



Tasmanian Seafood Industry Council and Seafood Industry Victoria

Submission to the

Environment and Communications Reference
Committee Inquiry into the

Impact of seismic testing on fisheries and the marine environment

Tasmanian Seafood Industry Council
PO Box 878 SANDY BAY TAS 7006
P: 03 6224 2332
tsic@tsic.org.au www.tsic.org.au



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Introduction

About TSIC

The Tasmanian Seafood Industry Council (TSIC) is the peak body for the Tasmanian seafood industry. TSIC represents the interests of approximately 520 wild catch fishers, 73 marine farm businesses and 60 seafood processing businesses. These members produce \$1.182 billion GVP value per annum, directly employ 3,410 FTEs and indirectly employ 5,393 FTEs, and contribute \$597 million to household income¹.

About SIV

Seafood Industry Victoria (SIV) is the peak body for the Victorian seafood industry. SIV represents the interests of 630 wild catch fishing licences, 4 aquaculture businesses and Victoria's wholesale and processing industry. The Victorian seafood industry produced \$355 million GVA in 2017/18, employed 3,174 FTEs and contributed \$198 million to household income¹.

Our industry stakeholders

TSIC and SIV work closely with all State seafood sector Associations and representatives. Notably, TSIC works with 9 seafood sector Associations and SIV works with 18 affiliated Member Bodies.

A shared marine resource

Tasmanian and Victorian commercial fishers have statutory fishing rights, licences and quotas that provide access to a community owned resource. Available stocks are also shared with other sectors, namely recreational and indigenous fishers. Furthermore, the marine space is a shared resource, with a diverse range of other marine users in this space, including the offshore oil and gas industry.

This shared nature of space and resources inherently creates conflict, with conflict exacerbated should activities impact the ability to access a region and / or the activity could impact current or future fishing stocks or the broader marine environment and the ecosystem services it provides to the community.

¹ Australian Fisheries and Aquaculture Industry 2017/18: Economic Contributions Estimates Report, BDO EconSearch.

Inquiry Terms of Reference

TSIC and SIV acknowledge the Terms of Reference for the inquiry as follows:

- a. the body of science and research into the use of seismic testing;
- b. the regulation of seismic testing in both Commonwealth and state waters;
- c. the approach taken to seismic testing internationally; and
- d. any other related matters

Structure of this response

TSIC and SIV will address specific aspects of the Term of Reference, with a primary focus on:

- inadequacies in the EP consultation process (regulation 11A);
- unacceptable criteria for acceptance of an environmental plan, in particular the requirement to mitigate risks to As Low As Reasonably Practical – ALARP (Regulation 10A)
 - Selective use of science in EPs
 - How to assess risk in light of limited or no science – i.e. inadequacies of ALARP
 - Consideration of application of the offset principle in acknowledgement that seismic has greater impact on animals than previously accepted or acknowledged.
- Conclusions
- Summary of Recommendations

The Submission

The body of science and research into the use of seismic testing

TSIC and SIV accepts there is a diverse range of information and publications concerning the impact of seismic exploration on the marine environment, including anecdotal observations from the fishing community, oil and gas industry funded consultant reports (grey literature), scientific technical reports (or the like) often funded by the oil and gas industry and robust, peer reviewed scientific publications.

It is important to note there is significant variation in the level of scrutiny afforded to these different levels of information and knowledge, from no scrutiny (anecdotal evidence), through a high level of scientific scrutiny through the peer review process, which ensures scientific validity. The lack of policy, regulation and guidance around how EP evidence is assessed makes the current seismic approval, consultation and documentation process an extremely frustrating process for all involved.

In acknowledging there are some issues with the peer review process, it is still the most consistently robust process to ensure scientific credibility. It is for this reason that peer reviewed scientific publications should be more heavily weighted than grey literature or internal technical reports.

We urge the inquiry to consider the impact of ‘cherry-picking’ of evidence that continues to occur when the oil and gas industry prepare their environment plans, often to the detriment of the fishing industry.

The following two sections provide an evidence base for why the seafood industry is increasingly concerned about the impact of seismic on the marine environment.

Anecdotal evidence from fishermen

Fishermen worldwide have long held the view that seismic activity has a negative, detrimental impact on fish stocks and the broader marine environment through direct mortality or changed behavior, such as fish moving from traditional fishing areas.

The following examples are easily accessible through online platforms and mainstream media outlets.

\$70m scallop fishery wiped out (abc.net.au – Nov 2010)

Tasmanian and Victorian scallop fishermen believe seismic testing has killed \$70 million worth of scallops in Bass Strait... Three new scallop beds were discovered in 2007, with an estimated 28,000 tonnes of healthy scallops.

Seismic has impacted rock lobster recruitment (rock lobster fisher – comments in open meeting)

After a bout of seismic activity off the west coast, we didn't see good catches 5 to 7 years later, because seismic impacted the larvae

Fishermen fear seismic testing for gas will damage famed fishing grounds off Newcastle (2 April 2018 – ABC Newcastle).

"After more than 40 years trawling the waters off Newcastle in NSW... only pulled up nets of rotten fish on a few occasions. Each time coincided with seismic testing being conducted off the coast."

Impacts in Norway (8 April 2013 – ZigZag (online)).

A 60 year-old Norwegian fisherman has warned that the controversial seismic surveys for marine oil and gas reserves off the Eastern Cape coast could seriously impact the local fishing industry for years to come.

Peer reviewed scientific evidence showing negative impacts of seismic

With respect to the impact of seismic activity on SE Australian species, the most relevant, up to date peer reviewed science has been conducted and reported by the Institute for Marine and Antarctic Studies (IMAS). This research has been published in some of the most influential scientific journals in the world. A summary of key findings is provided below:

- Day et al. (2017) *Exposure to seismic air gun signals causes physiological harm and alters behavior in the scallop Pecten fumatus*, Proceedings of the National Academy of Sciences of the United States of America 114(40).
 - Exposure to seismic signals significantly increased mortality in scallops, especially over a chronic (months post exposure) time scale.
 - Changes in behavioral patterns during exposure
 - Persistent alterations in recessing reflex behavior following exposure, with the rate of recessing increasing with repeated exposure.
 - Hemolymph (blood analog) physiology showed a compromised capacity for homeostasis and potential immunodeficiency, as a range of hemolymph biochemistry parameters were altered and the density of circulating hemocytes (blood cell analogue) was significantly reduced, with effects observed over acute (hours to days) and chronic (months) scales.
 - The size of the air gun had no effect but repeated exposure intensified response.
 - Conclusion was that exposure to seismic activity harms scallops.
- Fitzgibbon et al (2017) *The impact of seismic air gun exposure on the haemolymph physiology and nutritional condition of spiny lobster, Jasus edwardsii*, Marine Pollution Bulletin, 125(102).

