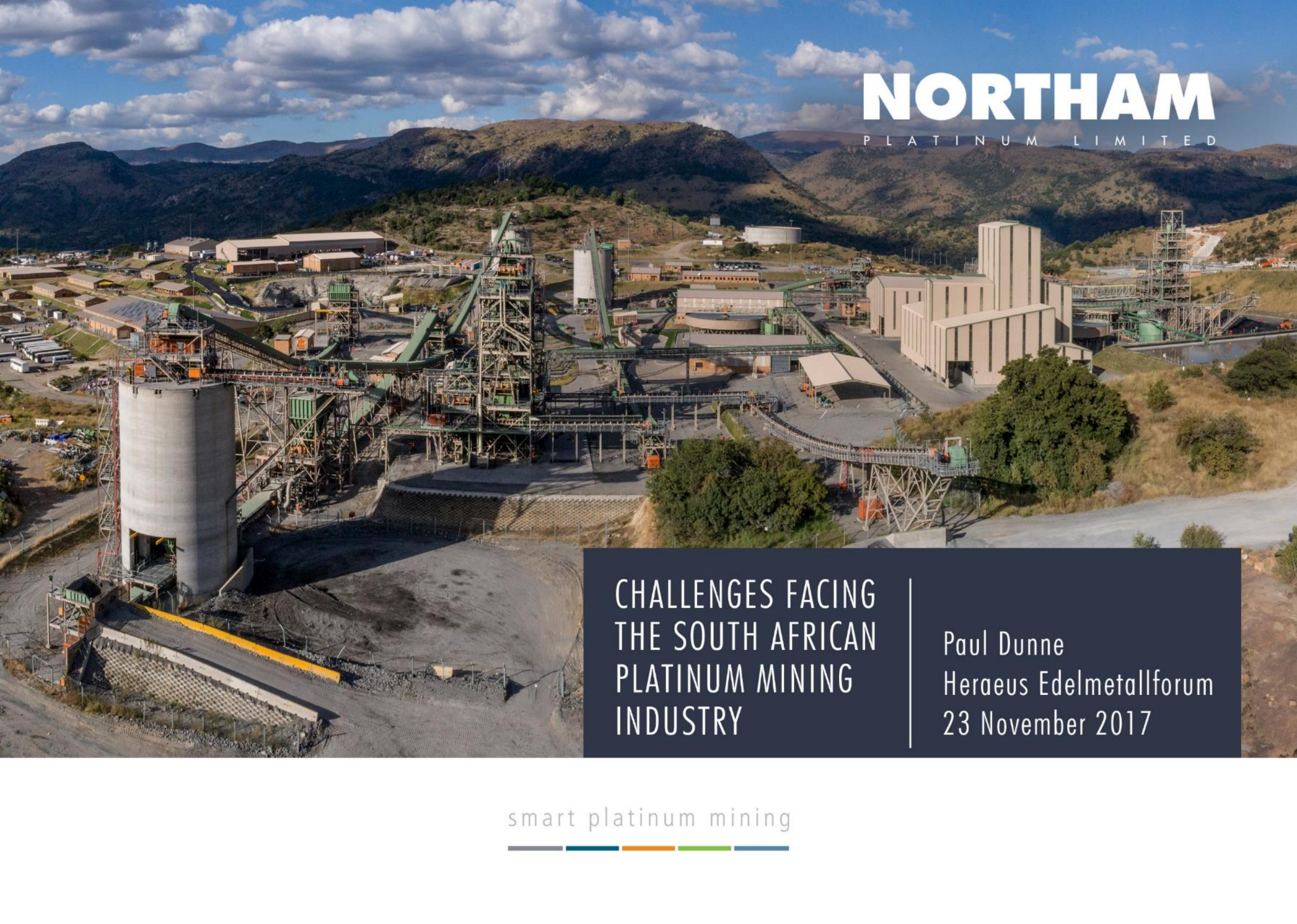




NORTHAM

PLATINUM LIMITED

CHALLENGES FACING THE SOUTH AFRICAN PLATINUM MINING INDUSTRY

Paul Dunne
Heraeus Edelmetallforum
23 November 2017

smart platinum mining

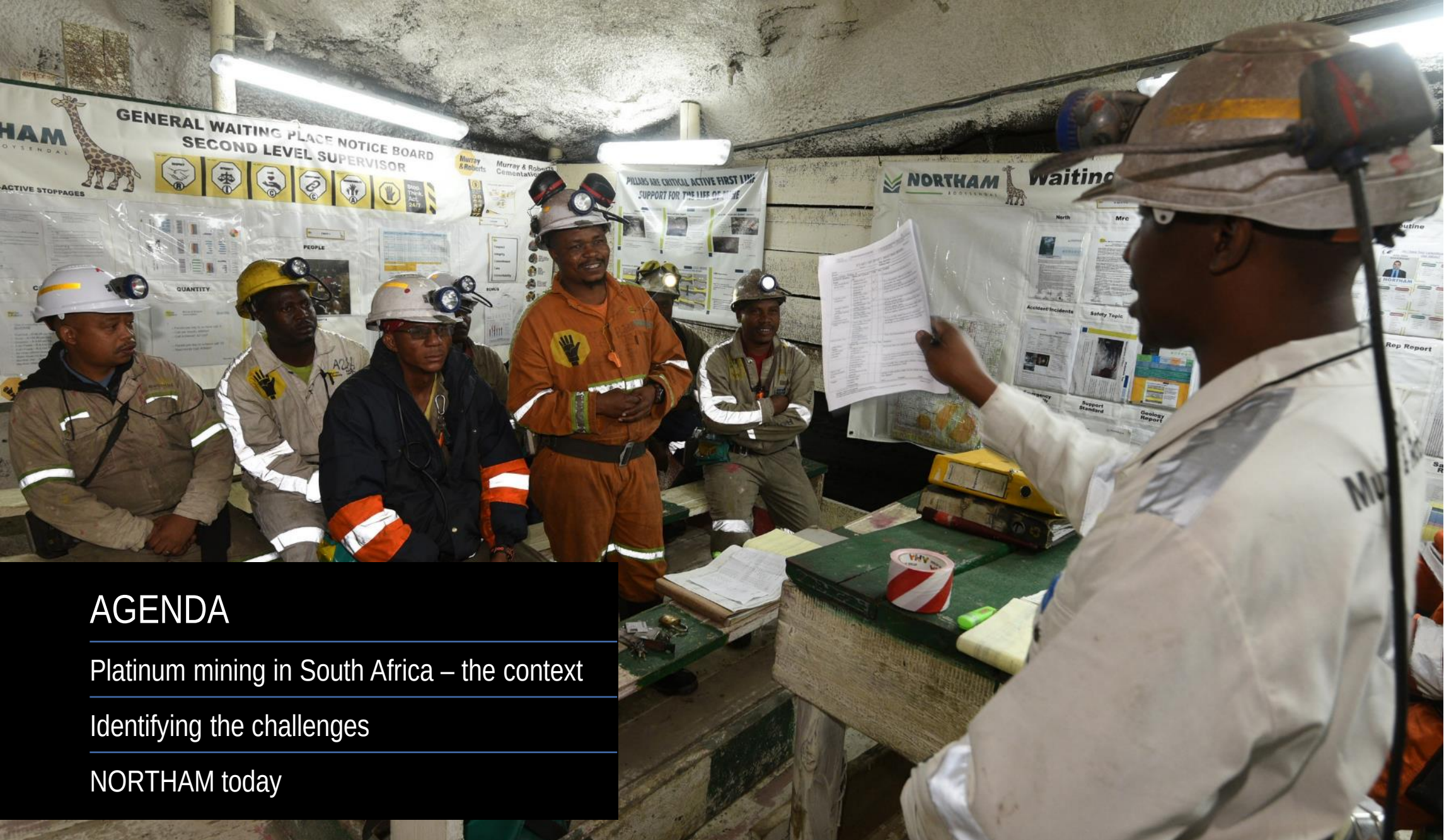


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Although Northam believes that the expectations reflected in such forward-looking statements are reasonable, no assurance can be given that such expectations will prove to be correct.

