ASX Announcement
26 March 2025

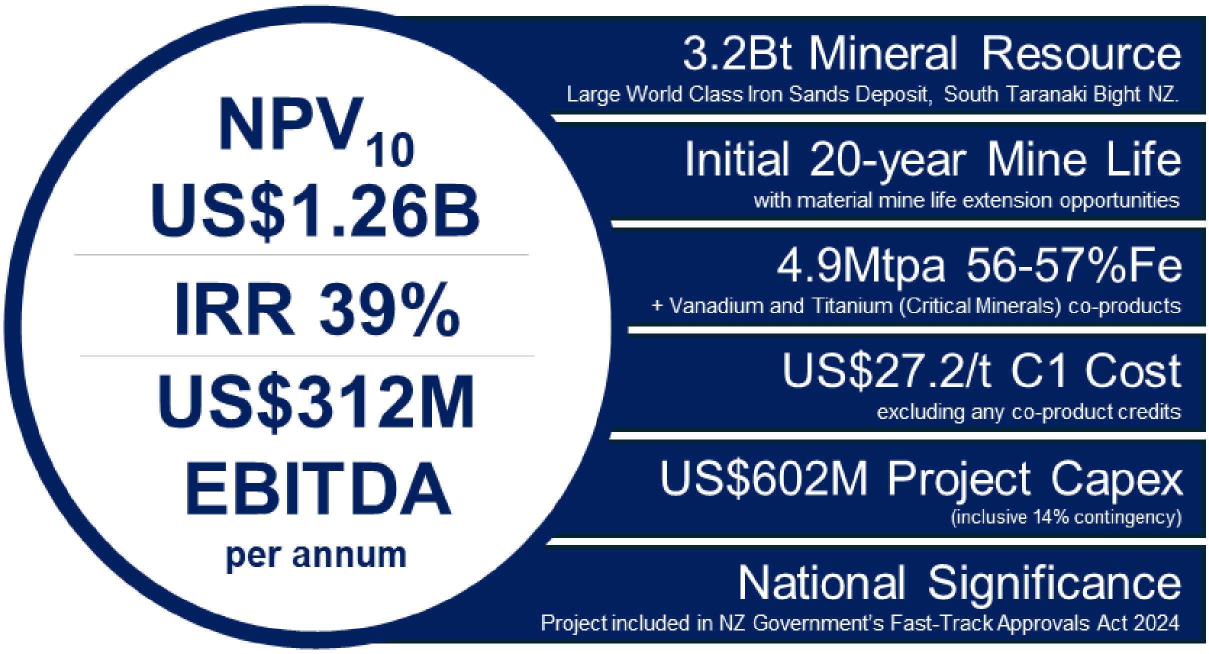
MANUKA RESOURCES

ASX: MKR

Taranaki VTM Project Delivers Extremely Robust Pre-Feasibility Economics – Full Speed Ahead

Highlights

- Updated Pre-Feasibility Study[1] ("**PFS**") released for the New Zealand-based Taranaki VTM Project ("**the Project**") owned by Manuka Resources Limited ("**MKR**", the "**Company**") subsidiary, Trans-Tasman Resources Limited ("**TTR**").



- Initial 20-year Production Target underpinned by 75% Indicated Resources and 25% Inferred Resources located on granted Mining Permit MP55581.
- **Project to deliver a significant contribution to local development in the Taranaki region of New Zealand and assist the NZ government in delivering against its critical minerals policy objectives.**
- The Project was included in Schedule 2 (projects to be directly referred to an Expert Panel) of the recently passed New Zealand Fast Track Approvals Act 2024[2].
- Following completion of the current approval process, the Company intends to progress to a Bankable Feasibility Study (**"BFS**") consisting of detailed vessel engineering and the development of procurement and funding strategies.
- **The Company will shortly submit its approval application and commence the New Zealand Fast Track approvals process.**

[1] https://www.manukaresources.com.au/site/projects/taranaki-vtm-project/studies
[2] https://environment.govt.nz/acts-and-regulations/acts/fast-track-approvals

MKR Director and TTR Executive Charman Alan Eggers commented:

The Taranaki VTM Project is an exciting, financially robust and potentially company-making opportunity that provides Manuka shareholders with strategic exposure to critical minerals. The outstanding PFS results released today build upon a substantial body of technical and environmental work completed over the past 10 years.

The Project is one of national significance for New Zealand whose stated objective is to double mineral export earnings from NZ$1.5B to NZ$3B per annum over the next decade. The Taranaki VTM Project is forecast to generate NZ$854M revenue per annum representing over 50% of the targeted increase.

Importantly, the Project will deliver substantial benefits to the Taranaki and Whanganui regions with over 300 new full-time local jobs and NZ$238M per annum expenditure injected into the local economy.

With the updated PFS complete, we are now looking forward to progressing the Project through the New Zealand Fast-Track approvals process and turning our attention to workstreams related to Project delivery and execution"

Project Overview

The Taranaki VTM Project ("**the Project**") is located offshore along the west coast of the North Island of New Zealand in the South Taranaki Bight within water depths of between 20m to 50m and comprises granted mining permit MMP55581 and granted exploration permit MEP54068 covering a large world-class Resource of vanadium and titanium bearing iron sands located on the seabed floor (Figure 1, Table 1).

Both vanadium and titanium have recently been named on New Zealand's Critical Minerals List.

The Project PFS contemplates the mining of iron sands from the shallow seabed floor within MP55581 via an underwater seabed crawler at a rate of 50Mtpa. The crawler will pump sediment as seawater slurry to a surface vessel (Integrated Mining Vessel, "**IMV**") (Figure 2) where the sand will undergo beneficiation into a saleable vanadiferous titanomagnetite ("**VTM**") concentrate with an iron grade of ~57% Fe, 0.50% V_2O_5 and titanium of 8.4% TiO_2.

The Project is scheduled to produce VTM concentrate at a rate of 4.9Mtpa. The balance of the mined sand (~45Mtpa) will be returned continuously to the seabed floor behind the surface vessel where it will be restored to its natural state within two years.

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Figure 1: Location of the VTM Project with respect to Mineral Resource outline, granted Mining Permit MMP55581 (within New Zealand's Exclusive Economic Zone) and Exploration Permit MEP54068 (within New Zealand Territorial Waters).

Figure 2: The proposed Integrated Mining Vessel and associated subsurface seabed crawler and simultaneous re-deposition of post processed sands.

Table 1: VTM Project Mineral Resource Estimate (March 2023)

Resource	Bt	Fe_2O_3	TiO_2	V_2O_5
Indicated	1.4	10.37%	1.05%	0.05%
Inferred	0.5	8.81%	0.90%	0.04%
MMP55581	**1.9**	**9.99%**	**1.01%**	**0.05%**
Indicated	0.7	10.61%	1.07%	0.05%
Inferred	0.6	10.26%	1.04%	0.05%
MEP54068	**1.3**	**10.44%**	**1.05%**	**0.05%**
Total	**3.2**	**10.17%**	**1.03%**	**0.05%**

See ASX Announcement 1 March 2023. All Resources are reported at a 3.5% DTR cut-off except for the Tasman Block which is reported at a 7.5% Fe_2O_3 Cut-Off

Production Overview

The iron sands will be mined using two seabed crawlers (Figure 3), one operating and one standby. Sand extraction (50Mtpa) will occur in lanes, on average 5m deep with the crawler advancing at a rate of 0.04km/h and pumping 8,000 tph of sand as a seawater slurry to the IMV.

The ROM sand will be screened, magnetically separated and ground before final magnetic separation to produce a clean concentrate. All processing will be done wet using seawater throughout the process. The final concentrate will be dewatered to ~10% moisture and stored temporarily on the IMV before being slurried with fresh water from a reverse osmosis (RO) desalination plant.

The slurry will be pumped to a floating storage and offloading vessel ("**FSO**") where it will be dewatered and stored in the FSO holds. Once fully loaded, the FSO sails to a sheltered area (if required by prevailing weather conditions) where it offloads the cargo to an ore carrier, typically a Capesize vessel for shipment to market.

Tailings will be disposed of in real-time via a fall pipe extending forward off the port side of the IMV such that the tailings are deposited as far as possible from the face of mine. The tailings disposal fall pipe will be of a similar design to a trailing suction hopper dredge drag arm. The tailings will first be dewatered via hydro cyclones with the wastewater disposed of separately along the tailings fall pipe.

Operations will be 24 hours a day, 7 days per week with an estimated 28% downtime due to inclement weather conditions, servicing and maintenance.

