



NO SEABED MINING **IN PATEA** **MINING**

MINEFIELD

A company called Trans-Tasman Resources is having a second go at setting up a world-first project to mine iron ore from the seabed off South Taranaki's coast.

The company (TTR) has spent a decade and about \$70 million to hone its case for Environmental Protection Authority (EPA) consent to take more than a billion tonnes of iron-bearing sand off the sea floor over 25 or so years.

The process – which will return 90 percent of what's extracted back to the seabed - will bring in about \$400 million a year in off-shore ore sales, with our government getting about \$6 million in annual royalties. The project is expected to increase Taranaki's gross domestic product by about \$220 million a year (half that of Methanex) and create about 300 jobs.

Sound like a good deal? Somewhere between 13,733 and about 17,000 people (the total is disputed) don't think so. Many people living in South Taranaki and further afield, local iwi, most of the fishing industry, and a close-neighbour oil company are worried about what it might do to the environment and local communities. That uncertainty has prompted their representative organisations and many individuals to fight the company to the bitter end.

The case will be a precedent-setter under the Exclusive Economic Zone (EEZ) Act. Environmentalists don't like the law, partly because it excludes climate change-causing emissions as grounds for objection, and partly because they reckon it's the National government's way of opening up our 200 kilometre-wide continental shelf to big overseas business.

They gained short-term solace in 2014, when TTR's first application to the EPA was rejected on grounds of uncertainty. Now the company's back again, claiming a more complete case. Opponents have also had time to marshal their own expert opinions, which say nothing's changed.

Who will win? By the time you read this, the EPA's hearing process will be near an end. A decision is expected in June. This story tells you what's been going on.



Trouble was expected when the EPA began new hearings in Wellington in February to see if TTR should be allowed to mine South Taranaki's seabed. The authority chose the members' lounge on the upper-most level of the Cake Tin - aka Westpac Stadium - to hear the arguments, an inner sanctum that can be reached only through a big wire fence, numerous escalators and doors easily defended with hired muscle.

One of the main opposing groups, Kiwis Against Seabed Mining (KASM), posted a Facebook page inviting people to turn up at the stadium when hearings began. Just five came, a couple of them from Taranaki. In the end, the muscle let them in.

One was Sarah Sinclair-Taikato, who attended with her mother, Patricia Sinclair of New Plymouth. Counting the other three, they were the only people of about 50 in the room who weren't counsel, advocates, media or EPA staff.

Sinclair-Taikato, a lawyer who has lived in Patea and owned a house there, says she was worried she might be biased against the project after what she'd seen from KASM, on Facebook, and in the news. "But what I heard wasn't enough to change my view."

In his opening address, Alick Shaw, chair of the four-person hearing committee, issued a warning against disruptive action, saying protest and clamour won't affect the outcome. It's not a popularity contest open to petition – it will be decided on formal evidence as it related to the law.

Older would-be protestors might see some irony in those comments. In 1981, Shaw was a leading protestor against the Springbok tour, something that probably helped a later political career that saw him become deputy mayor of Wellington.



He and his decision-making committee colleagues were faced with a complex minefield of expert opinion and boosterism, residing in hundreds of technical reports, added to by the hour as they headed into several weeks of hearings in Wellington, New Plymouth, and back in Wellington.

To understand what the four non-lawyer commissioners grappled with, it's useful to refer back to TTR's first unsuccessful application, which was filed in 2013 and heard in a similar series of hearings the following year, including sittings in Wellington, Hamilton, Whanganui, and at Pariroa Marae near Kakaramea.

A sore point among opponents this time is that only Wellington and New Plymouth hosted hearings and there was none on a marae. Some who appeared in New Plymouth said they had to travel many kilometres to be there, incurring lost pay, travel and accommodation expenses, and time away from family.

In 2014, the EPA received nearly 5000 submissions, 99 percent of them opposing TTR. The latest application attracted 13,733, according to the EPA, although KASM claims the total is around 17,000. Whether the proportion of opponents was the same this time is unknown, but a cursory look through the submissions list suggests it's likely to have been similar.

While the EPA analysed all the 2014 submissions to arrive at its 99 percent opposed statistic, this time it closely examined only those received directly at its offices or on its website, lumping the rest into a category it called "third-party web-based submission portals" - that is, mostly those from Greenpeace (70 percent) and KASM (28 percent).

That narrowed the number of analysed submissions to 262, and from that number the EPA declared a majority 56 percent (147) supported or partly supported TTR's application. That drew ire from KASM, several of whose presenters told the New Plymouth hearings the EPA submission form was elusive and clunky. For example, a Patea woman said she tried to fill it out numerous times but failed, so she went to the KASM site, whose online submission form was easily managed.

All this was plainly embarrassing for the hearing committee. In New Plymouth, it reassured submitters it looked through all the submissions and had not divided them into two classes in terms of significance.

An important thing to remember about this application is that the EPA's 2014 hearing committee heeded an EEZ Act requirement that if too much doubt remains about environmental impacts, an application must be rejected. It found many uncertainties about effects on the sea environment and what lives in it, from microscopic creatures to the world's biggest animals, blue whales.

Almost on cue, as the first application hearings were about to start in 2014, NIWA scientists spotted more than 50 of the whales feeding in the South Taranaki Bight (below), not far from the proposed mining site. Again this summer, nearly 70 were counted there.



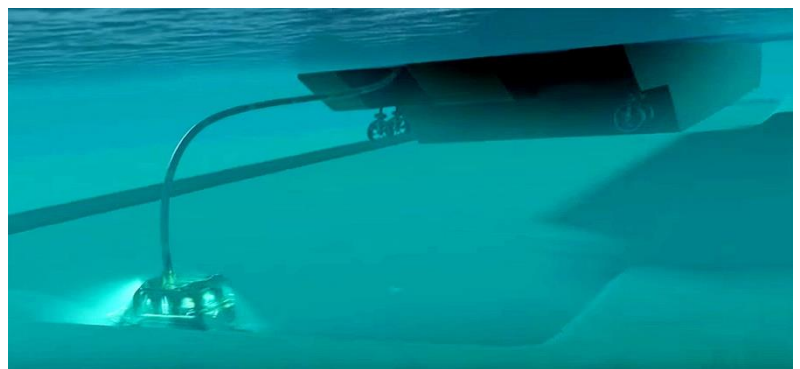


The TTR mining ship. Below: The excavator working on the seabed at the end of its umbilical cord.

