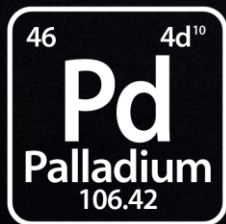


# Advancing the Next Great Palladium Mine

Waterberg Definitive Feasibility Study (DFS) Results

November 15, 2019

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# Disclosure

## Technical and Scientific Information

This presentation has been prepared by Platinum Group Metals Ltd. ("Platinum Group" or the "Company"). Information included in this presentation regarding the Company's mineral properties has been compiled by R. Michael Jones, P.Eng, the President and Chief Executive Officer of the Company, and a non-independent Qualified Person for purposes of National Instrument 43-101 - Standards of Disclosure for Mineral Projects ("NI 43-101"), based on independent information filed by the Company with the Canadian securities regulators and the U.S. Securities and Exchange Commission ("SEC"). R. Michael Jones, the QP who has compiled the technical info for the presentation, has approved the written disclosure regarding technical and scientific information in this presentation. For more detailed information regarding the Company and its mineral properties, you should refer to the Company's independent technical reports and other filings with the Canadian securities regulators and the SEC, which are available at [www.sedar.com](http://www.sedar.com) and [www.sec.gov](http://www.sec.gov), respectively. Scientific and technical information contained herein is derived from the Company's technical reports. Information contained herein related to the Waterberg Definitive Feasibility Study and associated Reserve and Resource Update can be found in the October 4, 2019 technical report entitled, "Waterberg Project Definitive Feasibility Study and Mineral Resource Update." [www.sedar.com](http://www.sedar.com)

and [www.sec.gov](http://www.sec.gov). Reference is made to such reports for more detailed information with respect to the Company's properties, including details of quality and grade of each mineral resource estimate, details of the key assumptions, methods and parameters used in the mineral resource estimates and a general discussion of the extent to which the mineral resource estimates and the other estimates and projections included in the reports may be materially affected by any known environmental, permitting, legal, taxation, socio-political, marketing, or other relevant issues.

## Cautionary Note to United States Investors

Estimates of mineralization and other technical information included or referenced in this presentation have been prepared in accordance with NI 43-101. The definitions of proven and probable reserves used in NI 43-101 differ from the definitions in SEC Industry Guide 7. Under SEC Industry Guide 7 standards, a "final" or "bankable" feasibility study is required to report reserves, the three-year historical average price is used in any reserve or cash-flow analysis to designate reserves and the primary environmental analysis or the report must be filed with the appropriate governmental authority. As a result, the reserves reported by the Company in accordance with NI 43-101 may not qualify as "reserves" under SEC standards. In addition, the terms "mineral resource", "measured mineral resource", "indicated mineral resource" and "inferred mineral resource" are defined in and

required to be disclosed by NI 43-101; however, these terms are not defined terms under SEC Industry Guide 7 and normally are not permitted to be used in reports and registration statements filed with the SEC. Mineral resources that are not mineral reserves do not have demonstrated economic viability. Investors are cautioned not to assume that any part or all of the mineral deposits in these categories will ever be converted into reserves; "inferred mineral resources" have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian securities laws, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, except in rare cases. Additionally, disclosure of "contained ounces" in a resource is permitted disclosure under Canadian securities laws; however, the SEC normally only permits issuers to report mineralization that does not constitute "reserves" by SEC standards as in place tonnage and grade without reference to unit measurements. Accordingly, information contained or referenced in this presentation containing descriptions of the Company's mineral deposits may not be comparable to similar information made public by U.S. companies subject to the reporting and disclosure requirements of United States federal securities laws and the rules and regulations thereunder.

# Forward Looking Statements

This presentation contains forward-looking information within the meaning of Canadian securities laws and forward-looking statements within the meaning of U.S. securities laws (collectively “forward-looking statements”). Forward-looking statements are typically identified by words such as: believe, expect, anticipate, intend, estimate, plans, postulate and similar expressions, or are those, which, by their nature, refer to future events. All statements that are not statements of historical fact are forward-looking statements. Forward-looking statements in this press release include, without limitation, statements regarding the projections and assumptions relating to the DFS, including, without limitation NPV, IRR, costs, mine life, payback periods, margins, exchange rates, inflation, recoveries, grades, potential production of the Waterberg Project and other operational and economic projections with respect to the Waterberg Project; Waterberg Project’s potential to be a bulk mineable, low cost, dominantly palladium mine producing platinum and palladium based on a fully mechanized mine plan; the Waterberg Project’s potential to be one of the largest and lowest cash cost underground platinum group metals mines globally; the projected receipt of the Mining Right in Q1 2020, first production in late 2023 and steady state production by 2027; the expected creation of 1,100 new highly skilled jobs; the potential for future drilling to convert mineral resources into reserves, extending mine life; and the potential for underground mining of the North Mine to lower future capital costs. Mineral resource and reserve estimates are also forward-looking statements because such estimates involve estimates of mineralization that may be encountered in the future if a production decision is made, as well as estimates of future costs and values. Although the Company believes the forward-looking statements in this press release are reasonable, it can give no assurance that the expectations and assumptions in such statements will prove to be correct. The Company cautions investors that any forward-looking statements by the Company are not guarantees of future results or performance and that

actual results may differ materially from those in forward-looking statements as a result of various factors, including the Company’s inability to generate sufficient cash flow or raise sufficient additional capital to make payment on its indebtedness, and to comply with the terms of such indebtedness; additional financing requirements; the Company’s credit facility (the “Sprott Facility”) with Sprott Resource Private Lending II (Collector), LP (“Sprott”) and the other lenders party thereto is, and any new indebtedness may be, secured and the Company has pledged its shares of Platinum Group Metals (RSA) Proprietary Limited (“PTM RSA”), and PTM RSA has pledged its shares of Waterberg JV Resources (Pty) Limited (“Waterberg JV Co.”) to Sprott, under the Sprott Facility, which potentially could result in the loss of the Company’s interest in PTM RSA and the Waterberg Project in the event of a default under the Sprott Facility or any new secured indebtedness; the Company’s history of losses and negative cash flow; the Company’s ability to continue as a going concern; the Company’s properties may not be brought into a state of commercial production; uncertainty of estimated production, development plans and cost estimates for the Waterberg Project; discrepancies between actual and estimated mineral reserves and mineral resources, between actual and estimated development and operating costs, between actual and estimated metallurgical recoveries and between estimated and actual production; fluctuations in the relative values of the U.S. Dollar, the Rand and the Canadian Dollar; volatility in metals prices; the failure of the Company or the other shareholders to fund their pro rata share of funding obligations for the Waterberg Project; any disputes or disagreements with the other shareholders of Waterberg JV Co., Nnombo Wethu Consultants (Pty) Ltd. or Maseve; the ability of the Company to retain its key management employees and skilled and experienced personnel; conflicts of interest; litigation or other administrative proceedings brought against the Company; actual or alleged breaches of governance processes or instances of fraud, bribery or corruption;

the Company may become subject to the U.S. Investment Company Act; exploration, development and mining risks and the inherently dangerous nature of the mining industry, and the risk of inadequate insurance or inability to obtain insurance to cover these risks and other risks and uncertainties; property and mineral title risks including defective title to mineral claims or property; changes in national and local government legislation, taxation, controls, regulations and political or economic developments in Canada and South Africa; equipment shortages and the ability of the Company to acquire necessary access rights and infrastructure for its mineral properties; environmental regulations and the ability to obtain and maintain necessary permits, including environmental authorizations and water use licences; extreme competition in the mineral exploration industry; delays in obtaining, or a failure to obtain, permits necessary for current or future operations or failures to comply with the terms of such permits; risks of doing business in South Africa, including but not limited to, labour, economic and political instability and potential changes to and failures to comply with legislation; the Company’s common shares may be delisted from the NYSE American or the TSX if it cannot maintain or regain compliance with the applicable listing requirements; and other risk factors described in the Company’s most recent Form 20-F annual report, annual information form and other filings with the U.S. Securities and Exchange Commission (“SEC”) and Canadian securities regulators, which may be viewed at [www.sec.gov](http://www.sec.gov) and [www.sedar.com](http://www.sedar.com), respectively. Proposed changes in the mineral law in South Africa if implemented as proposed would have a material adverse effect on the Company’s business and potential interest in projects. Any forward-looking statement speaks only as of the date on which it is made and, except as may be required by applicable securities laws, the Company disclaims any intent or obligation to update any forward-looking statement, whether as a result of new information, future events or results or otherwise.

# Overview of Platinum Group Metals Ltd.

In Joint Venture with major PGM producers



- Large-scale palladium dominant mine development in South Africa.
- Definitive Feasibility Study (DFS) completed September 2019.
- Strategic Partner: Implats - world's third largest PGM producer.
- Construction decision in early 2020 with potential \$165M investment from Implats.



- Research and development using PGMs in a lithium battery.
- Supported by Anglo Platinum, world's largest PGM producer.
- Research partnership with Florida International University (FIU).
- Focused on Lithium Air and Lithium Sulfur with PGMs in the cathode.