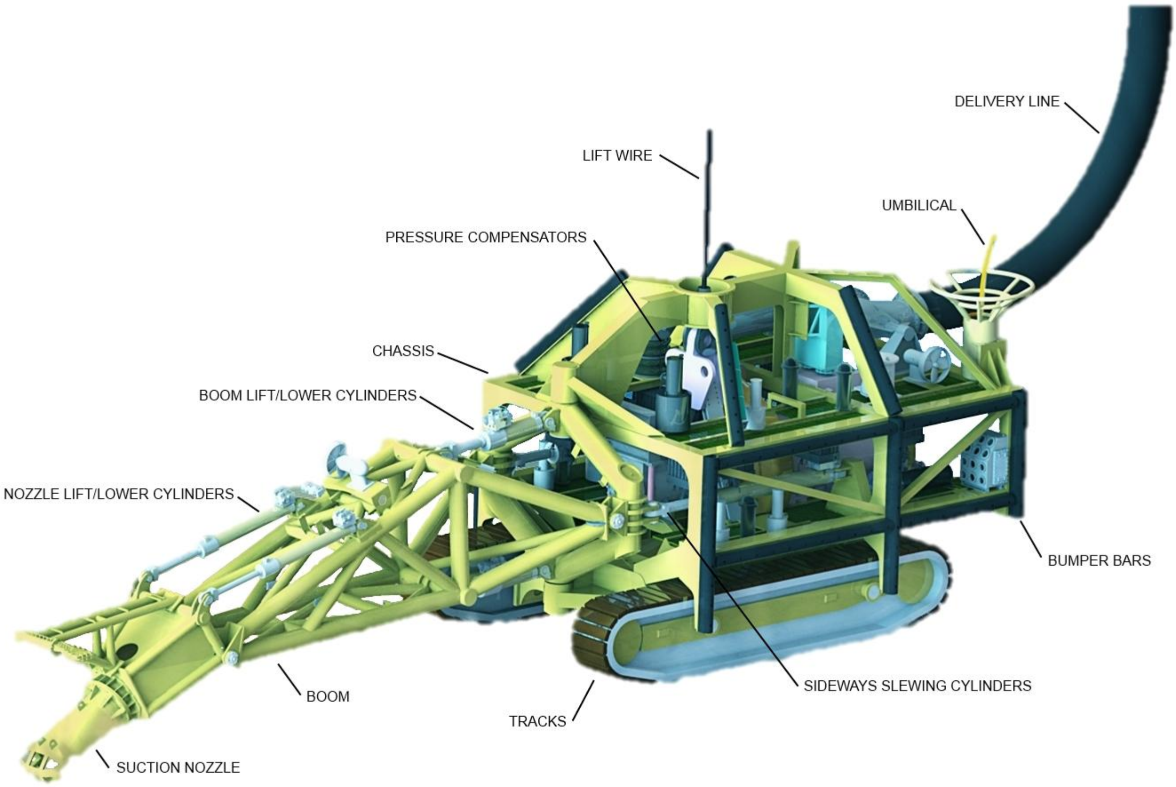


Figure 3: Example of a Seabed crawler

Market Overview

Vanadiferous Titanomagnetite (Fe_3O_4 with vanadium and titanium content) is a distinct iron ore type that differs from traditional hematite (Fe_2O_3) and hard rock magnetite (Fe_3O_4). While hematite remains dominant in seaborne trade, both hard rock magnetite and vanadiferous titanomagnetite have been gaining importance due to beneficiation potential and specialised steel applications.

VTMs (57% Fe) presents both challenges and opportunities in the Chinese iron ore market. While historical trades have been at a discount to standard hematite fines, its standard form, specialty steel applications, blending potential, and strategic positioning in the decarbonisation trend make it a viable export commodity.

VTMs (57%) historically have been priced at a discount of $5-$15/dmt (10-15% discount/dmt) relative to 62% Fe fines (Platts IODEX). The underlying discount today depends on the titanium and vanadium content and even low-grade ores (52-54% Fe) can trade at a premium to the 62% price depending on the contained percentages of vanadium pentoxide (V_2O_5) within the ore.

Both vanadium and titanium are crucial for a range of applications, including aerospace, renewable energy storage and technologies, and advanced manufacturing. Their strategic importance is further demonstrated by the fact that nations such as Australia, the United Kingdom, the United States, Canada, and the European Union also classify them as critical minerals.

Financial Evaluation

> ***The Project is forecast to produce concentrate at a cost of US$27.20/tonne and generate an annual EBITDA of US$312M over a 20-year initial mine life to deliver a Post Tax NPV$_{10}$ US$1.26B and IRR of 39% on an initial investment of US$602M.***

Macroeconomic assumptions include 13.7% discount to a flat benchmark Fe concentrate pricing of US$90/t CFR China, V_2O_5 co-product pricing of US$5.45/lb (multiplied by a 77% third party recovery rate and 50% payability) and Capesize freight rates of US$10/t.

No revenue is assumed to be derived from the TiO_2 (titanium oxide) co-product.

The figures are presented on a real (non-escalated) basis. A tax rate of 28% has been applied and US$100M of carried forward losses have been factored into the analysis.

The operational expenditure ("**OPEX**") for the Project is estimated to be US$27.20 per metric tonne of concentrate. The breakdown in Table 2 highlights OPEX elements.

Table 2: Breakdown of Unit Operating Costs

OPEX Costs by Flowsheet Item	US$/t Concentrate
8,000tph Seabed Crawler	US$ 1.29
Integrated Mining Vessel	US$ 15.34
Floating Storage and Offloading (FSO) Vessel	US$ 7.72
Anchor Handling Tug	US$ 1.85
Environmental Monitoring Vessel	US$ 1.00
Total	**US$ 27.20**
OPEX Costs by Input Item	**US$/t Concentrate**
Contractor Costs (FSO)	US$ 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
Enviro Monitoring & Training	US$ 1.00
Total	**US$ 27.20**

The total Capital Expenditure ("**CAPEX**") for the Taranaki VTM Project is estimated to be US$602M. This includes costs for project management, consultancy, procurement, and contingency reserves. The breakdown of these costs are shown in Table 3. The all equipment cost estimate accuracy is +/-30%. Contingency applied across all the items is 14% (US$84.4M) of the total CAPEX.

Table 3: Breakdown of Capital Costs

Component	Item	Capex Estimate
IMV	Hull	$61,213,399
	Equipment	$37,956,005
	Integration	$54,128,825
Process	Process Plant	$183,864,152
	Dewatering	$18,068,794
Mining Systems	Crawler	$111,953,187
Auxiliary	Power Generation	$74,479,898
	Desalination	$26,095,570
Management	PM&E	$34,423,194
Total		**$602,183,024**

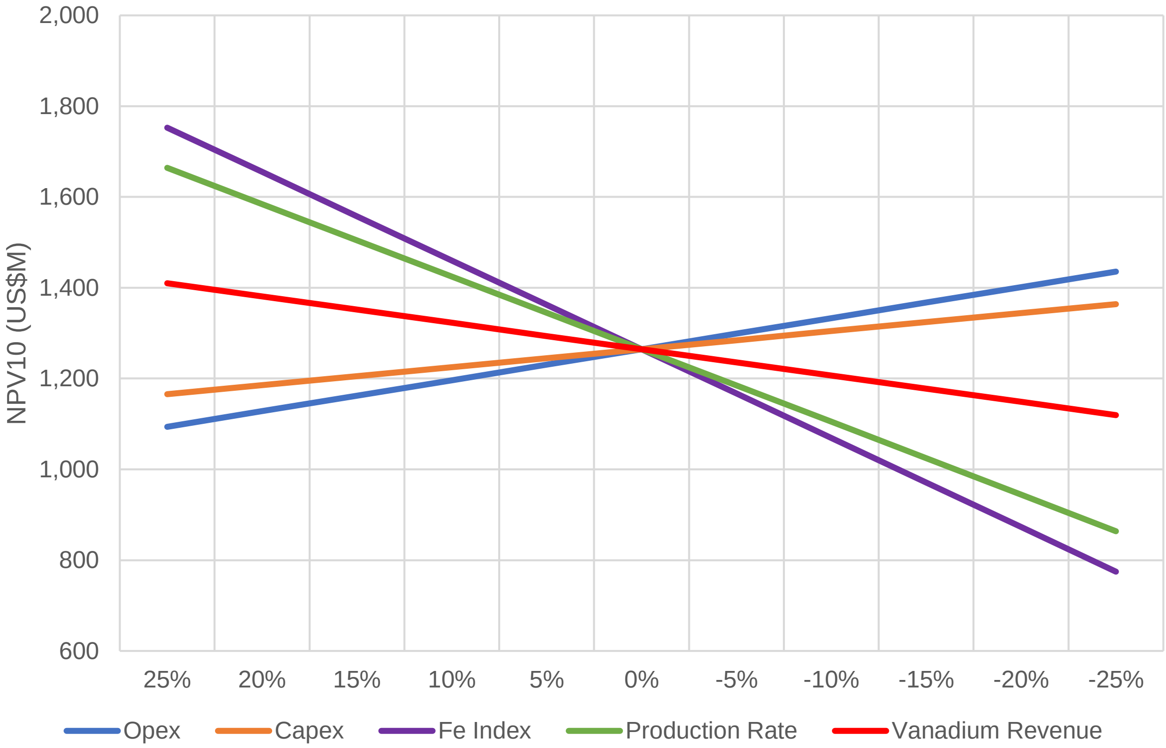
Each capital Item comprises the following cost segments:

- Project Management: Consultancy, travel, and administrative setup.
- BFS & Engineering/Design: Covering resource definition, environmental initiatives, and infrastructure planning.
- Procurement: The largest cost category, including:
  - IMV elements (hull, machinery, piping, etc.).
  - Specialised processing equipment from the USA and Europe.
  - Process plant equipment such as pumps and screening systems.
- Risk-Based Contingency: Addressing uncertainties and potential risks.

Based on the strong operating cash flows generated by the Project (US$312M EBITDA per annum) it is anticipated that it will support typical project financing debt terms of 60% gearing, 5-year loan life at a 2x Debt Service Cover Ratio.

The size and robust economics of the Project give the Company sufficient confidence that the equity contribution to the development CAPEX would be raised via public markets and potential investment from strategic partners.

Project Sensitivities



Next Steps

The Project was specifically included in Schedule 2 of New Zealand's recently legislated Fast Track Approvals Act 2024. The objective of the legislation is to provide a streamlined decision-making process to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.

> ***The Company is well placed to submit its approval application and commence the New Zealand Fast Track approvals process within the coming weeks.***

Subject to completion of the regulatory approval processes, the Company intends to move into Definitive BFS workstreams which consist largely of detailed vessel engineering and the development of procurement and funding strategies.

This announcement has been approved for release by the Board of Manuka Resources Limited.

For further information contact:

Dennis Karp
Executive Chairman
Manuka Resources Limited
Tel. +61 412 268 114

Admin@manukaresources.com.au

Compliance Statement

Information relating to Mineral Resources for the Taranaki VTM Project is extracted from the announcement titled "Maiden Vanadium Resource at Taranaki VTM Iron Sand Project" dated 1 March 2023 and available to view on the Company's website. The Company is not aware of any new information or data that materially affects the information used to compile the Mineral Resource and all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed.

Cautionary Statement

The Pre-Feasibility Study ("**PFS**") outlined in this announcement has been undertaken to explore the technical and economic feasibility the Company's 100% owned VTM Project, located in the South Taranaki Bight, New Zealand (the Project).

The Production Target underpinning financial forecasts comprises 75% Indicated and 25% Inferred Resources. Further evaluation work and appropriate studies are required to establish sufficient confidence that this target will be met. There is a low level of geological confidence associated with Inferred Resources and there is no certainty that further exploration work will result in the conversion of Inferred Resources to Indicated Resources or return the same grade and tonnage distribution. The Mineral Resource underpinning the Production Target has been prepared by a Competent Person in accordance with the requirements in the JORC Code.

The economic outcomes associated with the PFS are based on certain assumptions made for commodity prices and exchange rates and other economic variables, which are not within the Company's control and subject to change from time to time. Changes in such assumptions may have a material impact on economic outcomes.