- Seismic air gun exposure suppressed total haemocyte count (THC) for up to 120 days post-exposure, suggesting a chronic negative impact of immune competency.
 - THC levels after 365 days post exposure were elevated two fold, potentially indicating an immune response to infection.
 - Haemolymph refractive index was reduced after 120 days post exposure in one experiment, suggesting a chronic impairment of nutritional condition.
 - There was no effect of air gun exposure on 24 haemolymph biochemical parameters, hepatopancreas index or survival.
 - Conclusion was exposure to seismic has permanent impact on Rock Lobsters and may negatively influence the lobster's nutritional condition and immunological capacity.
- Day et al (2019) *Seismic air guns damage rock lobster mechanosensory organs and impact righting reflex* Proceedings of the Royal Society B, 286(1907).
 - Following exposure equivalent to a full-scale commercial assay passing within 100–500 m, lobsters showed impaired righting and significant damage to the sensory hairs of the statocyst.
 - Reflex impairment and statocyst damage persisted over the course of the experiments—up to 365 days post-exposure and did not improved following moulting.
 - These results indicate that exposure to air gun signals caused morphological damage to the statocyst of rock lobsters, which can in turn impair complex reflexes.
 - This damage and impairment adds further evidence that anthropogenic aquatic noise has the potential to harm invertebrates, necessitating a better understanding of possible ecological and economic impacts.
 - Day et al (2016) *Seismic air gun exposure during early-stage embryonic development does not negatively affect spiny lobster Jasus edwardsii larvae (Decapoda: Palinuridae)* Scientific Reports 6 (22723)
 - Overall there were no differences in the quantity or quality of hatched larvae, indicating that the condition and development of spiny lobster embryos were not adversely affected by air gun exposure.
 - These results suggest that embryonic spiny lobster (eggs under the tail of an adult lobster) are resilient to air gun signals.
 - McCauley et al (2017) *Widely used marine seismic survey air gun operations negatively impact zooplankton* Nature – Ecology and Evolution 1: (0195)
 - Experimental air gun signal exposure decreased zooplankton abundance when compared with controls, as measured by sonar (~3–4 dB drop within 15–30 min) and net tows (median 64% decrease within 1 h), and caused a two- to threefold increase in dead adult and larval zooplankton.
 - Impacts were observed out to the maximum 1.2 km range sampled, which was more than two orders of magnitude greater than the previously assumed impact range of 10 m.
 - Although no adult krill were present, all larval krill were killed after air gun passage.

- There is a significant and unacknowledged potential for ocean ecosystem function and productivity to be negatively impacted by present seismic technology.

Summary of seafood industry concerns

The outcomes of the research conducted by IMAS has confirmed the seafood industry long held view – that seismic activity has far wider impacts than ever before reported. Regardless, of the scientific integrity of this research, the oil and gas industry continue to question the validity of this research to their proposed seismic operations instead of accepting that this research creates a high level of uncertainty about the impact of seismic on:

- The health and wellbeing of adult rock lobsters
- The survival of adult scallops
- The unknown impacts on rock lobster and other commercial species larvae
- The spatial magnitude of impact on zooplankton and
- The broader impact on ecosystem services (or broader marine health).

Case Study 1: the 2010 Bass Strait Scallop Fishery

The 2010 Bass Strait Central Zone Scallop Fishery (BSCZSF) case study clearly shows a need for greater precaution in light of a lack of science and unknown impacts of seismic on marine animals.

In 2009, the BSCZSF industry and regulator (the Australian Fisheries Management Authority AFMA) negotiated with two organisations that intended to conduct seismic surveys in Bass Strait. The proposed seismic activity would overlap a known very large bed of abundant scallops, which in theory would last the commercial fishery 3 to 5 seasons fishing.

At the time, the seismic proponents argued there was no scientific evidence to show that seismic activity would impact adult scallops. As such, it was their view that seismic activity would not harm the extensive BSCZSF scallop bed.

One company to their credit agreed to relocate seismic transect lines away from the known scallop bed to ensure scallop stocks were not impacted. Another organisation based in Victoria arrogantly ignored repeated requests to keep away from the two major scallop areas and in early 2010 conducted a two month intensive 2D seismic program over a wide area of Bass Strait. When the scallop harvesting season got underway around mid-June 2010 it was immediately apparent that the very valuable scallop stocks had been impacted and were dying or newly dead at a time when they should be in peak condition. This die-off resulted in an estimated loss of around 24,000 tonnes of scallops with a retail value in excess of \$70M. This loss had a significant effect on the regional economies of both Victoria and Tasmania. Industry at the time believed the intense and repeated seismic air gun booms may have caused scallops to take flight with repeated startle responses exhausting them to the point of delayed mortality. Other known scallop stocks in Bass Strait north east of Flinders Island that were not in the path of seismic activity were found to be in excellent condition, just as we would normally expect at this time of the year².

Since this survey, our understanding of the potential impacts of seismic activity on adult scallops has been expanded through the research of IMAS. In simple terms, this research showed that seismic activity can cause delayed mortality of adult scallops. Perhaps the industry suspicion, although not back by the scientific literature at the time, was in fact correct.

² <https://tasmaniantimes.com/2010/11/the-valuable-bass-strait-scallop-fishery-decimated/>

Case Study 2: 2016/17 Origin Energy seismic survey in the Otways 'Crowes Foot'

The first Seismic survey to be undertaken since IMAS release of Rock Lobster and Scallop research (2016).

In 2016, Seafood Industry Victoria and the Victorian Rock Lobster Association registered significant concerns with an approved environment plan for Origin Energy to undertake a substantial seismic program off Victoria's Otway coastline. This EP had been approved, and the planning for the survey was well underway and due to start within days of the release of the IMAS seismic research results. With the release of this new evidence, which confirmed industry speculation that in fact seismic operations do affect fisheries resources, the survey was put on hold by NOPSEMA to allow further consultation and workshops between the proponent and the fishing industry.

Through a sequence of roundtable discussions there was recognition by all that there can no longer be a blanket assertion by the oil and gas industry that 'they have no impact'.