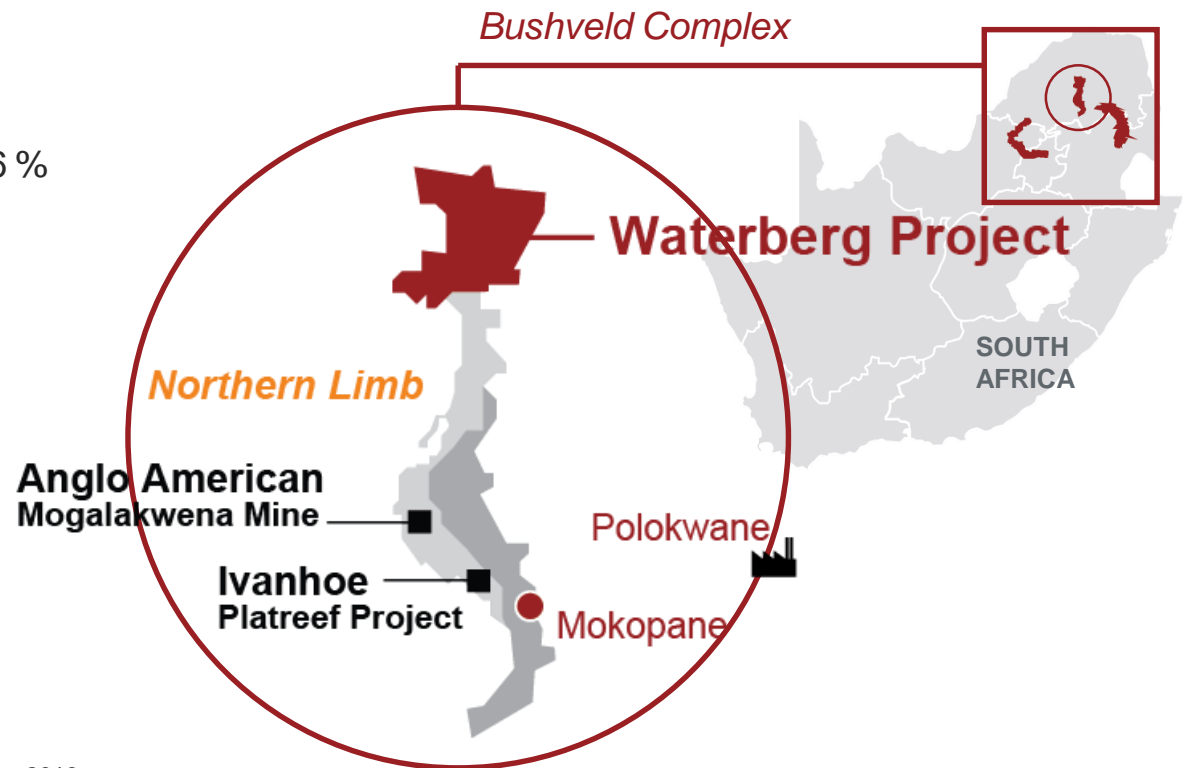


# Bushveld Complex

## South Africa

South Africa produced 73% of platinum and 36% of palladium in 2018\*.

The Waterberg Project is located in the Northern Limb of the Bushveld Complex.



\*Source: Johnson Matthey, PGM Market Report, May 2019

# Why Waterberg

Measured and Indicated Resource: 26.4M ounces  
Palladium, Platinum, Gold and Rhodium, (4E)\*

## Thick

Amenable to **bulk mechanized mining** - higher skilled and educated work force.



## Unique

Metal balance versus traditional South African PGM reefs – **palladium dominant** – strong gold credit.



## Shallow

**Deposit starts 140m from surface** - allows for potential multi decline ramp access - **lower capital costs** compared to deep vertical shafts



## Desirable

**Desirable** low chrome **concentrate** with base metal content amenable to existing smelters.



40m

Waterberg Deposit  
13 story stopes

1.85m



1.2m

Merensky Reef  
Conventional  
Thickness

\*100% Waterberg Project  
See Press Release dated September 24, 2019 and  
Appendix. [www.sedar.com](http://www.sedar.com)

# Waterberg Project

## Strategic Investors

The Waterberg Project is supported by a group of Strategic Investors



Implats is the world's third largest producer of platinum with a fully integrated operation including smelting, refining and marketing. Implats owns a 15% interest in the Waterberg project.



Japan Oil, Gas and Metals National Corporation (JOGMEC) owns a 12.95% interest in the Waterberg Project. Hanwa Co., a diversified Japanese trading company, acquired 9.75% of JOGMEC's interest and metal marketing rights.

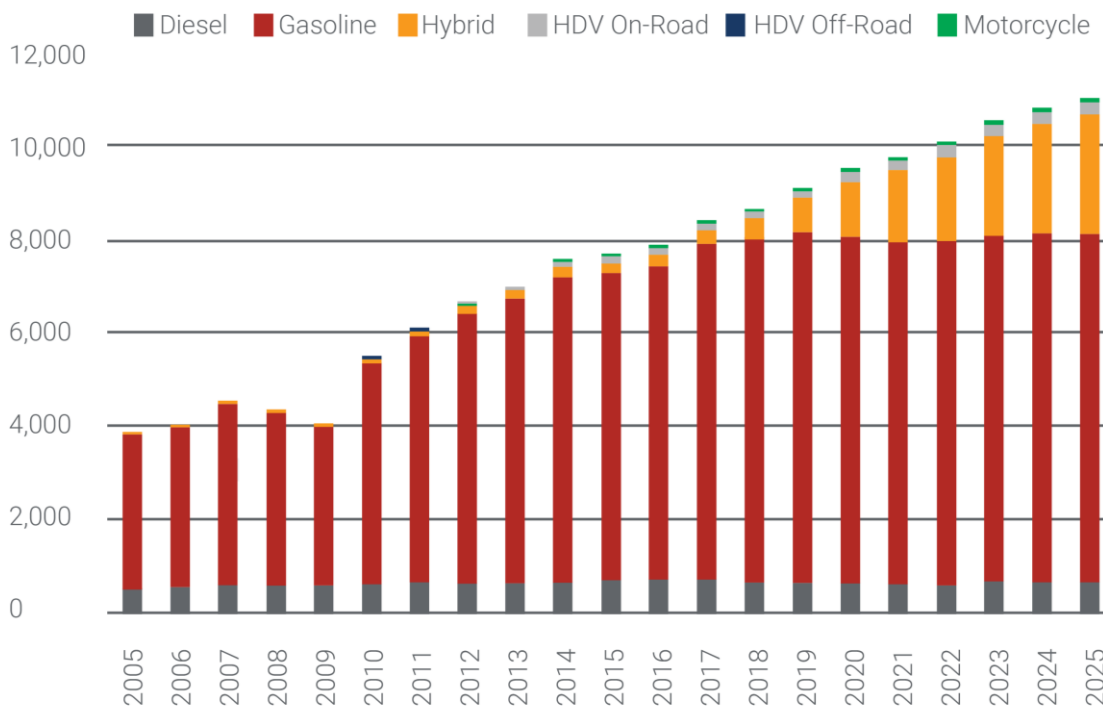


Hosken Consolidated Investments (HCI) is a South African black empowered holding company listed on the JSE. HCI owns 30.20% of PLG/PTM.

# Palladium Market

Palladium Demand (000's Toz)  
By Transportation Sector:

- Current palladium price at all time highs above \$1,800/ounce USD.
- Palladium has been in a deficit for nine consecutive years.
- Stringent emission standards in major auto markets leading to higher loadings.
- Electrification opportunities in hybrid and fuel cell platforms positive for both palladium and platinum.



SOURCE: Precious Metals Commodity  
Management LLC



# Commodity Price

Waterberg Basket Price has increased dramatically since the 2016 Pre-Feasibility Study (PFS)



Waterberg Basket: 63% Pd, 29% Pt, 6% Au, 2% Rh

2016 PFS Banker Consensus: \$800 Pd, \$1,213 Pt, \$1,300 Au, \$1,000 Rh

September 4, 2019 Spot: \$1,550 Pd, \$983 Pt, \$1,552 Au, \$5,050 Rh

# Waterberg DFS Highlights

- Completed by Stantec Consulting International, DRA Projects SA, Turnberry Projects and owners' team.
- Proven and probable reserves **187 million tonnes at 3.24 g/t 4E or 19.5 million ounces 4E**. (2.5 g/t 4E cut-off)
- Annual steady state production rate of **420,000 ounces 4E**.
- On site **life-of-mine average cash cost US \$640 per 4E ounce** with by-product credits and including smelter discounts as a cost.

## Stantec and DRA

Principal DFS Consultants

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### 19.5M Ounces 4E

Proven and Probable Reserves

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### 420,000 Ounces

Annual Steady State Production 4E

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### \$640/4E Ounce

On site LOM average cash cost

# Waterberg DFS Highlights

- **Post-tax NPV8 of US \$982 million** at recent spot prices. (September 4, 2019)
- Estimated **peak project funding of US \$617 million**.
- Post-tax internal rate of return (IRR) **20.70%**
- Significant base metal by-product production including **16.7M pounds of nickel and copper annually**.

\$982M

Post Tax NPV8 at Spot Prices

\$617M

Estimated Peak Project Funding

20.70%

IRR Post Tax

16.7M Pounds

Annual Nickel and Copper Output

# Waterberg DFS Highlights

- **Projected mine life of 45 years** based on current reserves.
- Precious metals **recovery rate of 78.90%** life of mine.
- Mining right grant expected in **early 2020**.
- **First production scheduled for 2023** with steady state in 2027.

