

**QKR NAMIBIA**  
NAVACHAB GOLD MINE

## EXPANSION PROJECTS AND GROWTH TRAJECTORY OF THE NAVACHAB GOLD MINE

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**MINING EXPO - 2022**

**George Botshiwe**  
**Managing Director**





1. Navachab Overview
2. Navachab Asset History Timeline
3. Strategic Review
4. Operations Restructuring – Project Khaima
5. Mining Expansion and Capacity Timeline
6. Underground Feasibility Study
7. Processing Expansion & Capacity Timeline
8. Expansion Value Addition
9. Community Development

# NAVACHAB OVERVIEW

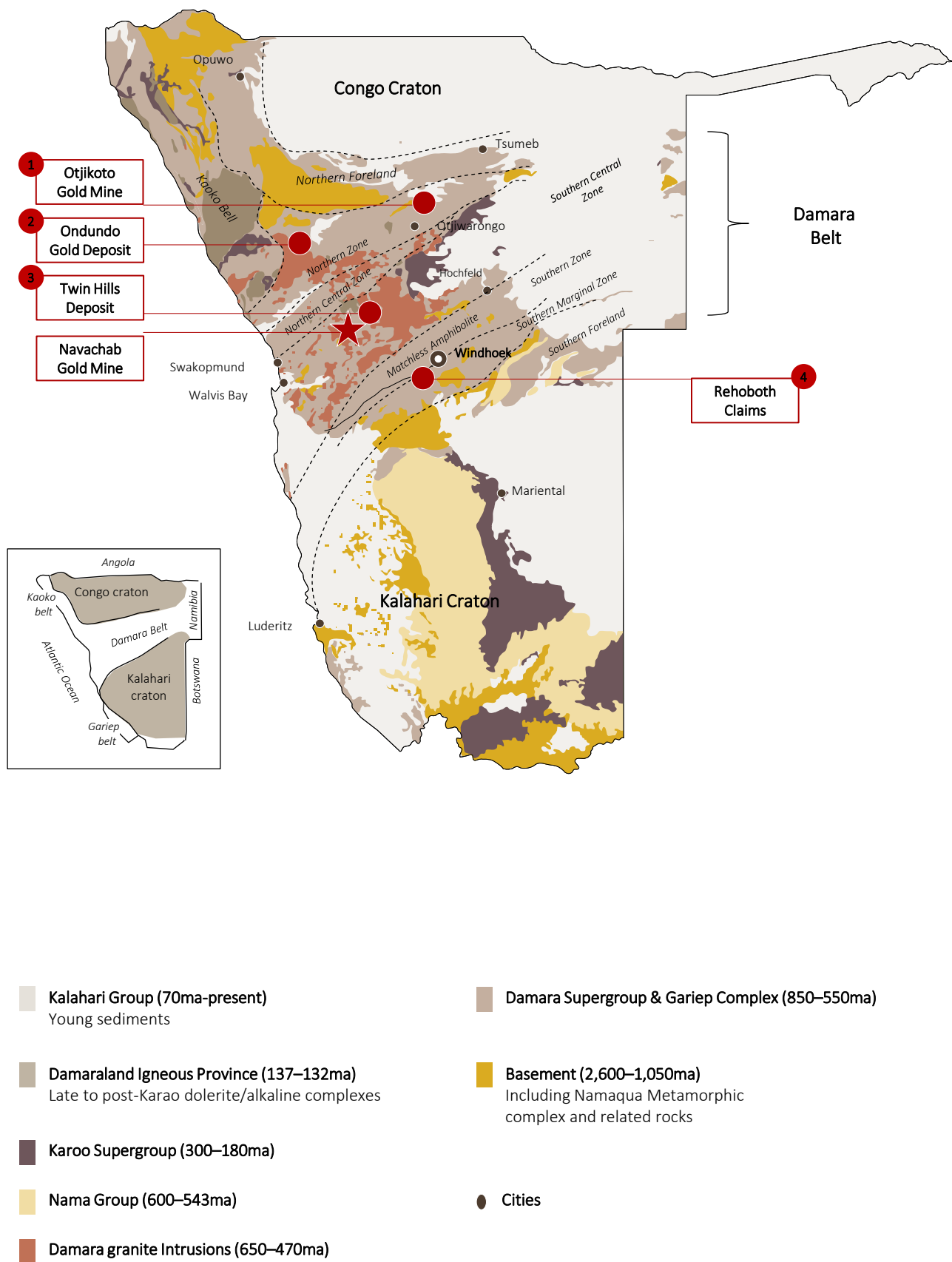
Overview

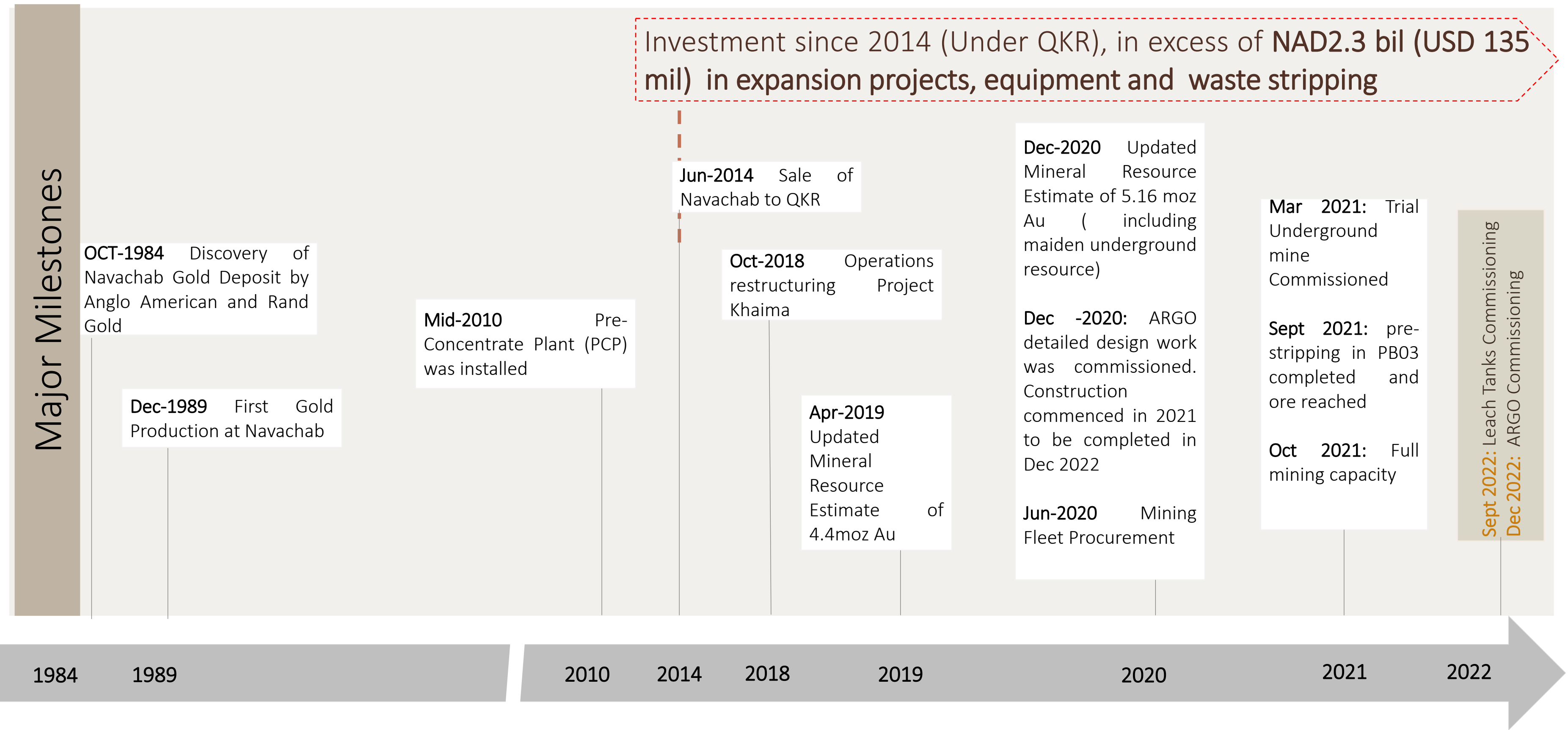
Ownership:	92.5% QKR, 7.5% Epangelo
Location:	Located 10km from the town of Karibib, and 180km west of the capital, Windhoek
History:	Production commenced in 1989. QKR acquired Navachab from AngloGold in 2014
Commodity:	Gold
Mine type:	Open pit (operating) Underground (trial mine commenced in Mar-2021)
Processing:	<ul style="list-style-type: none"><li>Conventional carbon-in-pulp ("CIP") plant, fed by a SAG milling circuits with 1.7 Mtpa operating capacity</li><li>ARGO high-pressure grinding mill in construction (1.3 Mtpa). From 2023 total milling capacity will be 3Mtpa</li><li>ARGO circuit includes upgrading via a pre-concentrate plant ("PCP"), dense medium separation ("DMS") and X-ray transmitter sorter ("XRT") plants</li></ul>
Contained mineral :	as per JORC 2012 guidelines
- Reserves:	2.43moz (0.99 g/t)
- Resources:	5.16moz (1.14 g/t)
Employments:	717 employees and 559 contractors

