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THE SOUTH AFRICAN MINERAL REPORTING CODES



SAMREC

THE SOUTH AFRICAN CODE FOR THE REPORTING OF
EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES



SAMVAL

THE SOUTH AFRICAN CODE FOR THE REPORTING OF
MINERAL ASSET VALUATIONS



SAMOG

THE SOUTH AFRICAN CODE FOR THE REPORTING OF
OIL AND GAS RESOURCES

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Overview of the SAMREC Codes

Ken Lomberg
Pivot Mining Consultants

October 2017

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Listed PGE Companies

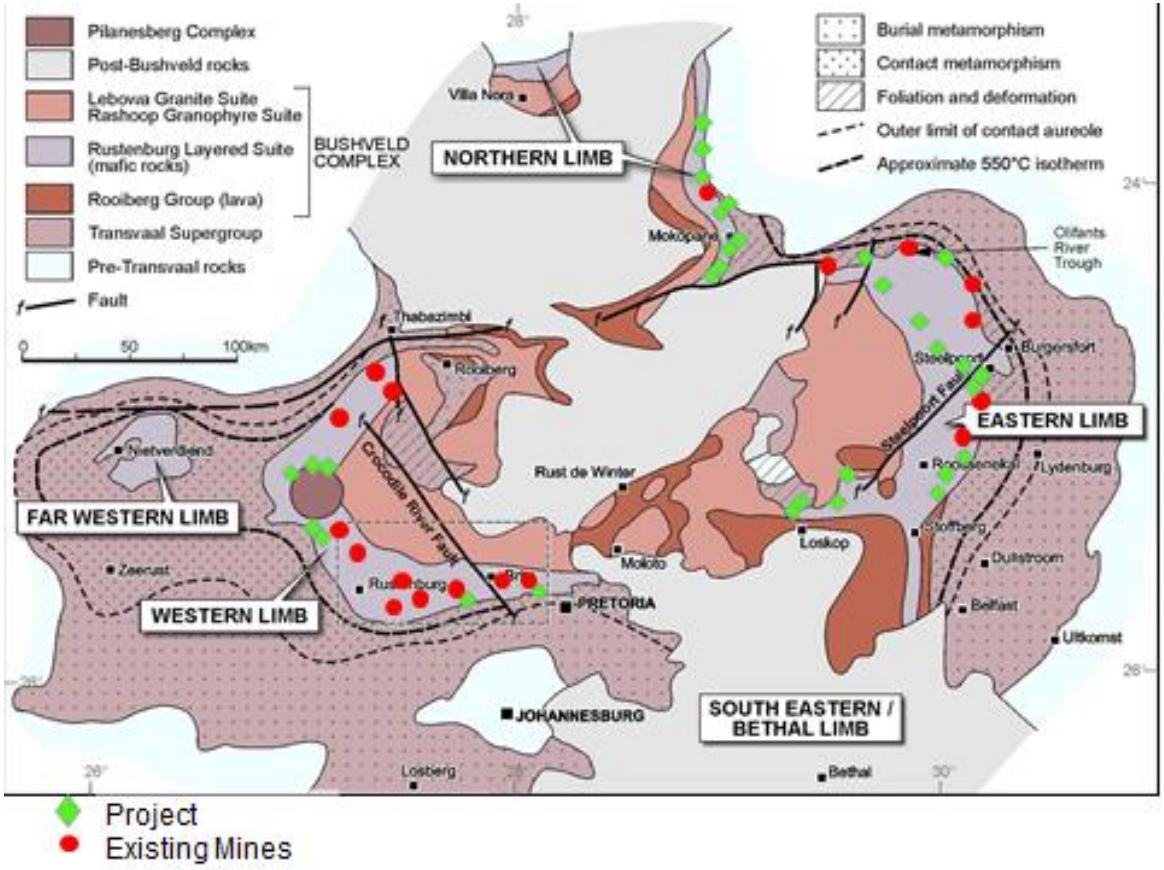
- Aquarius Platinum Limited
- African Rainbow Minerals
- Anglo American Platinum
- Atlastsa Resources Corporation
- Bauba Limited
- Chrometco Limited
- Eastern Platinum Limited
- Glencore Xstata
- Jubilee Resources Limited
- Impala Platinum Ltd
- Lonmin plc
- Northam Platinum Ltd
- Pallinghurst Limited
- Platfields Ltd
- Royal Bafokeng Platinum
- Sibanye Stillwater
- Tharisa plc
- Wesizwe Platinum Ltd

JSE

- **18 of 59 on Minerals Board**
- **Reporting in accordance with SAMREC, SAMVAL and Section 12**

OTHER COMPANIES – OTHER BOURSES/PRIVATE

- African Thunder Platinum
- Bushveld Platinum
- Bushveld Minerals
- Hernic
- Ivanhoe
- Lesego Platinum
- Nkwe Platinum
- Platfields
- Platinum Group Metals
- Sedibelo Platinum Mines
- Sylvania Minerals



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THE SOUTH AFRICAN CODE FOR THE REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES

(THE SAMREC CODE)

2016 EDITION

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Pertinent Aspects of the Reporting Codes

A **required minimum standard** for the **Public Reporting** of Exploration Results, Mineral Resources and Mineral Reserves