To achieve the range of outcomes indicated in the PFS, additional funding will be required. Investors should note that there is no certainty that the Company may be able to raise the amount of funding when needed and/or reach a Final Investment Decision. It is also possible that such funding may only be available on terms that may be dilutive to, or otherwise affect the value of Manuka's existing shares. It is also possible that Manuka could pursue other 'value realisation' strategies such as a sale or partial sale of the Company's share of the Project.

This announcement contains forward-looking statements. Manuka has concluded it has a reasonable basis for providing the forward-looking statements included in this announcement and believes it has a reasonable basis to expect it will be able to fund the development of the Project. However, several factors could cause actual results, or expectations to differ materially from the results expressed or implied in the forward-looking statements. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the PFS.

About Manuka Resources Limited

Manuka Resources Limited (ASX: MKR) is an Australian mining and exploration company with key gold and silver assets located in the Cobar Basin (NSW), and offshore vanadium and titanium bearing iron sands in the South Taranaki Bight of New Zealand.

The Mt Boppy Gold Mine (Cobar Basin, NSW)

The Mt Boppy gold mine is located 43 km east of Cobar, in the Central West region of New South Wales. A resource update was released on ASX on 16 April 2024.

The Company has to date processed its stockpiles and gold mineralised waste product through its Wonawinta plant. Manuka are currently pursuing a strategy of establishing of a fit-for-purpose, on-site crush-screen-mill-float facility to enhance the economics of the Mt. Boppy Mine and the value of near-mine prospects. The Mt Boppy site includes a 48-person mine camp and is fully permitted for the proposed processing plant and on-site production.

The Wonawinta Silver Mine (Cobar Basin, NSW)

Previously Australia's largest primary silver producer, Wonawinta produced approximately 3 million ounces of silver during 2012-2013, and an additional 500,000oz of silver in 2022. The mine hosts a significant Resource[3] - including stockpiles and shallow oxide material, Wonawinta contains total Resources of 38.8 million tonnes at 42 g/t Ag for 52.4 million ounces. Furthermore, on 29 October the Company released its maiden Ore Reserve of 4.8Mt[4] at 53.8g/t Ag containing 8.4Moz of silver comprising:

- Proved Ore Reserves of 0.8Mt at 50.8g/t Ag; and
- Probable Ore Reserves of 4.1Mt at 54.3g/t Ag.

The Wonawinta processing plant has a nameplate capacity of approximately 850,000 tpa. The Company is reviewing the potential of recommencing operations at Wonawinta, taking advantage of the strengthening silver price environment.

The Taranaki VTM Project (South Taranaki Bight, New Zealand)

Manuka is the 100% owner of the Taranaki VTM (vanadium titanomagnetite) Iron Sands Project**.** The 3.2Bt Taranaki VTM Project Resource was released on ASX on 1 March 2023.

The Project is located 22km to 36km offshore in New Zealand's EEZ, or Exclusive Economic Zone, outside the 12 nautical limit from the shoreline, in waters ranging between 20 to 50 metres depth and has a granted mining permit, MMP55581, permitting production of 5Mtpa. On granting of final government approvals to operate the Company will complete its Bankable Feasibility Study (BFS) on the Project. The Project is anticipated to sit in the lowest quartile of the iron ore production cost curve.

[3] ASX Release 1 April 2021
[4] Arithmetic errors may be present due to rounding

Appendix 1: Additional Information

Project Description

Incorporated in September 2007 New Zealand registered company Trans-Tasman Resources ("**TTR**") was established to explore, assess and uncover the potential of the offshore titanomagnetite iron ore deposits along the west coast of the North Island of New Zealand. TTR's ambition is to provide a reliable supply of low-cost iron ore concentrate, containing valuable vanadium and titanium metal credits, and build mutually beneficial strategic long-term partnerships with mineral processing facilities and steel manufacturers. TTR is committed to conducting all its activities in a safe and environmentally sustainable manner and to proactively engage with existing interests, local and regional authorities, iwi groups and local communities on all relevant economic, environmental, cultural and social issues.

The aim of the Pre-Feasibility Study ("**PFS**") is to present the proposed operational process, along with an economic evaluation of the selected ore recovery and mineral processing techniques and methods, to achieve the following objectives.

- **Run-of-Mine Extraction**: The offshore iron ore will be extracted from the identified and reported mineral resources using efficient and environmentally responsible mining techniques.
- **Ore Beneficiation**: The extracted VTM ore grading 10.17% Fe_2O_3, 1.03% TiO_2 and 0.05% V_2O_5 will undergo a mineral beneficiation process to increase the iron content, producing a VTM concentrate with an iron grade of 56-57% Fe with vanadium grade of 0.5% V_2O_5 and titanium of 8.4% TiO_2.
- **Concentrate Washing and Logistics:** The VTM concentrate will be processed and beneficiated on a dedicated Integrated Mining Vessel ("**IMV**"), washed in fresh water to a Floating and Storage Offloading Vessel ("**FSO**"), dewatered and transferred to bulk Capesize vessels at sea for export to a third-party processing plant for further treatment and final metal recoveries.
- **Vanadium Extraction:** At third party processing plant, advanced metallurgical methods will be applied to extract the recoverable vanadium from the VTM concentrate.
- **Iron Ore for Steelmaking:** The remaining iron ore, after vanadium extraction, will be delivered to a steelmaking facility where it will serve as feedstock for blast furnace operations.
- **Market Shipment:** A VTM concentrate suitable for international markets will be prepared and shipped to global customers.
- **Capital and Operating Cost Estimate**: A capital (Capex)and Operating (Opex) estimate with an accuracy level of ±30%.

The PFS provides a comprehensive overview of the entire value chain including engineering and environmental management solutions, mineral extraction and beneficiation to product shipment and export, value-added processing and economic feasibility.

Option Study Overview

In the previous revision of the PFS (2014), several mining system options were thoroughly reviewed and evaluated. Initially, a simple dredging option was commissioned during the early stages of the study. However, a subsequent workshop held with IHC in the Netherlands explored a broader range of options to identify the most suitable and sustainable solution for TTR's operations. The options assessed included integrated crawler systems, trailer suction hopper dredges (TSHD), drill ship recovery (Drill), roll-on/roll-off (Ro-Ro) systems, and point suction dredges (PSD).

These systems were evaluated based on key performance indicators such as resource optimization and mining efficiency, operational ocean depth (20m to 50m), capacity, flexibility, logistical complexity and tailings dispersal management and marine environmental impact.

The structured decision analysis revealed that the Drill, Ro-Ro, and PSD systems were not viable options due to limitations in efficiency, flexibility, and environmental performance. The results identified two promising candidates: the TSHD, as detailed in the initial PFS report, and the integrated mining vessel and crawler system (IMV) similar to the proven and operating design used by De Beers Marine of South Africa now for over 30 years.

While the TSHD demonstrated scalability, it posed significant challenges regarding tailings dispersal. Its operation could create large sediment plumes due to limited control over tailings return. In contrast, the IMV crawler system, with its precise and (based on grade control drilling) targeted extraction process able to avoid zones of high (>2%) silt, and controlled return of the de-ored sediments (tailings) to the seafloor, minimises plume generation. By employing a tailings pipe and pressure diffuser to around 4m above the seabed, the system will return sediment to the seabed in a controlled manner, reducing the suspended sediment impact in the surrounding water column.

Based on these findings, it was clear that utilising proven IMV seabed crawler technology offered the lowest project risk along with the most effective and environmentally responsible mining solution, particularly given its superior tailings management capabilities. The seabed crawler will be remotely operated from a surface support vessel and equipped with advanced acoustic navigation and imaging systems to ensure precise, systematic extraction along pre-defined grade controlled lanes. It will pump the unconsolidated surface sediment to the IMV vessel for processing and beneficiation. The high-precision nature of the crawler's operation ensures comprehensive coverage of the target area, able to avoid areas of high silt loads, eliminating the need for re-mining and enhancing overall efficiency. The mining vessel will employ a dynamic positioning system with multiple anchors to maintain accurate placement during ore extraction and redeposition of tailings onto the seafloor, ensuring safe and effective operations across the designated mining zones.

Project Geology

Titanomagnetite iron sand forms Quaternary onshore beach and dune deposits and offshore marine deposits along approximately 480 kilometres of coastline from Kaipara Harbour in the north, south to Wanganui on the west coast of the North Island, New Zealand. The onshore deposits include the present beach and dune sand, and older coastal sand deposits that have been preserved by uplift due to faulting and/or lowering of sea level.

The titanomagnetite mineral is sourced from the Quaternary volcanic rocks of western Mount Taranaki and the volcanic rocks of the Taupo Volcanic Zone, transported to the coast by rivers, along the coast by shallow marine longshore currents, and subsequently concentrated by wave, wind and tidal action into beach and dune lag deposits.

From the interpretation of the exploration information, the geological model of the offshore iron sand deposits can be represented as areas, consisting of remnant coastal beach and dune lag deposits that were constructed, in the same geological process as the current onshore dune deposits, at a time of lower sea levels of around 30m to 50m during the last glaciation from around 9,000 to 15,000 years ago. These paleo-dune features were part of an ancient river system in which dunes formed contemporaneously at the mouth of the river(s) and the coastline. The rivers are locally controlled by active faulting with the iron sands within the river channels and dunes partially reworked by currents and longshore drift then inundated and reworked by the rising and transgressing seas over the last 7,000 to 8,000 years.

Exploration Summary

TTR have undertaken extensive exploration activities within its tenement areas, and in particular within the proposed mining area within MMP55581. Exploration activities have included, high resolution aeromagnetic surveys, high resolution 2D seismic surveys, multi beam sonar bathymetry surveys, ROV video surveys of seafloor, multiple programs of shallow and deep drilling, bulk metallurgical sampling and pilot plant processing. From these exploration and processing activities TTR has been able to report a JORC Mineral Resource Statement using drilling methods that have been independently technically verified to enable representative sampling at depth of the seabed titanomagnetite resource.

Mineral Resource

On 1 March 2023, MKR reported the mineral resource estimates for its Taranaki VTM[5] iron sand project located in the STB off the west coast of the North Island, New Zealand

The 3.2Bt Indicated and Inferred mineral resource of 10.17% Fe_2O_3, 1.03% TiO_2 and 0.05% V_2O_5 contains 1.6Mt vanadium pentoxide ranking the deposit as one of the larger drilled vanadium deposits globally.

