

GETTING IT RIGHT FIRST  
TIME – EVERY TIME  
The Skorpion Zinc Project

*Bryony Walmsley*

*Michele Kilbourn Louw*



# INTRODUCTION

- ❖ The Environment
- ❖ The Project
- ❖ The Paperwork
- ❖ The Actions
- ❖ The Lessons Learnt





# From this.....(October 2000)

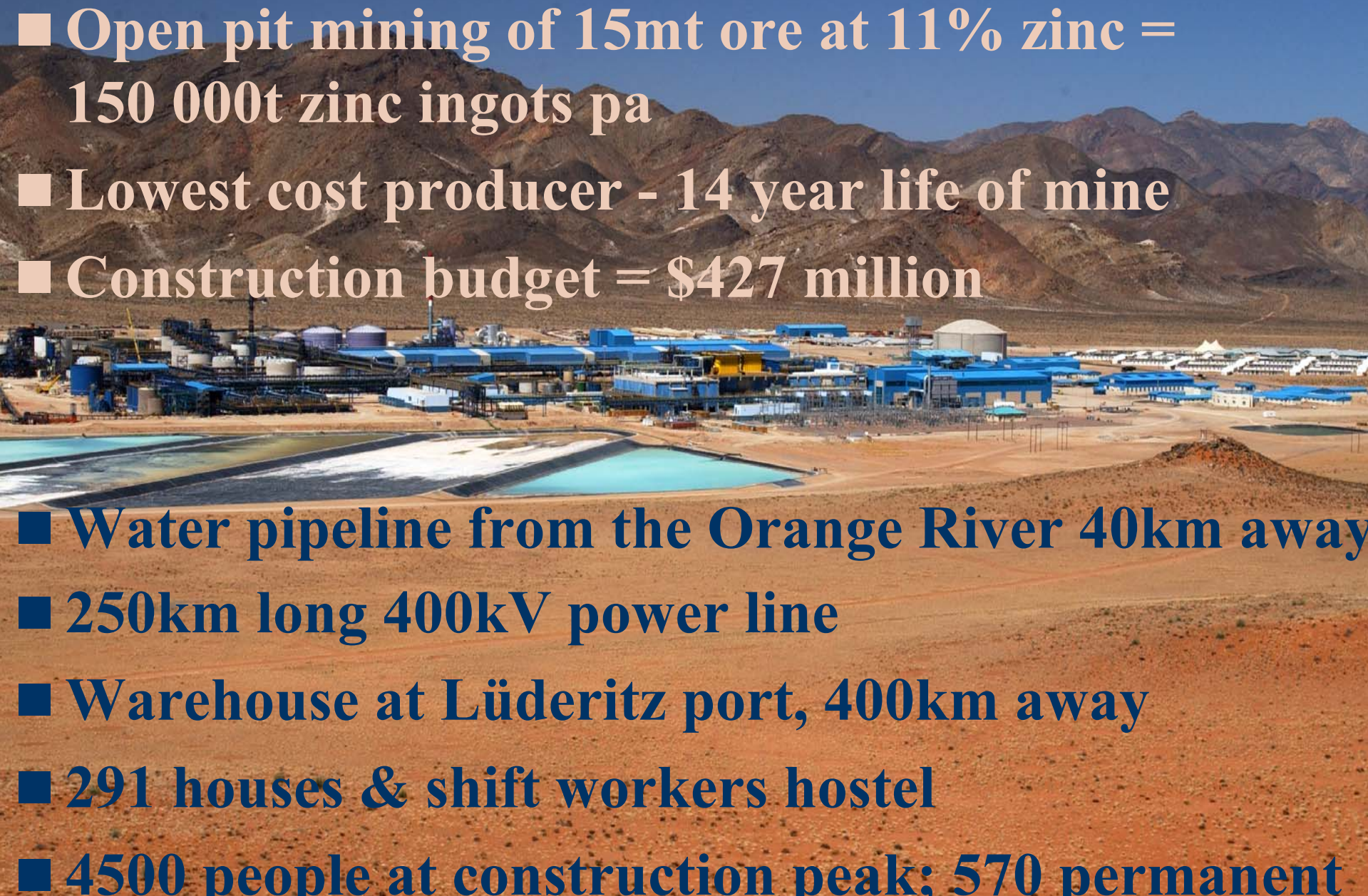
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- Arid and windy
  - Hot dry summers - cooler winters
  - Transitional rainfall zone
  - Virtually pristine & unknown – global biodiversity hotspot
  - Grasses, succulents, insects – many endemics
  - Sensitive rocky outcrops – collect log
  - Groundwater / fossil aquifer at 180m below
  - Dusty but no air pollution
  - Fragile soil surface
- ...unspoiled  
desert...



