18 June 2014

Questions and Answers

# Trans-Tasman Resources South Taranaki Bight Project

Background Information

***What is TTR?***

* Trans-Tasman Resources Limited (TTR) is a New Zealand company that was established in 2007 to explore the North Island’s west coast iron sand deposits. TTR is headquartered in Wellington New Zealand and is funded by New Zealand and international investment.
* Since inception TTR has spent more than $60million to investigate the resource, and on engineering, marketing, studying the existing physical and ecological environment and identifying potential impacts.
* TTR’s objective is to develop an iron sands extraction project which achieves substantial economic development while protecting the environment.

***What is iron sand?***

* Iron sand (or titano-magnetite) comes from volcanic material, which over thousands of years has been washed down by large rivers and deposited in defined offshore areas. In New Zealand, the North Island’s west coast deposits are derived largely from Mount Taranaki but also from the Central Plateau. The iron sand is rich in iron, and contains titanium and vanadium.
* Iron sand concentrate is used in the manufacture of steel in both conventional and specialised steel mills. It is used either as a blend with other ores (such as haematite), or as a dedicated steel-making feed.

Project Overview

***What is the South Taranaki Bight Iron Sands Project?***

* The Project area is 65.76 km2 and is located between 22-36 km offshore from the coast of Patea and in water depths between 20-42 m. This is within New Zealand’s exclusive economic zone (EEZ) and the environmental effects are governed by the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act).
* The TTR Project involves the excavation of up to 50 million tonnes per year of sand from the seabed and separating out the iron into an iron ore concentrate on an integrated mining and processing vessel.
* Around 10% of the extracted material will be processed into iron ore concentrate for export. The residual sediment (approximately 45 million tonnes per year) will be returned to the seabed via a controlled discharge below the mining vessel, usually backfilling previously extracted areas.
* Iron ore concentrate from the mining vessel will be slurried to a transhipment vessel where it will be de-watered and stored ready for transfer to bulk carrier vessels for export to world markets.

***What are the next steps?***

* The key next step for TTR is to secure ongoing project funding to complete definitive feasibility study work and fund the project through to production which if all goes to plan would be late 2016.

[Under the consent conditions TTR is required to undertake baseline monitoring programmes and establish oversight committees and the Community Trust before commencing mining. TTR will seek recommendations and expressions of interest to undertake these programmes once the decision to mine has been made]. *Note: Although this is probably the case, this paragraph needs reviewing once the final consent conditions are received.*

Economic Benefits

***How many jobs will the South Taranaki Bight Project create?***

* Around 200 personnel will be required for the offshore vessels (the mining vessel, transhipment vessel and the anchor handling tug). Approximately another 50 fulltime equivalents will be employed by TTR, including administration, engineering, environmental staff and other contractors.
* NZIER estimates the project should create around 170 indirect jobs throughout the rest of the regional economy.
* The skills required and developed for the TTR project will produce higher wages for New Zealanders working for those firms and the skills tend to spill over into other support industries.

***What are the economic benefits for New Zealand?***

* During the hearing, the experts agreed that the project will lead to tax and royalty payments of approximately $40 million per year, which are a minimum baseline estimate of the economic benefits to New Zealand. This is without any regard for New Zealand labour, services or supplies.
* Wider economic benefits result from higher wages, increased employment and spending, and increased returns to capital.
* NZIER estimate the Project will increase the size of the New Zealand economy by:
  + Increasing exports by $147 million per year
  + Increasing Gross Domestic Product (GDP) by $302 million per year
  + Increasing household consumption by $104 million per year
* TTR is willing to commit to invest in New Zealand and Taranaki. TTR has already invested over $60 million in New Zealand and this is a vote of confidence in the quality of New Zealand resources and people. TTR estimates it will spend approximately $150 million annually in services, consumables, wages and royalties.
* As a small country, New Zealand does not have the large stock of capital therefore many large, expensive, capital intensive projects are funded by international investment. The investment benefits communities by providing employment, spending in the local economy through purchasing and economic growth results from the investment.
* TTR shareholders are making an investment in New Zealand, they are confident that the combination of their investment, the iron sand resource and New Zealand ingenuity, TTR can develop and export iron ore and offshore mining IP to the rest of the world.

***What are the local benefits for South Taranaki?***

* NZIER estimate the Project will benefit the Taranaki regional economy by raising regional GDP by 3% or $240 million year.
* NZIER estimates the project should create around 170 indirect jobs throughout the rest of the Taranaki region.
* There will be increased opportunities for residents of Taranaki and Whanganui to access training and work experience that is relevant to the range of positions associated with TTR’s operations.
* TTR has committed to establishing a community trust, to support local community projects, and ensure that the local communities of South Taranaki benefit from the Project. As a sign of this commitment, TTR volunteered the Community Trust and scholarships as consent conditions so the communities of South Taranaki can be certain that they will see investment in their people and communities from TTR.

