CASE STUDY:
OPERATIONAL READINESS FOR A GREENFIELD GRAPHITE MINE IN TANZANIA

In 2022, Black Rock Mining was preparing to build the first module of its Mahenge Graphite Project in south-eastern Tanzania. VBKOM was appointed to develop the Operational Readiness Plan (ORP) and Project Execution Plan (PEP). Together they turned a feasibility-stage design into a practical plan for commissioning, ramp-up and steady-state operation.

CLIENT
Black Rock Mining Limited (ASX: BKT)

PROJECT
Mahenge Graphite Project, Module 1

LOCATION
Ulanga District, Morogoro Region, Tanzania

COMMODITY
Flake graphite

SCOPE
Operational Readiness Plan and Project Execution Plan

PROJECT STAGE
Pre-construction, first of four modules

YEAR
2022, three months

SOLUTION
Management Consulting: Optimise Processes and Systems

THE PROJECT IN BRIEF

THE CHALLENGE

A first mine, in a remote region, where people, community, infrastructure, technology and construction all had to be ready at the same time.

THE THINKING

An owner-side readiness plan built on five focus areas, starting from an operating philosophy and built into the project schedule.

THE OUTCOME

A readiness work breakdown structure, actions owned through RACI, a schedule and a budget, governed through weekly progress meetings.

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THE CHALLENGE

A world-scale resource, a first mine and a remote site

Mahenge lies in Tanzania's Ulanga District, about 70 km south of the TAZARA railhead at Ifakara and some 450 km by road from the port of Dar es Salaam. It hosts one of the world's largest flake graphite reserves, planned as four modules, with Module 1 first.

In 2022 the project was moving from studies towards construction. Its Special Mining Licence was granted in September, and FEED and an updated feasibility study followed in October.

Engineering defines how a plant will be built. Readiness defines how a company will run it. For a first mine in a remote region, that means communities to resettle, a workforce to recruit, house and move, and systems to stand up, all before the first tonne.

