

ANGLO AMERICAN PLATINUM CORPORATION

ANNUAL FACILITY VISIT

5 March 2003

POLOKWANE SMELTER

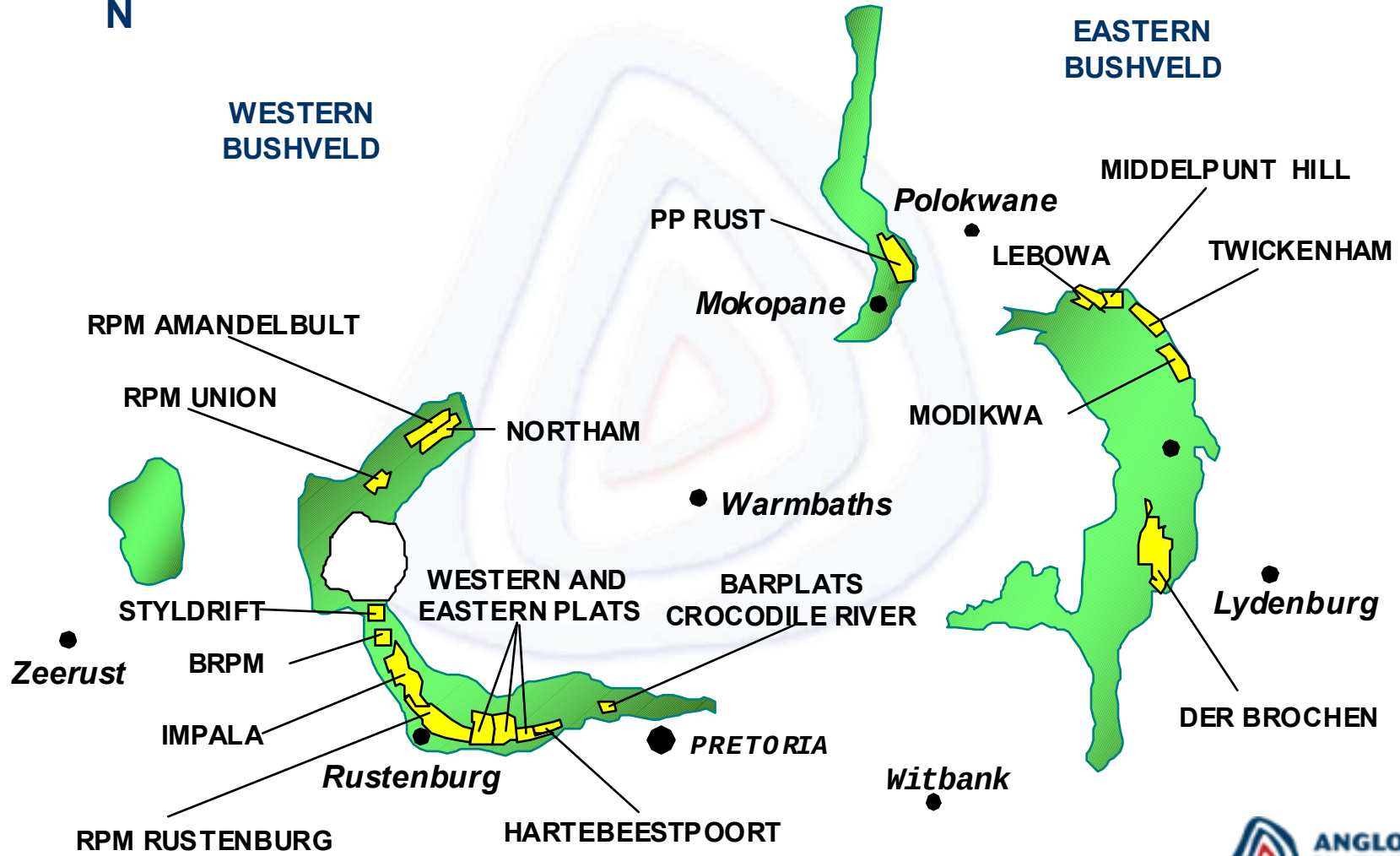
Duncan Wanblad

General Manager: Process Projects

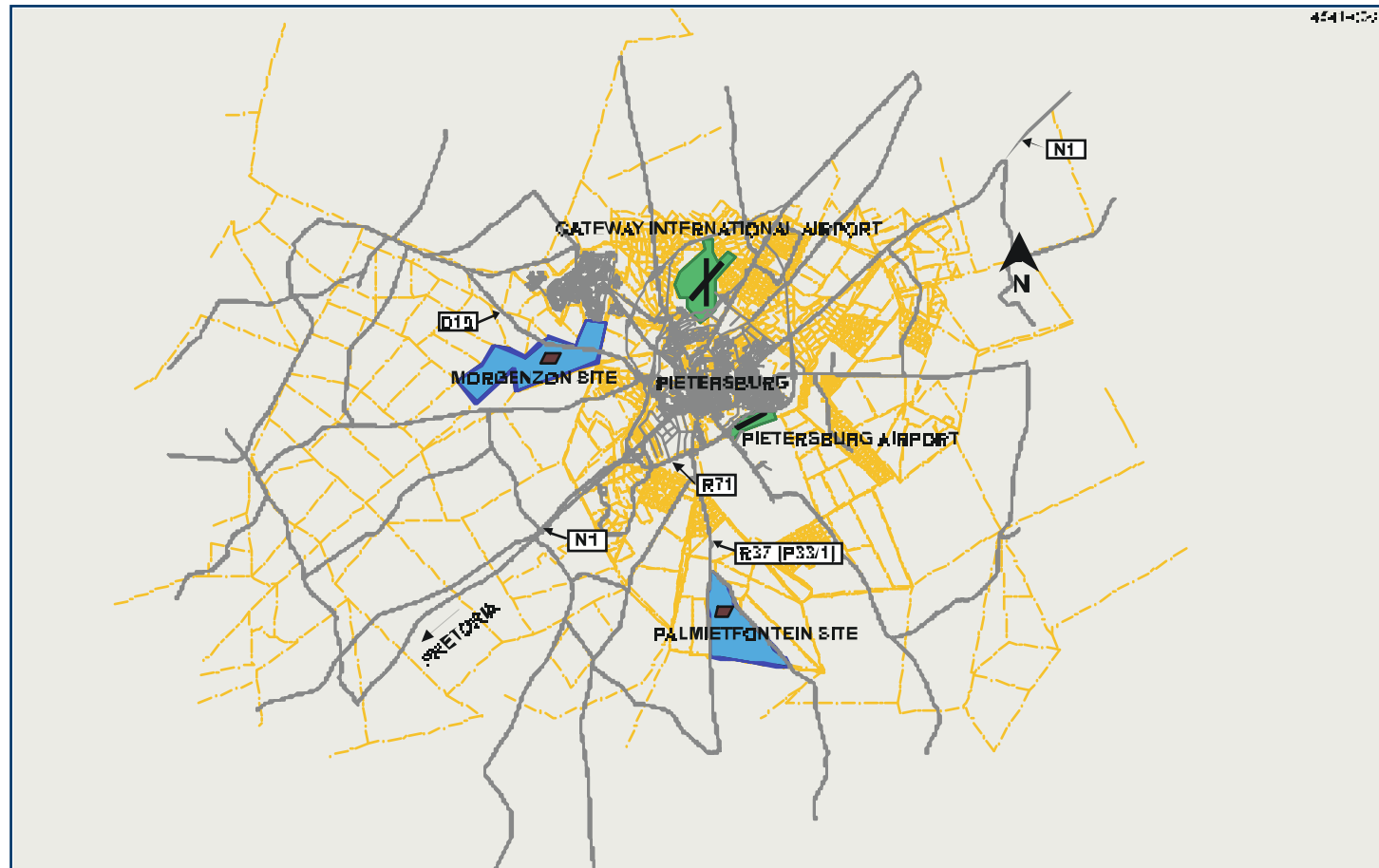
July Ndlovu

Polokwane Smelter Manager