Through these consultation and negotiation sessions (chaired by NOPSEMA) it became clear that there was to be an impact, but quantifying the impact would be extremely difficult. Therefore, it was agreed to compensate fishers for their displacement during the survey, but also use that as an opportunity to support the fishery by leaving those fish in the water until the next fishing season. It was also agreed that due to there being no real method of visualizing and quantifying the impact, that there would be fund allocated for 'reef reseeding projects' to again benefit and grow the resource.

This was a major turning point for engagement between the Victorian fishing industry and the proponent Origin Energy, however what is disappointing is that this recognition of there being 'an impact' NOPSEMA and future proponents have completely ignored and dismissed this process as any form of precedent.

Recommendation 1: The inquiry must consider the impact of 'cherry-picking' of evidence that continues to occur when the oil and gas industry prepare their environment plans, often to the detriment of the fishing industry.

The regulation of seismic testing in both commonwealth and state waters

According to the NOPSEMA website³, a petroleum or greenhouse gas activity by law cannot commence before NOPSEMA has assessed and accepted an environment plan for that activity. NOPSEMA will only accept an environment plan once it has determined the plan meets all the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009. The Environment Regulations provide eight acceptance criteria that NOPSEMA must assess each environment plan against. These criteria are that the environment plan:

- is appropriate for the nature and scale of the activity
- demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable
- demonstrates that the environmental impacts and risks of the activity will be of an acceptable level
- provides for appropriate environmental performance outcomes, environmental performance standards and measurement criteria
- includes an appropriate implementation strategy
- does not occur in a World Heritage Property (with the exception of environmental monitoring or responding to an emergency)
- demonstrates that appropriate consultation has been, and will continue to be, undertaken
- complies with the OPGGS Act 2006 and its associated regulations.

Both TSIC and SIV hold significant concerns about the consultation process, how the oil and gas industry portray scientific literature in their EP and how NOPSEMA as a regulator assess the content of an EP prior to any approval. It is because of these concerns and continued uncertainty in consultation that the TSIC and SIV Boards co-signed a policy in respect of consultation with our respective industries, named '*Policy in relation to Mining, Gas and Petroleum sector Consultation with the Professional seafood industry*' (Attachment 1).

The EP Consultation Process

It is the responsibility of an oil and gas proponent to develop and submit an Environmental Plan.

At present there is no formalised process that defines how an oil and gas exploration entity must conduct consultation, apart from the need to meet the requirements defined within Regulation 11A, which states *conduct consultation with relevant authorities, persons and organisations etc.*

What is consultation?

Each oil and gas entity adopts a different approach to the consultation process. Traditionally, the oil and gas sector has considered consultation to be a process where written information about proposed activities is shared via email with relevant authorities, persons and organisations, with a statement offering further meetings and an opportunity to comment. In some instances, a 'cold call' phone call

³ <https://www.nopsema.gov.au/environmental-management/environment-plans/>

may be made. If no comment is received, it is assumed there are no concerns with the proposal, and appropriate consultation has been conducted.

This transfer of information process (not consultation) is not fit for purpose for the fishing industry and has resulted in a high level of disengagement by individual fishers, especially in recent years when there has been multiple proposed seismic activities in the SE region.

Oil and Gas Fisheries Liaison Officers

Oil and gas exploration companies often utilise the services of 'Fisheries Industry Liaison Officers' or consultants to conduct consultation on their behalf. Although many of these third party providers adopt relatively open and transparent communication processes, there are some behaviors, whether planned or not, that can only be described as 'deceitful'.

TSIC and SIV have received correspondence and comments from fishers asking about the role of certain industry liaison officers' in the oil and gas consultation process.

There are many examples to support our concerns around how some Fisheries Liaison / consultants operate during the consultation process. These concerns generally align with individual consultants not clearly identifying who they were working for, with a perception they may in fact be trying to support the seafood industry cause. This statement is supported by the following email received from a concerned TSIC member.

I received a phone call from [an oil and gas industry Fisheries Liaison Officer] in regards to seismic testing off King Island. He asked me for several phone numbers of local giant crab fishers. Initially I believed he was trying to stop it [the seismic survey]. It wasn't until I asked what his role was, he told me he was 'industry liaison' [but he did not state this was for Spectrum]. At no stage in conversation did he indicate he was working for Spectrum. It was the [TRLFA CEO] who brought this to my attention. I have very grave concerns that by speaking to crab fishers individually the [oil and gas company] may claim they have consulted industry. It may be a somewhat divide and conquer approach. Hopefully you are aware of this and can shed some light on where industry is at.

Consultation with TSIC and SIV

It is the view of TSIC and SIV that the oil and gas industry has traditionally seen peak seafood bodies representing the interests of the fishing, marine farming and seafood processing sectors as low priority and/or last minute consultation 'tick box' requirement. Furthermore, there is a consistent expectation that seafood peak bodies will act as a 'mail box' for oil and gas proponents in seeking comment from the broader industry.

This statement is supported by the two case studies provided below.

Note: The below examples provided are engagement attempts with TSIC, and it must be noted that SIV had very similar engagement with the same oil and gas proponents.

Case Study 3 - 'Consultation' with company A

- 2 February: Email apparently sent to generic TSIC email address, but cannot be traced by TSIC.
- 29 March: Phone call from Fisheries Liaison Officer for Company A – first discussions on company A's seismic proposal.
- 3, 4 and 5 April – email correspondence providing information RE proposed seismic activity, and setting up a face to face meeting with company A. From information provided it is obvious that company A's plans are well progressed.
- 6 April – email from company A Fisheries Liaison Officer confirming staff had been mobilised and the meeting would be next Thursday, 2-m in TSIC's Sandy Bay Offices.
- 12 April (1405) – TSIC CE contacted by company A Industry Liaison Officer asking if we had logged into video conference site. We were waiting for them to turn up to the TSIC office. Video conference failed so resorted to phone conference. First real opportunity for discussion on TSIC and seafood concerns with company A seismic proposal.
- 1 June – Company A provide TSIC with further information related to their EP submission.
- 5 June – NOPSEMA notify TSIC that company A had submitted their EP on 8 May and that a decision would be made in the coming days.
- NOPSEMA reject company A EP based on poor consultation.
- 12 July - First face to face meeting with company A (attempt at proper consultation).
- 15 July - TSIC submit a proposal to assist company A, as subject matter experts, with the consultation process.
- 17 July – Company A formally accept the TSIC proposal, but require an interim report by **MONDAY 23 JULY (only 4 working days)**.

