



DFS reinforces Engebø as a world class rutile and garnet project



OAX: NOM

**NORDIC
MINING**

DFS Presentation

January 28, 2020

-  Large deposit with unique location
-  Sustainable solutions
-  Robust project economics
-  Quality offtake partners
-  Strong competitive position

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Agenda

1 Introduction and highlights

2 Project and operations

3 Financials

4 Way forward

5 Appendix

Minerals for a sustainable future



Rutile

- Energy efficient air transportation
- Environmentally friendly pigment
- Air cleaning surface materials
- Health applications



Garnet

- Health and environmentally friendly cutting and blasting material



Lithium

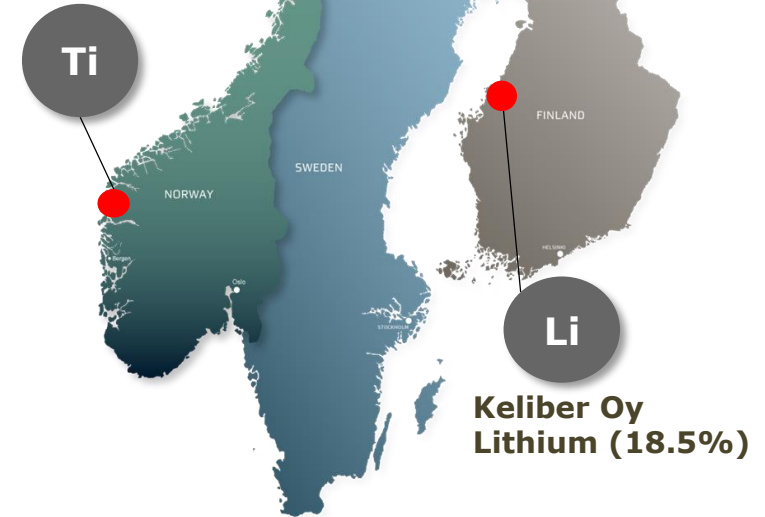
- Batteries for electric vehicles and renewable energy storage



Alumina

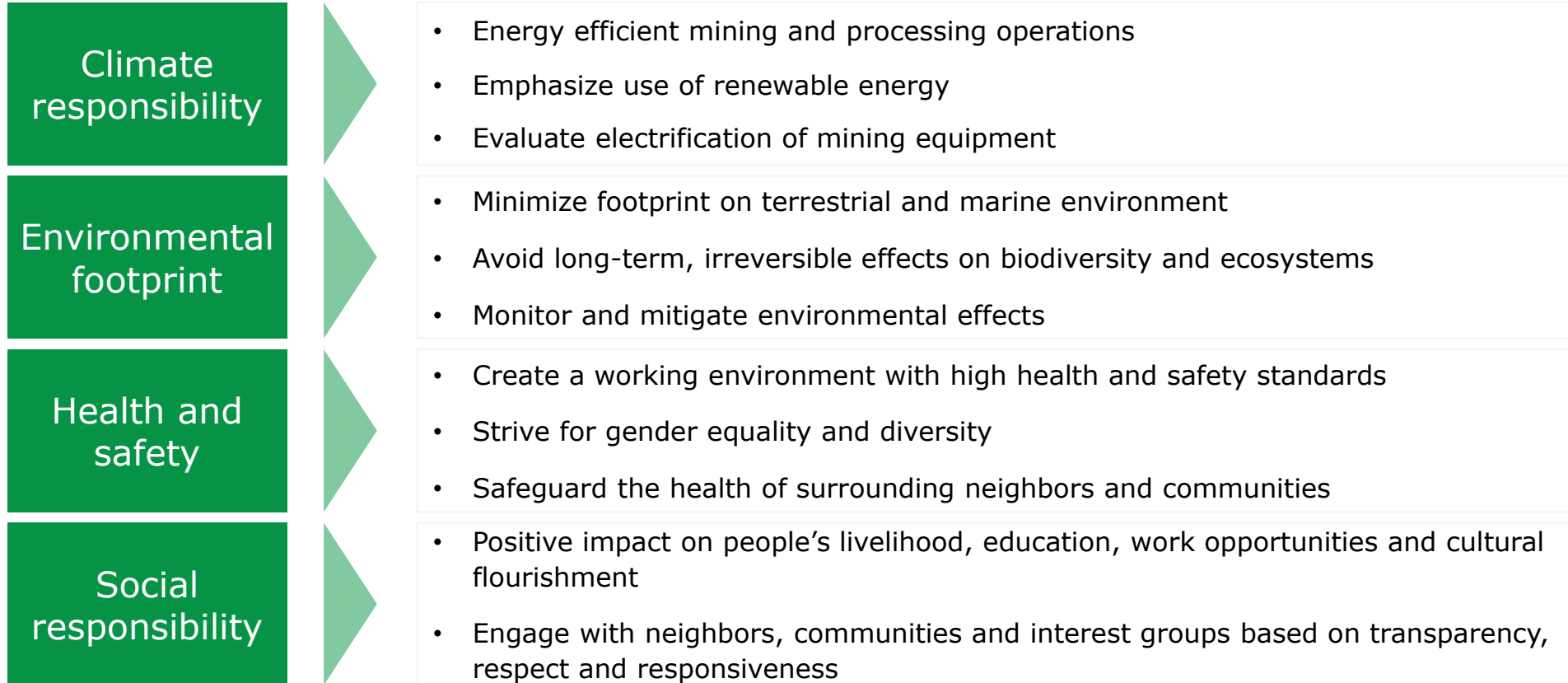
- Patented technology for green alumina production with integrated CO₂ consumption

Engerbø Rutile and Garnet (100%)



Overarching ESG goals

Nordic Mining will develop the Company's Projects in accordance with IFC Performance Standards and the Equator Principles, and on the basis of the United Nation's sustainable development goals



DFS documents an attractive mineral project

De-risked for financing and execution

- DFS represents a major de-risking milestone
- Solid basis for financing

Attractive financials

- NPV@8%(real) of USD 450m and IRR of 21.9% pre-tax
- NPV@8%(real) of USD 344m and IRR of 19.8% post-tax

Strong cash flow, short payback

- Average annual Free Cash Flow first 15 years of USD 70m
- Accumulated Free Cash Flow of USD 2,160m
- Payback of <5 years

Low cost operation

- Dual mineral production provides robust operational margin
- Average production cost per sales tonnes first 15 years of USD 73
- Average EBITDA margin of 77% during first 15 years

Long project life

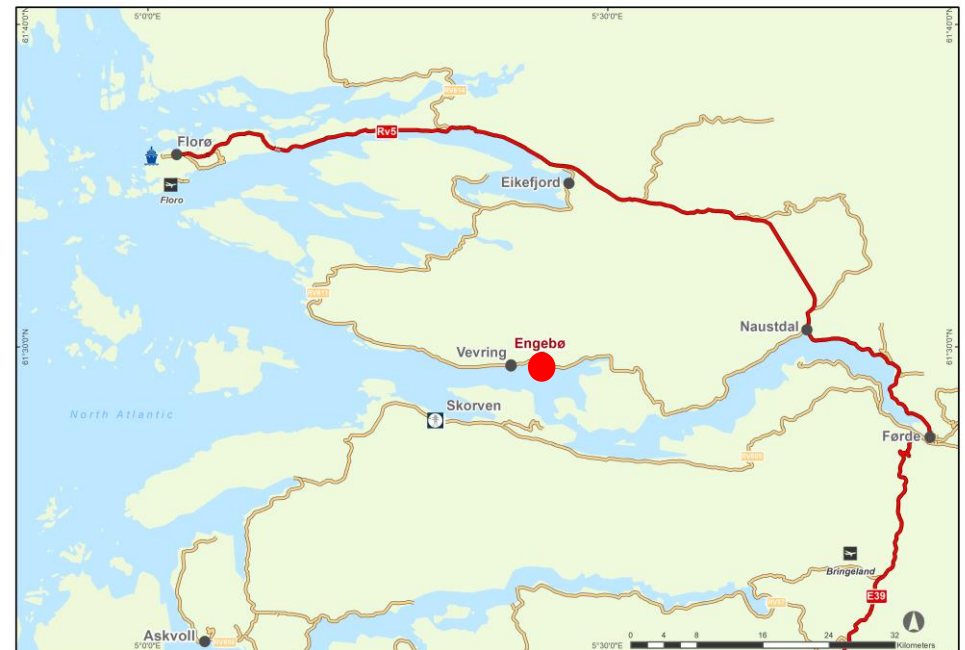
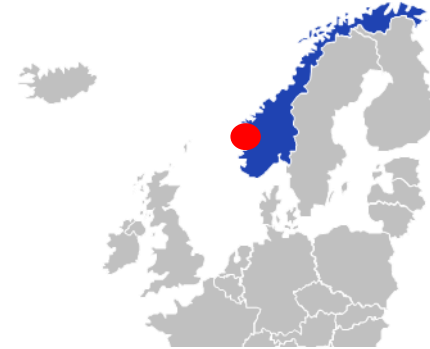
- Total project life of 42 years
- Further extensions possible from substantial inferred resources