ONGOING AND EXPANSION OPERATIONS ORIENTATION



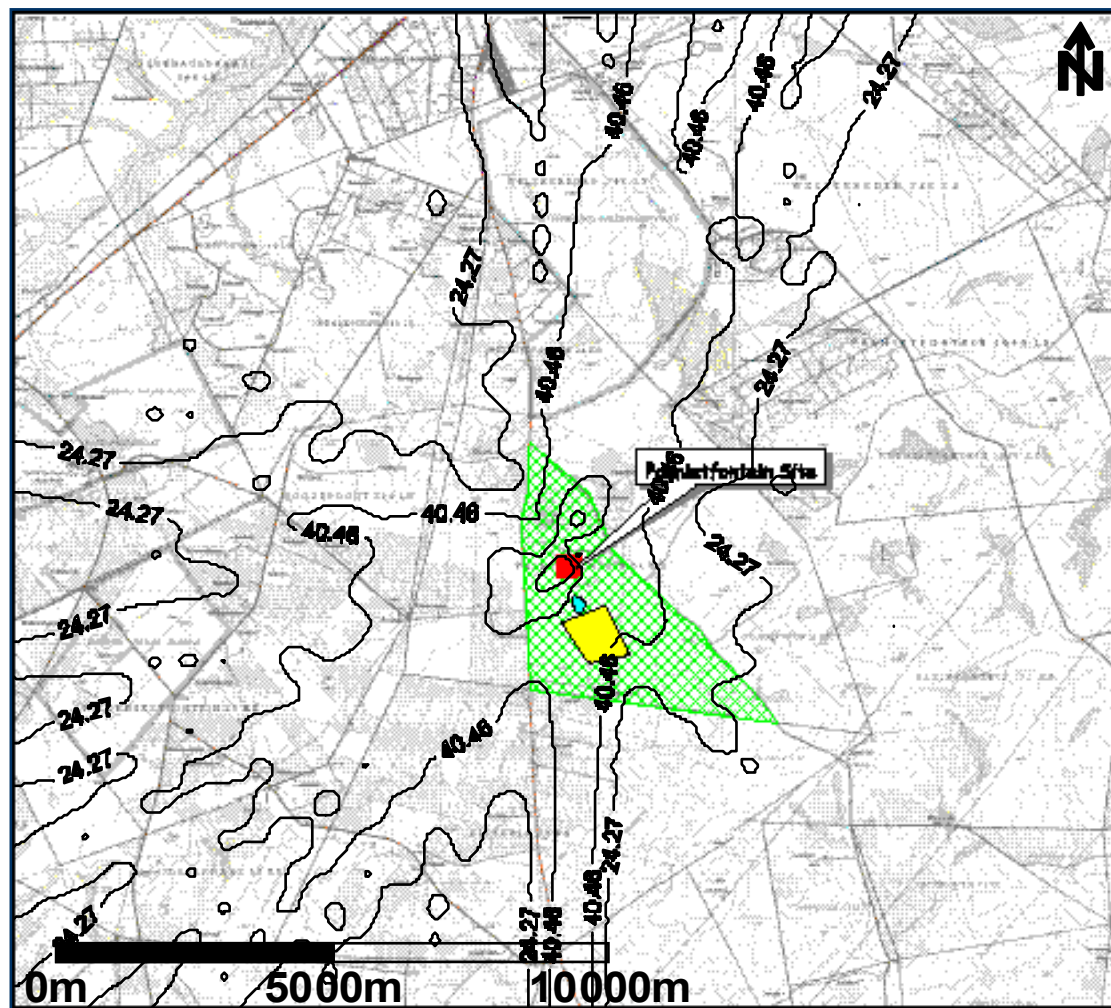
LOCATION OF SMELTER



SMELTER TECHNOLOGY

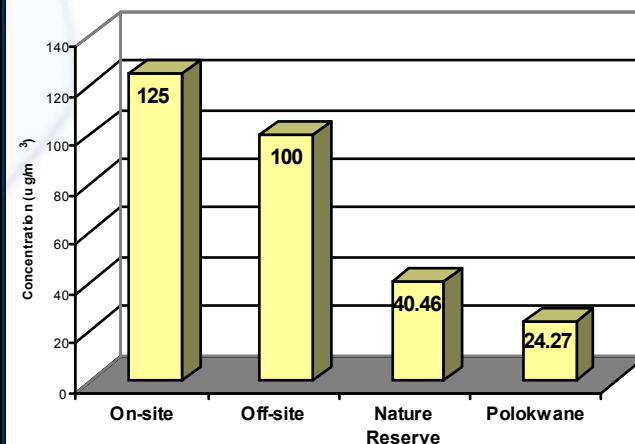
- **Key Drivers**
 - **Capacity**
 - **Environmental**
 - **Mineralogy**
 - **Operability**
 - **Costs**