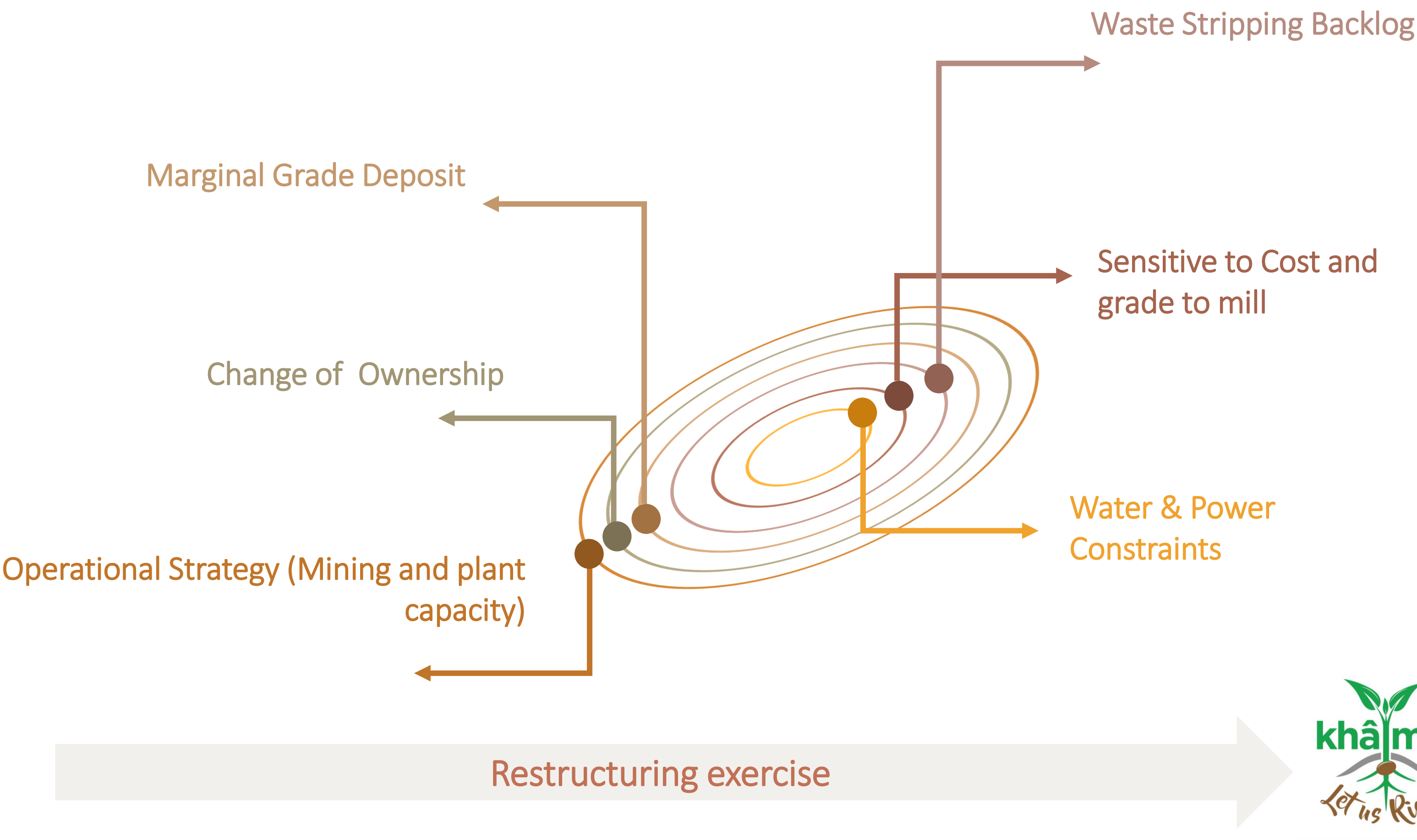
Operations

	LOM
Period:	2022-2042 (Mining 2033)
Target mill capacity:	3Mtpa
Total production:	2.1Moz
Avg. production:	101Kozpa
Avg. AISC:	US\$876/oz

Navachab is located in Namibia's highly prospective Damara Belt







OPERATIONS REDESIGN THROUGH - PROJECT KHAIMA PILLARS



## “Expansions through the Pandemic”



## KEY STRATEGIC REVIEWS



- Whittle Enterprise Optimisation
- Contract Vs Owner mining model review
- OEM trade-off study between Hitachi, CAT and Komatsu
- Independent Reserve and Resource audit (JORC 2012)

