

## PROFITABLE LOW COST CO-PRODUCER

SITE VISIT FEBRUARY 2017

# tharisa



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## **→** DISCUSSION OUTLINE

1	Welcome
2	Mining
3	Processing
4	Mine to Market
5	Operational Performance
6	Financial Performance
7	Closing



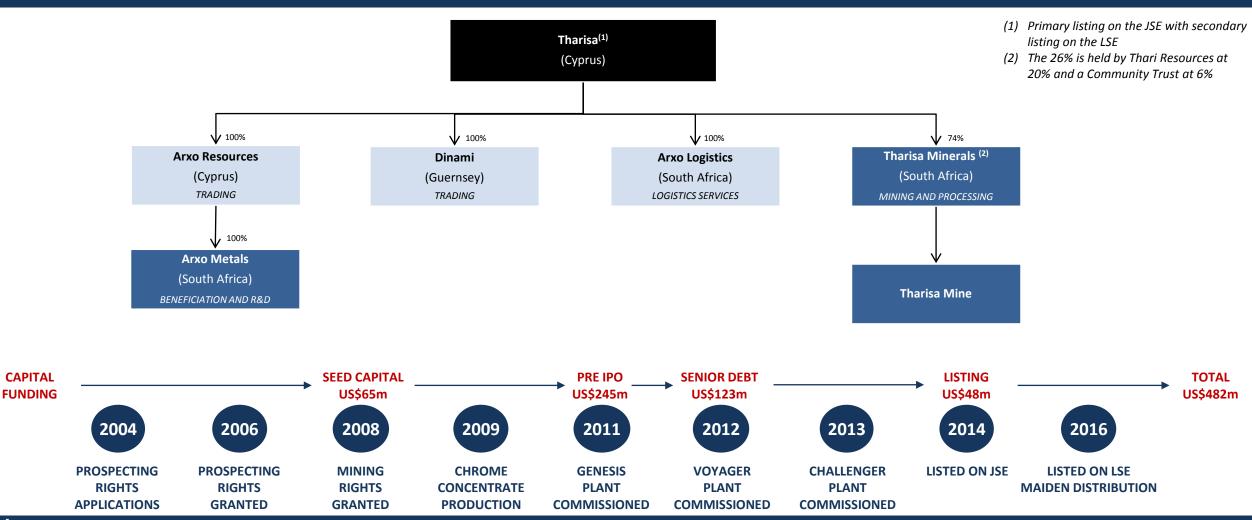
## **──•** WELCOME



### **¬CORPORATE STRUCTURE**

#### THARISA IS A EUROPEAN HEADQUARTERED INTEGRATED RESOURCE GROUP

We are uniquely positioned incorporating mining, processing, beneficiation, marketing, sales and logistics. Tharisa is a low cost producer of PGM and chrome concentrates resulting from two distinct revenue streams from a single resource with costs being shared between the commodities. We continue to explore beneficiation opportunities through innovation and technology.



## **→** CORPORATE STRUCTURE

ONE YEAR INFORMATION (31 JANUARY 2017)	<b>JSE</b> PRIMARY LISTING	LSE STANDARD LISTING MAIN BOARD
Short name	THA	THS
Price	ZAR22.80	GBp137.50
High – 52 week	ZAR28.75	GBp165.00
Low – 52 week	ZAR4.00	GBp35.00
Market capitalisation	ZAR5.9 billion	GBP353.4 million
One year return	470%	
P/E ratio	31.4	



TOP SHAREHOLDINGS (31 January 2017)	%
Medway Developments	46.3
Rance Holdings	15.8
Fujian Wuhang Stainless Steel Product	10.9
Maaden Invest	4.3
Macquarie Capital Hong Kong	3.2
Friedshelf 1525	2.6
Altius Investment Holdings	2.2
Phillip Ventures Enterprise Fund	2.1
Hongkong Heyi Mining Resource	2.0
BlackRock Investment Management	1.4
Swiss Asia Financial Services (HK)	1.1
Quam Securities	1.1
Canaccord Genuity	0.9
Old Mutal	0.6
Tharisa share award plan	0.4

<sup>\*</sup> Average volume traded is measured over 30 days



## **→THE GROUP'S KEY DIFFERENTIATORS**

**DEVELOPMENT** 

INITIATED IN 2006, THROUGH THE FINANCIAL AND ENERGY CRISIS

IDENTIFICATION OF UNIQUE ORE BODY

INNOVATIVE DEVELOPMENT OF PROCESSING PLANTS

UNIQUE

MINING OF FIVE MG CHROMITITE LAYERS

CO-PRODUCTION OF PGM AND CHROME CONCENTRATES

MINE TO MARKET MODEL

LARGE SCALE MINING OPERATIONS

OPEN PIT OPERATIONS WITH 18 YEARS LOM

UNDERGROUND EXTENSION BY FURTHER 40 YEARS

MECHANISED OPEN PIT MINING

**INNOVATIVE PROCESSING** 

INTEGRATED PRODUCTION AND DERISKED

INDEPENDENT PROCESSING PLANTS – OPERATIONAL FLEXIBILITY PGM AND CHROME
CONCENTRATES

**TRACK RECORD** 

EXTENSIVE INDUSTRY AND MANAGEMENT EXPERIENCE

SUCCESSFUL TRACK RECORD OF IDENTIFYING, DEVELOPING AND OPERATING MINES

OPTIMISATION IN PROGRESS AND R&D TO MAXIMISE VALUE



## → MINING

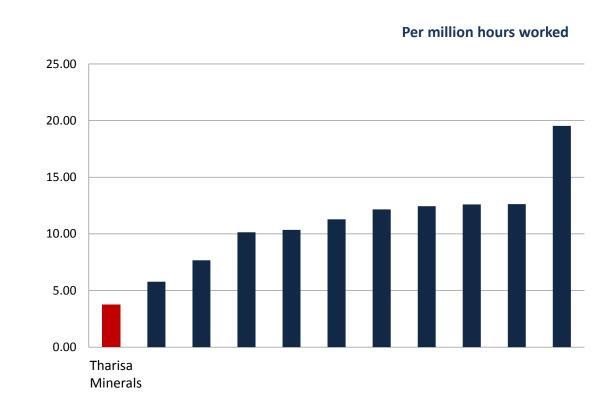


### **SAFETY**

### SAFETY AND HEALTH A PRIORITY

- Safety remains the number one priority of management and all employees - we strive for zero harm
- On 19 January 2017, Tharisa Minerals achieved the milestone of one million fatality free shifts
- There were no lost time injuries in Q1 FY2017
- Best Safety Performance in class award at Mine Safe 2016