## 45 Years

Mine Life Based on Reserves

## 78.90%

LOM 4E Concentrator Recovery

## Q1 2020

Mining Right Expected

## 2023

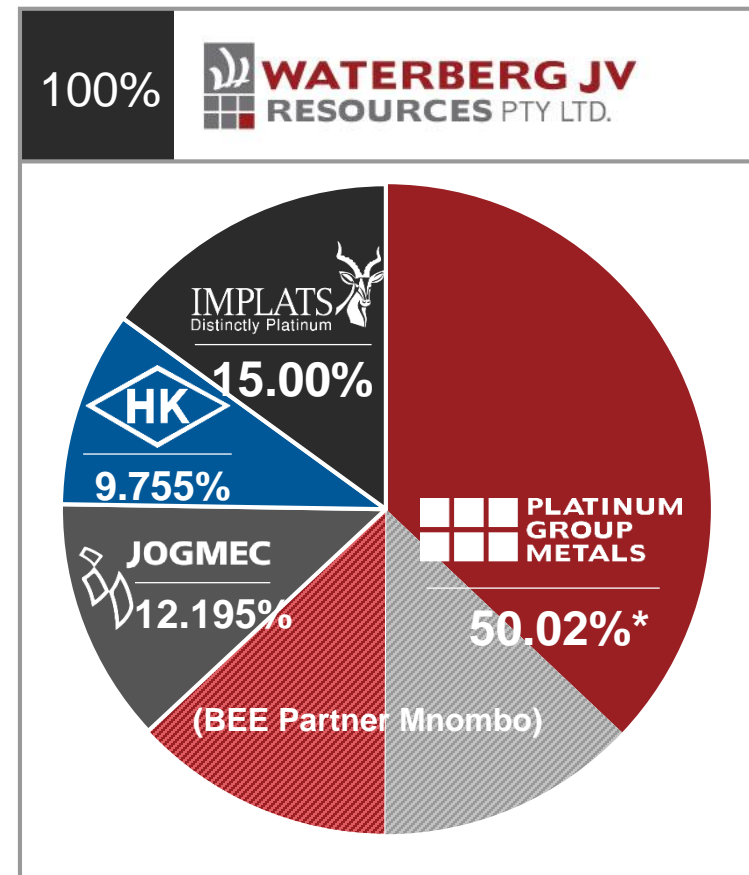
First Production

# Current Ownership Structure

Implats purchased a 15% interest in Waterberg for \$30M USD in 2017

- Implats purchased a 15% interest in operating company Waterberg JV Resources Pty Ltd. for \$30M USD.
- PTM sold 8.6% interest to Implats for US\$17.2M and retains a 37.05% direct interest.
- JOGMEC sold 6.4% interest to Implats for US\$12.8M and currently holds a 12.195% interest.
- BEE Partner Mnombo maintains 26% interest. PTM maintains 49.90% interest in Mnombo resulting in an aggregate 50.02% interest.\*
- Hanwa acquired a 9.755% interest from JOGMEC including all metal marketing rights in March 2019.
- Implats holds an option for a US \$166M Acquisition and Development Commitment and right of first refusal for concentrate offtake.

*\* As a result of Platinum Group's 49.9% ownership interest in Mnombo, the Company has an effective interest in the Waterberg JV of 50.02%.*

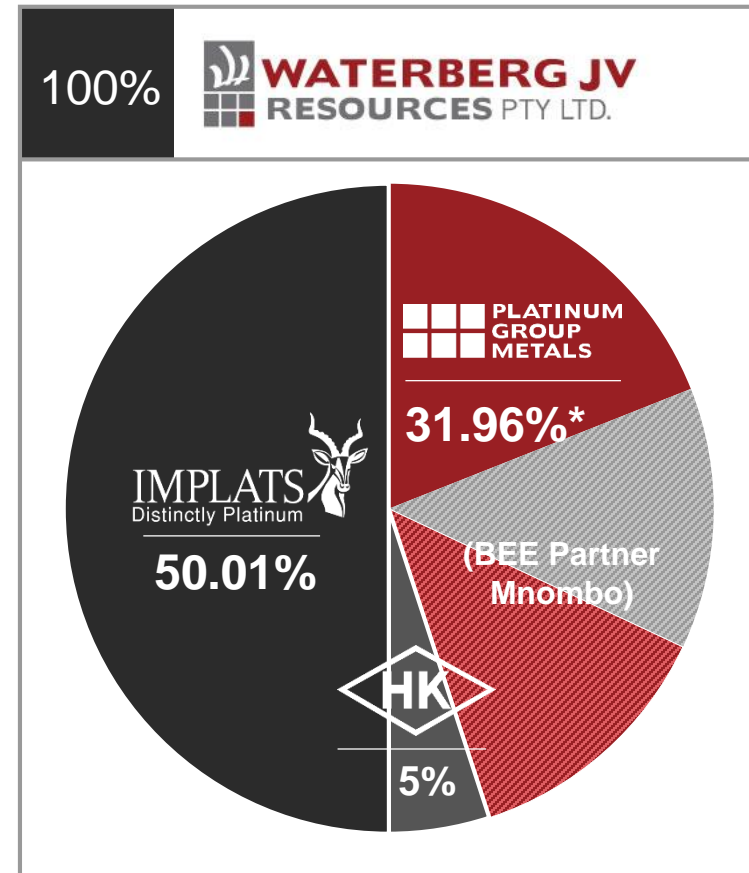


# Ownership Structure Post Implats Option

Upon DFS completion, Implats can increase its stake to 50.01% for \$165M USD

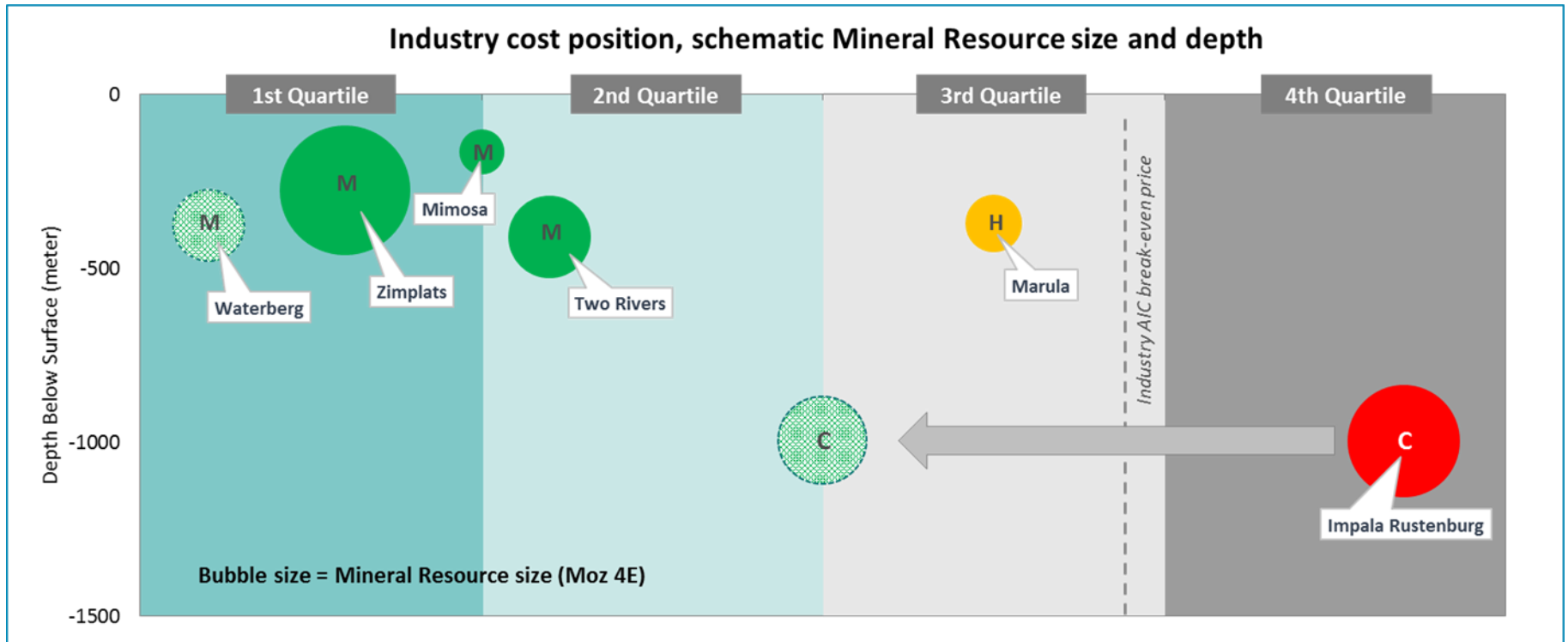
- Upon completion of DFS Impala has an option to increase ownership to 50.01% with a firm funded Acquisition and Development Commitment.
- Purchase an additional 12.195% from JOGMEC for US\$34.8M.
- Acquire an additional 22.815% (4.755 from Hanwa and 18.06% from PTM) by spending US\$130M on project development.
- BEE Partner Mnombo would maintain a 26% interest. PTM holds a 49.90% interest in Mnombo resulting in an aggregate 31.96% interest.\*
- Broad Based Empowerment planned for fair value at completion of Development Commitment.
- Implats to confirm specific terms of project financing upon completion of Development Commitment.

*\*As a result of Platinum Group's 49.9% ownership interest in Mnombo the Company would have an effective interest in the Waterberg JV of 31.96%*