Three contiguous resource deposits, the Cook, Kupe and Tasman VTM deposits that make up the Taranaki VTM project, are separately reported. The mineral resource and Davis Tube Recovery (DTR) concentrate estimates reported, based on all available assay data as of 1 January 2015, include iron oxide and iron (Fe_2O_3 & Fe), titanium dioxide (TiO_2) and vanadium pentoxide (V_2O_5) mineral resource estimates.

The mineral resource estimates for Cook, Kupe and Tasman deposits, have been reported separately for each of the North Blocks inside the 12Nm limit within Mineral Exploration Permit MEP54068 (Resource Management Act (RMA) approval area) and the South Blocks outside the 12Nm limit within Mineral Mining Permit MMP55581 (Exclusive Economic Zone (EEZ) approval area) (Table A1).

The mineral resource estimates are prepared and classified in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012).

Table A1: Taranaki VTM Mineral Resource Estimate

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**				

*DTR is Davis Tube Recovery of the magnetic fraction of the sample

The reported mineral resource estimate for the contiguous Cook, Kupe and Tasman
The JORC classification of Indicated and Inferred resource categories for the reported 1.881Bt VTM resource for the Cook, Kupe and Tasman South Blocks, limit within MMP55581, are presented in Table 2. The 1,881Mt Resource within MMP55581 comprises 1,418Mt, or 75%, Indicated and 463Mt, or 25%, Inferred resource categories (Table A2).

[5] Vanadiferous titanomagnetite ($Fe_{2.74}Ti_{0.24}V_{0.02}O_4$).

Table A2: Breakdown of Indicated and Inferred Mineral Resources within Mining Permit MMP55581 located outside the 12Nm

Taranaki VTM Resource Classification MMP55581						
	Indicated and Inferred Mineral Resources					
VTM Deposit MMP55581	Cut-Off Grade	Mt Ind	Mt Inf	Mt Total	% Ind	% Inf
Cook South Block	3.5% DTR*	864.9	49.6	914.4	95%	5%
Kupe South Block	3.5% DTR*	238.2	33.6	271.8	88%	12%
Tasman South Block	7.5% Fe2O3	315.0	380.1	695.1	45%	55%
Total VTM Resource		**1,418**	**463**	**1,881**	**75%**	**25%**

Mining

A mining block model was created from the geological model. The mining model was regularised to a consistent block size of 250 m × 250m × 1m. Bench tonnages for the proposed mining areas were calculated by summing the blocks that have the block centroid within an area. Figure A1 shows the outline of these regularised blocks, which were constrained due to the Mining Permit boundary at the time of that study.

The basis for the PFS concept is a mobile device with a submersible dredge pump and slewing boom configuration. The concept is based on many years of actual operational experience of the mining and dredge processes, and the designing of offshore mining/dredge systems, submerged pumps, dredge components and subsea tracked vehicles within the De Beers Marine SA group.

It is proposed to have the seabed crawler and the IMV both aligned along the SW - NE mining direction. This alignment direction is parallel to the prevailing wind/wave direction (facing into the waves/wind) and perpendicular to the prevailing current direction.

The seabed crawler will be located on the sea floor, connected to the IMV via an umbilical delivery tube. A winching system will be used to locate the IMV relative to the seabed crawler which will be working 300m × 300m blocks in a predetermined sequence.

The PFS schedule contemplates mining via the seabed crawler at a rate of 50Mtpa based on the following assumptions:

- Seabed Crawler throughput = 8,000tph
- Annual operation hours = 6,326hrs
- Calculated scheduling rate = 8,000tph × 6,326hrs pa = 50.0Mtpa.
- Based on 72% SBC and IMV production utilisation rate and 28% downtime for servicing, weather events and breakdowns.

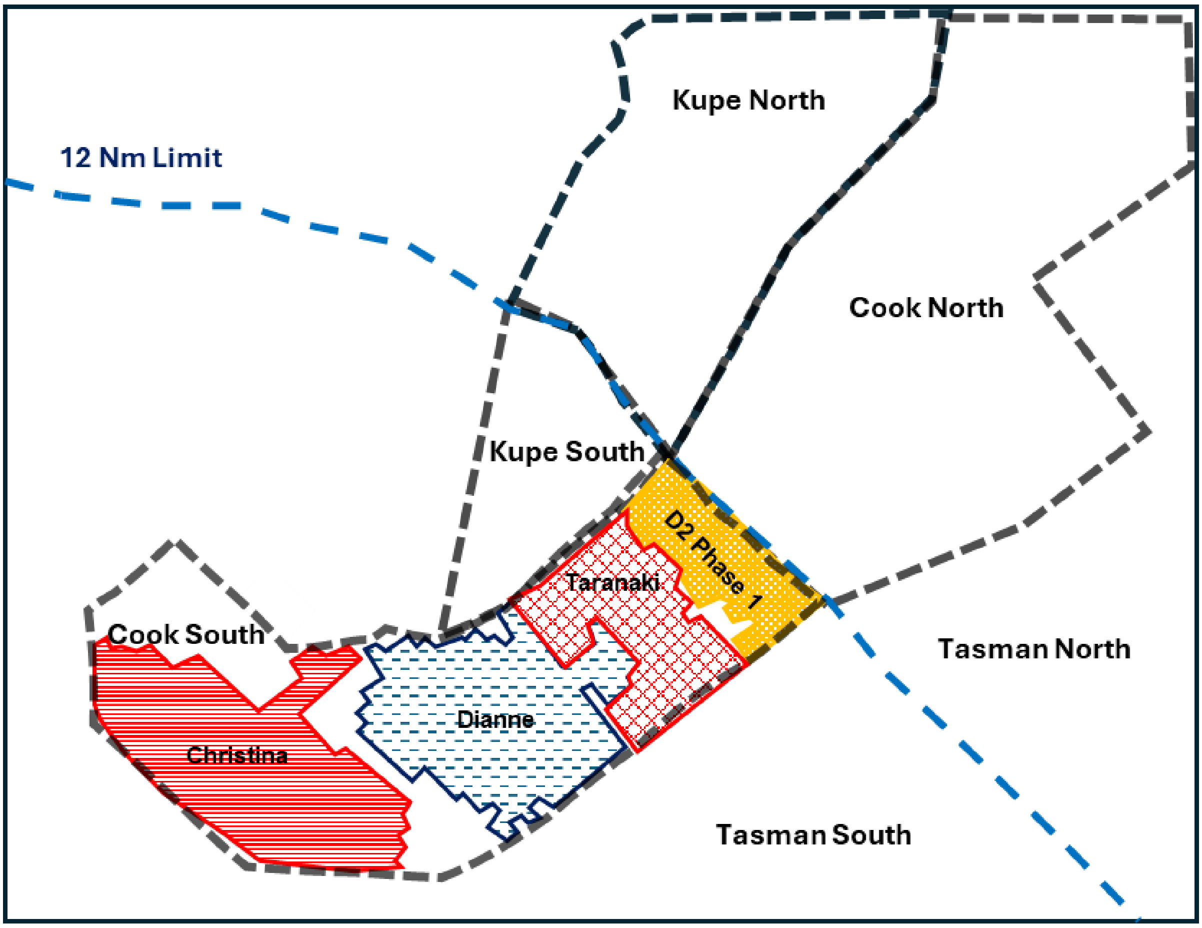


Figure A2: Defined Mining Areas and Updated Mineral Resource Blocks within MMP55581 Note Kupe South and Tasman South have since been added to the schedule based on the expanding Mining Permit.

A ten-year mining schedule was originally developed; however, the updated 2023 Mineral Resource model highlights additional resources now available for mining by the crawler within MMP55581 for up to 20 years at the planned rate of extraction (Table A3).

Table A3: Production Schedule

Year	ROM Mt	Resource Block	Resource Depletion Mt	Concentrate Mt
1	50	Cook South	636	4.9
2	50	Cook South	586	4.9
3	50	Cook South	536	4.9
4	50	Cook South	486	4.9
5	50	Cook South	436	4.9
6	50	Cook South	386	4.9
7	50	Cook South	336	4.9
8	50	Cook South	286	4.9
9	50	Cook South	236	4.9
10	50	Cook South	186	4.9
11	50	Cook South	136	4.9
12	50	Cook South	86	4.9
13	50	Cook South/Kupe	240	4.9
14	50	Kupe	154	4.9
15	50	Kupe	104	4.9
16	50	Kupe	54	4.9
17	50	Kupe / Tasman	150	4.9
18	50	Tasman	100	4.9
19	50	Tasman	50	4.9
20	50	Tasman	0	4.9

Metallurgical Testwork

The TTR Siecap metallurgical study summarised the laboratory-scale metallurgical test-work and process flow sheet development to recover iron, vanadium and titanium metals. The metallurgical testwork has been conducted in 3 stages:

- Stage 1 – Preliminary testwork
- Stage 2 – Pilot plant testwork
- Stage 3 – Vanadium and titanium recovery testwork

Iron Recovery

The purpose of Stage 1 testwork was to investigate the viability of upgrading the ore using conventional mineral sands processing methods and technology to determine the base parameters required for the design of the metallurgical process flow sheet. The purpose of the testwork was to design a process flow sheet that is capable of producing a saleable iron ore concentrate whilst maximising recovery of the valuable titanomagnetite component in the primary ore resource.

Initial testwork in Stages 1 and 2 focused on gravity separation as is commonly used at many existing mineral and iron sands operations. This initial testwork proved that this approach was not viable and steered the process flow sheet design towards conventional magnetite processing which is based primarily on magnetic separation.

A summary of the Stage 1 and Stage 2 testwork results shown inf Figure A3 and A4 and Tables A4 and A5.

