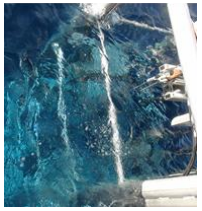
Trans-Tasman Resources Limited







TARANAKI VTM PROJECT

World Class Resource Discovery

2 September 2025

Fast-track

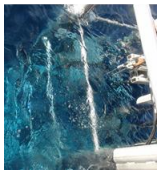
Taranaki VTM Project

Presenters

- *Alan J Eggers – TTR Executive Chairman – Project Overview*
- *Dr Alison MacDiarmid (Earth Sciences New Zealand formerly NIWA) – Marine Ecology and Sedimentation Effects*
- *Paul Majurey (Holm Majurey Law) – Tīkanga and Treaty Settlement matters*
- *Luke Faithfull (Mitchell Daysh) – Project effects summary and proposed consent conditions and management plans*
- *Morgan Slyfield (Legal Counsel) – Relevant legal tests and legal issues in contention*





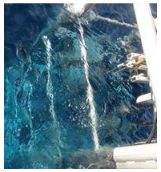


Taranaki VTM Project

Alan J Eggers – Project Overview





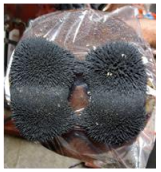


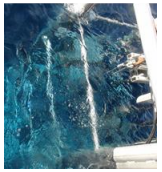
Taranaki VTM Project

The Future of Mineral Exploration and Mining

Significant Opportunity for NZ

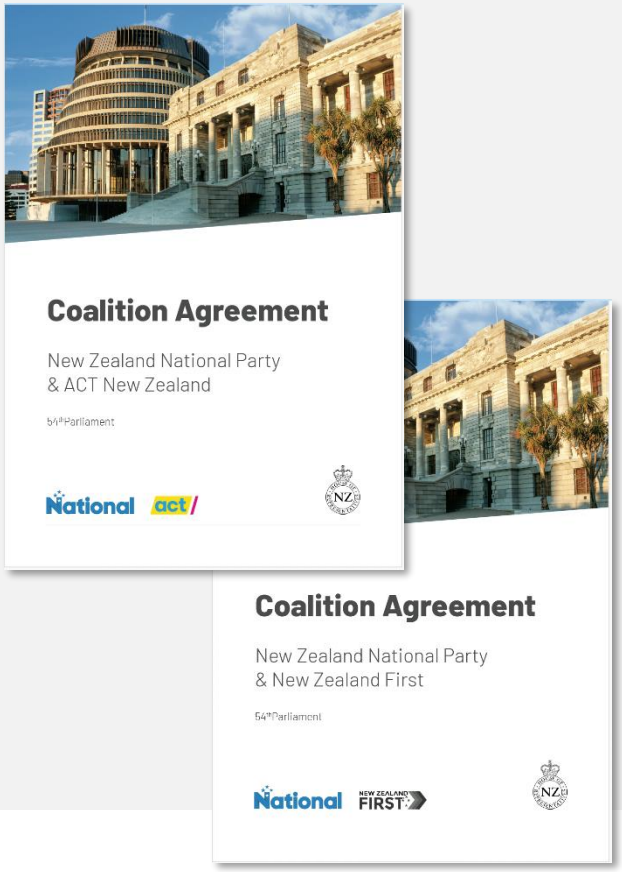
- A world class tier one resource 3.2Bt VTM
- One of NZ's largest metal discoveries
- Will be one of NZ's largest export earners
- Delivers essential and critical minerals
- Full set of environmental conditions & management plans
- Fast Track approval process underway





Taranaki VTM Project

NZ Government Coalition Agreements

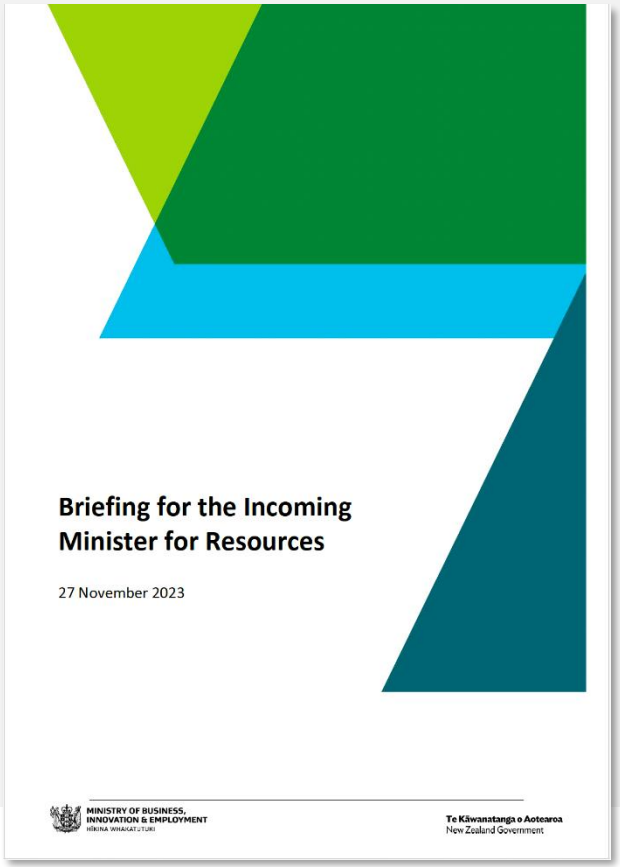


- *Government Priorities for Mining*
- *Update Crown Minerals Act 1991 and promote the use of Crown Minerals*
- *Explore potential for critical minerals list with preferential pathway for development*
- *Prioritise regional & national projects of significance*
- *Improve consenting settings in relation to mining by Fast Track Approvals legislation*
- ***Investigate strategic opportunities for NZ's mineral resources, including vanadium***
- *Develop a plan to develop these opportunities*

Coalition Agreements to govern 23 November 2023

Taranaki VTM Project

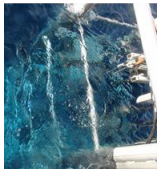
MBIE Briefing to Minister for Resources



- *Iron sand along the west coast of the North Island sitting in 20-50 metres of water could supply:*
- ***Iron for steel making, construction, EV's, wind & solar, power transmission***
- ***Vanadium for steel, rebar & utility scale battery storage (VRFB); and***
- ***Titanium for aerospace, satellites, paints, paper, white goods, electronics, medical, building products…***
- *MBIE estimates an 'in the ground' value of [TTRs] Taranaki iron sand at* ***NZ$100 billion***
- *Additional offshore iron sand deposits of up to* ***NZ$275 billion***







MBIE 27 November 2023

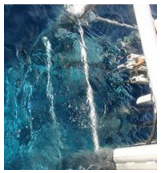
Taranaki VTM Project

Fast Track Approvals Legislation 2024

- *Draft Bill introduced to Parliament on 7 March 2024*
- *Ministers originally empowered to be the decision-makers on applications under the Act*
- *Expert panels appointed to review applications, make a recommendation and determine a set of consent conditions as required*
- *During the passage of the Bill, the decision making powers were shifted to the expert panel*







FTAA Legislation introduced 7 March 2024

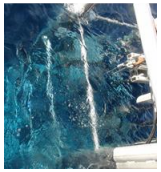
Taranaki VTM Project

GNS Report Mineral Potential for New Zealand

- *STB iron sand VTM deposits in GNS Report Mineral Potential for New Zealand 29 August 2024*
- *TTR has defined JORC Indicated and Inferred Resources of 3,157 Mt at 10.17% Fe_2O_3, 1.03% TiO_2 and 0.05% V_2O_5 in the Cook, Kupe and Tasman north and south deposit blocks in STB*
- *The world class VTM resource discovered offers the NZ the opportunity to be long term iron ore exporter and lead producer of critical minerals internationally*







MBIE 29 August 2024

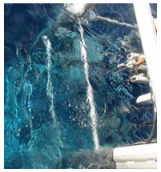
Taranaki VTM Project

Fast-track Approvals Mining Projects 2024

- ***Taranaki VTM Project listed*** *in Schedule 2 for Fast Track consent*
- *11 mining projects will make a major contribution to the Government's objective of doubling the value of mineral exports to $3 billion by 2035 including iron sands*
- *They will deliver measurable benefits to regional and national GDP, highly skilled and paid jobs in the regions*
- *Fast-track Approvals Act passed into law on 23 December 2024*
- *Expert Panel applications opened 7 February and* ***TTR applied 15 April 2025***







Fast-track Projects Schedule 2 6 October 2024

Taranaki VTM Project

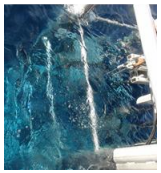
Critical Minerals List 2024

MBIE December 2024

- *Vanadium and titanium – both included in NZ's Draft Critical Minerals List*
- *Development of the project could elevate NZ to be the third largest vanadium producer globally and the largest in the western world*
- *The "window of opportunity" is for NZ to capitalize on its mineral resources, particularly critical minerals*
- *This opportunity is driven by growing global demand for these minerals and security of supply especially for those used in renewable energy technologies and electric vehicles*
- *"There is tremendous opportunity for New Zealand to be part of the global supply chain of critical minerals," NZ Minerals Council*

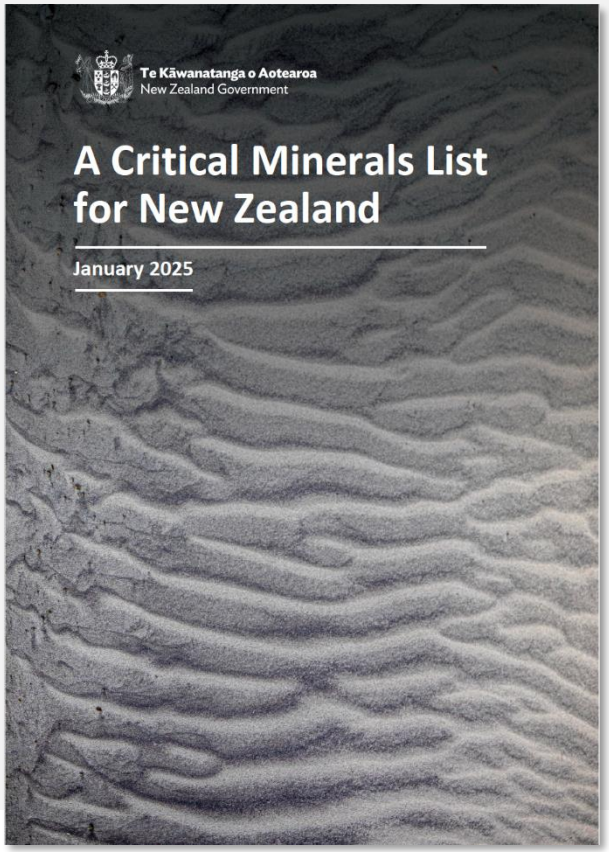






Taranaki VTM Project

Critical Minerals List 2025



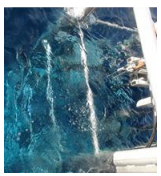
- *Vanadium and titanium – both included in NZ's Draft Critical Minerals List*
- *Also in USA, UK, EU, AUS, CAN and China's Critical Minerals Lists*

Further information about the list of critical minerals

Mineral	Key identified uses	Whether these minerals appear on other countries' critical minerals lists: USA	UK	EU	AUS	CAN
MINERALS CURRENTLY PRODUCED IN NEW ZEALAND						
Aggregate and Sand	Roading, construction	N	N	N	N	N
Aluminium	Packaging, automotive, aerospace, defence	Y	N	Y	N	Y
Arsenic	Treatment of wood, electronics (including semiconductors)	Y	N	Y	Y	N
Gold	Jewellery, electronics, dentistry, aerospace	N	N	N	N	N
Metallurgical coal	Steelmaking, industrial processes	N	N	Y	N	N
Rare Earth Elements	Permanent magnets, glass polishing, ceramics, metal alloys, LEDs, lasers	Y	Y	Y	Y	Y
Silicon	Glass, casting sand, nanomaterials, electronics	N	Y	Y	Y	Y
Titanium	Aerospace, medical	Y	N	Y	Y	N
Vanadium	Steel and titanium alloys, catalysts, magnets, coatings, battery and energy storage applications	Y	Y	Y	Y	Y
Zirconium	Fuel cells, auto catalysts, bearings	Y	Y	Y	Y	N
MINERALS WITH THE POTENTIAL TO BE PRODUCED IN NEW ZEALAND						
Antimony	Defence, electric vehicles (EVs), medical	Y	Y	Y	Y	Y
Bismuth	Electronics (data storage)	Y	Y	Y	Y	Y
Cesium	Cancer treatments, electronics, optics, aerospace, photovoltaic (PV) cells (also called solar cells)	Y	N	N	N	Y
Chromium	Stainless steel and other steel alloys	Y	N	N	Y	Y
Cobalt	Battery and energy storage applications, steel alloys, fertiliser and livestock health	Y	Y	Y	Y	Y
Copper	Power transmission, electronics, EVs, fertiliser and livestock health	N	N	N	N	Y
Magnesium	Lightweight alloys, fertiliser and livestock health	Y	Y	Y	Y	Y
Phosphate	Fertiliser, battery and energy storage applications	N	N	Y	N	N
Platinum Group Metals	Catalysts, hydrogen fuel cells, EVs, electronics, communications	Y	N	Y	Y	Y
Rubidium	Medical, electronics	Y	N	N	N	N
Tungsten	Tools for drilling, mining and cutting	Y	Y	Y	Y	Y
MINERALS THAT NEW ZEALAND RELIES ON BUT DOES NOT PRODUCE AND HAS LOW/NO KNOWN POTENTIAL TO PRODUCE						
Beryllium	Aerospace, electronics (including semiconductors)	Y	N	Y	Y	N
Boron	Permanent magnets, electronics, PV cells, fertiliser	N	N	Y	N	N
Fluorspar	Aluminium production, insulating foams, refrigerants, steelmaking	Y	N	Y	N	Y
Gallium	PV cells, electronics (including semiconductors)	Y	Y	Y	Y	Y
Germanium	Electronics (including semiconductors)	Y	N	Y	Y	Y
Graphite	Battery and energy storage applications	Y	Y	Y	Y	Y
Indium	Electronics, solders, batteries, PV cells, bearings	Y	Y	N	Y	Y
Manganese	Steel and aluminium alloys, batteries, catalysts, glass, electronics, fertiliser and livestock health	Y	N	Y	Y	Y
Molybdenum	Steel alloys and high temperature alloys, fertiliser and livestock health	N	N	N	Y	Y
Nickel	Stainless steel and other steel alloys, battery and energy storage applications	Y	N	N	Y	Y
Niobium	High-temperature superalloys	Y	Y	Y	Y	Y
Potassium (Potash)	Fertiliser	N	N	N	N	Y
Selenium	PV cells, electronics, fertiliser and livestock health	N	N	N	Y	N
Strontium	Magnets, alloys, paints	N	N	Y	N	N
Tellurium	PV cells, electronics	Y	Y	N	Y	Y
Zinc	Anodising, corrosion protection, fertiliser and livestock health	Y	N	N	N	Y



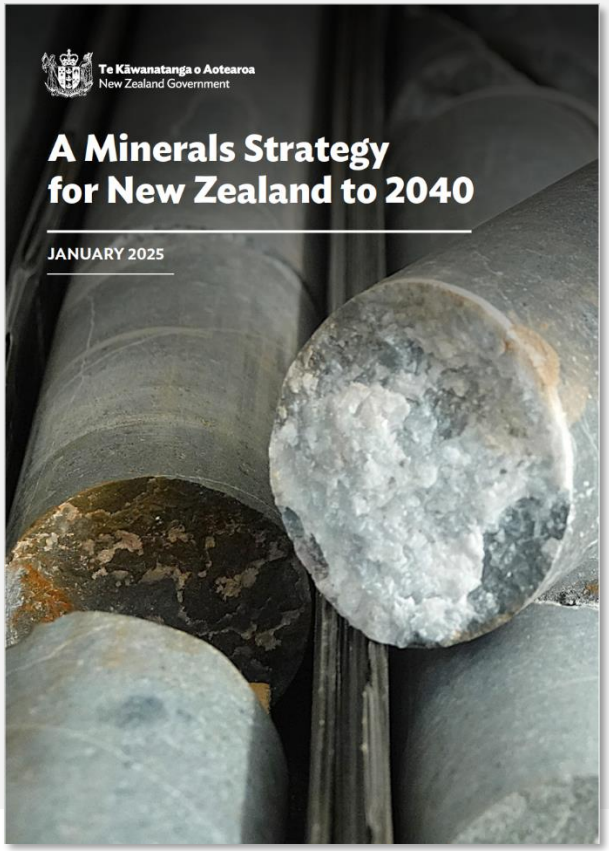




MBIE 31 January 2025

Taranaki VTM Project

Minerals Strategy to 2040



- *Growth will be underpinned by scaling up our existing exports and by realising new mineral opportunities*
- *Aim to double NZ's minerals exports to $3 billion by 2035*

New mineral opportunities

Based on permit data, private mineral exploration, and inferred from the geology of the area

Heavy minerals sands
Titanium, garnet, zircon and REEs are used in metal alloys, abrasives, in electronics, computers and batteries.

Vanadium and titanium
Used in iron and steel, superalloys, pigments, carbides and chemical catalysts and redox flow batteries.

Antimony
Used in semi-conductors, micro-capacitors, and as flame and heat retardants important in EVs and energy storage.

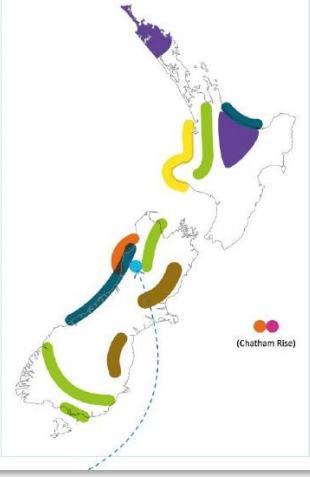
Phosphate
Used in fertiliser.

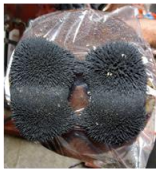
Potash
Used in fertiliser.

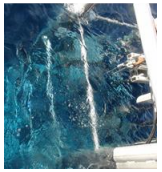
Lithium
Used in lithium-ion batteries for electric vehicles, mobile phones and laptops.

Hydrogen
Used in industrial processes including as a feedstock and fuel source, and in fuel cells.

Rare earth elements
Used as critical components of electronics, computers and batteries.