MAHENGE IN 2022

Licence
Special Mining Licence, Sept 2022

Ownership
84% Black Rock, 16% Government of Tanzania

Module 1
~1 Mtpa ore feed

Product
High-purity flake graphite concentrate

Status
FEED complete; financing under way

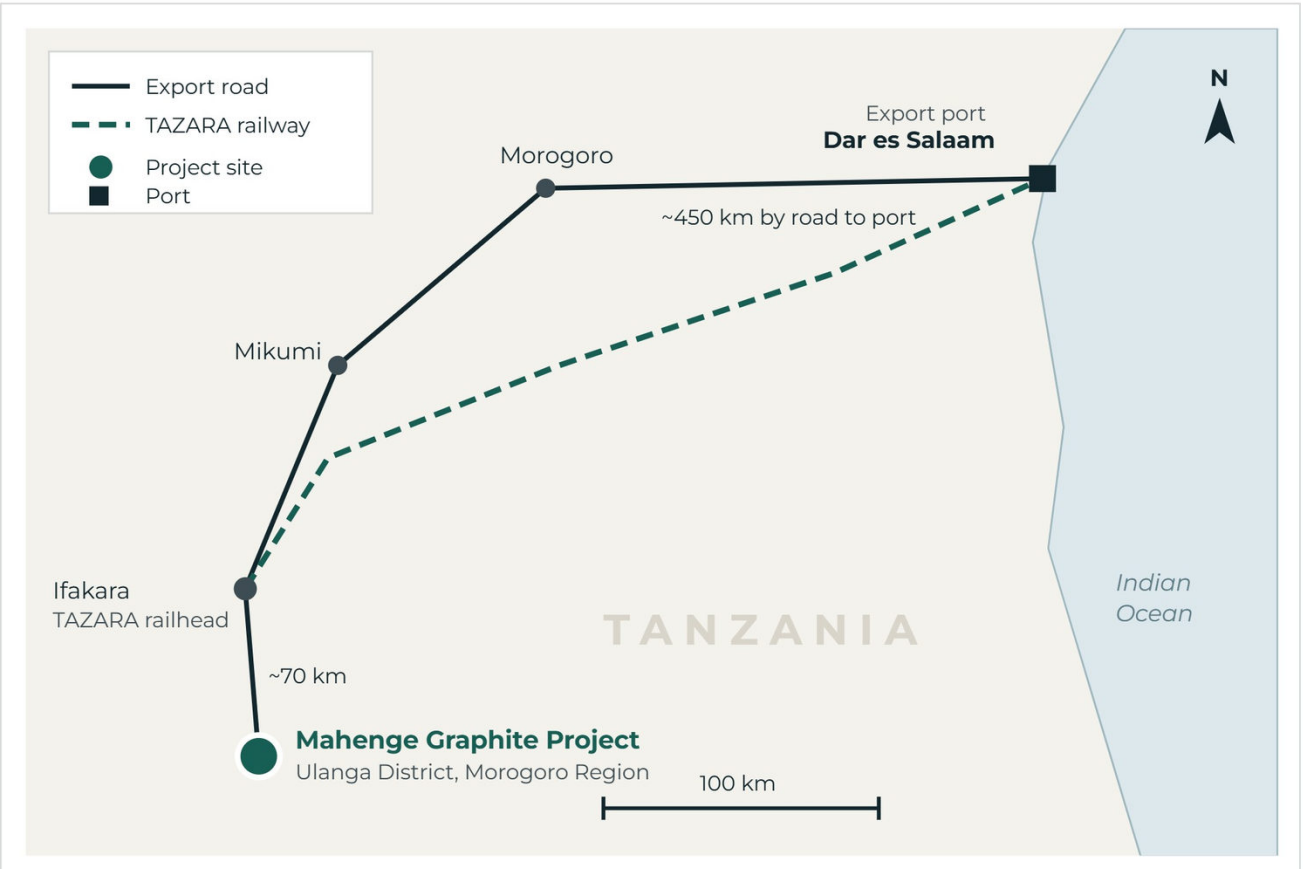


Fig 1. Mahenge site, export road and the TAZARA railway to Dar es Salaam. Schematic; positions and routes approximate.

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THE APPROACH

Five focus areas, one readiness plan

The Operational Readiness Plan covered everything Module 1 would need to commission, ramp up and reach steady-state operation. VBKOM organised it into five focus areas, each with defined deliverables and owners.

01 **Philosophy, policy, processes and procedures**

An operating philosophy for every operating area of the mine, so policies, processes and procedures follow from how the operation intends to run.

02 **People mobilisation**

The people side of a greenfield mine, from the community around it to the workforce that will run it.

Community and grave relocation · Recruitment and appointment · Accommodation · Staff transport · Site access and induction for staff and visitors

03 **Construction integration**

Keeping readiness and construction on one path, so the plant handed over is the plant the operation planned for.

Completion of engineering designs and specifications · Approval of construction drawings · Appointment of contractors

04 **Technology establishment**

The systems needed to manage and control the operation once construction ends, at a remote site.

IT for HR, operations, maintenance, supply, logistics and finance · Negotiations with the national telecommunications provider

05 **Readiness function execution**

An owner-side readiness function to drive the plan, and the link between readiness and commissioning.

Readiness management and control · Commissioning integration

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THE THINKING

Four principles behind the plan

Readiness for a greenfield mine fails when it is treated as a checklist added at the end of construction. VBKOM built the plan on four principles, so it would hold up on a remote site with a new team.

PHILOSOPHY FIRST

How will this mine run?

The plan started from an operating philosophy for each area of the mine. Policies, procedures, systems and organisation then follow from one shared view of how the operation will work, rather than being assembled piece by piece.

PEOPLE HAVE THE LONGEST LEAD TIME

Who needs to be ready, and when?

On a remote greenfield site, community relocation, recruitment, accommodation and transport take longer than most equipment. They were planned from the start, not left until the plant was nearly built.

ONE SCHEDULE, NOT TWO

Does readiness move with construction?

Readiness activities were built into the project schedule itself. Construction, commissioning and operational preparation move together, so a delay in one shows up in the others.

EVERY ACTION OWNED

Who is accountable?

Each action carried a RACI allocation and a budget line, and progress was reviewed weekly with the client. The plan stayed a live management tool rather than a report on a shelf.

A project isn't finished when it's built. **It's finished when it runs.**

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THE OUTCOME

A readiness plan the owner could run

As part of the Project Execution Plan, VBKOM delivered an operational readiness package that Black Rock's owner's team could manage against, week by week.

01

Readiness WBS

A work breakdown structure covering every focus area.

02

Owned actions

Readiness actions with RACI allocations.

03

Integrated schedule

The readiness schedule built into the project schedule.

04

Readiness budget

The cost of getting ready, made visible and planned.

05

Weekly governance

Progress meetings with the client to keep the plan live.

What it gave Black Rock

A clear view of what had to be ready, by when, by whom and at what cost, before the first module was built.

For a company building its first mine, the plan made the less visible work explicit: the people, community, systems and decisions that determine whether a plant performs once it is handed over.

SINCE 2022: THE PROJECT ON THE PUBLIC RECORD

September 2022
Special Mining Licence granted.

October 2022
FEED and updated feasibility study, including an Operational Readiness Plan.

May 2025
Debt facilities increased to US$204 million.

October 2025
Groundbreaking and start of early works.

Source: Black Rock Mining public announcements.

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By unearthing opportunities, our solutions have the power to improve lives.

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RELATED CAPABILITY

Management Consulting: Optimise Processes and Systems

Operational readiness, industrial and systems engineering, discrete-event simulation, stochastic debottlenecking, supply chain studies and data analysis.

vbkom.com/solutions/optimise-processes-and-systems

Let's talk about your project's path to operation.

ABOUT VBKOM

We bring together multidisciplinary engineering expertise, practical mining experience and commercial perspective to help our clients move from complexity to clarity.

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