The main focus this time has been TTR's attempts to convince everyone it has done enough research, expert analysis and modelling to overcome the uncertainty threshold.

Opponents said that, again, not enough is known to be confident.

In September 2016, six key issues were identified by an EPA scientist. They included concerns about the sediment plume created by the mining ship; disturbances to the seabed; the environmental triggers and limits (danger signs) proposed by TTR, and something called "adaptive management"; effects on Māori interests; effects of excluding others from the project area; and economic benefits to New Zealand.



Adaptive management means monitoring a project like this and changing its management as you see what the effects are. But adaptive management is technically a non-flyer now, because of a change to the EEZ Act in 2015. It said anyone getting a marine discharge consent must either meet its conditions or close down – they can't adapt their operation as it goes along.

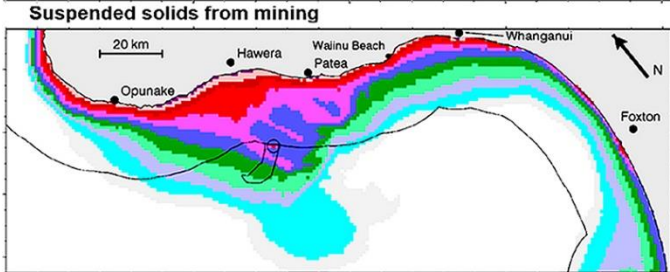
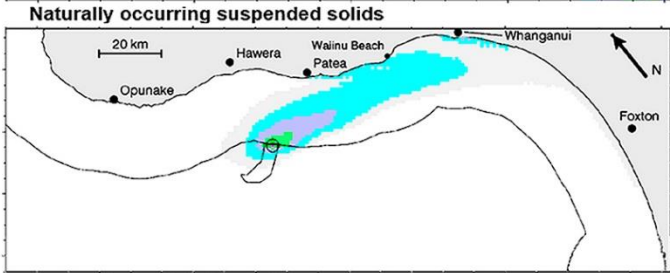
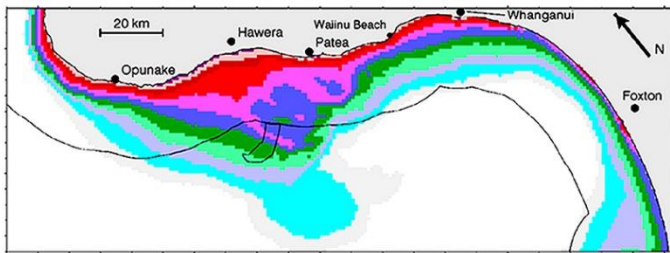
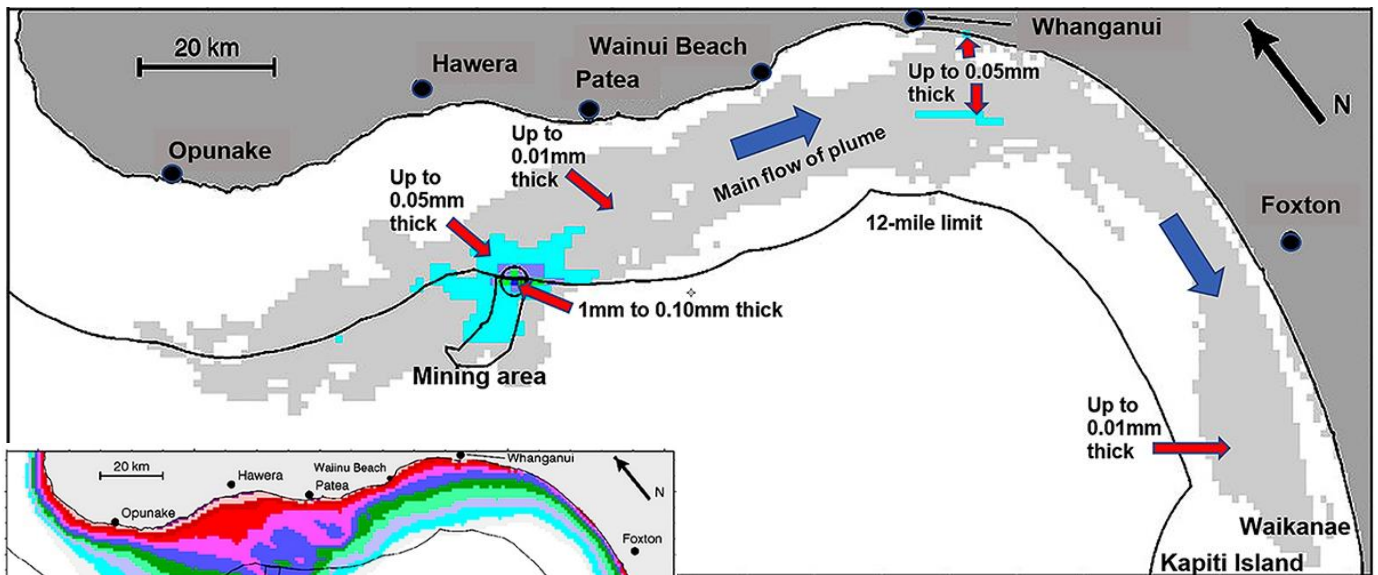
Committee chair Alick Shaw acknowledged this as a key dilemma – could conditions set by the EPA amount to adaptive management? He said he would arrange legal consultation to ensure that if the committee approved the application, its decision is not later derailed on such a legal technicality.

TTR believes the discharge conditions it wants set - for example, maximum accumulation levels of potentially toxic substances - can be monitored, and the frequency of monitoring increased if levels rise, without that amounting to adaptive management.

It says if increased monitoring shows levels have hit the agreed danger point, mining simply stops. A moot point is whether it could start again later after remedial steps. With more than \$600 million invested in the project, it's certain the company would want to start again. That could amount to adaptive management.