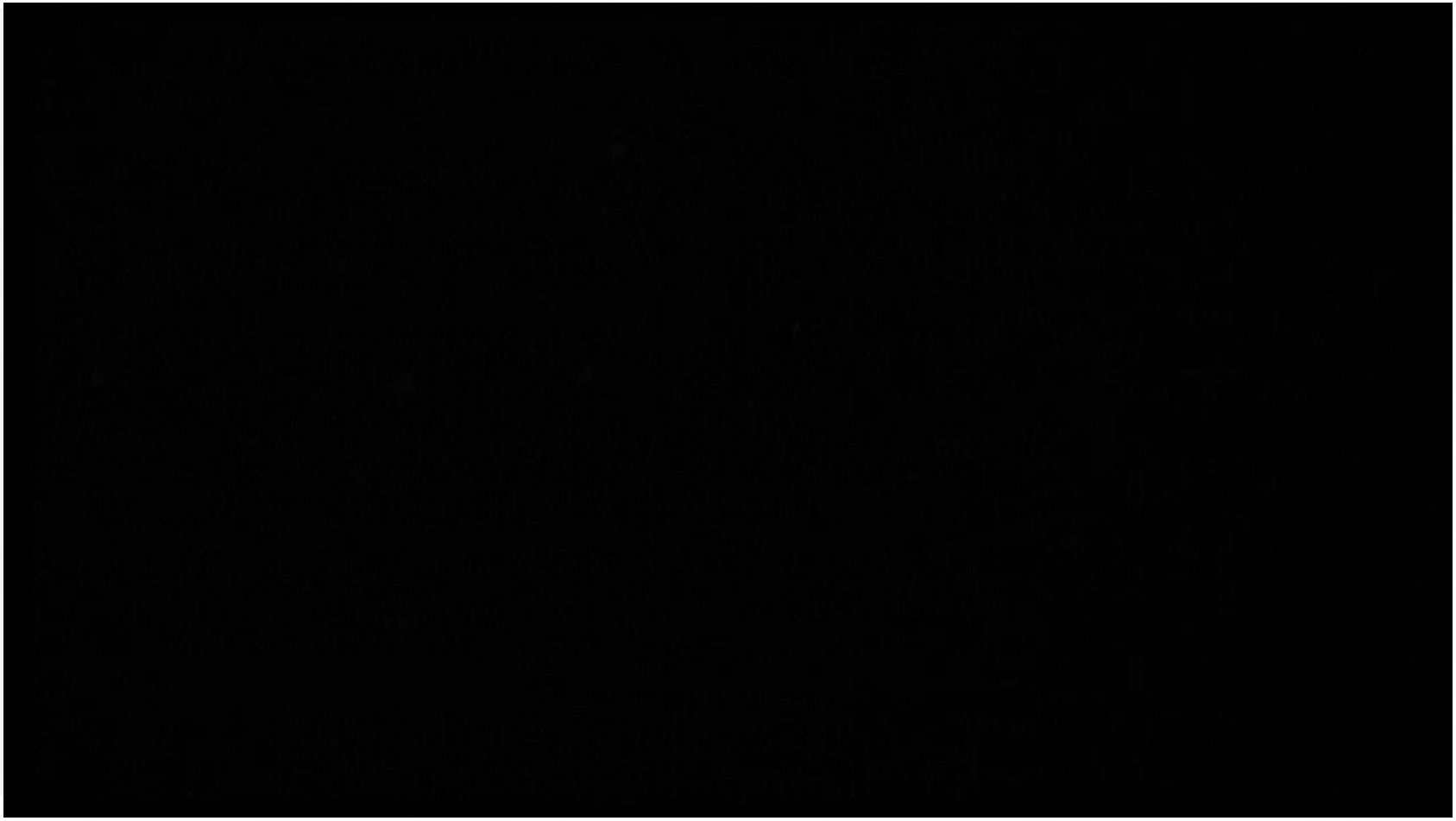


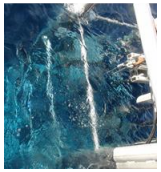




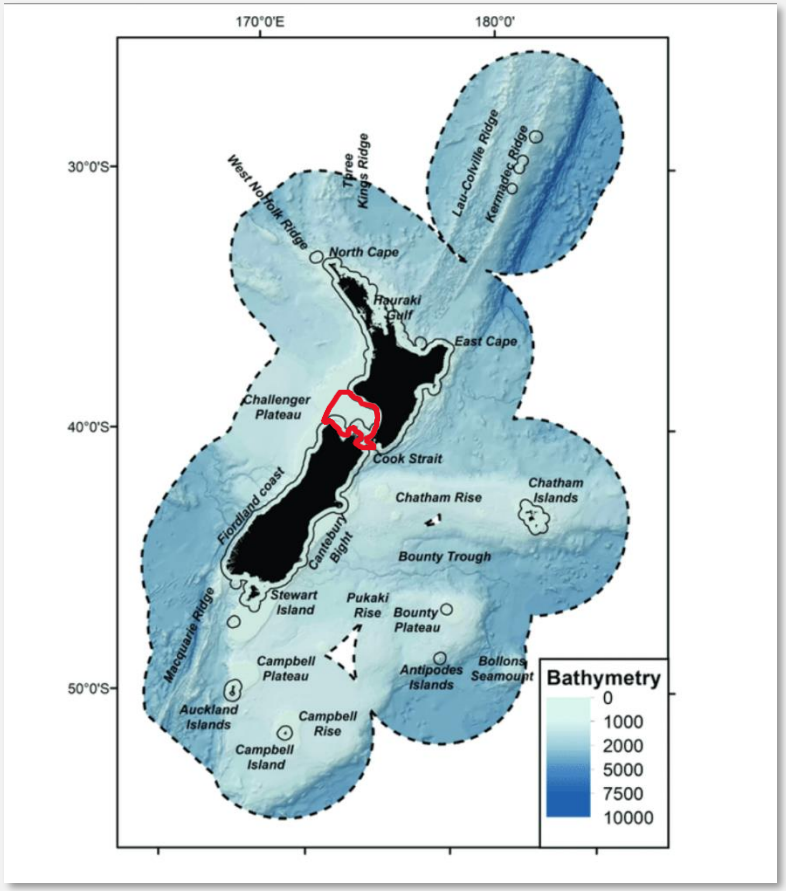
MBIE 31 January 2025

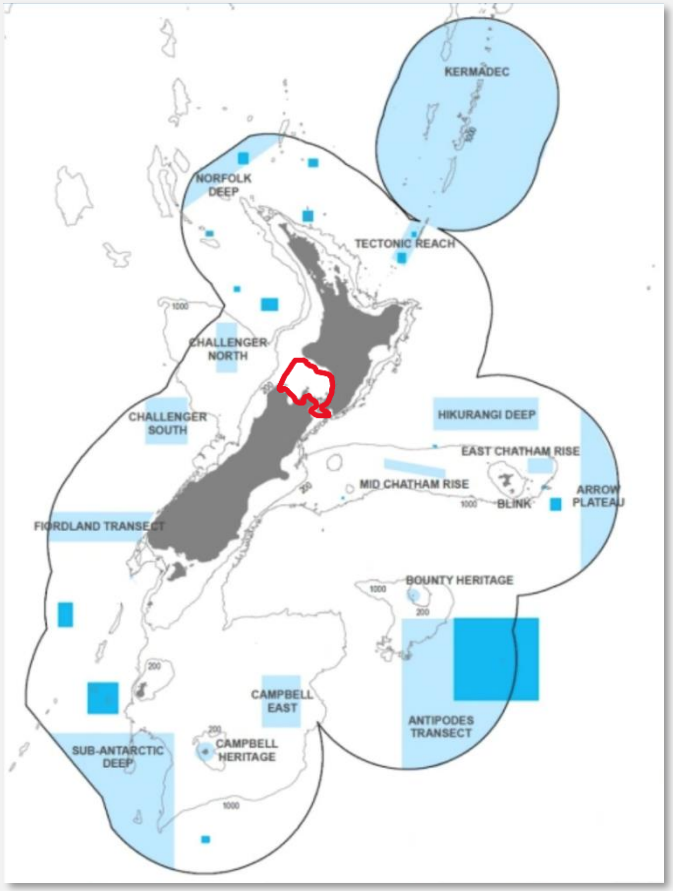
Taranaki VTM Project

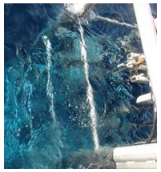




NZ Exclusive Economic Zone



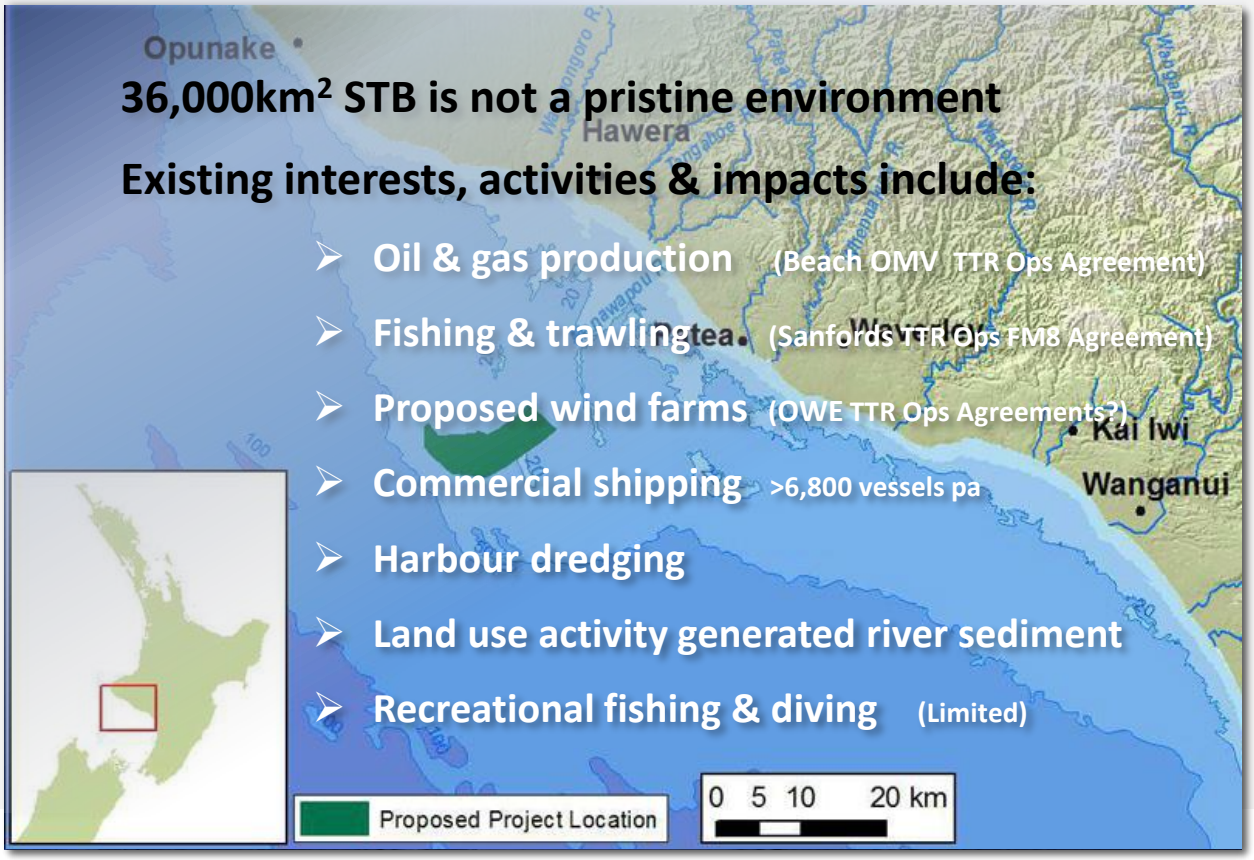


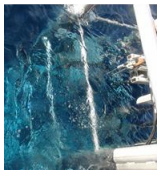


EEZ covers **over 4,000,000km²** is approximately **15 times the land area of New Zealand**
EEZ has **over 1,700,000km²** or **42% in marine reserves & benthic protected areas**
South Taranaki Bight (STB) <1% of EEZ

Taranaki VTM Project

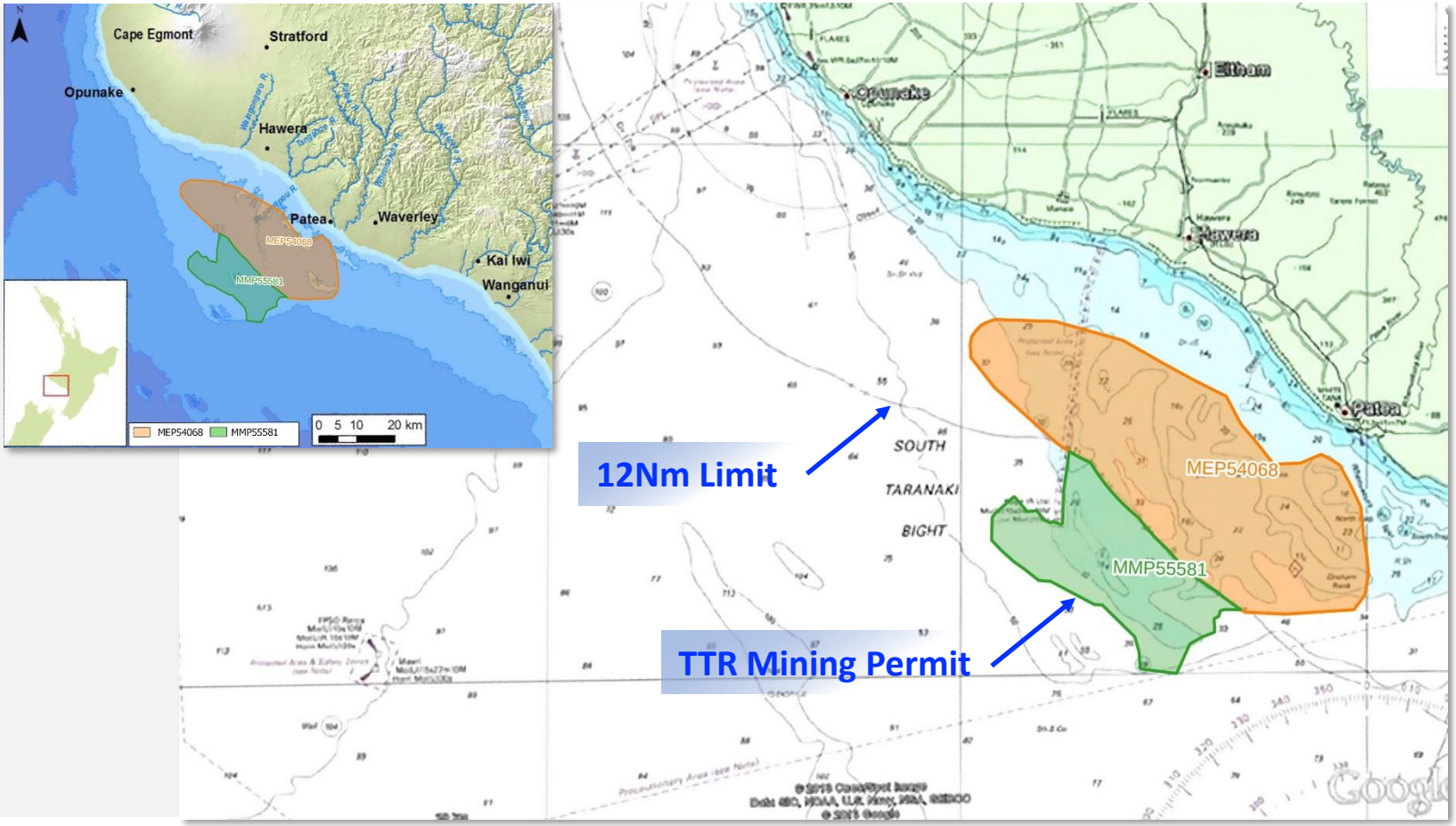
South Taranaki Bight (STB)

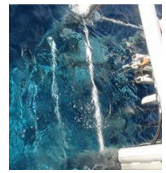




STB covers **approximately 36,000km²** which is around **0.9% the area of NZ's EEZ**

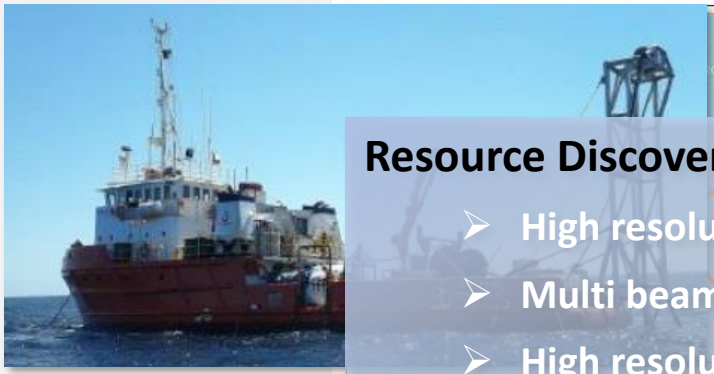
TTR Mining Permit 55581





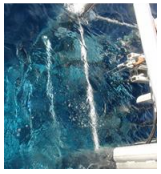
MMP55581 243km^2 which is around **0.20% the area of STB** and **0.002%** of **EEZ**
MEP54068 635km^2

TTR Exploration & Resource



Resource Discovery, Definition & Economics

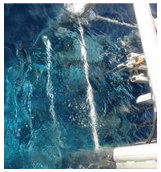
- High resolution airborne magnetic surveys
- Multi beam sonar bathymetry surveys
- High resolution boomer seismic surveys
- ROV video surveys seafloor
- Wide spaced target drilling
- Resource definition drilling (100x100m to 20x20m - >700 holes)
- Bulk sampling (100s tonnes)
- Pilot plant processing
- Independent JORC Mineral Resource Statement
- Advanced Prefeasibility Study (PFS 2025)



MMP55581 243km^2 which is around **0.20% the area of STB** and **0.002%** of **EEZ**
MEP54068 635km^2

22km to 36km offshore

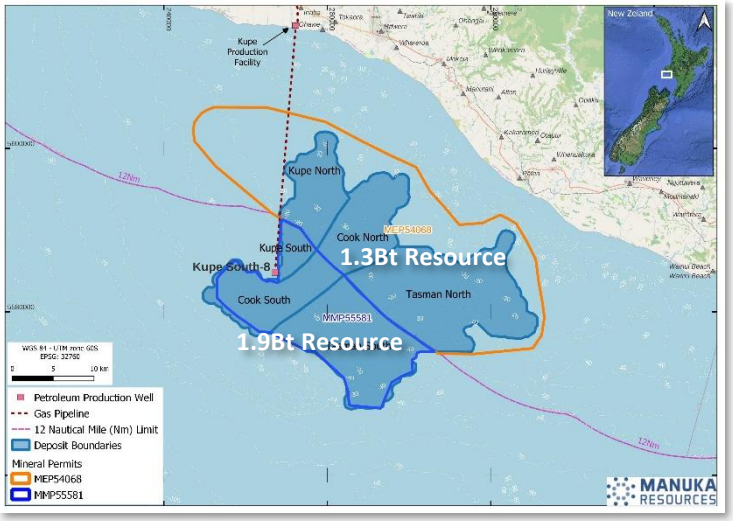
TTR Exploration & Resource



MMP55581 243km^2 which is around **0.20% the area of STB** and **0.002%** of **EEZ**
MEP54068 635km^2

22km to 36km offshore

TTR JORC Resource Estimates



3.2Bt Indicated and Inferred Mineral Resource

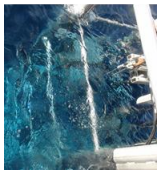
10.17%Fe_2O_3, 0.05%V_2O_5 & 1.03%TiO_2

1.6Mt of contained V_2O_5

TTR Mine Plan 1,000Mt
20 years at 5Mtpa Concentrate
57%Fe[1], 0.5%V_2O_5 & 8.4%TiO_2







Taranaki VTM Resource Estimates Summary									
	Indicated and Inferred Mineral Resources					DTR Concentrate			
MEP54068 Inside 12Nm (RMA)	**Cut-Off Grade**	**Mt**	**Fe_2O_3%**	**TiO_2%**	**V_2O_5%**	**Mt**	**Fe%**	**TiO_2%**	**V_2O_5%**
Cook North Block	3.5% DTR*	274	11.90	1.19	0.06	21	57.19	8.12	0.52
Kupe North Block	3.5% DTR*	417	11.48	1.21	0.06	31	57.07	8.35	0.51
Tasman North Block	7.5% Fe_2O_3	585	9.02	0.88	0.04				
Total VTM Resource (RMA)		**1,275**	**10.44**	**1.05**	**0.05**				
MMP55581 Outside 12Nm (EEZ)									
Cook South Block	3.5% DTR*	914	10.95	1.12	0.05	63	55.84	8.45	0.50
Kupe South Block	3.5% DTR*	272	9.76	0.98	0.05	16	56.33	8.43	0.50
Tasman South Block	7.5% Fe_2O_3	695	8.81	0.89	0.04				
Total VTM Resource (EEZ)		**1,881**	**9.99**	**1.01**	**0.05**				
Taranaki VTM Resource Total		**3,157**	**10.17**	**1.03**	**0.05**				

- **VTM *Vanadiferous titanomagnetite*** $Fe_{2.74}Ti_{0.24}V_{0.02}O_4$
- Davis Tube Recovery (DTR) Estimate is based on analytical DTR and calculated DTR values
- JORC (2012) reported 1 March 2023
- 1: 57%Fe = 81%Fe_2O_3

Taranaki VTM Project

Exclusive Economic Zone & Continental Shelf (Environmental Effects) Act

The EEZ Act *incorporates comprehensive environmental safeguards and international guidelines that seek to balance economic development with environmental protection*

The EEZ Act ***is not 'no effects' legislation & permits mineral recovery*** *where the impact on the environment can be remedied, mitigated or if other interests including economic benefit and the efficient use and development of natural resources are justified*

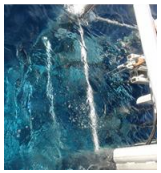
Plus: the Precautionary Principle[1]

"insufficient information: Don't know = Don't do"

TTR provided extensive marine research and best available expert information







1: The precautionary principle **reverses the burden of proof—the individual or entity proposing the activity must** prove the activity is not harmful

Taranaki VTM Project

Fast Track Approvals Act 2024

The FTA Act passed on 23 December 2024 *is a one stop shop to:*

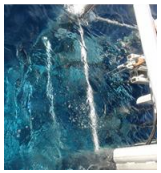
"Facilitate the delivery of infrastructure and development projects with significant regional or national benefits."

The elevation of FTA Act's purpose over RMA, and EEZ Act, when considering the application for approval:

- *limiting the ability to decline applications to only when the adverse impacts are sufficiently significant to be out of proportion to the project's regional or national benefits; and*
- *the Act's 'one stop shop' approach to obtaining key statutory approvals*
- *TTR 2025 FTA application - Metallurgical Report, PFS, NZIER EIA, updated Marine Science and wide consultation*





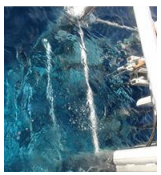


Taranaki VTM Project

Fast-track Approvals Act 2024 Process

TTR's FTA Application process:

Substantive application lodged	***15 April 2025***
Notified application complete	***15 May 2025***
Panel convener gets advice & reports	
Panel convener conference	***7 July 2025***
Expert panel appointed (5)	***12 August 2025***
Expert panel commences assessment	***25 August 2025***
Invited comments	***29 September 2025***
Draft decision to TTR & Minister (100 Days)	***4 March 2026***
Decision published	***18 March 2026***
Appeal notice period	***17 April 2026***



https://www.fasttrack.govt.nz/projects/taranaki-vtm

Taranaki VTM Project

Fast-track Approvals Act 2024

The FTA Application includes:

- *2025 pre-feasibility study (PFS)*
- *New JORC mineral resource statement including vanadium & titanium (MRS)*
- *2025 metallurgical report on critical mineral recoveries (V_2O_5 & TiO_2)*
- *2025 NZIER economic impact assessment (EIA)*
- *2025 ongoing consultation updated*

Full review and update of the previous 2016 application package including:

- *Effects on marine mammals & seabirds*
- *Updated sediment plume modelling*
- *High Court, Court of Appeal and Supreme Court Judgments addressed*

https://www.fasttrack.govt.nz/projects/taranaki-vtm

Taranaki VTM Project

Fast-track Approvals Act 2024

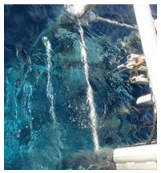
The FTA Application includes:

- ***High Court Judgment 28 August 2018***
- ***Court of Appeal Judgment 3 April 2020***
- ***Supreme Court Judgment 30 September 2021***

The Court judgment [229] stated:

"Given the complex and evolving nature of the issues involved, it would not be appropriate to deny TTR the opportunity to have the application(s) reconsidered" and "TTR should be able to remedy matters if it can."

Importantly, the SC judgment provided a summary of the legal deficiencies of the original consent grants and the legal framework to address these when the grants are reconsidered by the DMC.



https://www.fasttrack.govt.nz/projects/taranaki-vtm

Taranaki VTM Project

Environmental Advantages

- ***Operation has small environmental footprint***

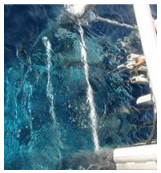
  only 300m x 900m (0.27km^2) area of disturbance at any time

- ***Very low, <50% carbon emissions compared to other hard rock iron ore concentrates with no:***
  - *Heavy machinery mining & haulage fleets*
  - *Open pits or overburden stripping*
  - *Waste or tailings dumps*
  - *Haul roads*
  - *Energy intensive crushing & grinding circuits*
  - *Roads, railroads or ports*

*VTM minerals harvests **3km^2** vs NZ crops **1,800km^2** year*







✓ **TTR iron sands lowest carbon intensity** 62kgCO_2/t versus 120-250kgCO_2/t for competitors world wide

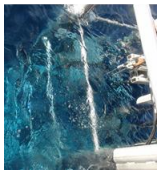
Taranaki VTM Project

Environmental Advantages

- *Harvesting minerals top 5m average (1m to 11m deep)*
- *Simple magnetic separation of VTM*
- *No chemical additives in processing or tailings*
- *No permanent seabed installations or fixtures*
- *Natural processes delivers rapid rehabilitation of mined areas*
- *Recolonised in weeks & full recovery <2 years*
- *No impact on fish, whales or dolphins*
- *No legacy issues with continuous rehabilitation part of recovery process*







✓ **TTR iron sands lowest carbon intensity** 62kgCO_2/t versus 120-250kgCO_2/t for competitors world wide

TTR Marine Consents STB

Environmental Consents

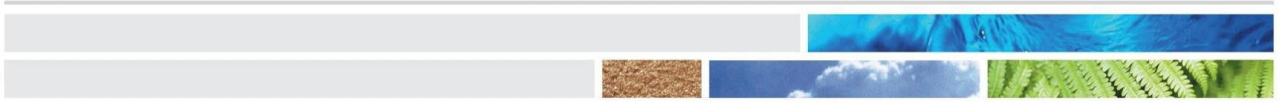
Environmental Protection Authority
Te Mana Rauhī Taiao

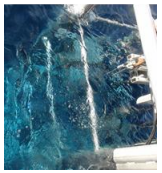
Application Ref: EEZ000011
August 2017

DECISION ON MARINE CONSENTS AND MARINE DISCHARGE CONSENTS APPLICATION

Environmental consents were granted subject to:

- 109 comprehensive conditions to operate (Updated 2025);
- Detailed set of management & operations plans; and
- 30+ year marine effects monitoring program





TTR delivered NZ's most comprehensive mining project environmental application ever

TTR Marine Consents STB

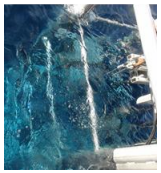
Management and Monitoring Plans

The proposed conditions provide for the following management and monitoring plans:

- *Pre-commencement Environmental Monitoring Plan (PCEMP)*
- *Environmental Monitoring and Management Plan (EMMP)*
- *Seabird Effects Mitigation and Management Plan (SEMMP)*
- *Marine Mammal Management Plan (MMMP)*
- *Collision (Loss of Position) Contingency Management Plan (CCMP)*
- *Simultaneous Operations Plan (SIMOPS)*
- *Biosecurity Management Plan (BMP)*
- *Kaimoana Monitoring Programme (KMP)*
- *Post- extraction Monitoring Plan (PEMP)*







TTR delivered NZ's most comprehensive mining project environmental application ever

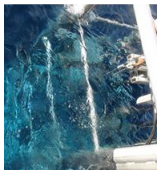
TTR Marine Consents STB

Environmental Data

Air Discharges	*Fish Stocks*	*Oil & Gas*
Archaeological	*Commercial Fishing*	*Other Marine*
Baseline Enviro Report	*Geology*	*Management*
Bathymetry	*Navigational*	*Reefs*
Benthic Studies	*Noise Impacts*	*Sediment Toxicology*
Cetacean Surveys and Habitat Modelling	*Oceanographic Information*	*Shoreline Profiles*
Coastal Stability	*STB Climate Records*	*Social Effects*
Effects of Ships Lights	*Recreation Activities*	*Visual Effects*
	Cultural Use	*Wave & Surf Effects*
	Biosecurity	*Seabirds*

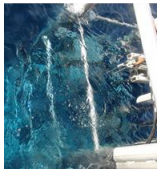






TTR delivered NZ's most comprehensive mining project environmental application ever

Taranaki VTM Project



Taranaki VTM Project

Route of the Hangatahua River

Adrian Cleary Photography
July 4 at 5:29 PM ·

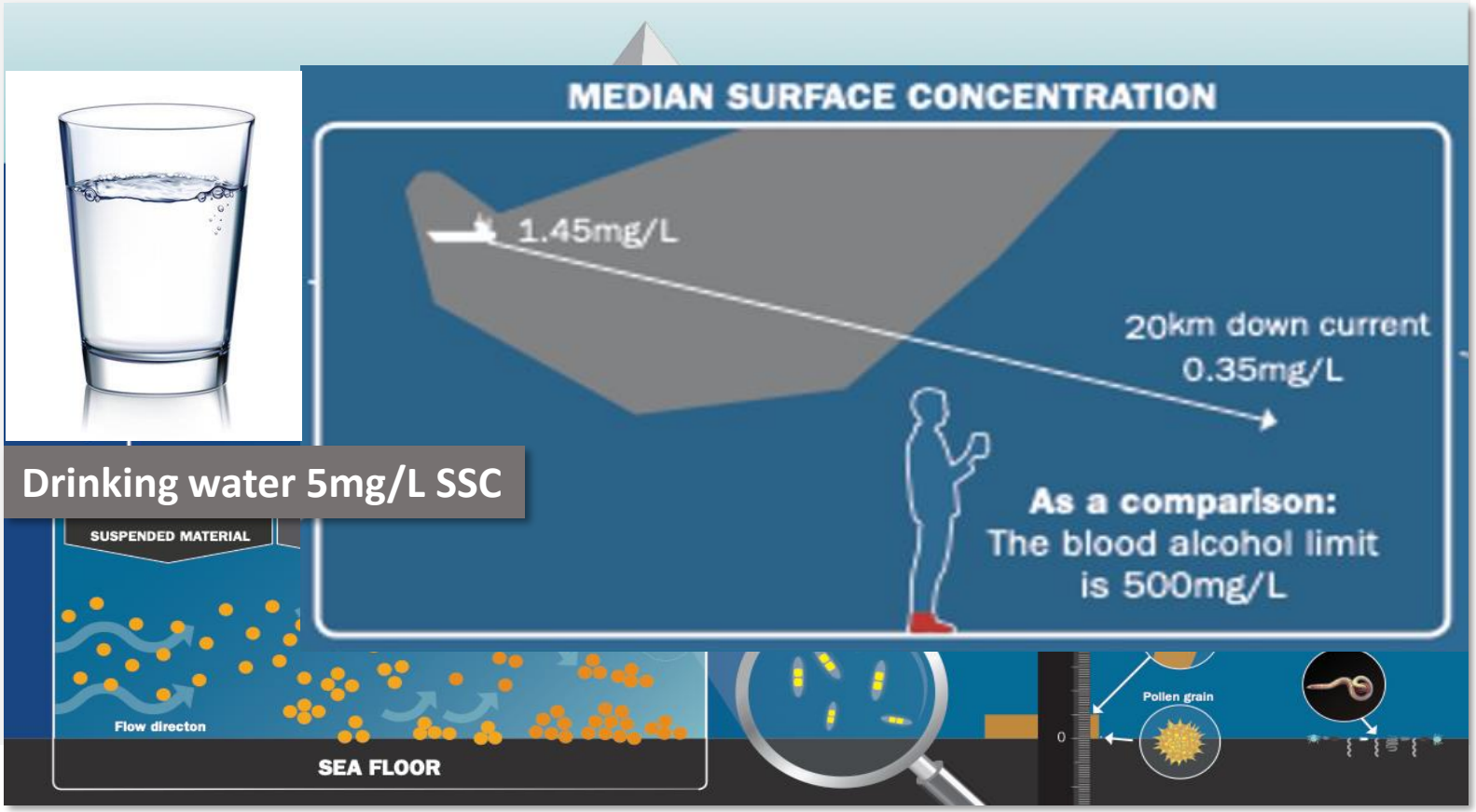
A little bit of rain coming down the Hangatahua/Stony...