Considered relevant to **all solid minerals**

Present information about mineral assets to

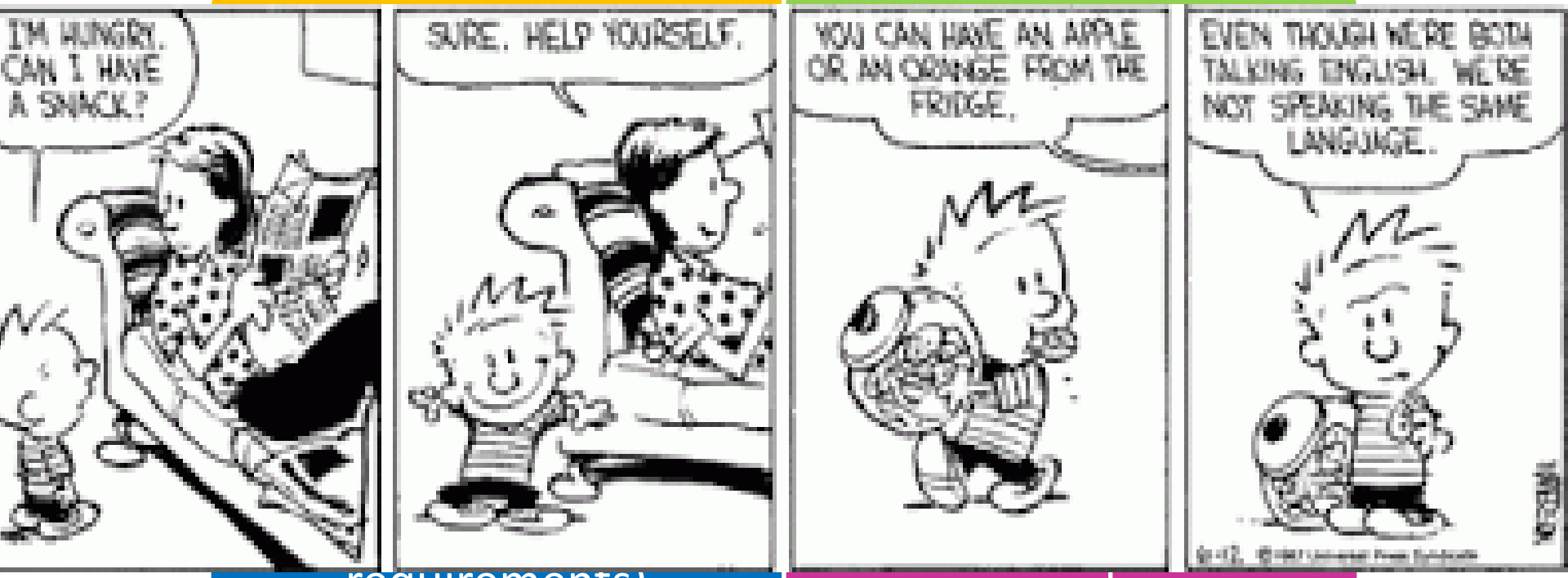
- Investors and potential investors
- Advisors
- Satisfy regulatory requirements



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WHY DID THE CODES DEVELOP



requirements)

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Public Reporting - What it's meant be

- To mitigate the risks
- Obtain financial, political, social support
- Demonstrate level of understanding of the project/mine.
- Need to communicate the risks effectively
- Provide a level of trust and confidence for the investors and other stakeholders.
- Effective communication is provided by the declaration of the Mineral Resources and Reserves.
- Provide a common understanding of the project/mine.



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What the Reporting Codes are not

- It's not a guarantee of good work
- It's not a cookbook for mineral resource or reserve estimation
- It's not confirmation that the project is good



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CRIRSCO CODES

SAMREC

PERC
PAN-EUROPEAN RESERVES & RESOURCES REPORTING COMMITTEE
www.perc.co

Preparado pela Comissão Brasileira de Recursos e Reservas "CBRR"

ABPM
ASSOCIAÇÃO BRASILEIRA DE EMPRESAS DE PESQUISA MINERAL

ADIMB
Agência para o Desenvolvimento Tecnológico da Indústria Mineral Brasileira

IBRAM
INSTITUTO BRASILEIRO DE MINERAÇÃO

CIM
ICM

RUSSIAN CODE

НАЭН

SME
Society for Mining, Metallurgy & Exploration

MPI
GEOSCIENCES and MINING

CERTIFICATION CODE FOR EXPLORATION PROSPECTS, MINERAL RESOURCES AND ORE RESERVES
Instituto de Ingenieros de Minas de Chile
December 2004

The JORC Code
2012 Edition

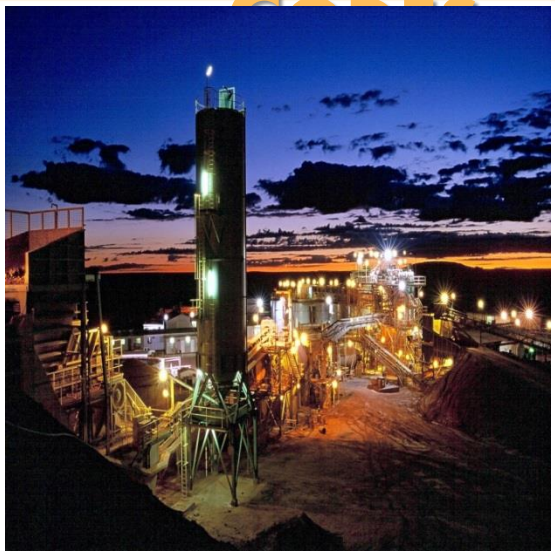
KAZRC
Republic of Kazakhstan

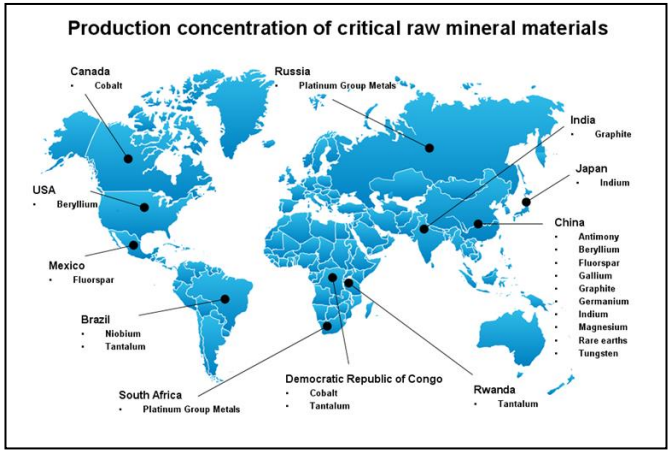
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Introduction to Mineral Reporting

The mining industry is a vital contributor to national and global economies; never more so than at present with soaring demand for the commodities that it produces. It is a truly international business that depends on the trust and confidence of investors and other stakeholders for its financial and operational well-being. Unlike many other industries, it is based on depleting mineral assets, the knowledge of which is imperfect prior to the commencement of extraction. It is therefore essential that the industry communicates the risks associated with investment effectively and transparently in order to earn the level of trust necessary to underpin its activities.