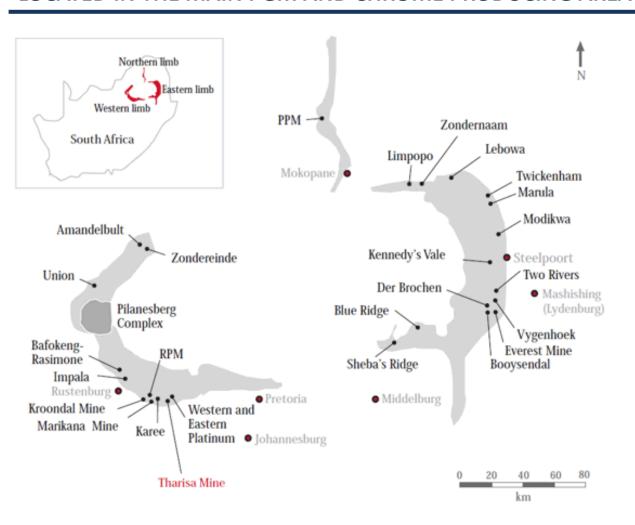
### **COMPARATIVE LTIFR RATE (January 2017)**



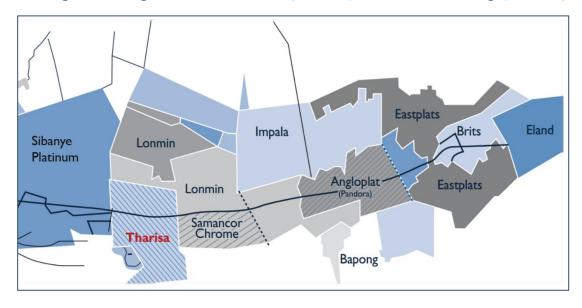


### OVERVIEW OF THE THARISA MINE

### LOCATED IN THE MAIN PGM AND CHROME PRODUCING AREA IN SOUTH AFRICA



- Mining rights over 5 475 ha
- Adjacent to Anglo Platinum, Lonmin, Impala Platinum, Eastern Platinum
- Well serviced by road, rail, power and other services
- Neighbouring towns are Brits (45 km) and Rustenburg (35 km)





## **™MINING**

### **RESOURCES AND RESERVES**

 Steady state mining rate of 5.0 Mtpa with an average open pit stripping ratio of 9.7 (m³:m³ basis)

#### MINERAL RESOURCE

- 877.7 Mt
- 1.58 g/t 6PGE + Au
- 20.5% Cr<sub>2</sub>O<sub>3</sub>

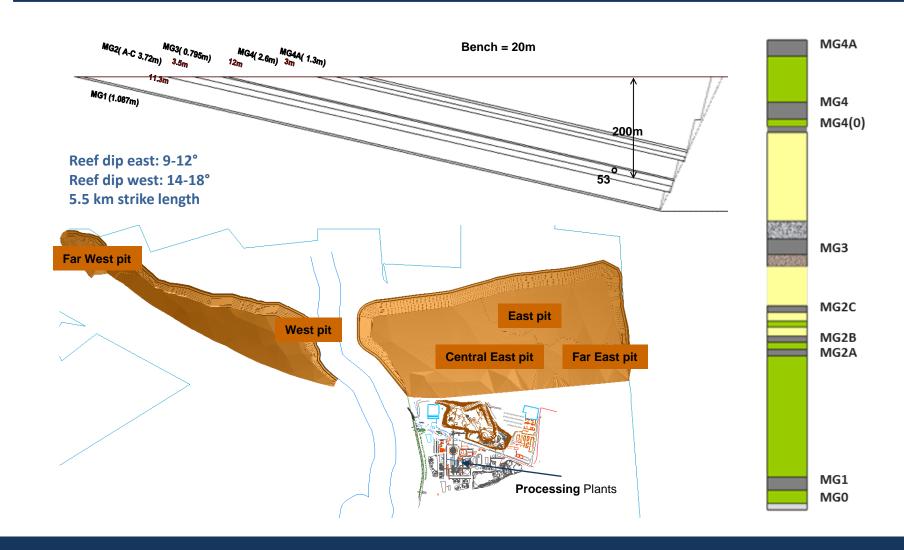
#### **MINERAL RESERVE**

- 98.9 Mt
- 1.50 g/t 5PGE + Au
- 20.1% Cr<sub>2</sub>O<sub>3</sub>

#### **OPEN PIT MINERAL RESERVE**

- 80.2 Mt
- 1.49 g/t 5PGE + Au
- 20.3% Cr<sub>2</sub>O<sub>3</sub>

### GENERALISED CROSS SECTION OF THE MG CHROMITITE LAYERS AT PLANNED DEPTH



Declaration as at 30 September 2016

## **⊸**GEOLOGY

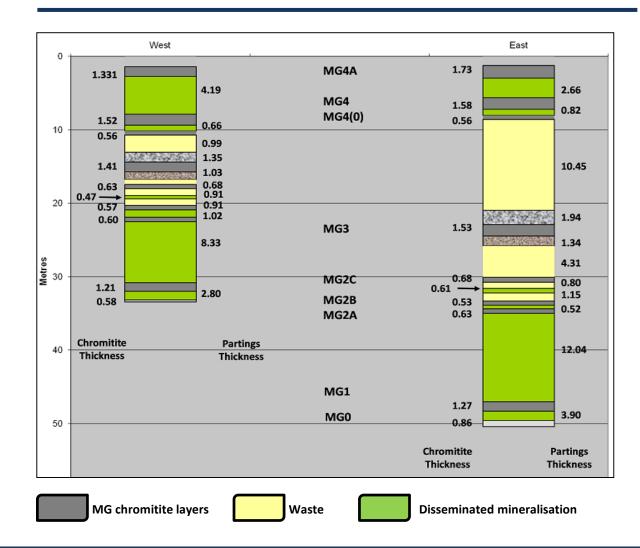
### **GEOLOGY**

- The MG reef package is classified into six chromitite layers
  - MG0, MG1, MG2, MG3, MG4, MG4A
- Partings are generally anorthosite, pyroxenite or norite
- Reef package varies from 50 m in the west to 74 m in the east (incl. partings)
- PGMs are concentrated in the MG2, MG3 and MG4 reefs