***How much will the project cost?***

* The Project will cost around US$550 million dollars to construct the vessels and mining equipment. The ongoing operating expenses are projected to be around US$150 million per year. The majority of the operating expenses relate to freight, trans shipment, labour costs and domestic inputs, such as fuel, services and supplies.

***What value is TTR adding to the iron sands in New Zealand?***

* TTR is adding value to the iron sands by creating an iron ore concentrate. To produce a concentrate for use in a steel mill the iron ore, or iron sand, has to be ground for mineral liberation, enriched for concentration and dewatered for transportation. TTR will be undertaking all three of these steps onboard the vessels before exporting the final product.

***Will TTR’s project remain economic with low iron ore prices?***

* Despite fluctuations in the New Zealand dollar and the iron ore price TTR is confident that its low cost, innovative iron sand extraction system should make it resilient to fluctuations in the iron ore price.

Potential Environmental Effects

***How will the sediment be extracted?***

* Seabed sediment will be excavated using a crawler dredge. The crawler operates on the seafloor. Its suction head pumps seawater via nozzles to the extraction face to fluidise the sediment, and pumps the sediment into the delivery pipe which delivers the sediment to the mining vessel for processing.
* The crawler operates in 300 m x 300 m blocks, extracting a “lane”. The mining vessel operating on a 4 point anchor mooring system winches itself up and down each lane following the crawler, re-depositing de-ored sand as it goes, usually backfilling previously mined lanes. This happens very slowly at a rate of around 70 m/hour.
* The crawler will extract sand to the full depth of the economic ore deposit up to 11 m below the sea floor. The ability to mine the full depth of the sediment down to the economic base minimises the area of seabed affected at any one time as it removes the need to mine the same area multiple times. This allows mined areas to naturally commence rehabilitation straight after mining and back filling is completed.

***How is the iron ore separated?***

* Initial screening will remove material greater than 2 mm in size, as this material has been shown to contain no titano-magnetite. “Beneficiation” is the term given to the extraction of iron ore from the source material and concentration to a commercial grade. TTR’s beneficiation process separates the titano-magnetite using a combination of magnetic separation and light grinding, to produce a product with a target mass yield in the order of 10% from the raw sediment.
* The process does not involve the use of any additional chemicals or the use of heat.

***How do we know what the effects will be?***

* TTR has spent over $8 million since 2009 collecting baseline data and researching the existing environment and potential effects on the South Taranaki Bight. TTR selected NZ’s leading independent consultancies, supported in critical areas by overseas experts, to investigate the current environmental conditions and advise on the potential effects. The methodology adopted by these consultants is based around accepted international best practice. This research has included collecting metrological ocean (met ocean) data on currents, waves, winds, beach profiles and sediment movement at various sites in the South Taranaki Bight from June 2011 – April 2012.
* This extensive data set has enhanced the collective knowledge of the South Taranaki Bight and assisted TTR’s experts to understand and predict the potential impacts. All of this information is in the public domain on the EPA’s website.
* The EPA also commissioned independent technical reviews of the key reports. They are independent experts in the field. The peers are people who have sufficient expertise in the field to assess the credibility of the research.

***Is this project sustainable?***

* Yes. The definition of sustainability according to the Bruntland Commission, which is the most quoted, is “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Looked at in that light, TTR’s project area will revert to its original state within a short time and hence won’t impact on the ability of future generations to meet their own needs. Consequently, this project can be described as being sustainable.

***What is the environment in the South Taranaki Bight?***

* The seabed within the project area is a dynamic and high energy environment. This environment is continually being disturbed by the prevailing waves, currents and moderately frequent storm events. Populations of organisms living within this environment must be either fully mobile or, if not, capable of rapid re-colonisation following disturbance. The main sessile (immobile) species that are present in the TTR extraction and re-deposition area are opportunists, frequently among the first organisms to re-colonise a disturbed area.
* The biological communities present within the TTR extraction and re-deposition area have limited biodiversity and are dominated by short lived, opportunistic polychaete wormspecies. The absence of long-lived organisms is indicative of a highly disturbed environment.

***How long will it to take to re-colonise the site?***

* The high energy environment combined with a relatively shallow water depth (20-45 m), and TTR’s proposed extraction methodology, which will only affect a minimal seabed area at any one time, means the effects of the project will be relatively short lived enabling rapid re-establishment of the pre-existing flora and fauna.
* International experience suggests that after an initial disturbance to seabeds similar to the South Taranaki Bight, “pioneering” organisms, such as small, tube-dwelling polychaete worms and small bivalves colonise the surficial sediments. TTR’s extraction area is currently dominated by early successional species such as the polychaete *Euchone* sp (tube worms). These opportunistic species occur in relatively high abundances and low diversity. However, overall, TTR’s benthic advisor concluded that the inner and mid-shelf zones in the extraction area, supported low abundance and diversity of macrofauna, meiofauna and marine algae, characteristic of highly disturbed shelf environments.
* The benthic ecology experts in the Hearing agreed that the recovery of benthic ecosystems within the directly impacted mining area is in the order of a decade where mining has moved on from an area; and in the absence of further anthropogenic -related disturbance (paragraph 39, Joint Statement Of Experts in the Field of Effects on Benthic Ecology – Part 2, 26 March 2014)