Case Study 4 – 'Consultation' with company B

- 25 September – Company B provide TSIC with maps and information relevant to their proposed marine seismic survey (MSS), and also indicate they are willing to utilize TSIC as subject matter experts in their consultation process.
- Early October – TSIC consultation at ten (10) Tasmanian Rock Lobster Fishermen's Association port visits around Tasmania, gaining significant insight into industry concerns with company B seismic proposal.
- October 3 – Company B request confirmation of timeframe for consultation report from TSIC. TSIC acknowledge mid-Nov as a worst case scenario. TSIC ask via email for the terms of payment for conducting the agreed work (contract).
- October 16- After no contract was received, TSIC invoice company B for sum on agreed monies.
- October 29 – Email from company B shows urgency for completion of work and that payment was dependent on progress.
- October 30 – TSIC email company B with concerns about completing work without any formal agreement or ToR. Company B respond saying there is 'Board approval'.
- Late October – confirmation of a NOPSEMA, APPREA, oil and gas and seafood industry round table discussion in Melbourne on 16 November. The discussion would focus on the consultation and impacts of seismic from a fisheries perspective. With no formal consultation agreement between TSIC and company B, TSIC decide to await the outcome of the roundtable before any further action on consultation for company B.

- November 8 – Company B request that TSIC only engage rock lobster and giant crab fishers rather than the proposed entire TSIC membership.
- November 16 – TSIC attend the roundtable discussions. In a discussion at this roundtable it was suggested that NOPSEMA were not comfortable with seafood peak bodies, such as TSIC, conducting consultation on behalf of oil and gas proponents.
- November 22 – Seafood Industry Victoria Executive Director met with NOPSEMA in Western Australia to work through any issue around peak bodies being utilized as subject matter experts (conducting consultation). NOPSEMA notified they had no concerns with peak bodies provide services as subject matter experts.
- November 23 – The TSIC Board voice significant concern regarding assisting the gas and oil industry with their consultation requirements, in particular being remunerated.
- December 5 – At a TSIC Board meeting, the TSIC CE presents detailed information concerning their role as subject matter experts to oil and gas industry proponents, in the best interest of TSIC members. TSIC Board provides support to progress arrangements with company B.
- December 7 – Following this elongate process of unplanned but justifiable delays and activities, company B notified TSIC that *It has been 2 months since we agreed to undergo your consultation policy, and as we have not heard any feedback from you, company B will now seek to employ other methods for contacting relevant commercial fishing licence holders in order to ensure that we can provide an opportunity for relevant persons to make a comment on this activity.*

Public consultation is still not adequate

On 25 April 2019, amendments to the Offshore Petroleum and Greenhouse Gas Storage Environment Regulations 2009 (Environment Regulations) took effect, and introduced a 30-day public comment period for seismic and exploratory drilling proposals. In theory, this public comment process provide the fishing industry and broader community with an opportunity to have their say on the proposed environmental management of exploration activities before NOPSEMA commences its formal assessment process.

Although this public consultation period provides improved transparency in process, it does not eliminate all concerns around consultation and transparency. In particular, there is no process that clearly articulates how industry comments and concerns have been considered within the EP. To understand how an EP has assess industry comment requires reading the entire EP document, many of which exceed 1000 pages. Furthermore, the ‘consultation’ component of an EP is redacted as confidential?

Industry Consultation Fatigue

It is important to note that in the past 12 months Tasmanian and Victorian fishers have been subjected to three separate companies all proposing seismic activity in the NW of Tasmania, SW of Victoria. The Victorian fishing industry has also had one seismic survey operate and another large-scale 3D seismic survey proposed in the Gippsland Basin. This process has now dragged over 2.5 years; and the landscape ahead doesn’t look much better with the Victorian government releasing significant areas of coastline for exploration and the Federal Government continuing to ‘auction’ off new and unexplored areas for activity.

The sheer number and timing of the consultation processes for these seismic activities has resulted in individual fishers being bombarded with emails and phone calls concerning seismic activity and has resulted in confusion and misunderstandings as to who fishers are talking to, have they talked before, are they new companies, where are they proposing to go, what is a 3D vs 2D seismic survey etc. The end result has been consultation fatigue, and in turn, a disengagement by the fishing community to the oil and gas consultation process.

In response, TSIC and SIV have encouraged ‘fatigued’ members to not engage with these oil and gas companies, and to entrust their peak bodies to represent their interests. This would be achieved through driving the consultation process with industry in a simplistic but meaningful manner.

The consultation processes described above have not provided adequate capacity for TSIC and SIV to engage with all interested persons. With significant variation of consultation (from none, to information provision, to peak body formally engaged) NOPSEMA has somehow evaluated all the EPs as providing sufficient evidence for appropriate consultation with potentially impacted persons, an evaluation we specifically reject. Oil and gas consultation with the affected seafood industry persons has not been met through most of these surveys, yet they have all been approved – this is simply not acceptable and needs to be rectified through this inquiry.

Case Study 5 - Further evidence of poor consultation

In October 2019, the Tasmanian Rock Lobster Fishermen’s Association requested that NOPSEMA review their decision to approve the Environmental Plan submitted by Dorrigo 3D Oil. Included in the Terms of Reference was whether procedural fairness was afforded the TRLFA (TSIC) as a “relevant person”. As was expected from an Administrative Review, NOPSEMA upheld their decision to approve the EP. However, the following statements made in the Review Report clearly identify fundamental failings in the consultation process:

The document record (full text emails) included in the EP, indicates that while the consultation undertaken with TSIC met the requirements of the Regulations regarding TSIC as a relevant person, the process was marred by misunderstandings and frustrations and ultimately did not provide a mechanism for facilitating consultation with fishing licence holders as originally intended.

- Lack of clarity in process (seemingly exacerbated by ineffective communication and variance from process steps)
- Mismatched expectations (regarding the purpose, outcomes and approach to consultation from the survey)
- Frustration evidence in written correspondence from TSIC
- Blurred roles and responsibilities (TSIC in three roles: 1. Peak body as a relevant person; 2. On behalf of fishers as relevant persons; 3. Contracted provider of consultation)

From these comments it is obvious to TSIC that under the NOPSEMA Regulations, an oil and gas proponent need only make communication with a relevant person (such as TSIC) and does not actually need to engage in meaningful dialogue or discussion!

An Agreed Collaborative Consultation Framework

Both TSIC and SIV firmly believe that the oil and gas industry must undertake meaningful, collaborative 2-way consultation/engagement with the fishing industry, and that this is best achieved through industry peak bodies, such as TSIC and SIV.