#### MINING SEQUENCE AND PROCESS ROUTE

UNIT	PROCESS
MG4A chromitite layer	Sent to Genesis Plant
Parting	Discarded
MG4 package	Sent to Voyager Plant
Anorthosite or norite	Selectively mined and discarded
MG3 package	Sent to Voyager Plant
Anorthosite or norite	Selectively mined and discarded
MG2 package	Sent to Voyager Plant
Pyroxenite with disseminated mineralisation	Selectively mined and discarded
MG1 package	Sent to Genesis Plant

### MG REEF STRATIGRAPHY

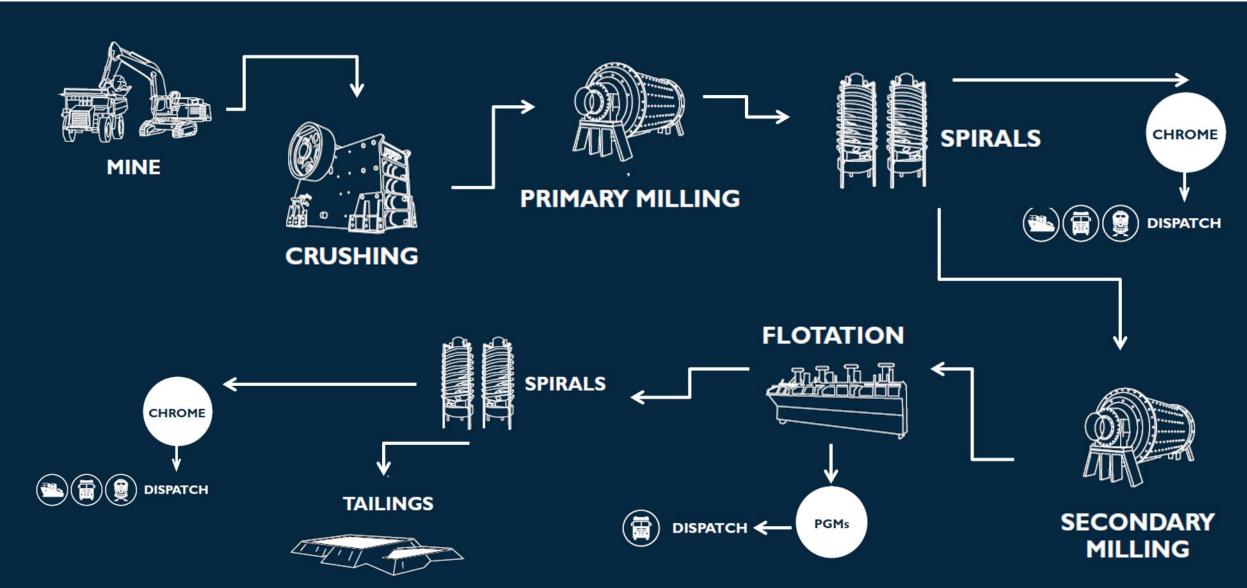




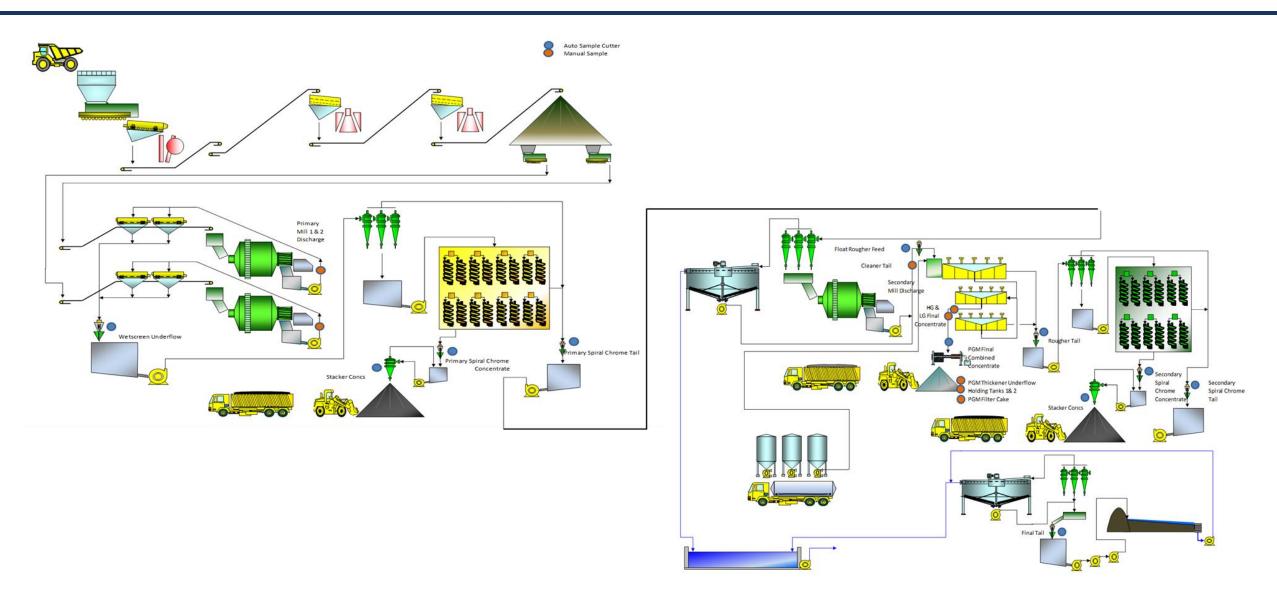
## **→ PROCESSING**



## **⊸INNOVATIVE APPROACH**



## **→ DETAILED PROCESS FLOW DIAGRAM**



## PROCESSING

### **KEY FACTS**

- Process plants are owned and operated by Tharisa
- Each plant operates independently, providing flexibility and limiting potential process disruptions
- Basic process:
  - ROM is crushed and screened
  - Selected reef ROM sent to Challenger
     Plant to recover foundry and chemical grade
  - Primary milling to liberate chromite crystals
  - Primary spirals to recover chromite
  - Secondary milling to liberate PGM particles
  - Flotation circuit to recover PGM particles
  - Secondary spirals to recover additional chromite