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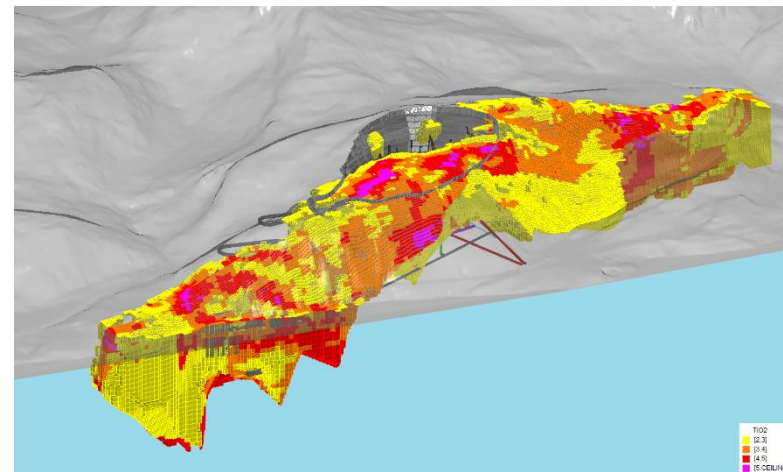
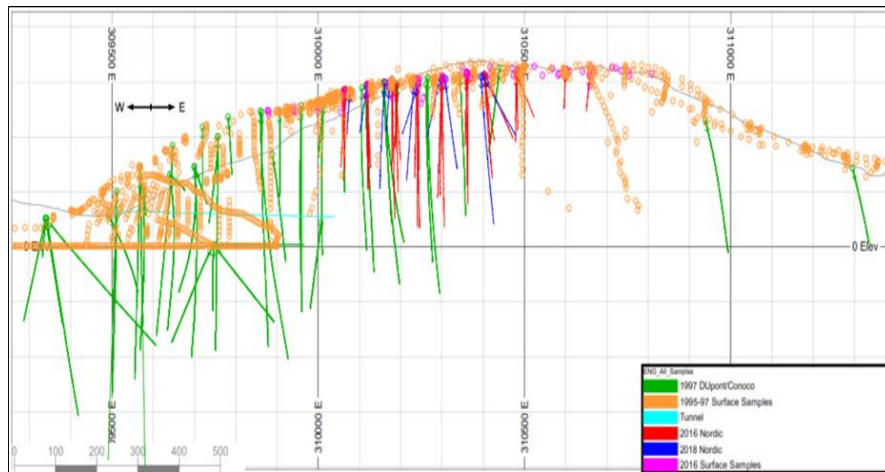
Favourable location, jurisdiction and infrastructure

- Location by the North Sea provides advantageous logistics
- Norway, a politically stable region
- Road access and two local airports
- Deep sea, ice free quay on site
- Renewable hydro power in close proximity
- Local supply of fresh water
- 40 minutes from Førde regional centre
- Region with skilled, industrial labour
- Maintenance and service vendors available in the region



Large high-grade rutile and garnet deposit

- 2.5 km hard rock eclogite ore body outcropping at surface
- Extensive drilling and sampling campaigns comprising 21,000m of core drilling
- Geotechnical assessments document competent rock with high stability that offers efficient solutions
- Low levels of heavy metals and radioactive elements



Mineral resource base with large upside potential

- Unique combination of high-grade rutile and garnet
- Among the highest rutile grades globally
- Abundance of high quality Almandine garnet
- JORC compliant ore reserves based on Measured and Indicated resources represent 42 years project life
- Large Inferred mineral resources in the east and west extension
- The deposit remains open at the depth



Mineral resources (2% TiO₂ cut-off)

	Tonnes (mt)	TiO ₂ grade (%)	Garnet grade (%)
Measured (M)	29.2	3.60	44.5
Indicated (I)	104.0	3.48	43.9
Total M&I	133.2	3.51	44.0
Inferred	254.1	3.15	41.3

Ore reserves

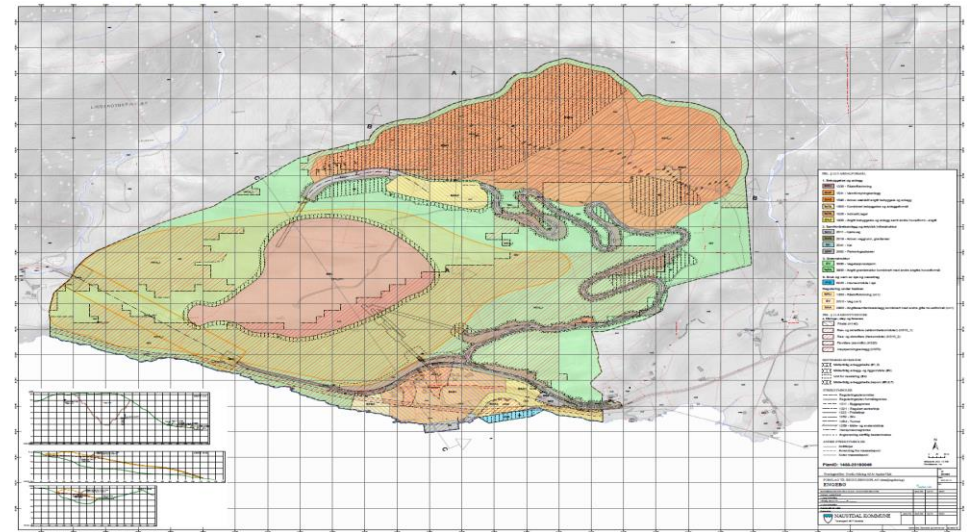
Open pit	Tonnes (mt)	TiO ₂ grade (%)	Garnet grade (%)
Proven (P)	21.1	3.54	43.8
Probable (Pr)	13.2	3.29	43.3
Total P&Pr	34.3	3.45	43.6
Underground			
Proven (P)	2.4	3.34	39.2
Probable (Pr)	26.5	3.21	38.6
Total P&Pr	28.9	3.22	38.7

Major permits granted

Granted

- ✓ Extraction permits for the total deposit
- ✓ Landowner agreements for open pit, infrastructure and process plant areas
- ✓ Detailed zoning plan for Life of Mine operations
- ✓ Environmental permit

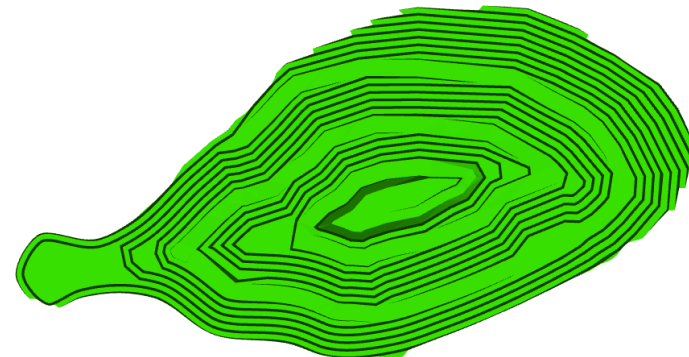
Detailed zoning plan



In progress

- Operating license
- Zoning plan for water pipeline

Open pit



42 years of operations

Open pit – 15 years

- Low stripping ratio of 0.55 (waste tonne/ore tonne)
- Staged approach with two “pushbacks”
- Stockpiling of medium and lower grade ore for maximum resource utilization
- Contractor mining planned for first 5 years of operations

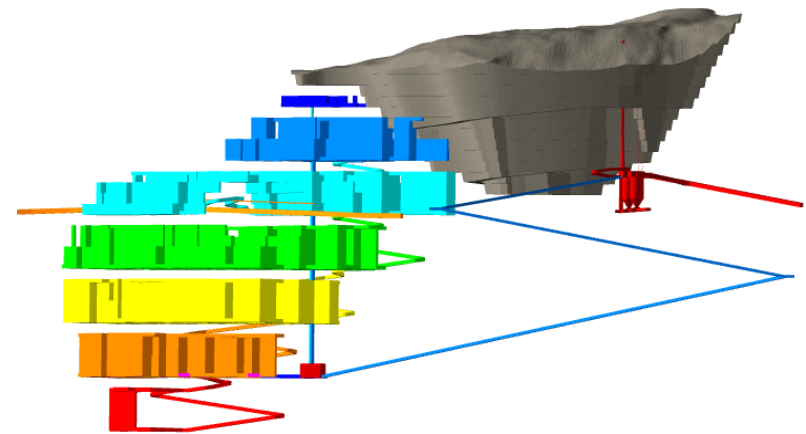
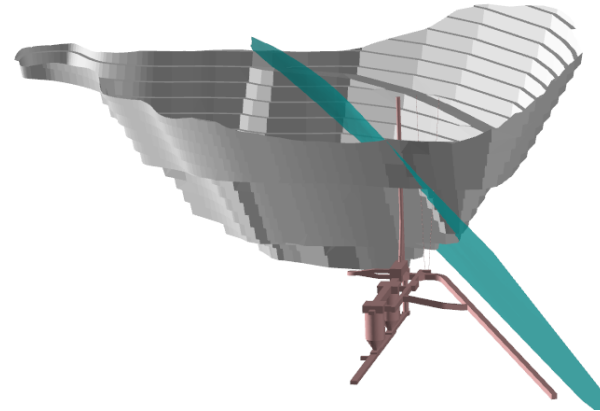
Underground – 19 years