SULPHUR DIOXIDE MODEL

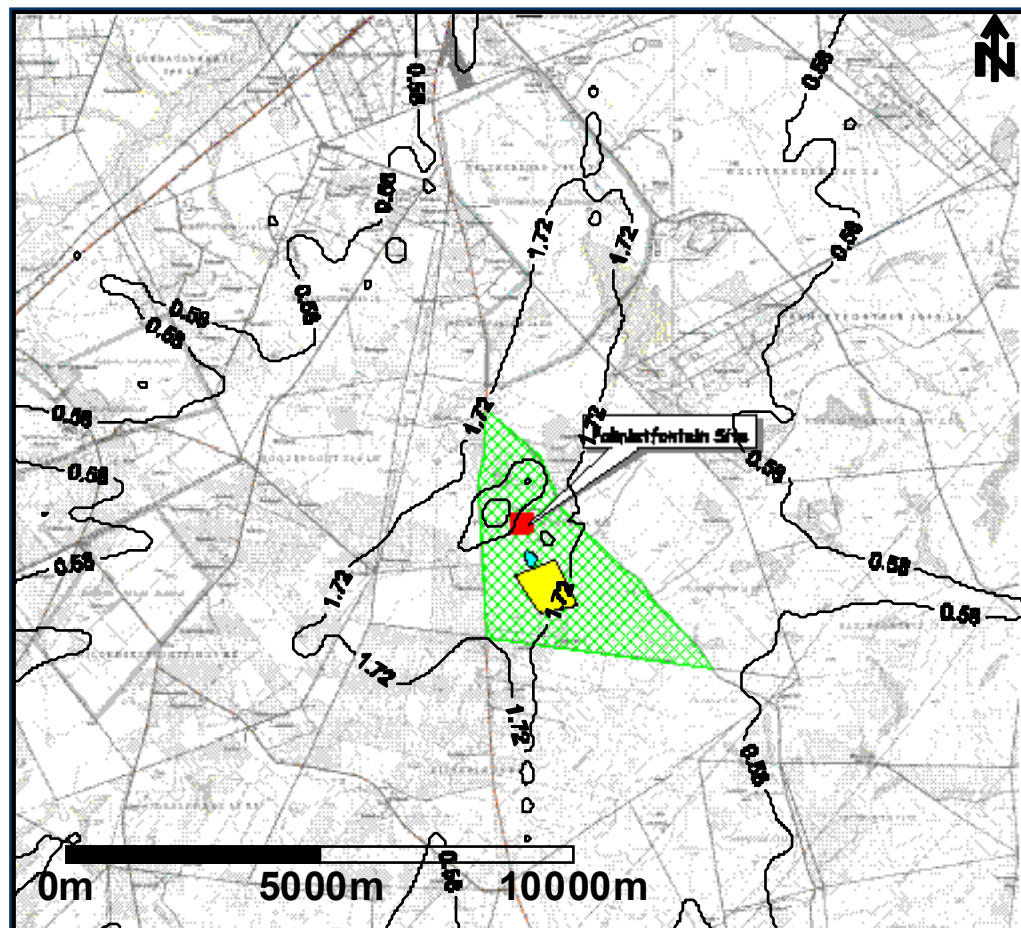


Max Daily Guidelines for
 SO_2 ($\mu\text{g}/\text{m}^3$)

South Africa	125
USEPA	365
WHO	125
World Bank	125
EU	250 to 350



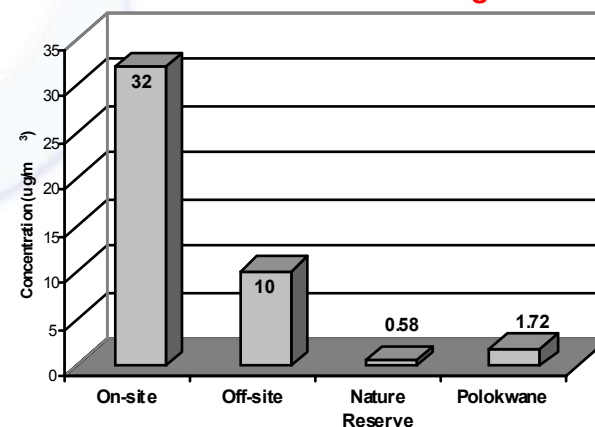
PARTICULATES MODEL



Max Daily Guidelines for
PM₁₀ ($\mu\text{g}/\text{m}^3$)