.....to this.....(February 2003)

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- Open pit mining of 15mt ore at 11% zinc = 150 000t zinc ingots pa
  - Lowest cost producer - 14 year life of mine
  - Construction budget = \$427 million
  - Water pipeline from the Orange River 40km away
  - 250km long 400kV power line
  - Warehouse at Lüderitz port, 400km away
  - 291 houses & shift workers hostel
  - 4500 people at construction peak; 570 permanent



# MAJOR EIA FINDINGS

- Dust - disturbance of desert surface
  - roads and safety
  - from tailings and mining
- Potential impacts on vegetation
- Visual impact
- Change of land use - wilderness to mining
- In-migration of aspirant job seekers
- Social dynamics in Rosh Pinah
- Good economic benefits - 4% to GDP - 570 jobs
- Development of infrastructure

...avoid, mitigate, manage



# THE PAPERWORK!

- ❖ EMP and audit reports for exploration
- ❖ EIA and amendments (including PPP)
- ❖ EMP and audit reports for the mine and refinery
- ❖ EIAs for the incoming 400kV powerline,  
temporary and permanent water supply pipelines
- ❖ EMPs and audit reports for the above infrastructure
- ❖ Skorpion HS&E policies



# MORE PAPERWORK!

- ❖ Environmental Code of Conduct and 5 Rules
- ❖ Induction booklet
- ❖ Home-owners pack
- ❖ Posters





# THE ACTIONS

- ❖ Commitment and support from senior management
- ❖ Adoption of the motto “*Get it right first time, every time*”
- ❖ Development of Environmental Design Criteria
- ❖ Inclusion of EMP and Code of Conduct in all tender documents
- ❖ Early appointment of an HO Env. Manager, site ECO, dedicated environmental team of 6, 2 trucks and funding
- ❖ Environmental team reported directly to Project Manager





# MORE ACTIONS...

- ❖ Induction course for everyone, including visitors
- ❖ Regular environmental tool box talks
- ❖ Regular communications via posters, displays and signboards
- ❖ Award of Skorpion Stings and Stars in monthly newsletter
- ❖ Formal system of non-conformance reporting, site directives, site instructions and corrective action programmes, linked to the overall construction quality control system



# AND MORE....

- ❖ Potential for repeat offenders to be thrown off site
- ❖ Rehabilitate or bust
- ❖ Weekly and monthly HS&E meetings and reports
- ❖ Bi-annual external EMP compliance audits
- ❖ Waste recycling programme
- ❖ Plant rescue and relocation
- ❖ Home-owners guides
- ❖ Abolition of plastic bags
- ❖ Introduction of EMS







## ...AND EVEN MORE...

- ❖ SHE representatives from each contractor
- ❖ Driver education and track management
- ❖ Recruitment Policy and Project Labour Agreement to prevent uncontrolled influx of job seekers
- ❖ Management of cumulative impacts through coordinated EIAs and representation in regional fora
- ❖ Communication with regulatory authorities

Plant rescue, relocation  
and propagation trials



**NBRI Windhoek**

**RESCUE!**



Burial cairn?



Site  
nursery



## 5 stage catalytic converter $\text{H}_2\text{SO}_4$ acid plant



(August 2002)

## ACID PLANT



Operational  
(Feb 2003)



(Jan 2003)

Tailings  
enclosed in  
waste rock

6 belt filters –  
dry tailings

## TAILINGS AND ROCK DISPOSAL



(May 2003)



# POLLUTION CONTROL

Dust suppression  
sprays on  
crushing circuit

Enclosed ore  
stacker re-claimer

20-year UV  
HDPE-lined  
evaporation  
ponds

(Feb 2003)

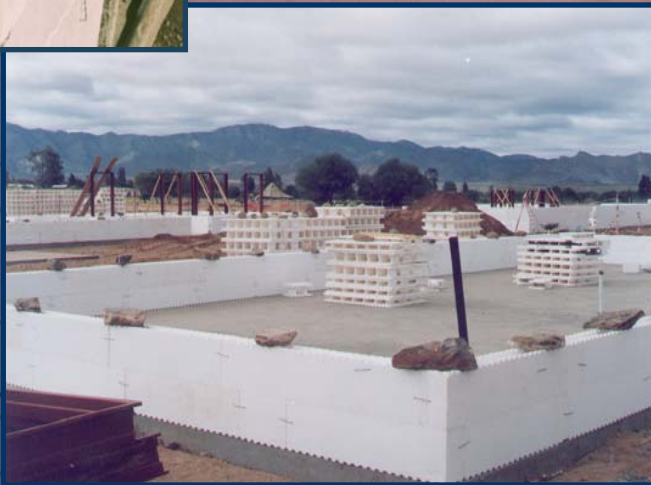




# HOUSING



Foam forms  
filled with  
cement and  
then plastered



Rosh Pinah (May 2003)



# WASTE MANAGEMENT

Central fuel depot

Oil recycling

Central concrete batch plant

Bunded hazardous materials stores

Clean up teams

Managed temporary landfill

Bio-remediation site

(Nov 2002)





# RECYCLING



Five streams



The "dus been"



Recycle depot

2 balers



First in Africa??

Isolation

Cross border  
issues

Lessons



# ENVIRONMENTAL MONITORING

- Air quality
  - sulphur dioxide
  - particulates
- Vegetation
  - natural & rehabilitated sites
  - plant stress - chlorophyll fluorescence
  - lichens
- Ground water (improbable)
- Seepage (not likely)
- Effluents





# LESSONS LEARNT

- ❖ Need environmental input to tender evaluation
- ❖ EMP clauses need to be practical, measurable, auditable
- ❖ Establish environmental lab facilities on site
- ❖ Appoint enough ECOs to do the work!
- ❖ Use students for long-term survey work
- ❖ Monitor socio-economic effects as well
- ❖ Communications with illiterate, transient, inexperienced workforce
- ❖ Autocratic vs participative management

.....AND.....



# A sense of humour!