- Development of underground at the end second pushback
- Long hole stoping mining method

Stockpile – 8 years

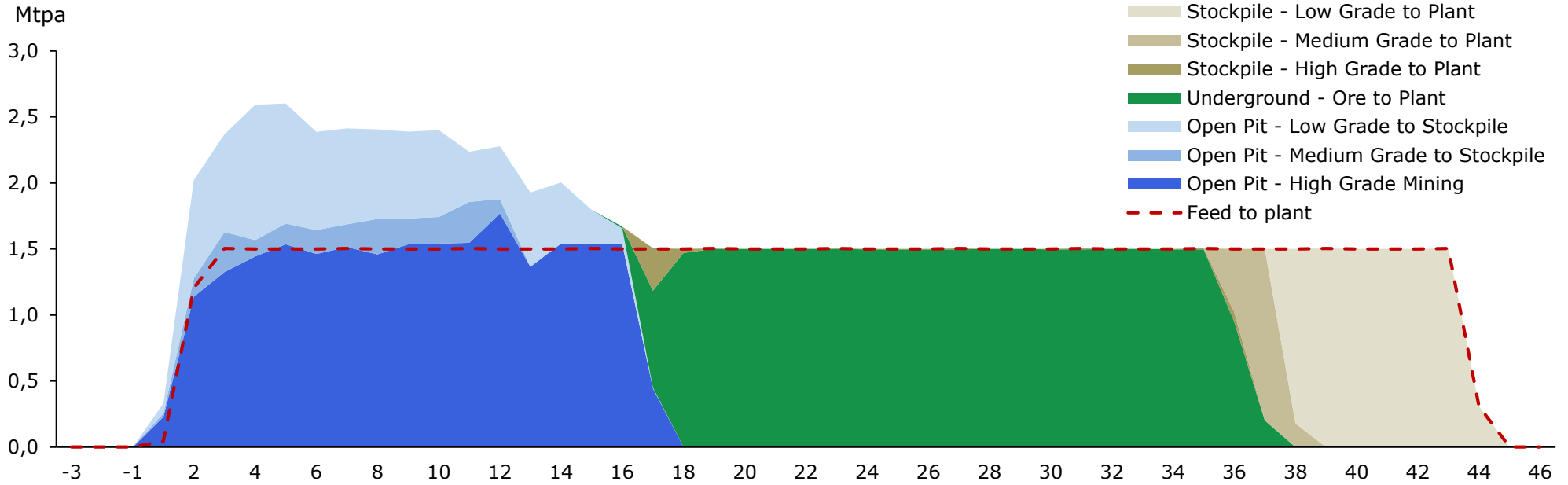
- Processing of stockpiled material after finalizing underground operations.

Overview of open pit and underground



Favorable geotechnical conditions allow for efficient and low cost mining with low carbon footprint

Stockpiling allows for optimization of mine schedule



Open pit	
Total tonnes	53.1 Mt
Ore to plant	22.9 Mt
Ore to stockpile	11.3 Mt
Waste rock	18.8 Mt
Life	15 years

Underground	
Total tonnes	30.3 Mt
Ore to plant	28.8 Mt
Waste rock	1.5 Mt
Life	19 years

Stockpile	
Total tonnes	11.3 Mt
Ore to plant	11.3 Mt
Life	8 years

Conventional process technology – extensive test work

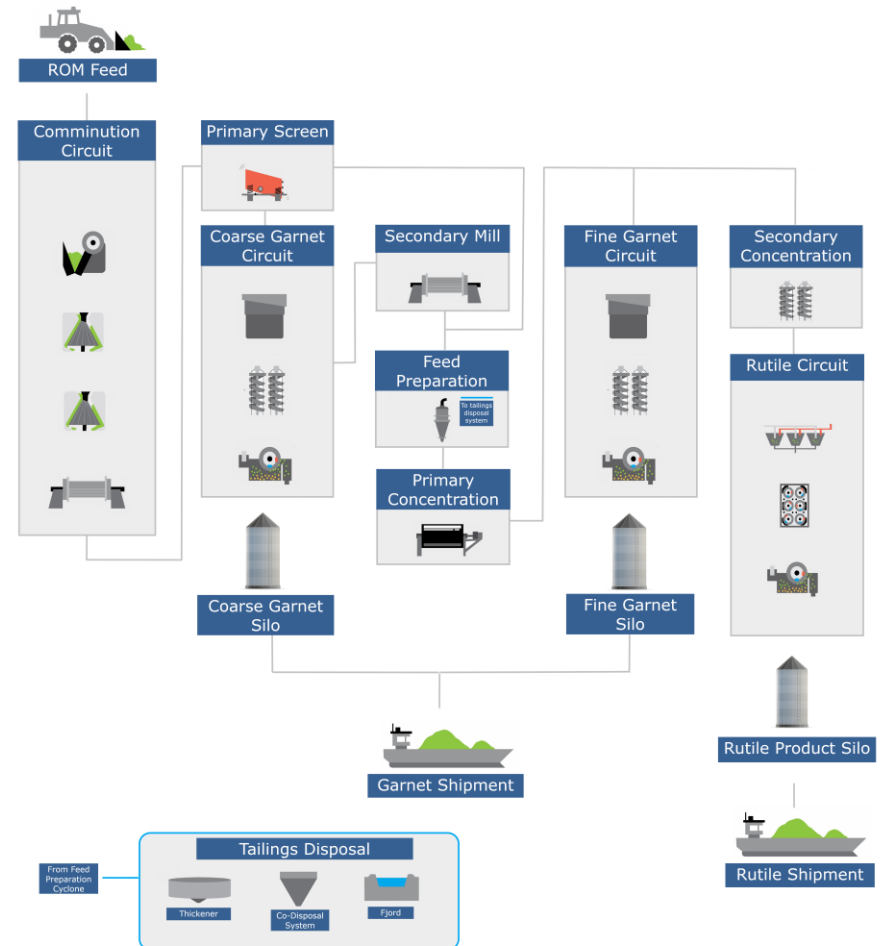
Key design factors

- Integrated flowsheet for rutile and garnet
- Favorable internal logistics with short distance from ore pass to quay
- Underground infrastructure for primary crushing and siloed ore storage
- Extensive instrumentation connected to control system allowing high degree of automation
- Buffer stockpiles caters for operational flexibility downstream of crushing circuit
- Waste heat recovery systems

Operational staff

Mining	31
Process	38
Service & maintenance	22
Sales, HR, Administration	14
Total	105

Flowsheet



Minerals with unique properties and fundamental drivers

Rutile



Pigment

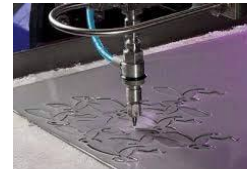


Titanium



Welding rods

Garnet



Waterjet cutting



Sand blasting



Abrasives

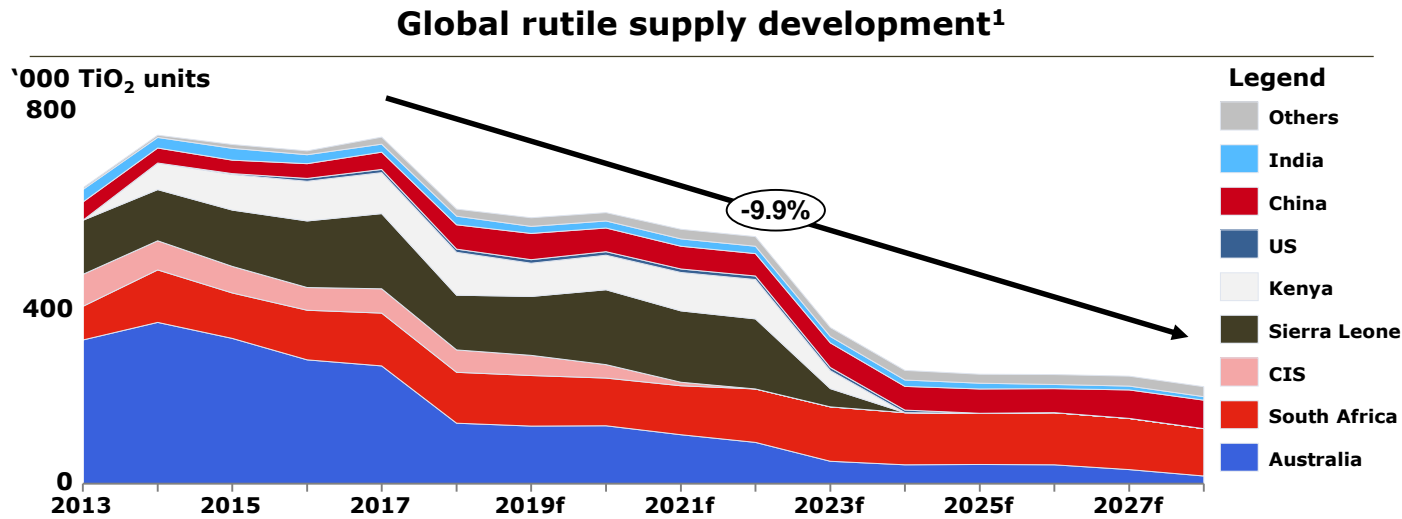
Market drivers

- Titanium has unique properties as oxide and metal
- Rutile is the highest grade titanium feedstock and improves efficiency and reduces waste
- Higher growth rates in emerging markets and aerospace industry