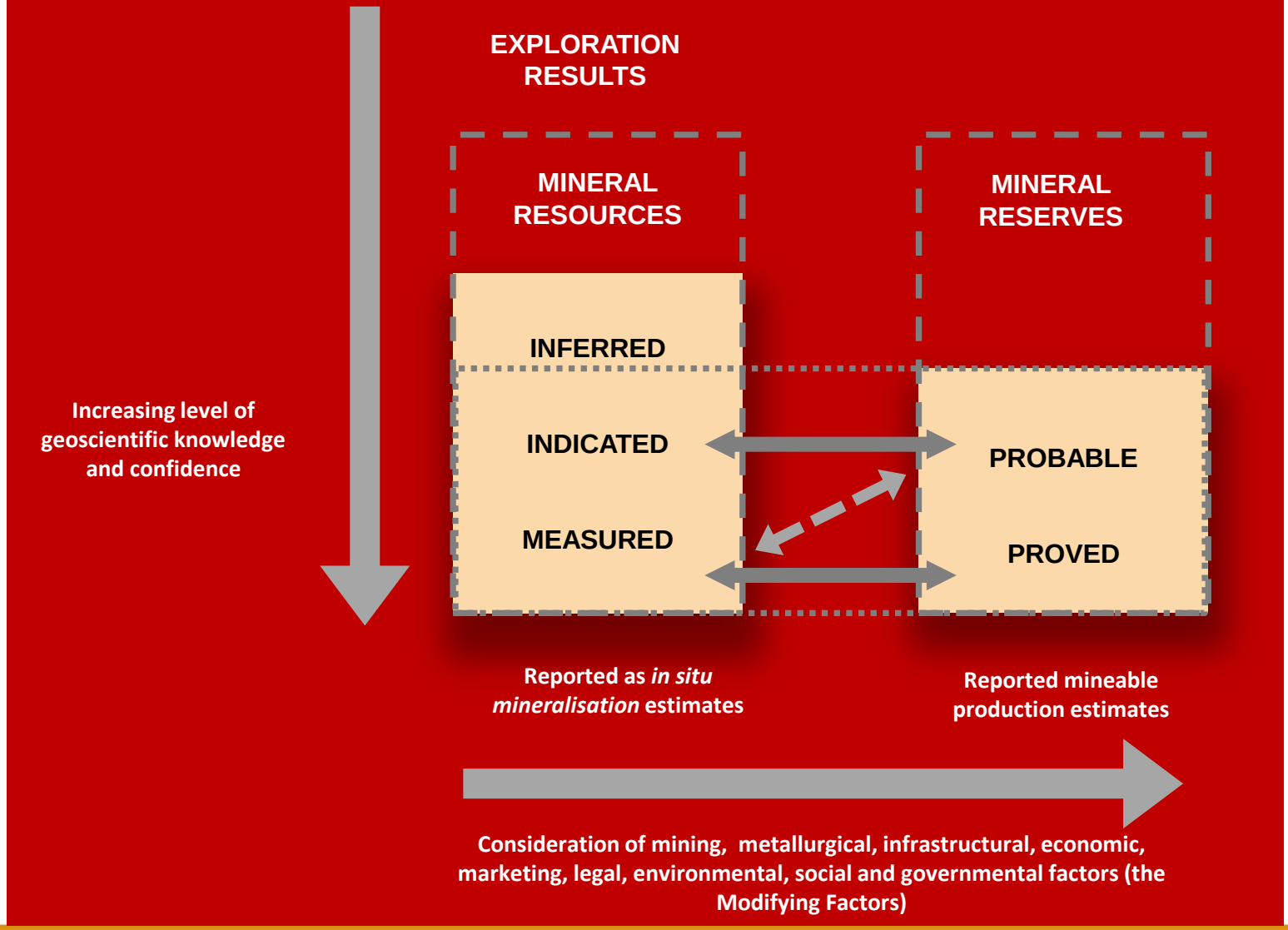
(CRIRSCO Website)