For relevant persons engagement (consultation) to be effective both the titleholder and stakeholder must engage openly and in good faith. This will require a clear and agreed process, an aligned view on the purpose of consultation and the roles and responsibilities of those involved. This can either be achieved for each consultation need, or as an overarching consultation framework adopted by titleholders (oil and gas), other stakeholders and endorsed by NOPSEMA. The agreed framework must be a collaborative, two way process, with regular meaningful communications (in comparison to the current uncertainty and ad-hoc communications from the oil and gas industry).

TSIC and SIV has developed a Consultation Framework as a starting point for their consultation with oil and gas. This Framework provides a formalised, collaborative consultation process (Attachment 1).

There have been further attempts to develop an agreed consultation framework between seafood and APPEA. Although some discussions have been promising, there has been no outcome to date.

Recommendation 2: TSIC and SIV recommends the development of a formalised, transparent, meaningful two-way oil and gas / seafood industry consultation framework as a matter of urgency.

Assessing and mitigating environmental impacts and risks

Fisheries Spatial Distribution is not a proxy for stock distribution

The oil and gas industry and NOPSEMA in large use fisheries data to evaluate the potential overlap of seismic activity with fishing activities. Oil and gas companies often use a consultant to assess fishery catch and effort data. Neither TSIC nor SIV have an understanding of the methodology or datasets used in such assessments.

It is important to understand that fisheries catch and effort data does not reflect the true dynamics of fishing effort and fish stocks. For example:

- Fisheries reporting and assessment blocks are often very large vs the spatial distribution of fishing effort. i.e. oil and gas regularly assume equal distribution of fishing effort within a fishing block to conclude that they will have a lower impact on fishing activities and/or fishers can move to other parts of a fishing block. These assumptions do not hold true.
- Some stocks are often not targeted for a range of reasons. For example, there is a known and extensive area of southern rock lobster west of King Island. This stock is located in deep water, and is rarely fished as the bigger 'white' lobsters from deep water do not fetch the price of the shallower 'red' lobsters. This resource will not be visible if using only fisheries data but may be important to the fishery in later years and as a source of egg production.

A selective use / assessment of 'science'

The defensible, peer reviewed outcomes of the IMAS research detailed previously, and further articulated in Case Study 1 clearly show that seismic activity is having a far greater impact on scallops, rock lobster and zooplankton than the oil and gas industry are prepared to acknowledge. There remain significant gaps in our scientific knowledge, particularly with respect to the impact of seismic on larvae and broader ecosystem services. It is the view of TSIC and SIV that these knowledge gaps are not adequately addressed in Environmental Plans, and mitigation of potential adverse outcomes for fisheries are certainly not addressed under the As Low As Reasonably Practical assessment process. It is also concerning that oil and gas companies are misquoting or misrepresenting the IMAS body of research within their EPs.

Case Study 6 – misrepresentation of science in EPs.

The Spectrum Geo EP, Section 4.1.12.2.2 Invertebrates states:

Day et al. (2016) assessed the impact of seismic sound on rock lobsters, scallops and their larvae. Exposure to the maximum measured SPL of 209 to 212 dB re 1µPa (Lpk-pk) did not result in mortality of any adult lobsters or a reduction in the quantity or quality of larvae; however, a range of sub-lethal effects to adults were observed (Day et al. 2016). For the assessment of potential effects on crustacean species (southern rock lobster and giant crab) from the Otway Deep MSS, an SPL of 209 dB re 1µPa (Lpk-pk) has been adopted as the exposure level for which a range of effects may be experienced ranging from sub-lethal to behavioural or catchability effects. Exposure to air gun signals did not result in any lobster mortality in any of the experiments conducted in the Day et al. (2016) study; therefore, mortality is not expected to occur based on these findings.

These statements infer that Day et al (2016) studied the direct impacts of seismic on rock lobster and scallop larvae and that no mortality was expected from the proposed seismic activity.

The Dorrigo 3d Oil Environmental Plan section 7.2.3.1 Plankton states:

*Similarly, no effects were measured on the mortality, abnormality, competency, or energy content of lobster larvae (*J. edwardsii*) after exposure of berried females and early embryonic stages to cumulative SELs of 190-197 dB re 1µPa² .s (209-212 dB re 1µP PK-PK) within close proximity of an operational array (~6-8m) (Day et al, 2016).*

Again, this statement could be interpreted that early hatched embryonic stages of rock lobster larvae were subjected to seismic activity and that no effects were detected.

It is important to clarify that Day et al. (2016) did not study the impact of seismic on lobster and scallop larvae. The study looked at the impact of seismic on rock lobster eggs, located under the tail of an adult rock lobster, and the subsequent quantity and quality of hatched larvae (post exposure)

Although Oil and gas EPs generally acknowledge the array of laboratory based experiments looking at the impacts of seismic, results are rarely provided (as they tend to show negative impacts). Instead statements such as the following are made:

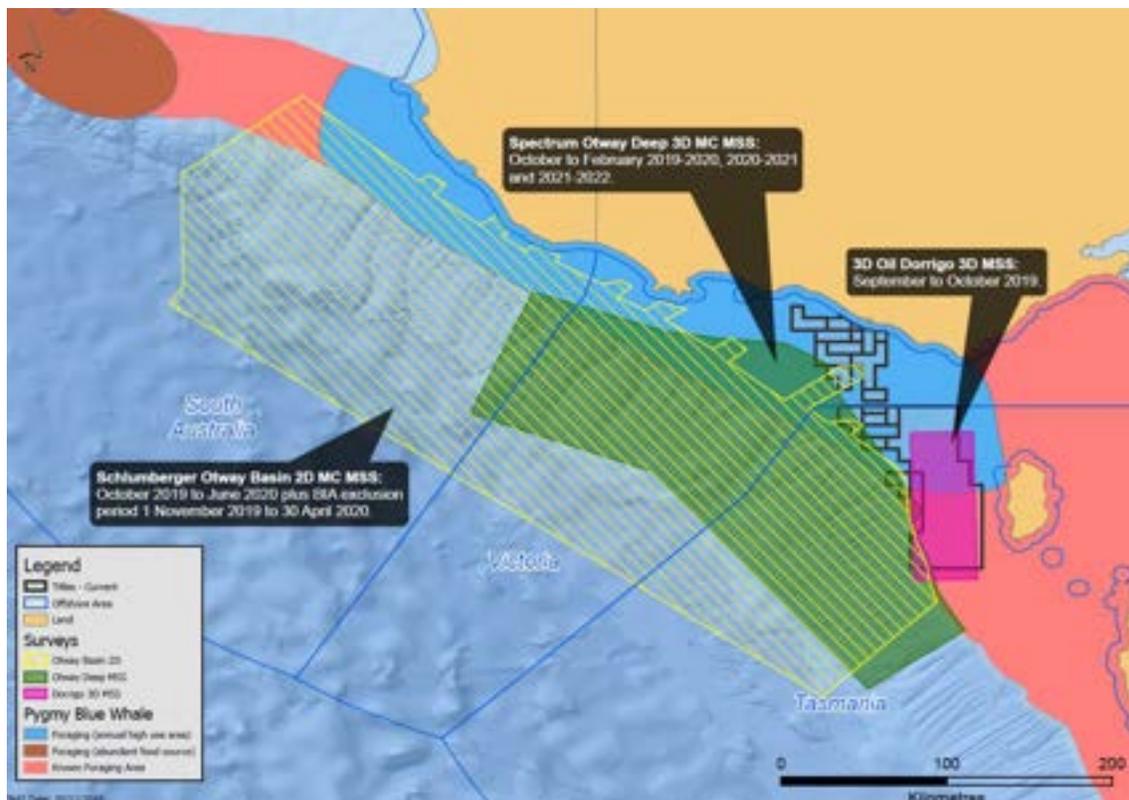
Due to the logistical and financial difficulties of field-based experiments, most scientific investigations into the impact of seismic outputs on rock lobster (and other marine invertebrate) larvae have been confined to laboratory environments. However, these do not replicate a real-world context and extrapolating results from laboratory conditions to field environments does not provide an accurate understanding of how larvae are affected by seismic signals in real world surveys