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AGENDA

Platinum mining in South Africa – the context

Identifying the challenges

NORTHAM today

PLATINUM MINING IN SOUTH AFRICA

THE CONTEXT



1924

Platinum
discovered in SA
by Hans Merensky

1930s



First mines
established



2006

5.2Moz
Peak Pt production

2016



4.2Moz
Annual production

PGMs
mined as a
complex suite
of metals

44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver
76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold

South Africa host to **80%**
of global PGM resources



PLATINUM MINING IN SOUTH AFRICA

THE MAIN PLAYERS

	Reserves	Production	Market cap
	Moz 4E	koz Pt	Rbn
Anglo Platinum	170.2	2335	111.6
Implats	41.0	1438	30.2
Lonmin	31.7	742	3.8
Sibanye-Stillwater (SA)	23.2	239	43.3
Northam	25.0*	274	26.7
RBPlats	11.8	196	6.6

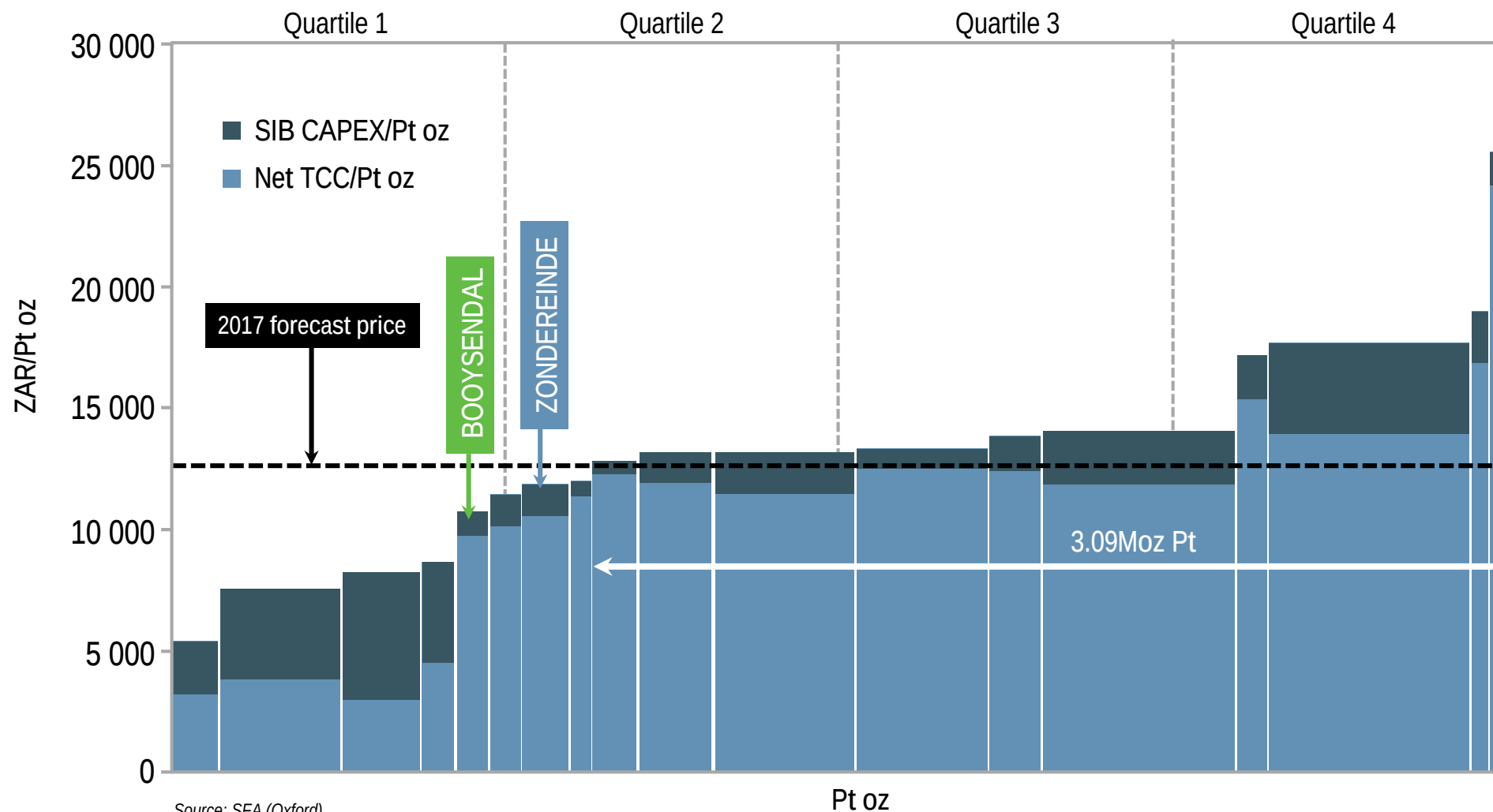
**Excludes reserves of new acquisitions*