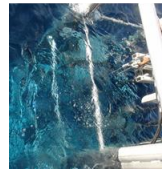
Even at home, half a km or so away from the spot I'm standing at, you can not only hear, but feel the boulders smashing their way down the awa - a constant rumble, vibrating and droning in the background. Quite surreal.

#river #storm #flood #swollenriver #hangatahua #stony #taranaki #moungataranaki

TTR Marine Consents STB

The Plume

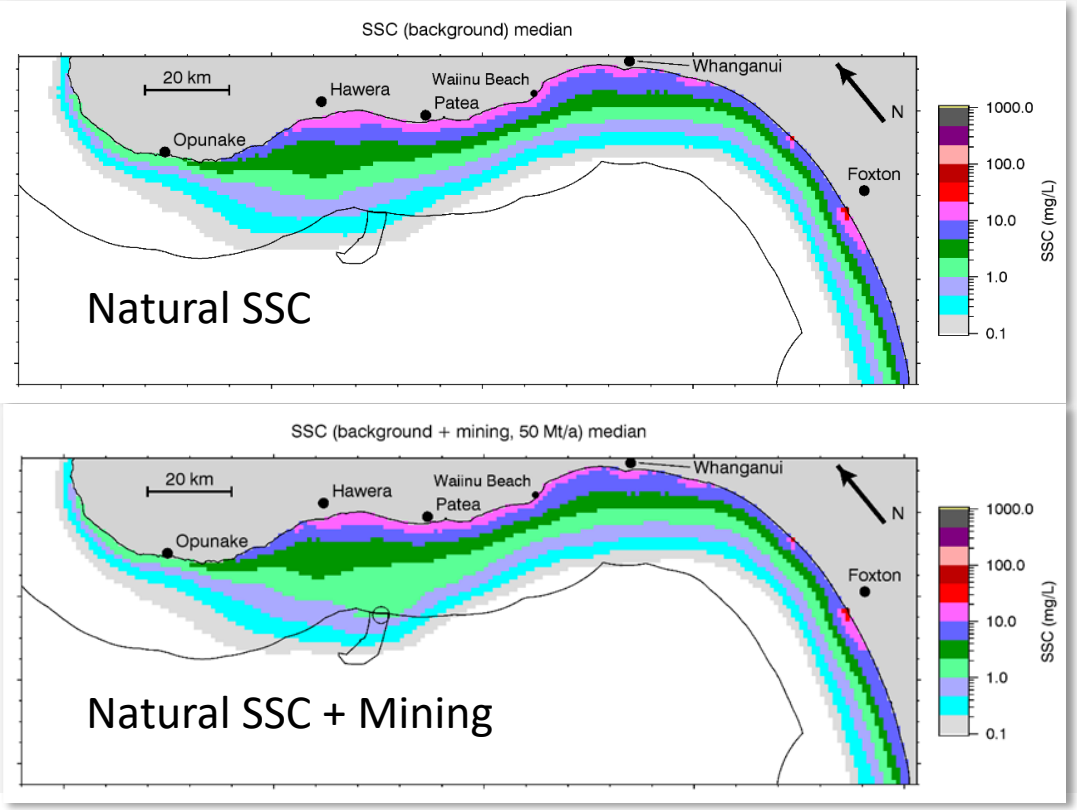




The operation, for around 260 days a year for 20 years, will ***occasionally*** add 0.5 – 1.5mg/L of suspended sediment, less than NZ drinking water standards, to a small and migrating plume. Never reaches shore

TTR Marine Consents STB

Suspended Sediment in STB Ocean

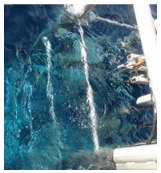


Plume Modelling (Existing TSS average)

STB has high turbidity of 10mg/L to >1,000mg/L TSS in water column

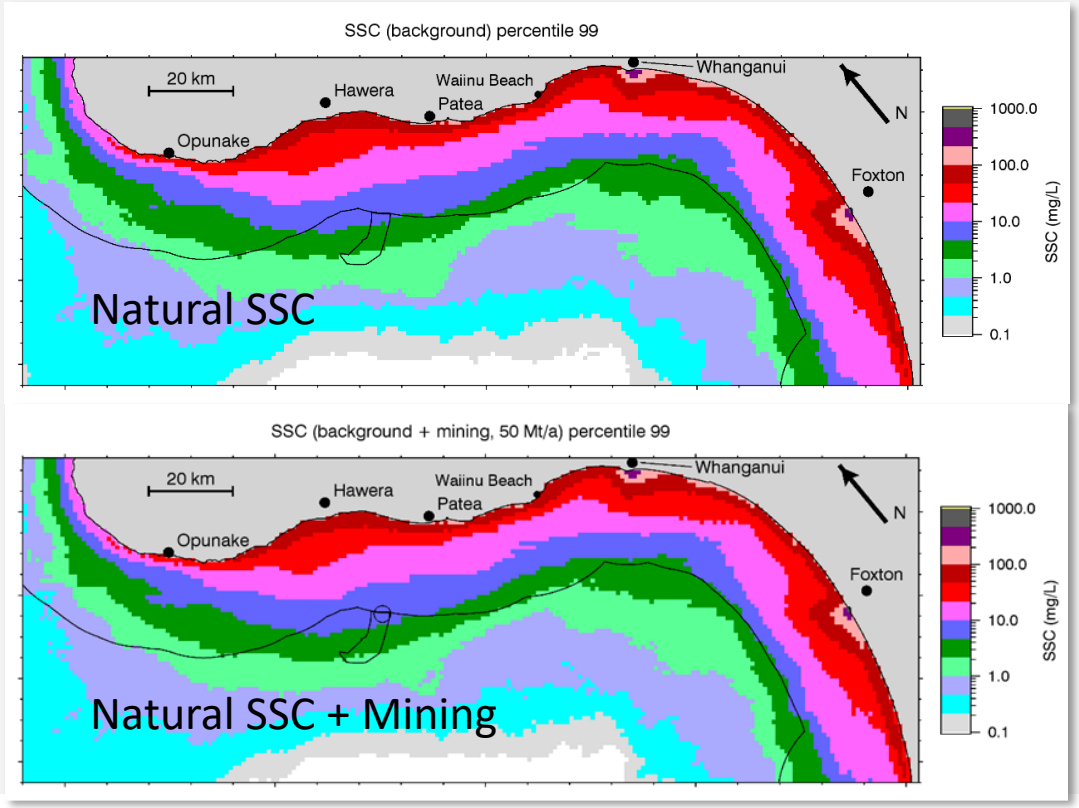


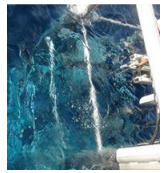




TTR Marine Consents STB

Suspended Sediment in STB Ocean





Plume Modelling (Worst case storm, wave, swell & tidal currents – ***no operations***)

STB has high turbidity of 10mg/L to >1,000mg/L TSS in water column

TTR Marine Consents STB

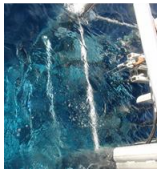
Blue Whale Sightings

Table 3.5: Number of marine mammal sightings in the area of the proposed consent area, and in the 5km and 10km buffer area around it from the DOC Marine Mammal Database to April 2023 [56]

Species	Within the project area	Within 5km buffer of the project area	Within 10km buffer of the project area
Blue whale	0	0	1
Minke whale	0	1	0
Common dolphin	1	4	4
Hector's or Maui dolphins	0	0	1
Orca	0	1	0
TOTAL	1	6	6







TTR Marine Consents STB

Blue Whale Sightings

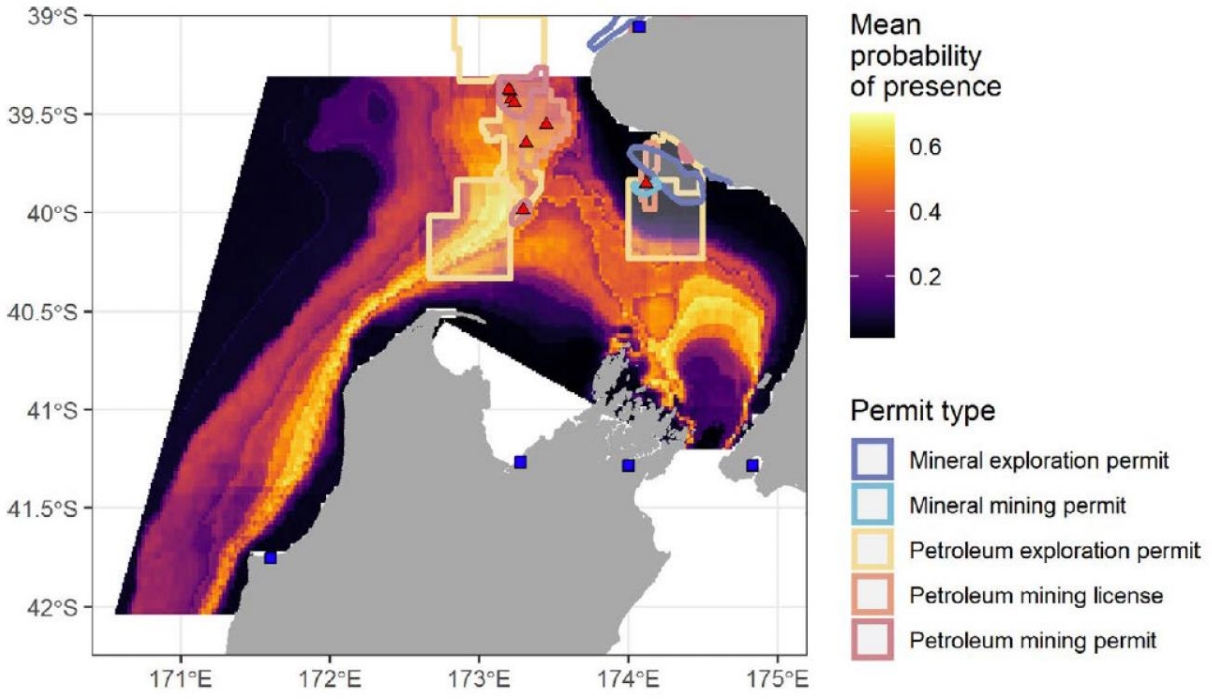
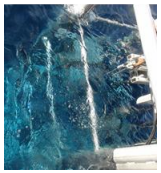


Figure 3.10: Mean probability of blue whale presence predicted by the BRT whale model, calculated across 100 bootstrap runs [58].

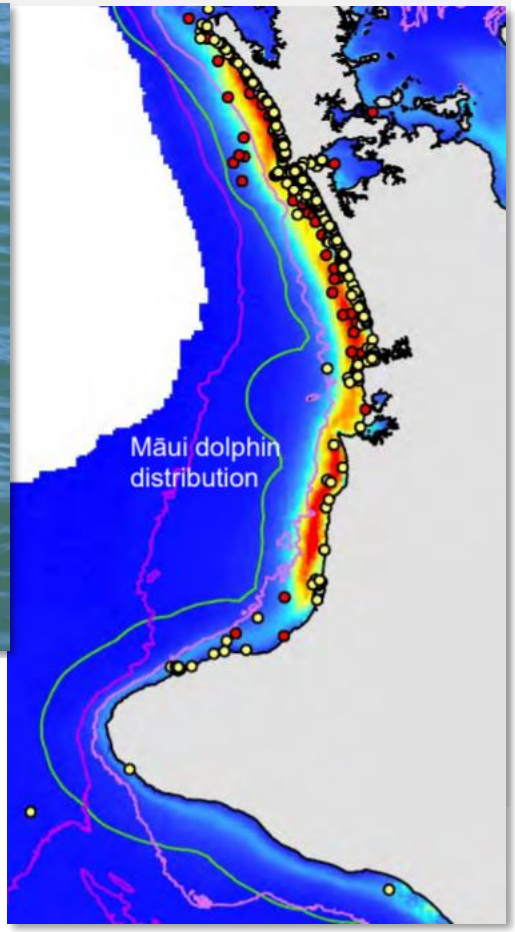






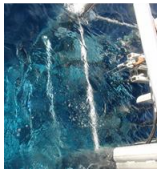
TTR Marine Consents STB

Māui Dolphin Sightings



The latest survey by the DoC showed there were just 54 remaining

RNZ TE REO IRIRANGI O AOTEAROA



TTR Marine Consents STB

Commercial Shipping (>7,000pa)

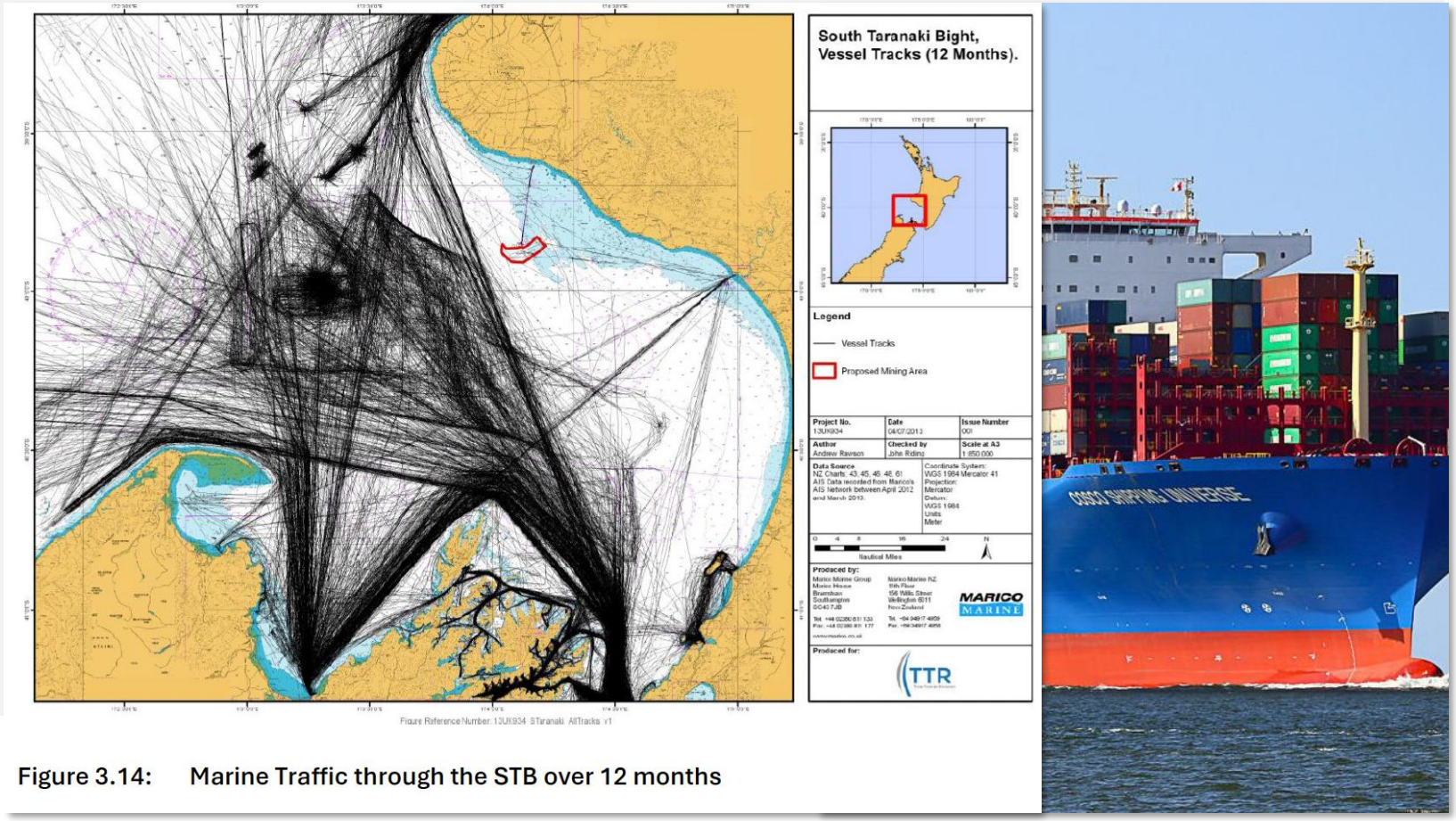
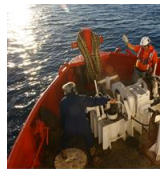
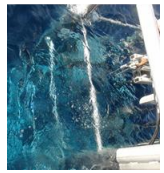


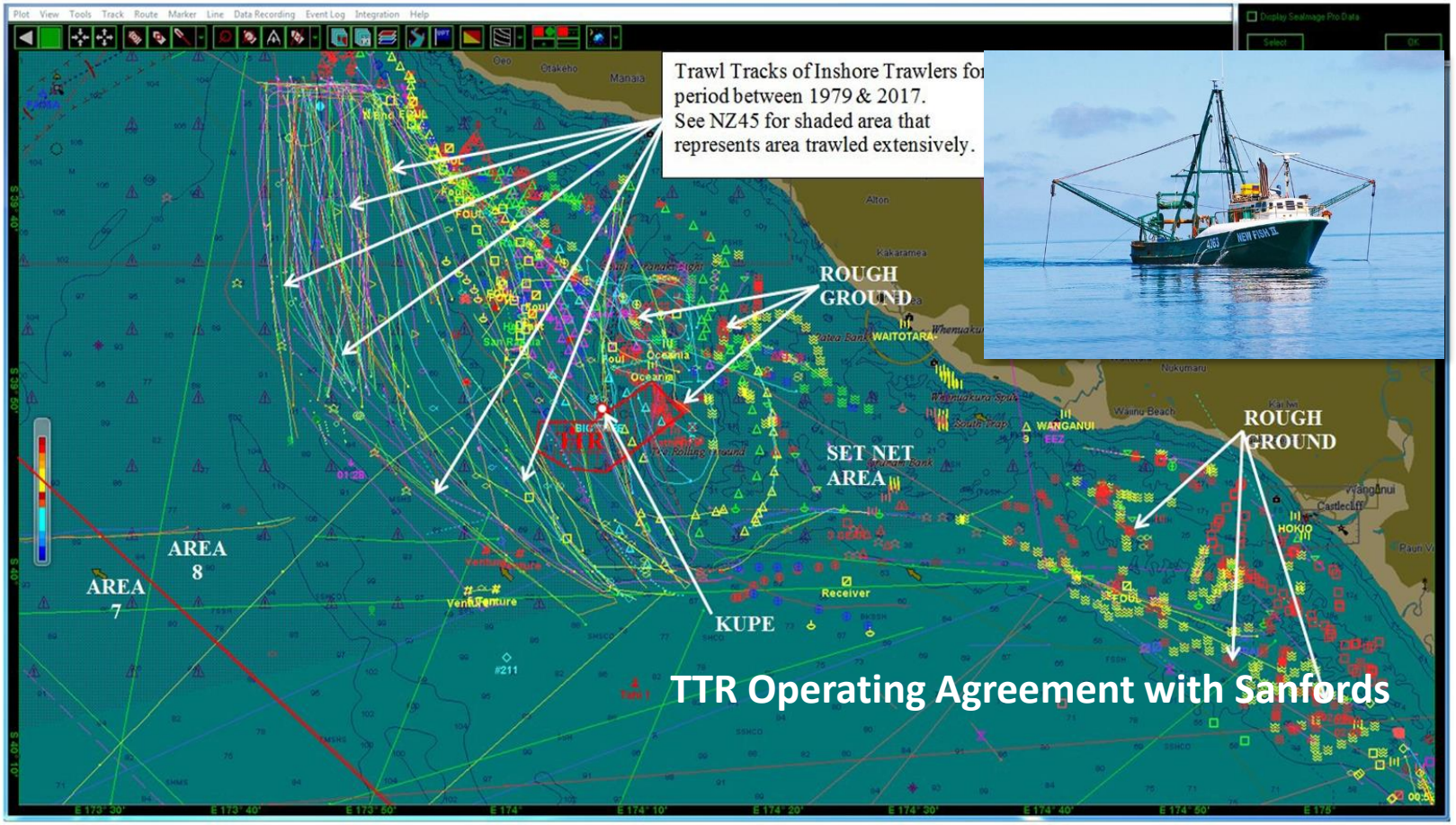
Figure 3.14: Marine Traffic through the STB over 12 months

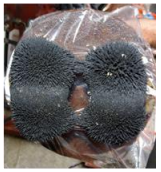


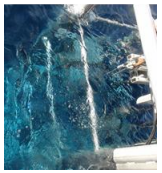


TTR Marine Consents STB

Commercial Fisheries & Trawling







TTR Marine Consents STB

Independent Experts & Evidence

TTR 3.2Bt VTM deposit in STB is a world class resource that can be recovered whilst avoiding material harm and can deliver major economic and social benefits

Extensive peer reviewed expert reports and evidence (>12,000p) has been provided to the committee that supports this and shows the STB marine environment and outcomes are well understood

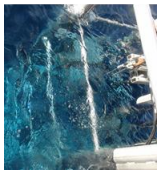
Dr Alison MacDiarmid Regional Manager NIWA Wellington May 2023 states:

"The proposed mining area and adjacent areas in the STB are one of the best studied shallow exposed shelf marine environments in Aotearoa New Zealand with a wealth of studies generated by the applicant [TTR] that add to a body of existing information. The information is the best available and sufficient for me to give my expert opinion on the effects of the proposed mining operations and resulting sedimentation on biota in the STB." and

"In light of the Supreme Court's findings, I have considered whether granting consent, subject to the proposed conditions, will avoid material harm, and will favour caution and environmental protection in relation to the effects of proposed mining operations and resulting sedimentation on biota in the STB, including ecological effects on marine mammals. ***In my opinion it will****."*







TTR Marine Consents STB

Independent Experts & Evidence

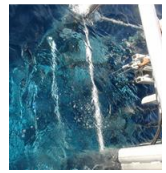
Dr Alison MacDiarmid NIWA Regional Manager

March 2024:

"The proposed mining area in the STB is one of the best studied shallow exposed shelf marine environments in New Zealand

There's a wealth of studies generated by the applicant [TTR] that add to a body of existing information

Granting consent, subject to the proposed conditions, ***will avoid material harm, and will favour caution and environmental protection in relation to the effects of proposed mining operations"***



TTR Marine Consents STB

Independent Experts & Evidence

Dr Phil Mitchell Partner Mitchell Daysh Expert Planner

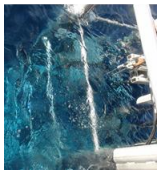
May 2023:

"I acknowledge the very clear and consistent opposition by tangata whenua, and all I can say that based on the technical evidence, the environmental resources of the STB, from a western science perspective, will not be materially harmed

I consider that granting of both the marine and discharge consents is consistent with the overall purpose of Section 10 of the EEZ Act in that it will:

***(a) Promote the sustainable management of natural resources** of this marine environment; and*

***(b) Protect this environment from pollution** by regulating the discharge component of the activity"*



TTR Marine Consents STB

Independent Experts & Evidence

er 07 2024

Stuff

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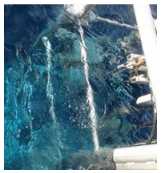
DOC give the green light to mining company wanting to mine in South Taranaki

"DOC accepted all TTR conditions to monitoring & management plans and did not consider further conservation gains would be made by submitting"

October 27, 2016 · 11:25am

Share



TTR Marine Consents STB

Consultation summary - 2025

Fast-track Consultation in 2025 has included:

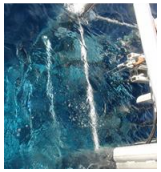
- ***MfE, DoC, NPDC, TRC, SDC, STDC , WDC & Patea CB***
- ***MPs D McLeod, C Bates, S Redmayne & B Kuriger***
- ***Fisheries, OWE, Oil & Gas, TCC, Ports, Venture Taranaki & Woods Training***

Iwi of Taranaki - made numerous attempts to engage with iwi groups

Provision for ongoing community and iwi involvement is addressed through consent conditions







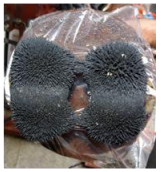
Significant iwi engagement has been a cornerstone of Trans Tasman Resource's stakeholder engagement strategy since 2010

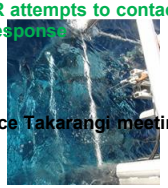
2013-14 (high-lights only, significant engagement pre 2013)

- Ngāti Ruanui- email
- Taranaki Iwi- msg left
- Ngāruahine - email
- Ngāti Ruanui- meeting with TTR
- Rangitaane o Manawatu -meeting
- Ngāti Apa - email
- Ngāti Ruanui-letter to Ms Packer
- Maniapoto - email
- Maurice Takarangi/TTFF- meeting TTR
- Te Ohu Kaimoana- preso TTR
- Ngāti Ruanui is paid $19,624 by TTR for CIS
- Ngāti Ruanui sends email to suggest meeting
- iwi submitters (various locations with EPA)
- Whanganui Iwi - suggests meet TTR in March
- Ngāti Ruanui emails TTR saying no consultation occurred
- Ngāti Ruanui acknowledges emails from TTR
- TTFF-Maurice Takarangi meeting to update
- Ngāti Ruanui emails TTR re meeting with Jenny Shipley
- Ngāti Ruanui- meeting between TTR and NR technical staff
- Ngaa Rauru, meeeting Cassandra & TTR

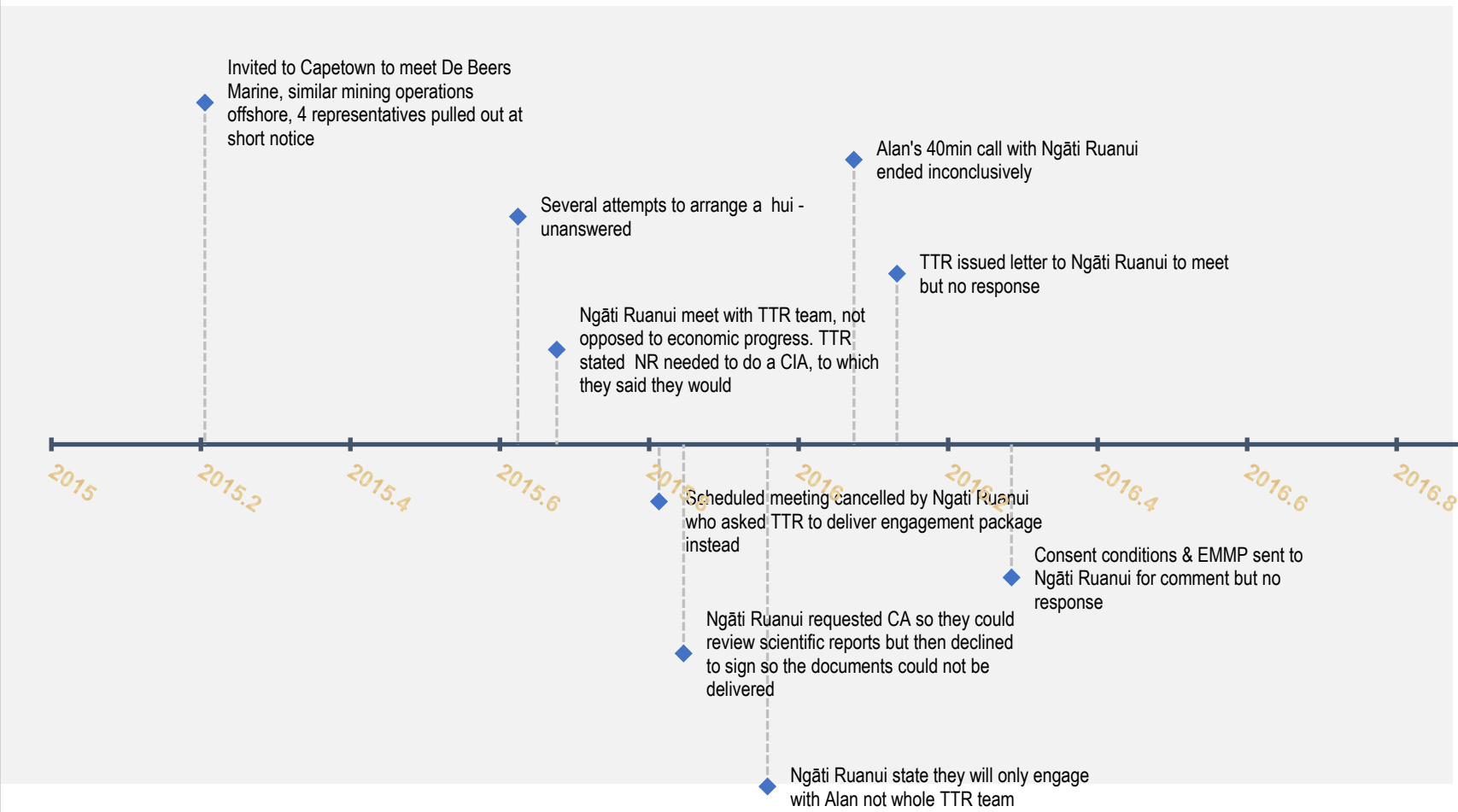
2013.4 — 2014.4

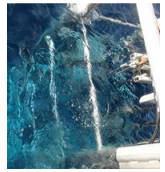
- Maniapoto- TTR gave presentation
- Public expo to discuss project (25 attended)
- Ngāti Raukawa ki te Tonga - msg
- Ngāti Ruanui is paid $5,467 by TTR for CIS
- Whanganui River - email
- Rangitaane o Manawatu
- Te Taihauāuru fisheries forum -TTR preso
- Tainui- email
- Ngaa Rauru meeting
- Ngāruahine
- Ngāti Ruanui is paid $15,786 by TTR for
- Ngāruahine meets with TTR
- Ngāti Ruanui - TTR requests meeting
- Ngāruahine states to TTR they will always oppose
- Public expo - info session (60 attended)
- Ngāti Ruanui - many emails
- Ngāti Ruanui - various contacts attempted
- Ngāti Ruanui - meeting enviro unit, Sommerville, Venus et al
- Ngāruahine -thankyou letters from TTR sent
- TTFF - Maur[illegible] Takarangi
- Ngāti Ruanui - TTR attempts to contact- no response
- TTFF - Maurice Takarangi meeting

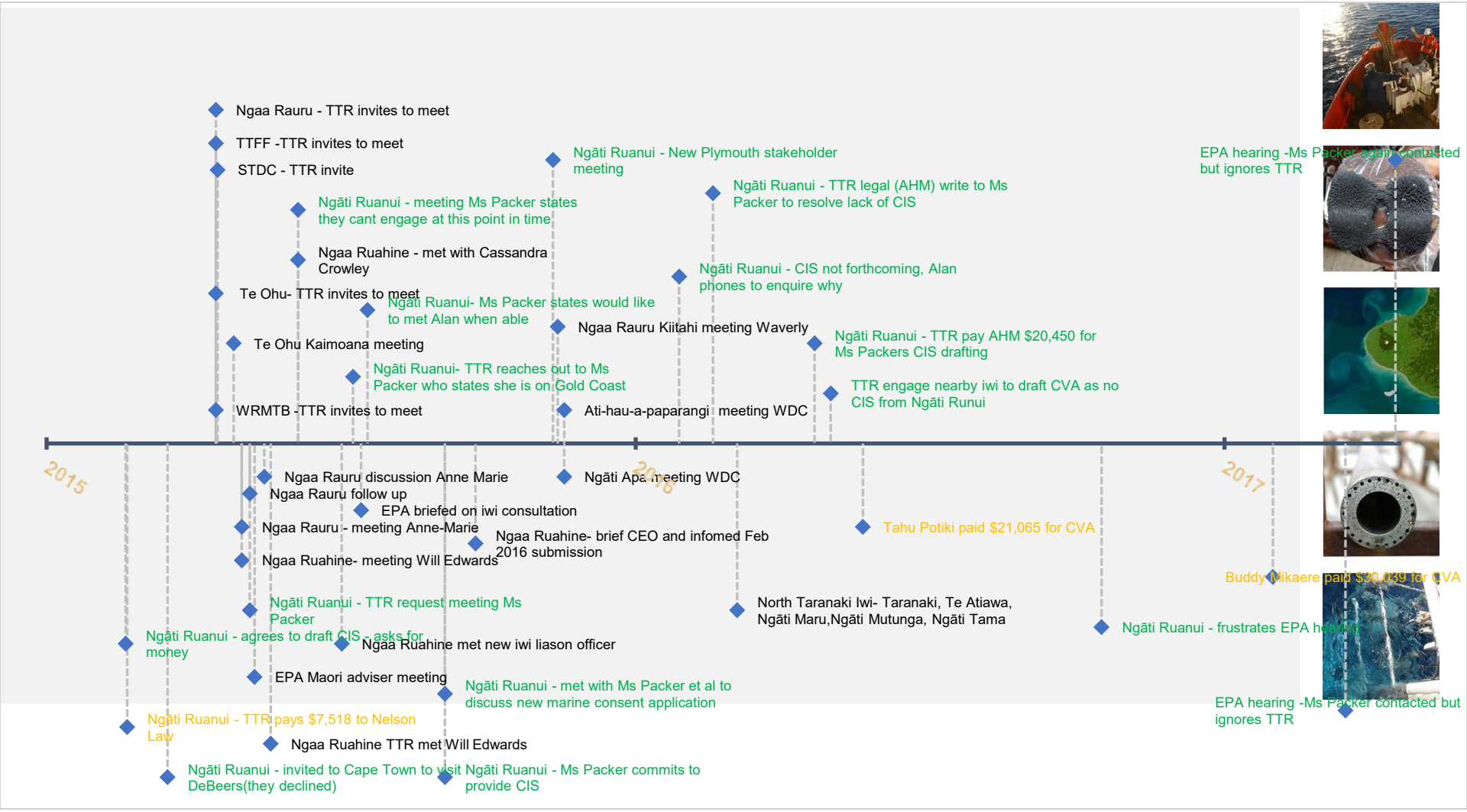



Extensive Attempted Early Engagement with Ngati Ruanui

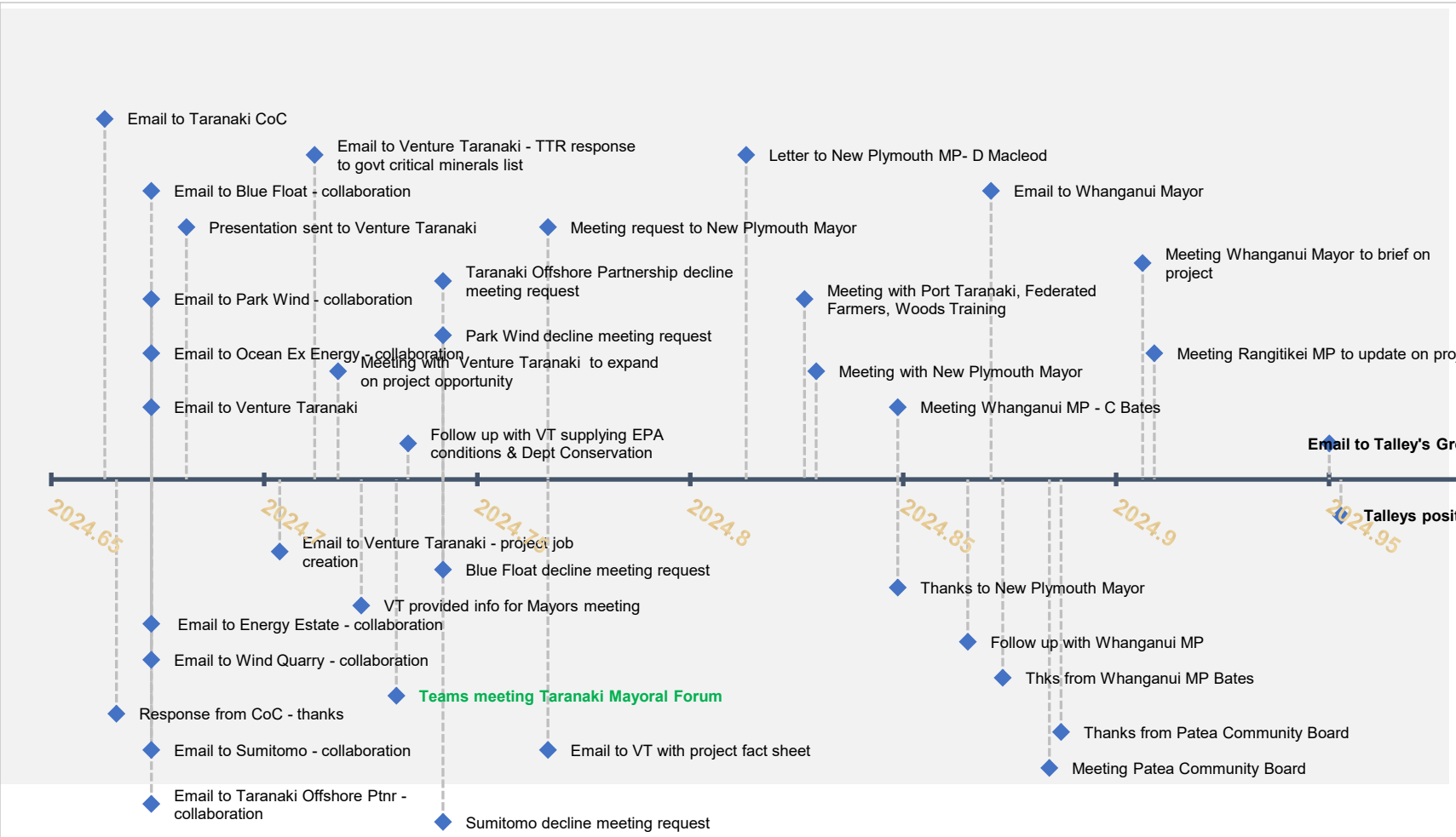


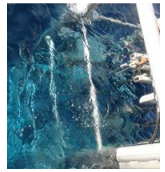


Iwi Engagement 2015 to 2016

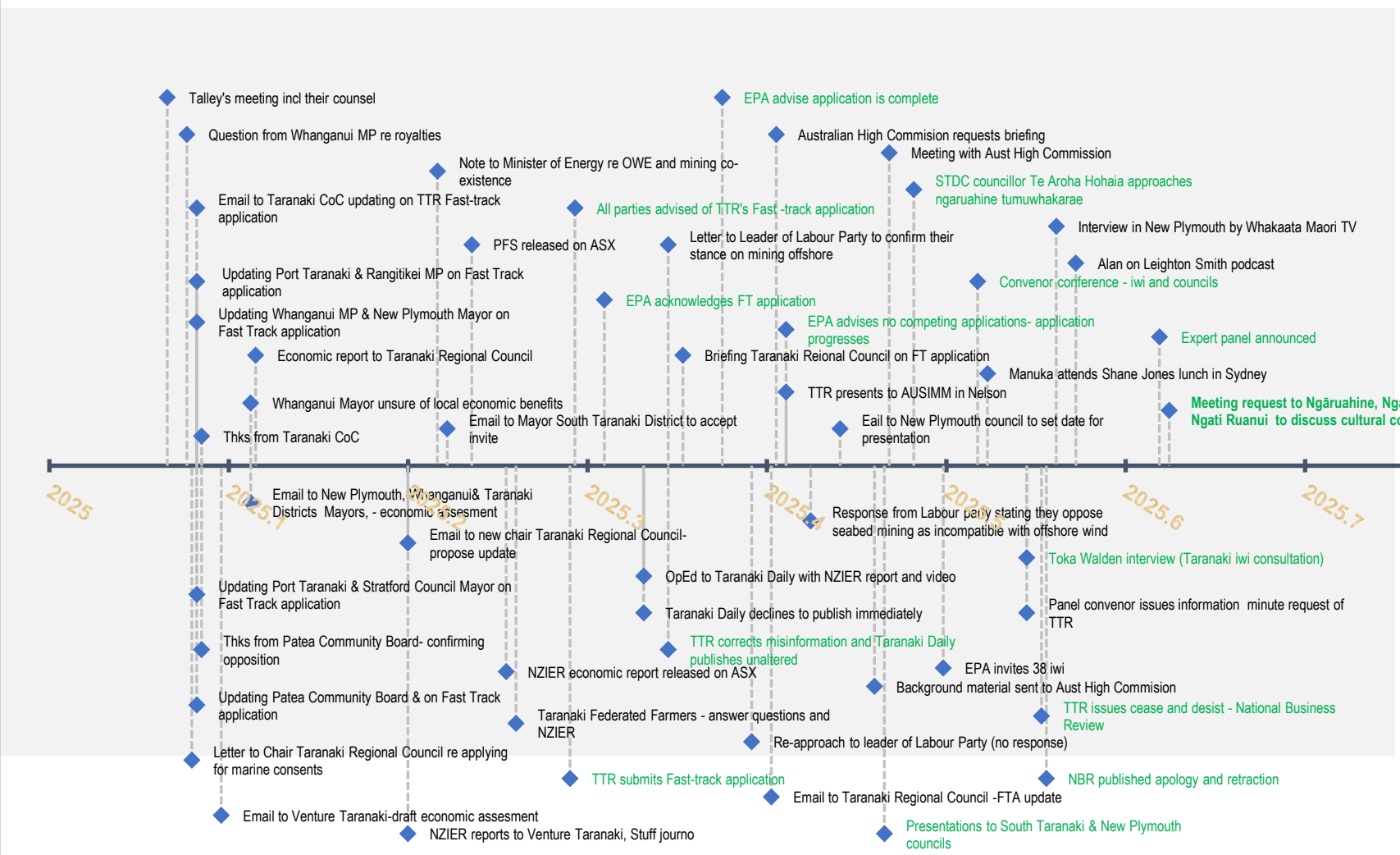


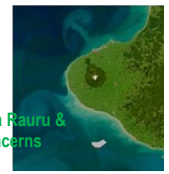
Broad Stakeholder Engagement 2023-24

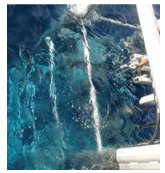




Broad Stakeholder Engagement 2025+







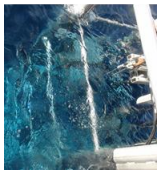
TTR employed a full-time iwi community relations officer in 2013 and were actively engaging with groups prior to that date

- Formal stakeholder engagement presentations were delivered in person and updated as needed during this process (2012-2017) several public meeting were held in addition to the myriad private meetings with iwi groups over several years
- EPA Statement of Evidence by TTR (Austen-Falloon) dated 17 Feb 2024 describing iwi and broader stakeholder engagement
- TTR 152 page stakeholder engagement package October 2015
- Extensive direct letters, phone call and meetings over many years
- 2010 to 2013 a log of iwi engagement filed at "iwi Communications Record.xlxs"
- 2013 to 2016 "6A 07 Record of iwi engagement.xlxs"

- Extensive engagement with Ngati Ruanui since 2010:
  - TTR paid almost $100,000 in fees to assist Ngati Ruanui draft Cultural Impact Statements (CIS) and Cultural Values Assessments (CVA)
  - No documents were ever delivered by Ngati Ruanui
  - This was documented in TTR letter to Stuart Smith MP National Party spokesperson for energy and resources - dated 19 July 2023
  - Interaction with this iwi group is noted in green text on the preceding charts

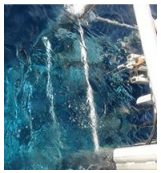






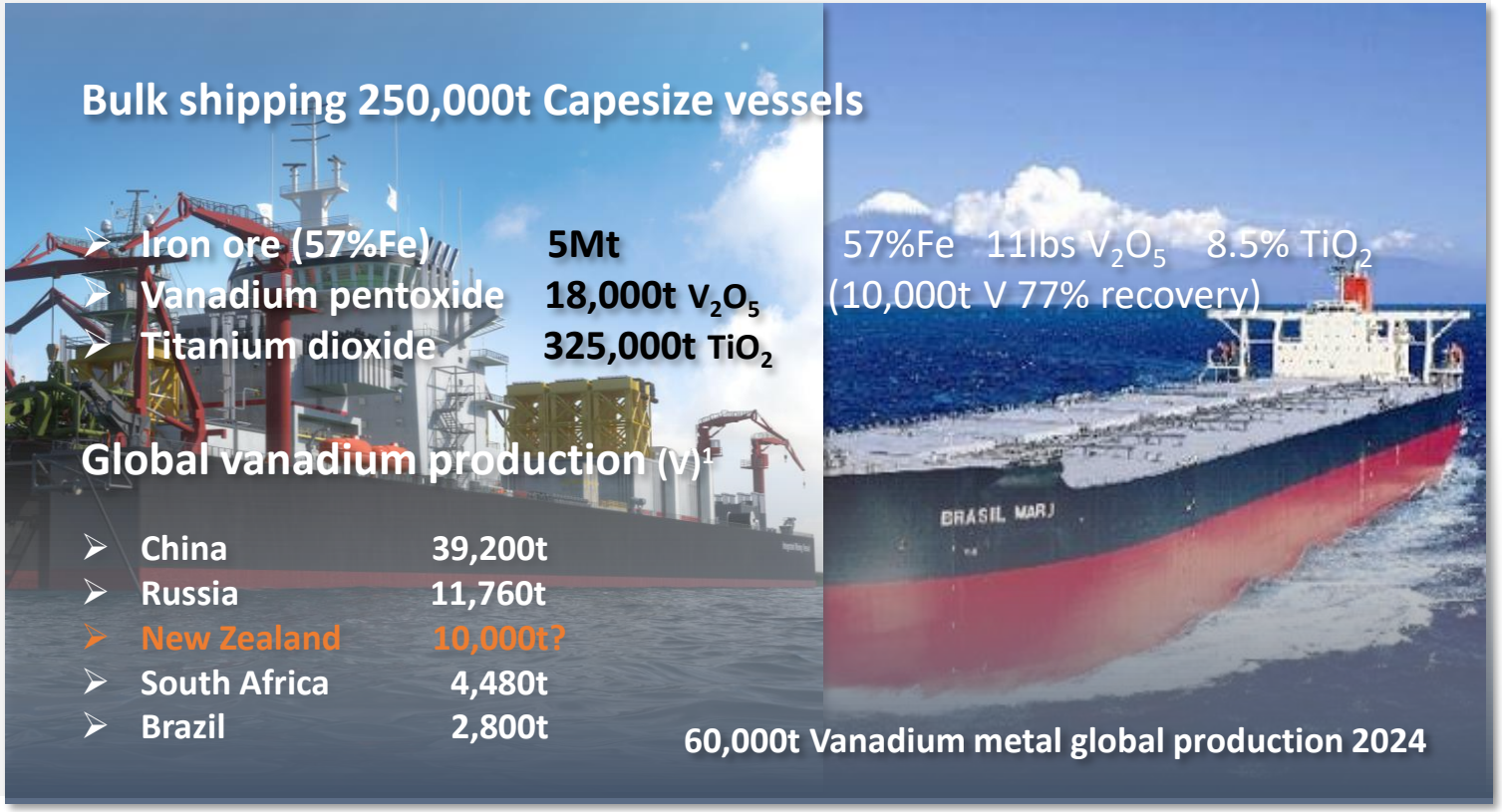
TTR Project Economics

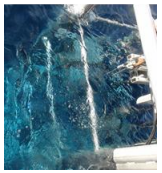
Iron Ore Price 2015 to 2025



TTR Project Production

Annual VTM Concentrate Exported



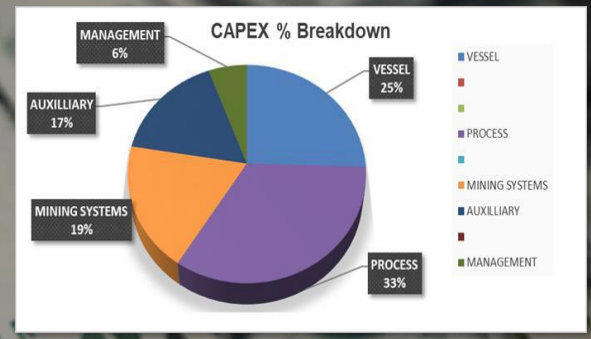


1 US Geological Survey, Mineral Commodity Summaries, January 2025: V vanadium metal
Project Economics based on 57% Fe iron ore concentrate and 77% recoverable vanadium

TTR Project Economics

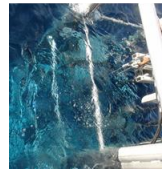
Project CAPEX February 2025[1]