## STRATEGIC OUTCOMES



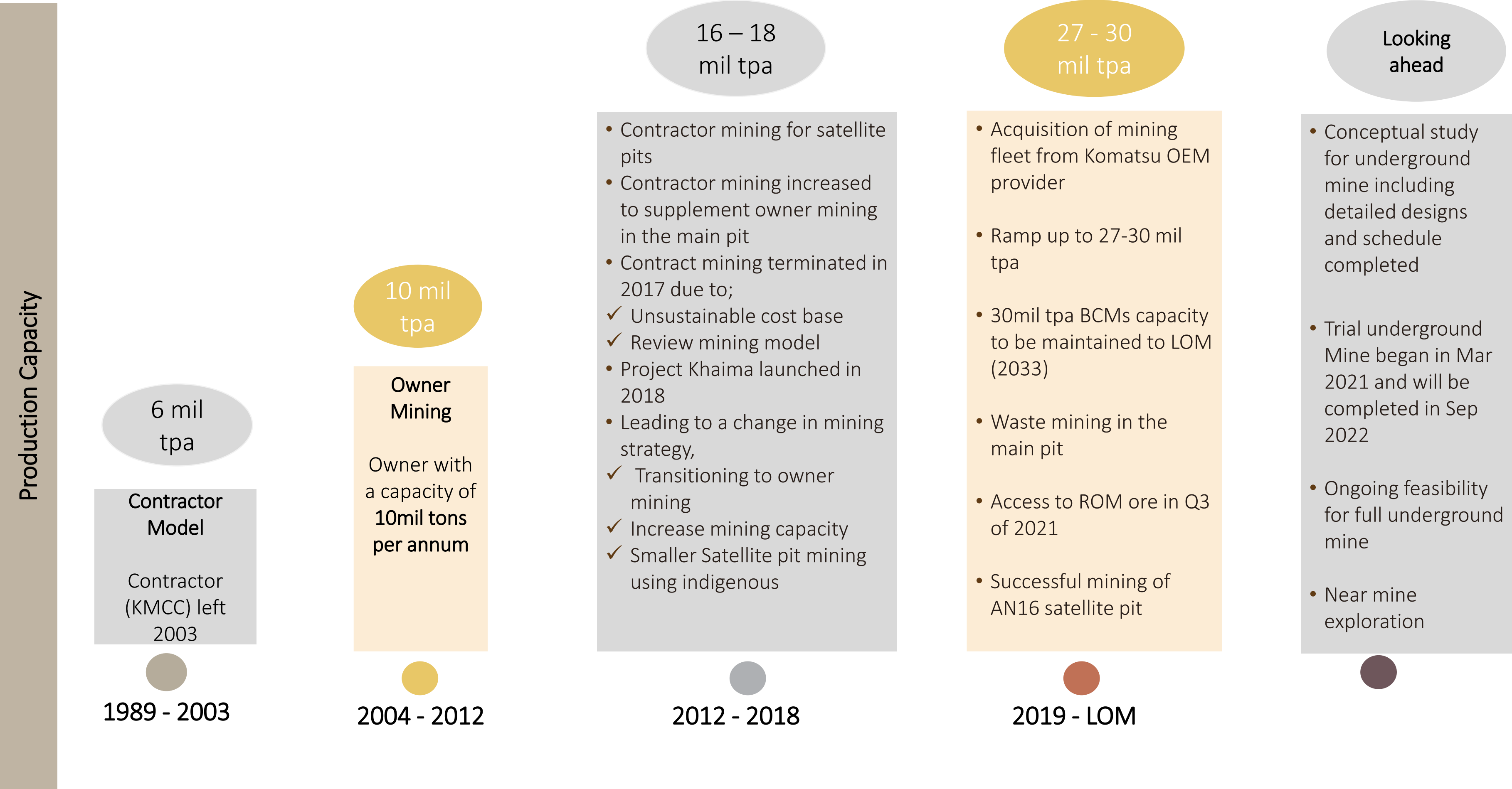
- Owner Mining
- Increase mining capacity
- Mining fleet acquisition
- Technology investment
- Lower unit mining cost
- Increase in resource and reserve