South Africa	180
USEPA	150
WHO	150 to 230
World Bank	260
EU	130 to 250

DEAT Guideline 180 $\mu\text{g}/\text{m}^3$



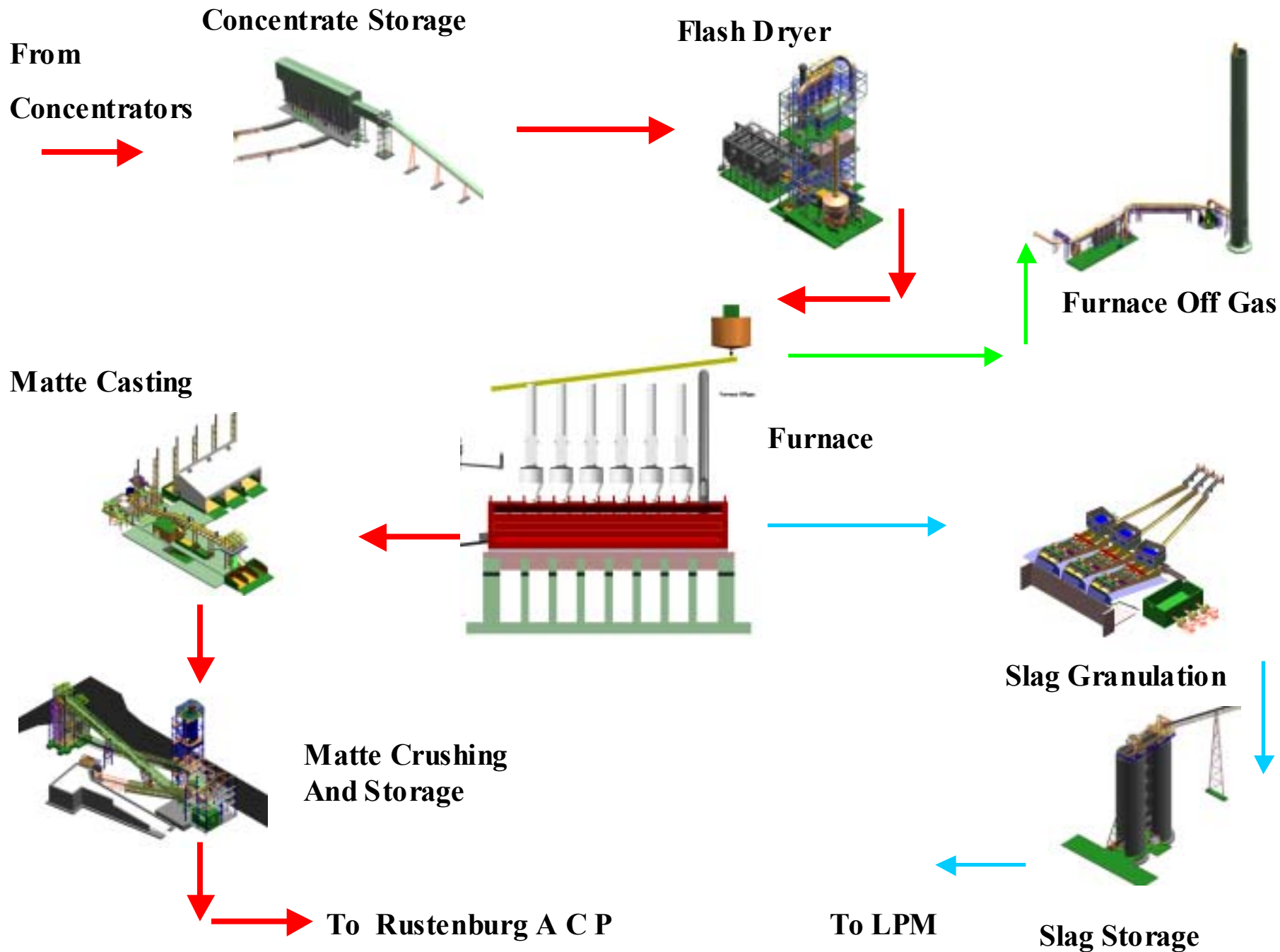
MERENSKY AND UG2

Typical mineralogical profiles for the
UG2 and Merensky reefs

MINERAL	UG2 - % CONTENT	MERENSKY - % CONTENT
CHROMITITE	75.00	1.00
PYROXENE	20.00	60.00
FELDSPAR	3.00	34.00
CHLORITE	0.50	1.00
TALC	1.40	2.00
TREMOLITE		1.00
BASE METAL SULPHIDES	0.10	1.00
TOTAL	100.00	100.00

FLOWSHEET



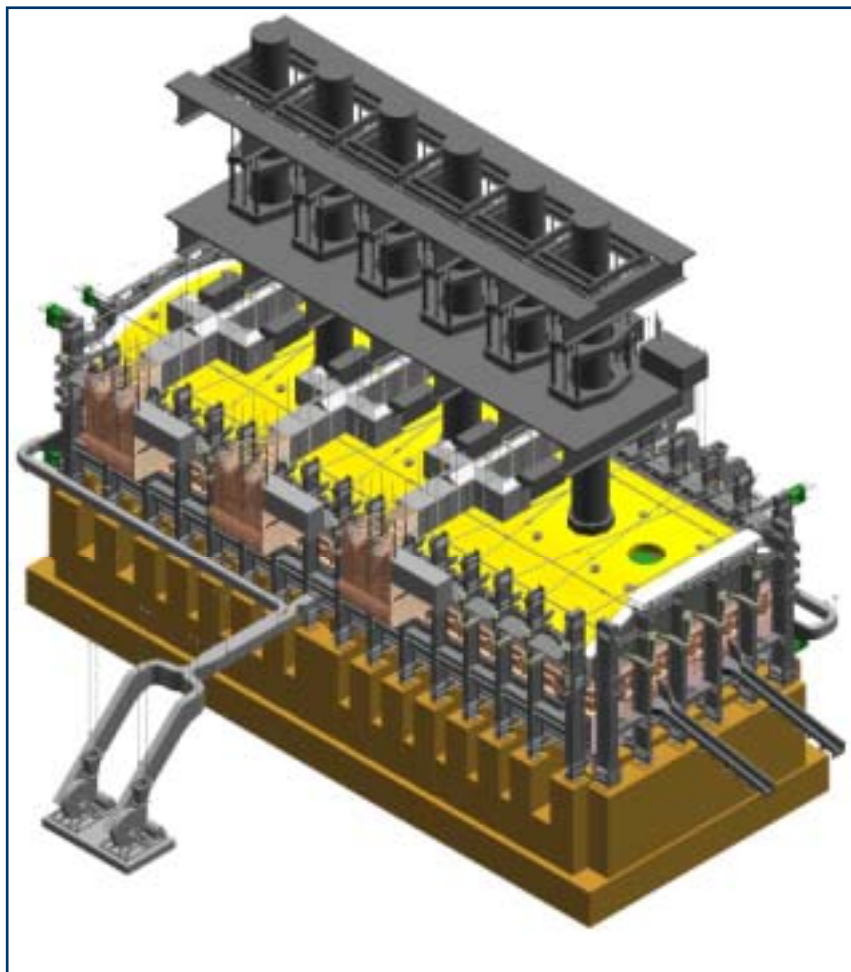


FLASH DRIERS



- Capacity :
 - Wet 70 – 78 tph
 - Dry 66 tph
- Moisture :
 - 10 – 16% (w/w)
- Heat release :
 - 54 GJ/hr

FURNACE



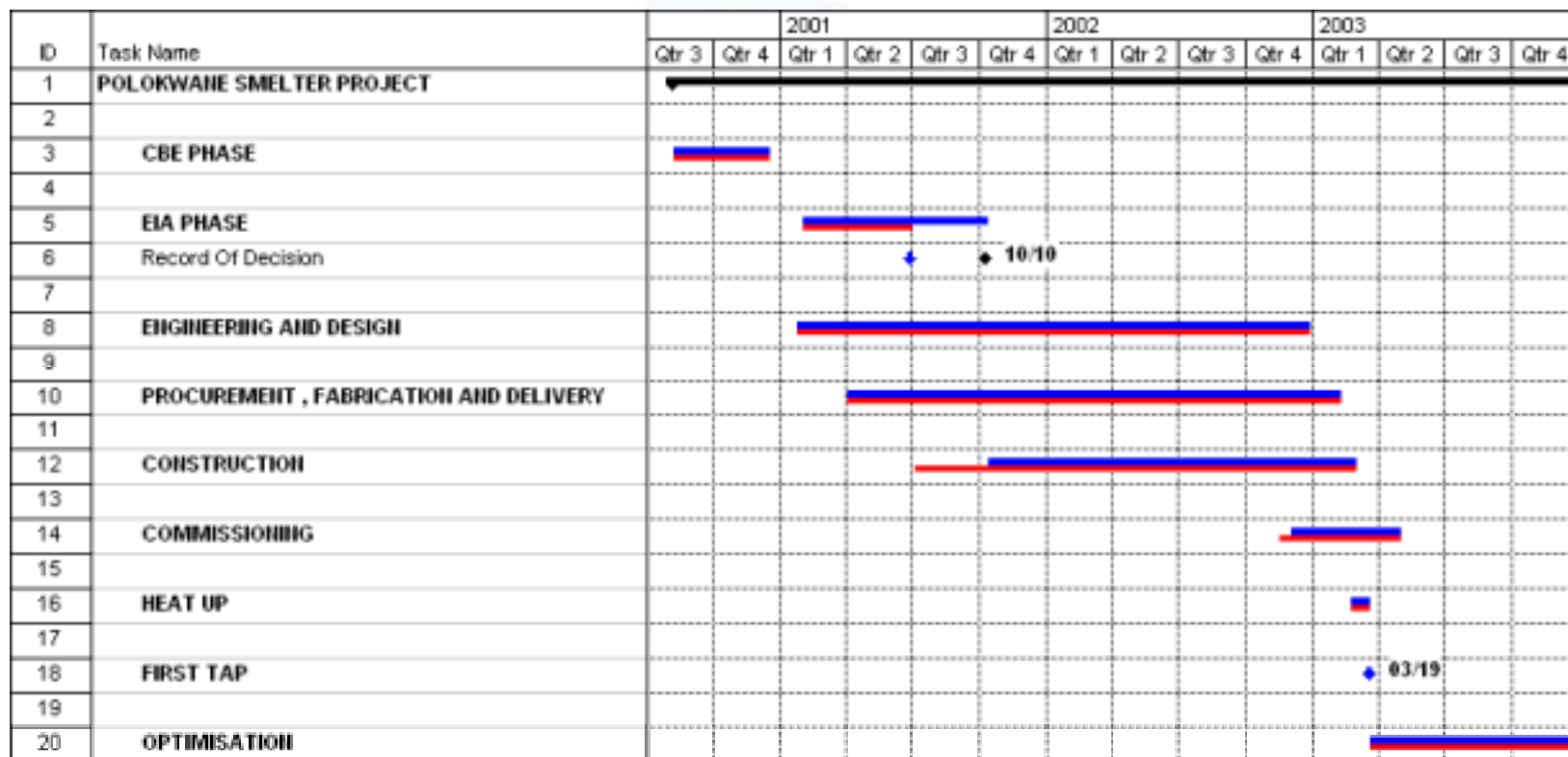
- Capacity :
 - 650,000 t/a (87 tph)
- Power :
 - 68 MW (168MVA)
- Power density :
 - 250 kW/m²
- Matte temperature :
 - 1,550°C
- Slag temperature :
 - 1,600°C