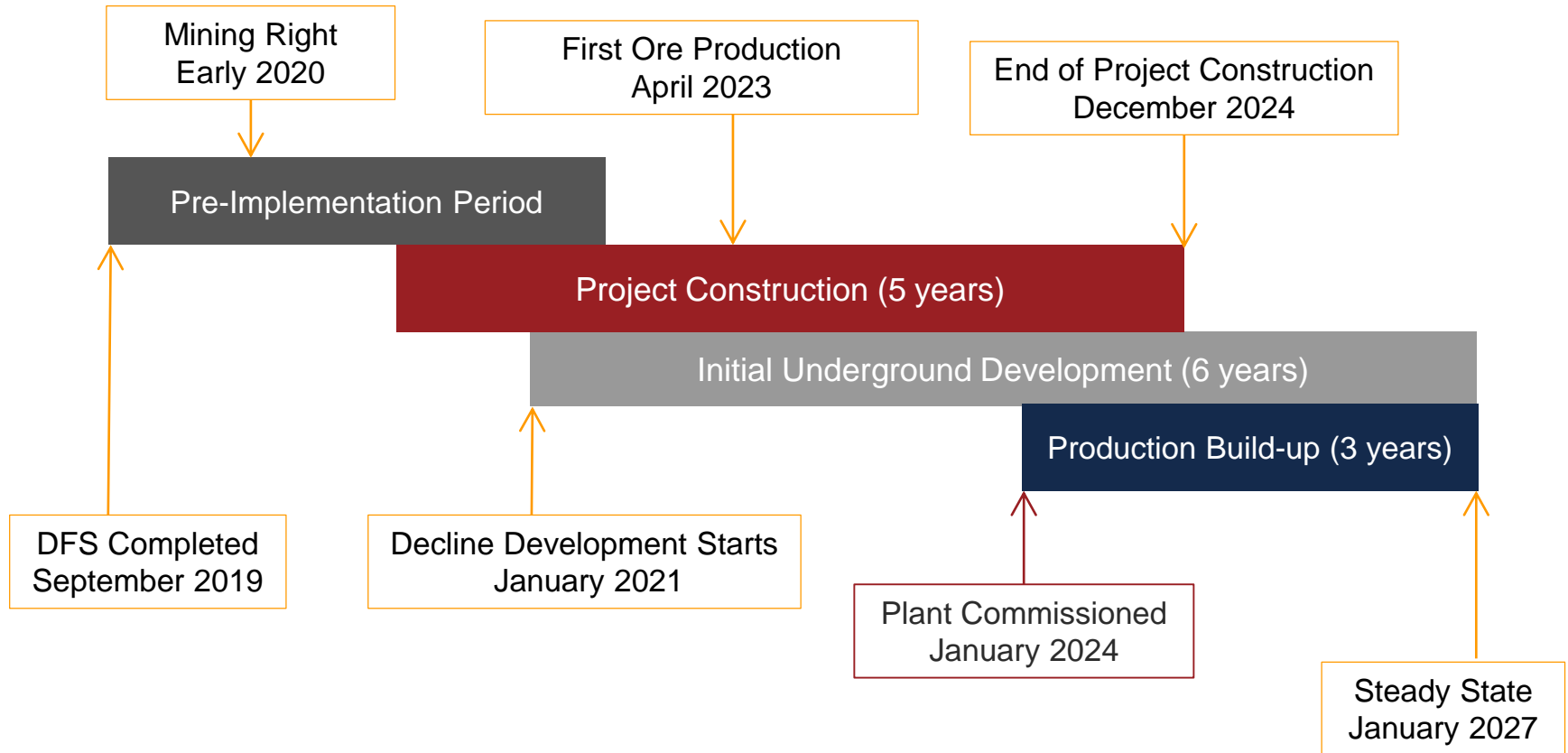
# Implats Restructuring

The Waterberg Project is a potentially low-cost, shallow mechanised ore body critical for future expansion.



Source: Implats; M: Mechanized; H: Hybrid; C: Conventional; Mineral Resources all shown on a 100% basis.