A lot rides on how accurately the EPA determines environmental limits and trigger points. To help with that, it uses panels of independent experts, who hold Skype conferences to discuss various options.

In New Plymouth, those few of us left by the fourth day of hearings got a taste of how it works, when the committee Skyped to Dr Tom Cresswell, an Australian expert on toxic substances. He told us levels of toxic fallout from the project are unlikely have significant impact.



The diagram above is TTR's projection of where the plume will go and how thick its sediment will be on the seabed. At left is TTR's version of how the plume will disappear without trace into existing sediment along the South Taranaki Bight coastline.

One of the biggest fears about the project concerns potential damage from a plume of sediment discharged from the mining ship. It will mostly drift south-east from where the ship is anchored about 20 kilometres offshore from Patea.

The version described in the first application was potentially long enough to extend hundreds of kilometres towards mussel farms in the Marlborough Sounds.

TTR contracted scientists and engineers to use samples taken from the seabed to construct computer models to test the plume's content and behaviour.

Their maps show that away from the immediate mining zone, the plume will be insignificant among existing background sediments and discolouration already drifting around the South Taranaki Bight, especially after rivers discharge mud loads and the at-times wild seas stir up the bottom.

One of TTR's leading experts, US marine biologist Lawrence Cahoon, told the hearing "region-wide effects of iron-sand mining on short-lived primary producers and consumers will be indistinguishable within natural oceanographic variability". Effects will be more significant close to the mining zone, but reduced by the ocean's "physical and biological processes".

In short – the sea and its creatures will cope, as they already do from the effects of mankind's extensive impact on land, rivers and sea through cutting down the bush and intensive farming.

Opposing groups – Greenpeace and KASM combined, commercial fishing interests, the Forest and Bird Society, and various iwi and Māori organisations – have challenged TTR's latest claims as inconclusive. They say too little is known about the existing sea environment there. For example, Dr Shaw Mead (KASM), told the hearing information about the bight's benthic ecology is substantially unchanged since TTR's previous application.

“Considerable effort has been invested in the improvement of models predicting sediment dispersion, optical effects and primary production. However, much less attention has been dedicated to improve our understanding of the composition and functioning of benthic systems in the (bight) that will be impacted by the (mining) activities.”

Some translation might help: the benthic zone is the ecological region at the lowest level of a body of water, including the sediment surface and some sub-surface layers. Organisms living there are called benthos, for example the benthic invertebrate community. They’re part of the food chain that leads up to fish and mammals like whales and dolphins. Primary production refers to plant matter produced by small phytoplankton, tiny lifeforms near the surface where sunlight is available for photosynthesis.

Dr Mead’s thesis supported a prevalent opposing refrain that aside from investigating the plume and reconfiguring the economic case, TTR has done little in the last two years to establish a “baseline” state of the environment. Robert MakGill, the fisheries lawyer, said it was a case of "the same old car with a new lick of paint".

That said, Shaw conceded that “Unlike the previous application, the current one includes an extensive monitoring and management framework...The proposed framework seems adequate if all components are executed with due diligence.”

That view goes some way towards explaining the Department of Conservation’s stance on this application. It surprised many when it announced in October it would not be making submissions - because it has worked with TTR on the conditions and is satisfied with what emerged.

Fallout from DOC’s position came in New Plymouth, when Anne-Marie Broughton, chair of the Taranaki-Whanganui Conservation Board – a DOC-administered organisation - told the committee she and her colleagues were never consulted by DOC, and the department’s stance did not coincide with views held by some DOC staff with extensive experience of the region. “We were absolutely dumb-founded and disappointed,” she said.

This contradiction didn’t escape the hearing committee’s notice and it asked DOC to explain. The department said the boards are independent bodies providing it with advice on conservation matters. In the end, DOC was due to appear late in the hearings at the hearing committee’s request - not to submit its opinion, but to answer questions.

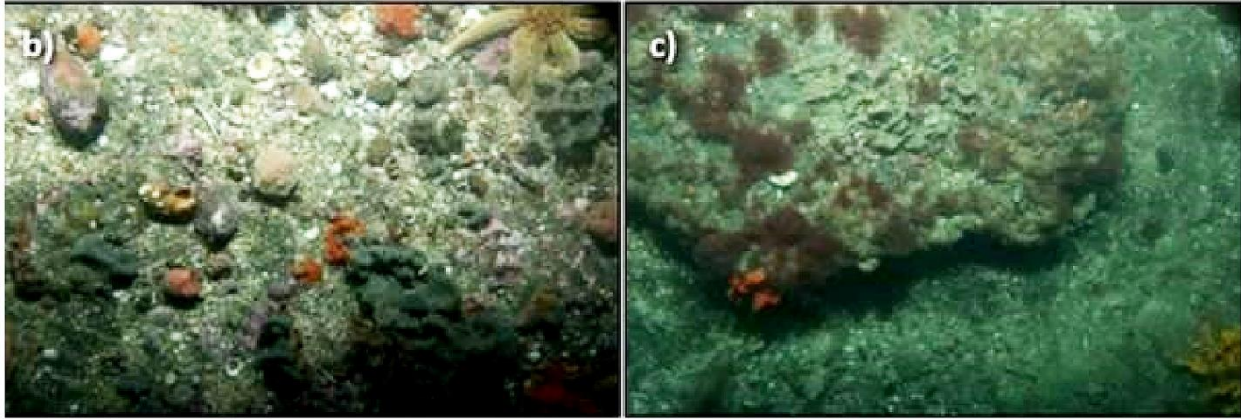
Something else in New Plymouth that seemed to catch the committee’s attention even more was testimony from South Taranaki fishers and divers. South Taranaki Underwater Club’s Bruce Boyd provided a video and photographs that contrasted with TTR’s efforts to project the offshore area as unremarkable. The underwater images showed a Jacques Cousteau-type tropical garden, resplendent with corals, sponges, anemones, plants, brightly coloured fish, molluscs and crayfish.