SUMMARY CAPITAL COSTS		US$
VESSSEL	HULL	42.2
	EQUIPMENT	31.6
	INTEGRATION	45.1
PROCESS	PROCESS PLANT	163.4
	DEWATERING	15.5
MINING	CRAWLERS	92.3
AUX SYSTEMS	POWER GENERATION	66.0
	DESALINATION	22.0
MANAGEMENT	PM&E	27.2
SUPPORT	AHT	5.5
	EMV	2.2
	GSV	5.0
CONTINGENCY	RISK	84.4
TOTAL		602.4









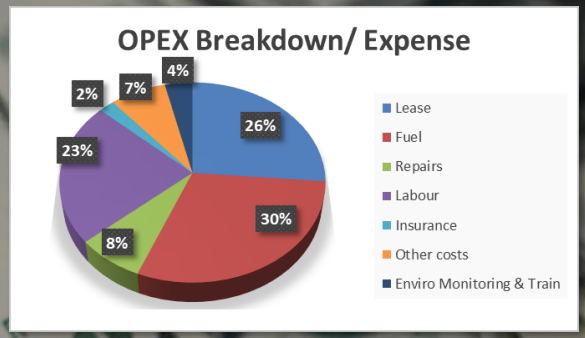
1 ***Taranaki VTM Project PFS February 2025 (Manuka ASX Release 2 March 2025)***
Based on proposed IMV 5Mt annual VTM concentrate production

TTR Project Economics

Project OPEX February 2025[1&2]

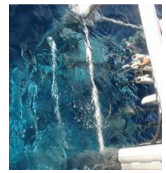
Summary OPEX Costs	US$/te Concentrate
8000 tph Seabed Crawler	US$ 1.29
Integrated Mining Vessel	US$ 15.34
Floating Storage and Offloading Vessel	US$ 7.72
Ancilliaries (AHT)	US$ 1.85
Environmental Monitoring Vessel	US$ 1.00
Total	**US$ 27.20**

Summary OPEX Costs	US$/te Concentrate
Leasing Costs (FSO)	US$ 7.00
Fuel	US$ 8.12
Repairs & Maintenance	US$ 2.04
Labour	US$ 6.27
Insurance	US$ 0.57
Other Costs (Misc.)	US$ 2.20
Environ Monitoring & Training	US$ 1.00
Total	**US$ 27.20**









1 ***Taranaki VTM Project PFS February 2025 (Manuka ASX Release 2 March 2025)***
Based on proposed IMV 5Mt annual VTM concentrate production
2 ***Lower quartile costs global iron ore producers***

TTR Project 2025 PFS

Project CAPEX, OPEX & Concentrate Metal Value[1&2]

- **Total CAPEX US$600m (NZ$1B)**
- **Total OPEX US$27.00t**

TTR metal in concentrate value tonne

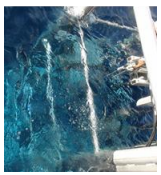
- **Iron ore (57%Fe) US$78.00t** (13.7% discount US$90t)
- **Vanadium US$23.00t** (77% recoveries 50% cost)
- **Concentrate US$101.00t**

- Plus potential metal credits
- Titanium· US$155.00t

NPV US$1.26B (NZ$2.20B)
EBITDA US$315m (NZ$550m) pa
IRR 39%
Capital Payback 18 Months







1 ***Taranaki VTM Project PFS February 2025 (Manuka ASX Release 2 March 2025)***
Based on proposed IMV 5Mt annual VTM concentrate production
2 ***Lower quartile costs global iron ore producers***

Taranaki VTM Project

Economic Benefits

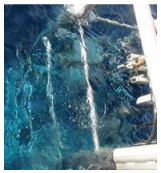
20 year life of mine with 60 years reported resource

Taranaki benefits[1]

- **New Plymouth HO & Hawera** training & logistics base
- **305 jobs** Directly employs 270 operational staff + 35 admin HO support
- **1,125 jobs** Taranaki based jobs (logistics, services, supplies, maritime ops)
- **$250m** Annual Taranaki region operating spend
- **Port Taranaki & Whanganui** upgrades
- **TTR Charitable Trust Grants** for social and cultural activities
- **GDP boost by $222m**







1 ***New Zealand Institute of Economic Research Report 12 March 2025***
Based on proposed IMV 5Mt annual VTM concentrate production

Taranaki VTM Project

Economic Benefits

20 year life of mine with 60 years reported resource

National benefits

- **1,320 jobs** Nation wide indirect
- **$55m pa** Royalty revenues (Royalties for Regions?)
- **$136m pa** Corporate taxes
- **US$495m pa** Foreign exchange earnings (NZ$855m pa)
- **US$600m** Capex investment (NZ$1B) leading edge technology

Industry statistics (for the year to June 2023)

$1.46 billion
in mineral exports

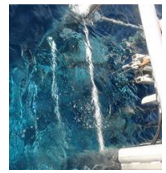
5,290 people
employed in the sector

$21.6 million
in royalties

- **No public or government infrastructure required**
- **Promotes the sustainable management of natural resources in EEZ**







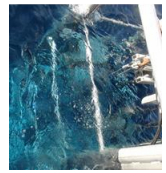
Corporate tax is equivalent to approx. 1% of NZ's corporate tax

Taranaki VTM Project

Approvals process taken over 12 years & >$88 million

The approvals process

- EPA DMC hearing process three times
- Three court challenges, including Supreme Court, focused on:
  - Legal definitions & purpose of the EEZ Act legislation
  - DMC panel grants process & decision write up
  - Certainty of information principles
  - Treaty & application of tikanga principles
- Court challenges *not* about project, environmental impact, protection or conditions
- Challenges also include 2020 Dolphin Reserves, 2023 Parliamentary Inquiry into Seabed Mining, Te Pāti Māori Bill to ban seabed mining, 2025 Waitangi Tribunal, ASIC & ASX complaints, Energy Minister seeks advice to restrict seabed mining (OWE)…….



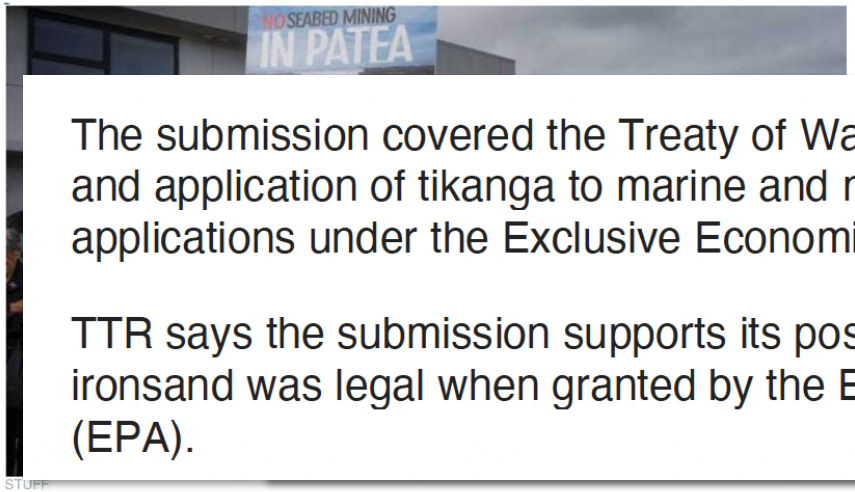
Attorney General, Crown Law & EPA Submissions Support TTR Case

TTR Marine Consents STB

Approvals process taken over 10 years

Attorney General raises ire of South Taranaki iwi leaders over ironsand appeal submission

Mike Watson14:04, Nov 06 2020



STUFF

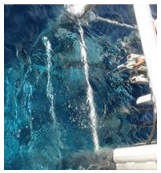
South Taranaki's Te Runanga o Ngati Ruanui Trust have opposed the iron sand mining project decision since 2017.

Ngāti Ruanui: Attorney General's Seabed Mining Intervention Risks Environmental Disaster

Thursday, 5 November 2020, 10:04 am
Press Release: Ngati Ruanui

The submission covered the Treaty of Waitangi, Maori customary interests and application of tikanga to marine and marine discharge consent applications under the Exclusive Economic Zone (EEZ) Act 2012.

TTR says the submission supports its position that its consent to mine ironsand was legal when granted by the Environmental Protection Authority (EPA).



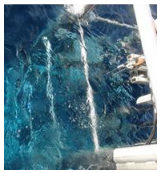
Attorney General, Crown Law & EPA Submissions Support TTR Case

Taranaki VTM Project

Long term environmentally sustainable mineral recovery

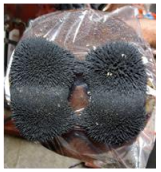
Opportunity to develop new +$1 billion export industry

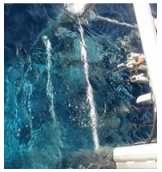
- *Propels NZ into top ranked producer* ***critical minerals & green steel feed***
- ***Proven technology solution & experienced operators***
- ***World class resource*** *with significant exploration upside*
- ***Low Q1 opex & internationally competitive***
- ***Small footprint & environmentally sustainable***



Taranaki VTM Project

Long term environmentally sustainable mineral recovery





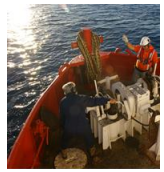
Taranaki VTM Project

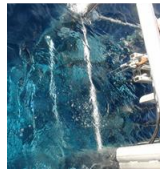
Long term environmentally sustainable mineral recovery

Taranaki VTM Project ready for immediate start

- *2025 PFS & EIA completed & BFS ready to go*
- *FTA Approvals application 15 April & Panel starts 25 August2025*
- *7 month hearing with wide participation invited*
- *Operating conditions and management plans lodged*
- *Green light required!*

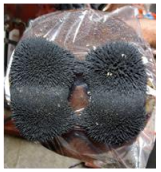
Seabed mineral recovery is part of the solution, and the future

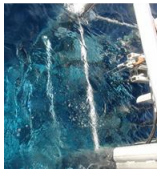




Taranaki VTM Project

Paul Majurey (Holm Majurey Law) – Tikanga and Treaty Settlement matters

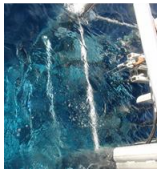
Taranaki VTM Project

Tikanga and Treaty Settlement Matters

- Supreme Court decision made in the context of different legislation
- No Treaty principles consideration
- Tikanga relevant to decision process (not merits)
- Consultation
- Limited parameters for declining consent





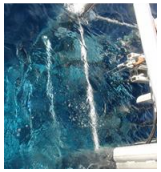


Taranaki VTM Project

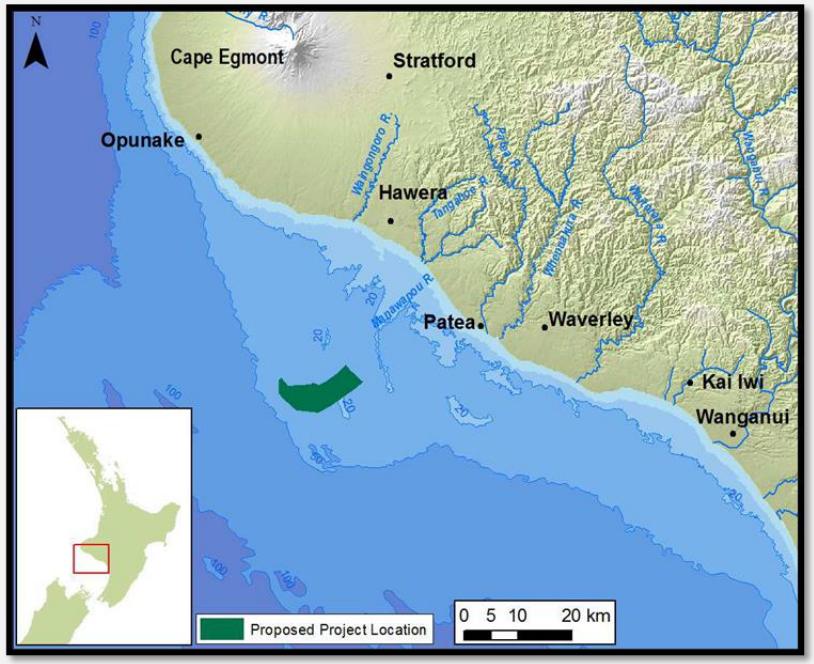
Dr Alison MacDiarmid – Marine Ecological and Sedimentation Effects Summary and Ecological Monitoring Plans



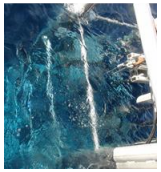




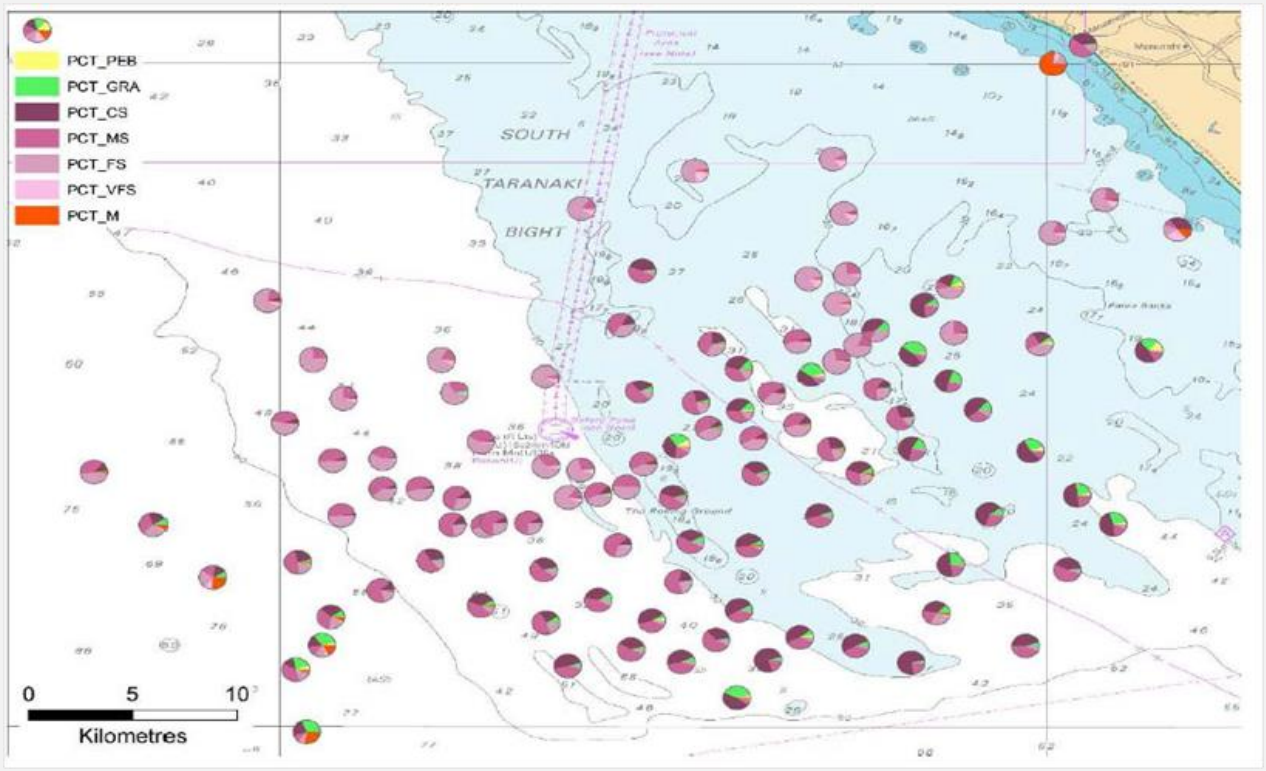
Environmental setting - location

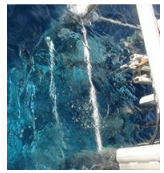


The proposed project area (PPA) is located on a shallow shelf (Pātea Shoals) in the South Taranaki Bight (STB), 22km to 36km offshore at water depths of 25–40 m, outside the coastal marine area



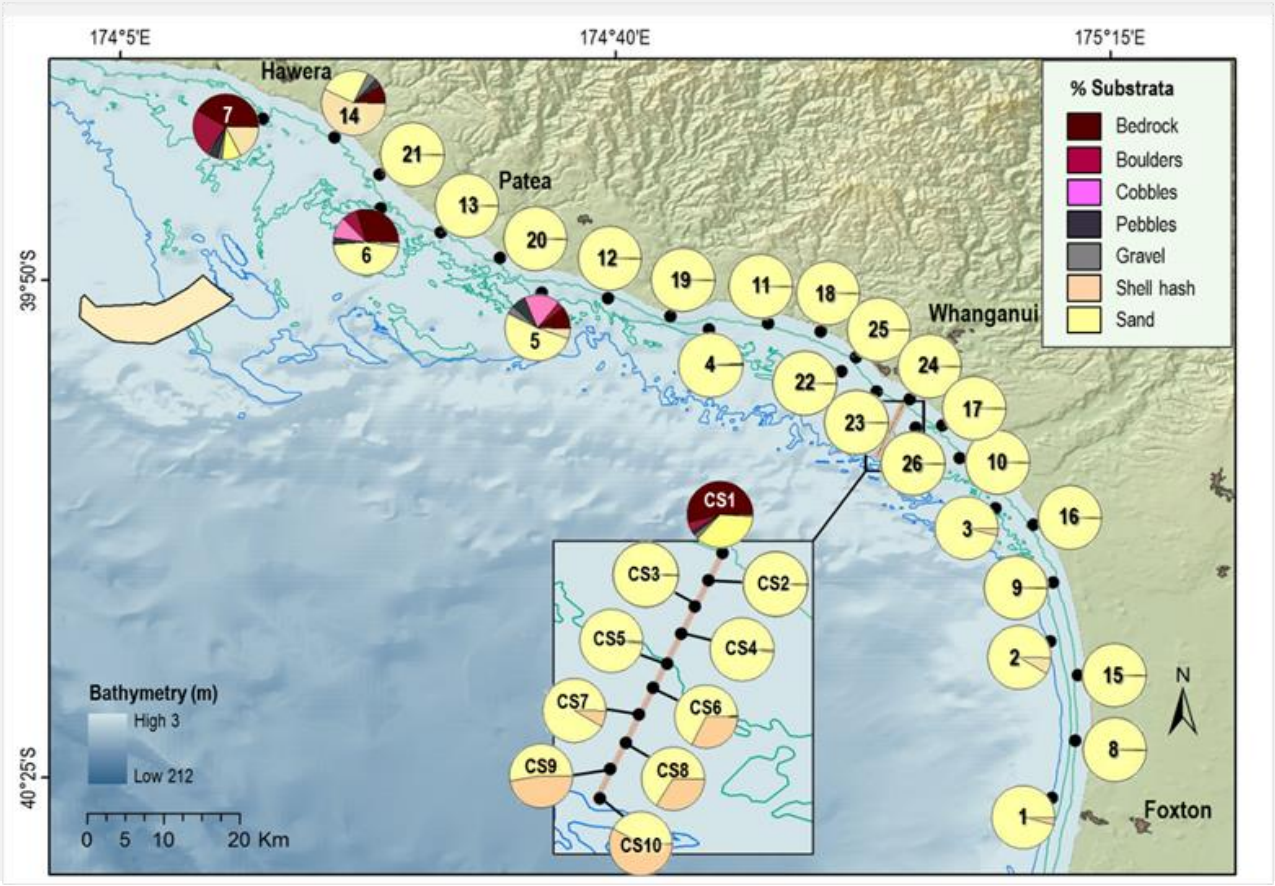
Environmental setting – seafloor sediments

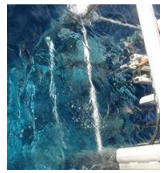




Surface sediments in the PPA are dominated by fine to medium sands. Muds increase offshore in depths > 50 m and in some areas close inshore off river mouths. Gravels and coarse sands occur more frequently to the east, south and west of the PPA

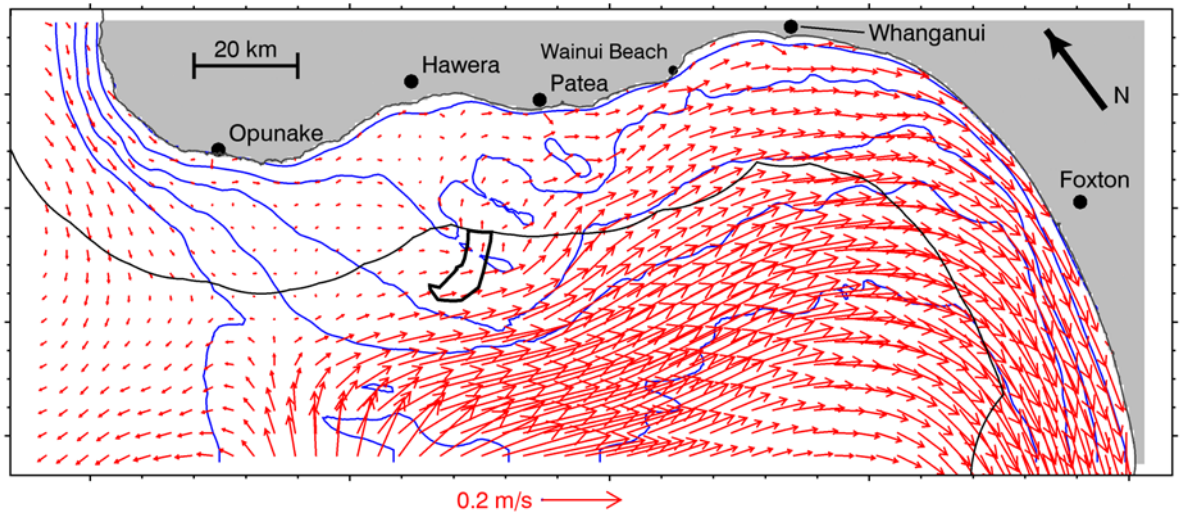
Environmental setting – nearshore sediments





Rocky outcrops were found at 5 of the 36 inshore sites sampled while fine rippled sands dominated the remainder

Environmental setting – STB currents and tides

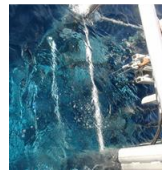


Modelled time-averaged, depth-average velocity for the STB. Velocity vectors are averaged over 730 days. Depth contours are at 10, 25, 50, 75 and 100 m.

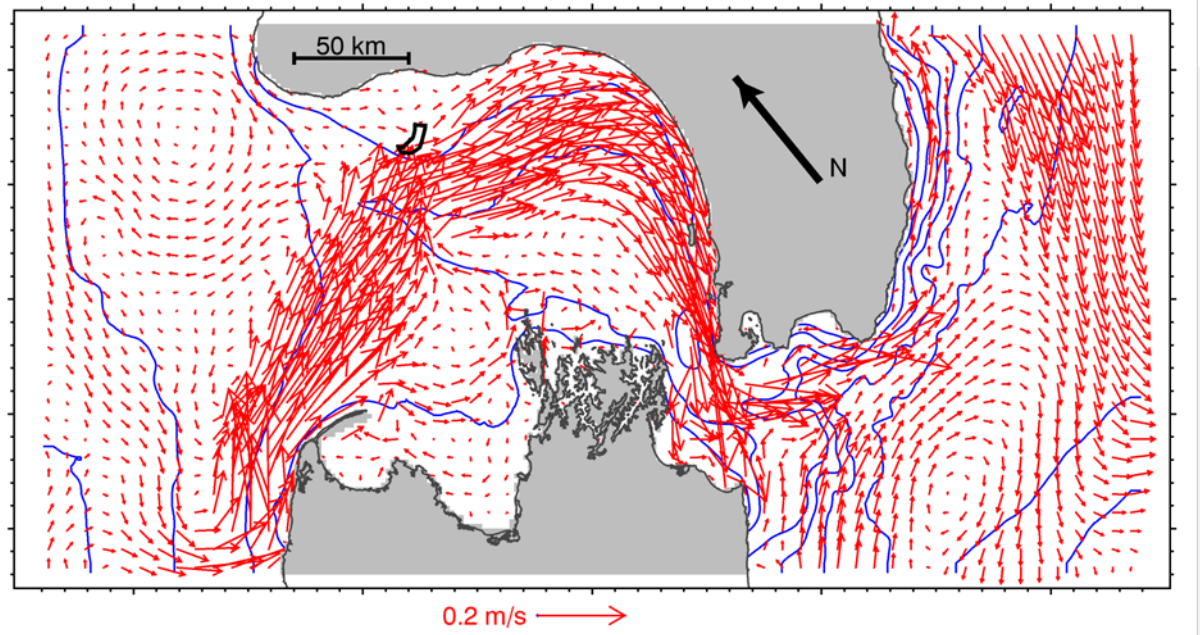
- Twice-daily lunar tidal cycle currents account for 40 – 80% of the measured current strength and variability in the PPA and STB at depths <50m
- Peak and ebb current speeds ranged between 0.13 – 0.25 m/s, with higher and lower speeds occurring on spring and neap tides respectively
- The orientation of the tidal flow is in a northwest – southeast direction (i.e. parallel to the coast), which has important implications for sediment plume dispersion
- Current direction and strength can also be substantially affected (up to 1 m/s) by surface winds
- The predominant wind direction are from the west and southeast, with strong winds producing currents in a constant direction for more than 24 hours







Environmental setting – currents

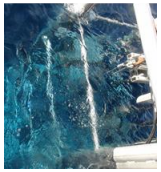


Modelled time-averaged, depth-average velocity for central NZ. Velocity vectors are averaged over 730 days. Depth contours are at 50, 100, 250, 500, 1000 and 2000 m..

