



# **GAMSBERG: MINING WITH CARE**

Gamsberg is the flagship project of Vedanta Zinc International's Black Mountain Mine located near Aggeneys in South Africa's Northern Cape province.

Discovered more than 40 years ago and held undeveloped in the asset portfolios of various mining companies, Gamsberg was acquired from Anglo American by the Vedanta group in 2011. Its development is well timed to feed into a global supply-demand gap and forms part of Vedanta's commitment to the development of the region.

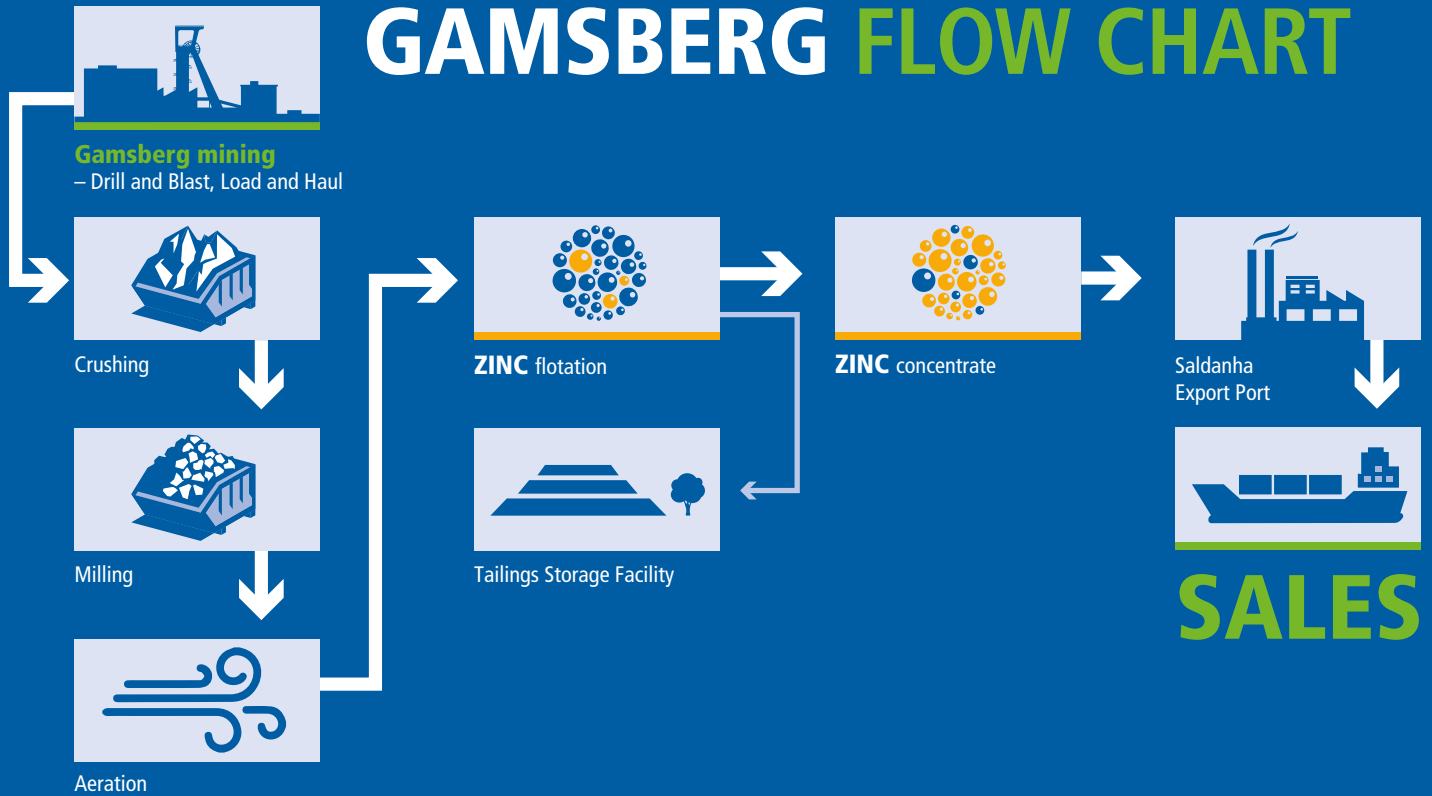
Gamsberg has a large reserve and resource of 214Mt, with an average grade of between 6 and 6.5%, and an estimated life of mine (LOM) of 30 years. In Phase 1, which has a LOM of 13 years, 4Mtpa of ore will be produced from Gamsberg's open pit and 250,000tpa of zinc-in-concentrate from its concentrator plant.

First production is expected by mid-2018, with full production reached in nine to 12 months. As zinc prices are reaching multi-year highs, Gamsberg should be well-placed to take advantage of strong markets.