Experienced fishers like Roger Malthus (pictured below addressing the committee in New Plymouth) spoke of up to 60 boats a day braving the Patea River bar to get to extensive fishing grounds, scattered with uncharted reefs, shoals, banks and seabed cracks teeming with snapper, blue cod and crays.

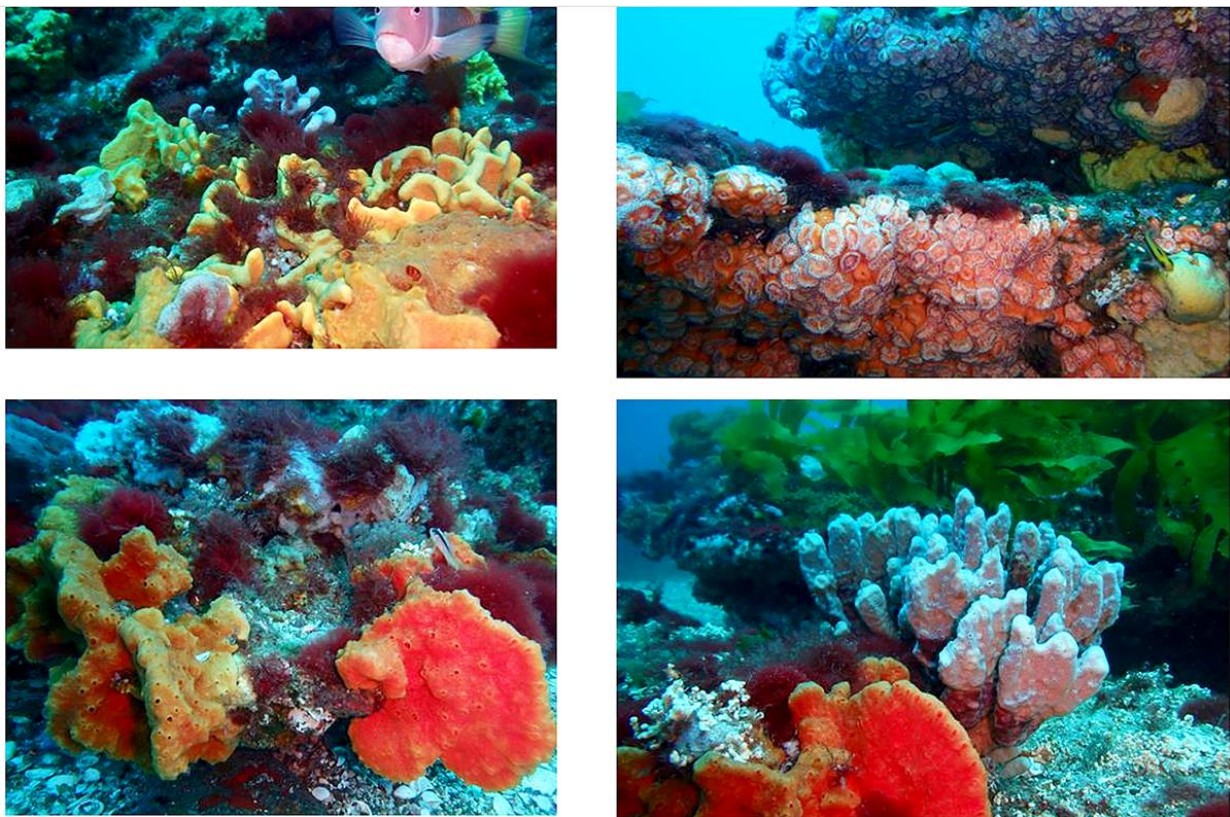
It became something of a running joke among submitters as to whether anyone should provide GPS co-ordinates of favourite fishing spots, but all agreed to the committee’s requests for more data. That was an entreaty later decried by Sheryl Hart of the Raglan Sport Fishing Club, who said such work is the responsibility of professional scientists, not recreational fishers.

Iwi and others from South Taranaki spoke of the vulnerability of reefs along the coast that are vital sources of kaimoana. They fear the effects of the plume’s sediments. Anne Marie Broughton, of Te





Above: TTR images of a South Taranaki reef. Below: Some of the underwater club's photos of the area's reefs.



Kaahui o Rauru Iwi at Waverley, said the land-based Waipipi iron-sands mining project that closed 16 years ago did damage to shell-fish reefs that's evident even today.

How could anyone - even experienced commissioners like hearing committee members Alick Shaw, Dr Kevin Thompson (deputy chair of the EPA Board), Sharon McGarry, and Gerry Coates – hope to unravel the millions of words from dozens of experts whose conflicting views are typical of academia's constant churn?

That's where the expert conferences come in, and they looked particularly hard at TTR's attempts through UK hydraulics company HR Wallingford to show the plume won't be anywhere near as bad as first thought in 2013.

Most experts agreed Wallingford's modelling methods were sound, but – among other things – they debated at length the probable size of the plume's sediment particles and how those might behave; what proportion will comprise bigger and heavier particles that drop quickly to the seabed; and how

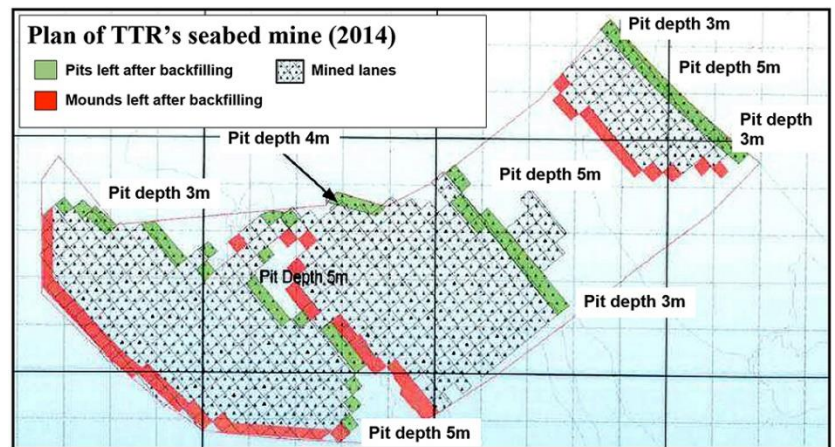


The above drawing shows (at left) the pipe that will send tailings – and a plume – towards the hole that has been dug in the seabed.

many will be tiny and stay suspended over long distances, blocking out light essential for photosynthesis.