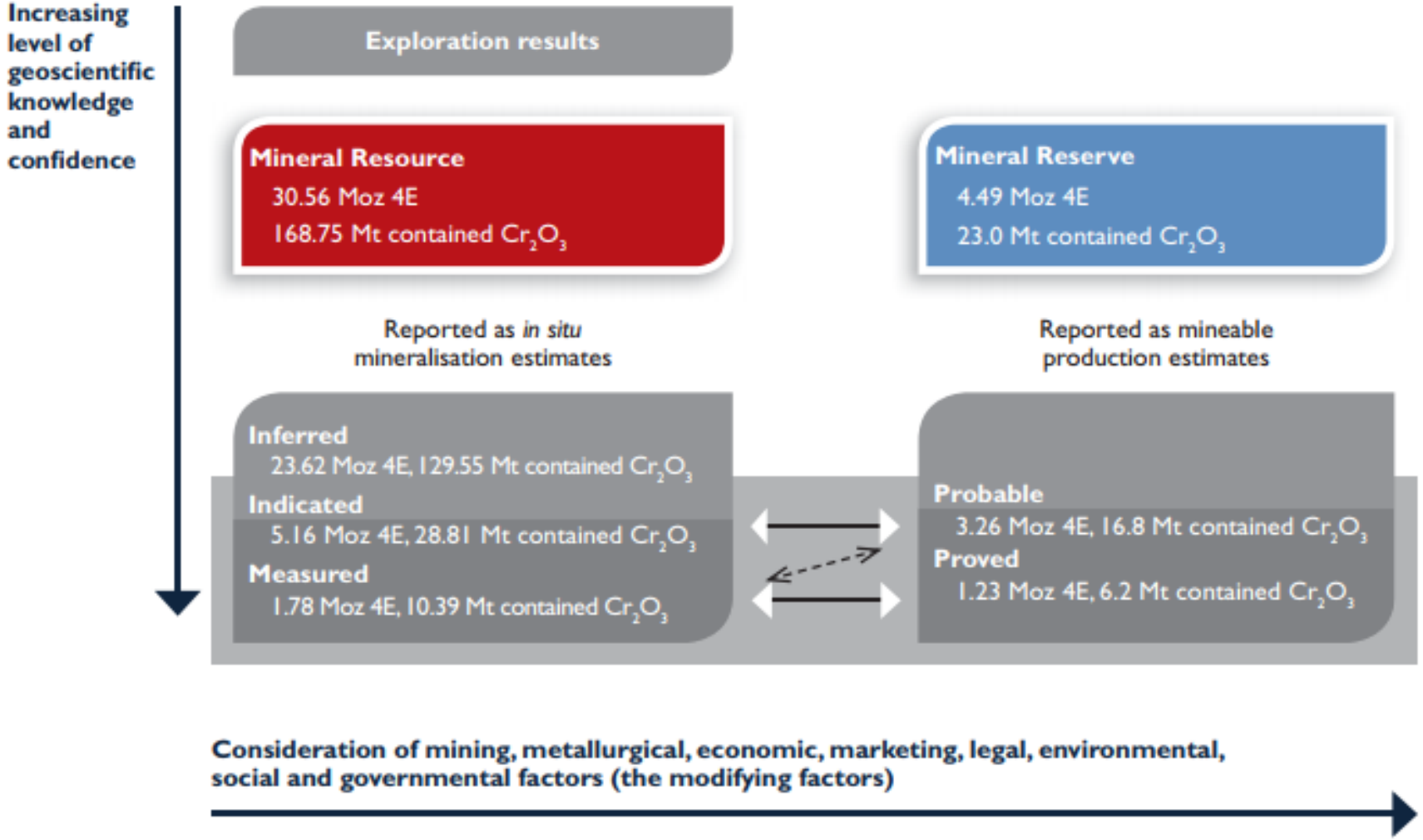




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SAMREC Code: Figure 1




Increasing level of geoscientific knowledge and confidence
Exploration results
Mineral Resource
30.56 Moz 4E
168.75 Mt contained Cr_2O_3
Mineral Reserve
4.49 Moz 4E
23.0 Mt contained Cr_2O_3
Reported as *in situ* mineralisation estimates
Reported as mineable production estimates
Inferred
23.62 Moz 4E, 129.55 Mt contained Cr_2O_3
Indicated
5.16 Moz 4E, 28.81 Mt contained Cr_2O_3
Measured
1.78 Moz 4E, 10.39 Mt contained Cr_2O_3
Probable
3.26 Moz 4E, 16.8 Mt contained Cr_2O_3
Proved
1.23 Moz 4E, 6.2 Mt contained Cr_2O_3
Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the modifying factors)

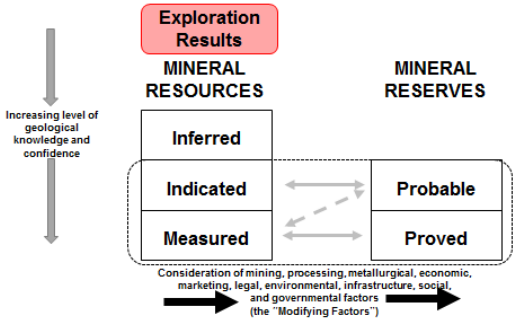
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Exploration Results

Strategic



Pre-Resource





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BAUBA PLATINUM

Bauba's PGM Merensky Reef exploration result estimate as at 30 August 2013

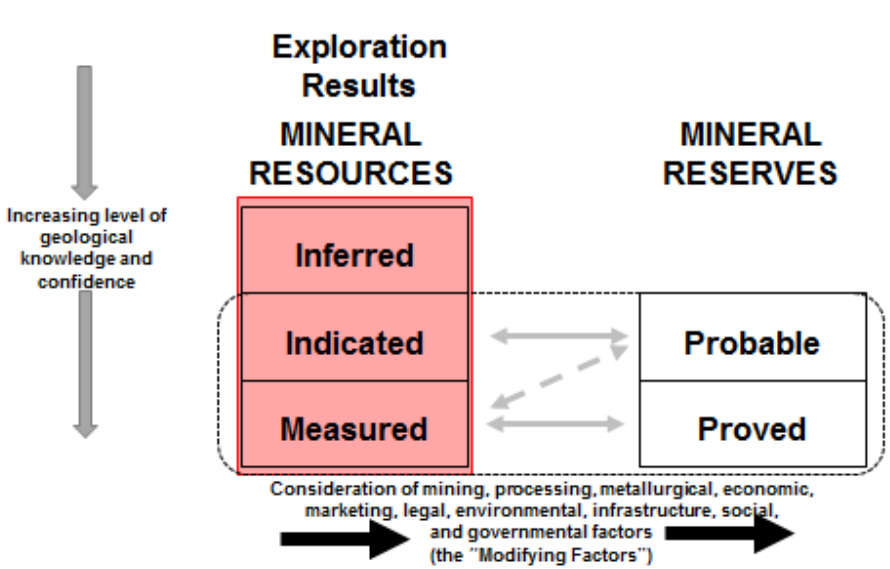
Cluster	Farm name	Plan area ha	Reef area* ha	Geological loss %	RD	Width m	Gross tonnes Mt	4PGE grade g/t	4PGE ounces Moz
Northern	Schoonoord 462KS	1 333	1 394	19,0	3,3 – 3,6	0,94 – 1,04	34,7 – 42,4	3,9 – 4,7	4,3 – 6,4
	Indie (portion RE) 474KS	1 515	1 585	19,0	3,3 – 3,6	0,94 – 1,04	39,5 – 48,2	3,9 – 4,7	4,9 – 7,3
	Indie (portion 1) 474KS	1 516	1 586	19,0	3,3 – 3,6	0,94 – 1,04	39,5 – 48,2	3,9 – 4,7	4,9 – 7,3
	Zwitzerland 473KS	1 953	2 042	19,0	3,3 – 3,6	0,94 – 1,04	50,8 – 62,1	3,9 – 4,7	6,3 – 9,4
	Fisant Laagte 506KS	2 013	2 105	19,0	3,3 – 3,6	0,94 – 1,04	52,4 – 64,0	3,9 – 4,7	6,5 – 9,7
Northern total		**8 330**	**8 712**	**19,0**	**3,3 – 3,6**	**0,94 – 1,04**	**216,9 – 265,0**	**3,9 – 4,7**	**26,9 – 40,2**
Northern Bauba attributable**		**4 998**	**5 227**	**19,0**	**3,3 – 3,6**	**0,94 – 1,04**	**130,1 – 159,0**	**3,9 – 4,7**	**16,2 – 24,1**
Central	Magnets Vlakte 541KS	1 129	1 180	25,0	3,2 – 3,6	0,96 – 1,06	27,3 – 33,4	4,1 – 5,0	3,6 – 5,3
	Dingaanskop 543KS	1 036	1 083	25,0	3,2 – 3,6	0,96 – 1,06	25,1 – 30,7	4,1 – 5,0	3,3 – 4,9
Central total		**2 165**	**2 263**	**25,0**	**3,2 – 3,6**	**0,96 – 1,06**	**52,4 – 64,1**	**4,1 – 5,0**	**6,9 – 10,2**
Central Bauba attributable**		**1 299**	**1 358**	**25,0**	**3,2 – 3,6**	**0,96 – 1,06**	**31,5 – 38,4**	**4,1 – 5,0**	**4,1 – 6,1**
Southern	Groot Vygenboom 284KS	810	847	17,0	3,2 – 3,5	0,95 – 1,05	21,3 – 26,0	4,1 – 5,0	2,8 – 4,2
	Genokakop 285KS	1 154	1 206	17,0	3,2 – 3,5	0,95 – 1,05	30,3 – 37,0	4,1 – 5,0	4,0 – 6,0
Southern total		**1 964**	**2 053**	**17,0**	**3,2 – 3,5**	**0,95 – 1,05**	**51,5 – 62,9**	**4,1 – 5,0**	**6,8 – 10,2**
Southern Bauba attributable**		**1 178**	**1 232**	**17,0**	**3,2 – 3,5**	**0,95 – 1,05**	**30,9 – 37,8**	**4,1 – 5,0**	**4,1 – 6,1**
Total exploration results		**12 459**	**13 028**	**19,7**	**3,2 – 3,6**	**0,95 – 1,04**	**320,9 – 392,0**	**3,9 – 4,8**	**40,6 – 60,7**
Total Bauba attributable**							**192,5 – 235,2**	**3,9 – 4,8**	**24,4 – 36,4**