Similarly, EPs often erode the potential impacts of seismic through statements such as *it is important to note that this [research] study was undertaken at water depths of 10 – 12 m, which is significantly shallower than the Otway Basin MSS Operational Area.*

Cumulative impacts of seismic

TSIC and SIV have continuously articulated their concerns about the cumulative impacts of seismic (i.e. same company over multiple years in same region / different companies in same region at same time / or different years).

The following map shows the proposed seismic surveys in the Otway Basin, and illustrate both spatial and temporal overlap of seismic activity. To date, these surveys are due to begin (having all been approved) in the coming weeks and there has been NO consideration of the cumulative impacts of these activities.



To date, the oil and gas industry and NOPSEMA has not adequately addressed these concerns. In fact, NOPSEMA has in large has dismissed the impact of cumulative seismic surveys and their ability to actually manage and understand the cumulative effects.

Recommendation 3: The oil and gas industry and NOPSEMA must afford greater attention and focus to the potential and currently unknown cumulative impacts of seismic.

Assessing and mitigating risk to ALARP

TSIC and SIV, who are regularly engaged with the oil and gas industry and regulators, remains uncertain about interpretation and application of the As Low As Reasonably Practicable (ALARP) assessment process.

We remain unconvinced that the use of ALARP provides adequate, if any, protection to fish stocks (including larvae) and broader marine ecosystem services, especially in light of the significant unknown impacts of seismic.

To adequately protect current and future fish stocks, TSIC and SIV recommend a more precautionary approach to seismic survey activities.

It must be remembered that the consequences to the oil and gas industry of the ALARP process not addressing real world risks is negligible, however the consequences for the fishing industry could be significant and result in reduced egg production, recruitment failure and ultimately reduced Total Allowable Catches. It is important to note that these impacts will not be observed until at least 3 to 5 years post seismic survey, well after the oil and gas seismic testing has moved on, and a time frame near impossible to monitor and test the impacts of seismic.

Statements made in by the fishing industry in Newfoundland and Labrador in Canada ring true here in Tasmania⁴.

“The Grand Banks are desperate for a break,”

“While Ottawa preaches caution when it comes to fisheries management, (Premier) Dwight Ball throws that caution over the side of a seismic boat.”

“I know they say there’s not a direct link. But in the absence of all the facts and considering the delicate state of our marine ecosystem and (fish) stocks, they should be erring on the side of caution and they’re not,”

“(Instead), they blast the Grand Banks first and down the road they’ll determine if it has an impact. I think that’s absolutely foolhardy. It will be too late.”

Regardless of these concerns, the ALARP process results in statements for the oil and gas industry along the lines of... *Consequently, based on the worst-case assessment, the significance of any potential effects is considered to be acceptable and should any effects at an individual level occur, it is **highly unlikely** that these will be apparent at a population.*

⁴ <https://ipolitics.ca/2019/04/18/seismic-testing-concerns-ignored-in-oil-obsessed-nfld-and-labrador-union/>

The term highly unlikely does not sit well with the fishing community, and our concerns are exacerbated by the statements made by the authors of the research by the University of Tasmania and Curtin University who state “there is a significant and unknowledgeable potential for ocean ecosystem function and productivity to be negatively impacted by present seismic technology.

Recommendation 4: In light of insufficient scientific evidence, TSIC and SIV recommend a more precautionary approach when assessing potential risk of seismic on the marine environment to adequately protect the renewable marine resources that the fishing industry rely on.

Application of the Offset Principle

The South Eastern (Tasmanian and Victorian) fishing industry is under no doubt that seismic survey activity is having far greater impact on marine animals and their larvae, and the broader marine ecosystem services on which they rely. It is acknowledged that to fill the current research gaps would be exceptionally costly, and time consuming and the end outcome would still be a ‘oil and gas science and interpretation of science’ showing low to no impacts vs ‘fishing industry supported and interpreted science showing greater impacts and uncertainty’.

It is the firm view of TSIC and SIV that the oil and gas industry should offset this unknown and potentially unmeasurable impact. This could be achieved through the application of the offset principle to seismic surveys or the establishment of a marine community fund to support marine rehabilitation projects.

From a fisheries viewpoint, stock enhancement projects could be funded, which would counteract the unknown impacts of seismic on larvae (future recruitment).

TSIC and SIV have held preliminary discussions with APPEA, but there is still some way to go to establishing a formalised marine community fund.

The unmeasurable but detrimental impact that seismic causes was acknowledged by Origin Energy when undertaking the Crowes Foot survey in the Otway Basin in 2016/17, and should become common practice as is required through the ‘rehabilitation bond’ process applied to on land exploration.

To simply ignore the need to rehabilitate any impact, or potential impact, at sea simply because it is not visible, when in contrast it is a regulated requirement for on land exploration is simply not acceptable and must be addressed through this enquiry.