BAG HOUSE



- Inlet temperature :
 - 950°C
- Dust in:
 - 4,400 kg/hr
- Dust out :
 - 32 kg/hr
- Bag area :
 - 2,471m³

PROJECT SCHEDULE



SAFETY STATISTICS

- Personnel Employed 4,323
- Personnel Peak $\pm 3,300$
- Fatality Free Man Hours 6,384,481
- Total Lost Time Injuries 6
- LTIFR 0.19
- Record Days without a LTI 145



SALIENT CONSTRUCTION FEATURES



• Earth moved	1.90 million	m ³
• Concrete	60,000	m ³
• Structural steel and platework	5,700	t
• Piping	32,000	m
• Cable	380,000	m
• Cable racking	9,700	m
• Electric motors	314	No
• Light fittings	3,200	No

MAJOR CONTRIBUTORS

Project Management and Design

Managing Consultant - Greenblat & Hutton
Quantity Surveyors – Professional Cost Consultants
Civil & Structural Design – Jones & Wagener
HT Electrical Design – EHL
Electrical & Instrument Design – iControl
Furnace Design – Hatch

Construction

Bulk Earthworks & Civils – Grinaker-LTA
Structural and Mechanical Erector - Group 5 Projects
Structural and Mechanical Erector - Tubular Technical Services
Piping – Concor
Electrical & Instrumentation – Grinaker-LTA MEIP

Major Suppliers

Steel – Cosira and DSE
Baghouse – Howden
Flashdriers – Drytech
Pneumatic Transfer – Clyde Bergmann