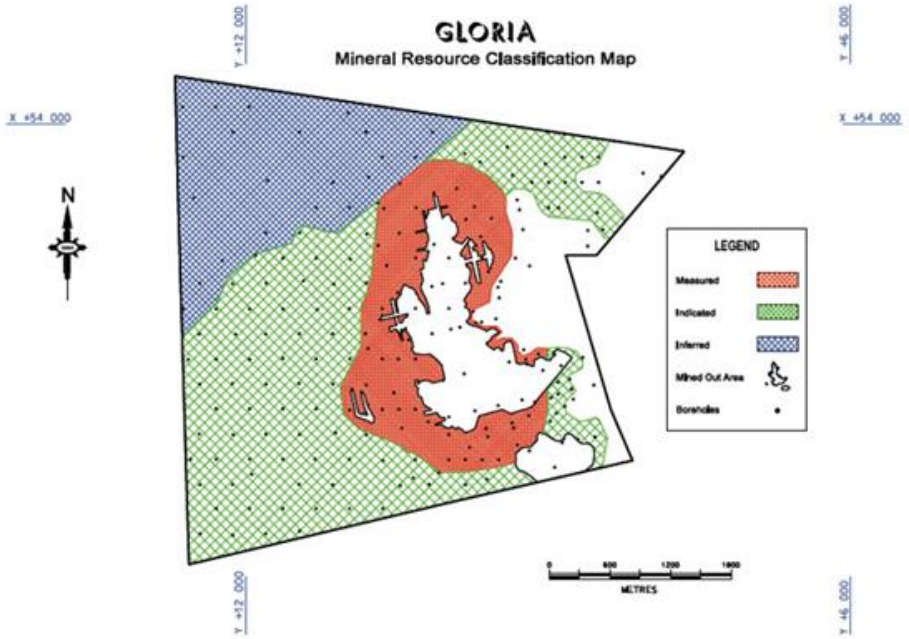
* A regional dip of 17° west has been used to calculate the Reef area.

** Based on Bauba Platinum Limited's 50% attributable share.

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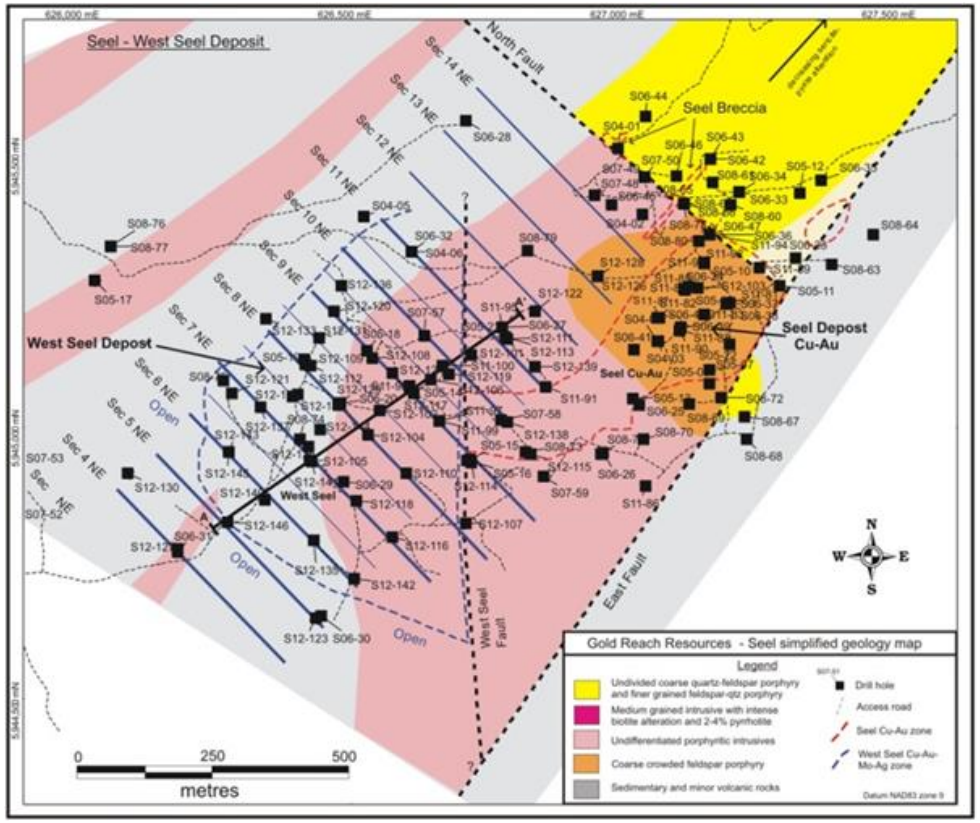
MINERAL RESOURCES