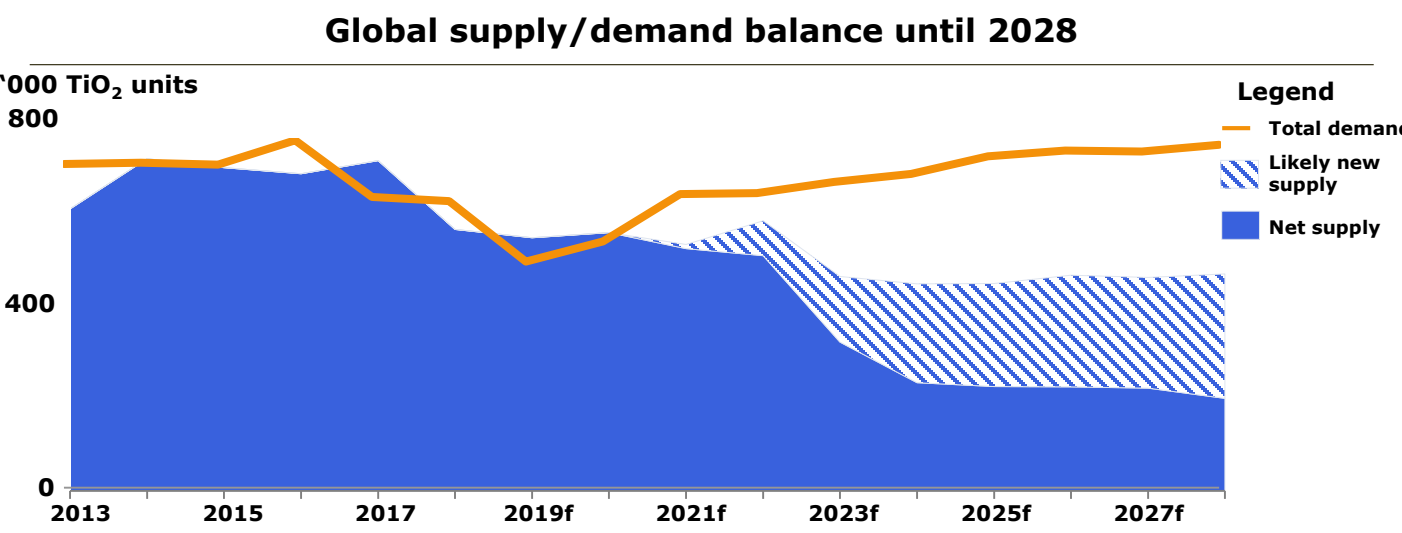
Market drivers

- Emerging mineral with strong growth and potential
- No substitutes for garnet in waterjet cutting
- Performance enhancement and environmental and health benefits in blasting
- Improved recycling properties

Reduced supply and increasing demand firms rutile market



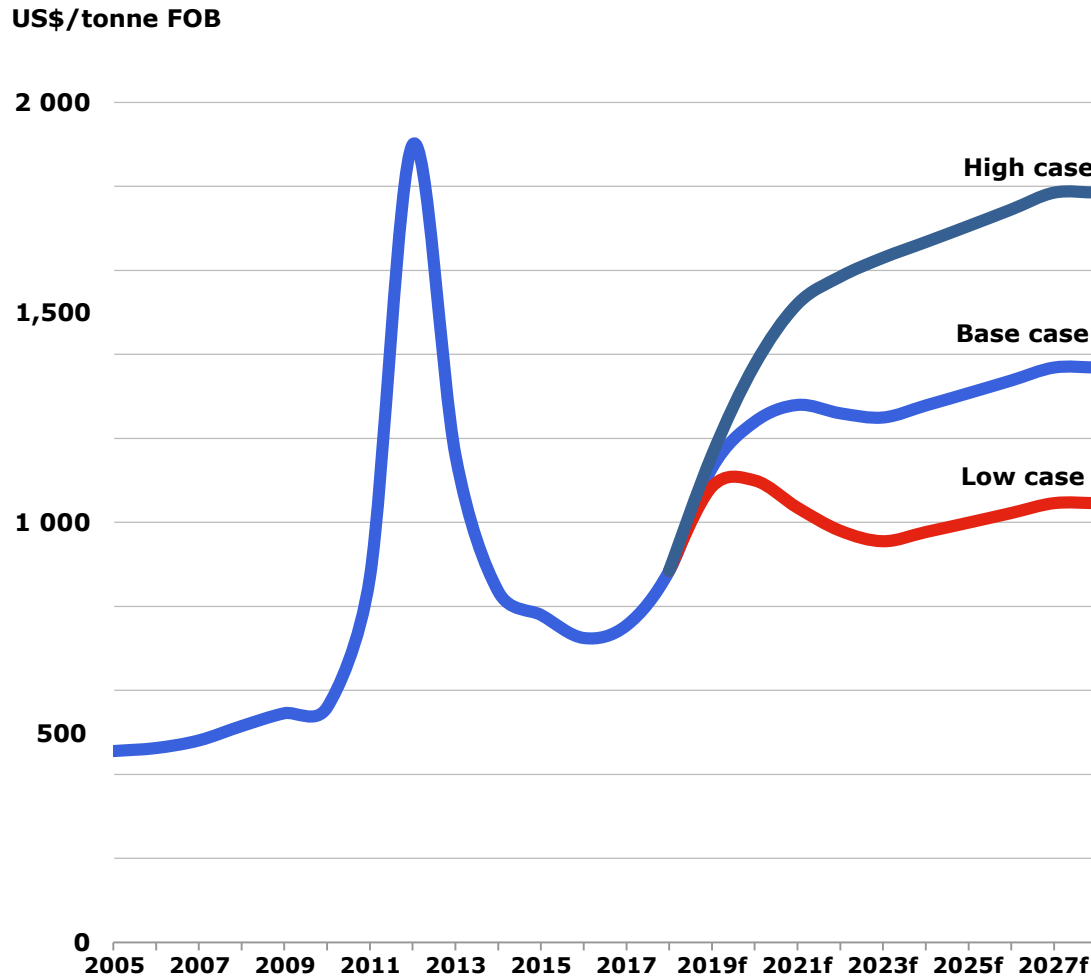
- ### Supply
- Significant reduction in existing rutile production from Australia and Africa
 - Ceasing production in Ukraine, the only country with rutile production in Europe



- ### Demand
- Strong demand for high-grade feedstock expected to continue
 - New projects under development/ planning will not replace estimated reduction of capacity

Rutile price continues its upward trend

Rutile price forecast (nominal)

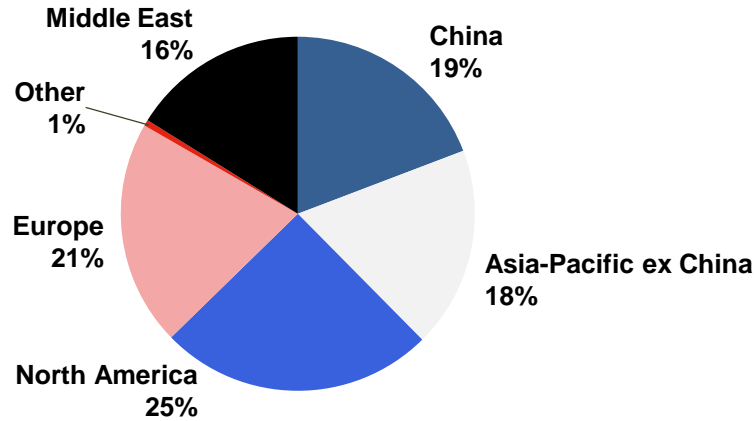


Price outlook

- TiO₂ demand is closely linked to industrial production, with some volatility from stocking and destocking cycles
- Price bubble and significant supply overhang in 2012, due to a de-stocking cycle, pushed rutile prices down
- Base case price forecast is expected to converge to long-term inducement price
- Rutile minimizes pigment plant waste footprint
- Large supply deficit going forward drives rutile price outlook
- DFS price assumption of USD 1,142 per tonne rutile (real 2019)