CONSTRUCTION PROGRESS OVER 12 MONTHS



**Construction start :
November 2001**

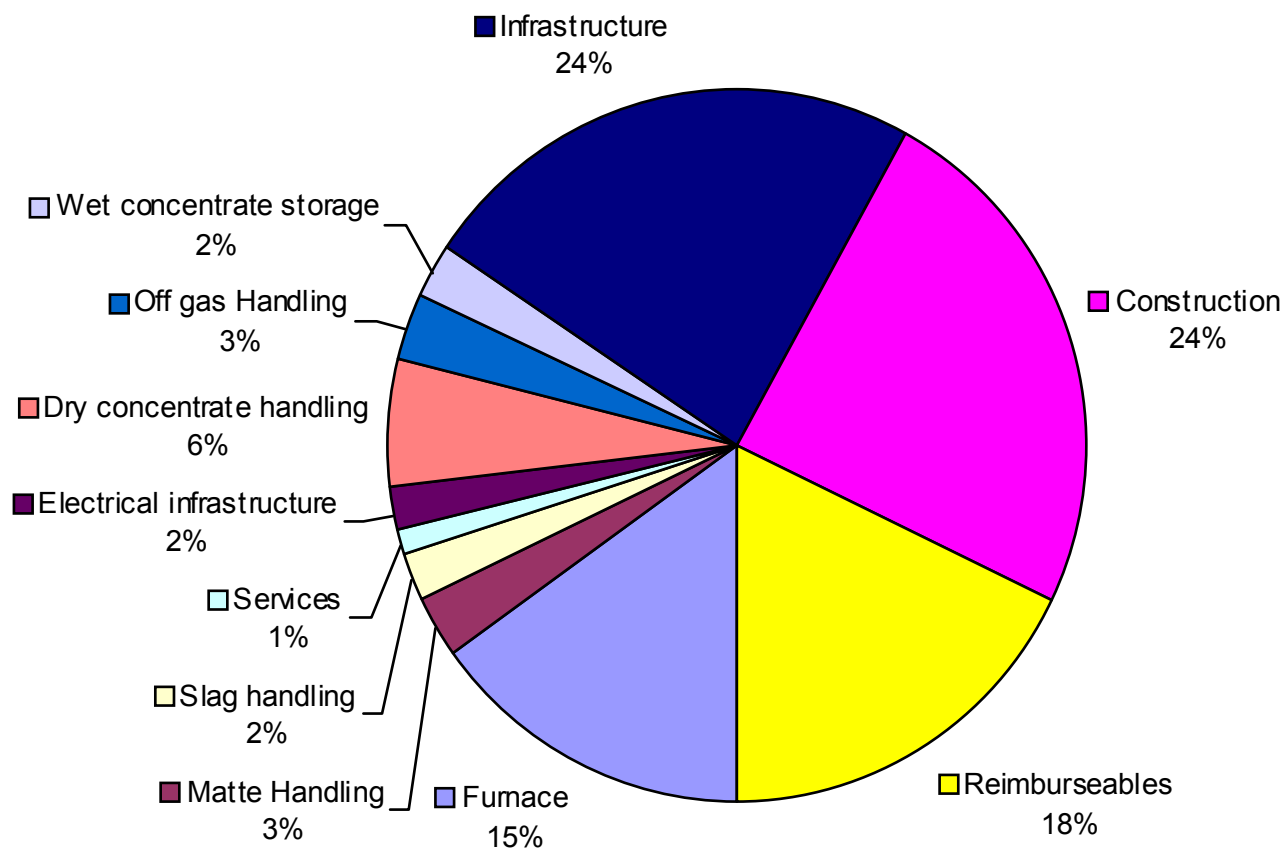
CONSTRUCTION PROGRESS OVER 12 MONTHS



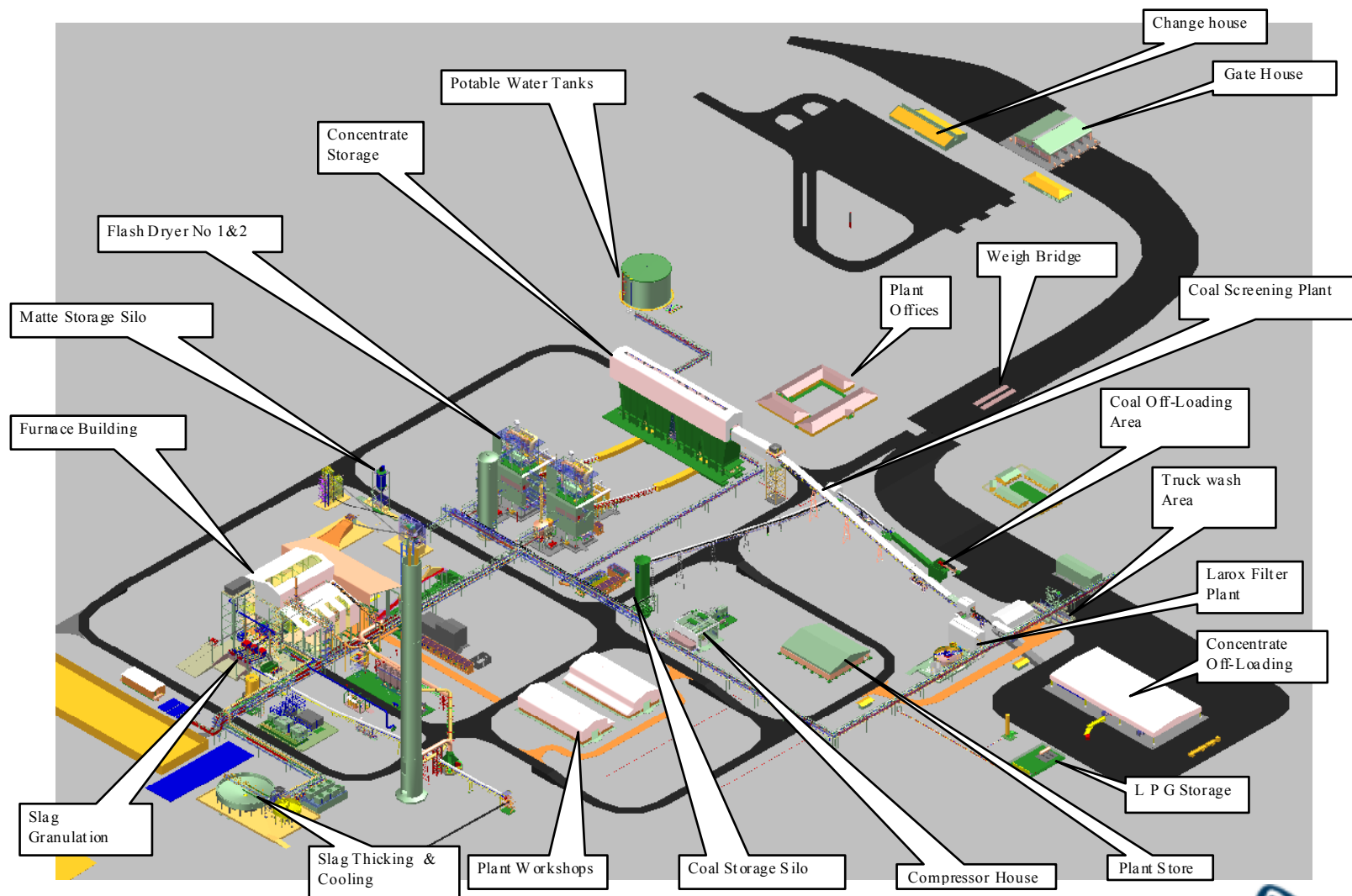
Construction progress
as at November 2002

MAJOR AREAS OF EXPENDITURE

Voted Amount : R 1.31 billion (2001 terms)



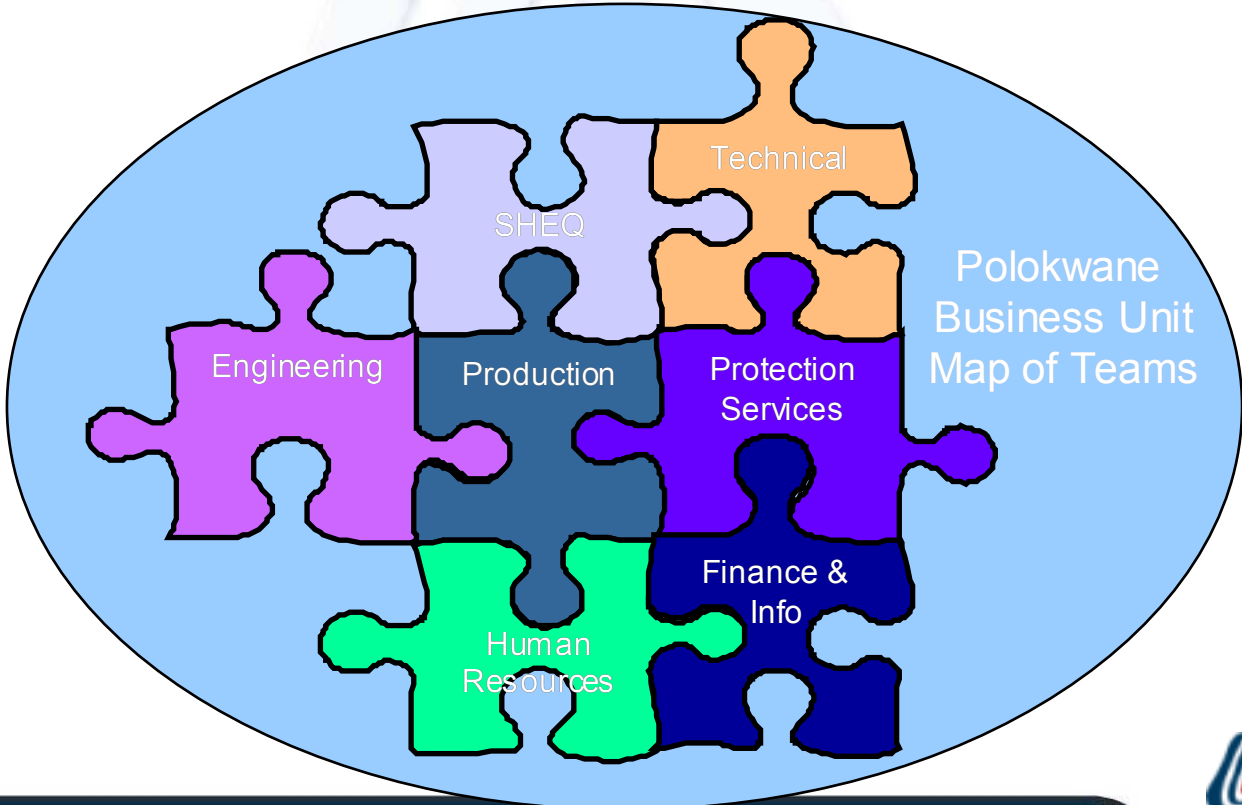
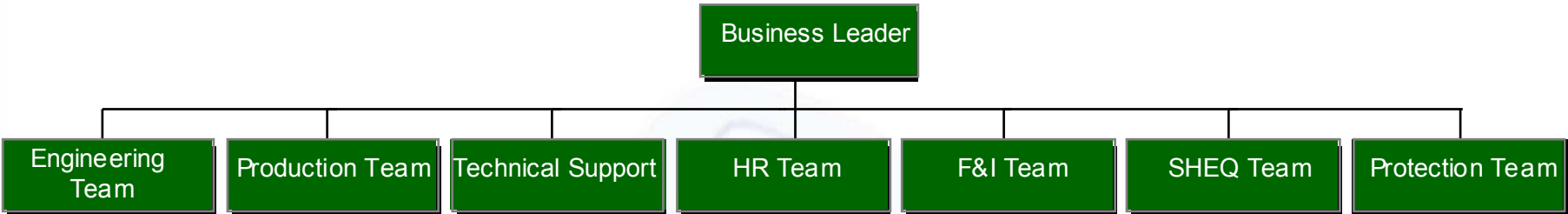
COMMISSIONING TO OPERATION



