthy government enforcement process
Reliability	Consistently good in performance
Reputation	A widespread belief that the operation is good or bad
Resources	Financial resources can restrict building of support through restricting the depth of participatory processes
Respect	Respect for other stakeholders, their values, way of life
Role of organisational factors	The operations' attitude and commitment to behaviours beyond compliance. e.g. improving environmental performance, how they treat their employees
Role of outside interests	Involvement of organisations not directly involved - e.g. NGO's, legal firms, media, influential personalities – to influence a process
Size/scale of operation	The scale of an operation and its inherent structure can influence relationship building with stakeholders
Social networks	Small, closed networks mean limited ability to seek or adopt new ideas, make well-informed decisions while wide networks increases access to social capital
Societal benefits/impacts/risks	Regard for society/community interests and welfare. Benefits/impacts/risks on the wider society/community
Stakeholder identification/representation	Who are the stakeholders and are they represented?
Transactions	Financial transactional relationships
Transparency	Being clear, open, and fully disclosing the positive and negative
Trust	Firm belief in reliability, truth and ability between stakeholders, within stakeholder groups, and between the 'operation' and stakeholders
Trust in knowledge	Trust in (e.g. expert, scientific) knowledge can influence support
Uncertainty	Uncertainty of outcome and situation among stakeholders may influence the level of support
Values	Respecting and understanding values and trying to align values can build support. These are also referred to as attitudes, beliefs, perceptions, cultural orientation
Visibility	Whether an 'operation' is visible to the public or not

Appendix D: Interview Topic Guide

Topics of investigation:

1. What are the social factors that predisposed the fishery/aquaculture business to decreased or increased societal support?

- Individual values of the stakeholder
- Group characteristics, behaviours and dynamics within and between groups
- Types and level of conflict and/or cooperation
- Industry capacity

2. What are the economic factors that predisposed the fishery/aquaculture business to decreased or increased societal support?

- Business/sector scale
- Characteristics of the products produced
- Characteristics of the market chain
- Certification presence

3. What are the environmental factors that predisposed the fishery/aquaculture business to decreased or increased societal support?

- The environmental and economic context the fishery/aquaculture business is working in
- The type/accuracy of information and science
- The characteristics and practices of the fishery/aquaculture business

4. What are the political factors that predisposed the fishery/aquaculture business to decreased or increased societal support?

- The political context
- The regulatory context
- The administration of the fishery/aquaculture business
- Type and level of participation/consultation

5. What engagement strategies or interventions were present?

Appendix E: Codes identified in survey

Question #	Code	Number of respondents
Q3	Recognition of benefits	5
	No negative perceptions	1
	Purchase of seafood	2
	Enjoyment of consumption	1
	Transparency	2
	Open dialogue	6
	Neutral/positive community activity	3
	Positive media coverage	4
	Trust & credibility	3
	Acknowledgement of issues	1
	Accepted independent oversight	2
	Support/acceptance	16
	Shared values	1
	Accountability	1
	Healthy & prosperous industry	1
	Relationships	2
	Communication	1
	Engagement/participation	5
	Management not political	1
	Knowledge of industry	7
	Responsible use	2
	Respect	2
	Co-management	2
	Confidence	1
	Continued investment	1
	Stable product prices	1
	Maintaining access	1
	Proactive	2
	Best practice	1
	Forgiveness	1
	Sustainability	1
	Continued traditional use	1
	Informed consent	1
	Smiling and happiness	2
	Pride in industry	1
	Defence of industry	1
	Negotiation	1
	Industry part of community	1
	Decreased pressure	1
	Increased politician support	1
Q4	Difficulty attracting workforce	1
	Inability to gain/lack of support	4
	Lack of credit	1
	Lack of sales/poor sales	3

	Impacts on megafauna	1
	Impacts on recreation	1
	Lack of transparency	3
	Increased activity to undermine	10
	Negative media	5
	Government action	2
	Conflict	6
	Lack of understanding views	1
	Poor communication	2
	Assessments lack (perceived) independence	1
	Political decisions	2
	Emotion & value led	1
	Focus on profit	1
	Industry struggling economically	2
	Poor brand recognition	1
	Lack of public profile	2
	Lack of respect	2
	Ineffective participation	2
	Consumer disapproval	1
	Sector focused	1
	Lack of belief in evidence	1
	Unhappiness	1
	Calls for reduced use	1
	Failure to follow rules	2
	Under attack	2
	Lack of trust	4
	Mistruths	2
	Unsustainable	1
	Inability to differentiate	1
	Lack of confidence	1
	Loss of access to resource	2
	Inconsistent with expectations	1
	High levels of scrutiny	1
	Defensive behaviour	1
Q6	Land based aquaculture different	2
	Different issue focus	12
	Different levels of support	6
	Different scale and scope	3
	Different benefits	1
	Ease of measuring costs & benefits	1
	Different stakeholders & interests	2
	Different public expectations	1
	Different business practices	1