Waterjet cutting drives global demand of quality garnet

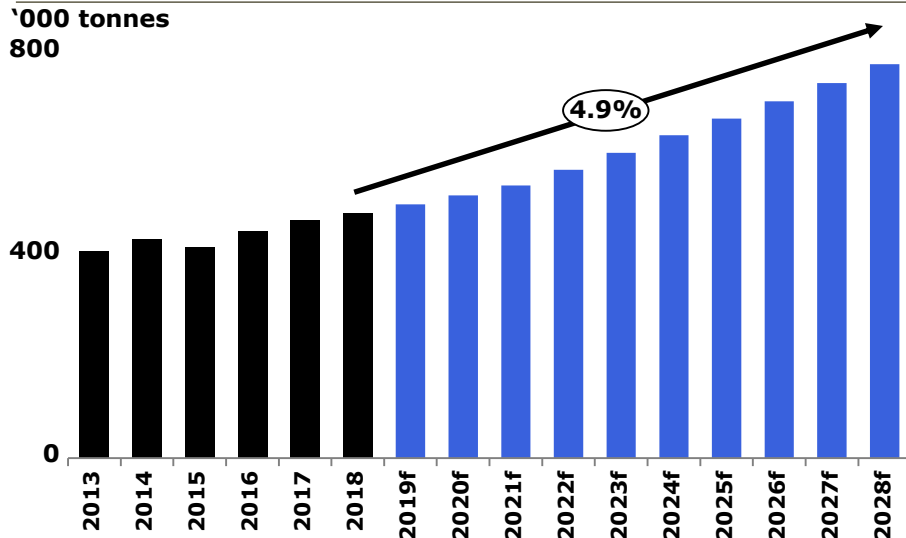
Demand breakdown by region (2018)



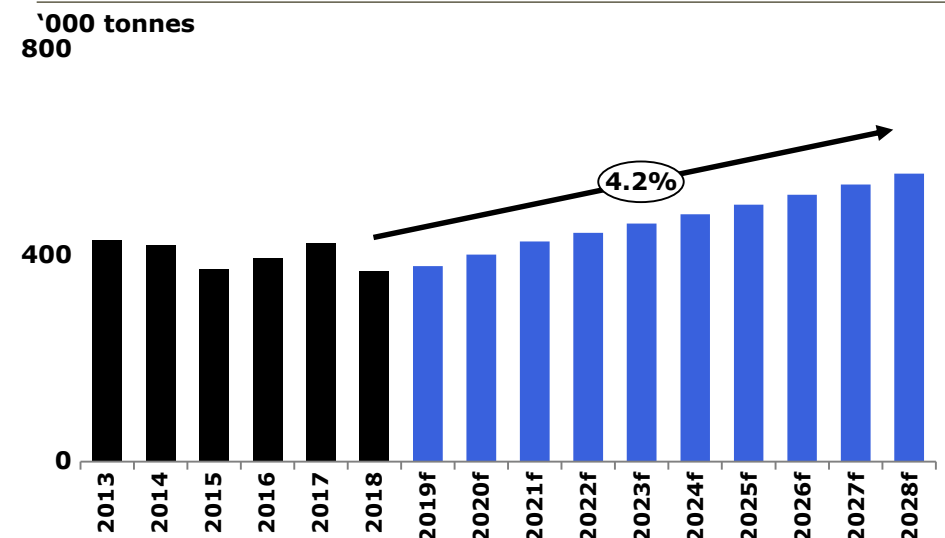
Key demand drivers

- The primary markets for industrial garnet are abrasive blasting and waterjet cutting
 - No substitutes in waterjet cutting is expected to strengthen demand
 - Superior properties in abrasive blasting
- China, Middle East and North America are expected to lead demand growth in volume terms

Garnet demand in waterjet cutting

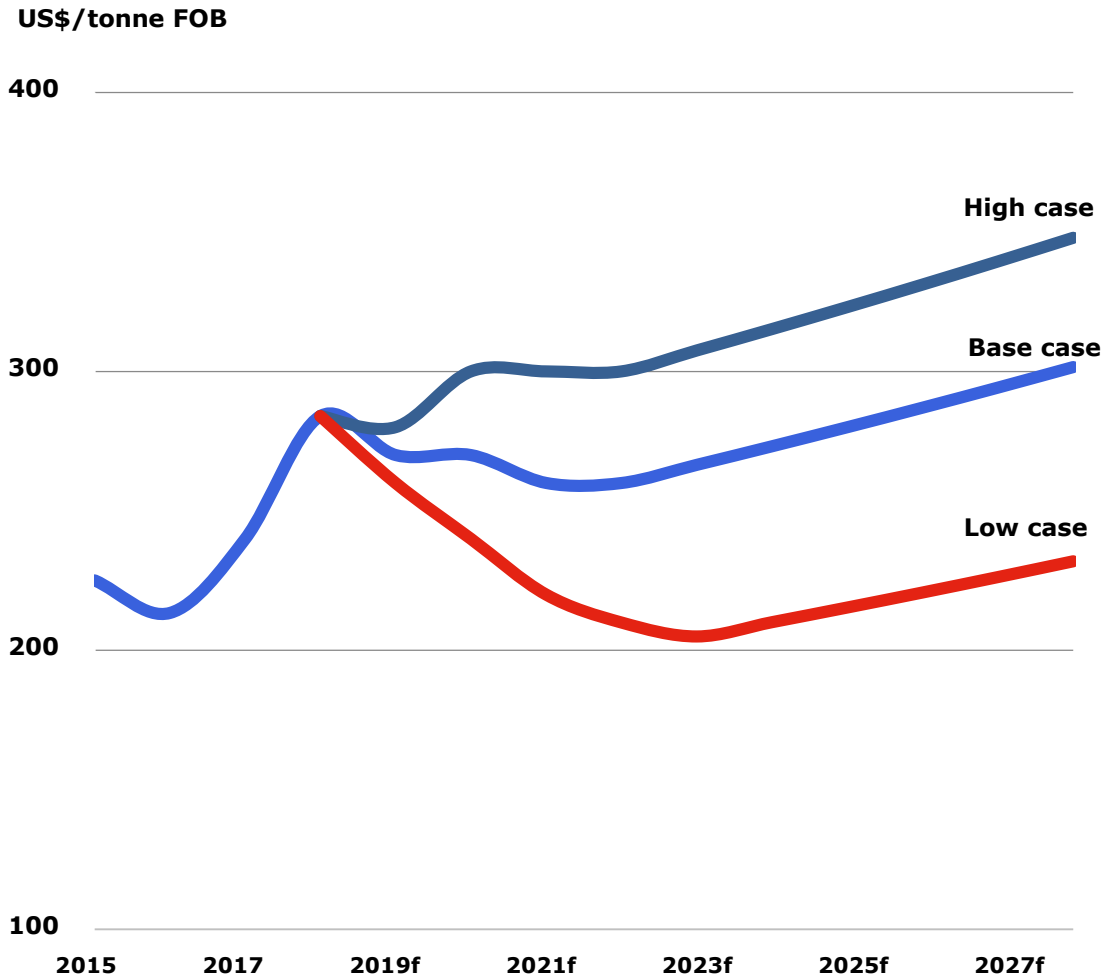


Garnet demand in abrasive blasting



Garnet demand expected to firm garnet price outlook

Global average garnet price forecast (nominal)



Price outlook

- Broad price range depending on qualities
- Test work has shown that garnet from Engebø is of high quality and well suited for waterjet cutting
- Average garnet price development has exhibited a clear upward trend since 2008
- Shortage of supply from India, due to a government ban on beach sand mining, has driven price appreciation
 - Expect continuation of regulatory constraints in the medium term
- DFS price assumption of USD 248 per tonne garnet (average, real 2019)

Offtake partners with participation in construction financing

Rutile offtake



Japanese trading house

- Heads of agreement for rutile offtake and construction financing
- Offtake for a significant portion of the rutile production
- Intention to participate with a substantial portion of the construction financing



Garnet offtake



The Barton Group

- Heads of agreement for garnet offtake and financing
- Offtake for garnet to the Americas
- JV for sales and marketing cooperation in Europe
- Intention to participate as an anchor investor in the construction financing
- Barton currently owns 5.8% of NOM