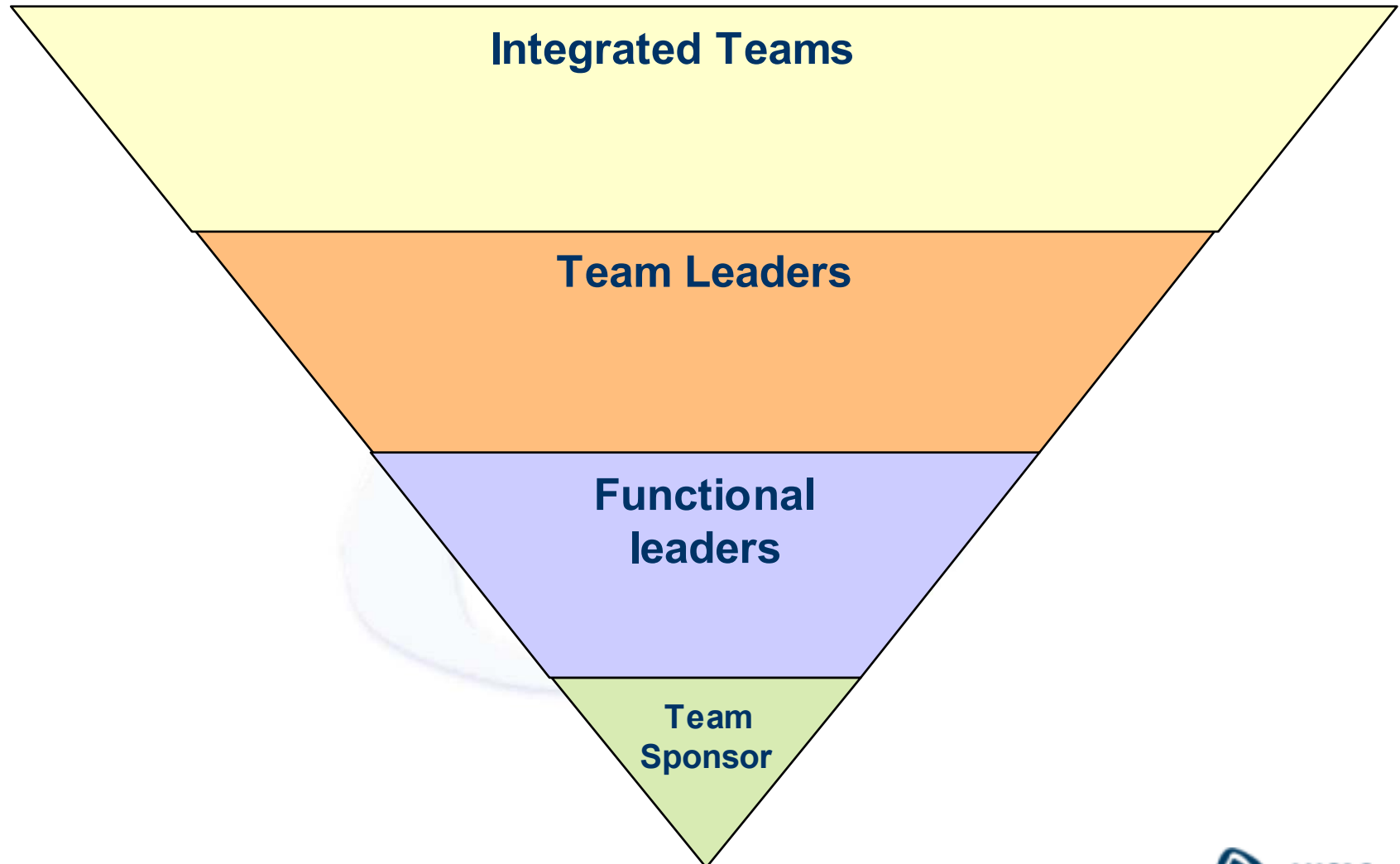
RECRUITMENT AND SELECTION CRITERIA

- Recruited both locally and nationally
- Battery of assessments to match competencies with roles
 - Logical, spatial, musical, interpersonal and intrapersonal
 - 100% literacy
- Focus on local communities
- Engage local structures and institutions
 - Department of Labour