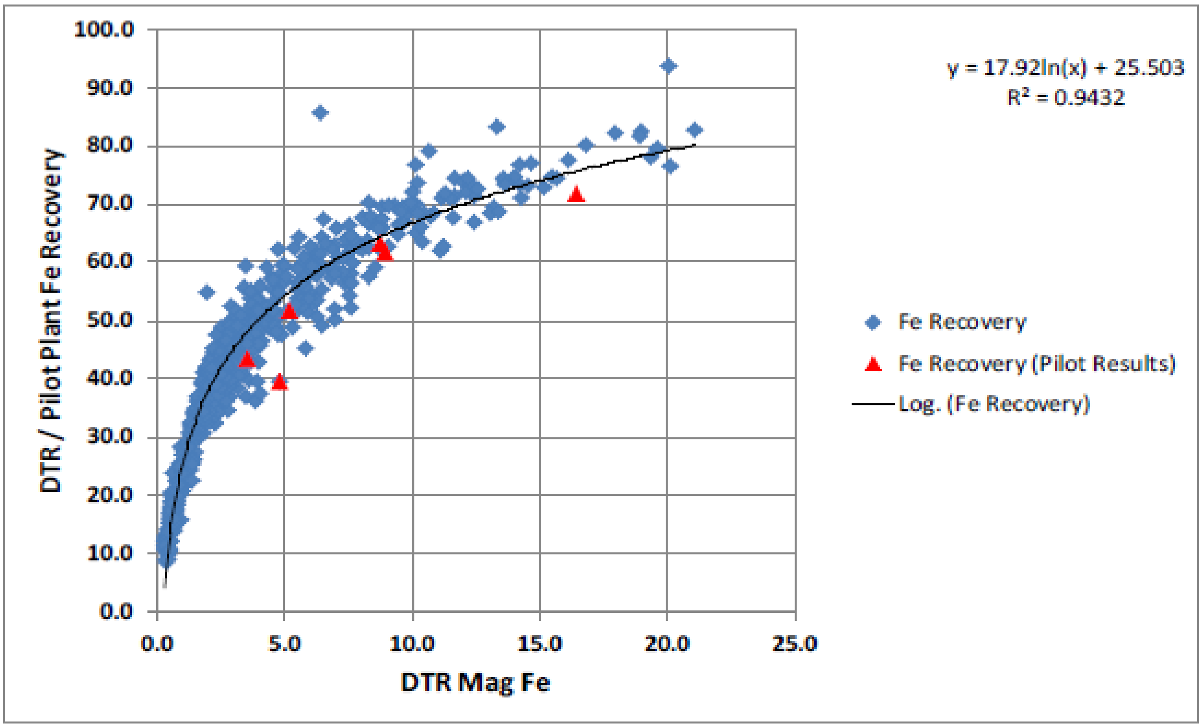


Figure A3: Pilot Plant and DTR Fe Recovery vs Mag Fe

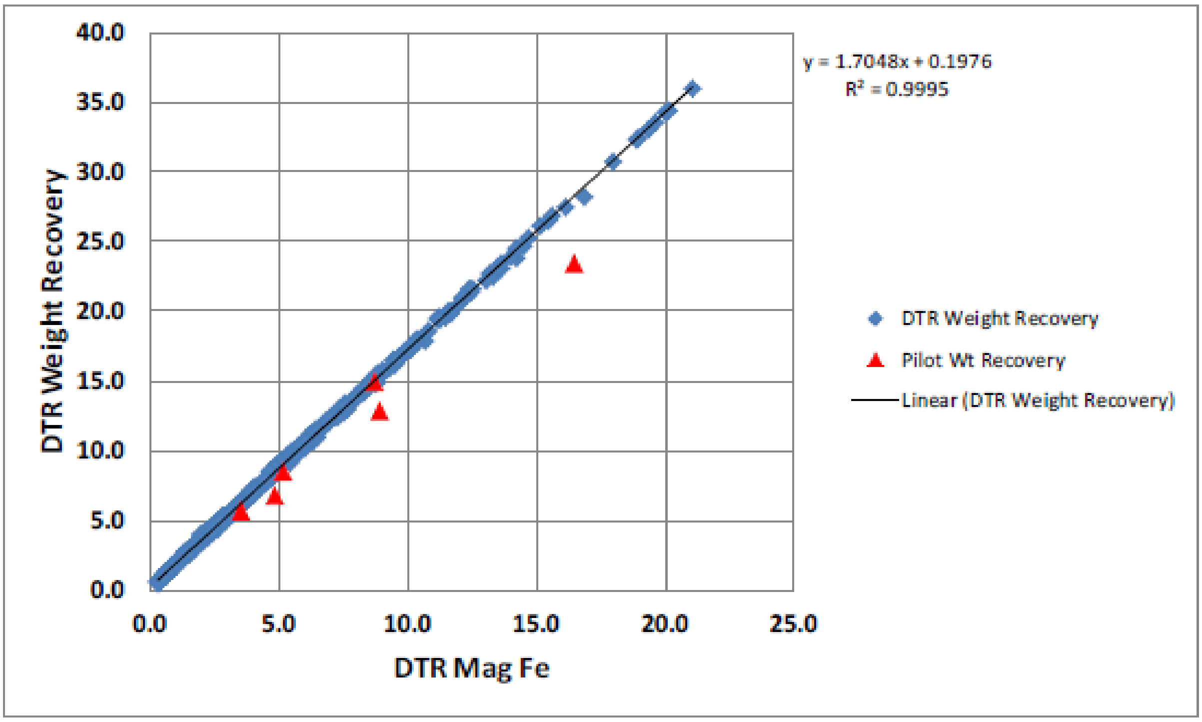


Figure A4: Pilot Plant and DTR Weight Recovery vs Mag Fe

Table A4 Pilot Plant Results – Fe Recoveries

			Fe Recovery					
Sample ID	Head Fe	Mag Fe	MIMS& LIMS1/1	LIMS2	LIMS3	O/All Fe Recovery	DT Fe Recovery	Mag Fe Recovery
X450	7.8	3.5	48.6		83.4	43.3	45.0	96.3
X439	9.6	5.2	60.5		85.5	51.7	53.8	96.2
Bulk501	10.5	4.8	45.0	90.0	97.6	39.5	43.7	90.5
B456	13.9	8.9	66.3		92.7	61.6	62.7	98.3
X451Y	13.8	8.7	66.9	96.7	97.6	63.2	63.3	99.7
X438	21.1	16.4	76.9		91.2	71.9	74.4	96.7

Table A5: Pilot Plant Results – Fe Grades

	Fe Grade			
Sample ID	MIMS& LIMS1	LIMS2	LIMS3	LIMS2
X450	15.9	30.8		55.9
X439	18.8	34.2		56.3
Bulk501	14.3	29.7	49.4	56.9
B456	25.4	40.2		58.2
X451Y	26.1	40.9	51.8	57.8
X438	28.1	42.0		58.2

A bulk sample from TTRs pilot plant was provided to Metso for conducting standard Jar Mill testwork data to assess the milling requirements to achieve the target grind and provide a Vertimill® sizing for the marine duty.

Several magnetic separation concentrates were progressively milled using the Levin-Method; which is effectively fine grinding in a standard Bond laboratory mill at known energy inputs. Milling tests were also conducted in laboratory scale UFG (ultrafine grinding) mills (Isa mill) on concentrates, and so a comparison between each technology and ball size effect can be made.

The testing undertaken by DRA / Metso showed that the breakage rates are less than conventional milling, despite improved particle breakdown, suggesting the smaller media size is more inefficient. Therefore, it was recommended that the use of Tower Mills be investigated. The grinding rates obtained were similar at low energies, 3.465t/kWh and were significantly higher than both Levin and IsaMillsTM, by at least a factor of two, and significantly more at the lower energy inputs. These results were subsequently used for simulating a full-scale mill.

Using the data from the Jar Mill test it was possible to estimate the performance of the full-scale unit, taking feed PSD and closed-circuit milling into consideration. The resultant simulations estimate that two VTM3000-WB units, in closed-circuit with two 33”Ø gMax or equivalent hydrocyclones, should cover the milling duty.The estimated power requirement is between 3.3~3.5kWh/t.

The proposed final product specification for a concentrate at a grind size (P_{80}) of 75 µm is given Table A6.

Table A6: Product Specification – 75µm Concentrate

Fe (min)	P (max)	SiO_2 (max)	Al_2O_3 (max)	TiO_2 (max)	V (min)	CaO (max)	S (max)	MgO (max)	K_2O (max)	Na_2O (max)	Zn (max)	Cl (max)
56.0	0.160	3.9	4.2	8.9	0.28	1.00	0.01	3.2	0.15	0.20	0.085	0.029

Third Party Vanadium Recovery

In 2023 TTR commenced Stage 3 testwork and commissioned metallurgical testwork into advanced mineral processing techniques to optimise the extraction and separation of vanadium and titanium from the Taranaki titanomagnetite VTM iron sands concentrate.Testwork conducted by the University of Canterbury and Callaghan Innovation confirmed the viability of sodium salt roasting-water leaching process for the sustainable recovery of vanadium from the VTM concentrate. The sodium salt – water leaching process not only achieved high recovery rates of vanadium (77%) but also exemplified a model that balanced economic viability with environmental stewardship. This dual focus ensured that vanadium extraction aligned with TTR’s sustainable development goals.

Vanadium Recovery testwork was undertaken primarily for the purposes of marketing the vanadium bearing VTM Concentrate to third-party customers.

Operational Description

Integrated System

The selected integrated solution is based on a single IMV (Figure A4, A5) that will contain the seabed crawler mining system, the mineral processing, beneficiation and tailings deposition mechanisms.

A single Floating Storage and Offloading Vessel (FSO) that will transship and dewater the concentrate from the IMV onto standard commercial Capesize bulk vessels for export and delivery to mineral processor end users (Figure A6).