# Project Timeline

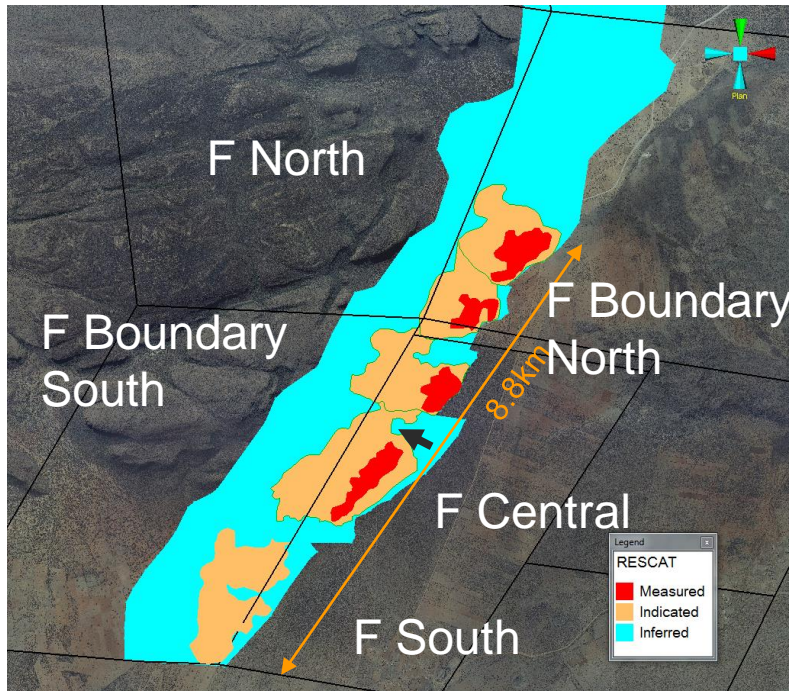




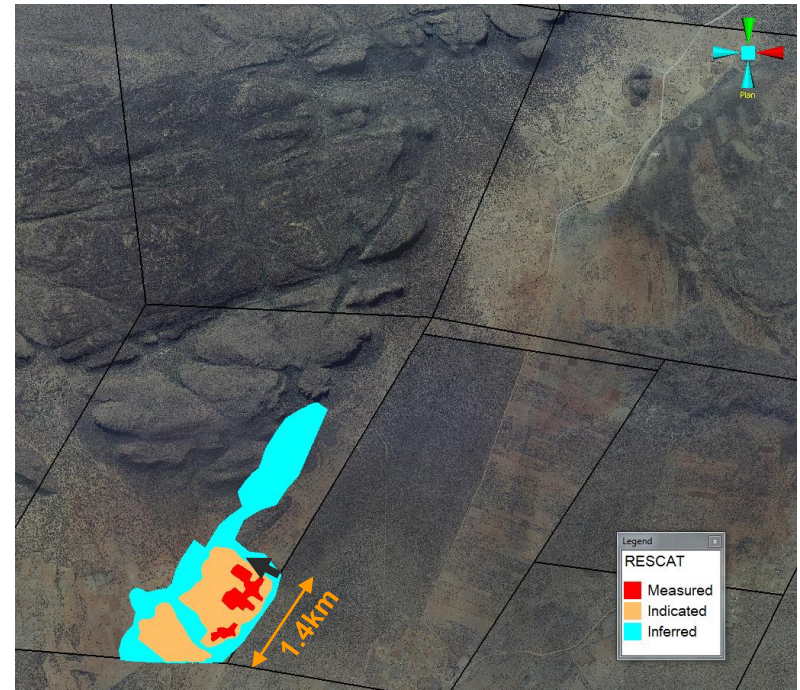
# Mineral Resource

## Classification

F Zone

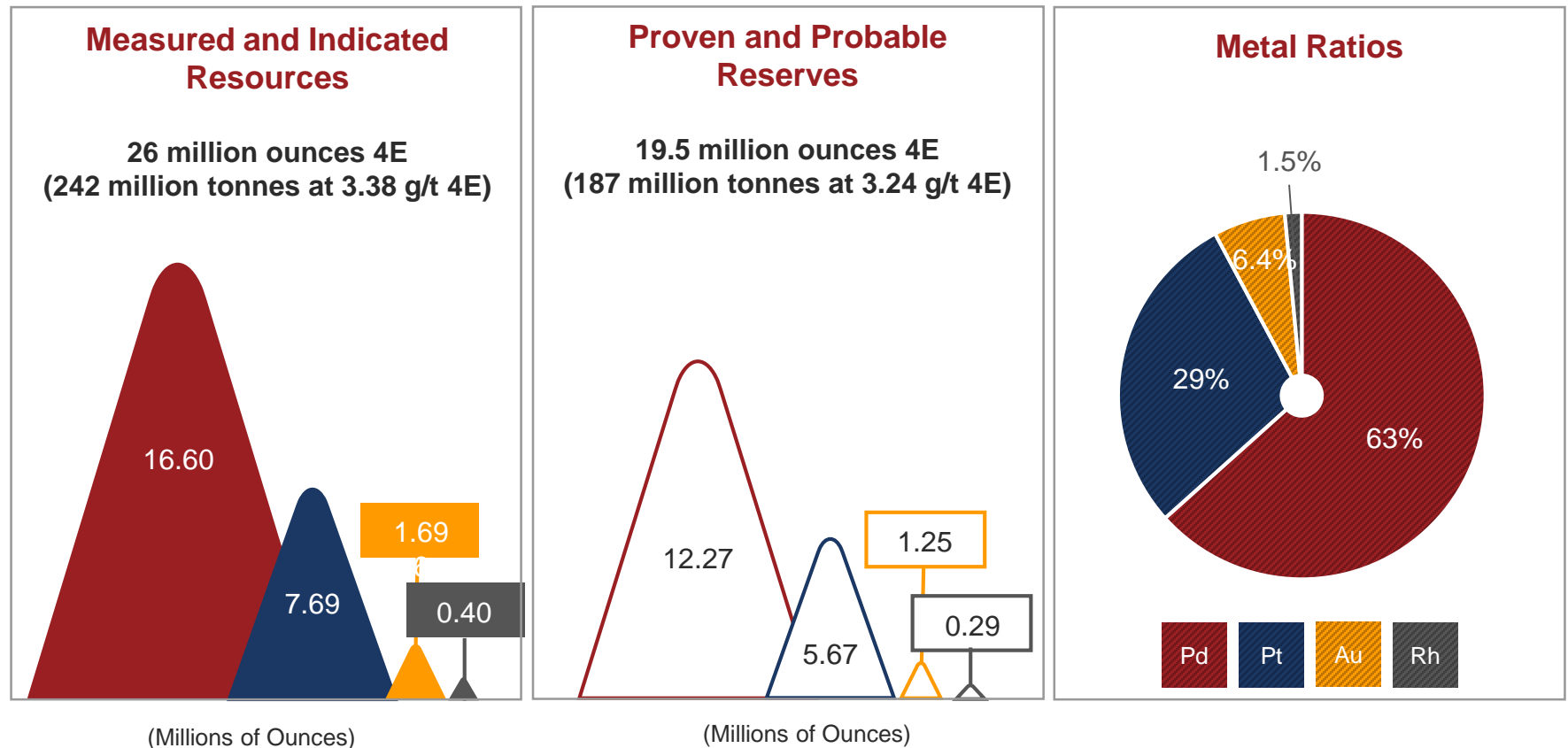


T Zone



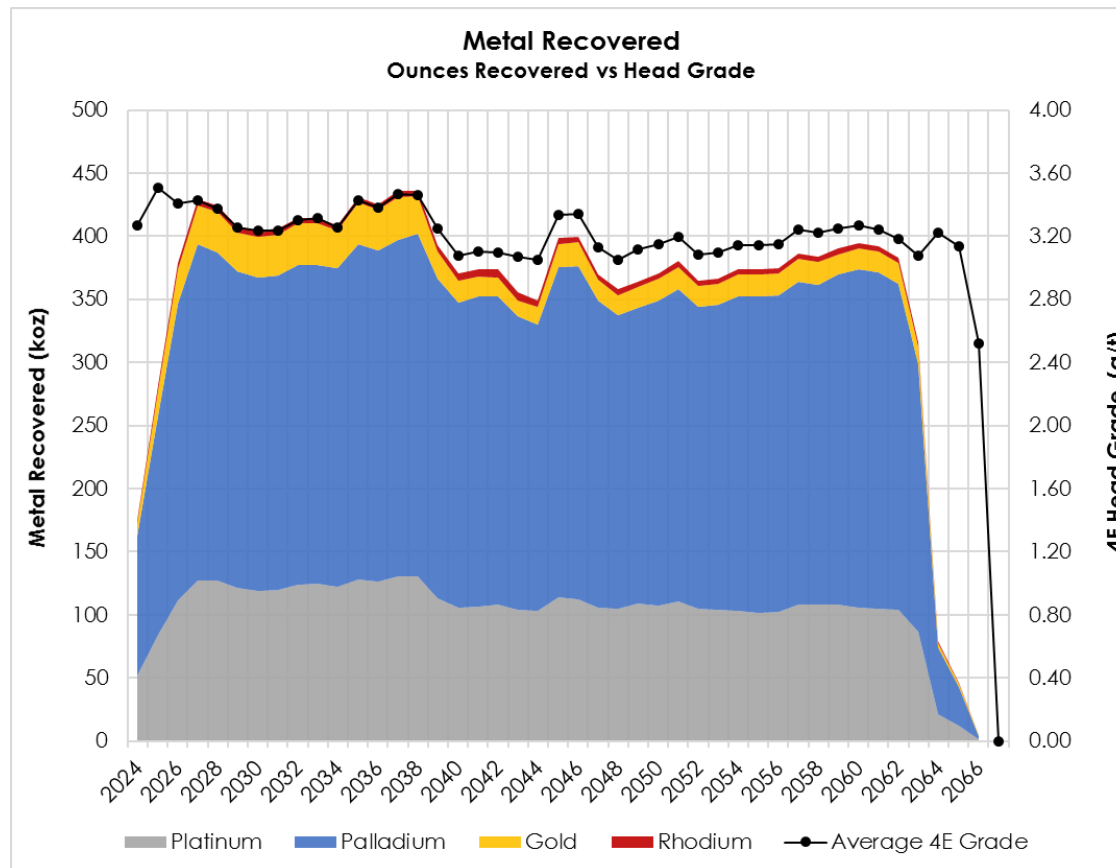
# Resources and Reserves Update

Waterberg Ounce Profile - DFS Update – September 2019



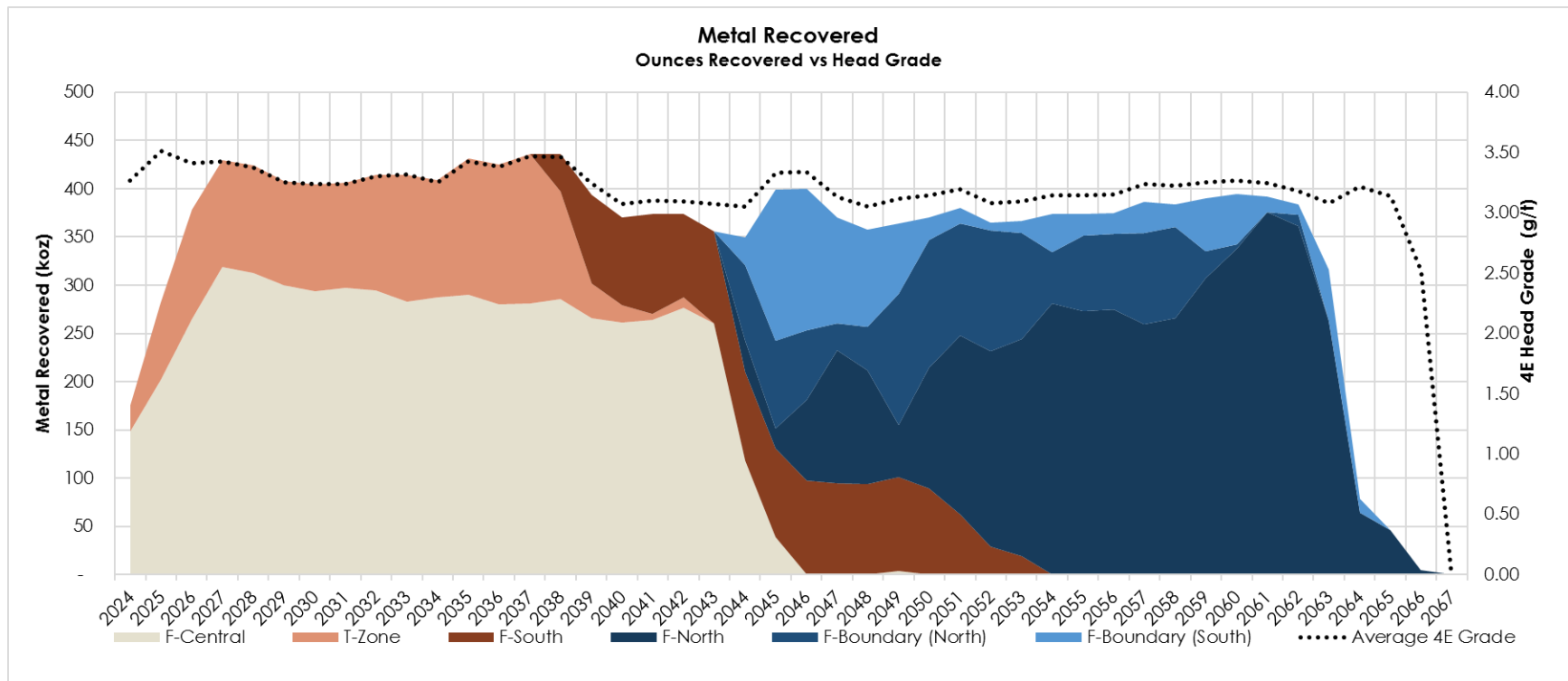
# Production Profile

420,000 Ounces 4E Per Year Steady State – Mine Life to 2066



# Production Profile

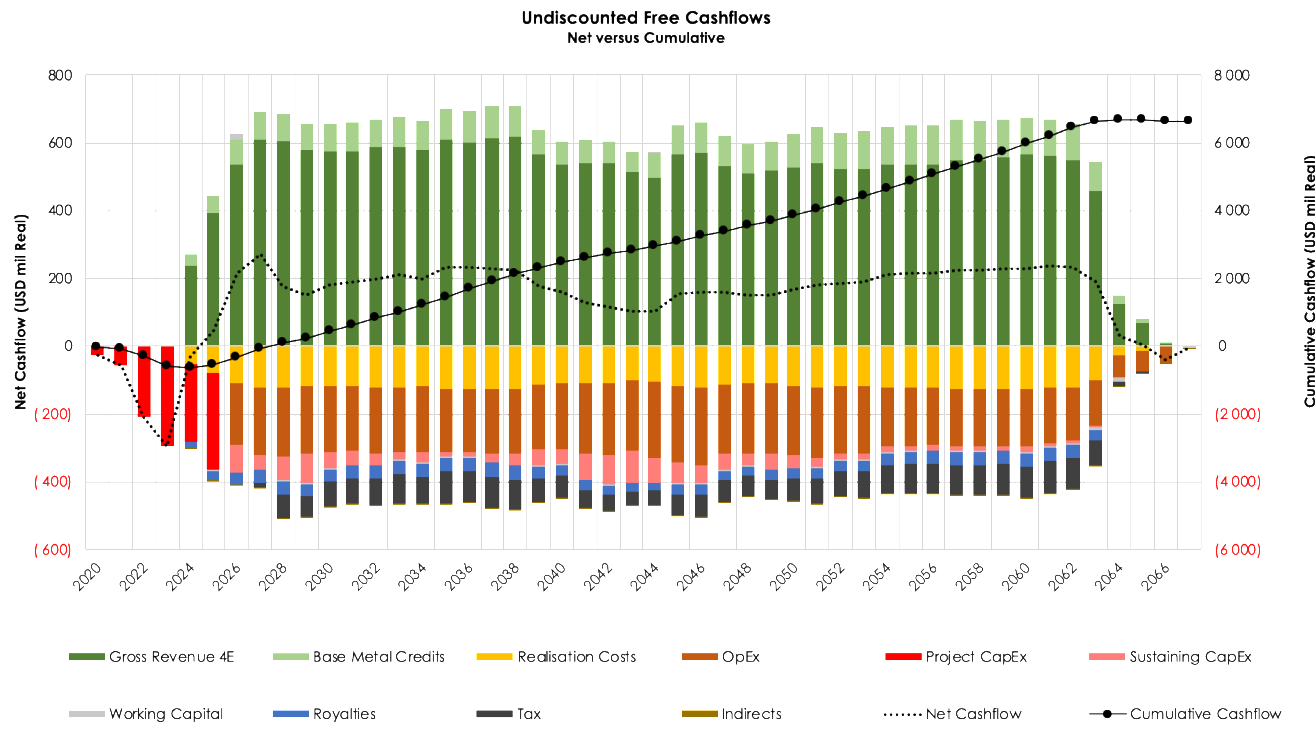
420,000 Ounces 4E Per Year Steady State – Mine Life to 2066



100% Waterberg Project, See Press Release dated September 24, 2019 and Appendix.