**Gamsberg will exploit one of the largest, known, undeveloped zinc ore bodies in the world.**

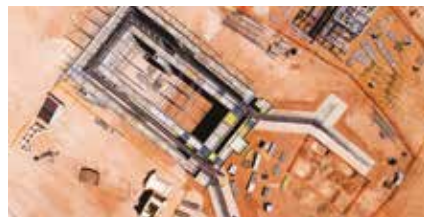
# GAMSBERG FLOW CHART



## CAPITAL COST-SAVING

Rather than stop Gamsberg's development while the zinc price was depressed, Zinc International's executive briefed the project team to review every aspect of the initial capital estimate of US\$600 million and to engage robustly on costs. Consequently, the capital cost was reduced to US\$400 million.

The US\$200 million saving means Gamsberg's viability has been considerably enhanced.



## PROGRESS TO DATE

From the first blast for Phase 1 in July 2015, pre-start mining advanced according to schedule. Completion in April 2017 of an access ramp – essential for waste pre-stripping to access the ore body for bulk mining – was a significant milestone.

By November 2017, full waste pre-stripping of 4.0Mtpm had been achieved and is expected to continue at this rate until the start of ore production in mid-2018. In the course of pre-start mining and pre-stripping, more than 45Mt of waste have been moved; by the start of production, the total will be 65-70Mt.

Construction of the concentrator plant and vital infrastructure for the overall project – including a power line, water pipeline and a high density polyethylene (HDPE)-lined tailings dam – has peaked in the last quarter of 2017. Currently, the water pipe line and power line are more than 90% complete. The earthworks for the tailings dam are complete, and the installation of the HDPE lining is at 75 hectares of the 110 hectare total.

# GAMSBERG OPEN PIT CROSS-SECTION



OREBODY

“By December 2017, more than  
**45Mt**  
of waste had been moved”

## EMPLOYMENT



More than **2,200** people are currently employed by Zinc International's business partners at the Gamsberg site.



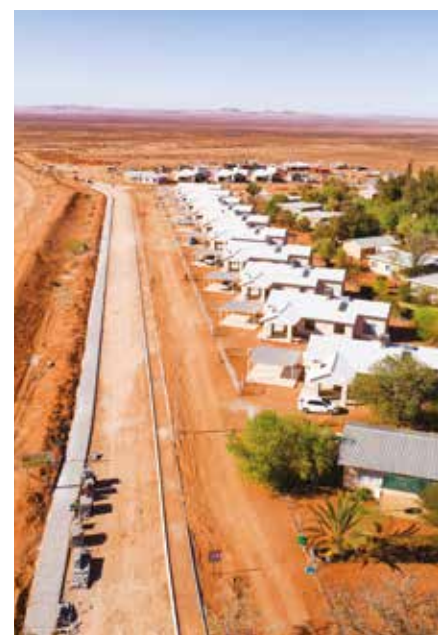
Between **700** and **800** people will be employed permanently, once Gamsberg is in production.



Recruitment of **local people** – in the first instance from local communities and then from the **Northern Cape** – is an obligation for all of the business partners working on Gamsberg and a priority for Zinc International itself.



Of the more than **2,200** people already deployed on the project, more than half are from local communities.







**COMMUNITY DEVELOPMENT INITIATIVES ARE PRIORITISED ACCORDING TO LOCAL NEEDS:**

- Social investment (health, education and livelihoods)
- Bio-investment (water harvesting, agriculture and social forestry)
- Environmental conservation

These corporate social responsibility activities are included in the operation’s business plans and appropriate implementation is carefully considered in collaboration with associates, government bodies and volunteer organisations.

Progress and performance are measured by third-party reviews and reported regularly to all stakeholders.

Our business is based on a strong value system. We seek to build sound relationships with the people in our host communities and strive to empower these communities so that they can achieve self-sustainability.

Our approach at BMM is holistic and integrated, although specific proposals and initiatives have been put in place in line with Gamsberg’s SLP programme, including:

- A focus on skills development and training: 10 BMM community trust bursaries have been granted to local students; in partnership with a key business partner, a group of 13 dump truck operators and 12 drilling rig assistants successfully completed a training programme and are eligible for employment or promotion;

250 young people are currently training via the Northern Cape MQA programme as electrical and construction engineers, diesel mechanics, boilermakers and fitters and turners; and more than 250 learners currently benefit from a range of educational assistance provided to Khai-Ma schools.

- In order to address housing shortages in our immediate community, 109 houses are currently under construction.
- Given our SLP commitment to enterprise and local supplier development, we are proud that 72 SMMEs have been registered, and 69 of those have already been assessed. In total, 9 tenders have been issued, and a further 35 quick-win opportunities have been identified. Thus far, 41 jobs have been supported as a result. 12 new local businesses were created in 2015, with a commercial value of R7.1 million – these have continued to grow with an increase in commercial opportunities of R23.75 million.
- Gamsberg complies fully with the BEE procurement requirements set out in the MPRDA and Mining Charter. BMM’s expenditure with BEE companies in 2016 was R946 million – 84.2% of our discretionary expenditure of R1,123 million during this period. BEE expenditure between January and June 2017 is R746 million, representing 85% of total discretionary expenditure of R878 million.
- BMM’s commitment to community SLP projects in 2017 amounts to R26 million, with R8.1 million allocated by Gamsberg.