Figure A4: 3D model of the IMV

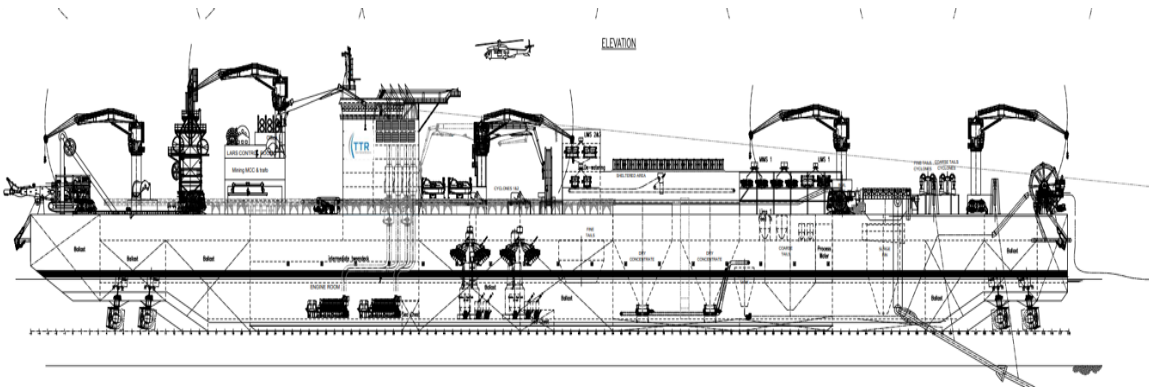


Figure A5: Elevation Plan of the IMV model of the IMV

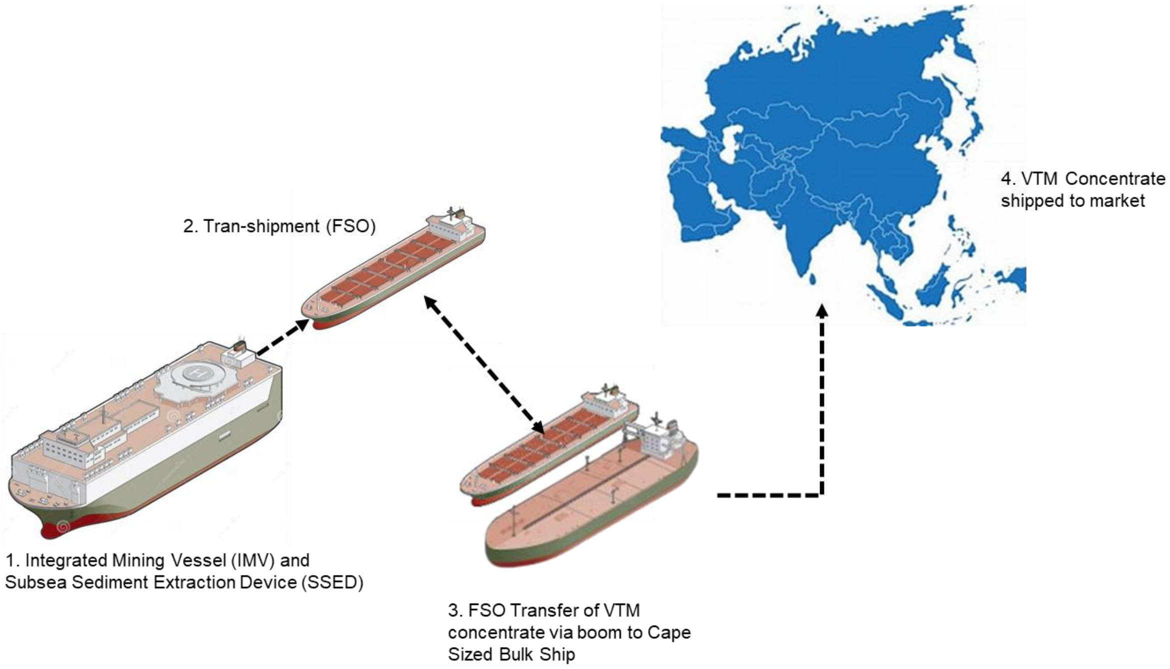


Figure A6: TTR Taranaki VTM Project – Operations

Seabed Mineral Resource Recovery

A mobile seabed crawler was selected as the preferred sediment extraction technology to be integrated into the IMV. This proven and tested technology is very similar to the De Beers Marine extraction equipment operated offshore Namibia now for over 30 years.

During extraction operations the seabed crawler is lowered onto the seabed by the launch and recovery system (LARS), together with the discharge hose and umbilical. Around 2-3 sections of the discharge hose will be floating on the water allowing for flexibility in the movement of the subsea device
.

To accommodate the deposition of the tailings into an already depleted area, because of the location of the tailings deposition pipe on the bow of the vessel, the length of each extraction run will be a function of the vessel length, e.g. 300m. At the end of each run the seabed crawler will turn 180° and work the adjacent run (Figure A6). The total width of the planned run of the SBC boom is 10m wide allowing for a 1m overlap on both sides of the run to minimize spill (losses).

The IMV will typically follow the seabed crawler at the advance rate of 40m an hour. A 300m x 300m block will typically be depleted in around 10 days, and the mooring system will normally span a 900m x 300m area (Figure A7) allowing a period of 30 days between each mooring move.

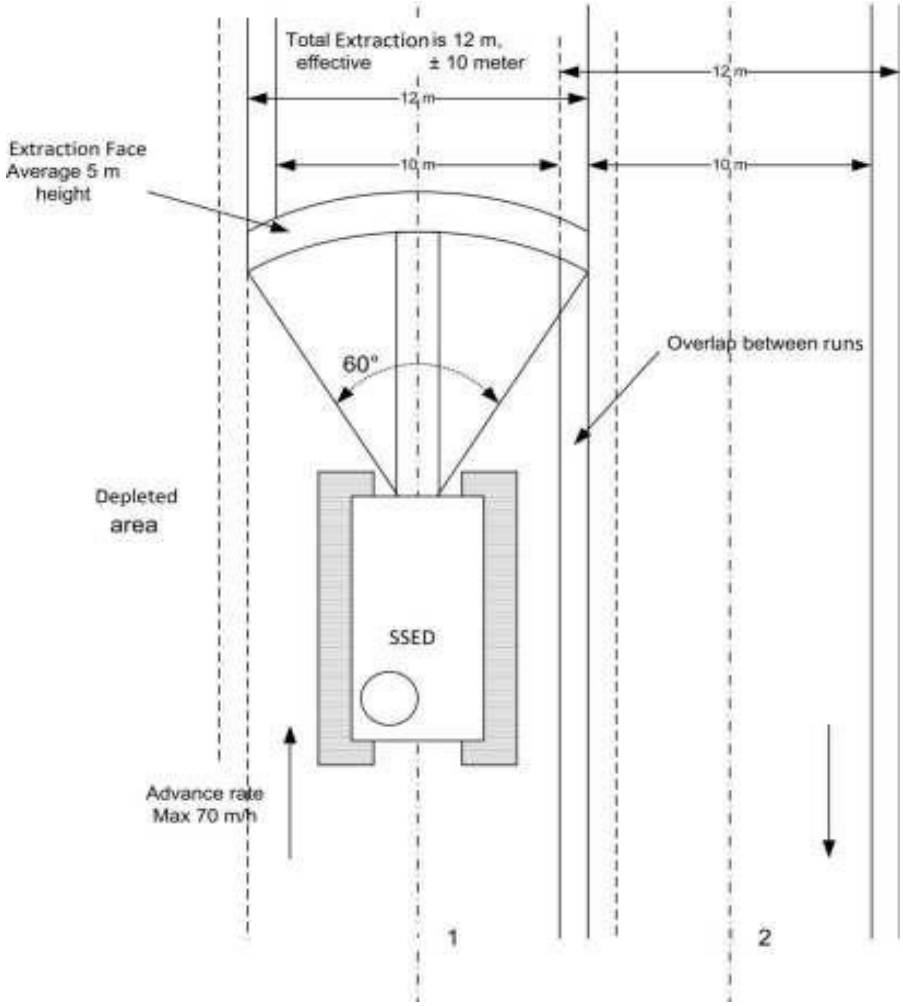


Figure A6:Typical seabed crawler extraction run

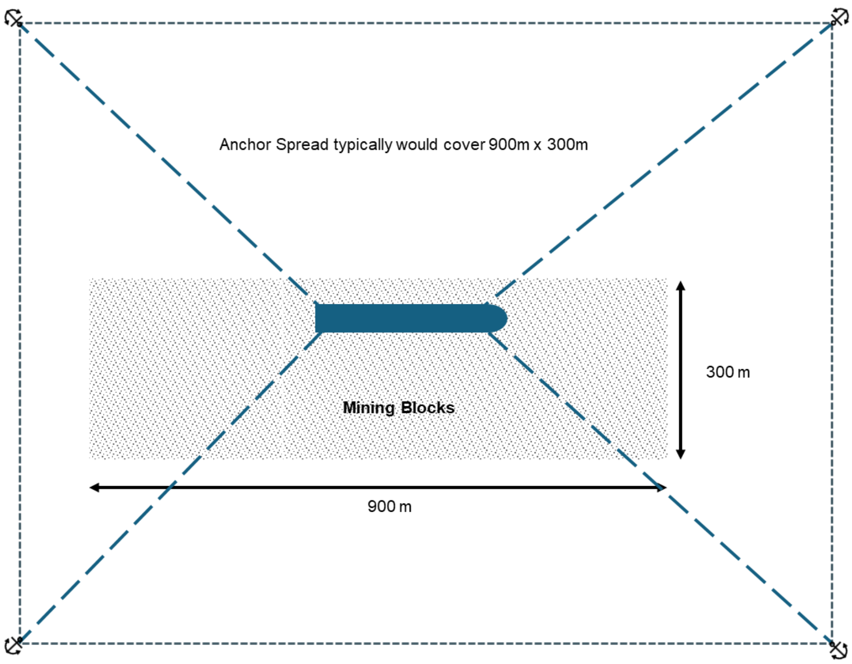


Figure A7: IMV Mooring Layout

Metallurgical Processing Module

The metallurgical test work programs demonstrated that the TTR VTM Project mineral resources can be beneficiated using conventional classification, i.e. magnetic separation followed by grinding and a final magnetic separation to produce a 56-57%Fe product (typically 75μm) with mass yields in the order of 10%.

A summary of the proposed processing facility is detailed below and Figure A8.

- **Preparation** – Extracted sediment will be delivered to the IMV via an 800mm ID rubber hose connected to the SBC. The pump will allow the transport of the sediment slurry at a rate of 8,000 tonnes per hour resulting in a slurry velocity in the hose of around 6.5m/s. The suction velocities directly at the nozzle entry will typically be around 1.5 to 2m/s and will decrease rapidly as the distance increases from the nozzle face. The estimated intake velocities 1m away from the nozzle will be a maximum of 0.5m/s.

  The run of mine (ROM), ore will be directed into a boil box from where it will be directed into two intermediate distribution sumps. Process water will then be added to reduce the slurry density to approximately 31.5% solids by weight before the slurry is fed to 10 trommel screens at main deck level. The screen aperture will be 4mm such that the effective screen size of the ROM will be ~2mm. Spray water on the screens will reduce the slurry density further to approximately 30% solids. The screen undersize is fed under gravity to 10 water agitated storage tanks directly below the screen area. The oversize will be fed via a chute to the tailings handling area.

