National SCIENCE Challenges

SUSTAINABLE SEAS

Ko ngā moana whakauka

What do I need to know about processes and evidence to start a new business activity in a particular location?

For businesses

Introducing your business to a new place can be difficult, especially if it is an activity that the community has not been exposed to before.

Talking to people and presenting a well-considered case as to why the business will help rather than degrade the social dynamics and the environment is really useful. Speed in gaining any needed consents from local government and iwi will be increased if you use rigorous and up-to-date risk assessment procedures.

Community support and environmental risk assessment are essential

When you're thinking of starting a new business activity somewhere, work hard to get the community and hapū/iwi onboard and do a thorough environmental risk assessment.

Get the community and hapū/iwi on your side

Dissecting the discourse of social licence to operate

Do an environmental risk assessment

- Understand what environmental stressors your activity will produce. <u>See the table</u>.
- Understand what environmental stressors are already happening ask your community, hapū/iwi and council.
- Understand where the present ecological response footprint is — ask your council or go through an exercise with your community and hapū/iwi. Using this as an exercise could help with gaining community and hapū/iwi support.

Calculating ecosystem response footprints

<u>Using ecosystem response footprints to guide environmental</u> <u>management priorities</u>

- Assess the cumulative effect of your intended activity in the location you intend to do it. Do this by:
 - assessing whether responses to your activity will overlap the present ecological response footprint (ERF) and consulting *Adding other stressors* in the following section.
 - assessing the ecological health and connectivity of the area

Assessing present ecological health

- If necessary, determine in consultation with those that granted social licence whether there are other places it could go or whether there are mitigations you could put in place. In this case, use a risk assessment method that can cope with multiple types of outcomes and evidence — see the *Risk and uncertainty decision tree*, below
- Develop monitoring protocols and 'what if' actions in consultation with your iwi/hapu, community, and council.
- Present risk assessment to council.

Adding other stressors

Managers and users of the marine environment often need to assess what a new activity might do to the ecological health of an environment. If the new activity generates a new stressor(s), the following is a guide to the risk that this additional stress generates. Activities and stressors can be sorted into low, moderate, or high risk to ecological health based on Gladstone-Gallagher et al (2024).

Risk is high in adding an activity:

• if the activity generates multiple stressors.

Risk is moderate in adding an activity that only generates a single stressor:

• even if the stressor generated is at low-to-moderate level but the stressor was already present and the addition will increase its intensity or the area it covers.

Risk is low in adding any stressor:

• if the stressor is at low levels, generates unimodal responses and is not one that accumulates (generates physical legacies such as mud content generated by sedimentation).

Risk is high in adding any stressor:

- if the stressor impacts on more than component of the ecosystem network, especially if the stressor is one that accumulates
- if the stressor is occurring at a high level and covers a large area.

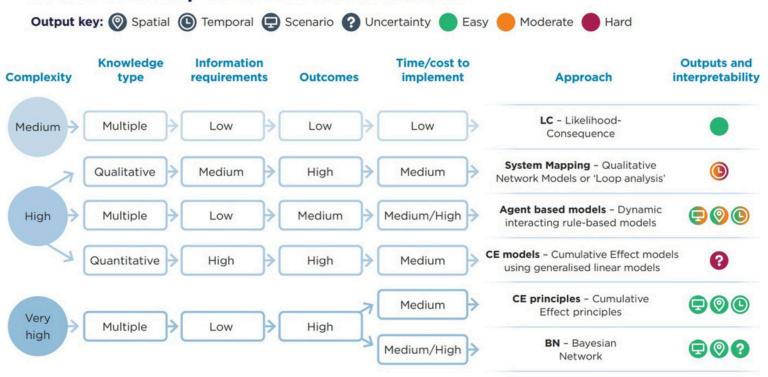
Risk is moderate in adding any stressor:

- even if the stressor only occurs at low-to-moderate level, but is one that accumulates and will cover a large area this risk will increase over time with the accumulation of the legacy and move into a high-risk level
- if the stressor occurs at a moderate level and covers a large area.





Decision tree to help choose a risk assessment method



References

Gladstone-Gallagher R, Hewitt J, Low J, Pilditch C, Stephenson F, Thrush S & Ellis J (2024). Coupling marine ecosystem state with environmental management and conservation: A risk-based approach. Biological Conservation 292:110516.

Hewitt J & Thrush S (2019). Monitoring for tipping points in the marine environment. Journal of Environmental Management 234:131-7.

Hillman J, Lundquist C & Thrush S (2018). The challenges associated with connectivity in ecosystem processes. Frontiers in Marine Science 5.

Rullens V, Stephenson F, Lohrer A, Townsend M & Pilditch C (2021). Combined species occurrence and density predictions to improve marine spatial management. Ocean & Coastal Management, 209:105697.

Shao Z, Bryan K, Lehmann M, Flowers G & Pilditch C (2024). Scaling up benthic primary productivity estimates in a large intertidal estuary using remote sensing. Science of The Total Environment 906:167389.

Schenone S, Azhar M, Ramírez C, Strozzi A, Delmas P & Thrush S (2022). Mapping the delivery of ecological functions combining field collected data and unmanned aerial vehicles (UAVs). Ecosystems 25(4):948-59.

Thrush S, Lewis N, Le Heron R, Fisher K, Lundquist C & Hewitt J (2016). Addressing surprise and uncertain futures in marine science, marine governance and society. Ecology and Society 21:44.

Townsend M, Thrush S & Carbines M (2011). Simplifying the complex: an ecosystem principles approach to goods and services management in marine coastal systems. Marine Ecology Progress Series 434:291-301.