#### INDEPENDENT PROCESSING PLANTS

#### **GENESIS PLANT**

- Capacity: 100 ktpm ROM
- Processes reef layers with lower
   PGM and higher chromite grades
- Challenger Plant recovers high value foundry grade and chemical grade chrome concentrates



#### **VOYAGER PLANT**

- Capacity: 300 ktpm ROM
- Processes reefs with higher PGM and lower chromite grades
- Produces both metallurgical and chemical grade concentrate





## **→** MINE TO MARKET



### **⊸VALUE CHAIN**



MID TIER OPEN PIT PGM AND CHROME CONCENTRATE CO-PRODUCER WITH AN INTEGRATED MARKETING, SALES, AND LOGISTICS PLATFORM









## **⊸GLOBAL DISTRIBUTION**





## **¬**COMMODITY MARKETS – PGMS AND CHROME



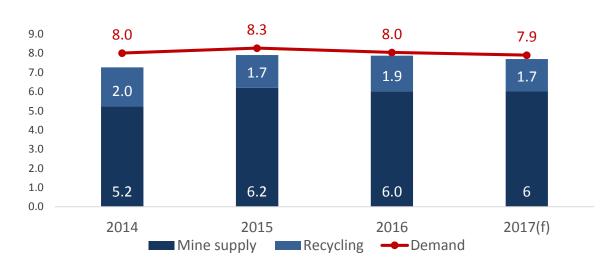


### **⊸PGM MARKET**

### **DEMAND AND SUPPLY**

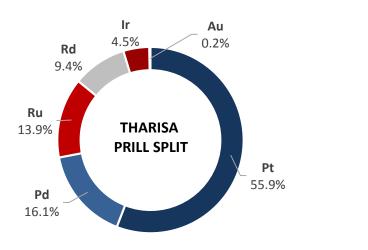
- Demand is driven by the autocatalyst, jewellery, industrial and investment sectors
- In 2017 platinum to remain in deficit by 100 koz
- Palladium to remain in deficit for 2017

### PLATINUM DEMAND AND SUPPLY [Moz]



### PLATINUM AND PALLADIUM MARKET PRICE







### CHROME MARKET

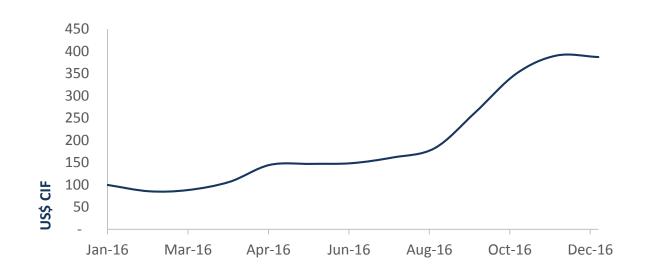
### **DEMAND AND SUPPLY**

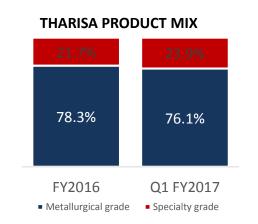
- Demand for metallurgical grade chrome concentrate is driven by its use in the manufacture of stainless steel
- China is wholly dependent on imports of chrome ore/alloy
- Current port stocks are 1.5 Mt (as at 20 January 2017)

### **CHROME ORE IN CHINA [kt]**



### METALLURGICAL GRADE CHROME CONCENTRATE PRICE





CHEMICAL GRADE	FOUNDRY GRADE
Cr <sub>2</sub> O <sub>3</sub> – 45% to 47% SiO <sub>2</sub> - <1.2%	Cr <sub>2</sub> O <sub>3</sub> - >46% SiO <sub>2</sub> - <1.0%
Used to produce sodium dichromate used in leather tanning, pigments, plating	Used in moulds for metal castings and nozzle sands

## **→ OPERATIONAL PERFORMANCE**



## **→OPERATIONAL HIGHLIGHTS**

### **QUARTERLY PERFORMANCE**

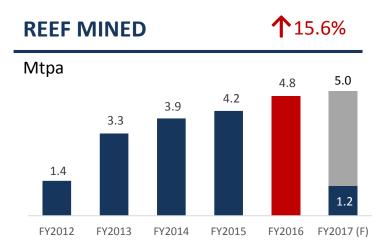
		Q4 FY2016	Q1 FY2017	% change
ROM mined	kt	1 243.3	1 229.9	(1.1)
PGM rougher feed grade	g/t	1.61	1.52	(5.6)
Chrome grade	%	17.5	17.5	-
ROM processed	kt	1 267.2	1 206.4	(4.8)
PGM recovery	%	80.6	80.5	(0.1)
PGM in concentrate	koz	39.1	34.8	(11.0)
Chrome recovery	%	63.5	64.3	1.3
Chrome concentrate	kt	332.2	322.2	(3.0)
Metallurgical grade	kt	250.1	245.1	(2.0)
Specialty grade	kt	82.1	77.1	(6.1)
PGM basket price	US\$/oz	804	740	(8.9)
Chrome concentrate price (42% CIF China)	US\$/t	157	250	59.2
Average exchange rate	ZAR:US\$	14.1	13.9	