- **Rougher Magnetic Separation** – The -2mm ore will then be pumped from the agitated storage tanks to the first stages of magnetic separation. The purpose of the rougher magnetic separation (RMS) will be to capture both the liberated and locked magnetic particles whilst rejecting the majority of the gangue4.

- **Grinding** – The feed to the first stage (~1,420t/h) will be ground to a P80 of nominally 130μm, requiring a grinding installed energy of 3.5kWh/t. It is envisaged that the first stage grinding duty will be accomplished using 2 x 3,000HP Vertimills® in parallel.

- **Intermediate Magnetic Separation (IMS)** – The IMS section will comprise 12 units arranged into two clusters of six separators each. Approximately 30% of the IMS feed will be rejected to tailings. The IMS concentrate will be gravity fed to the second stage grind feed tanks and the tailings will be gravity fed via a chute to the tailings handling area.

- **Cleaner Magnetic Separation** – The cleaner magnetic separation (CMS) section will consist of eight triple drum co-current magnetic separators at an intensity of 950 gauss, arranged in two clusters of four each. The CMS concentrate will then be gravity fed to a set of dewatering drum magnets to reduce the concentrate moisture to ~10%.

- **Final Concentrate Handling** – The dewatered concentrate will be stored in two hoppers. The hoppers were sized for a buffer capacity of 40h or approximately 32,000t. This will allow enough time for the FSO to sail a distance of maximum 70 nautical miles to a sheltered area (if required by weather conditions), offload its entire load of 60,000t concentrate and return to the IMV. Once the FSO is on station, it will connect to the IMV via a floating slurry line.

- On-board the IMV dewatered concentrate will be extracted from the bottom of the storage hoppers onto a conveyor belt. It will be elevated to the top of a constant density (CD) agitator tank with a sandwich conveyor. In the CD tank the concentrate will be slurried with fresh water from the desalination plant (from two intermediate freshwater tanks) to form a 50% by solids slurry. Fresh water is required to wash the concentrate, i.e., to reduce the chloride (salt) level of the product. The slurry will then be pumped to the FSO and filtered to a low moisture content of less than 6.5% using four hyperbaric pressure filters on the FSO.

- During offloading of concentrate the process plant will continue to operate to produce the balance of the 60,000t FSO cargo. Offloading to the FSO therefore will occur at double the production rate of the process plant (~1,600t/h).

- **Tailings Handling** – In order to minimise the environmental impact of the tailings, it will be dewatered before disposal via a set of hydro-cyclones. The coarse and fine tailings will be dewatered separately to approximately 75 to 80% solids before being discharged under gravity via the tailings deposition pipe. The deposition pipe will be controlled using sonar such that the discharge occurs at a constant height 4m from the seabed. The tailings wastewater will be discharged via a second pipe along the tailing's deposition pipe slightly higher than the solids discharge.

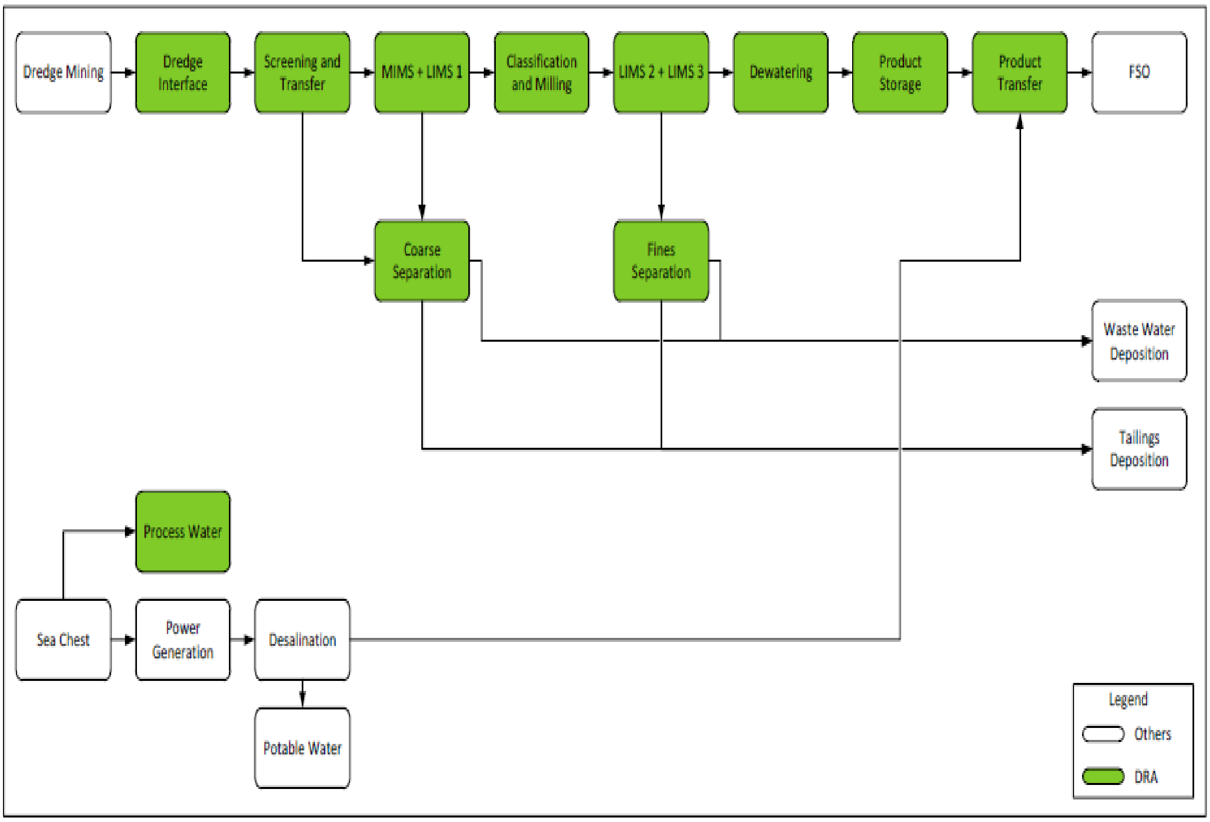


Figure A8: Process Description

Auxiliary Services

Power Generation

The Project has specified on the IMV four (4) Siemens SGT-500 gas turbine generator sets for a total installed power capability of 80MW.

The SGT-500 set was selected because of its multi-fuel capability on a range of gas and liquid fuels specifically that of Intermediate Fuel Oil (IFO). The units also have:

- The ability to accept a wide range of load application / rejection;
- The ability to accept a 6MW step load increase in a single step;
- The ability to shed load from 11MW to zero in a single step;
- The ability to shed load from full load to 2MW in a single step;
- The ability for on-line turbine washing;
- Low NOx emissions – 350ppmv without water injection, 50ppmv with water injection;
- Low noise emissions – 85dB(A) @ 1m;
- Low lube oil consumption; and
- Low footprint and weight.

Sea Water Desalination

The project has specified 10 separate containerised Reverse Osmosis plants, each with a production capacity of three thousand (3,000) cubic metres per day.

Splitting the plant up in this way reduces risk as in the case of a breakdown in one plant, nine others are still available. It is also advantageous from a maintenance downtime perspective: with only 10% capacity offline at any one time, production is hardly interrupted for scheduled servicing. Spare parts are common across all plants, further reducing costs of stocking critical parts and components.

Environmental Regimes and Permitting Status

The Taranaki VTM project has undergone extensive environmental investigations and permitting processes. In 2017, TTR were granted marine and marine discharge consents by EPA Decision Making Committee (DMC) under New Zealand's Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act).

The EPA's decision was appealed to the High Court by environmental advocacy groups, some fishing interests and iwi representatives. The court process and outcomes, that subsequently included appeals to the Court of Appeal (CoA) and Supreme Court (SC), on points of law are summarised in the PFS.

Finally, the Supreme Court's decision, issued in September 2021, provided new guidance on the correct application of provisions in the EEZ Act by the DMC.

The Supreme Court judgment held that the DMC had made some errors of law in granting the consents. The SC referred the consents back to the DMC for reconsideration in light of the SC decision. The Court judgment 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 reconvened DMC.

The EPA appointed a new decision-making committee to reconsider the applications in accordance with the SC appeal outcomes, and reconsideration hearings began in March 2024.

In anticipation of the NZ government's new Fast-Track Approvals process, TTR withdrew its application for reconsideration by the reconvened DMC at the end of March 2024.

Between March and December 2024, the New Zealand Government developed the Fast Track Approvals Act 2024 (FTA Act), the purpose of which is to improve the delivery of projects with significant economic benefits. The FTA Act became law on 23 December 2024 and provides a streamlined process for such projects, with bespoke legal tests that give more weight to regional and national economic benefits than under the EEZ Act. At TTR's request, the New Zealand Government has listed TTR's project in the FTA Schedule 2[6], which means the project has already been approved to apply for final consents under the FTA process. This enables TTR to make an application for the project without first having to obtain additional ministerial support. TTR is now preparing its FTA application, which will reflect the new FTA legal tests.

TTR's EPA approved comprehensive set of consent operating conditions and detailed management plans mandate at least two years of baseline pre-mining commencement environmental monitoring and data collection, continuous operational monitoring over the 20 years of mining and five years of post-production environmental monitoring and review to address any unforeseen adverse impacts. TTR remains responsible for demonstrating ongoing compliance with these conditions to the regulator, the EPA, with oversight from independent technical reference groups including regional authorities, commercial fishing, oil and gas, iwi fishing forum representatives and cultural advisory panels to ensure environmentally responsible operations and stakeholder involvement throughout the project's lifespan.

Environmental Impact Assessment

For a detailed analysis of the updated Environmental Impact Assessment (EIA), including the most recent findings on sediment plume dynamics, marine ecology, and other key environmental factors, please refer to Appendix 19.21. This appendix contains the comprehensive assessment prepared by the National Institute of Water and Atmospheric Research (NIWA), which incorporates new data, updated modelling scenarios, and insights relevant to the ongoing environmental monitoring and environmental management strategies for the project. The information presented provides critical context for understanding the potential environmental impacts and the measures implemented to mitigate these risks.

Capital Costs

Capital costs (Capex) were estimated by TTR supported by various technical consultants and equipment providers. The Capex estimates of this PFS should be considered to be ±30% order of accuracy current at the first quarter of 2025.