Agenda

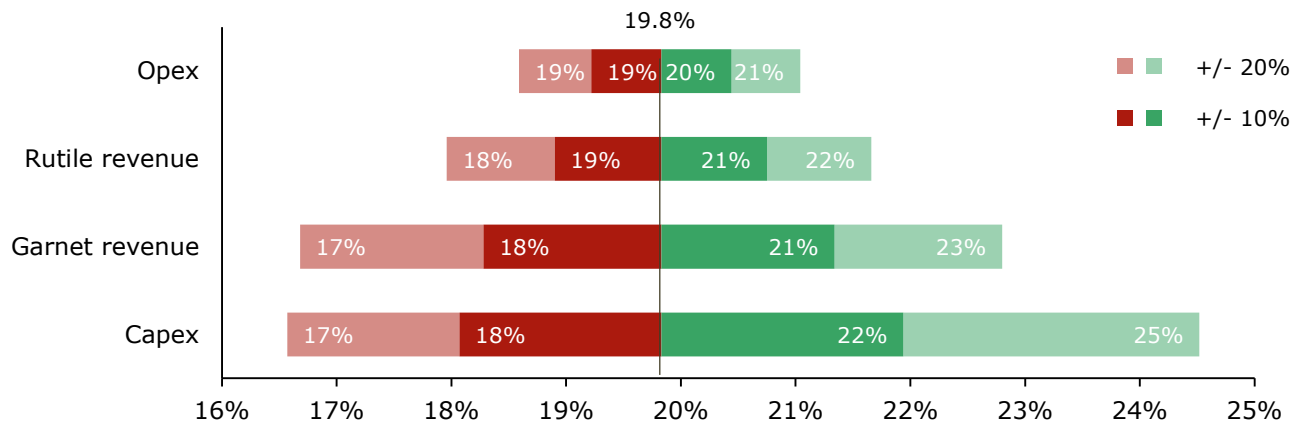
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Project economics – A strong business case

	<u>Pre-Tax</u>	<u>Post-Tax</u>	
Net Present Value @ 8%	USD 450m	USD 344m	
Internal rate of return	21.9%	19.8%	
	<u>Garnet</u>	<u>Rutile</u>	
Yearly average sales ¹	278 ktpa	34 ktpa	
	<u>Revenue³</u>	<u>Opex</u>	<u>EBITDA</u>
Average per tonne sold ^{1,2}	USD 339	USD 73	USD 266
Average per year ^{1,2}	USD 106m	USD 24m	USD 82m
Capex	USD 311m		

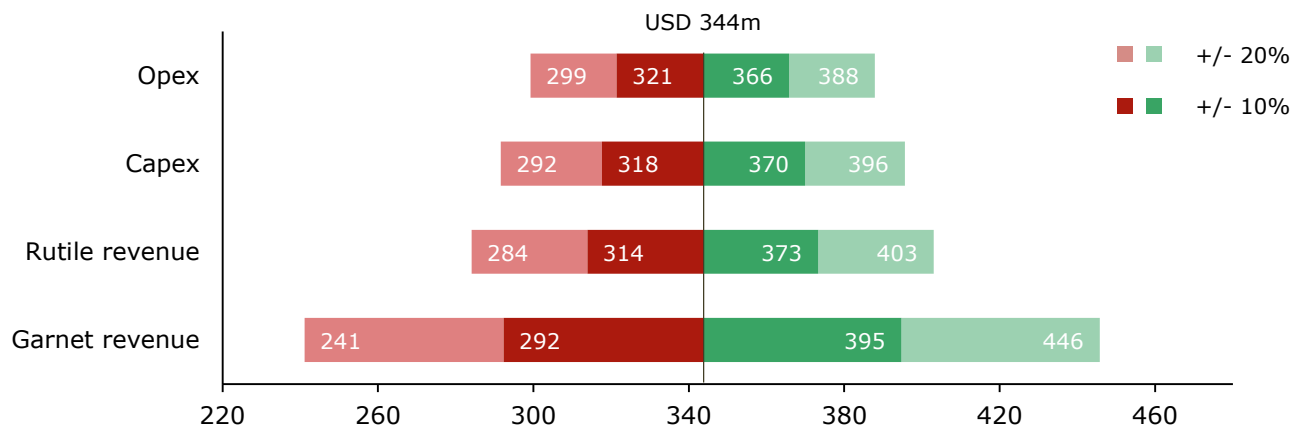
Key financials resilient to variations

Internal Rate of Return (post-tax)



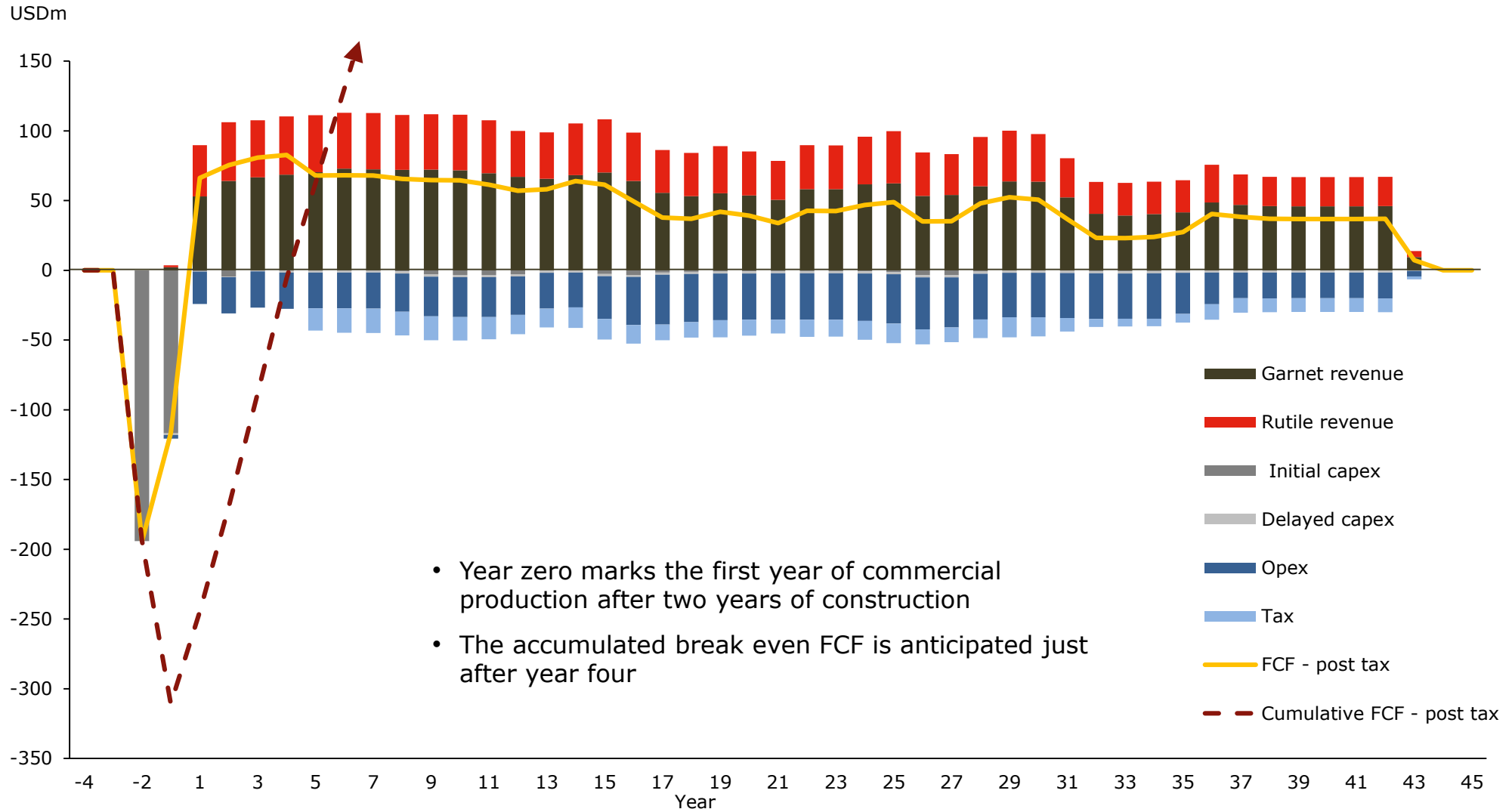
- The Internal Rate of Return (IRR) is most sensitive to positive changes in capex and changes in garnet revenue
- The IRR is least sensitive to changes in opex

Net Present Value (post-tax)