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MINERAL RESOURCES



Increasing level of geological knowledge and confidence

Exploration Results

MINERAL RESOURCES	MINERAL RESERVES
Inferred	
Indicated	Probable
Measured	Proved

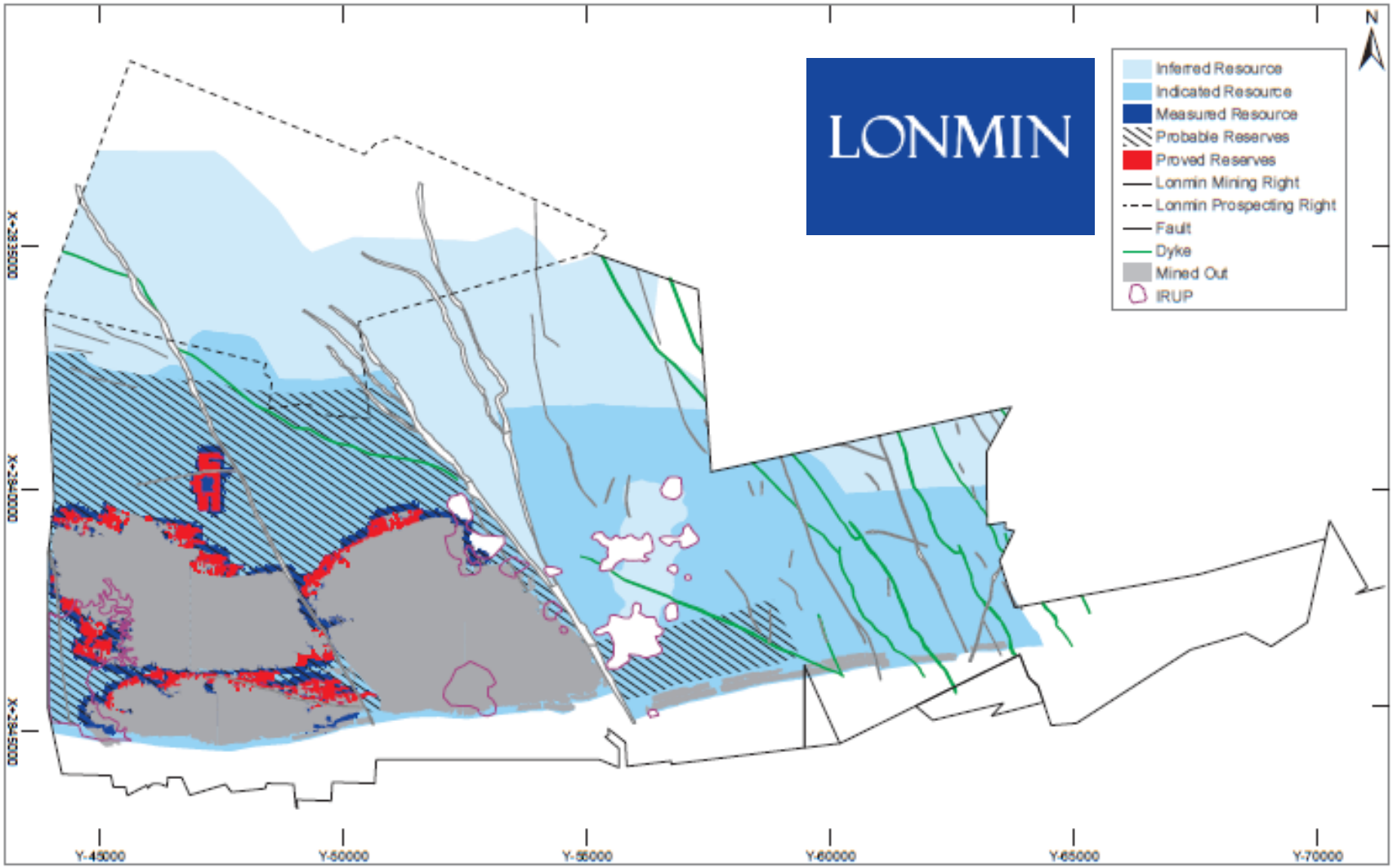
Consideration of mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social, and governmental factors (the "Modifying Factors")

Reasonable expectations for eventual economic extraction

Marikana Mineral Resources

Mineral Resources		30 September 2016				30 September 2015			
		3PGE+Au			Pt	3PGE+Au			Pt
Ore Source	Category	Mt	g/t	Moz	Moz	Mt	g/t	Moz	Moz
Merensky West	Measured	12.9	4.77	2.0	1.3	13.9	4.77	2.1	1.4
	Indicated	63.2	5.78	11.7	7.5	64.0	5.88	12.1	7.7
	Inferred	55.2	6.39	11.3	7.1	55.3	6.46	11.5	7.2
	Sub Total	**131.2**	**5.94**	**25.1**	**15.9**	**133.2**	**6.00**	**25.7**	**16.3**
Merensky East	Indicated	103.0	3.69	12.2	7.3	103.0	3.69	12.2	7.3
	Inferred	58.5	4.20	7.9	4.9	58.5	4.20	7.9	4.9
	Sub Total	**161.5**	**3.87**	**20.1**	**12.1**	**161.5**	**3.87**	**20.1**	**12.1**
Total Merensky	Measured	12.9	4.77	2.0	1.3	13.9	4.77	2.1	1.4
	Indicated	166.2	4.48	24.0	14.7	167.0	4.53	24.3	15.0
	Measured and Indicated	**179.0**	**4.51**	**25.9**	**16.0**	**180.9**	**4.55**	**26.4**	**16.3**
	Inferred	113.7	5.26	19.2	12.0	113.8	5.30	19.4	12.1
	Total Merensky	**292.8**	**4.80**	**45.2**	**28.0**	**294.7**	**4.84**	**45.8**	**28.4**
UG2	Measured	22.6	4.80	3.5	2.2	28.6	4.77	4.4	2.6
	Indicated	240.6	4.94	38.2	22.5	246.1	4.94	39.1	23.1
	Measured and Indicated	**263.2**	**4.93**	**41.7**	**24.8**	**274.7**	**4.92**	**43.5**	**25.7**
	Inferred	172.7	5.06	28.1	16.5	172.8	5.05	28.0	16.5
	Total UG2	**435.9**	**4.98**	**69.8**	**41.3**	**447.5**	**4.97**	**71.5**	**42.2**
Total Marikana	Measured	35.5	4.78	5.5	3.5	42.5	4.77	6.5	4.0
	Indicated	406.8	4.76	62.2	37.3	413.1	4.77	63.4	38.0
	Measured and Indicated	**442.2**	**4.76**	**67.7**	**40.8**	**455.6**	**4.77**	**69.9**	**42.0**
	Inferred	286.4	5.14	47.3	28.5	286.6	5.15	47.4	28.6
Total Resources		**728.6**	**4.91**	**115.0**	**69.3**	**742.2**	**4.92**	**117.4**	**70.6**