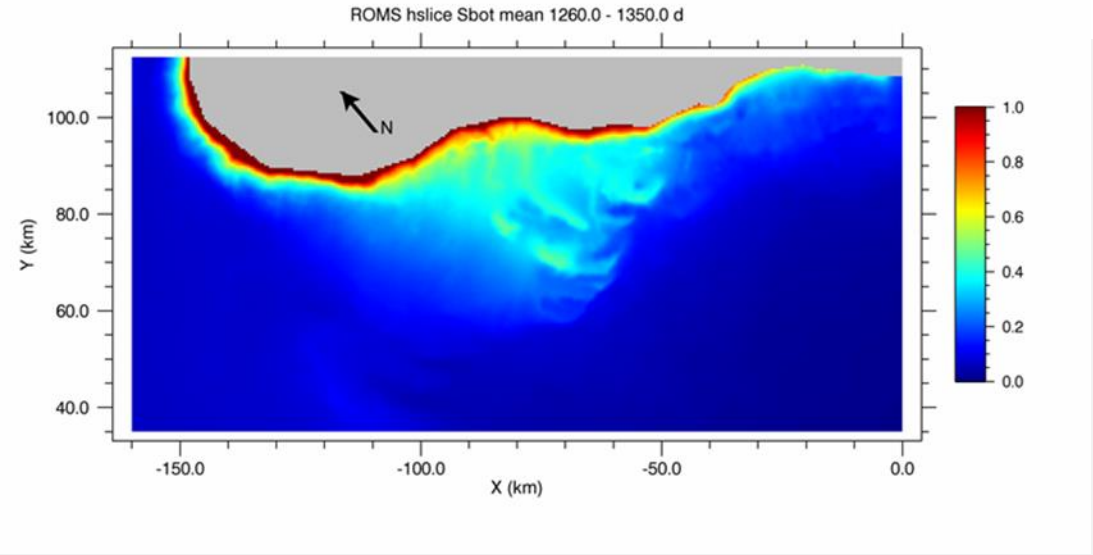
- Under calm conditions there is a prevailing current over the Pātea Shoals towards the southeast as a result of the influence of the D'Urville Current, which flows past Farewell Spit and into the STB and then towards the southeast
- During times of moderate to strong west to northwest winds, the prevailing southeast drift is considerably enhanced
- This current drift direction is significantly altered by moderate to strong southeast winds, which, for a period, reverses the drift towards the northwest



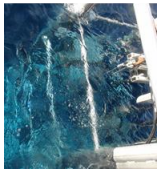




Wave environment



Modelled winter average bottom wave orbital speeds (m s^{-1}) from Cape Egmont to south of Whanganui. .



- The coastal environment out to a water depth of 50 m is a high-energy environment with significant wave heights in excess of 2 m routinely experienced
- Significant wave heights of up to 7.1 m were measured during the seven-month instrument deployment as part of the oceanographic studies carried out for TTR. The higher waves recorded generally came from either a southeast or southwest direction, with a reduction in wave heights as they move towards the coast or down the coast in a south-southeast direction
- Sea floor sediments on the Pātea Shoals are subject to both strong current flows and wave orbital velocities depending mainly on depth. Storm events typically generate wave orbital speeds several times the average

Background suspended sediments

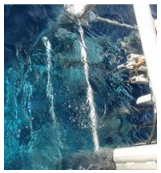
- Measurements taken around the project area and across the Pātea Shoals as part of the oceanographic studies by NIWA recorded typical maximum concentrations of up to 25 milligrams per litre (mg/L) of suspended fine sediment near the sea surface of with higher peaks inshore after significant rainfall or following significant wave activity
- Offshore, near the 50 m water depth, near-surface suspended fine sediment concentrations were typically less than 10 mg/L with small peaks occurring during or just after periods of significant rainfall, which is indicative of river inputs of suspended-fine sediments
- Inshore suspended fine sediment concentrations of up to 1,900 mg/L were recorded close to the seabed, mostly associated with high wave activity
- Further offshore over the proposed mining area and in adjacent areas the seabed suspended fine sediment concentrations were typically less than 10 mg/L, but were recorded up to 80 mg/L. The highest concentrations were not always associated with rainfall events or wave activity, but could also be a result of advection from up current of the area

Optical water quality

- NIWA (now Earth Sciences New Zealand) undertook two boat surveys and collected water samples from 11 nearshore sites across the STB. Further, a six-week deployment of instruments on nearshore moorings in approximately 10 m of water was undertaken to assess temporal variability and establish relationships of optical properties
- The boat surveys showed that suspended sediment concentrations and diffuse light attenuation are greatest closest to shore, and visual clarity increases rapidly with depth and distance offshore
- There is also a reduction in suspended sediment concentrations and a subsequent increase in visual clarity in the south-southeast direction of the STB. Further, both coloured dissolved organic matter and chlorophyll a concentrations decreased with increasing water depth and distance offshore
- Suspended sediment concentrations also increased as result of increased river flows (and related sediment load inputs), with high suspended sediment concentrations resulting in reduced visual clarity
- Some nearshore increases in suspended sediment concentrations occurred during periods of high wind speeds and low river discharges, when typically wave stirring entrains seafloor sediment into the water column and affects visual clarity







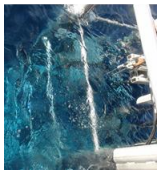
Effects on coastal processes - Shoreline processes and coastal stability

To assess the shoreline processes and coastal stability, extensive field investigations that were conducted by NIWA over two years, including oceanographic measurements, and shoreline monitoring as outlined in sections 3.2.3 and 3.2.4 of the Application. Key findings were:

- **The natural landforms and geomorphic character of the beaches and cliffs is unlikely to change as a result of the project**
- **Changes in shoreline stability are highly unlikely to change as a result of the project**
- **The grainsize of sediment on the beaches is unlikely to change as beach sediments primarily come from cliff erosion and river outwash**





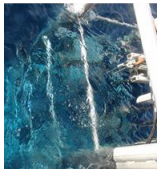


Effects on coastal processes – waves and surf

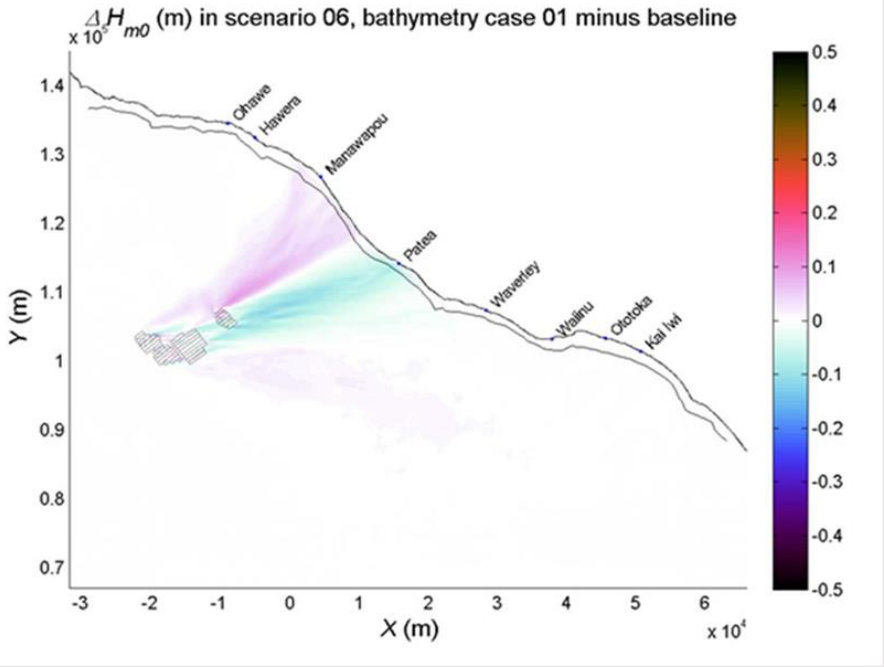
- **TTR engaged NIWA to undertake near-shore wave modelling to consider the impacts of the project on wave characteristics and eCoast Marine Consulting and Research to investigate the impact of the project on surf breaks in the STB**
- **Although the deposition of de-ored sediments will fill the majority of the extracted areas it results in a mound and a pit at either end of a mining track**
- **The assessments examined whether the resulting pits and mounds have the potential to alter the direction of wave approach and wave height nearshore in the STB, and therefore alter longshore transport of sediment, and the patterns of erosion and accretion at the shoreline**







Effects on coastal processes – waves – worst case scenario



Difference between significant wave height for case 1 and existing bathymetry, over the model domain, for environmental scenario 6 (2.4 m high waves from the SW)

Key findings under the worst case scenario of an 8 – 9 m mound at the southwest end of the operational area and 9 – 10 m pit at the northeast end were:

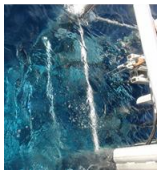
- **Increases in wave height in the order of 100 mm around the Manawapou River**
- **Decreases in wave height in the order of 100 mm around Pātea**
- **An increase in wave period of less than 0.5 seconds north of Pātea**
- **A decrease in wave period of less than 0.1 seconds at Pātea**

Residual pits and mounds will occur at the end of the lanes in which iron sand recovery and deposition occurs. It is likely that pit depths and mound heights will be significantly smaller than the case presented above

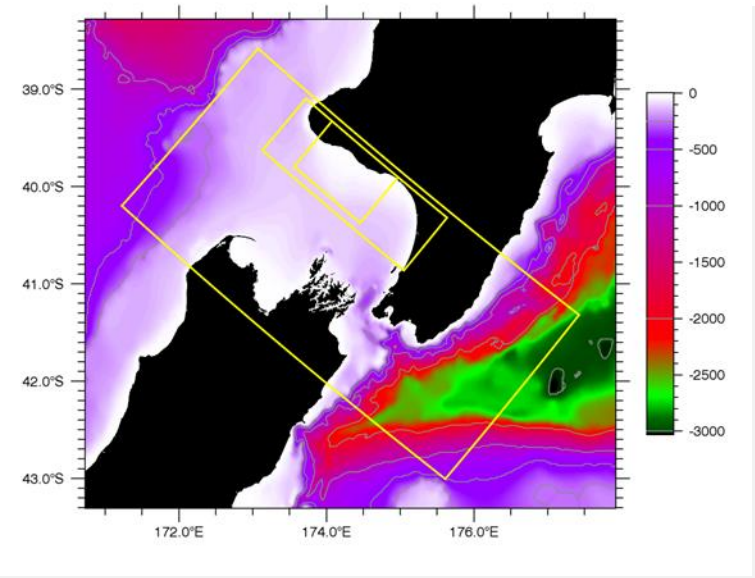
Overall, the impacts of the project operations on the wave and surf environment within the project area and at the coast are considered to be insignificant

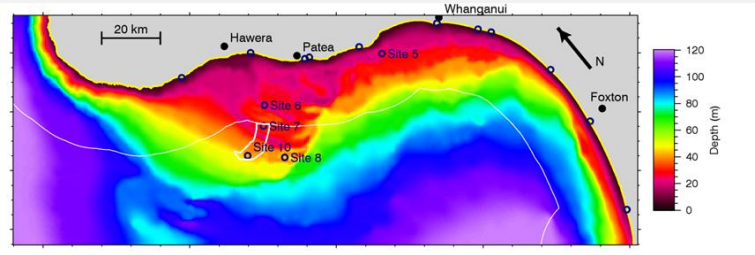






Sedimentation and Sediment Plume Effects – ROMS model



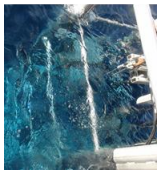


ROMS model domains. Top panel: Outer (Cook Strait) and inner (Cape Egmont to Kapiti; Pātea Shoals) domains. Bottom panel: Inner (Cape Egmont to Kapiti) domain, 22.2 km territorial limit (thin white line), project area (thick white line), ADCP sites (dark blue). Colours indicate water depth (m)

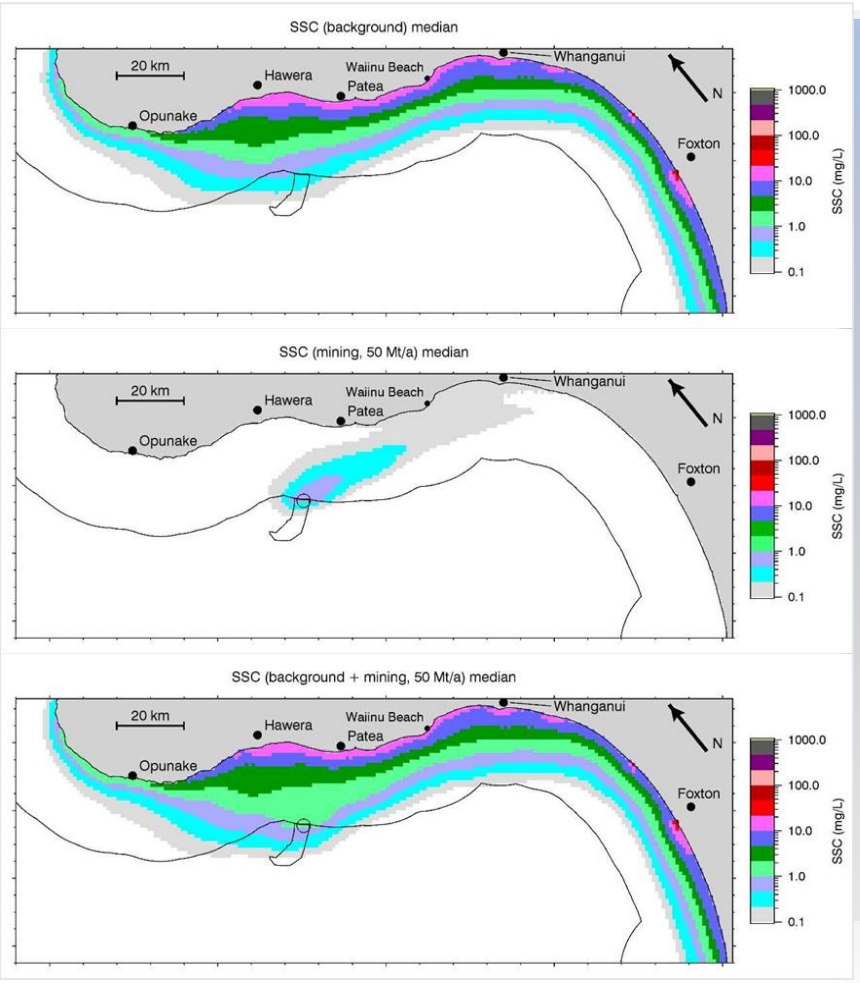
- The sediment plume model uses the Regional Ocean Modelling System (ROMS), which is a widely accepted ocean / coastal model with optional embedded models of suspended sediment and sediment - bed processes. The model has been used to track and display sediments at concentrations that are frequently too small to be seen, detected or measured in the field.
- The model grid resolutions vary between the domains - 2km grids for the outer domains and 1km for the inner domains (with the option of using a 500m resolution). The 500m resolution is used to investigate the sensitivity of the model results to the grid resolution
- The model required the input of 13 parameters relating to sediment classes, grain size and density, porosity of the seafloor, background sediments (river and sea derived) sizes and proportions, sediment input rates, settling velocity (of sediments in the water column), critical bed shear stress for erosion, erosion rate parameter, iron sand recovery derived sediments, hydro cyclone overflow discharge, and de-ored sediment discharge
- HR Wallingford ("HRW") in the UK conducted laboratory tests using sediment samples from the STB to better define how discharged de-ored sediment behaves in the near-field, particularly potential flocculation and settling rates for finer particles







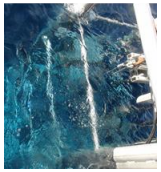
Sedimentation and Sediment Plume Effects – ROMS modelling



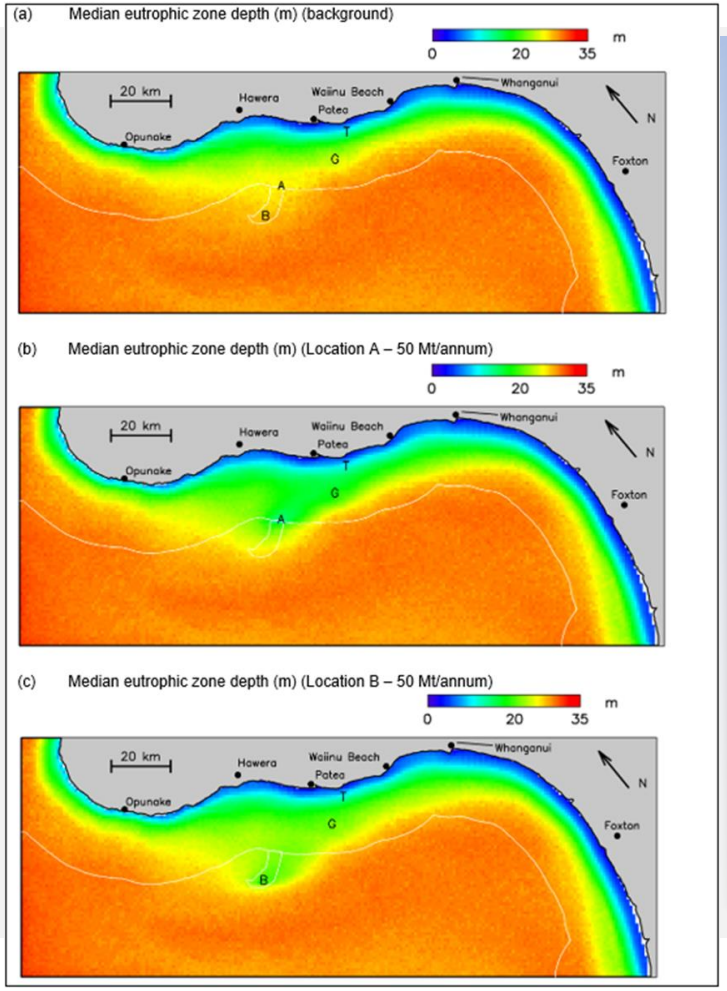
Median near-surface concentration of suspended sediment from mining (50Mt/a) at source Location A at the inner end of the PPA. Note the logarithmic colour scale running from 0.1 to 1000mg/L

Extensive modelling indicates:

- **Background suspended sediment concentrations are higher inshore and decline offshore, and away from the river sources (see top panel)**
- **The sediment plume (middle panel) will travel predominantly in an east-southeast direction from its source**
- **The suspended sediment concentration (SSC) resulting from mining operations will be greatest at the mining site**
- **The magnitude of SSC in the plume will reduce rapidly with distance from the mining location whilst the background SSC values increase**
- **The comparison of background, with background plus iron sand extraction activities concentrations (bottom panel), shows a movement offshore of the surface 1mg/L threshold of about 6km outwards over the Pātea Shoals**
- **Suspended sediment concentrations from the project will be moderate, near to the project area. Closer to the coast the project derived SSC will be much lower than background levels and not discernible.**



Optical Water Quality Effects

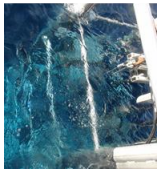


Modelled euphotic zone depth at Background Levels (top panel), mining at Location A plus background (middle panel), and mining at Location B plus background (bottom panel). G: Graham Bank; T: The Traps

- NIWA provided an updated assessment of optical water quality impacts based on the worst-case sediment plume modelling
- The euphotic zone depth is the depth at which the downwelling irradiance has fallen to 1% of its surface value
- The modelling shows that with mining at site A or B the median euphotic zone depths northeast of the mining site will be considerably shallower than in the background case with discernible changes at the Traps and Graham Banks
- In contrast, the mining is predicted to have only a very small effect on euphotic zone depth near shore

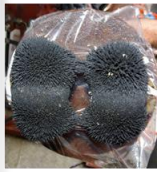


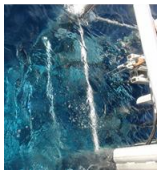




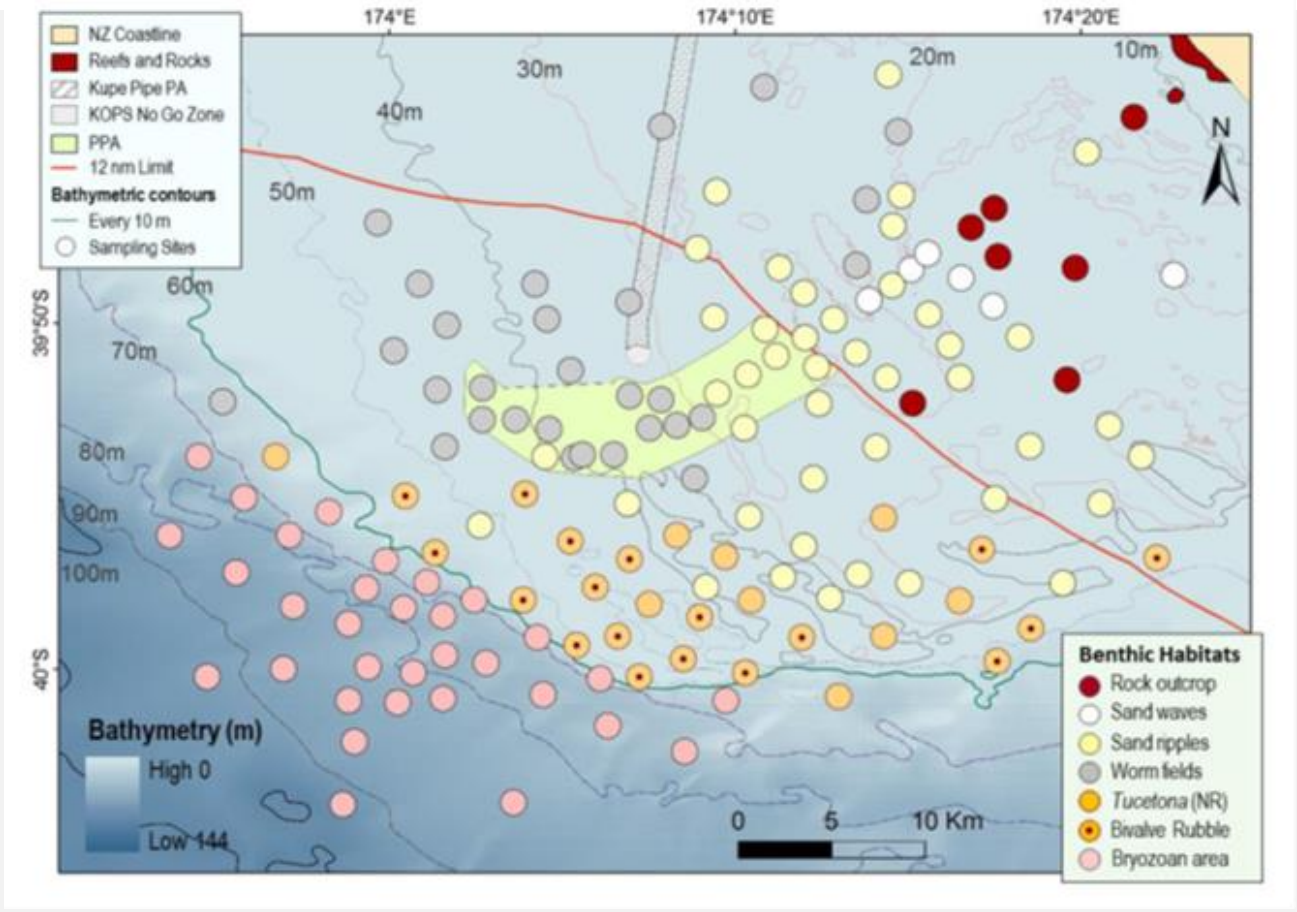
Effects on primary production

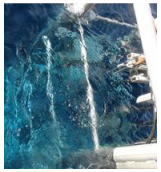
- The sediment plume will result in absorption and backscattering of light which will reduce light availability for phytoplankton and benthic plants
- Water column primary production averaged over the SMD would reduce by 1% and 0.8% when extraction is occurring at Locations A and B respectively, with the largest reduction focused close to the extraction site
- Impacts on primary producers are considered negligible because:
  - primary producers are resilient to short-term fluctuations in light availability (photo-adaptation)
  - the likelihood that primary production by phytoplankton in the STB is likely nutrient-limited, not light limited
  - many microalgae may also be capable of heterotrophic production (mostly uptake of dissolved organic material)
  - macroalgae have the additional advantage of being able to store photosynthetic products in their larger bodies for extended periods
  - the presence of the plume and effects on light levels will be increasingly intermittent at sites > 2 km from the active point of mining





Effects on benthic ecology – seabed habitats





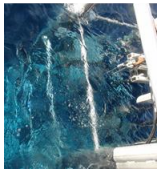
Seabed habitat types observed at each site within the Pātea Shoals area of the STB

Effects on benthic ecology – seabed habitats cont.