The capital costs for the project have been updated to reflect the impact of various external and market-driven factors. Adjustments were made based on the origin of key project elements, considering differences in labor costs, material availability, and regional economic conditions. Market fluctuations, including changes in commodity prices and currency exchange rates, were incorporated to provide a more accurate cost baseline. Inflation adjustments were applied in line with the latest industry indices to capture the rising costs of materials and services, particularly in sectors such as ship construction, mining process equipment, and industrial equipment procurement. Supply chain challenges, including delays and increased freight costs, have been factored into the revised estimates, given their significant influence on lead times and overall project

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[6] https://www.manukaresources.com.au/site/pdf/e2c94ac0-59d0-469d-a14d-fc1ce85ababb/TTR-Taranaki-VTM-Project-included-in-new-FastTrack-Approvals-Act-in-NZ.pdf

expenditure. As a result, the project schedule and financial analysis have been recalibrated to align with these cost revisions, ensuring that contingency allowances and risk assessments are updated to reflect current market conditions and potential future scenarios.

The total project Capex is estimated at US$602.183 million (NZ$1 billion). This figure encompasses a wide range of cost elements including project management, consultancy efforts (both BFS and execution), travel and accommodation, and extensive procurement activities. The procurement segment alone covers major components such as the IMV hull and superstructure, piping, machinery, the SBC, a geotechnical drilling and grade control survey vessel (GSV) and a variety of specialized equipment and installation costs. Each element has been meticulously evaluated to ensure that the overall estimate reflects both the scale and complexity of the project.

A critical aspect of any Capex estimate is the inclusion of a contingency reserve to address uncertainties and mitigate potential risks. The contingency, for this Capex estimate amounts to US$84.4 million (NZ$120M) or 14% of the total Capex.

The updated Capex estimate now also includes an allocation of NZ$2 million for the establishment of a dedicated employee training facility in Hāwera, aimed at enhancing workforce competency and supporting operational excellence. This facility will provide specialized training programs tailored to the project's manning needs, ensuring compliance with industry standards and best practices. Additionally, a NZ$3.9 million allowance has been incorporated for the acquisition of a suitable environmental monitoring and research vessel (EMV) l, monitoring equipment and technology and the necessary port infrastructure. This investment underscores the project's commitment to environmental stewardship, enabling continuous monitoring of marine ecosystems and ensuring adherence to regulatory requirements. These additions strengthen the project's long-term sustainability and operational resilience while aligning with best practices in environmental and workforce development.

The following key assumptions have been made in regard to the capital cost:

- Contracted concentrate transfer and marine support operations;
- Owner run of mining, mineral processing, concentrate dewatering and environmental compliance and monitoring;
- Contracted vanadium recovery operations;
- Capital allowance has been made for an on-shore pilot vanadium recovery plant;
- Outside of the above, no capital allowance has been made for on-shore facilities as these are assumed to be covered by the respective entities providing services to the project at an operating cost; and
- The processing plant capital estimate has been based on suitable equipment sized from preliminary metallurgical test-work and flow sheet development. The processing plant is also based on a modularised construction strategy allowing (where practical) assembly and testing off site with reduced on-site construction effort and risk.

Operational Costs

Operating costs (Opex) have been estimated on the basis that all primary mining operations will be carried out by TTR. All transfer and support operations will be contracted out to third parties. The Opex estimates of this PFS and should also be considered to be ±30% order of accuracy current at the first quarter of 2025.

The detailed Opex framework provides an in-depth analysis of the operational costs, amounting to US$27.20 (NZ$47.00) per tonne of VTM concentrate. This cost structure not only highlights the complexity and scale of the offshore mining operation but also identifies key cost drivers and opportunities for improving efficiency. Each component of the operation contributes uniquely to the overall expenditure, reflecting the logistical and technical demands of offshore mining while underscoring strategic areas for cost optimisation.

Project Schedule

It is estimated that the project duration will be 24 to 30 months from project Decision to Mine (DTM). The basic development schedule for the future stages of the TTR project is proposed in the schedule shown in Figure A9.

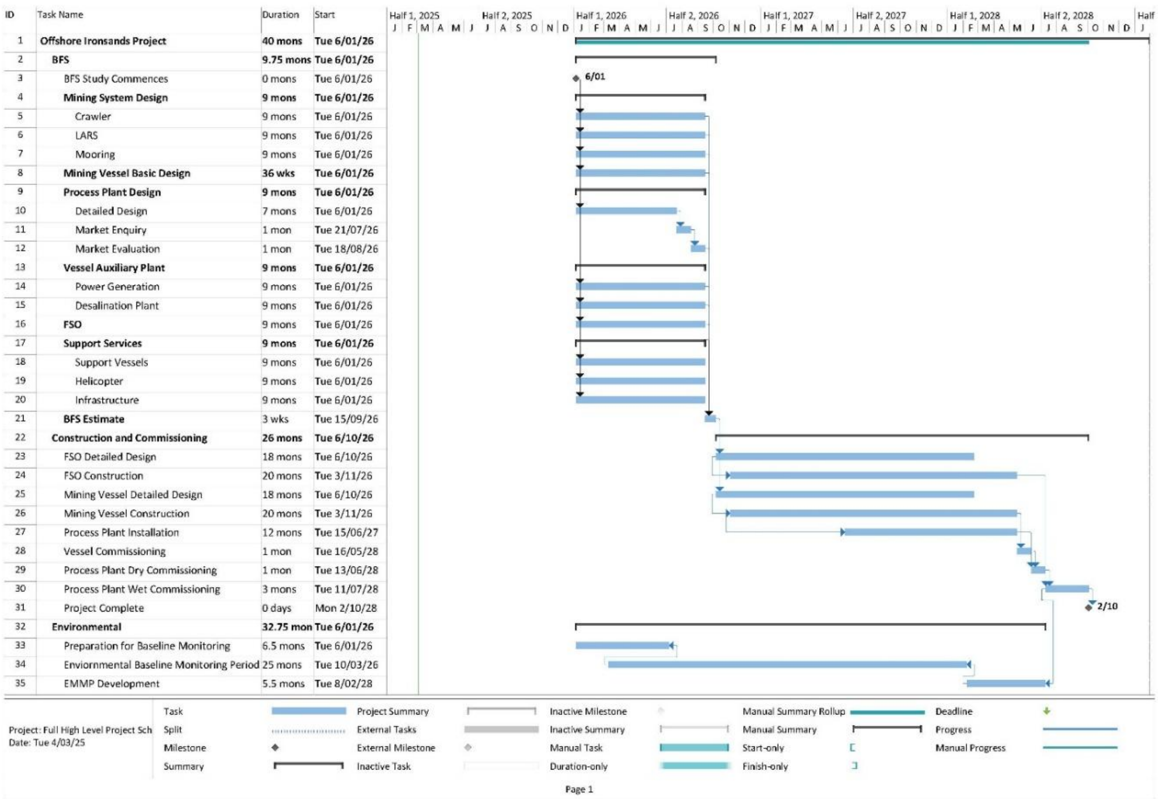

Figure A9: Basic Schedule of the BFS and Project Construction

Forward Work Programme

There are several areas that will require additional focus during the next phase (BFS) of the Project. These works are summarised below:

Bulk Concentrate Testwork

- A larger representative bulk sample in the order of 1,500kg VTM concentrate is required to undertake additional testworks to confirm process equipment and PFDs and evaluate the concentrate product's sintering and pelletizing properties.

- A total of approximately 20t bulk sample is currently available for further testwork. Supervised trials will be conducted on the pilot plant with sample analysis carried out in local laboratories and in Australia. The following testwork is planned for the BFS phase.

Minerals Processing Testwork

- In addition to the minor recommendations contained within each of the PFS verification reports the following activities will be included within the next phase of metallurgical testwork.

- Confirmation of optimum grind size for each grinding stage;

- Grinding circuit optimization – The potential for reduction of the grinding duty by closing the grinding circuit and having material at the target product size bypass the grinding will be investigated. This will include both laboratory sighter testwork and pilot plant trials. The impact on product grades will be closely monitored. Also included under this program will be further grindability testwork in order to provide accurate data for grinding mill sizing and Project power consumption;

- Once the grinding and magnetic separation circuits are optimised, the balance of the bulk samples will be processed according to the final flow sheet. The final concentrate produced will be provided to potential customers for sintering pot testwork;

- Magnetic separation circuit optimisation: The potential to reduce the number of MIMS units will be investigated. The impact on overall Fe recovery, Mag Fe recovery and product grade will be closely monitored;

- A mathematical concentrate grade from the Davis Tube Recovery (DTR) on each sample should be done and then compared to the DTR of the sample and also compare this with actual pilot run results; and

- A continuous pilot run with representative ore and a pilot plant configuration similar to the proposed flowsheet will be scheduled, including the use of sea water that will be used throughout the process plant

In order to optimise the current metallurgical flowsheet TTR will:

- Evaluate options to determine if it will be viable to install separation equipment on the LIMS 1 concentrate to remove the target size material in the feed to the first grinding stage and similarly on LIMS 2 concentrate. This could have a positive impact on the grinding circuit by removing feed tonnage to the mills;

- Investigate different separation options for the removal of the +2mm fraction;

- Materials handling testwork- Samples will be collected at various stages of the pilot flow sheet for materials handling testwork (TUNRA testwork), including hydraulic conveying testing (slurry parameters), and material flow property and related tests. This work is needed to determine the key slurry parameters such as settling velocity, yield stress and viscosity. Wear rate of slurry pipeline materials will also be determined. The material flow properties of the final concentrate at the moisture level stored on the IMV as well as the FSO will be tested to provide critical data for bin and conveyor design. The transportable moisture limit will also be determined;

- Sea water trial – All pilot plant testwork to date has been carried out using potable water. A trial will be conducted to compare the pilot plant operation with sea water as opposed to freshwater to determine the extent of the influence of sea water on the process:

- Determine the dilution method, factor and effect of the process water (e.g. sea water);

- Develop a water management strategy that includes possible recycling of the filtrate from the FSO system helping in the dilution of the high total dissolved solids (TDS) and other elements in the concentrator plant; and

- In addition to the testwork above, a continuous 1tph pilot plant run will be considered in order to de-risk the final process flow sheet. Additional bulk samples will be required for a continuous run. This material could potentially be collected during tests to determine the free-flowing properties of the in-situ ore.