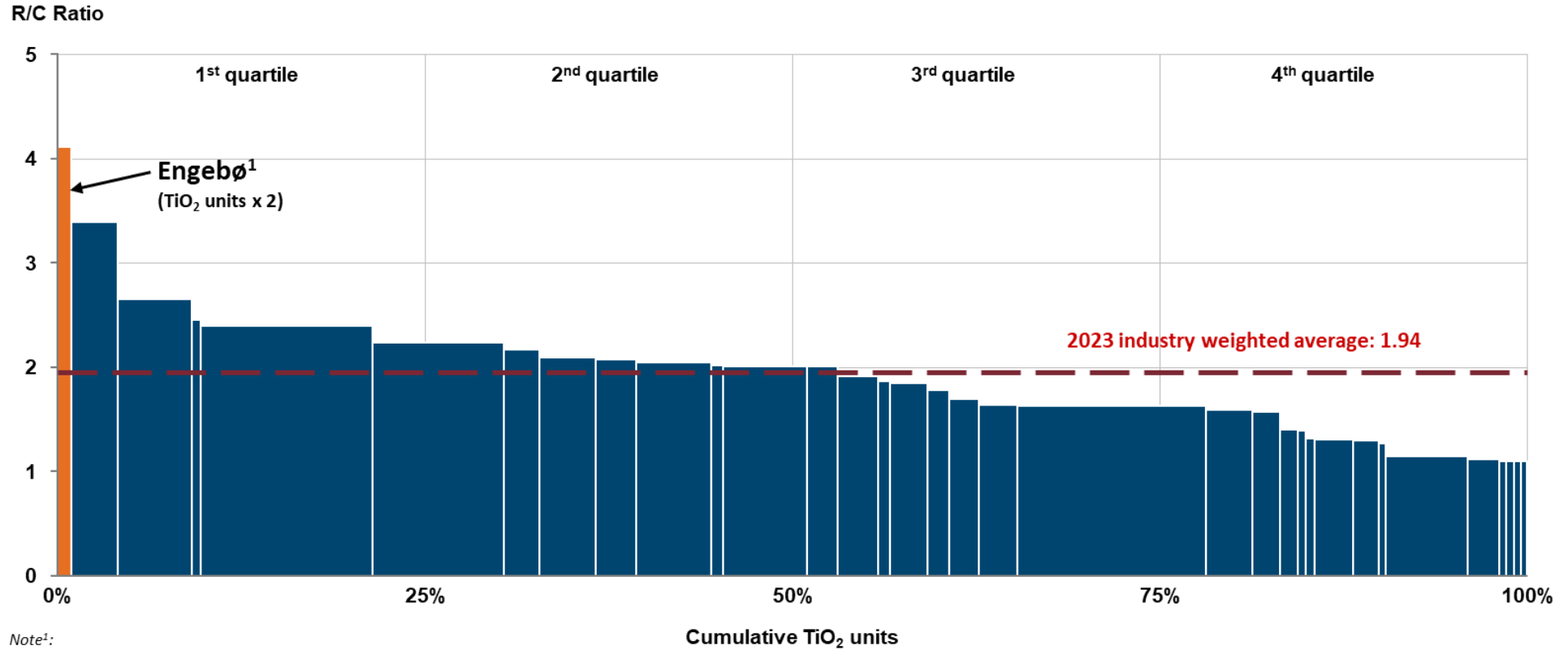


- The Net Present Value (NPV) is most sensitive to changes in garnet revenue
- The NPV is least sensitive to changes in opex

Strong and stable cash flow



Revenue vs cash costs per TiO₂: a robust feedstock producer



Note¹:

- RC ratio is based on the TZMI 2019 feedstock cost study using long-term pricing and forecast exchange rate.
- The R/C ratio for Engebø was determined using standard TZMI methodology with production and operating cost assumptions provided by Nordic Mining ASA.
- The industry curve was determined by TZMI using TZMI estimates.

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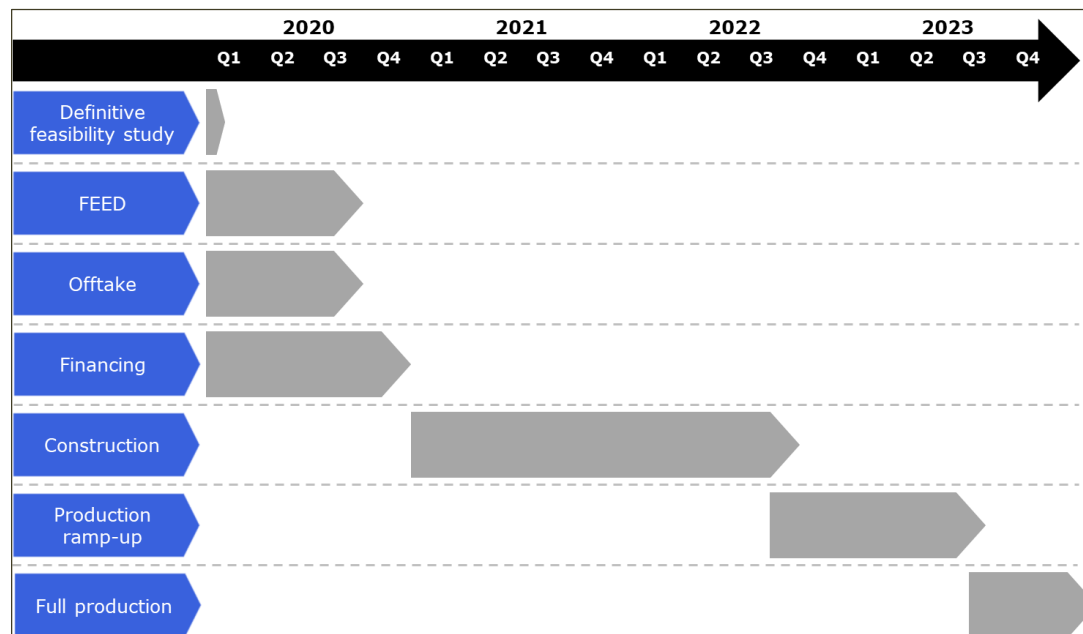
Progressing towards construction and production

FEED

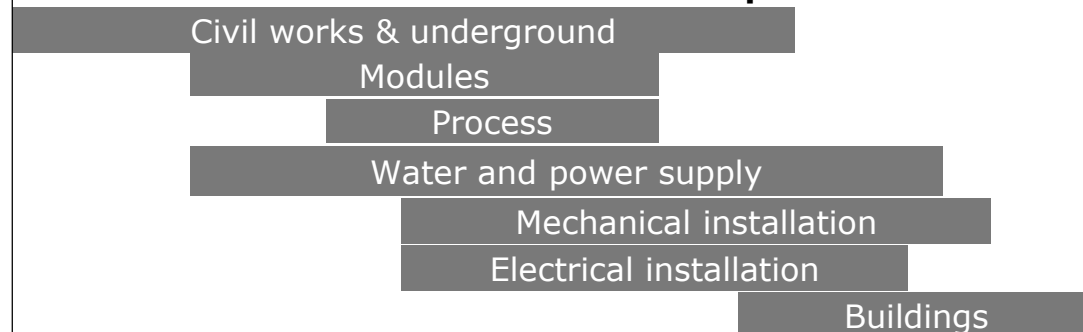
- Detailed engineering
- EPCM bid process
- Final negotiations of main contract packages
- Procurement preparations, long lead items
- Building permits at site
- Environmental monitoring

Strategic focus

- Contracted EPCM services
- Off-site construction of process plant modules
- Staged installation on-site
- Optimize synergies between contract packages
- Pre-commissioning off-site



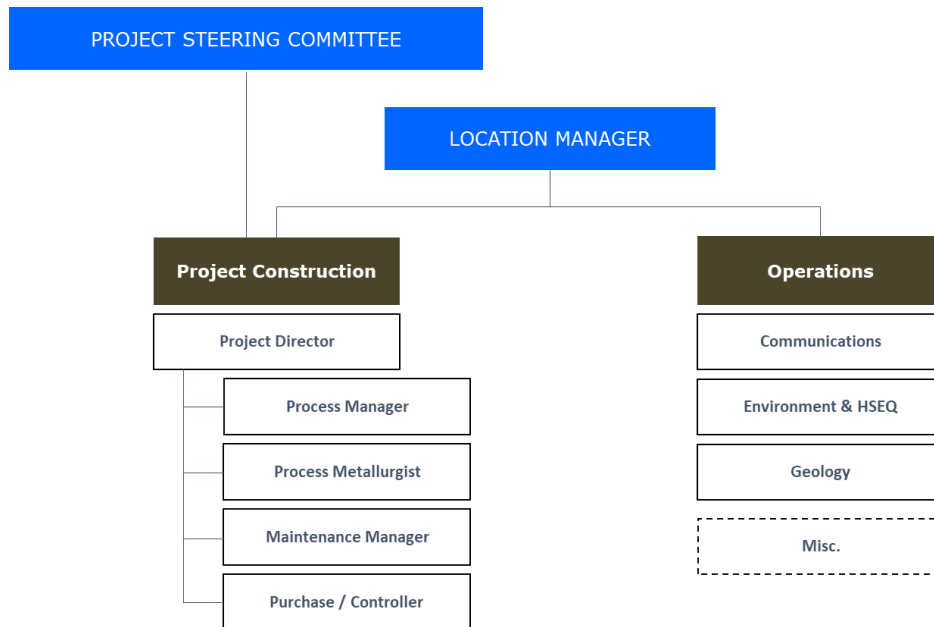
Tentative construction sequence



From project to long-term industrial operation

Owner's team

- Reducing risk; early recruitment of key personnel for procurement, construction and commissioning
- Build permanent organization for long-term operations and employment
- Contract mining during the first 5 years