Source: published company information

THE CONTEXT

MOVING DOWN THE COST CURVE

Net total cash costs including Cr revenue, 2017F (ZAR/Pt oz)

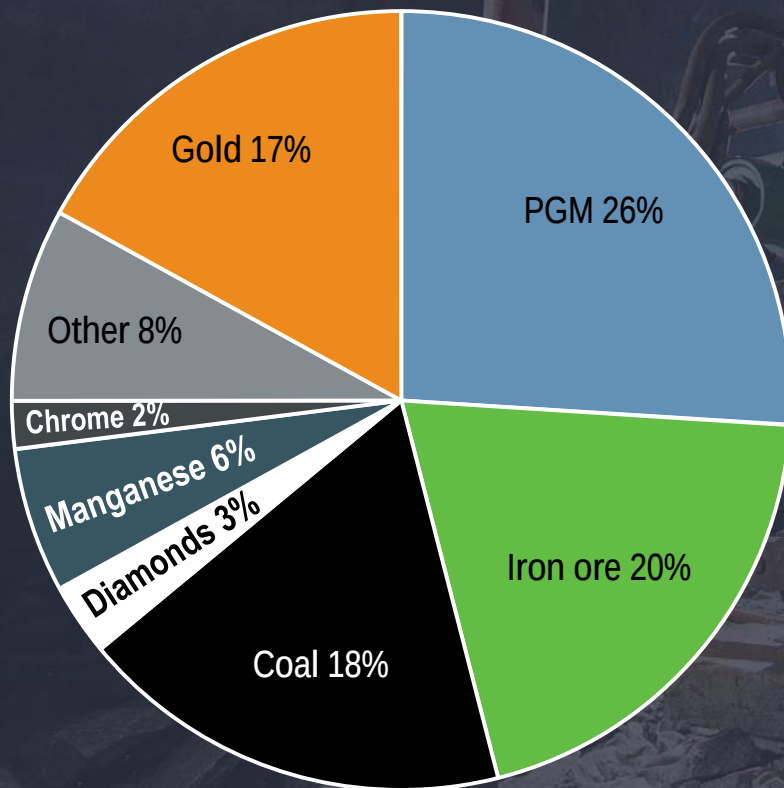


Source: SFA (Oxford)

Pt oz

PLATINUM'S CONTRIBUTION THE CONTEXT

Sector contributions to mineral exports
in South Africa (2016)