# Financial Evaluation

\$6.6B+ USD Free Cash Flow After Tax Undiscounted Life of Mine



**NPV**  
(Post-Tax)  
**USD 982m**



**IRR**  
(Post-Tax)  
**20.7%**



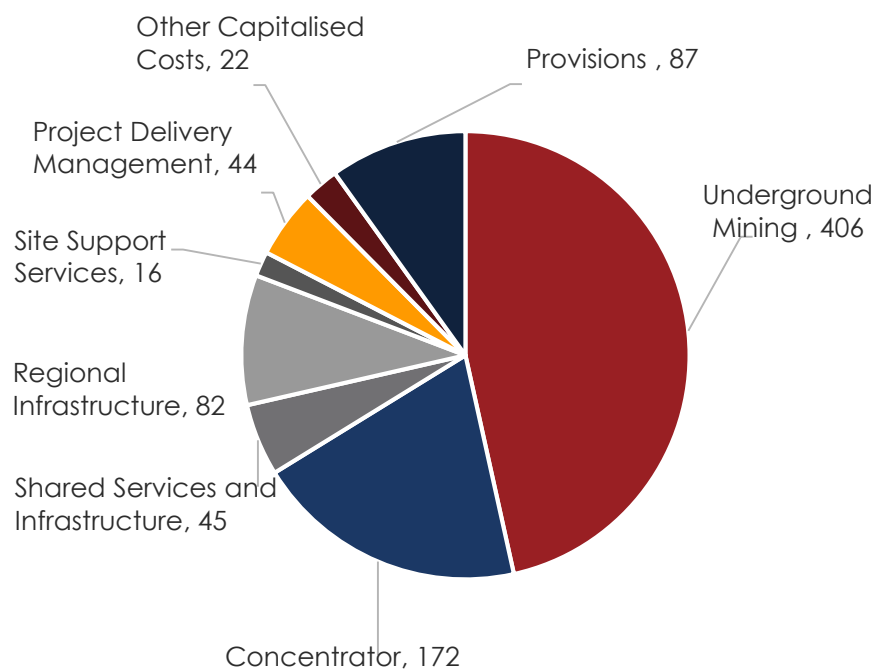
**Payback**  
(Undiscounted)  
**08 yrs**



**Peak Funding**  
(Real Terms)  
**USD 617m**

# Capital Costs

Peak Funding - \$617M USD

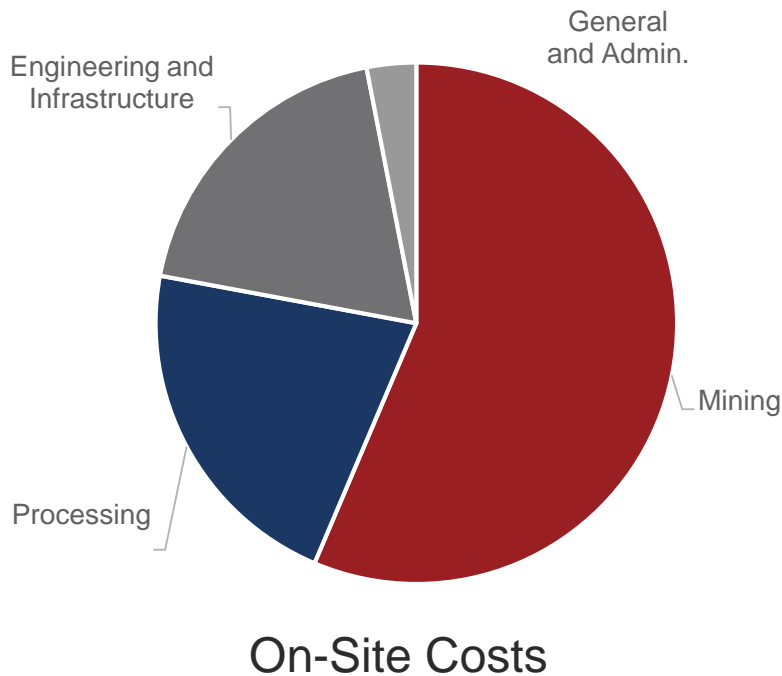


USD Million

Cost Area	Total (US\$ million Real)
Underground Mining	406
Concentrator	172
Shared Services and Infrastructure	45
Regional Infrastructure	82
Site Support Services	16
Project Delivery Management	44
Other Capitalised Costs	22
Provisions	87
<b>Total Project Capital</b>	<b>874</b>
Capitalised OPEX	230
<b>Total Project Capital</b>	<b>1,104</b>
Peak Funding (Capex, Opex and Revenue to lowest point in cash flow, Spot Prices)	<b>617</b>

# Operating Costs

On Site LOM Average Cash Cost: \$640 USD/4E Ounce



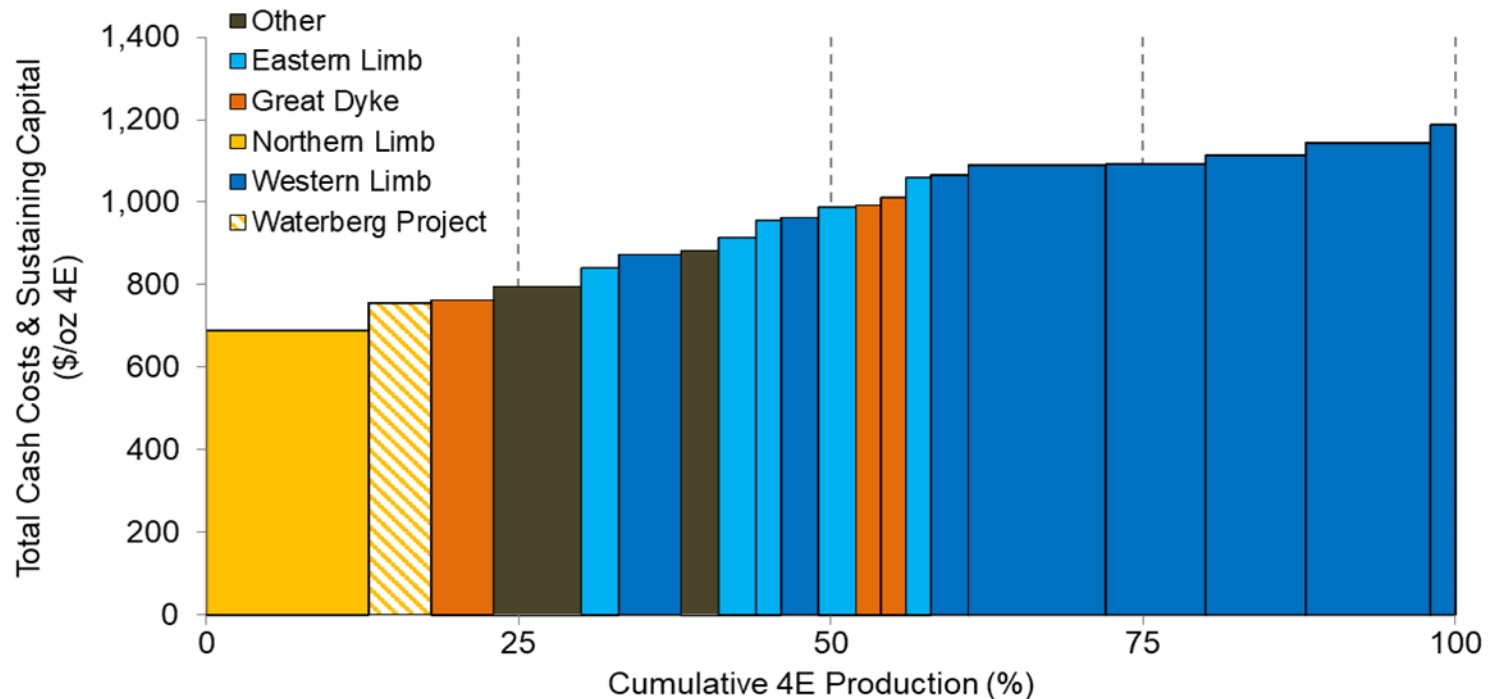
Cost Area	Spot Prices (US\$/4E oz Real)
On-Site Costs	487
Smelting, Refining and Transport Costs	302
Royalties & Production Taxes	88
Less By-Product Credits	(236)
<b>On Site LOM Cash Cost</b>	<b>640</b>
Sustaining Capital	94
Project Capital	34
<b>Total All-in Cost</b>	<b>767</b>

100% Waterberg Project, See Press Release dated September 24, 2019 and Appendix.



# PGM Industry Cost Curve

Waterberg Total All-In Cost: \$767 USD/4E Ounce



SOURCE: Metals Focus. Data for Waterberg is based on Platinum Group projections and is not representative of Metals Focus view.



# North American Palladium

## Comparison to Recent Implants Acquisition



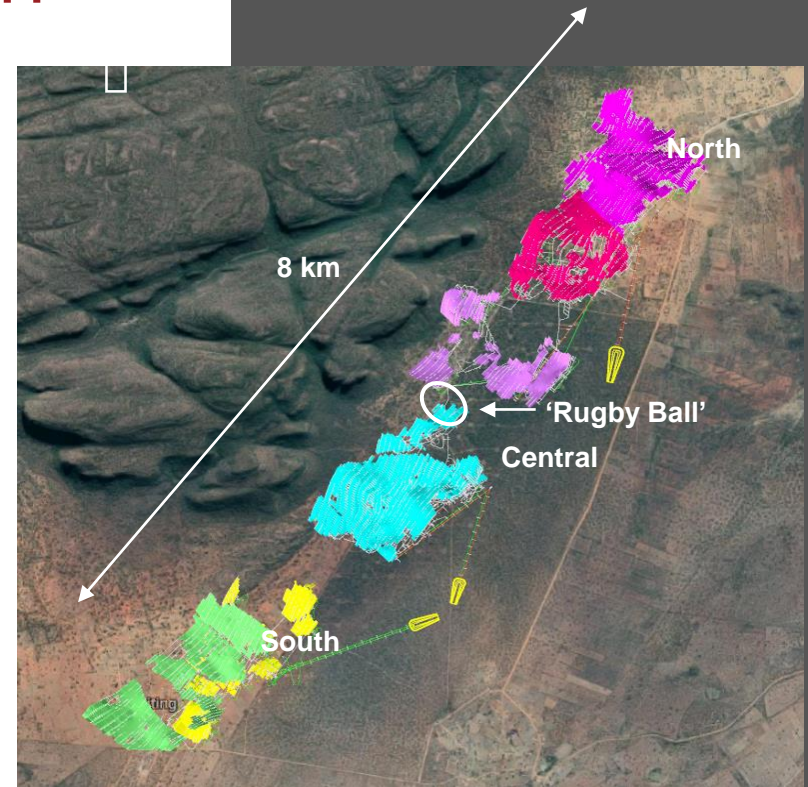
	Lac des Iles	Waterberg
Resources (M&I)	72.98M tonnes	242M tonnes
Reserves (P&P)	3.5M ounces 3E	19.5M ounces 4E
Reserve Grade	2.58 g/t 3E	3.24g/t 4E
Mine Life	9 Years	45 Years
Total All-in Cost (USD)	\$834/Pd ounce	\$767/4E ounce
Annual Production	294,000 ounces/3E	420,000 ounces/4E
Market Capitalization (USD)	\$758M	\$90M
<b>Market Cap/Reserve Ounce (USD)</b>	<b>\$216.57</b>	<b>\$9.23*</b>