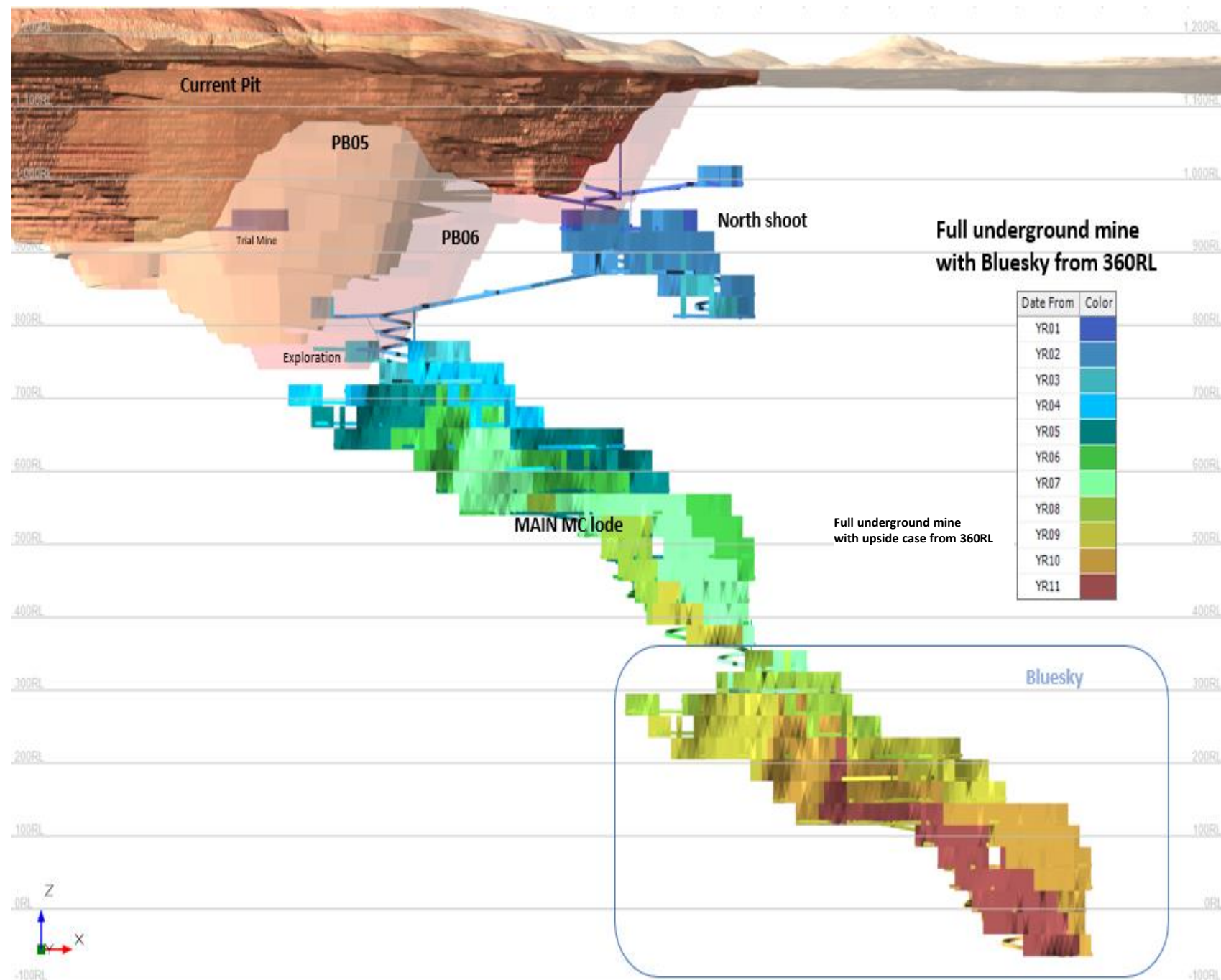
## GROWTH THROUGH EXPANSION

- Mining Production ramp up started in July 2020 and AN13 reached ore in September 2021 and total mining volumes ramped up to run modelled capacity in Oct 2021
- Increase mining rates from **15 -18 mln tpa** to **30 mln tpa**
- Full capacity comprising of **4x excavators, 21 trucks** and support equipment
- Employment of an additional **195** mining staff, artisans and operators

*“To date a total of circa N\$ 600 mil worth of fleet and technology investment spent on mining operations with a further circa N\$ 200 mil to be spend on acquisition of drills and additional fleet requirements. Fleet of 4x New excavators and 21 trucks delivered.”*







- Large Resource base
- Open pit vs Underground trade off
- Conceptual study completed in 20202 - Trial Mine recommended
- Geotech assessment (support, pillar size, etc.), ore recovery and dilution, hydrogeology, mining rates, costs etc.
- MC lode extends downplunge and is open ended at depth – high grade 20-30m wide
- Contractor appointed in January 2021. Trial Mine to be completed in September 2022
- Feasibility Study to be completed – potential to increase life of mine and yearly production.
- Exploration drilling will be key shoot.

*A total of N\$ 200 mil of investment into underground trial project.*



## KEY STRATEGIC REVIEWS



- Processing capacities historically misaligned with mining capacity and the capability of the orebody
- Optimisation studies indicated the need to increase processing capacity
- Investigated several technologies to expand processing capacity, with key consideration being power, water and unit cost.

## STRATEGIC OUTCOMES

- Feasibility study indicated that mill incremental throughput of 160tph was feasible, expanding total milling capacity to 3.0mil tpa from 1.7mil tpa
- This require expansion of the leach capacity - additional **6x 1,300m<sup>3</sup>** leach tanks doubling retention time and improve recoveries by 1%-4% based on material type
- ARGO & HIG milling technology found suitable due to water and power efficiency – extensive testwork completed
- Innovative milling technology, first worldwide application in gold processing
- Lowers operating unit cost

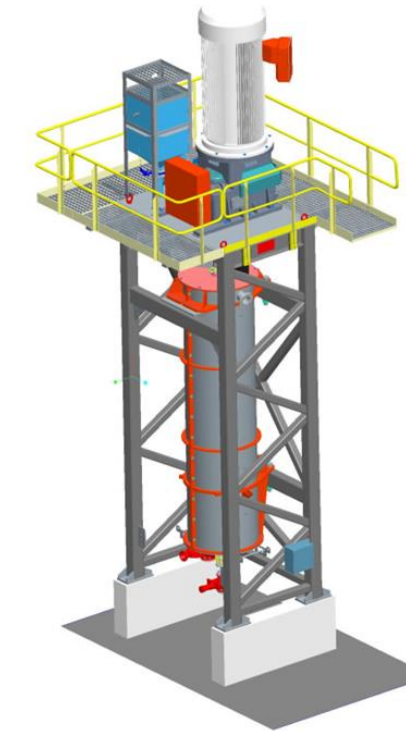
## GROWTH THROUGH EXPANSION

- ARGO increases total **milling capacity to 3mtpa**
- Milling capacity expansion will be **aligned to the higher mining rates**, allowing SAG mill TO process the highest grade ore sourced directly from the pit while the ARGO mill would process concentrate from the PCP circuit
- ARGO project will result in **decrease in unit processing costs** and uplift in recoveries
- Additional staff of 87
- Commissioning in Dec 2022
- Over 300 jobs during Construction phase