- NIWA identified seven seabed habitat types on the Pātea Shoals with the seabed in the PPA typically consisting of sand waves and worm communities (i.e. wormfields)
- Generally inner and mid-shelf sandy habitats supported few visible epifauna, while small scattered rocky outcrops on the inner shelf had diverse macroalgal and macrobenthic assemblages
- More recently, NIWA identified further areas of rocky reef in this same general area, and it is highly likely that other areas of rocky reef occur inshore of the PPA and may be known to the local fishing and diving community but remain to be formally mapped
- Offshore were two habitat types:
  - Bivalve rubble habitats dominated by live and dead shells of the large robust dog cockle (*Tucetona laticostata*)
  - The bryozoan rubble habitat growing on shell debris at depths of greater than 60 m
- Both these deeper habitats support diverse assemblages dominated by sessile suspension-feeding taxa and motile taxa such as crabs and gastropods





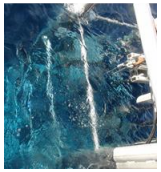


Effects on benthic ecology - Seabed habitat loss

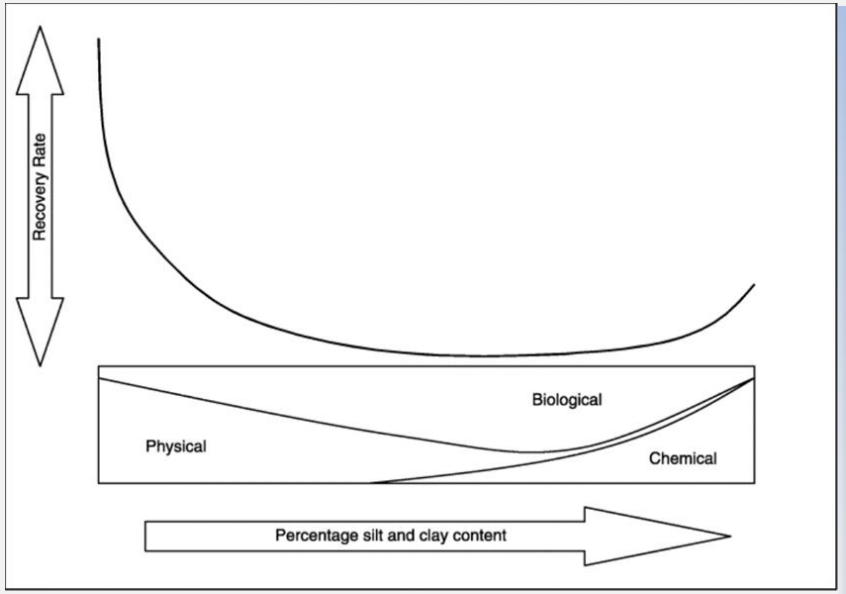
- The main direct physical impact on aquatic communities will be the eventual physical removal and death of all sessile and sedentary taxa, as well as relatively immobile taxa, within the PPA
- Very close to wherever the mining operations are currently taking place the effects of suspended sediments will be extreme at the suction face and within 1-2 km of the point where sediment is returned to the seabed
- However, these effects will not occur over the entire PPA all at once but will sequentially and gradually occur within a short distance of the mining ship as it traverses the PPA over the course of 20 years
- Note that the PPA and immediately adjacent areas are very exposed, high energy, highly dynamic sandy environments and are thus subjected to frequent episodic disturbances from wave events and river inputs during high rain-fall events
- Consequently, the existing benthic community in the PPA is dominated by short-lived, opportunistic and early successional or colonisation stages, with a very low abundance of longer-lived organisms. This community is well-adapted to disturbance and will in time recover once the immediate disturbance has ceased







Effects on benthic ecology - recovery

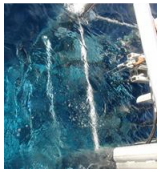


Schematic diagram of the recovery rates of faunal communities within disturbed sediments and the relative importance of physical, biological and chemical processes. Figure from Dernie et al. (2003).

- The time it will take for the benthic community to recover is not able to be stated with precision as recovery rates can only be inferred from studies undertaken in more sheltered locations
- Generally, communities associated with sand in high energy environments are very frequently disturbed and continually in an early transitional stage with recovery likely to be at the scale of months to a year
- The sparse longer-lived species, such as large starfish, could take several years to fully recover in numbers and sizes, but some may migrate from adjacent areas





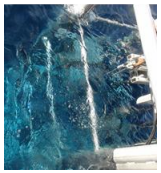


Effects on fished species

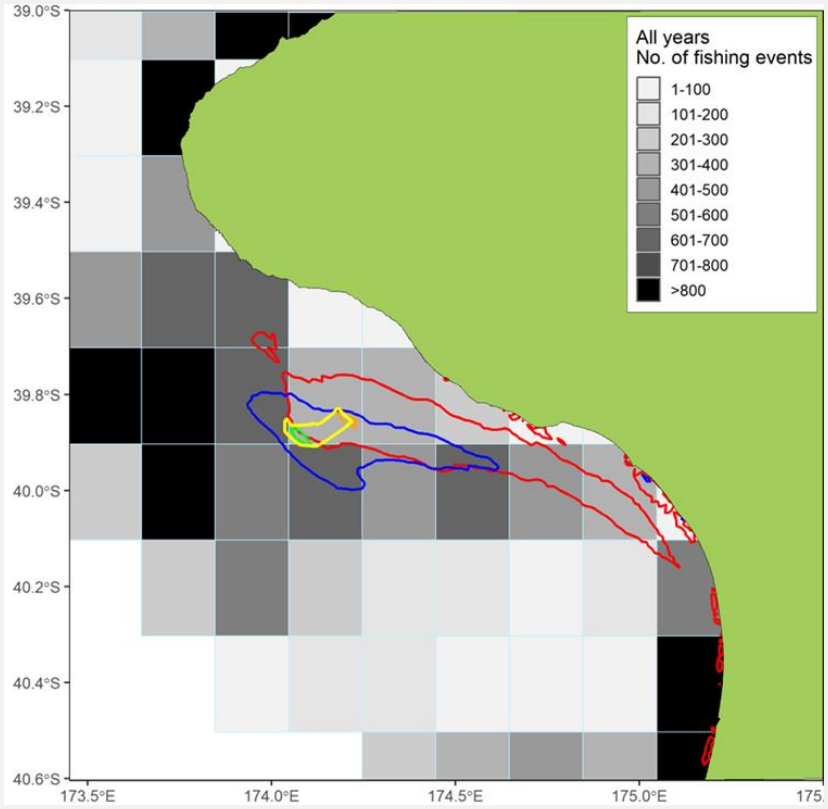
- A NIWA review of the spatial and foraging ecology of the key fauna occurring in the STB identified that for most commercially, recreationally and customarily fished species, there should be negligible effects of mining 50 Mt per annum according to standard evaluation criteria
- This is because the scale of the mined area and the areas of elevated SSC are small compared to the area used by the populations of these species. Consequently, they are likely to be displaced from, or experience a decrease in prey abundance or availability over a very small part of their distribution
- One non-commercial species, eagle ray, may be affected to a moderate extent by the proposed iron sand recovery activities
- Acute and chronic impacts would only occur at significantly higher SSC levels in excess of 500mg/L that are highly unlikely even at the point of sediment discharge





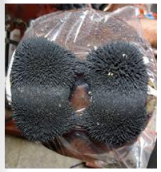


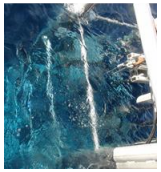
Effects on fishing



The number of fishing events aggregated into 0.2 degree squares for FMA 8 for fishing years 2008–2023. The PPA is shown in yellow. Areas of SSC above 2mg/L fish avoidance threshold are as follows: Mining A median SSC area in orange, Mining A 99th percentile SSC area in red, Mining B Median SSC area in green, and Mining B 99th percentile SSC area in blue. From MacDiarmid et al. (2024)

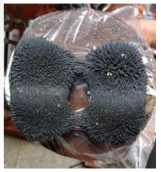
- The highest level of overall commercial fishing effort in the STB occurs offshore in deeper water, reflecting the location of the mid-water trawl fishery for jack mackerel, and along the coast near Foxton
- Fishing effort in the PPA and the Pātea Shoals generally is less intense
- The overall number of fishing events for all methods combined in the PPA has declined over time indicating likely minimal spatial displacement of commercial fishing due to mining operations
- From time to time, suspended sediment concentrations above 2mg/L will occur somewhere within the areas indicated in the figure and fish may move to adjacent areas of lower sediment concentration where they will be available to be caught
- The project is unlikely to affect the abundance of fished species in the project area or beyond

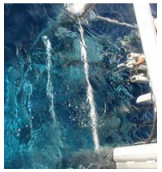




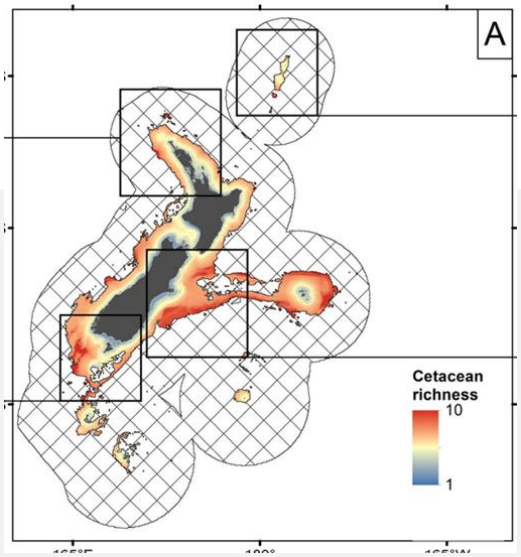
Effects on seabirds

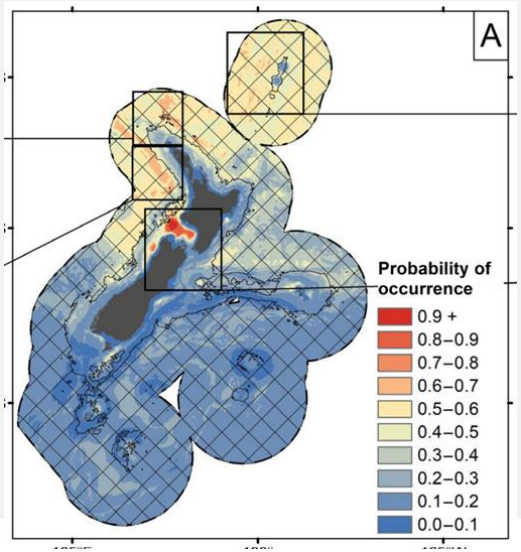
- NIWA studies indicate the STB supports a relatively modest seabird assemblage occurring throughout the area and does not support large breeding colonies for any species
- A NIWA review of the spatial and foraging ecology of five typical seabird species occurring in the STB identified that there should be negligible effects of mining 50 Mt per annum according to standard evaluation criteria
- This is because the scale of the mined area and the areas of elevated SSC are small compared to the area used by the populations of these species. Consequently, seabirds are likely to be displaced from or experience a decrease in prey abundance or availability over a very small part of their distribution





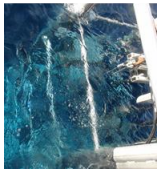
Effects on marine mammals – elevated SSC





Top panel: Cetacean species richness. Bottom panel: Blue whale probability of occurrence. From Stephenson et al. (2020).

- The STB has low (inshore) to moderate (offshore) suitability for cetaceans generally
- However, the STB is an important area for marine mammal conservation within New Zealand, as a feeding and breeding location for different species at different times (e.g. blue whales)
- There is a low likelihood of marine mammals being present in the proposed project
- Effects on marine mammals of localised increases in SSC from mining 50 Mt per annum should be negligible according to standard evaluation criteria
- This is because the scale of the mined area and the areas of elevated SSC are small compared to the area used by the populations of these species. Consequently, they are likely to be displaced from or experience a decrease in prey abundance or availability over a very small part of their distribution



Effects of underwater noise on marine mammals

- Underwater noise was identified as a potential risk for marine mammals from the proposed operation
- A comparison of the estimated underwater noise data with the m-weighted thresholds for Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS) effects in marine mammals indicate that there is no risk of either for any species at 500m or further from the operation even if they spend 24 hours in the area
- For noise impacts on marine mammals to have an actual effect at the individual or population level, requires that there are marine mammals in the immediate area around the operation. While this is clearly possible, the evidence suggests that the area has a low likelihood and low abundance of marine mammals being present
- This low level of marine mammal presence means that the likelihood of significant noise impacts on marine mammals is very low
- Conditions, halting operations if marine mammals are sighted, further minimises the risk

Pre-commencement environnemental monitoring plan (PCEMP) – Conditions 47 - 51

- **The pre-commencement environmental monitoring programme, undertaken in accordance with the certified PCEMP, is a fundamental component of the project, with the overarching purpose being to build on the existing environment information collated as part of the preparation of this application**
- **The minimum of 2 years of monitoring carried out under the PCEMP will also serve to validate the planned Operational Sediment Plume Model (OSPM) and assist with refining the methodologies and environmental management thresholds proposed in the post mining commencement Environmental Monitoring and Management Plan (EMMP)**

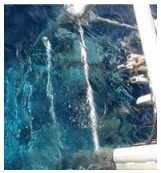
Pre-commencement environnemental monitoring plan (PCEMP) – Conditions 47 - 51

The purpose of the PCEMP is to:

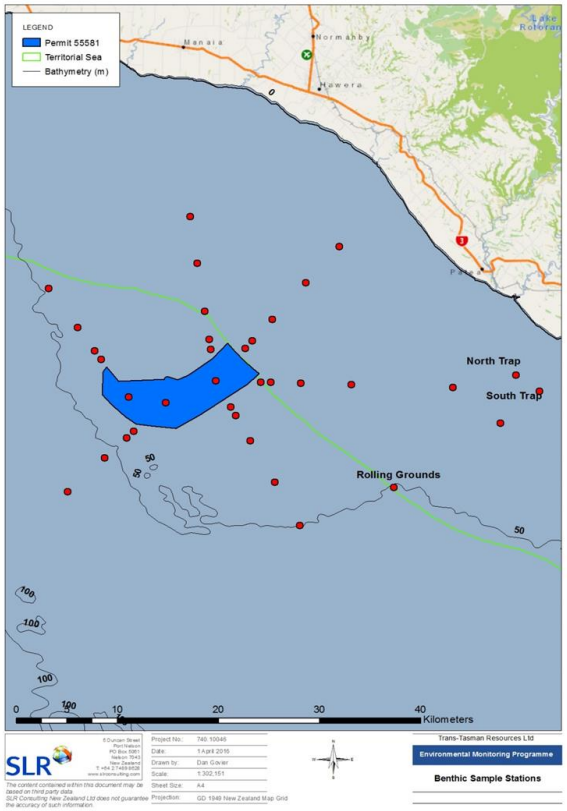
- **Establish the most up-to-date pre-commencement environmental data that further identifies natural background levels in the STB, while also taking into account seasonal variations. This pre-commencement data will provide the means by which any potential effects of the project can be quantified**
- **Confirm the current understanding of the seasonality and natural variability of environmental parameters that will be monitored under the EMMP**
- **Provide data to validate the OSPM**
- **Provide data to verify that the SSC values are appropriate following the validation of the OSPM. These values will ensure actions to avoid, remedy or mitigate project-related effects are implemented at the appropriate time**
- **Confirm that the identified sampling locations are the best suited for the EMMP**
- **Confirm the objectives of the EMMP are appropriate**
- **Confirm that the parameters being monitored and the chosen methodology is the best suited for the EMMP**
- **Ensure compliance with all regulatory requirements**







PCEMP Monitoring Design and Methodology

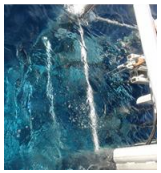


Proposed location of benthic monitoring stations in relation to the PPA

- A 'Before After Gradient' design is to be used for the water quality and sedimentation, primary productivity, zooplankton, subtidal benthos and intertidal reef aspects of the PCEMP
- This design approach has been selected as it allows TTR to continue to undertake environmental monitoring when the extraction is occurring and facilitates a direct comparison between the pre-commencement and operational periods
- The design means that sample locations are distributed at variable distances from the project area
- The PCEMP is made up of a number of separate monitoring programmes, with each addressing a separate environmental parameter
- Data analyses will be specific to each monitoring programme
- For each monitoring programme Annual and Final Monitoring Reports will be prepared





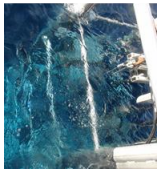


Environmental Monitoring and Management Plan (EMMP) – Conditions 54-56

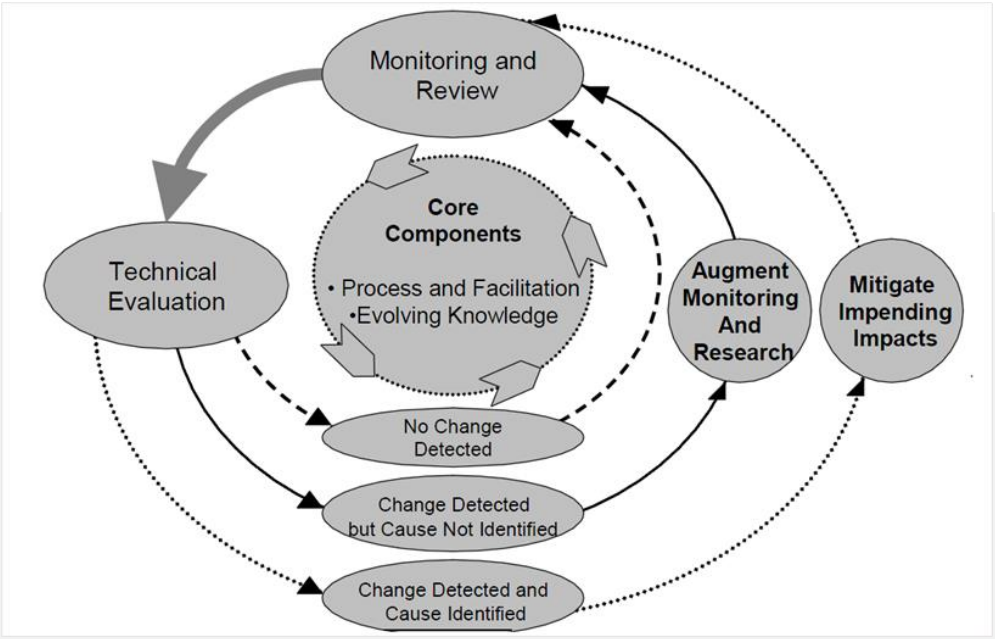
- The EMMP is a continuation of the PCEMP. It is the overarching document for the monitoring and management of the project related effects and sets out the process for the ongoing environmental monitoring once the extraction activities commence
- The final form of the monitoring programme will reflect the findings and recommendations from the Final PCEMP report
- The overall purpose of the EMMP is to ensure that any project related effects are effectively and efficiently monitored and managed throughout the term of the project. This includes:
  - Ensuring compliance with all regulatory requirements
  - Stating objectives for the monitoring and management associated with the project
  - Implementation of environmental monitoring programmes including sampling design, methodology, frequency, duration and monitoring locations
  - Verifying environmental performance through monitoring project related effects as they occur
  - Details of data analysis and processing for all parameters being monitored
  - Reporting methods and frequency for all parameters being monitored
  - Identification of the operational responses to be undertaken if SSC Limits or water quality limits are reached
- To achieve these purposes the EMMP establishes an Environmental Management Strategy (EMS) and a suite of environmental monitoring programmes

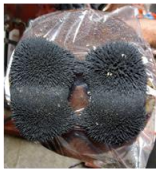


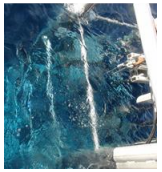




EMMP - Environmental Management Strategy (EMS)







- The EMS is essential for the successful implementation of the project through:
  - Ensuring compliance with the proposed consent conditions
  - Highlighting key environmental objectives, mitigation measures and monitoring programmes to be adhered to
  - Reporting requirements
- If any anomalies or unexpected results are found as part of the environmental monitoring programme, then the EMS identifies a framework for addressing any such events
- The objective of the EMS is to undertake a science-based, systematic approach to monitoring and managing the effects of the project on the STB

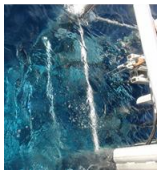
EMMP - Environmental Management Strategy (EMS)

South Taranaki Bight Sites	Background Percentiles (SSC mg/L)							
	Surface				Bottom			
	25th	50th	80th	95th	25th	50th	80th	95th
Rolling Grounds (WGS 1984: 39 57 22.58780 S, 174 22 29.90885 E)	TRG	TRG	0.3	1.1	TRG	TRG	3.5	15.3
Graham Bank (WGS 1984: 39 53 16.22020 S, 174 24 40.68384 E)	TRG	TRG	1.7	4.5	TRG	TRG	32.8	84
Source A to Whanganui 1 km (WGS 1984: 39 51 22.41692 S, 174 13 46.13207 E)	TRG	TRG	1.1	2.7	TRG	TRG	16.9	44.2
Source A to Whanganui 20 km (WGS 1984: 39 53 14.34932 S, 174 27 08.62846 E)	TRG	TRG	2.3	5.9	TRG	TRG	29	76.6
South Traps (WGS 1984: 39 51 53.21010 S, 174 32 48.75387 E)	TRG	TRG	6.3	11.1	TRG	TRG	37.7	97.4
North Traps (WGS 1984: 39 51 02.22374 S, 174 31 10.63364 E)	TRG	TRG	7.2	12.4	TRG	TRG	46.5	115
Tūteremoana (WGS 1984: 39 55 00.03802 S, 174 47 41.29085 E)	TRG	TRG	8.5	13.6	TRG	TRG	23.7	62.5
The Crack 1 (WGS 1984: 39 49 12.00 S, 174 15 00.00 E) provisional	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG
The Crack 2 (WGS 1984: 39 51 00.00 S, 174 18 00.00 E) provisional	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG
The "Project Reef" (location to be set by TRG)	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG

Schedule 2 of the proposed consent conditions - Proposed background percentiles of surface and near-bottom suspended sediment concentration at the ten monitoring locations in the STB





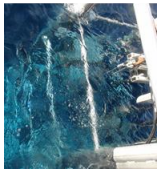


- The final EMMP with incorporate environmental performance thresholds into the monitoring of suspended sediment concentrations in the STB
- The thresholds are expressed as the 25th, 50th, 80th and 95th percentile SSC limits with the 95th percentile being a fixed limit (Condition 5.a) and the 25th, 50th and 80th percentiles (Condition 5.c). which allows variation of up to 10%, as determined over any twelve (12) month period
- If these limits are exceeded, as determined by monitoring and the OPSM, then extraction activities must cease until TTR can demonstrate compliance with those limits again to the satisfaction of the EPA

Luke Faithfull (Mitchell Daysh) – Project effects summary and proposed consent conditions





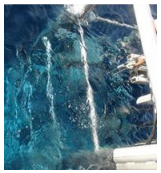


Approvals sought under the FTAA

- The proposal seeks all necessary marine consents under the EEZ Act. Including:
  - Activities associated with the disturbance, extraction, deposit, alteration of and on the seabed as provide for in s20(2)(a), (d), (e), (f), (g) and s20(4)(a) & (b)
  - Activities associated with the sediments and substances associated with the extraction and operations as as provide for in s20B(1) and s20C(1)
- Overall, under the EEZ Act, marine consent is sought as a Discretionary Activity for a term of 35 years
- No additional consents or authorisations are required, or sought, as part of the FTAA process





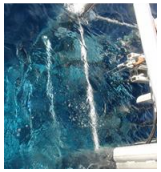


Project Effects

- The Substantive Application contains a detailed assessment of the effects of the project including:
  - Economic effects
  - Sedimentation and optical water quality
  - Coastal processes
  - Marine Ecology including primary productivity, fished species, seabirds, marine mammals
  - Visual, seascape and natural character
  - Cultural Effects
  - Existing interests and other matters including, air quality, health effects from discharges, environmental monitoring; anchor deployment and positioning, unplanned oil / fuel spills





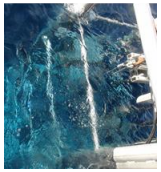


Management of effects

- The primary mechanism of addressing the effects of the proposal is to implement a comprehensive monitoring and management framework
- The framework, provided for by the consent conditions, is a multi staged approach that will ensure that any project related effects will be effectively and efficiently monitored and managed
- The approach provides for:
  - A Pre-commencement Environmental Monitoring Plan and Environmental Monitoring and Management Plan
  - Formation of a Technical Review Group
  - Development and operation of an Operational Sediment Plume Model
  - Operational controls and limits
  - Various management plans that setting out the operational / management requirements and protocols
  - Post-extraction monitoring





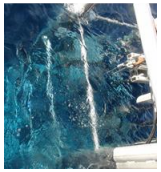


Effects Conclusion

- Environmental effects: Extensive monitoring programmes and management plans ensure any project-related effects are effectively monitored and managed
- Cultural effects:
  - TTR acknowledges seabed mining is opposed (metaphysical)
  - Mana whenua have a deep relationship with natural resources and kaitiaki obligations
  - Metaphysical objections cannot be resolved through consents, but where concerns relate to environmental health, TTR's objectives and kaitiaki values are aligned
- Conditions framework: Requires protection of the physical environment so taonga species and kaimoana are safeguarded and provides mechanisms for mana whenua to exercise kaitiakitanga
- Monitoring: Robust, ongoing programmes using western science and (if iwi willing) mātauranga Māori methods
- Overall, the effects will be localised and not significant beyond the active area and, based on technical evidence, the environment of the STB will not be materially harmed





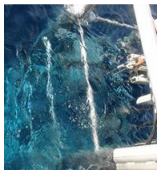


Proposed Consent Conditions – Structure

- The proposed conditions have been developed in consultation with parties over the various application processes
- By way of summary, the conditions include:
  - Activity & Operational Controls – define extraction/discharge rates, SSC limits, noise standards, and navigation/safety rules
  - Environmental Monitoring & Management Plans – PCEMP, EMMP, SEMMP, MMMP, CCMP, SIMOPP, BMP, PEMP. Each sets monitoring, triggers, and operational responses
  - Technical & Cultural Oversight – TRG, Kaitiakitanga Reference Group, kaimoana monitoring, mātauranga Māori integration
  - Community & Stakeholder Relationships – public website, community meetings, funding, training facility, Whanganui support base, fishing industry engagement
  - Reporting & Review – quarterly and annual reports, operational change notices, EPA review condition





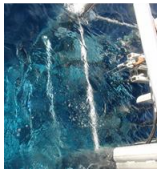


Proposed Consent Conditions – Discharge Limits

- Extraction Volumes (Con 3)
  - Max 12.5M tonnes / 3 months
  - Max 50M tonnes / 12 months
  - Continuous recording & quarterly reporting to EPA
- Operational discharge limits (Con 4)
  - Extraction rate ≤ 8,000 t/hr (monthly avg)
  - Sediment discharge ≤ 7,190 t/hr (monthly avg)
  - Fine sediment (<38 µm): ≤ 130 m^3/hr (48-hr avg), ≤ 83 m^3/hr (7-day avg), ≤ 66 m^3/hr (3-month avg)
  - Ultra-fine sediment (<8 µm): ≤ 1.8% of total extraction (weekly avg)
  - Continuous monitoring of particle size, rates & volumes; exceedances reported to EPA within 24 hrs; quarterly reporting required

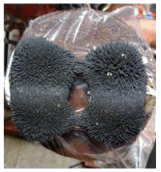


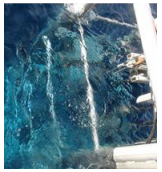




Proposed Consent Conditions – Environmental Limits

- Sediments Limits and quality (Con 5 and 6)
  - Must not exceed 95th percentile SSC (Schedule 2) or modified values, nor cause >10% change in 25th, 50th, or 80th percentile SSC at monitoring sites. Extraction stops if limits are breached until compliance is proven to EPA
  - Must not exceed ISQG-High values (ANZECC 2000) for metals/compounds at any monitoring site (Schedules 2 & 6)
- Benthic Ecology and recovery (Con 7 and 8)
  - ≤ 5% reduction in abundance, richness, or biomass at monitoring sites and assessed against the pre-commencement data
  - Recovery to within 15% of pre-mining levels within 5 years. If off-track → report to EPA with expert analysis & recovery plan

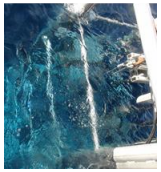



Proposed Consent Conditions – Environmental Limits cont.