\*Based on Platinum Group 50% project interest  
Source: Company Reports

# Mine Design Criteria and Mining Method Selection

## Site Overview

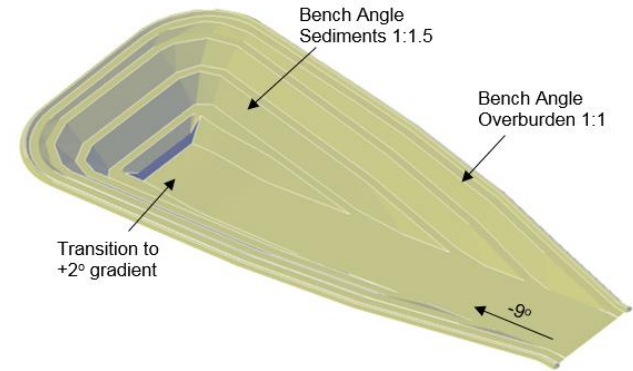
- Three complexes and six zones
  - **8 km strike length**
- Mineral Resource depth from 220m to 1,280m
- Average dip 34 to 48 degrees.
- **True thickness ranges from 2.4m to 107m**
  - **Central 'Rugby Ball' – thick high grade zone**
- Stope design based on 2.5 g/t COG
- Top mining horizon 220 Level
  - Each complex accessed via twin declines
  - Service and conveyor decline



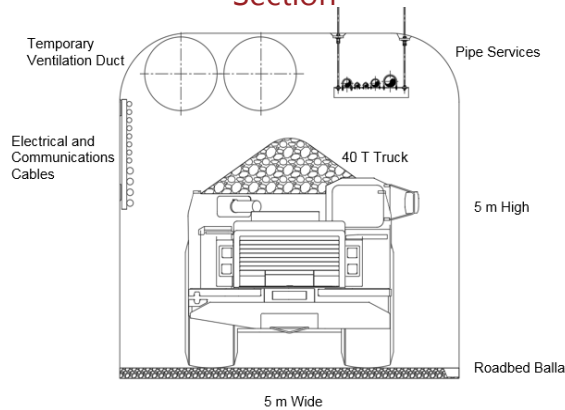
# Orebody Access

## Box Cuts and Declines

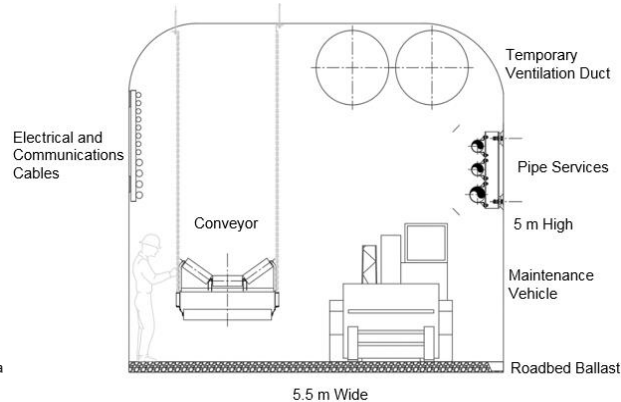
- Box Cut
  - Depth 30m, length 240m
  - Water collection trench on each side of roadway
  - Water collection sump at base of highwall



Service Decline Section



Conveyor Decline Section

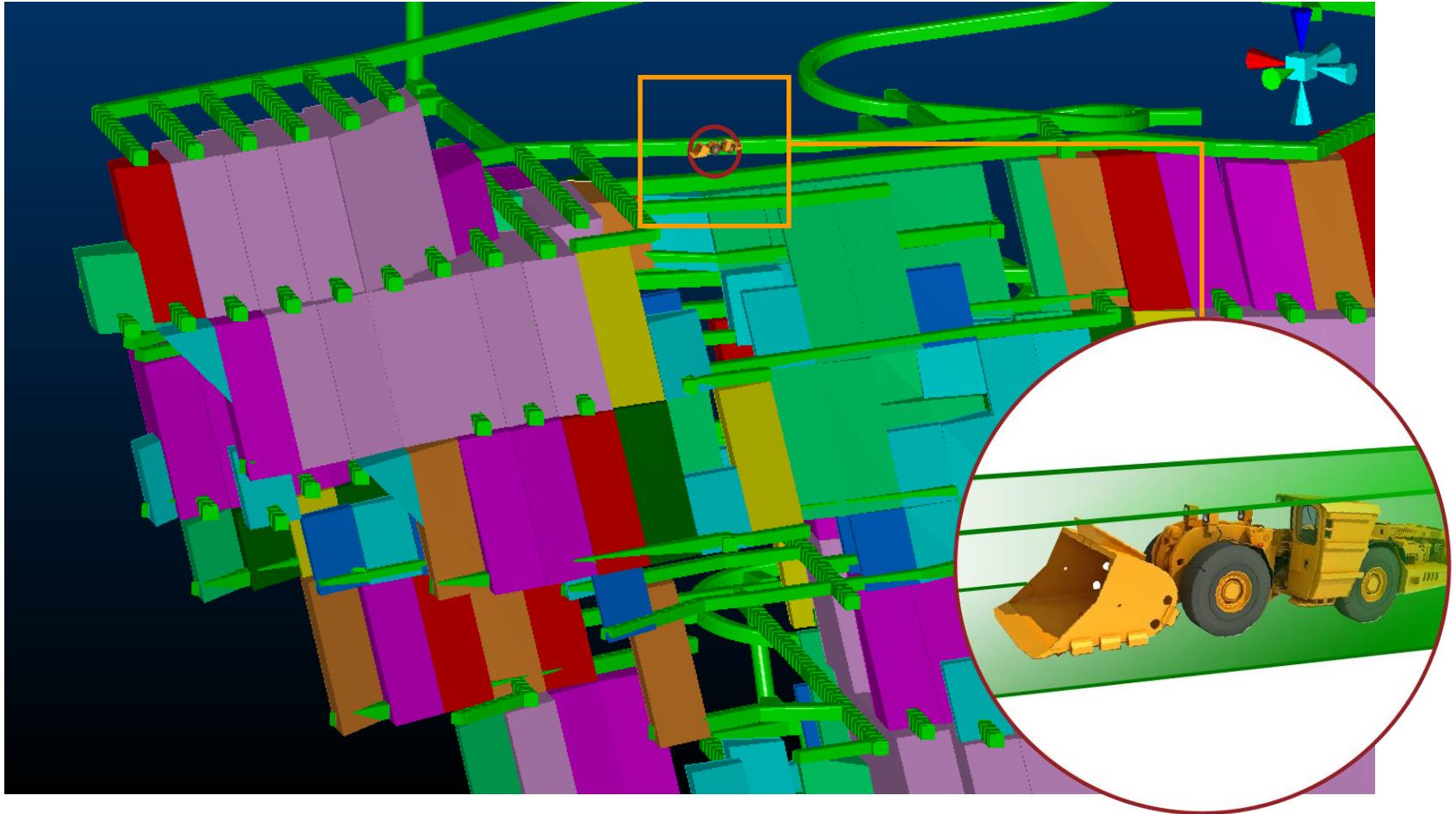


Box Cut



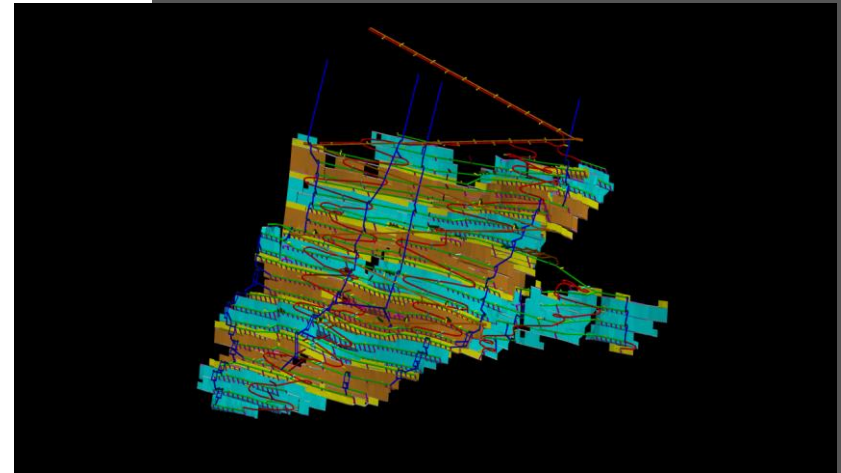
# Waterberg Block Model

Central Super F Access and Stopes



# Mine Design Criteria and Mining Method Selection

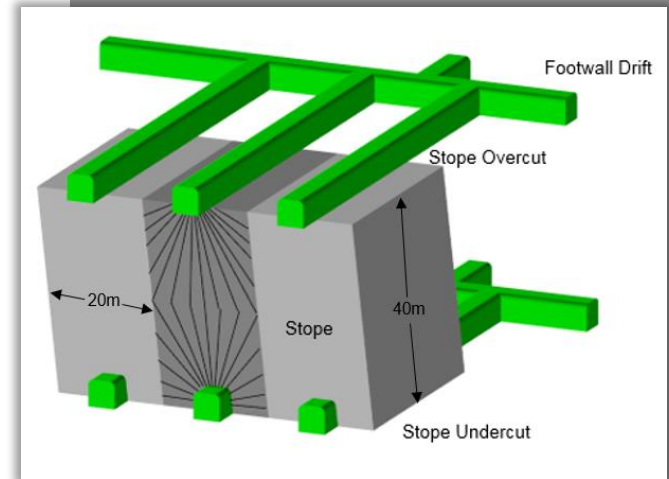
- DFS Design - sublevel longhole with paste backfill
  - Safety (non-entry method)
  - Reduced geotechnical risk
  - Reduced risk to production
  - Maximizing mineral resource extraction
  - Increasing flexibility (stope sequencing)
  - Higher productivity
  - Low operating costs