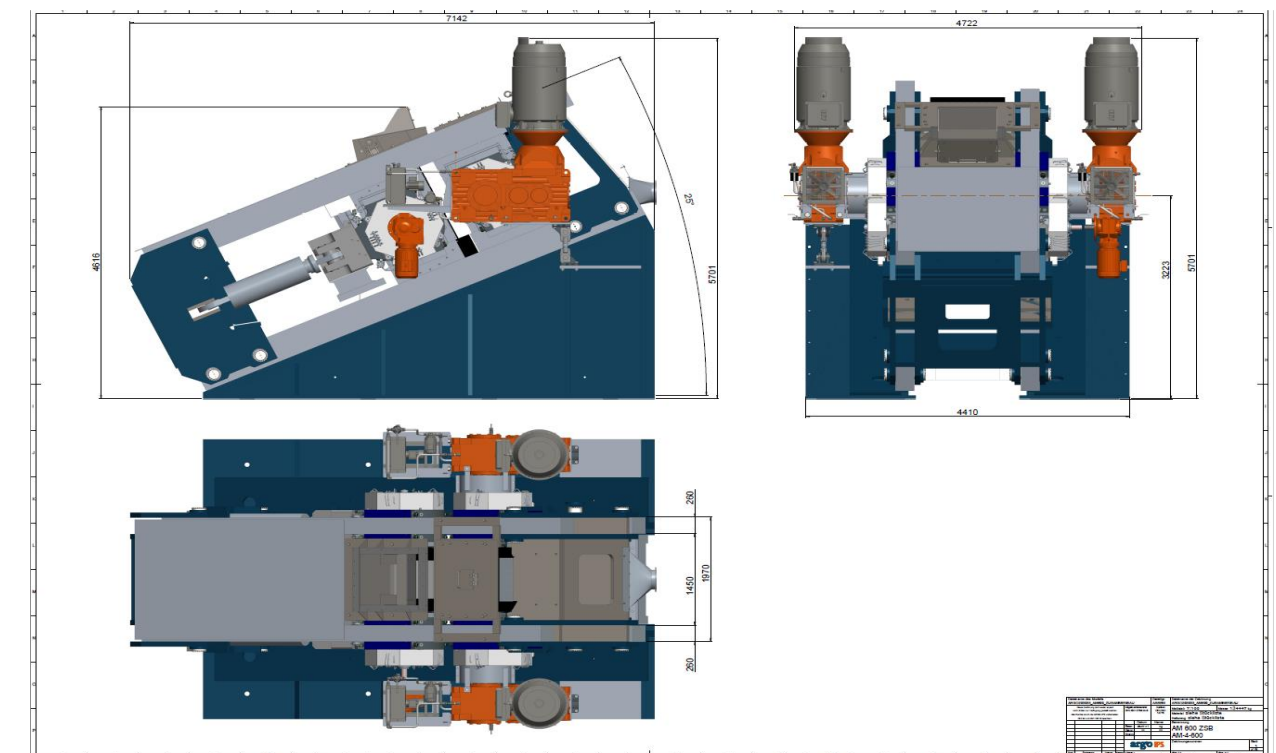
*A total of N\$ 880 mil of investment into ARGO and leach expansion.*

- ARGO Mill is a new generation High Pressure Grinding Rolls (HPGR) mill
- Material in the high intensity grinding (HIG) mill is fed from the bottom by a feed pump
- Particles rise up the HIG mill cylinder where they are ground in a media containing ceramic balls and grinding discs
- As the material becomes finer it rises through the mill chamber, the rise in velocity can be adjusted to match the required size
- ARGO and HIG mill plants product will be fed together with the CIP SAG mill product to the Leach section
- Allows PCP plant concentrate and SAG mill pebbles to be redirected from the SAG mill to the ARGO and HIG mill, thus only higher grade ROM material is fed through the SAG mill