CHALLENGES FACING THE PGM SECTOR IN SOUTH AFRICA



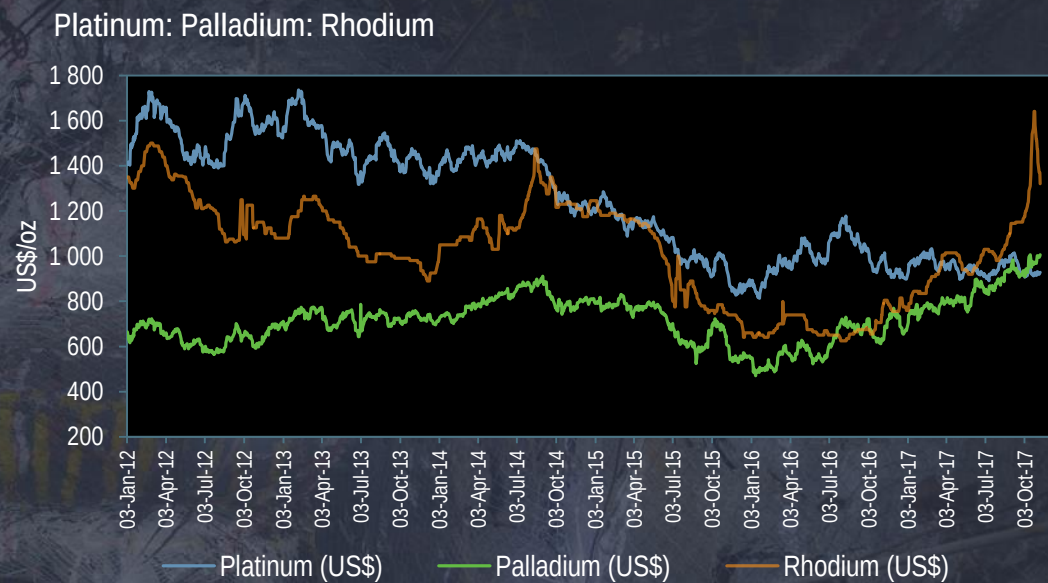


REGULATORY CHALLENGES

- Minerals legislation – MPRDA of 2002
- Mining Charter
 - continual revision and evolution
 - current impasse between Chamber of Mines and DMR
 - housing, living conditions, community development
- Permitting for environmental compliance
 - water
 - emissions/air quality
- Bureaucratic/admin delays
- Section 54 safety closures/stoppages
- Fiscal regime – subject to uncertainty
 - tax
 - royalties

ECONOMIC CHALLENGES

- Access to capital
- Price-taker
 - commodity price and exchange rate exposure
- Mining input pressures
 - electricity
 - wages
 - steel, explosives, fuel
- Margin squeeze
- Demand stimulation
 - PGI – jewellery
 - WPIC – investment
 - FCHEA – industrial, fuel cells





SOCIO-POLITICAL CHALLENGES

- Historical NUM/SACP/ANC alliance shaky
 - sporadic violence and labour instability
- Political imperative of job creation and retention
- Unrealistic community expectations
- Policy uncertainty



SUSTAINABILITY

- Human capital, skills development
- Safety and health
- Housing
- Natural resource management and conservation

TECHNICAL CHALLENGES

CHALLENGES	Solutions – ZONDEREINDE	Solutions – BOOYSENDAL
Depth	Conventional mining	Mechanised
High VRT, geothermal gradient	Pioneering hydropower	Minimising the footprint
Complex orebody – potholing, dykes, faults	• all u/g equipment driven by hydropower • backfill support • chilled water • environmental benefits: • reduces heat, dust	Reverse decline shaft connects the concentrator plant and infrastructure with the on-reef declines that outcrop on the side of the valley
Hazard management and safety: • water ingress • seismicity • equipment and materials handling		
Metallurgical complexity • UG2/Merensky balance • base metal removal • technological enhancements • precious metal refining (Heraeus)		



NORTHAM TODAY COMPANY SNAPSHOT

- Successful, diversified and well positioned
- Zondereinde – conventional, mature, longlife, high grade
- Booyssendal – modern, mechanised, shallow, large resource, modular expansion
- 2017 group output of >450 000oz
- Fully funded project pipeline in place
 - Zondereinde smelter expansion
 - Western extension – acquisition of Anglo Platinum resource
 - Booyssendal North UG deepening project
 - Booyssendal North Merensky mine
 - Booyssendal South development
- Acquisition program on track
 - Eland Platinum
 - recycling business in USA
- Long-term refining partnership with Heraeus
 - facilities in Hanau and Port Elizabeth (SA)



NORTHAM TODAY

OPERATIONAL STATISTICS

		F2017	F2016	Change
				%
Total tonnage milled	tonnes	4 450 111	4 186 028	6.3
Equivalent refined metal – own production	oz 4E	474 007	436 960	8.5
Equivalent refined metal – purchased	oz 4E	30 953	27 618	12.1
Total refined metal produced	oz 4E	452 468	453 228	(0.2)
Total refined platinum produced	oz Pt	273 432	270 902	0.9
Chrome concentrate produced	tonnes	581 385	538 405	8.0
PGMs sold	oz 4E	453 581	452 393	0.3
Total revenue per platinum oz sold	R/oz Pt	25 050	22 566	11.0
Cash costs per equivalent refined Pt oz	R/oz Pt	19 736	18 877	(4.6)



ZONDEREINDE SMELTER EXPANSION

- New furnace on schedule for December 2017 commissioning
- Drying plant commissioned
- Total capital expenditure to date is R671.6 million

ZONDEREINDE SMELTER EXPANSION



ZONDEREINDE SMELTER EXPANSION



BOOYSENDAL NORTH

UG2 mine

- Development started in August 2011
- Concentrator commissioned in March 2013
- Producing at steady state – 199 330oz (F2017)

Merensky mine

- Phase 1 mine established
- producing at 25 000tpm
- decline development and ore reserve establishment progressing