It emerged that problems might be aggravated by scattered deposits of clay (lens) in the mining zone seabed.

If the excavator hits one, it could increase fine sediment in the plume. To counter that, TTR said its surveys of the seabed ahead of digging will locate clay and ensure the excavator mostly avoids it.



In the early days of the first application, TTR made a change to the way it will return excavation tailings. Originally, these were going to go out about 15 metres above the seabed, which would have created a long dirty trail. TTR has now got the disposal pipe down to within four metres of the seabed. Is that good enough? It depends whose submissions you believe.

In its broad claims to the populace, TTR has declared the project does little more than take a bunch of sand off the seabed and return most of it back into the same hole. Not quite, it turns out. The undersea crawler will proceed along 300m-wide lanes across the seabed, digging at an average depth of about five metres, thereby creating long trenches, and the pipe that returns the tailings will refill those - but not completely.

One end of each trench will remain unfilled, while at the other end the refilling will overshoot and create mounds up to 9m high. TTR reckons those will eventually be eroded away by currents, but Origin Energy, owner of the nearby Kupe platform, is worried the mounds might migrate across the seabed and bury its undersea pipeline to land.

One idea is that TTR could fit some sort of machine on the end of the disposal pipe that would direct tailings more precisely into the trenches. The end of the pipe would be even closer to the seabed, cutting down the amount of water the tailings enter.

However, TTR's director and executive chairman, Alan Eggers (pictured right), says every option to improve the disposal method has been explored and the suggestion is not feasible. Four metres is as close as they can get the end of the disposal pipe to the seabed because of the rise and fall of the mining ship.





The EPA’s decision-making committee for the TTR application, from left: Kevin Thompson, Sharon McGarry, Alick Shaw and Gerry Coates.

An indication of the hearing committee’s concerns about the plume came midway through the first set of Wellington hearings, when it asked TTR to get its modellers to produce more detailed worst-case scenarios.

Let’s get back to sea mammals. Whales may be the most emotive topic in New Zealand’s public discourse. When KASM posted a link on its Facebook page to news that 68 blue whales were seen in the bight this summer, there were 39,000 views in a matter of hours.

My by-no-means-exhaustive search of the EPA’s TTR application data base found more than 70 mammal-related documents. Marine mammals were referred to often in New Plymouth, ranging from first-hand accounts from sailors, surfers, fishers and oil platform workers, to expert evidence from Climate Justice Taranaki marine scientist Dr Lyndon DeVantier.

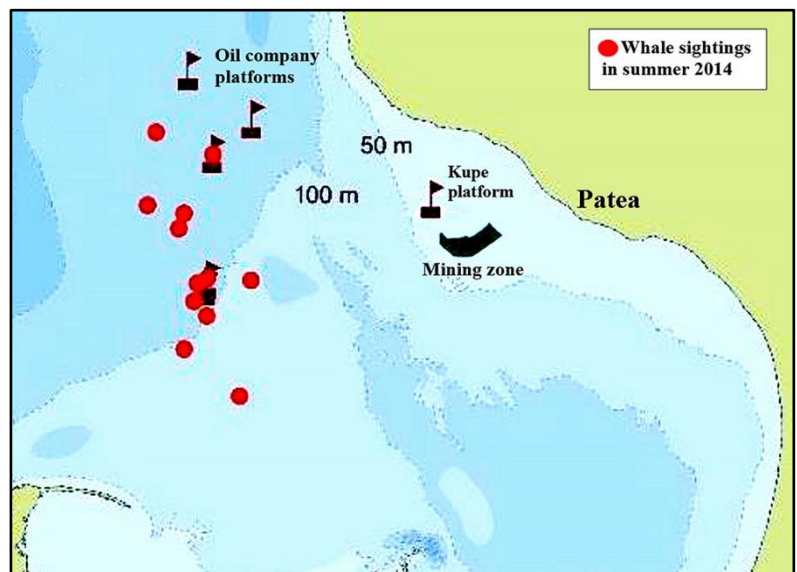
He said a 2011 research paper by German zoologist Kristin Kaschner and a panel of international scientists estimated the Tasman Sea off Taranaki is rivalled only by a zone near Uruguay as the world’s most populous cetacean region, with more than 40 species identified.

For KASM, zoology professor Elisabeth Slooten said the project’s potential impacts include noise, collisions with vessels and mining equipment, habitat damage (in the mining area and the plume), and pollution from anti-fouling agents and oil spills.

Publicly available data show at least 33 marine mammal species use Cook Strait, she said. “All nine baleen whales found in New Zealand waters use the area. In addition, 24 species of toothed whales, including dolphins, sperm whales and beaked whales are known to occur in Cook Strait.”

Māui dolphins found immediately inshore of the proposed mining operation are critically endangered.

“Any noise pollution in the area, including seismic surveys and mining, risks displacing these endemic dolphins into high risk areas and increasing the impact of other human activities, including fishing.”



Sperm and beaked whales “are very sensitive to noise disturbance and can suffer injury or death from stranding or rapid ascent during diving in response to noise. Blue whales, which use the area year-round, are susceptible to low-frequency noise in particular.”

Her reference to blue whales brings us to Leigh Torres, a former NIWA marine ecologist, now leading a team of international researchers funded by National Geographic and collaborating with DOC in a study of the pygmy blue whale foraging ground 40km north of Farewell Spit.

That the bight appears to be one of four confirmed foraging grounds in the Southern Hemisphere was confirmed by Torres in 2014, when a five-day field trip recorded 10 sightings of an estimated 50 individual blue whales, including a mother and calf. The team frequently saw blue whale foraging behaviour, and observed, captured and recorded the whales’ krill prey in high densities.



Marine traffic through the South Taranaki Bight in the year April 2012 to March 2013. Most is clear of the mining zone.

For KASM, she told the hearings committee the expected sediment plume may affect the distribution and availability of an important blue whale food called *Nyctiphanes australis*.