HIG mill



ARGO mill







ARGO Site Dec 2021



ARGO Site Aug 2022

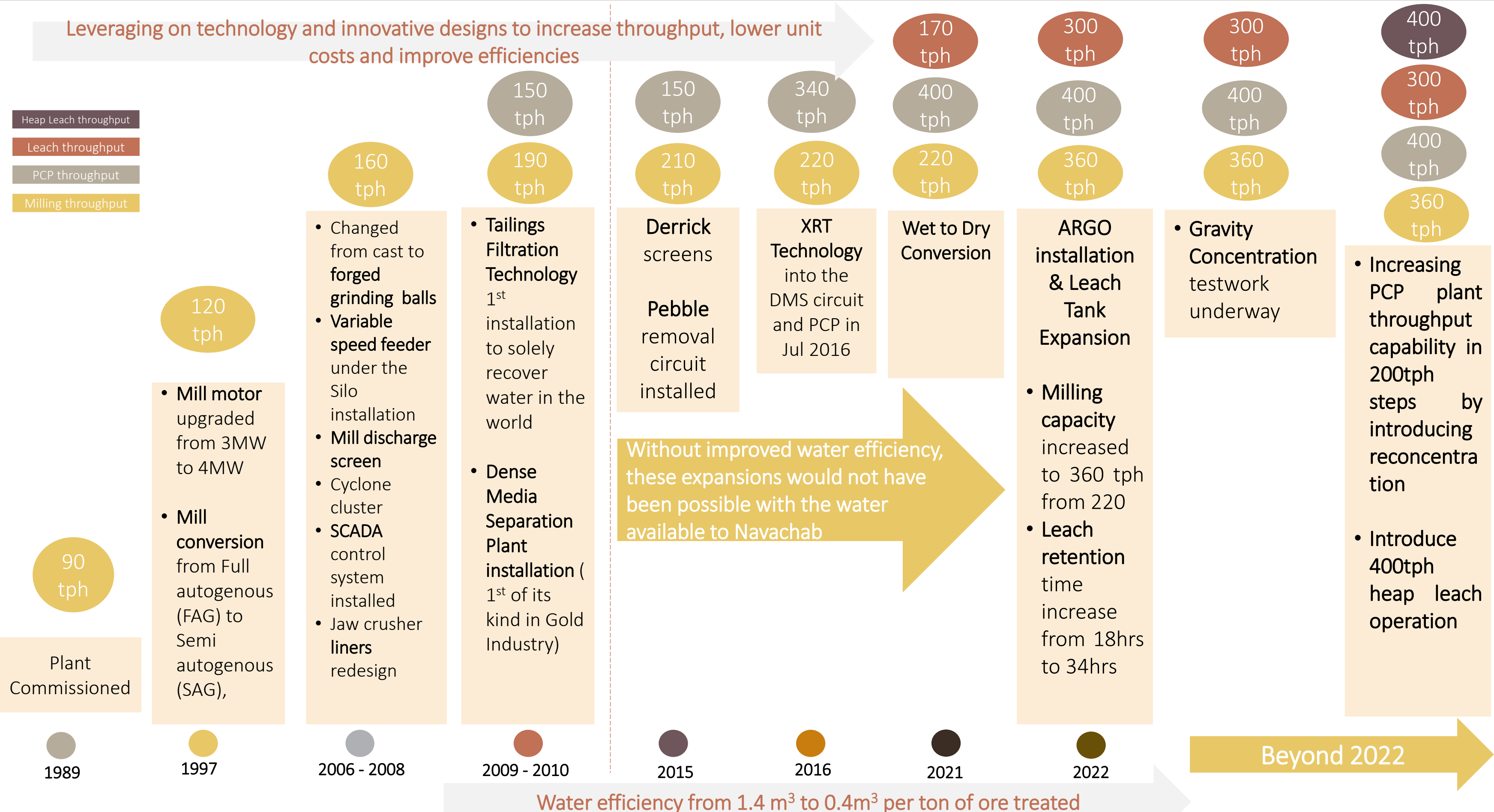


# PROCESSING PLANT TECHNOLOGY CHANGES TIMELINES

Technology Implemented

Leveraging on technology and innovative designs to increase throughput, lower unit costs and improve efficiencies