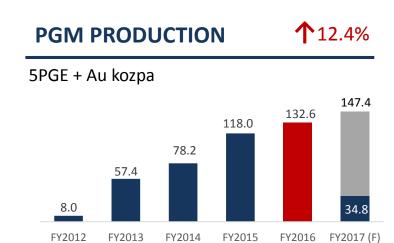
### **ANNUAL PERFORMANCE**

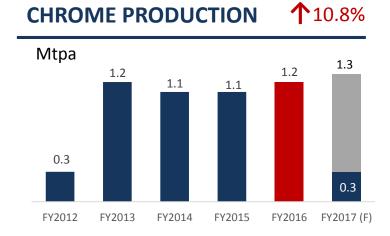
		FY2015	FY2016	% change
ROM mined	Mt	4.2	4.8	15.6
PGM rougher feed grade	g/t	1.62	1.65	1.9
Chrome grade	%	18.3	18.0	(1.6)
ROM processed	Mt	4.4	4.7	5.8
PGM recovery	%	65.8	69.9	6.2
PGM in concentrate	koz	118.0	132.6	12.4
Chrome recovery	%	58.0	62.7	8.1
Chrome concentrate	Mt	1.1	1.2	10.8
Metallurgical grade	kt	1 009.4	974.3	(3.5)
Specialty grade	kt	112.8	269.4	138.8
PGM basket price	US\$/oz	885	736	(16.8)
Chrome concentrate price (42% CIF China)	US\$/t	158	120	(24.1)
Average exchange rate	ZAR:US\$	12.0	14.8	



## **→HIGHLIGHTS**







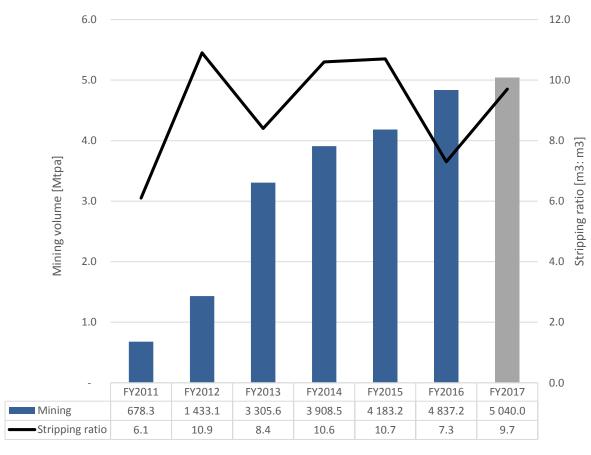






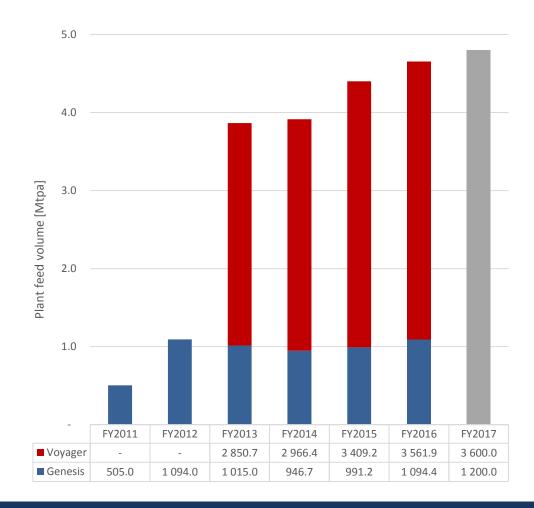
## **→ MINING**

### **MINING**



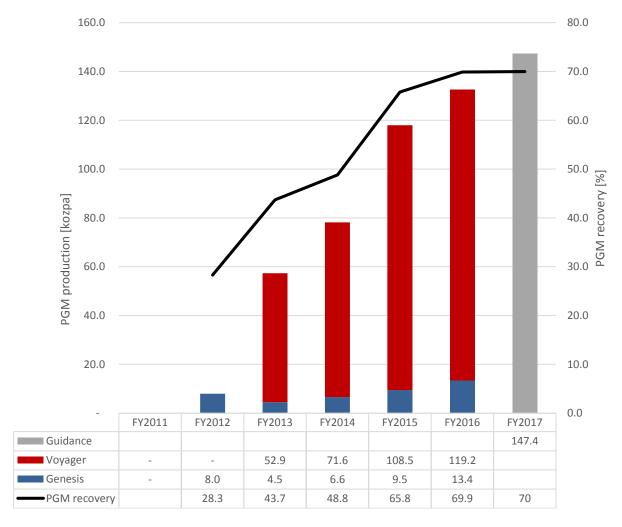
### Open pit LOM stripping ratio of 9.7 (m³ to m³ basis)