Appendix F: Initial draft list of determinants

Determinant of societal support	Description
Understanding and consideration of the context	*Context is the circumstances that form the setting for the operation. This will be different dependent on the location and scale of the operation and the circumstances surrounding the operation. For example, the types of context to understand might include: the socio-economics of the place and people, whether there are multiple users of the resource and space, whether stakeholders have lived or prior experience of an operation or similar, the nature and type of media coverage, the political situation, and other outside influences that may indirectly be affecting support. It is important to understand context because it may change over time, place and cultures. Some contextual factors cannot be influenced but may be important to be recognised. However, some factors may be influenced (e.g. media coverage) in order to achieve a higher level of societal support.*
Strength of government oversight	*Strength of government oversight includes the clarity in government agencies roles and responsibilities, and their regulatory effectiveness. The stronger the government oversight, the more trust there is that the operation is being regulated effectively and in line with societal expectations.*
Presence of fair decision-making processes by government	*Presence of fair decision-making processes by government includes the processes that resolve disputes and allocate resources.*
Demonstration of aligned operation and stakeholder values	*Societal support builds when the operation demonstrates that their values align with stakeholders' values. Examples of the values that have been shown to be important to stakeholders include: being honest and transparent, being reliable and responsive, showing respect, acting with integrity and being accountable.*
Evidence of sustainable and responsible practices	*Sustainable and responsible practices relate to the internal workings and behaviours of the operation. For example, these may include maintaining and improving the health and welfare of employees, having good governance systems in place, and practices which work towards to reducing environmental impacts and improving environmental health. These may include activities beyond practices directly relating to production, for example habitat restoration.*
Level of visibility	*The level of visibility is how visible an operation is to the public. Visibility can be beneficial or detrimental to building support. If an operation is visible to stakeholders, it is imperative they address other determinants e.g. engagement.*
Depth of Engagement	*The depth of engagement is about the interactions between stakeholders and operations to build good relationships. The depth of engagement occurs on continuum from information provision (one way) through inclusion in decision-making processes, to collaboration and partnership (two-way).*

Determinant of societal support	**Description**
Effectiveness of communication	*Effective communication is beyond information sharing. It is clear, open, involves consistent dialogue and active listening. It is related to engagement.*
Demonstration of shared vision of the future	*A vision is a mental image of what the future will or could be like. Having a shared vision between the operation and stakeholders involves meeting expectations, needs, aspirations and considers different worldviews. This is distinct from values and is more about what is important. An example might be 'a shared vision of a healthy environment'.*
Generation and distribution of benefits	*An operation can generate benefits to the environment (physical/biological benefits), or to society, stakeholder groups or individuals (socio-cultural benefits). Uncertainty of benefits and how benefits are distributed can influence support.*
Framing of the issue	*Framing (how something is presented) of the operation or the issues surrounding the operation will influence how the operation/issue is perceived by stakeholders. It may be based on emotions and language, rather than expert information or facts. The framing can be influenced and thus change perceptions.*
Connectedness to community	*Connectedness to community is the extent to which the operation is perceived to be 'local' or 'integrated' into the community or society. This can be affected by size, scale and geographical ownership of operation.*
Understanding and management of power asymmetries	*Power refers to the level of influence held by the operation, or by stakeholders. Stakeholder power can be affected by the process of stakeholder identification and representation e.g. inclusiveness/marginalisation. Large discrepancies in power make societal support more difficult to achieve.*
Presence of key influencers	*Key influencers might be individuals or groups. They may be within the operation and/or within stakeholder groups. The role of influencers play a large role in galvanising support or opposition of an operation.*
Existence of collective action	*Collective action is people working together and building alliances. It can have different purposes. It may be used create a louder voice of protest or support, or it can be used to co-develop solutions to issues.*
Level of material and human resources	*Material and human resources include money, skills/capabilities and networks of the operation and/or stakeholders*