“Phase 2 of Gamsberg could start on completion of Phase 1”



**LOOKING AHEAD**

Depending on market conditions, Phase 2 of Gamsberg could start as early as completion of Phase 1.

It is envisaged that at least a portion of Gamsberg’s zinc-in-concentrate production will be trucked to the Skorpion Zinc refinery in Namibia for refining.

While the Skorpion Refinery is currently configured to refine Skorpion’s oxide ore, this refinery will be converted to refine sulphide concentrate from Gamsberg once Skorpion’s own oxide reserves are exhausted. At some point in the future, depending on market conditions and other factors, Gamsberg may warrant its own refinery.



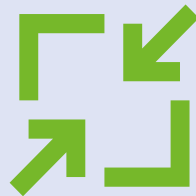
**BIODIVERSITY**

Gamsberg is located in the ecologically sensitive Succulent Karoo Biome, which is one of the world's 35 "biodiversity hotspots". The region contains more than 400 unique succulent plant species – the largest number in the world for a region of its size. Within the Gamsberg ecosystem, there are approximately 397 plant species, 16 of which are recognised as endemic.

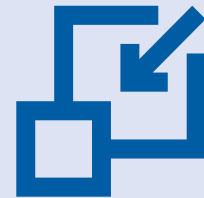
To balance the socio-economic benefits of developing the Gamsberg project with the need to preserve the unique biodiversity of this arid zone, Zinc International has developed – in compliance with the Vedanta Sustainable Development Framework and with expert external inputs – a clearly defined biodiversity action plan.



**KEY ACTIONS TO DATE INCLUDE:**



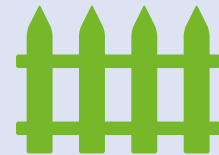
Redesign of the open pit to reduce its size, effectively sterilising 10Mt of ore



Redesign and relocation of the concentrator plant, the waste rock dump and tailings dam



Relocation of access roads



Fencing to create 'no-go zones' for human/vehicle traffic and implementation of a disciplinary code



Harvesting of more than 77,000 plants, stored at Gamsberg's own nursery for future relocation, with donations made both to the South African Biodiversity Institute and the Karoo Desert National Botanical Garden



Collection of more than 300,000 seeds for storage in the Gamsberg nursery's seedbank for future germination

And importantly, the start of implementation of a biodiversity offset agreement with the Northern Cape Department of Environment and Nature Conservation, involving the purchase, and management for a period of 10 years by Zinc International of 12,500 hectares of substantially intact land to offset the impact of land disturbed by Gamsberg's development



Zinc International has partnered with a global organisation, the International Union for Conservation of Nature (IUCN), in compliance with the zero offset agreement. This involves regular, independent review of progress by the IUCN and it adding value where and as required.





### GAMSBERG'S DIGITALISATION ROADMAP: "ADAPT AND THRIVE"

Mining companies around the world are abandoning traditional business models and embracing new technologies and ways of working. As one of the most digitally advanced new mining projects in Africa, Gamsberg's design and construction has aimed to be at the forefront of this digitalisation revolution from the start of operation.

For VZI, the digital transformation is not something that is planned in years to come, but one that is taking shape today. Great strides have been made in recent years in the development of smart technology and equipment. This has given impetus to VZI's 'Adapt and Thrive' approach. The next wave in both investment and implementation will be in the integration of these systems to enable our teams to make data driven decisions to find efficiencies, improve planning, lower risk, create safer working environments & unlock more value from our resources.

In November 2017, VZI announced a significant collaboration initiative between global innovation giant, GE, and leading mining software developer, MineRP. The first component of this collaboration will be the launch of 'Smart Ore Movement' at Gamsberg, with more developments to follow in the coming months.

### ABOUT VEDANTA ZINC INTERNATIONAL

Vedanta Zinc International (VZI) – headquartered in Johannesburg, South Africa – is a grouping of zinc assets located in South Africa, Namibia and Ireland, owned by India-based Vedanta Limited, a listed subsidiary of Vedanta Resources plc.

#### Operations include:

- Black Mountain Mining (BMM) and the associated flagship Gamsberg Project in South Africa's Northern Cape province;
- Skorpion Zinc Mine and refinery in the //Karas region of Namibia.

Mining and milling at the Lisheen Mine in Ireland was concluded in December 2015 after 17 years of operation and the mine is currently in active closure mode.

VZI's vision is to create an integrated world-class regional zinc complex comprising the BMM (including Gamsberg) and the Skorpion Zinc mining and refining operations.

### CONTACT US

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