### **PLANT FEED**

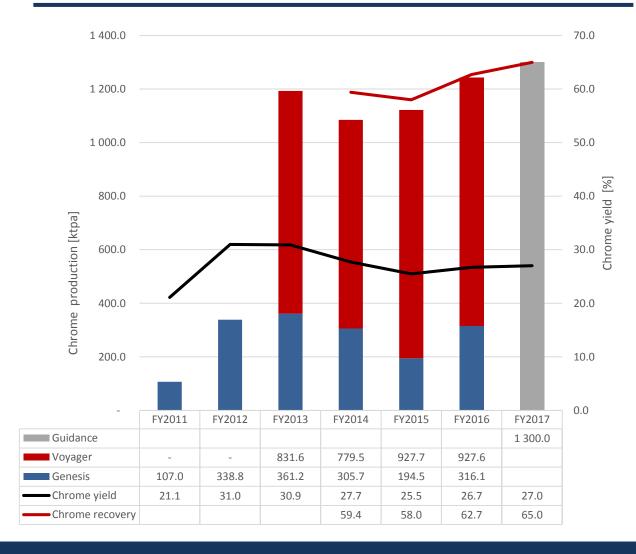


## **⊸PRODUCTION**

### **PGM PRODUCTION**



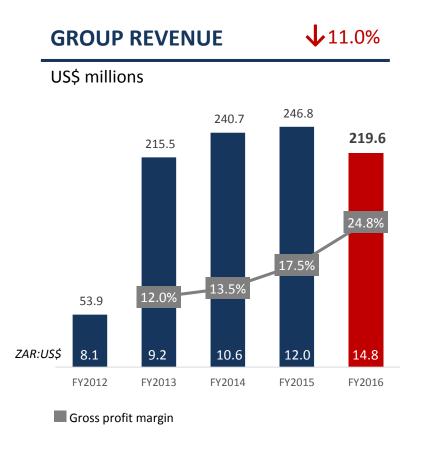
### **CHROME PRODUCTION**

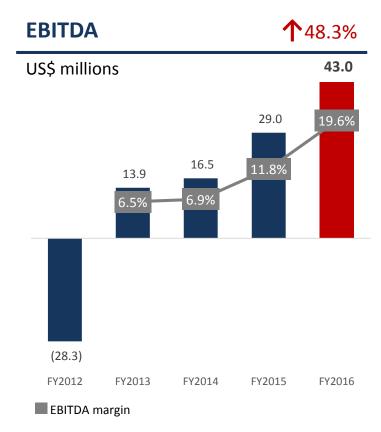


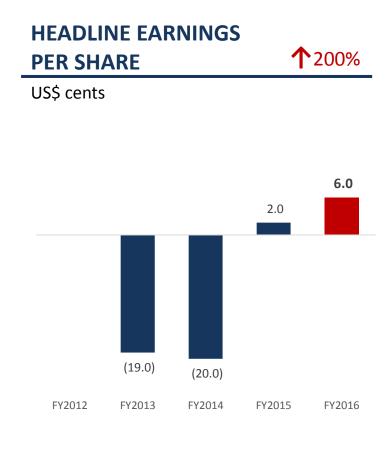
## → FINANCIAL PERFORMANCE



## **⊸GROUP FINANCIAL HIGHLIGHTS**







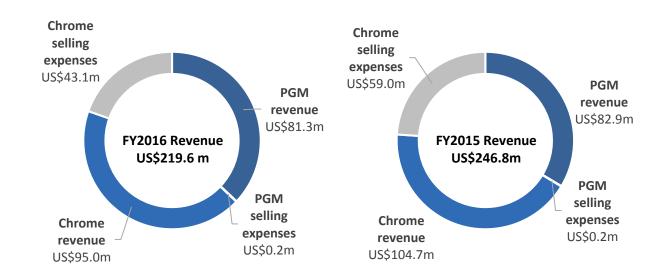
## **⊸GROUP SUMMARY OF RESULTS**

### **INCOME STATEMENT HIGHLIGHTS**

US\$ millions	FY2016	FY2015	% change
Revenue	219.6	246.8	(11.0%)
Gross profit	54.5	43.1	26.5%
Gross profit margin	24.8%	17.5%	41.7%
Results from operating activities	32.1	18.4	74.5%
EBITDA	43.0	29.0	48.3%
EBITDA margin	19.6%	11.8%	66.1%
Net finance costs	10.2	8.7	17.2%
Profit before tax	22.0	9.6	129.2%
Тах	6.2	3.6	72.2%
Profit after tax	15.8	6.0	163.3%
Headline earnings per share (US\$ cent)	6	2	200.0%
Distribution to shareholders proposed (US\$ cent)	1	-	-

### **SEGMENTAL ANALYSIS**

	FY2016		FY2015	
US\$ millions	PGMs	Chrome	PGMs	Chrome
Gross profit	24.2	30.3	19.2	23.9
Gross profit percentage	29.7%	21.9%	23.1%	14.6%
Sales volume	132.9 koz	1.2 Mt	119.9 koz	1.1 Mt
Average transport costs per tonne of chrome concentrate (CIF main ports China) a decrease of 24.5% - US\$/t		42		56



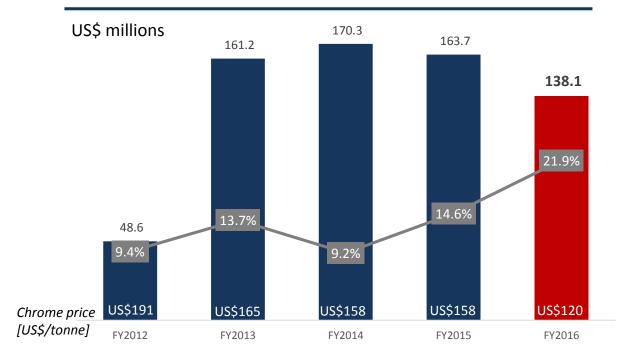


### **→ SEGMENTAL ANALYSIS**

### **PGM REVENUE AND GROSS PROFIT MARGIN**



### CHROME REVENUE AND GROSS PROFIT MARGIN



### PGM SALES VOLUME [koz]



### **CHROME CONCENTRATE SALES VOLUME [Mt]**





## **⊸GROUP COST ANALYSIS**

### **UNIT COSTS**

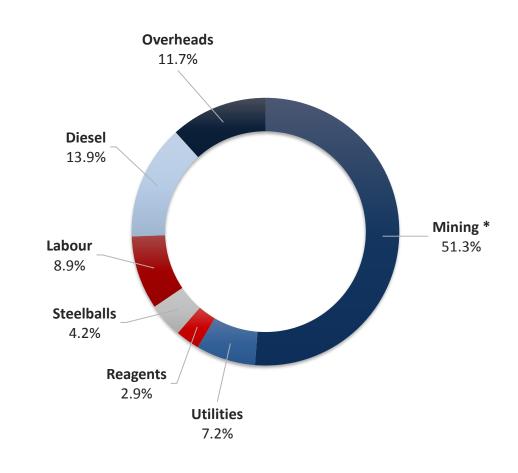
	FY2016	FY2015	% change
All in cost per Pt ounce sold	US\$438	US\$615	(28.8%)
All in cost per 42% chrome tonne sold	US\$85	US\$136	(37.5%)