UG2 deepening project

- two planned levels established
- ore handling infrastructure (conveyors, transfer boxes) 65% complete
- shaft bottom pumping arrangements 55% complete





BOOYSENDAL SOUTH PROJECT

- Central boxcut and pollution control dam nearing completion
- Phase 1 development started on all seven adits
- Civil works started for ore handling facilities – silo, ropecon
- North access road final surfacing in progress
- South access road on schedule
- Capital spend to June 2017 R733.1 million

BOOYSENDAL SOUTH PROJECT



BOOYSENDAL SOUTH PROJECT



BOOYSENDAL SOUTH PROJECT



BOOYSENDAL SOUTH PROJECT





ROPECON CONVEYOR SYSTEM

Low environmental impact

Source: Business Wire

ROPECON CONVEYOR SYSTEM

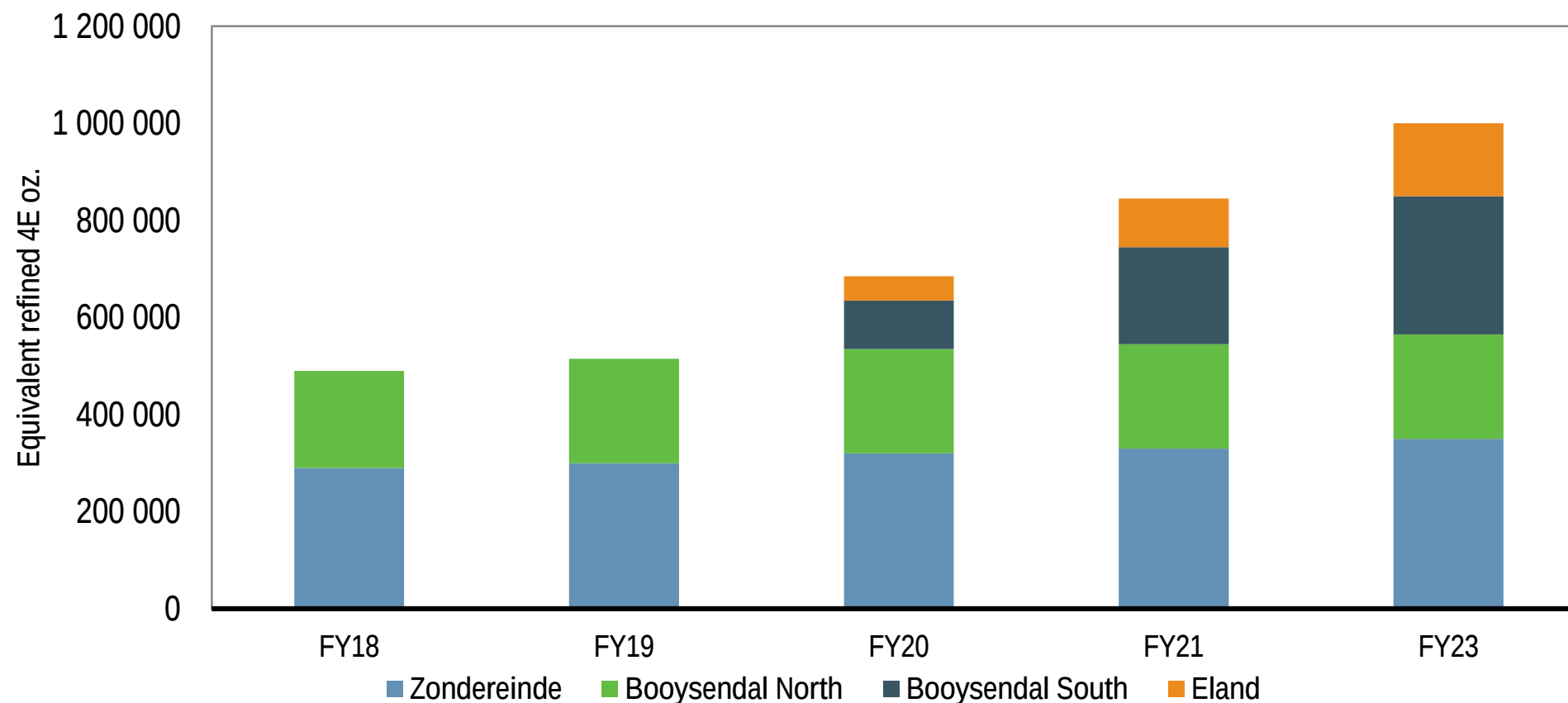
Traversing steep incline



Source: E&MJ Engineering and Mining Journal

NORTHAM GROWTH TRAJECTORY

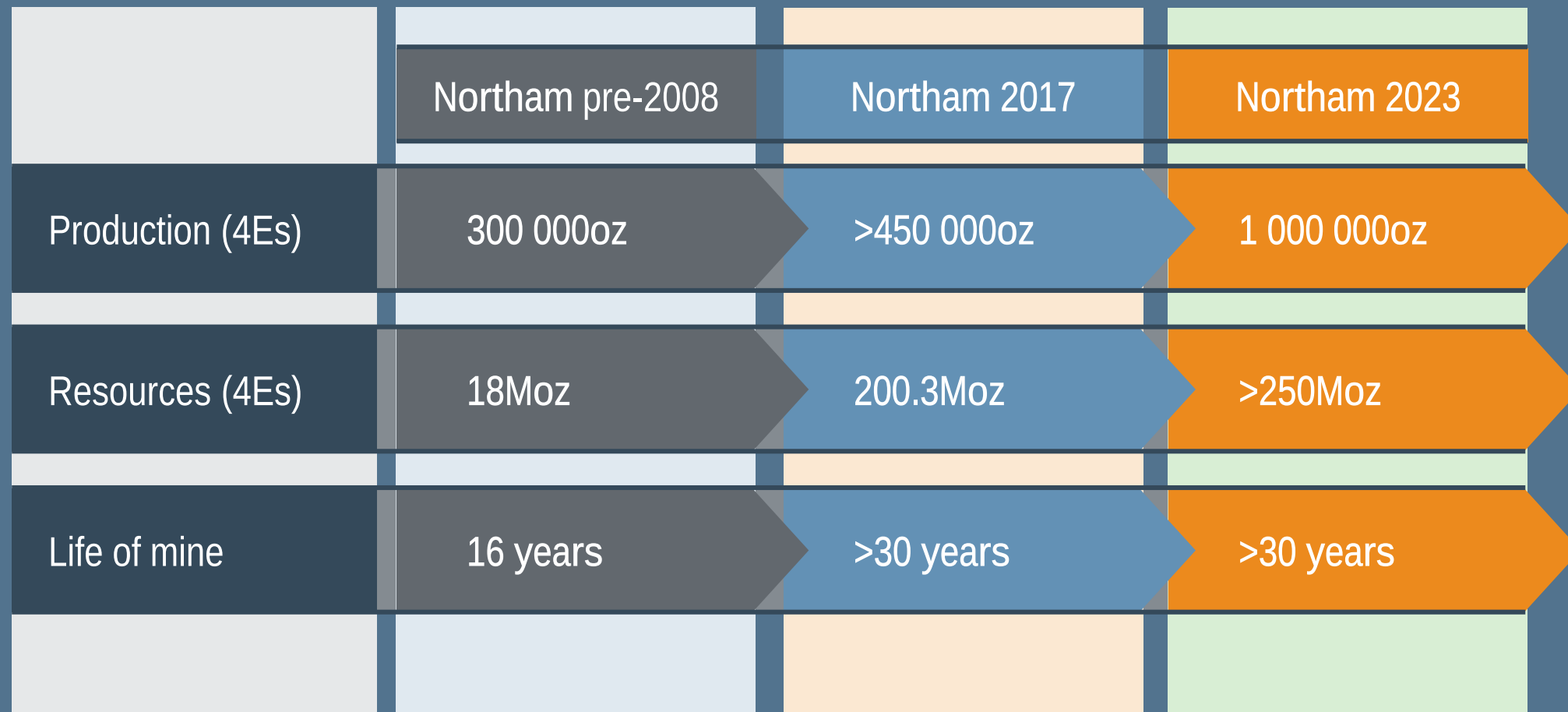
Equivalent refined 4E oz production



Notes:

- Zondereinde is shown including purchased concentrate and the stockpile release in FY18.
- Booyssendal South is shown including 4E produced by the TSF.

TRANSFORMING NORTHAM



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JSE sector	Platinum
Shares in issue	509 781 212