Merensky Reef Mineral Resource Confidence Plan



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'IF NOT, WHY NOT'

Agreed to the principle

Used of a verb i.e. ask a question

Not an additional reporting requirement

Triggers:

- Maiden announcement
- Significant change of a Material Project



Recommended - use for every report or estimation

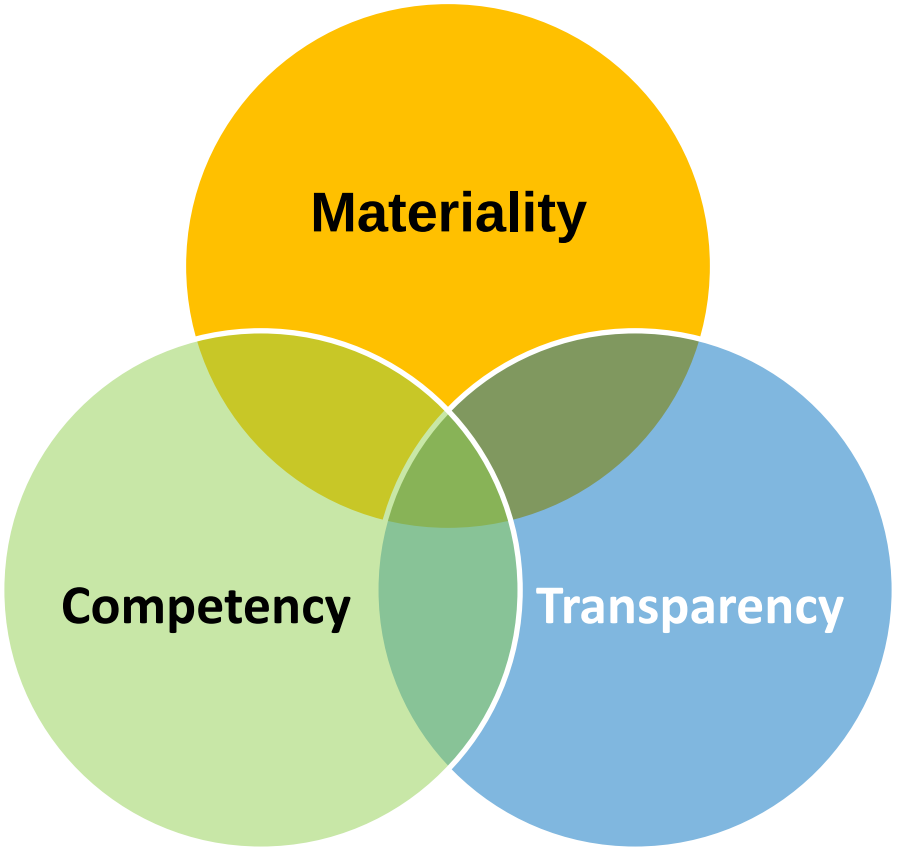
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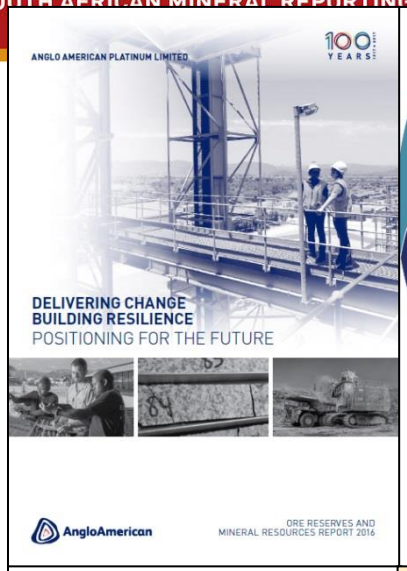
TABLE 1

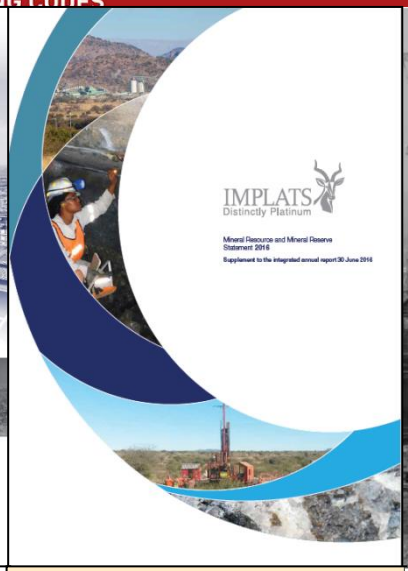
Prelude	
Section 1:	**Project Outline**
Section 2:	**Geological Setting, Deposit, Mineralisation**
Section 3:	**Exploration and Drilling, Sampling Techniques and Data**
Section 4:	**Estimation and Reporting of Exploration Results and Mineral Resources**
Section 5:	**Technical Studies**
Section 6:	**Estimation and Reporting of Mineral Reserves**
Section 7:	**Audits and Reviews**
Section 8:	**Other Relevant Information**
Section 9:	**Qualification of Competent Person(s) and other key technical staff. Date and Signature Page**
Section 10: Reporting of for Coal Resources and Reserves	
Section 11: Reporting of Diamonds and Gemstones	
Section 12: Reporting of Industrial Minerals	
Section 13: Reporting using Metal Equivalents	