Recommendation 5: TSIC and SIV recommends the immediate implementation of a ‘rehabilitation bond’ for all seismic exploratory work undertaken at sea. This could be achieved through the application of the offset principle to all seismic activity.

Conclusions

- The research published by the Institute for Marine and Antarctic Studies clearly shows that seismic activity is having a far greater impact on the marine ecosystem and animals it supports than ever accepted or acknowledged by the oil and gas industry.
- Without time consuming and exceptionally costly research, this impact is in large not quantifiable.
- Concerns raised by the fishing industry, and based on this new body of science are, in the view of TSIC and SIV, not being adequately addressed in the EP process. Instead, oil and gas proponents ‘cherry pick’ science to suit their end outcome.
- It is the view of TSIC and SIV that the EP consultation process is not adequate.
- Although the view of the oil and gas industry and NOPSEMA is that the ALARP assessment process adequately assess and mitigates risk when required, it is the firm view of TSIC and SIV that should (or when as is the case with scallops) this ALARP process gets the decision wrong it is the fishing industry and broader community that own the marine resource that will suffer the consequences, not the oil and gas industry.
- The oil and gas industry, NOPSEMA and the Australian Government must acknowledge that seismic is having a far greater impact on the marine environment than ever previously accepted, and they must implement the offset principle to counter this impact. This could be achieved through the establishment of an oil and gas ‘community fund’ or the like.

Summary of Recommendations

- Recommendation 1: The inquiry must consider the impact of ‘cherry-picking’ of evidence that continues to occur when the oil and gas industry prepare their environment plans, often to the detriment of the fishing industry..... 9**
- Recommendation 2: TSIC and SIV recommends the development of a formalised, transparent, meaningful two-way oil and gas / seafood industry consultation framework as a matter of urgency.. 15**
- Recommendation 3: The oil and gas industry and NOPSEMA must afford greater attention and focus to the potential and currently unknown cumulative impacts of seismic. 18**
- Recommendation 4: In light of insufficient scientific evidence, TSIC and SIV recommend a more precautionary approach when assessing potential risk of seismic on the marine environment to adequately protect the renewable marine resources that the fishing industry rely on. 19**
- Recommendation 5: TSIC and SIV recommends the immediate implementation of a ‘rehabilitation bond’ for all seismic exploratory work undertaken at sea. This could be achieved through the application of the offset principle to all seismic activity. 19**

Signed by:



Julian Harrington
Chief Executive
Tasmanian Seafood Industry Council



Johnathon Davey
Executive Director
Seafood Industry Victoria

On behalf of

The Tasmanian seafood industry

Victorian seafood industry



**POLICY IN RELATION TO MINING, GAS AND PETROLUUM SECTOR CONSULTATION
WITH THE PROFESSIONAL SEAFOOD INDUSTRY**

Definitions

Professional seafood industry	The professional fishing, harvesting, aquaculture, processing, wholesaling, retailing and exportation sectors of the Australian seafood industry, as represented by a seafood peak body.
Proponent or Title holder	The mining, gas and/or petroleum company proposing an activity within the marine environment.
Consultation:	An appropriate and meaningful form of engagement, consultation and collaboration between title holders and the professional seafood industry.
Seafood peak body	Recognised state based seafood bodies who represent the professional seafood industry, namely Seafood Industry Victoria (SIV) and the Tasmanian Seafood Industry Council (TSIC)

Background

Each Australian State has a seafood or fishing peak body (e.g. Seafood Industry Victoria – SIV; the Tasmanian Seafood Industry Council - TSIC). Seafood peak bodies represent a diverse range of memberships, which may include professional fishing, harvesting, aquaculture, processing, wholesaling, retailing and exportation of seafood.

Seafood peak bodies and the professional seafood industry is accustomed to operating within a multi-user environment and negotiating with other user groups for access to the marine resource. The industry supports the open and multi-user nature of State and Commonwealth waters.

In recent years, there has been an increased interest from mining, gas and petroleum companies to conduct a range of activities, in particular seismic surveys, within the marine environment. This has brought with it an increasing demand on the professional seafood industry to partake in consultation with mining, gas and petroleum activity proponents. This increasing demand for consultation is stretching the resources of seafood peak bodies and initiating a level of consultation fatigue. Furthermore, recent scientific reports¹ identify there are impacts on fisheries resources from exposure to seismic activities and the environment upon which they rely. This potential impact on the professional seafood industry operations is of significant concern.

¹ <http://www.frdc.com.au/project?id=585>
<https://www.nature.com/articles/s41559-017-0195>

When titleholders propose operations that would preclude existing users from fully exercising their rights and interests, the professional seafood industry will ensure concerns and interests are recognised and compensated accordingly. This includes the exclusive use of waters for activities such as establishment of safety zones around key infrastructures, and exclusion areas around seismic activities.

Future allocation of access to marine areas to titleholders, whether exclusive or not, should only be granted when there is an understanding of all impacts on professional seafood industry operations and the environment on which the sector depends on. All environmental plans and impact assessments must entail a full review of the risks and impacts of that particular allocation or acquisition area on the rights, operations and needs of intersecting and adjacent professional seafood industry interests. It should be obvious that this involves more than just articulation of historical catch data for key species.

Issues arise when titleholder projects impact on the marine environment to the detriment of professional seafood operations. Impacts may be short term, such as temporary displacement (construction or seismic activities) and other impacts may be long term, such as when the environmental effects of a project are of such magnitude that professional seafood operations are no longer viable or stock status is impacted.

Recent scientific reports² clearly identify the potential for longer term impacts on commercially targeted species and broader ecosystem services.

Adequate and consistent consultation practices must be carried out according to the principle that pre-existing users should be properly engaged and the identified risks and issues mitigated. Should there be potential negative impacts on professional seafood operations, there should be payment of compensation by the titleholders to the impacted party/s.

This Policy provides a background to the issue and a clear policy statement outlining the Australian professional seafood industry's position around all future mining, gas and petroleum activities within the marine jurisdiction. This Policy provides a clear and transparent process for all future titleholder consultation with the professional seafood industry, which would form the minimum consultation standard for all future mining, gas and petroleum activity within the marine environment.