***What impact will the project have on recreational fishing and diving in the South Taranaki Bight?***

* Inshore recreational settings are unlikely to be affected due to their distance from the mining site and naturally high background sediment levels. The main recreational effect is on diving at the North and South Traps, although adverse turbidity events will be limited to the periods when mining occurs in the eastern part of the mining area (so is not a persistent effect) and may influence recreation satisfaction when water clarity would be extreme and when diving is marginal for crayfishing. TTR expects there will be a no more than moderate and temporary adverse effect on recreational diving in the South Taranaki Bight outside the 10 km radius from TTR’s operational area. There will be a no more than minor and temporary adverse effect on non-commercial fishing in the South Taranaki Bight.

***What impact is the project expected to have on commercial fishing?***

* It is expected that there will be minimal or no negative impacts from TTR’s operations on existing commercial fishing rights with regard to quota value, downstream businesses, or fish stock sustainability as a consequence of TTR’s operations, in particular in respect of spatial displacement. TTR plans to work with commercial fishers in the region to develop conditions of consent to ensure TTR’s proposed operations do not adversely impact on existing commercial fishing rights.

***What is the likely effect on marine mammals in the area, including Maui’s dolphin and blue whales?***

* The project area is not a recognised habitat for marine mammals. Based on sightings and habitat modelling, Maui’s dolphins and blue whale are not found in the vicinity of the project area. Regardless, should Blue whales and or Maui’s dolphins swim into the project area TTR’s activities are such that they are not expected to adversely affect either species. TTR will also establish protocols for encounters with marine mammals to ensure adverse effects do not arise.

***What will the sediment plume look like?***

* A sediment plume derived from mining will contribute to the total suspended sediment concentrations within a few kilometres of the project area, but the sediment plume decreases with distance from the project area, and will be insignificant relative to the natural suspended sediment concentrations near the coast. The impact the sediment plume may have on the coastal and nearshore South Taranaki Bight waters including aquatic ecosystems, human observers, fishing and diving is therefore expected to be low.

***What impact will the project have on the South Taranaki coastline?***

* NIWA’s investigations and modelling have demonstrated that there will be no change to wave climate. Consequently no change to the topography of the coastline or its erosion characteristics is anticipated.

***Where else has similar seabed mining been undertaken?***

* Since 1991 De Beers Marine has been using a similar crawler technology to mine diamonds off the Namibian coast in water depths of 100-150 m. IHC Merwede, TTR’s technology partner, also has decades of experience in dredging projects of a similar scale to TTR’s operation.

***Is iron sand mining new in New Zealand?***

* Iron sand mining is well established in New Zealand. New Zealand Steel produces about two million tonnes of iron sand per year, operating onshore iron sand mines at North Waikato Head and Taharoa.

***Is this deep sea mining?***

* No, the TTR project is located in relatively shallow water (between 20 and 45 m deep). Environmental information gathering and monitoring in the shallower waters is relatively straightforward.
* Another key difference is in recolonisation rates. In TTR’s shallow water it is expected species will repopulate relatively quickly due to both the proximity to light (which provides energy for food sources), that the substrate won’t be appreciably altered by TTR’s mining and a consequence of the organisms being adapted to a “disrupted” environment with frequent storms. In deep water ecosystems, the environment is very stable and so the organisms do not have a biological need to repopulate quickly and due to low light levels growth rates are low hence recolonisation takes a longer time.

***What are the uncertainties associated with the project?***

* We live in a society that seeks certainty however it is not always possible for science to provide this. Science is rarely about absolute certainty. The EEZ Act recognises this and provides a process of assessing the evidence while considering the uncertainties and hence forming conclusions that have taken all matters presented into consideration.
* The research completed has provided valuable steps towards greater certainty about the environment and the effects of the project. This information will be complemented by further baseline monitoring, which TTR will undertake before commencing mining.

Marine Consents Process

***How does the EPA’s EEZ Act process work?***

* Under the EEZ Act the Decision-making Committee’s decision is not based on the numbers of submissions for or against a particular proposal; rather the process considers the effects of the proposal on the environment and existing interests as well as the proposal’s economic benefit to New Zealand.
* The EPA’s decision can then be appealed to the High Court on points of law only.

***Are Health and Safety and Maritime regulators also involved?***

* The mining vessel is considered a “workplace” under the general Health & Safety legislation and as the mining vessel will be a New Zealand registered ship, it will fall under Maritime NZ jurisdiction as the Health & Safety regulator (as well as under general maritime safety legislation).