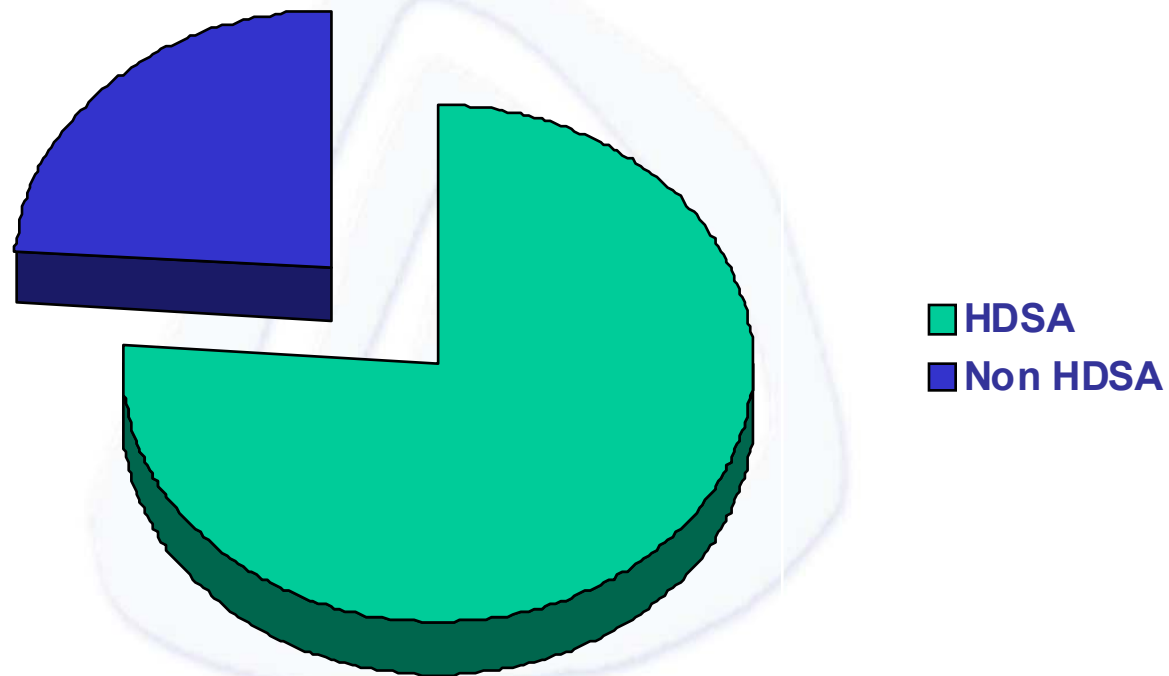
BUSINESS UNIT ORGANOGRAM



BUSINESS UNIT LEVELS

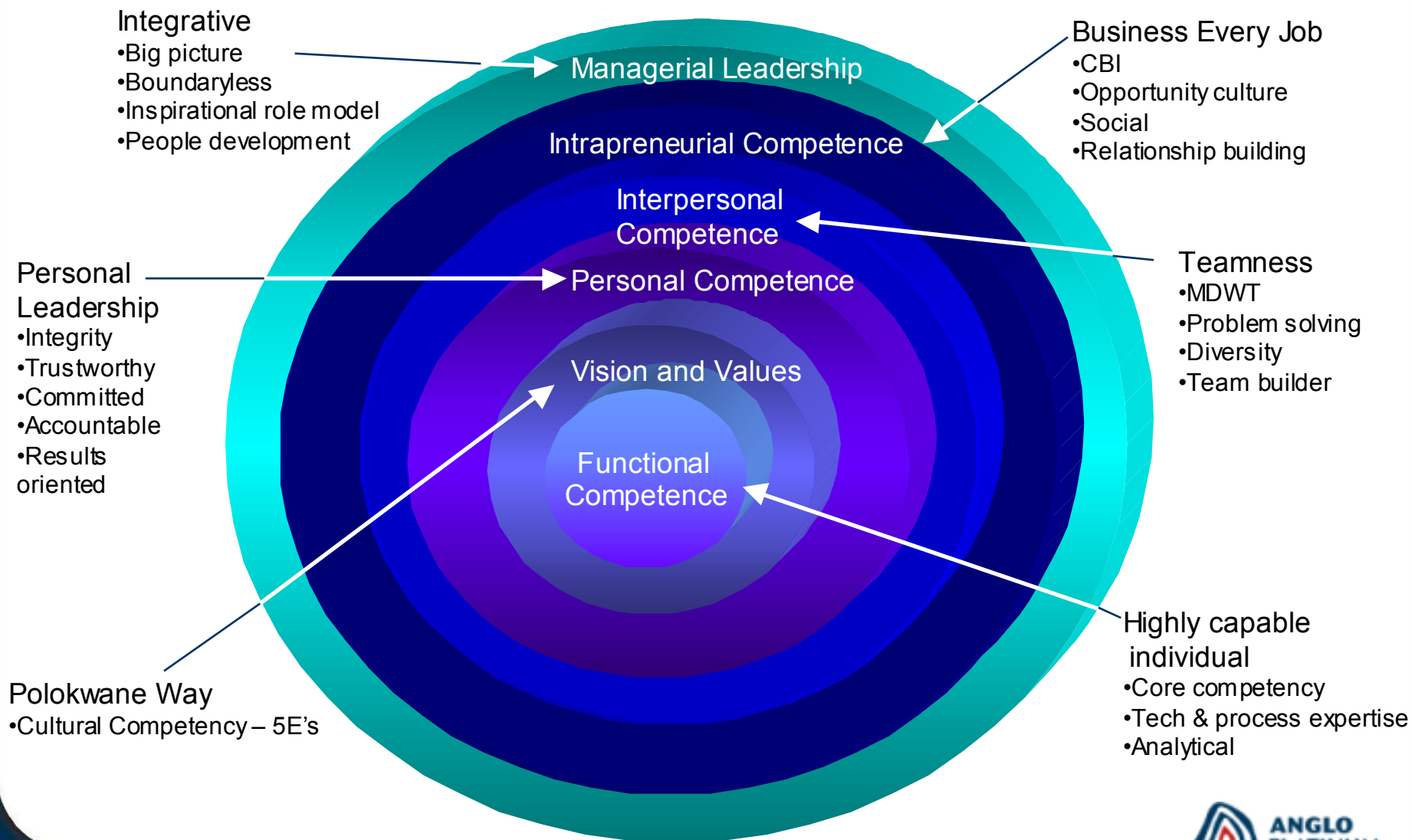


PROFILE OF POLOKWANE EMPLOYEES



Total proportion of employees who are female – 25%

BUILDING THE COMPETENCY



TRAINING

- Employees brought on board a year before commissioning
- Industry approved training to gain process skills
- Practical exposure at existing operations
- Commission with own employees
 - Part of training and knowledge transfer
 - Create early ownership of plant

COMMISSIONING

- Areas complete are:
 - Concentrate offloading (1st concentrate delivery on 1 Feb 2003)
 - Wet concentrate storage
 - Flash Drier 1 (1st dry conc produced 7 Feb 2003)
 - Dry concentrate storage
 - Furnace cooling water systems
 - Furnace air cooling systems
 - Electrodes
 - LPG
 - Furnace off-gas plant
 - Stack
 - Process water system

COMMISSIONING

- **Furnace heat up started on 20 February 2003**
- **Major milestone to come:**
 - **Furnace switch in: March 2003**

AREAS OF FOCUS

- Knowledge transfer
 - Operations team intimately involved in all aspects of commissioning
 - Vendor training using manuals plus rigorous field training
 - Seamless handover process from Commissioning to operating teams
- Design validation
 - Intensive vendor and design team support
 - Largely proven technologies

AREAS OF FOCUS

- **Transfer of operational experience**
 - Experienced trainers in place
 - Designed a fifth shift for continual training
- **Quality of feed materials**
 - Process designed for high chrome
 - Feed blending of materials
 - Optimal ramp up to gain understanding of UG2 type feed

POLOKWANE SMELTER

QUESTIONS