Heap Leach throughput  
Leach throughput  
PCP throughput  
Milling throughput

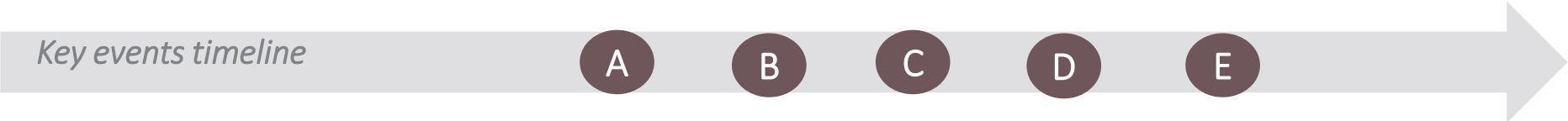
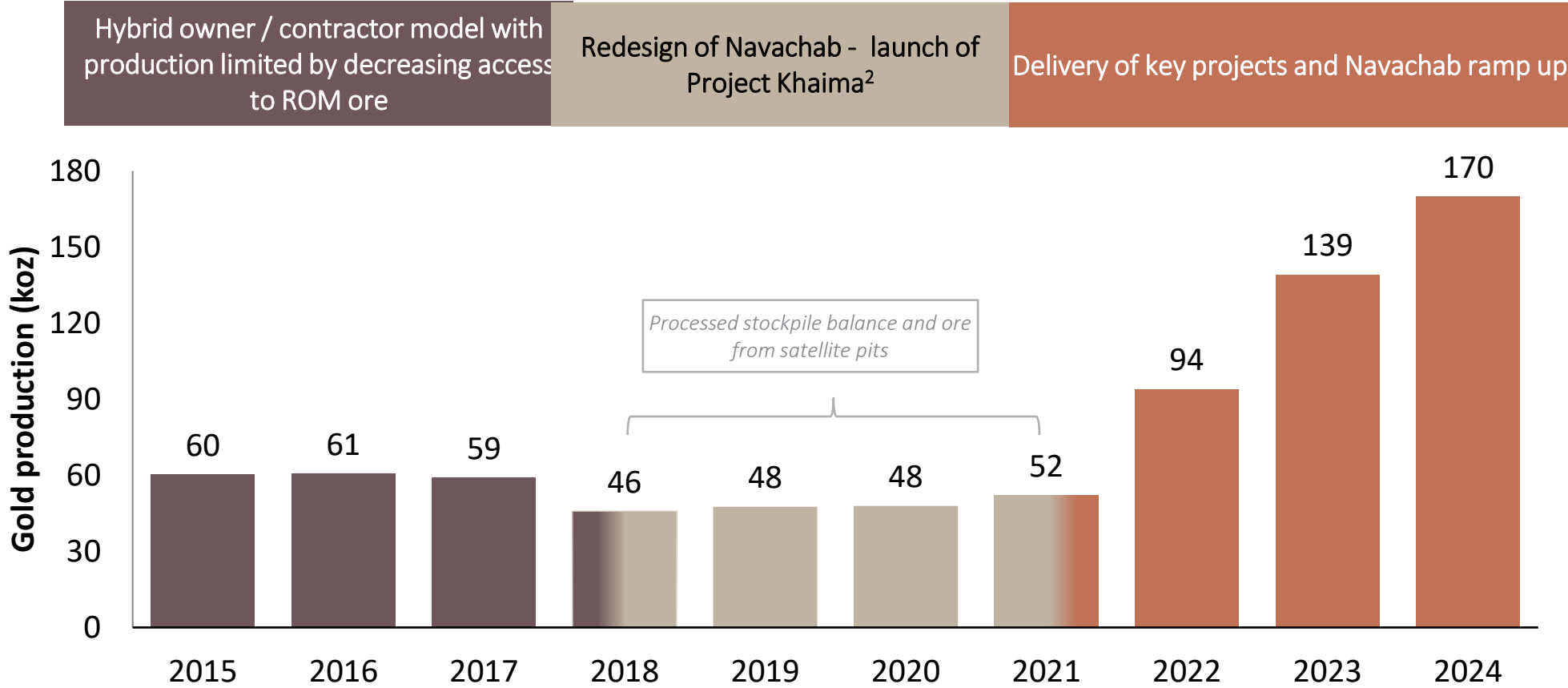




# EXPANSIONs VALUE ADDITION (Ounce Production Profile)



## Navachab production profile



Ore mined (mt)	3.7	2.6	1.5	0.5	0.5	0.6	1.1	4.5	5.7	8.1
OP strip ratio (x)	3.0x	4.9x	2.7x	9.4x	2.4x	18.2x	16.5x	5.3x	4.1x	2.8x
Material mined (mt)	14.7	15.5	5.7	4.8	1.7	10.7	19.4	27.9	27.2	28.8
Ore processed (mt)	1.5	1.4	1.5	1.7	1.6	1.6	1.6	1.7	2.6	2.8

- A** **Oct-2018:** All mining activities at the main pit ("AN13") ceased following decision to redesign mine plan, incorporating: move to owner-operator model at AN13, implementation of Project Khaima, processing capacity expansion, underground operation at AN13
- B** **Sep-2019:** Waste mining restarted at Pushback 3 ("PB3") of AN13 pit following approval of new mining work programme (contained within the new LOM plan) by Ministry. Initial stripping utilised old brownfield fleet
- C** **Aug-2020:** Increase in mining rates on PB3 with the delivery of new fleet and rental fleet leading to increased stripping
- D** **2021:** Access to ROM ore from main pit AN13 from Sep-2021
- E** **LOM - 2022** Full production ramp –up of mining operation, ARGO mill to initial steady state production target of 125tph  
**Beyond 2022:** ARGO mill is fully ramped up to target production rate of 160tph, overall mine operating capacity increases from 1.7mtpa (pre - ARGO) to 3.0mtpa and underground ROM ore contribution begins



COVID-19 Pandemic Support

- Quarantine Facility – approved by MoHSS, open to employees and public
- Water supply - marginalized communities
- PPE for medical personnel, front line workers like police and in schools
- Oxygen supply
- Ventilators
- Hospital repair and refurbishments

Post COVID-19 Pandemic Support

- Water supply (marginalized communities – countrywide )
- Schools upgrade – new classrooms, chairs, desks, buildings renovations and repairs
- Sports promotion (Governors Cup, Half marathon, intermine games)
- Community Garden Project

Community Sustainability

- House 2 Home Project
- Support to Local Schools refurbishment
- Mortuary Otjimbingwe
- NAMPOL Vehicle maintenance
- Township electrification and sewage services

Collaborative Local Development

- Medical Health Centre
- Community Garden
- SME start-up Capital
- AGRI Park Project



We rise by rising others





# Thank you