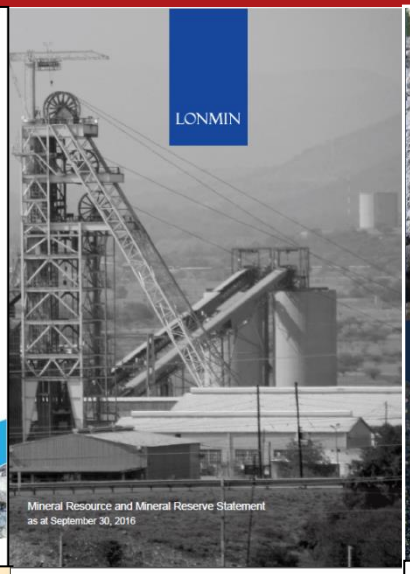
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Underlying Principles of Reporting Codes



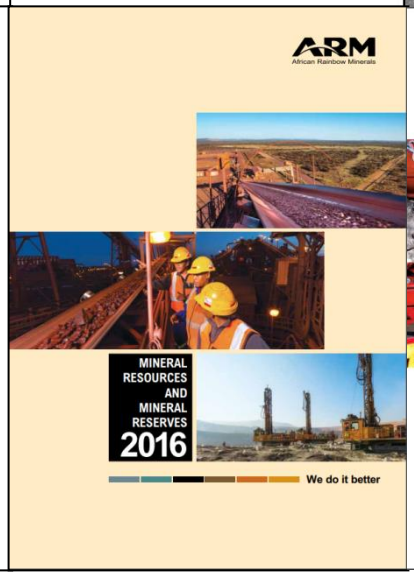

ANGLO AMERICAN PLATINUM LIMITED
100 YEARS
DELIVERING CHANGE
BUILDING RESILIENCE
POSITIONING FOR THE FUTURE
AngloAmerican
ORE RESERVES AND
MINERAL RESOURCES REPORT 2016

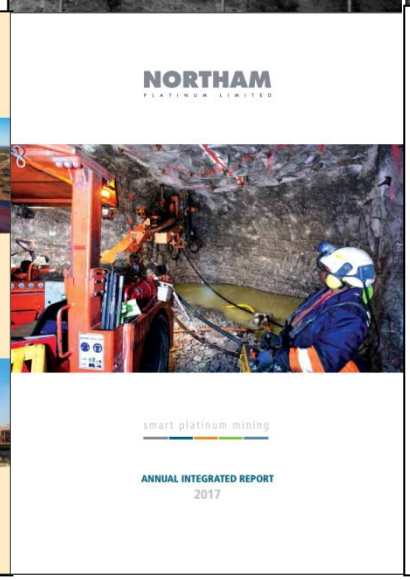

IMPLATS
Distinctly Platinum
Mineral Resource and Mineral Reserve
Statement 2016
Supplement to the integrated annual report 30 June 2016


LONMIN
Mineral Resource and Mineral Reserve Statement
as at September 30, 2016


tharisa
ANNUAL REPORT
2016
integrated
innovation


ROYAL BAFOKENG
PLATINUM
MORE THAN MINING
RBPlat Annual Mineral Resources and
Reserves Statement 2016
MORE THAN
MINING >


ARM
African Rainbow Minerals
MINERAL
RESOURCES
AND
MINERAL
RESERVES
2016
We do it better

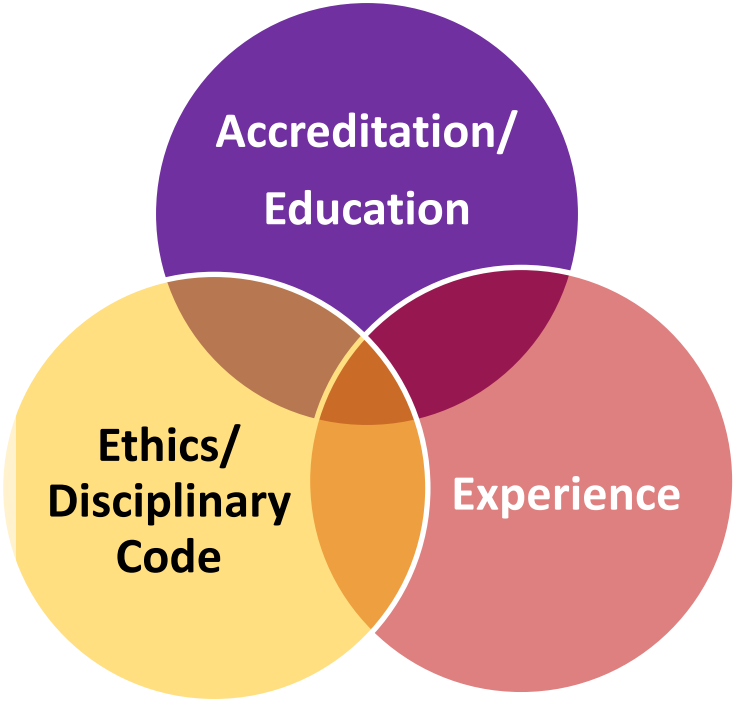

NORTHAM
PLATINUM LIMITED
smart platinum mining
ANNUAL INTEGRATED REPORT
2017


wesizwe
UNLOCKING GROWTH
INTEGRATED
ANNUAL REPORT
2016

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COMPETENT PERSON

- Be a self-regulatory organization covering professionals in mining or exploration or both;
- Admit members primarily on the basis of their academic qualifications and experience;
- Require compliance with the professional standards of competence and ethics established by the organization;
- Have disciplinary powers, including the power to suspend or expel a member



A minimum of 5 (five) years experience relevant to the style of mineralisation and type of deposit or class of deposit under consideration and to the activity which that person is undertaking.

Key question: could the Competent Person face his or her peers and demonstrate competence in the commodity, type of deposit and activity he/she is undertaking?

Gerhard Potgieter
ECSA 20030236
Lead Competent Person
Group Consulting Mining Engineer
Impala Platinum Limited
2 Fricker Road
Illovo, 2196
Private Bag X18
Northlands, 2116



1 September 2016

Seef Vermaak
SACNASP 400015/88, GSSA
Lead Competent Person
Group Executive: Mineral Resource Management
Impala Platinum Limited
2 Fricker Road
Illovo, 2196
Private Bag X18
Northlands, 2116



1 Se

IMPLATS
Distinctly Platinum

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Self Regulation

Complaints are filed

Procedure to review/assess



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To promote International Best Practice in the Reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves



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