She is concerned about noise, which she said whales and dolphins use as their primary sensory mode, with acoustics informing their foraging, communication, and navigation.

Large vessels travelling at higher speeds can also pose a danger, and she thought TTR’s mitigation plan is incomplete.

Keen to set minds at rest, TTR contracted senior research scientist Simon Childerhouse, who said he is not concerned about impacts on the whale and dolphin populations. “There is a low likelihood of marine mammals being present in the proposed mining area and there is nothing to suggest that the mining area is of any significance to any marine mammal species.”

He said his conclusions are supported by dedicated marine mammal surveys of the proposed mining area and by existing knowledge about how marine mammals use the greater Taranaki area.

Blue whale sighting data “when combined with a lack of any blue whale sightings from 8200km of dedicated aerial surveys undertaken by TTR within the proposed mining area and inshore waters, provides good evidence that the proposed mining and nearby waters are highly unlikely to be a significant area for blue whales”.

He agreed with Dr Torres that the greater South Taranaki Bight-Cook Strait region is an important foraging location for blue whales, but they have been seen feeding in at least four locations around New Zealand. “While Māui dolphins and/or Hector’s dolphins are found in very low numbers in the South Taranaki Bight region, the operational area is at the margins of the southern-most recognised range for Māui dolphins.”


He said in general the dominant noise frequency ranges from dredges are lower than the sensitivity range for most marine mammal groups, with the exception of some baleen whales. While hearing loss is theoretically possible, it’s a negligible risk and highly unlikely given the length of time and close approach a marine mammal will need to make to be affected.

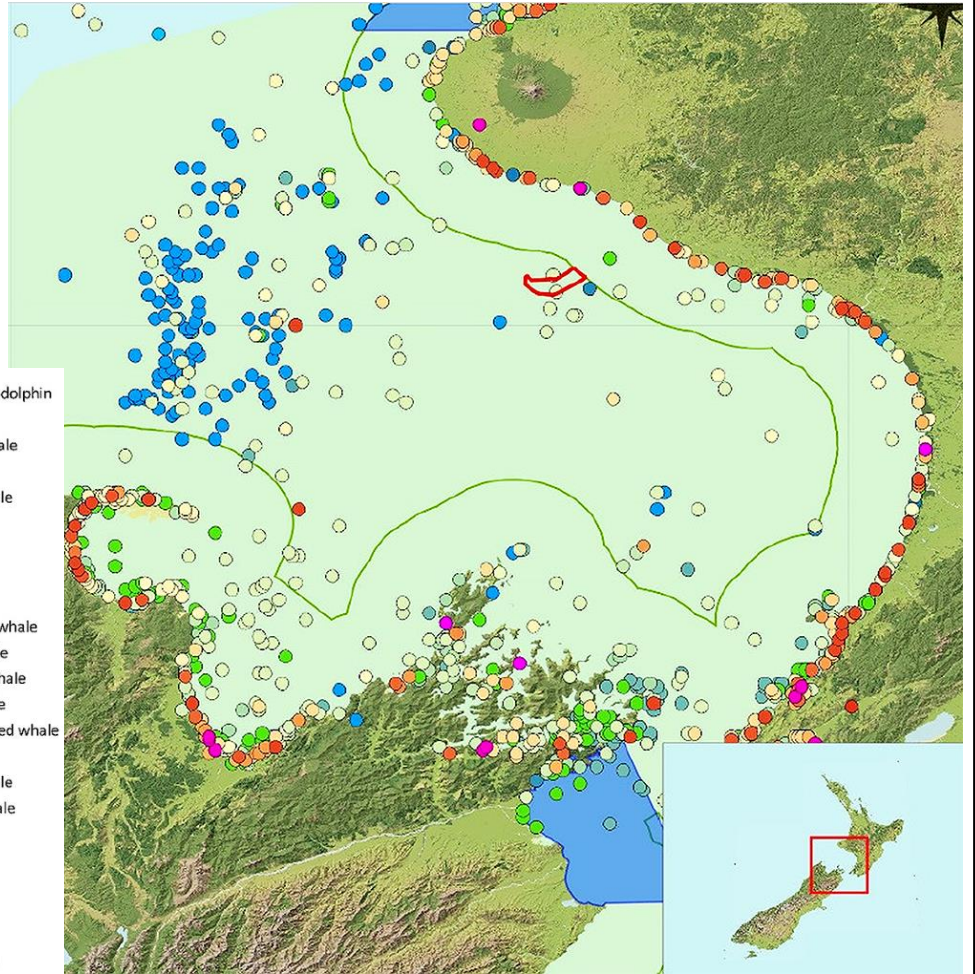
While chances of behavioural disturbance – mammals staying away from the area - are low to moderate, it will be evident only in the operation’s immediate area. Marine mammals disturbed by noise close to the dredge could move away much faster than the speed of the excavator (70 metres an hour). TTR’s engineering and project director, Shawn Thompson, told the hearing the operation will have a “mammal observation” system.

How many whales, dolphins and seals are we talking about?

A map tabled by NZ marine scientist Simon Childerhouse shows marine mammal sightings and strandings in the bight recorded by DOC up to late 2016.

KEY

 Marine Mammal Sanctuaries	 Southern right whale dolphin
 Areas of Ecological Importance	 Risso's dolphin
 12 nm Territorial Sea Outer Limit	 Short finned pilot whale
 Minerals Mining Permit 55581	 Pilot whale
Marine mammal records	
 Baleen whale	 Long finned pilot whale
 Minke whale	 Spectacled porpoise
 Antarctic minke whale	 False killer whale
 Common minke whale	 Killer whale
 Bryde's whale	 Pygmy sperm whale
 Sei whale	 Southern bottlenose whale
 Humpback whale	 Hector's beaked whale
 Fin whale	 Shepherd's beaked whale
 Blue whale	 Cuvier's beaked whale
 Pygmy Blue whale	 Ginkgo-toothed beaked whale
 Southern right whale	 Gray's beaked whale
 Pygmy right whale	 Arnoux's Beaked whale
 Hector's / Maui's dolphin	 Andrew's beaked whale
 Dusky dolphin	 Beaked whale
 Pantropical spotted dolphins	 Strap-toothed whale
 Bottlenose dolphin	 Sperm whale
 Common dolphin	 Crabeater seal
 Striped dolphin	 Leopard seal
	 New Zealand fur seal



Existing interests have to be considered by the EPA, and in this case they include a range of companies, local government bodies, government departments, organisations, local communities, and iwi, especially Ngāti Ruanui, the “home people” with manu whenua (territorial rights) status.