#### **CONSOLIDATED CASH COST PER TONNE MILLED**

US\$/tonne milled



### **OPERATING COST ANALYSIS – EX WORKS**



<sup>\*</sup> Including contractor mining labour

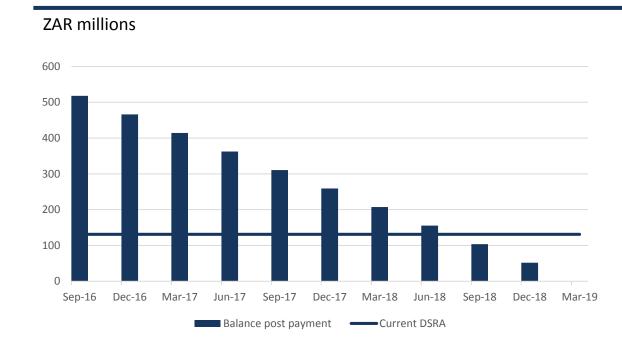


## **⊸BALANCE SHEET**

### **FUNDING**

US\$ millions	FY2016	FY2015
Total interest bearing debt	67.1	75.6
Long term	24.0	36.3
Short term*	43.1	39.3
Debt service reserve account	9.8	10.6
Pro forma interest bearing debt	57.3	65.0
Pro forma debt to total equity ratio	28.4%	36.3%
Cash and cash equivalents	15.8	24.3
Net debt	41.4	40.7
Net debt to total equity ratio	20.5%	22.8%
Net current assets/(liabilities)	0.5	(10.3)
Return on equity	5.8%	2.0%

### **SENIOR DEBT FINANCE FACILITY**



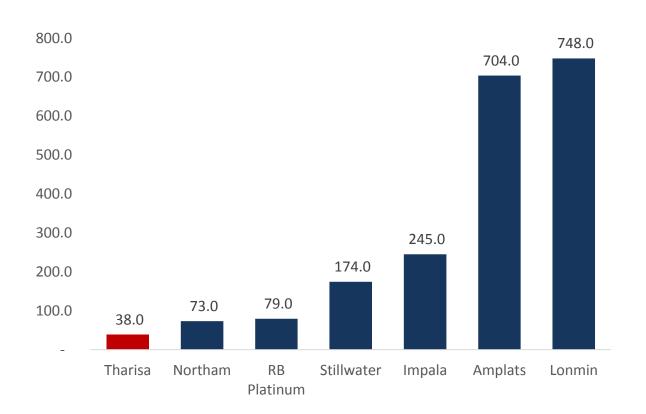
On 14 November 2016, **Tharisa Minerals achieved project completion** in respect of the senior debt finance facility. As a result, the facility's interest rate will reduce from JIBAR + 490 bps pa to JIBAR + 340 bps pa

<sup>\*</sup> Includes certain amounts in accounts payable relating mainly to accrued dividends payable by a subsidiary

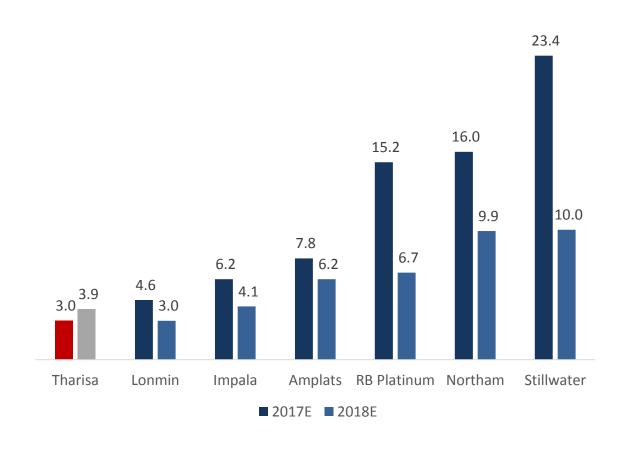


## **→PEER ANALYSIS**

### **CASH COST PER TONNE MILLED (US\$)**



### **EV/EBITDA**



Source: Company filings and analyst reports



## **─** CLOSING



## **OUTLOOK**

### **FY2016**

- Record financial and operational year for Tharisa, notwithstanding commodity price volatility
- Maiden distribution to shareholders

#### **FY2017 GUIDANCE**

- 147.4 koz of PGM concentrates
- 1.3 Mt of chrome concentrates, including 300 kt of specialty products

#### **COMMODITY MARKETS**

- Platinum price is relatively flat while palladium price remains strong at above US\$700 per oz
- Chrome prices have significantly strengthened post the financial year end

#### **LOOKING AHEAD**

- Streamlined mining operations
- Continued improvement in PGM and chrome recoveries
- Organic growth and optimisation opportunities