² <http://www.frdc.com.au/project?id=585>
<https://www.nature.com/articles/s41559-017-0195>

Key Policy Principles

1. The professional seafood industry is a major impacted sector when mining, gas and petroleum activities, particularly seismic activities, are conducted in the marine environment.
2. The titleholder or proponent has an obligation to properly engage with relevant seafood organisations, in particular seafood peak bodies such as SIV and TSIC. Consultation must aim to identify potential issues and risks, and to mitigate any risk to ALARP (as low as reasonably possible).
3. The most efficient way to undertake these consultations and negotiations is with a co-ordinated program run through existing seafood peak body's and their established network connections (eg: Tasmanian Seafood Industry Council and Seafood Industry Victoria). Titleholders who deal with individual fishers and smaller association bodies may tick the consultation process box, but in reality will only deliver out of context 'direct contact' and create 'consultation fatigue'.
4. The cost of running a coordinated Consultation Program should be solely met by the Titleholders who give rise for the need of this service. This must include financial contribution to seafood peak bodies for the considerable time already expected of them during any consultation period. It needs to be noted that Titleholders who engage consultants to undertake engagement on their behalf may be helping themselves but are NOT alleviating the burden of consultation, investigation and negotiation on seafood peak bodies or individual industry participants. It is also important to note that seafood peak bodies and other seafood representatives are currently not funded to undertake the burden of consultation that supports Titleholders operations and the benefits they derive from these operations (namely financial).
5. The overarching process would be as follows;
 - a. Once a titleholder identifies the jurisdictions (States and/or Commonwealth) in which they will be operating, they make 'first contact' with the seafood industry through the relevant seafood peak body (eg: SIV, TSIC). Information should be sent through to the seafood peak body. This should be done well in advance of the first briefing session with the peak body/s.
 - b. The first briefing session should discuss the approach and scope of a **Consultation Plan**. This will be informed by where and when the proposed activity is going to take place and on that basis, which industry sectors are likely to be impacted and what pre-existing opportunities for industry engagement might be available. Engagement platforms may include broadcast materials like the PROFISH (SIV) newsletter and the Tasmanian Seafood Industry News Magazine; sector-specific newsletters and/or already planned Industry forums such as TACC forums or Port Visits.
 - c. The peak body then provides a costed proposal (on behalf of Industry) to deliver the agreed **Consultation Plan** to meet the Titleholders and industry needs and to ensure Industry members are fairly treated.
6. Where a Titleholder has failed to engage in meaningful consultation with the professional seafood industry, seafood peak bodies shall seek to have regulatory approvals deferred for those project proposals that may significantly impact upon the interests of the professional seafood industry.

The Consultation Process

An increasing number of mining, gas and petroleum related developments overlap with professional seafood interests. State based seafood peak bodies find it challenging to engage with and respond to the ever increasing proposals being put forward by titleholders. At present, the levels of consultation employed by titleholders is inconsistent and often inadequate. Furthermore, seafood peak bodies are not compensated for the significant time and effort required for such consultation.

It is not sufficient for proponents of major developments to expect seafood peak bodies, or those fishers affected, to have the responsibility and dedicate the time required to investigate and review complex environmental reports. These reports may not even address the interests of professional fishers, or the links between their activities and the environment.

Seafood peak bodies are resource poor, and are not able, nor willing, to engage with each Titleholder and provide them with a list of contacts within the professional seafood industry. Subsequently, there is an impasse in the ability of each titleholder in their consultation, hence why we have developed this policy.

It is the view of the signatories of this Policy that the decision making process for mining, gas and petroleum project proposals must require proponents to demonstrate that their consultation and negotiation strategies engage appropriately with the professional seafood industry. This consultation process must address and where possible mitigate environmental and access issues.

The duty to consult lies solely with the titleholder. To achieve meaningful consultation titleholders must utilise appropriate two-way communication methods and techniques as the provision of information alone does not constitute appropriate and meaningful consultation.

An indicative Consultation Plan blueprint (up to publication / approval of the EP) is provided in the tables below. This shows that most titleholder consultations would require in the order of **30 days** time from seafood peak bodies. It needs noting that seafood peak bodies currently provide this service with no financial compensation, a situation we will not accept into the future.

Pre-activity planning and review of EP

Scoping	Review materials provided by Titleholder to identify what the proposed activity is, where it is happening and when. This will inform identification of potentially impacted sectors and likely issues and risks. This step assumes that all technical, eg modelling, work has been independently peer reviewed. If this is not the case then there will be an additional cost to get this review completed. This is a quality control step that Titleholders should undertake as a matter of course. [5 days]
Planning	Identify individuals and businesses in the potentially impacted sectors and make arrangements to qualify the nature of that potential impact. This will take into account that impacts could be short term, e.g. displacement of fishing effort and removal of access to fishing grounds and/or long term, e.g. damage to the flora and fauna within the marine environment and disturbance to ecosystem function. This would include the development of a communication and engagement plan for the individuals and businesses identified. [5 days]
Engagement	Execution of the communication and engagement plan in order to qualify the potential impacts. This would likely involve multiple meetings (possibly port visits) and also liaison with the state based regulators and research institutes to get certified fishing history statistics as required to support any subsequent negotiations. This would vary depending on size and nature of activity, number of fisheries, but time has been estimated based on engagement efforts and other costs associated with the Crowes Foot survey in Victoria. [10 days+]
Negotiation	On behalf of seafood individuals and businesses who have a qualified impact, develop a framework to mitigate risk and facilitate negotiations to ensure professional seafood industry members are fairly treated. [5 days] .
EP Review	In cases where issues and/or risks were identified that may not have required negotiation / compensation for individuals or businesses, but rather changes to how the planned activity was going to be undertaken (eg, equipment used, paths taken, timeframes adjusted, etc), these will be reflected within a reviewed EP. In turn, this will require the seafood peak body review the updated proposed activity plans. [5 days] .

Monitoring & Review (during and after completion of the activity)

(Indicative effort for an activity with 'moderate' compliance is in the order of **8 days**)

During the Activity There is a role for seafood peak bodies in monitoring the activity and communicating with fishers on progress, issues and/or any changes in plans. This will require the seafood peak body to be on standby for discussions during the proposed activity. [In the order of **1 – 7 days of planned activity**].

After the Activity On completion of the activity it is expected that there will be reports on compliance by the Titleholder of activity actually undertaken and 'groundtruthing' what actually happened as compared to what may have been modelled or assumed during the risk evaluation process in preparing the EP. For example, sound modelling is done prior to a survey. This is monitored during the survey for actual effect and then this should be reviewed to see if the impacts were greater than expected. This was actually the case for the Crowes Foot survey with compensation adjusted after the planned activity as the impacts were greater than originally expected. [Depending on levels of compliance / post-event findings **5 – 10 days**].

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Signatories

Johnathon Davey
Executive Director SIV

Julian Harrington
Chief Executive TSIC