TTR has gone to considerable lengths to woo some existing interests, with success varying from completely winning over government departments like DOC and the Ministry of Business, Innovation and Enterprise; convincing some local bodies like Whanganui District Council to remain “neutral”; partially satisfying Taranaki Regional Council (TRC); alienating many sectors of the South Taranaki community, fishing interests, and Origin Energy - and being ex-communicated by Ngāti Ruanui.

The four local bodies that submitted – TRC, Whanganui and South Taranaki District Councils, and Horizons (Manawatu) Regional Council – profess to be neutral, depending on what conditions are set. STDC wants TTR to double the annual \$50,000 grant it has offered for the benefit of the community (that would amount to \$3.5 million over the 35-year duration of the consents).

TRC - which has a coastal plan that includes the seabed 12 nautical miles out from South Taranaki - says as the region’s prime environmental management body it wants to be involved in regulation. It seems largely happy with the application, saying TTR has done substantial new work since 2014, and with more robust scientific information available, the effects are now better understood.

It says limits could be set in the conditions, and “where uncertainty remains there are better processes for dealing with it through an adaptive management-type approach”.



Opponents stage a welcome outside the Devon Lodge in New Plymouth on the first day of the TTR hearings on March 6. Hearing committee chair Alick Shaw later commended everybody on their restraint.

The last is an interesting comment, given adaptive management is now supposedly off the agenda. Addressing “uncertainty” now relies on setting accurate limits and trigger points in the conditions. The council’s submission recorded much the same reasons for continued uncertainty as those raised by the proposal’s opposition.

The council told the hearing committee that feedback it had from the community indicated TTR’s consultation has been “to a much higher and more comprehensive level than for the previous application”. Some South Taranaki submitters disagreed with that. Jacq Dwyer from the Patea Historical Society, for example, said there were no community meetings attended by the company, and no contact made with the Patea Community Board.

Michaela Stoneman, an artist who has lived in Patea for 13 years, said the community was well briefed by TTR in 2013, but this time there was nothing. “This time around, with this new proposal, which in essence, has not changed, it’s been different. TTR did not hold public meetings with diagrammes and a savvy suited PR crew. We were left with a stack of fat photocopies left in the library –impenetrable or incomprehensible to the general public.”

Ngāti Ruanui kaiarataki (leader) Debbie Ngarewa-Packer was similarly critical of the company for its lack of communication. She said far from being the “haters and wreckers” her iwi had been labelled by some, it is open to economic development and supports activities in the exclusive economic zone. The iwi had to modify its views as more and more of its young people got jobs in extraction industries, especially in Australia.



Ngāti Ruanui representatives Graham Young, Debbie Ngarewa-Packer and Haimona Manuera address the hearing committee in New Plymouth.

She said after a reasonable start, relations with TTR deteriorated when the company showed little respect for protocols essential to establishing a relationship with iwi. The company wanted to jump straight to stage five and pay no heed to what should happen first.

It failed to respond to repeated requests for detailed information so the iwi's consultants could assess the proposal. The company didn't seem to realise that Ngāti Ruanui had been dealing with oil companies in its rohe (territory) for many years, so had more experience and expertise in such relationships than any other iwi.

From information it did gather, the iwi felt it must oppose the application because it offered too little benefit to South Taranaki, environmental risks were too great, and the uncertainties too many.

There have been no meaningful exchanges between Ngāti Ruanui and TTR since 2014, something that worried the EPA's Māori advisory committee, Ngā Kaihautū Tikanga Taiao. It identified a long list of issues in the application that it urged the hearing committee to resolve, and it stressed tangata whenua must support any conditions that were set.

Wrapping up the New Plymouth hearings, Alick Shaw expressed concern at the lack of engagement. He urged those who had chosen not to take a full part to review that stance and play a role in setting conditions, should the application succeed. "You owe it to yourselves to make sure you don't say it's too late...because too late will come."

An existing interest that's made more hostile noise than almost anyone is Origin Energy, a Sydney-based company that in 2004 bought 50 percent ownership of the Kupe natural gas field 30 kilometres off the coast from Manaia.

TTR's mining permit runs right through the Kupe field, and Origin is nervous. Its lawyer portrayed the consequences of TTR hitting anything belonging to Origin - including a capped unsuccessful well 32 metres under the seabed in the mining area - as something approaching Armageddon.





Above: Former Patea resident and opponent Sarah Sinclair-Taikato. Right: KASM leader Phil McCabe, who's been driving the campaign for more than five years.

“It could result in losses of \$1 million per day of stopped production, or losses in the billions if the infrastructure is damaged beyond repair,” she said. Consequences of an uncontrolled hydrocarbon discharge “are potentially catastrophic”.

She accused TTR of pursuing its application without properly consulting Origin, and that proposed conditions don't offer enough protection. TTR on the other hand said it had been discussing conditions right up to the day before hearings started and thought Origin was comfortable with them.

As he met colleagues in the lobby of the Devon Lodge hotel after the last sitting in New Plymouth, Alan Eggers feigned a stagger almost to his knees – in the style of Atlas carrying the world on his shoulders. They smiled sympathetically. It'd been a gruelling week.

For four days he'd listened while he, his company and their proposal copped unrelenting criticism from more than 70 opposing individuals and half a dozen organisations. One submitter, Karen Pratt, had presented a 700-page fault-finding treatise. He and his team were consistently stoic, except for an occasional aside that some opponent or other was just another KASM voice. TTR would get its chance to respond formally in the last hearings hours in Wellington - where few if anyone from Taranaki would hear its retorts.