- Seabirds (Con 9)
  - No adverse effects on Threatened or At-risk seabird species
  - For other seabirds, effects from lighting, spills, sediment must be mitigated and avoided where practicable
- Marine Mammals (Con 10) – Developed with DOC during 2017 Application
  - No adverse effects on blue whales or species classed as Nationally Endangered/Critical/Vulnerable
  - For other species: minimise effects from noise, collision/entanglement, spills, sediment
  - Implementation of mandatory measures including:
    - Trained marine mammal observers and video monitoring on vessels
    - Sightings logged and strikes/entanglements reported to DoC/EPA; Maui/Hector's dolphins reported immediately
    - Vessel speed ≤ 5 knots within 300 m of large cetaceans/blue whale feeding groups
    - Helicopters maintain ≥ 600 m altitude (except landing/take-off)
    - Any other EPA-approved responses must be implemented





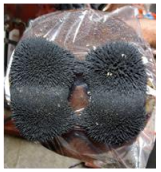


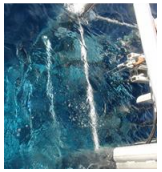
Proposed Consent Conditions – Underwater Noise

- **Noise Limits**
  - **At 500 m from IMV + crawler: ≤ 130 dB (low, mid, high frequencies) and broadband (10 m depth, 500 m): ≤ 135 dB (Cond. 11)**
  - **Equipment must be designed to meet ≤ 177 dB at 1 m (Cond. 12)**
- **Certification & Compliance**
  - **Independent acoustic engineer certification required pre-deployment (Cond. 13) with cert. provided to EPA before extraction starts (Cond. 14)**
  - **Weekly compliance monitoring during initial production ramp-up (Cond. 15)**
- **Modelling, Monitoring & Reporting Requirements**
  - **Initial 6-week continuous monitoring once at 90% production and 2 further checks in first year, then annual for 4 yrs, then 5-yearly. Extra monitoring if operations change or at EPA request**
  - **Propagation modelling at start to confirm extent of 120 dB contour (Cond. 17)**
  - **Reports to EPA within 20 working days of each monitoring round (Cond. 18)**

Proposed Operational Controls – Vessels and Operations (Cons 24 – 32, 35 -38)

- **Crawler Operation**
  - **Only one crawler permitted; Max cut depth: 11 m; Depth monitoring & quarterly reporting**
- **Anchoring & Vessel Management**
  - **IMV anchoring required during crawler use; Proof-load testing of anchors with surveyor witness; Anchoring only within mapped mooring area**
- **Sediment Deposition & Backfilling**
  - **Return pipe discharge ≥ 4 m above seabed; Mounds ≤ 4 m high; recorded within ±1 m; Pits ≤ 10 m (max), 5 m (average) depth; must be backfilled with de-ored sediment; No discharge within 300 m of CMA boundary**
- **Soft Start Procedures**
  - **20-minute ramp-up; Daylight operations only, ≥ 500 m visibility; Marine mammal observer clearance within 500 m zone**

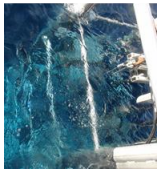



Proposed Operational Controls – Safety and Environmental Protocols (Cons 33-34, 38-39, 41-42)

- **Spill & Equipment Controls**
  - **Oil/fuel spill response plan; immediate EPA notification; Mooring failure mitigation measures; Lost equipment (>1 m): retrieval required or location reported to EPA, LINZ, Harbourmaster, and online within 24 hrs**
- **Equipment Removal**
  - **All extraction structures removed within 20 working days of final extraction**
- **Waste & Discharges**
  - **No harmful substance disposal at sea; Hazardous/oily waste stored onboard & shipped ashore; Fuel sulphur content ≤ 3.5% (IMO standard); annual reporting**





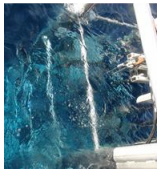


Pre-commencement Environmental Monitoring Plan (Cons 47- 51) and Environmental Management and Monitoring Plan (Cons 55 – 56)

- Plans have been previously summarised by Dr MacDiarmid
- Intent of the Plans
  - PCEMP → Establish robust pre-commencement dataset.
  - Recommencement Monitoring → Maintain seamless transition into operations.
  - EMMP → Provide a live, environmental management framework to ensure compliance, detect unanticipated effects, and guide operational responses.







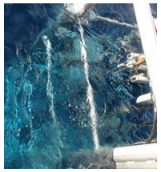
PCEMP (Cons 47- 51) and EMMP (Cons 55 – 56) cont.

How the Monitoring Plans Work Together

- **PCEMP (Pre-commencement, Cons. 47–51)**
  - **Collects 2 years of pre-commencement data (SSC, water quality, ecology, seabirds, mammals, fishing, etc.)**
  - **Establishes background conditions and validates SSC limits and the Operational Sediment Plume Model (OSPM)**
- **Recommencement Monitoring (Con. 54)**
  - **Ensures continuity between PCEMP and operational monitoring when activities start or restart. Prevents data gaps and aligns monitoring with operational conditions**
- **EMMP (Environmental Management & Monitoring Plan, Con. 55–56)**
  - **Builds on PCEMP results to design operational monitoring**
  - **Specifies sampling, OSPM calibration, SSC–turbidity relationships, benthic recovery, and ISQG-High checks**
  - **Includes operational responses if unexpected effects occur**
  - **Must be peer-reviewed, TRG reviewed, EPA certified before use**





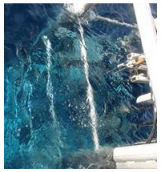


Operational Sediment Plume Model (Cons 52 – 53)

- Intent
  - Provide a validated, real-time management tool for plume behaviour
  - Ensure SSC compliance
  - Maintain independent oversight via peer review, TRG, and EPA certification
- Requirements
  - Developed within 6 months, using pre-commencement data
  - Predicts SSC levels, distinguishes natural vs operational effects, and forecasts plume spread
  - Runs in real-time with MetOcean forecasts to guide daily operations
  - Peer-reviewed at setup, post-PCEMP, and after each calibration
  - Calibrated/validated: every 6 months (PCEMP & first 3 yrs), then 24 months
  - Must be EPA certified before extraction begins





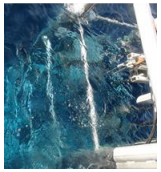


PCEMP and Operational Sediment Plume Model

- Integration of the conditions
  - PCEMP supplies the evidence base (background data + SSC validation)
  - OSPM operationalises that evidence into a real-time management tool for extraction
  - Together, they form a feedback loop: monitoring → model validation → monitored and responsive management → compliance with SSC limits





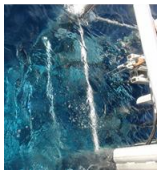


Post-Extraction Benthic Recovery Monitoring (Cons 57 – 58)

- **Intent**
  - **Confirm whether the benthic environment has recovered within 5 years of extraction and provide a peer-reviewed assessment of post-extraction seabed health**
  - **Ensure EPA and TRG oversight, with clear accountability for how recovery is measured and reported**
  - **Close the loop between pre-commencement data → operational monitoring → post-extraction recovery**
- **Requirements**
  - **5 years monitoring of benthic environment & heavy metals**
  - **PEMP due 3 months before extraction ends; must set roles, sampling design, methods, data analysis & reporting**
  - **Plan must be expert-prepared, TRG peer reviewed, EPA certified**
  - **Final Report (within 3 months of monitoring end): summaries, findings vs limits, conclusions on recovery, TRG input**





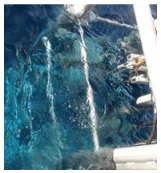


Technical Review Group (Cons 60 – 64)

- **Intent**
  - **Provide independent, multi-disciplinary oversight of monitoring and management**
  - **Ensure integration of science, mātauranga Māori, and stakeholder expertise**
  - **Strengthen operational management by recommending new parameters, responses, or condition reviews**
  - **Deliver transparency and accountability through published minutes and annual reporting**





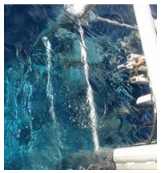


Technical Review Group (Cons 60 – 64) cont.

- **Requirements**
  - **Established 6 months before PCEMP and maintained for the duration of consent**
  - **Roles:**
    - **Review PCEMP, EMMP, and amendments**
    - **Compare results against pre-commencement data**
    - **Recommend new monitoring if unexpected effects arise**
    - **Incorporate mātauranga Māori and community knowledge**
    - **Review monitoring results annually/quarterly**
    - **Recommend consent reviews if needed**
  - **Membership: reps from TRC, Fisheries Inshore NZ/Sanford, Kaitiakitanga Group, Te Tai Hauāuru Fishing Forum, DOC, Kupe Operator, plus specialists**
  - **Meetings: annually during PCEMP, quarterly first 5 yrs of operations, annually thereafter incl. post-extraction**
  - **Consent Holder funds TRG and specialist costs**





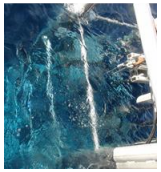


Tangata Whenua Conditions (Cons 72 – 80)

- **Intent**
  - **To embed tangata whenua as kaitiaki in monitoring and management of seabed extraction effects as they relate to cultural matters**
  - **Ensure customary resources (kaimoana) and cultural values are actively recognised, monitored, and protected throughout the project**
  - **Provide a structured forum (KRG) for dialogue, advice, and cultural oversight**
  - **Maintain accountability and engagement even if a formal KRG is not established**





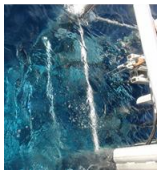


Tangata Whenua Conditions (Cons 72 – 80) cont.

- **Key components**
  - **Recognition (72): Tangata whenua relationship with the South Taranaki Bight recognised via a KRG, participation in TRG, and the Kaimoana Monitoring Programme**
  - **KRG (73–76): Must be offered within 20 working days; purpose is to embed kaitiakitanga in monitoring, advise on kaimoana, provide cultural input/liaison. Meetings funded, minuted, and notified; costs met by Consent Holder**
  - **Kaimoana Monitoring (77–78): Programme established with KRG input to track customary species and set thresholds. Tangata whenua engaged in monitoring; results reported to EPA; costs covered**
  - **Fallback (79–80): If no KRG forms within 12 months (despite good faith efforts), obligations 72–76 fall away. Kaimoana monitoring and annual iwi engagement still required, with records kept for EPA**





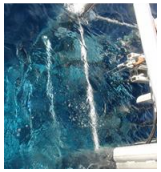


Tangata Whenua Conditions – KRG and KMP

Kaitiakitanga Reference Group (KRG)	**Kaimoana Monitoring Programme**
Offer to establish within **20 days** of consent (Cond. 73)	Programme in place **20 days before extraction** (Cond. 77)
Recognises **kaitiakitanga** and tangata whenua relationship with South Taranaki Bight	Monitors **customary species** from fishing grounds important to tangata whenua
Provides **cultural input** to monitoring, TRG, and operational responses	Sets **indicators & thresholds** for management action if effects occur
Functions as **liaison forum** for advice, cultural values, and ceremonial needs	Results reported to **EPA**; tangata whenua engaged to carry out monitoring.
Meetings funded, minuted, and outcomes shared; costs met by TTR	Costs covered by TTR
Fallback (Cond. 79–80): If no KRG formed within 12 months → obligations cease, but kaimoana monitoring + annual iwi engagement still required	**Fallback (Cond. 79–80):** Monitoring still mandatory; iwi engagement recorded and reported to EPA





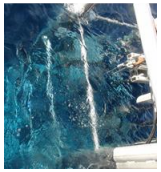


Community and Fisheries Relationship (Cons 81 – 86)

- **Intent**
  - **Build transparency and trust with the public through open information, regular engagement, and accessible records**
  - **Deliver tangible community benefits (funding, training, local jobs, facilities)**
  - **Provide operational support infrastructure in-region (Whanganui base)**
  - **Ensure ongoing collaboration with fishing industry to minimise conflict and coordinate use of the marine environment**





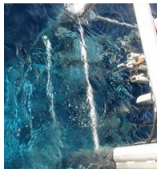


Community and Fisheries Relationship (Cons 81 – 86)

- Community Relationships (Cons 81–85)
  - Website: Public access to up-to-date activity and monitoring info
  - Meetings: Public meetings 6-monthly (first 5 yrs), then annually
  - Community Fund: $50k annually (inflation adjusted) for local projects
  - Training Facility: Hāwera-based; skills training with iwi & education providers
  - Support Base: Whanganui Port facility with berthing, storage, lab & offices
- Fishing Industry (Con 86)
  - 6-monthly meetings with fishing industry reps (e.g. Fisheries Inshore NZ)
  - Purpose: share info, coordinate activities, set communication protocols
  - Meetings funded/administered by TTR; minutes circulated & reported





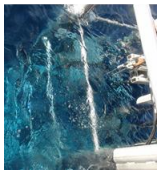


Project Management Plans (Cons 65 – 70)

- Conditions 65–70 require five certified management plans covering:
  - Seabirds
  - Marine mammals
  - Collision risks
  - Simultaneous operations
  - Biosecurity
- Each ensuring environmental protection, operational safety, and compliance before mining begins







Seabird Effects Mitigation & Management Plan (Con 65)

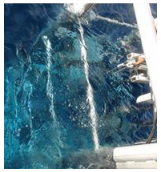
- **Intent:**
  - **To ensure seabird effects are avoided or minimised, with clear triggers and responses if adverse effects emerge**
- **Summary:**
  - **Prepared with DoC and KRG input**
  - **Sets out how compliance with seabird protection (Con 9) will be achieved**
  - **Identifies indicators of seabird mortality/injury, response actions, and monitoring requirements (e.g. vessel lighting and bird strike)**
  - **Certified by EPA before extraction; must be kept updated and onboard all vessels**

Marine Mammal Management Plan (Con 66)

- **Intent:**
  - **To provide a comprehensive operational framework for protecting whales and dolphins, ensuring legal and consent compliance**
- **Summary:**
  - **Prepared with DoC and KRG input**
  - **Details compliance with marine mammal protection (Con 10)**
  - **Sets entanglement protocols, adverse effect indicators, operational response framework, and integration with Marine Mammals Protection Act obligations**
  - **Certified by EPA before extraction; must be updated and onboard all vessels**





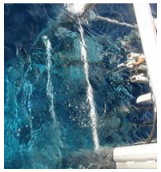


Collision (Loss of Position) Contingency Management Plan (Cons 67–68)

- **Intent:**
  - **To ensure collision risks are minimised and Kupe's infrastructure is protected, with tested contingency procedures in place**
- **Summary:**
  - **Prepared with Kupe Operator and independently reviewed**
  - **Sets procedures for mooring failure, thruster loss, severe weather sit-outs, and emergency responses**
  - **Addresses avoiding impacts on Kupe infrastructure and minimising environmental risks**
  - **Certified by EPA before extraction; must be updated with Kupe Operator involvement**





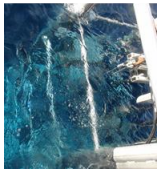


Simultaneous Operations Plan (Cond 69)

- **Intent:**
  - **To safely coordinate activities between seabed mining and Kupe operations, reducing risks from overlapping operations**
- **Summary:**
  - **Prepared with Kupe Operator; reviewed independently**
  - **Defines procedures when multiple vessels operate in proximity**
  - **Establishes consultation framework with Kupe Operator on mining design, block sequencing, and maintenance coordination**
  - **Certified by EPA 3 months before extraction**





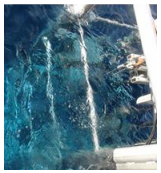


Biosecurity Management Plan (Con 70)

- **Intent:**
  - **To prevent invasive marine species introduction and protect biosecurity values in South Taranaki Bight**
- **Summary:**
  - **Prepared with MPI and Aquaculture NZ input**
  - **Requires vessel-specific biofouling management plans meeting IMO guidelines**
  - **Includes hull treatments, inspections, Biofouling Record Book, and additional measures for overseas vessels**
  - **Certified by EPA before extraction; must be updated to reflect latest standards**





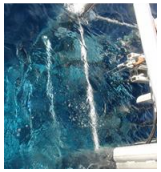


Reporting Requirements and Reviews (Con 103 – 106)

- **Intent:**
  - **Quarterly Reports → Provide regular operational transparency & compliance tracking**
  - **Annual Reports → Deliver critical evaluation of environmental performance and future extraction planning**
  - **Operational Change Notices → Ensure early warning and coordination with regulators & Kupe Operator**
  - **Review Mechanism → Give EPA ability to adapt consent conditions if effects or risks differ from expectations**





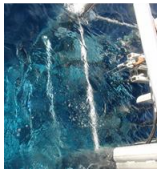


Reporting Requirements and Reviews (Con 103 – 106) cont.

- Quarterly Operational Report (Con 103)
  - Prepared every 3 months after extraction begins
  - Includes: GPS positions of anchors/crawler tracks, bathymetry changes, extraction/discharge volumes & rates, SSC values, complaints log, TRG/KRG recommendations, and pre-start observations
  - Submitted to EPA & Kupe Operator within 2 months of quarter end
- Annual Report (Con 104)
  - Prepared annually for full 12-month periods
  - Includes: critical review of all monitoring data & trends, extraction schedule (past + next 12 months), monitoring summaries, exceedances & responses, vessel fuel use, TRG reviews/recommendations, and pre-start checks
  - Submitted to EPA & Kupe Operator within 3 months of year end





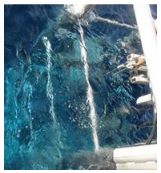


Reporting Requirements and Reviews (Con 103 – 106) cont.

- **Operational Changes (Con 105)**
  - **EPA (and Kupe Operator if relevant) must be notified of any changes to extraction/deposition areas or timing at least 30 working days prior (unless agreed otherwise under SIMOPP)**
- **Review Condition (Con 106)**
  - **EPA may review consent conditions within 20 working days of receiving reports or TRG recommendations**
  - **Scope: adjust or add limits/controls, address unanticipated adverse effects, or amend monitoring/reporting requirements**







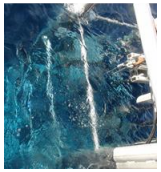
Proposed Conditions Summary

- **Intent of the Framework**
  - **Ensure seabed mining is tightly controlled, transparent, and science-led**
  - **Provide for robust monitoring, independent review, and cultural input**
  - **Enable responsive management of operations if unanticipated effects occur**
  - **Deliver community and iwi benefits alongside environmental safeguards**
  - **Maintain EPA and stakeholder oversight and engagement across the life of the consents**

Overall, the conditions form a comprehensive, multi-layered framework — balancing environmental protection, cultural recognition, community benefit, and operational accountability — so extraction can proceed with confidence, transparency, and environmental safeguards



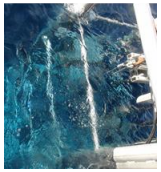




Morgan Slyfield (Legal Counsel) – Relevant legal tests and legal issues in contention







Taranaki VTM Project

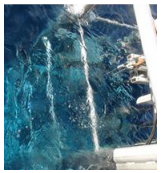
The Legal Tests – Key Features

A new hierarchy

- At the top: the purpose of the FTA Act: to facilitate the delivery of infrastructure and development projects with significant regional or national benefits. This must be given the greatest weight
- All other matters are subordinate ("taken into account")
  - The purpose of the EEZ Act (protecting the environment from "material harm")
  - Decision-making criteria under the EEZ Act (ss 59-60)
  - Favouring caution and environmental protection
- In the exercise of "taking account" of all relevant matters, the purpose of the FTA Act is required to be given the greatest weight







Taranaki VTM Project

The Legal Tests – Key Features

No Environmental Bottom Lines

Under the EEZ Act, the Supreme Court found various "environmental bottom lines":

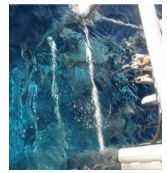
- **Protecting the environment from material harm (s 10(1)(b) EEZ Act)**
- **Favouring caution and environmental protection (s 61(2) EEZ Act)**
- **Avoiding adverse effects on natural character or outstanding natural features (Policies 13 and 15 NZCPS as another marine management regime under s 59(2)(h) EEZ Act)**

The Supreme Court's guidance on the meaning of these various provisions is still relevant — they just cannot be applied as 'bottom lines'

(In any event, TTR contends all these provisions are in fact satisfied.)







Taranaki VTM Project

The Legal Tests – Key Features

Limited grounds for declining approval – the proportionality test

"the adverse impacts are sufficiently significant to be out of proportion to the project's regional or national benefits".

Proportionality:

- Takes into account conditions for managing adverse impacts
- Not a "no effects" standard: if the benefits are significant, then a significant adverse impact might not be out of proportion to those benefits
- Not an exact measure, but a relative measure: things do not need to be 'equal' to be in proportion
- Cannot be based on Inconsistency with another Act or marine management regime

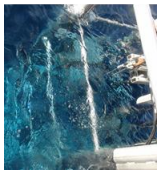
Taranaki VTM Project

The Legal Tests - issues

- Do you have the best available information? (Both for the existing environment, and the impacts of the project)
- Will there be material harm to the environment?
- Will there be an adverse impact on existing interests?
- Will granting consent (with conditions and management plans) adequately favour caution and environmental protection?
- How significant are the regional and national benefits?
- Would granting approval breach s 7?
- Taking into account all the proposed conditions of consent, will the adverse impact of the project be out of proportion to its regional and national benefits?







Taranaki VTM Project