## **STRATEGY**

## LEADING NATURAL RESOURCES GROUP

Globally significant diversified low cost operations

### **INNOVATION**

Growth through innovative research and development projects

## OPTIMISATION INITIATIVES

Maximise value extraction

# LEVERAGING MARKETING AND LOGISTICS PLATFORM

Marketing, sales and logistics platform

Expansion into multicommodities

Geographic diversity

### **CAPITAL DISCIPLINE**

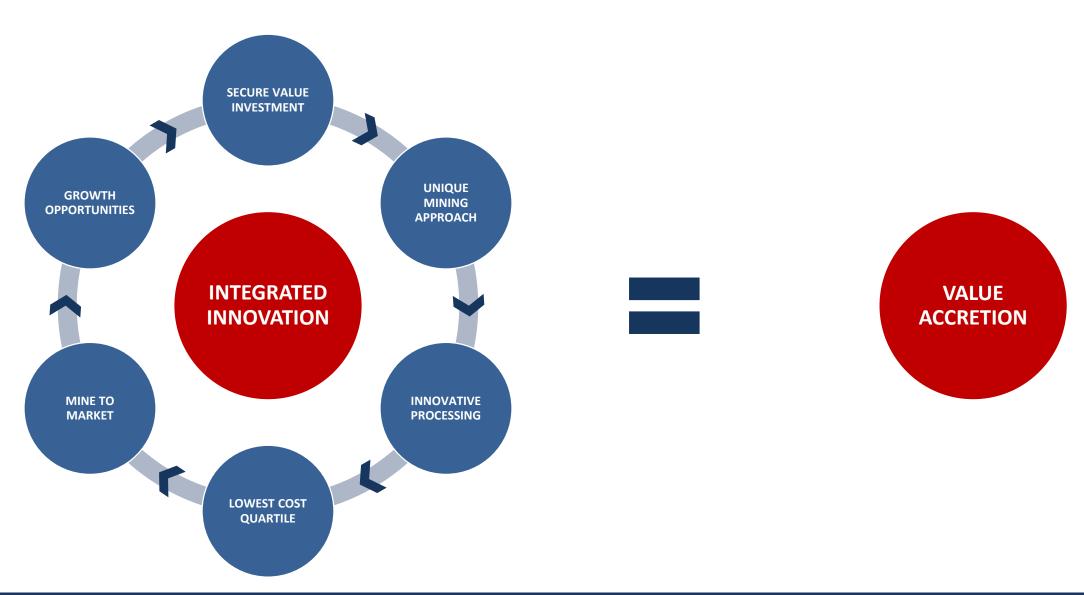
Dividend policy of 10% of NPAT

Capital allocation to low risk

projects



## **⊸**APOTHEOSIS

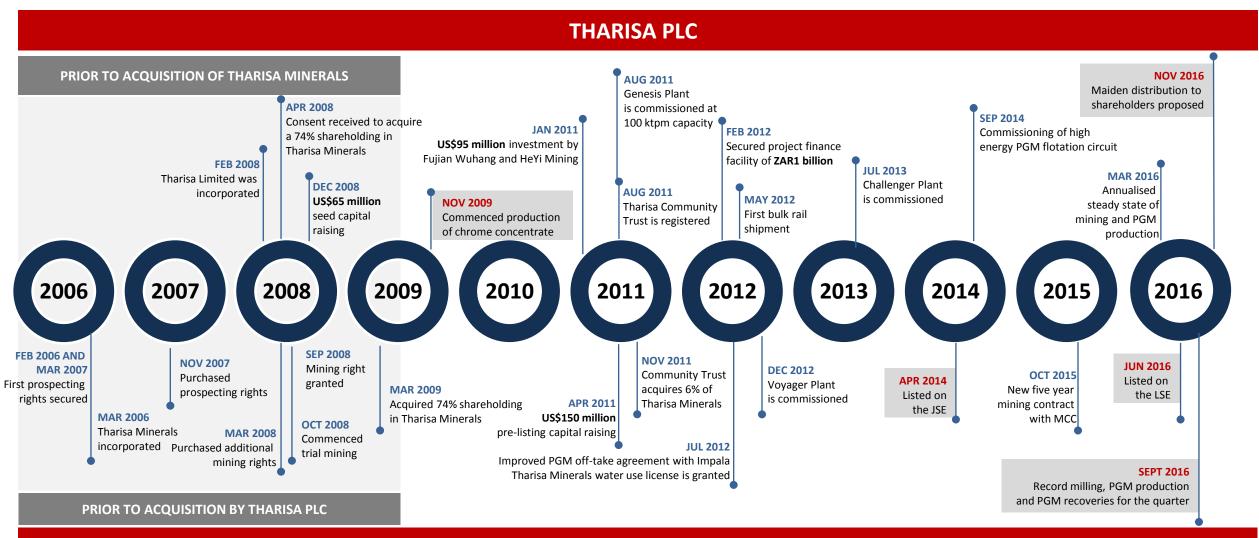




## **→ ANNEXURES**



## → HISTORY AND MILESTONES



### **THARISA MINERALS**

## "RESOURCE AND RESERVE STATEMENT

### **DECLARATION AT 30 SEPTEMBER 2016**

MINERAL RESOURCE	Tonnes [Mt]	6PGE+ Au grade [g/t]	<b>3PGE + Au grade</b> [g/t]	Cr <sub>2</sub> O <sub>3</sub> grade [%]	Contained 3PGE + Au [Moz]	Contained Cr <sub>2</sub> O <sub>3</sub> [Mt]
Measured	72.6	1.78	1.32	23.7	3.1	17.2
Indicated	112.1	1.72	1.26	22.8	4.5	25.5
Inferred	693.0	1.54	1.13	19.9	25.2	137.6
Total	877.7	1.58	1.16	20.5	32.9	180.3
MINERAL RESERVE OPEN PIT	Tonnes [Mt]	<b>5PGE+ Au grade</b> [g/t]	<b>3PGE + Au grade</b> [g/t]	Cr <sub>2</sub> O <sub>3</sub> grade [%]	Contained 3PGE + Au [Moz]	Contained Cr <sub>2</sub> O <sub>3</sub> [Mt]
Proved	54.2	1.53	1.17	21.1	2.0	11.4
Probable	26.0	1.42	1.09	18.6	0.9	4.8
Total	80.2	1.49	1.14	20.3	2.9	16.3
MINERAL RESERVE UNDERGROUND	Tonnes [Mt]	<b>5PGE+ Au grade</b> [g/t]	<b>3PGE + Au grade</b> [g/t]	Cr <sub>2</sub> O <sub>3</sub> grade [%]	Contained 3PGE + Au [Moz]	Contained Cr <sub>2</sub> O <sub>3</sub>
Probable	18.7	1.52	1.17	19.3	0.7	3.6
Total	18.7	1.52	1.17	19.3	0.7	3.6



### **→**SUSTAINABILITY

#### **HEALTH AND SAFETY**

- Fatality free year achieved
- There were no lost time injuries in Q1 FY2017
- Best Safety Performance in class award at MineSAFE 2016

### **LABOUR RELATIONS**

- No labour disruptions during the year
- 522 direct employees and 1 773 contractors
- In the second year of the three year agreement with NUM
- NUM representation of 65% within Tharisa Minerals
- Mining contractor MCC in the first year of its national three year wage deal

#### TRAINING AND DEVELOPMENT

- On mine training centre opened
- Learnerships, adult education and training

As at 31 December 2016



**LTIFR** 

**0.29** (FY2016: 0.36)





ON MINE EMPLOYEES AND CONTRACTORS

2 295

(FY2016: 2 187)



## **→**SUSTAINABILITY

### **ENVIRONMENT**

- Subscribe to the Equator Principles
- Environmental monitoring plan

### THUSANANG WELLNESS PROGRAMME

- TB programme
- HIV/AIDS programme
- Wellness days
- Peer educator programme currently 46 peer educators

### **COMMUNITY PROJECTS**

- Support of community SMME Rocasize
  - Garden services
  - Brick making
  - Clothing and personal protective equipment
- Retief Primary school food forest









## **CONTACT DETAILS**

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