Environmental and social management

- Environmental monitoring program
- Stakeholder engagement plan and grievance mechanisms
- Extractive waste management plan
- Emergency prevention and preparedness plan
- Energy management program
- Closure plan



Stepping up project financing activities

Status of activities

- Debt advisor appointed
- Initial meetings with banks and guarantors
- Banks' due diligence activities ongoing
- Traditional project financing structure pursued; terms and leverage to be developed with the banks
- Construction equity to be raised following committed debt

Sources of financing and guarantees

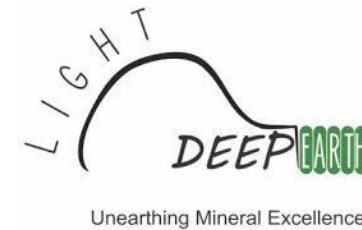
- Bank debt
- ECA (Export Credit Agencies)
- Offtake finance
- Vendor credit/leasing
- Alternative debt (bonds, streaming, specialized funds)
- Equity

Steps towards project financing



Acknowledgements

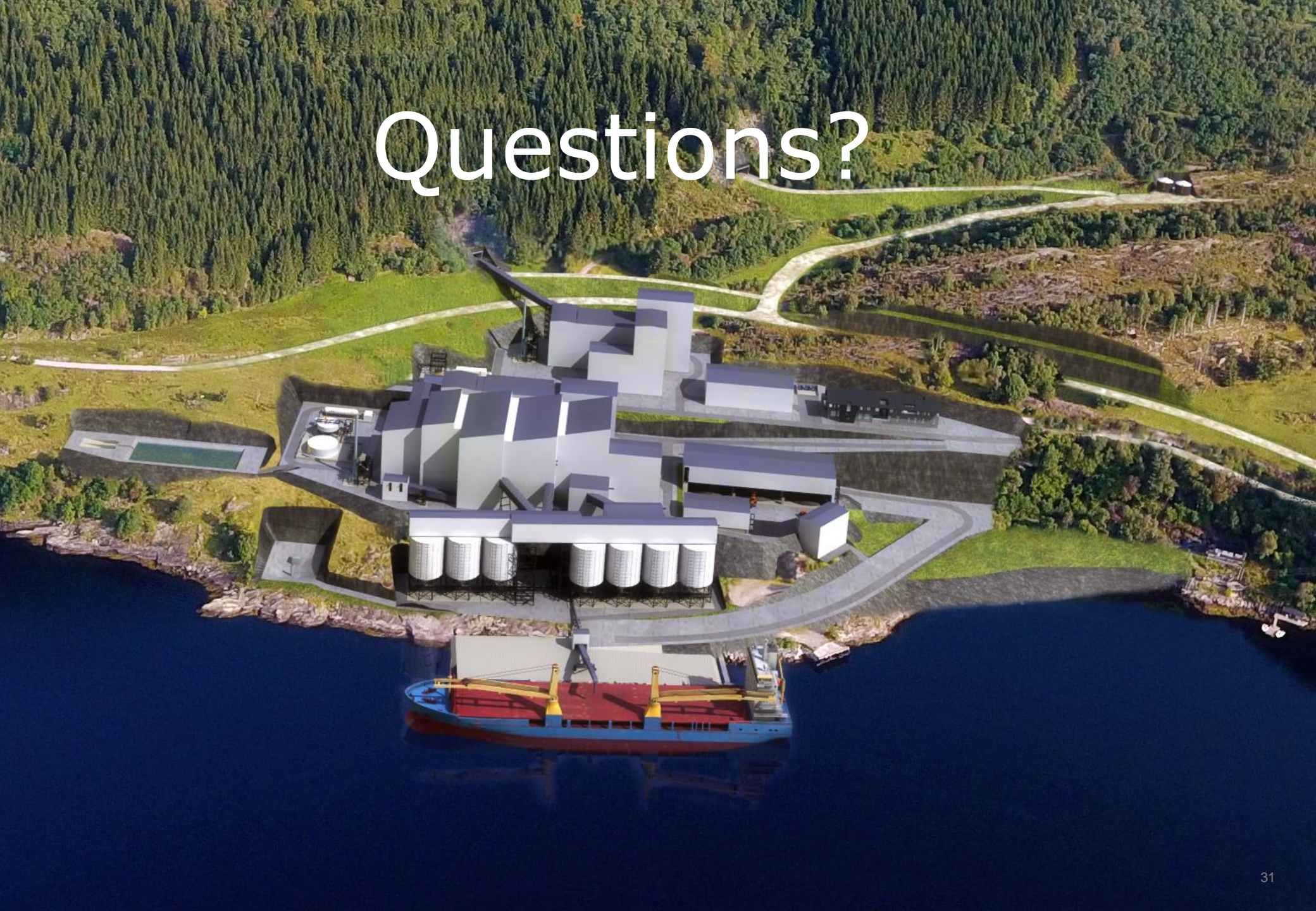
HATCH



Unearthing Mineral Excellence



Questions?



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Board of Directors and Management team

Board of Directors



Kjell Roland, Chairman

- Former CEO of Norfund
- Previous experience as partner and CEO in ECON Management AS and ECON Analysis
- Finance / economics background



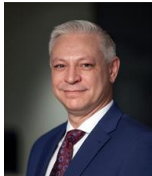
Kjell Sletsjøe, Deputy Chairman

- Comprehensive international management experience from mining, coatings and construction industries as well as consulting
- Technical / financial background



Benedicte Nordang, Board member

- 20 years' experience from the offshore industry, including various management positions from Equinor ASA and Aker Marine Contractors
- Held board positions in the mining industry for more than 10 years, including for Nussir ASA and Wega Mining ASA



Antony Beckmand, Board member

- More than 20 years' experience in financial, commercial and corporate roles within the mining industry
- Currently CEO of Sydvaranger AS (iron ore) and has previous industry experience across a range of commodities



Eva Kaijser, Board member

- More than 22 years of experience in the Swedish mining industry, including 11 years in Boliden
- Finance / industry background

Management team



Ivar S. Fossum, CEO

- 13 years with Nordic Mining (since founding)
- 20 years experience from management positions in Norsk Hydro and FMC Technologies



Birte Norheim, CFO

- Employed as of August 2018
- Broad management experience from various companies in the natural resources and infrastructure sector, i.a. as CEO of Njord Gas Infrastructure AS and VP Finance of Sevan Marine ASA



Kenneth Nakken Angedal, Project Manager Engebø

- Employed as of August 2018
- Broad management and project coordination experience from various management positions in the ABB Group



Mona Schanche, VP Exploration

- 11 years with Nordic Mining
- Geologist with broad mining background



Lars K. Grøndahl, Senior Advisor

- 13 years with Nordic Mining (since founding)
- Broad experience from various industrial management positions

Broad mining, industrial and financial experience combined with extensive network

Key assumptions

Assumptions first 15 years	Unit	Value
Rutile price	USD/t	1,142
Garnet price	USD/t	246
Yearly average rutile sales	ktpa	34
Yearly average garnet sales	ktpa	278
Capex	USDm	311
Open pit mining and comminution	USDm	59
Mineral processing and tailings handling	USDm	78
Infrastructure, storage and loadout	USDm	103
Indirects (excluding contingency)	USDm	50
Contingency	USDm	21
Deferred capex underground mine	USDm	25

Appendix

Project financials	Unit	Value
Pre-tax NPV @ 8%	USDm	450
Pre-tax IRR	%	21.9
Net Project operating cashflow (undiscounted)	USDm	2,160
Post-tax NPV @ 8%	USDm	344
Post-tax IRR	%	19.8
Payback period	Years	4.2
Production capacity		
Initial production capacity ROM	Mtpa	1.5
Capital expenditure		
Initial capital expenditure for open pit and processing plant	USDm	311
Deferred capital expenditure for underground mine	USDm	25
Operating parameters first 15 years of commercial production		
Average operating cost ^{1, 2}	USD/ROM tonne	15.44
Average operating cost ^{1, 2}	USD/sales tonne	73.36
Average net operating revenue ^{1, 2, 3}	USD/sales tonne	339.47
Mining and processing ⁴		
Open pit phase	Years	15
Total open pit production	Mt	22.9
Underground phase	Years	19
Total underground ore production	Mt	28.8
Stockpile phase	Years	8
Total stockpile ore production	Mt	11.3
Total Project lifetime	Years	42
Total Project ore production	Mt	63.1
Average ore grade – Rutile ¹	%	3.85
Average Rutile recovery ¹	%	56.54
Average ore yield – Garnet ¹	%	18.82

- 1) Average first 15 years
- 2) Rutile and Garnet combined
- 3) Net of royalties
- 4) 3 meters dilution applied on ore boundaries in the resource model