However, a response of sorts did come within a week, when the company released the third version of the conditions it is recommending to the EPA. With 85 clauses set out over nearly 40 pages, it attempts to meet most if not all of the opposition's objections, although the words “where practicable” or similar appear in 20 sentences.

For example: “At all times during the term of these consents, the Consent Holder shall, to the greatest extent practicable, mitigate and where possible avoid, any adverse effects on the environment or on existing interests (including infrastructure and operations of licences) as a result of mooring failure or loss of position.”

In contrast to the EPA's claim that 56 percent support the proposal, only two people at the New Plymouth hearings showed such inclination. One was Fred McLay, Taranaki Regional Council's resource management director (see above), and the other former Labour associate minister of energy Harry Duynhoven, who ticked the submission form box labelled "grant with conditions".

Duynhoven, whose family has a bach in South Taranaki, said he is familiar with such proposals from his work in government, and he could see the company had done a lot of work on mitigating environmental threats. He believed there were "potential significant employment and other benefits in the Taranaki region from a mostly New Zealand-owned company".

Has he seen something the others missed?

At first glance, the economic case seems excellent - if you exclude environmental costs, which the company dismisses as minor. The deal seems economically sound for the company. So long as global iron ore spot prices hold at around \$NZ80 a tonne (they peaked at \$NZ250 in January 2011, and have recently hovered at \$NZ75 to \$NZ80) and the US/NZ exchange rate stays stable, the Patea project expects to be debt-free three years after operations begin in 2021, and start bringing in nearly \$150 million in gross surplus each year.

TTR is claiming a lot of local and regional spending and employment benefits, but those are challenged by KASM consultant Jim Binney, an applied resource and environmental economist. Binney said TTR's economic analysis doesn't provide a solid economic argument. "While an economic impact assessment has been done, it generally overstates the likely benefits of economic activity attributable to the project, while effectively ignoring environmental and social risks."

Environmental risks do have economic value, he said. The deep-sea marine environment provides an array of ecosystem functions, goods and services, many of which contribute significantly to human wellbeing and the functioning of the planet.

The nature of the project (a large proportion of inputs are imported or sourced from elsewhere in New Zealand) means little benefit will accrue to South Taranaki, the community most at risk from environmental and social damage. "The TTR operation will be very bespoke in nature (design, capital, much of the equipment, etc) and major domestic inputs such as fabricated metal manufacturing will require a level of sophistication and skill that is higher than most other major projects in the Taranaki."

This will make it more difficult for local and regional providers to be competitive, and increases risk of further leakage from the New Zealand economy. "While it is acknowledged that TTR will attempt to implement policies to source some inputs locally, experience elsewhere indicates such policies are easily gamed by suppliers."

He notes the original application used a modelling approach that estimated 370 fulltime job equivalents would be created, but this time round a different method ups that to 585. The hearing in Wellington heard that while senior specialist positions will initially be filled from the international market, local people would get about 30 percent of jobs overall. TTR has promised to put funds towards a training centre in Hawera or Patea that it expects could lift local employment to 60 percent or more after a few years.

Taranaki Regional Council said suitable economic work has been undertaken to identify positive economic benefits. For example, TTR economic consultant Jason Leung-Wai said Taranaki considers itself New Zealand's energy capital, and the project will further add to its reputation, help build its capability to support natural resource extraction industries, and contribute increased economic resilience to shocks.

More than a quarter of the annual spend will be directly with South Taranaki and Whanganui businesses, he said. "Of the estimated \$254 million in annual spend, just over half (52.2 percent) is expected to be in New Zealand. Of this, \$73.4 million is expected to be spent in the Taranaki/Whanganui region, with just under half of this again (\$34.6 million) spent within South Taranaki/Whanganui."

He said the project is expected to generate about \$18.6 million in GDP in the South Taranaki/Whanganui economy each year over 20 years, and employ 299 people. The wider Taranaki/Whanganui economy will benefit annually by about \$50.6 million in GDP and gain the equivalent of 683 jobs.

Leung-Wai said the region will get all the activity in three industries - fabricated metal product manufacturing, scientific, architectural and engineering services industries, and other transport. It will capture half the New Zealand expenditure in exploration and other mining support services, and about 20 percent in the basic material wholesaling industry (\$6.5 million). It will get 15 percent of legal and accounting services. Helicopter support will be provided out of New Plymouth at first, but later a helipad might be built in Hawera.

The overall national economy is expected to get about \$159 million in GDP and employment for 1666 people. The project will contribute about \$312 million to New Zealand exports, putting the iron sand ore into the top 20 of items exported from New Zealand. Estimated minimum annual royalty payments to the government will be about \$6.15 million. Tax is impossible to calculate, the applicant said, because it depends on unknowns like the final project cost and capital structure.

Asked by the hearing committee who will benefit financially from the project, Alan Eggers confirmed the company is 55 percent New Zealand-owned, a large shareholder being his family trust. Much of the initial \$570 million needed would have to come from Australian, Hong Kong and UK financial markets, he said, and large investors would naturally want board representation.

If, as KASM claims, 18,000 people are worried enough to fill in forms opposing it, and nearly 100 people were motivated to attend the first day of the New Plymouth hearings (dropping off to a mere half dozen by the fourth day), it may be the project has greater significance than the usual NIMBY impacts.

For something so remote - unless you live south of Hawera – it's hard even to imagine the scale of the proposal. One submitter likened it to a giant open-cast mine, which will excavate about 65 square kilometres of seabed. To conjure up an image of size, think of a digger working its way through New Plymouth from Paritutu to Waitara and three kilometres inland, excavating a hole deep enough in parts to take three houses stacked on top of one another.

Some opposers said the biggest worry is what this might lead to. The company already has permits to mine other parts of the seabed, and some of the world's largest mining companies are watching what happens.

In 2009, the Sunday Star-Times reported: "Under the radar and in many cases under the sea some of the biggest names in global mining are moving in on New Zealand's undeveloped mineral wealth. Mining giants Rio Tinto and Fortescue Metals, respectively the second and third biggest iron ore producers in the world, are surveying the ore-rich west coast of the North Island."

TTR may be first up in a mining bonanza that could spread 500 kilometres from Whanganui to Northland.