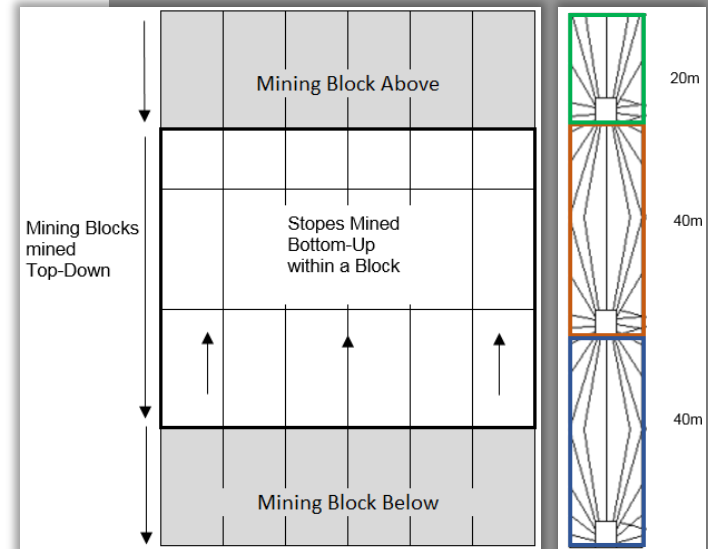
# Mining Method

## Stope Design

- Each Complex divided into 100m vertical blocks
  - Simultaneous production from multiple mining horizons to optimize production rate
  - Each block 2 x 40m high stopes (20m top-down section + 20m bottom-up section), 1 x 20m high stope
  - Stopes – 20m long (along strike)
- 40m high stopes - drill upholes & downholes
  - Maximum hole length 30m
  - Average hole length 17
- Blocks mined top-down, stopes mined bottom-up
- Combination of Longitudinal and Transverse stoping
  - Transverse where true thickness > 15m
  - Longitudinal where true thickness < 15m



Long Section View





# Ore and Waste Flow, Proven Methods for Large Scale

Material Handling – Big Underground  
Gear to Conveyor

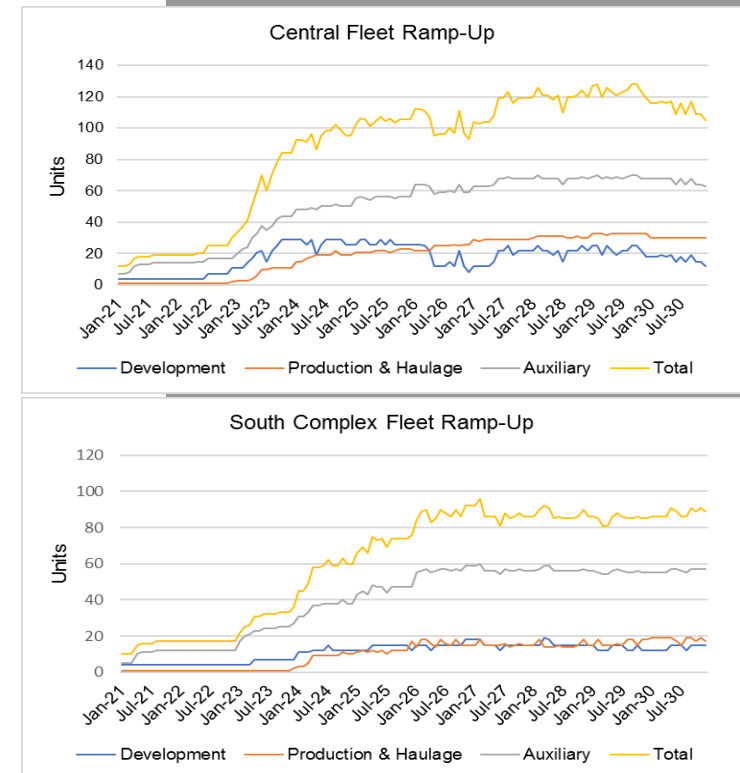
- Ore conveyed to surface
- Main conveyor decline from top of orebody to surface
- FW conveyor decline that traverses the Mineral Resource
- Rockbreaker / grizzly, bins, and feeders at strategic locations along conveyor
- Waste rock will be trucked and conveyed to surface.



# Mobile Equipment Fleet

## Equipment

Steady State Fleet	Central 2033	South 2033	North 2056
Development	15	12	18
Production	16	9	22
Haulage	12	7	19
Construction/Services	23	19	33
Maintenance	12	10	17
Personnel Carriers	29	25	35
<b>Total</b>	<b>107</b>	<b>82</b>	<b>144</b>





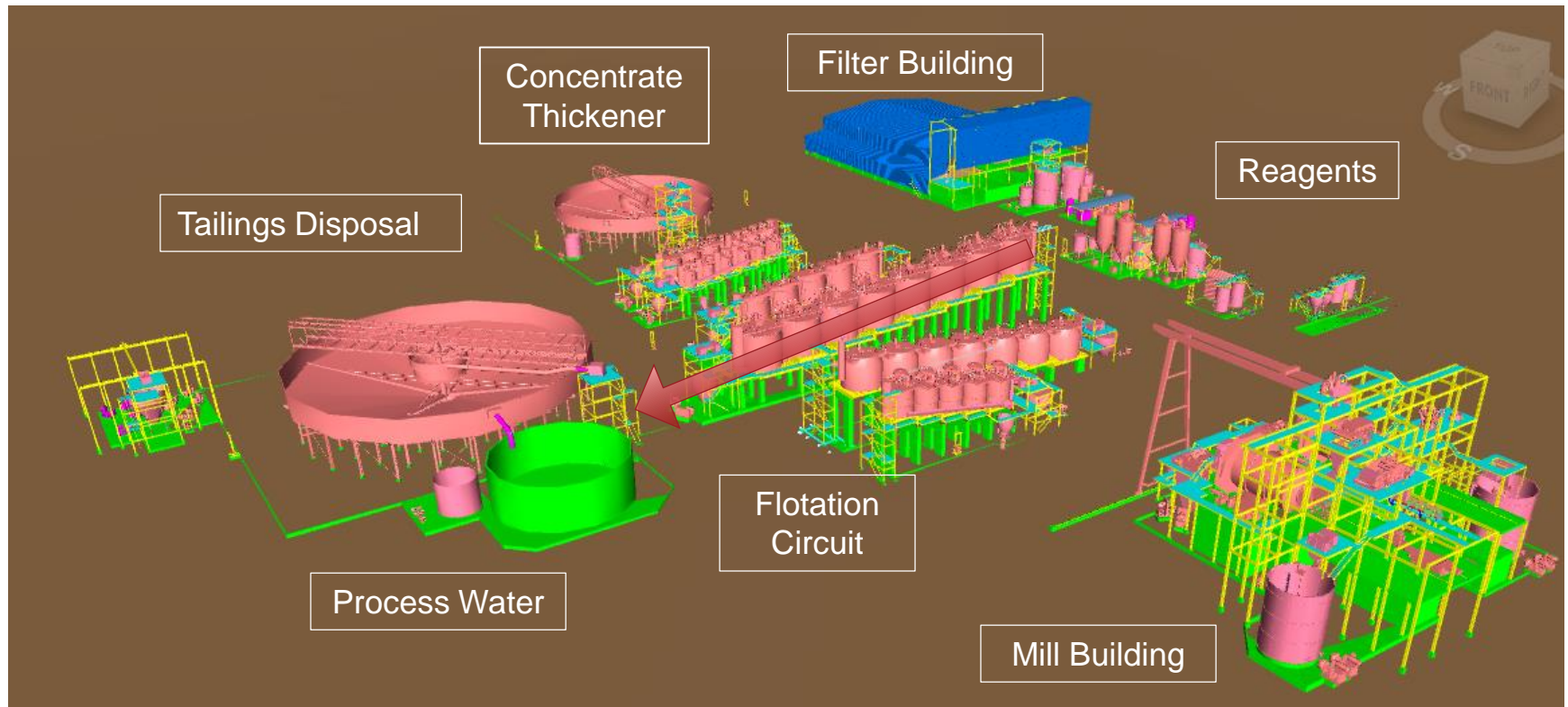
# Benchmarks: Operations Visited

Young Davidson Mine – Alamos Gold,  
Timmins West Mine – Pan American Silver,  
Ontario Canada

Item	Timmins West	Young Davidson	Waterberg Central
Mining Method	Longhole	Longhole	Longhole
Production Rate	2 700tpd	6 700tpd	10 000tpd
Transverse Stope Width (along strike)	20m	20m	20m
Longitudinal Stope Length (along strike)	20m	50m	20m
Stope Thickness (HW to FW)	5m to 70m	5m to 40m	3m to 107m
No. Longhole Drills	3 - ITH	4 - ITH	2 ITH, 6 top hammer
Sublevel Spacing	35m (Downholes)	35m (Downholes)	40m (Up/Downholes)
LHD - Production	5 (17 T class)	9 (20 T class)	11 (17 T class)
Development	200 m/month per jumbo	210 m/month per jumbo	186 m/month per jumbo
Mining Loss	5%	5% - 10%	10%

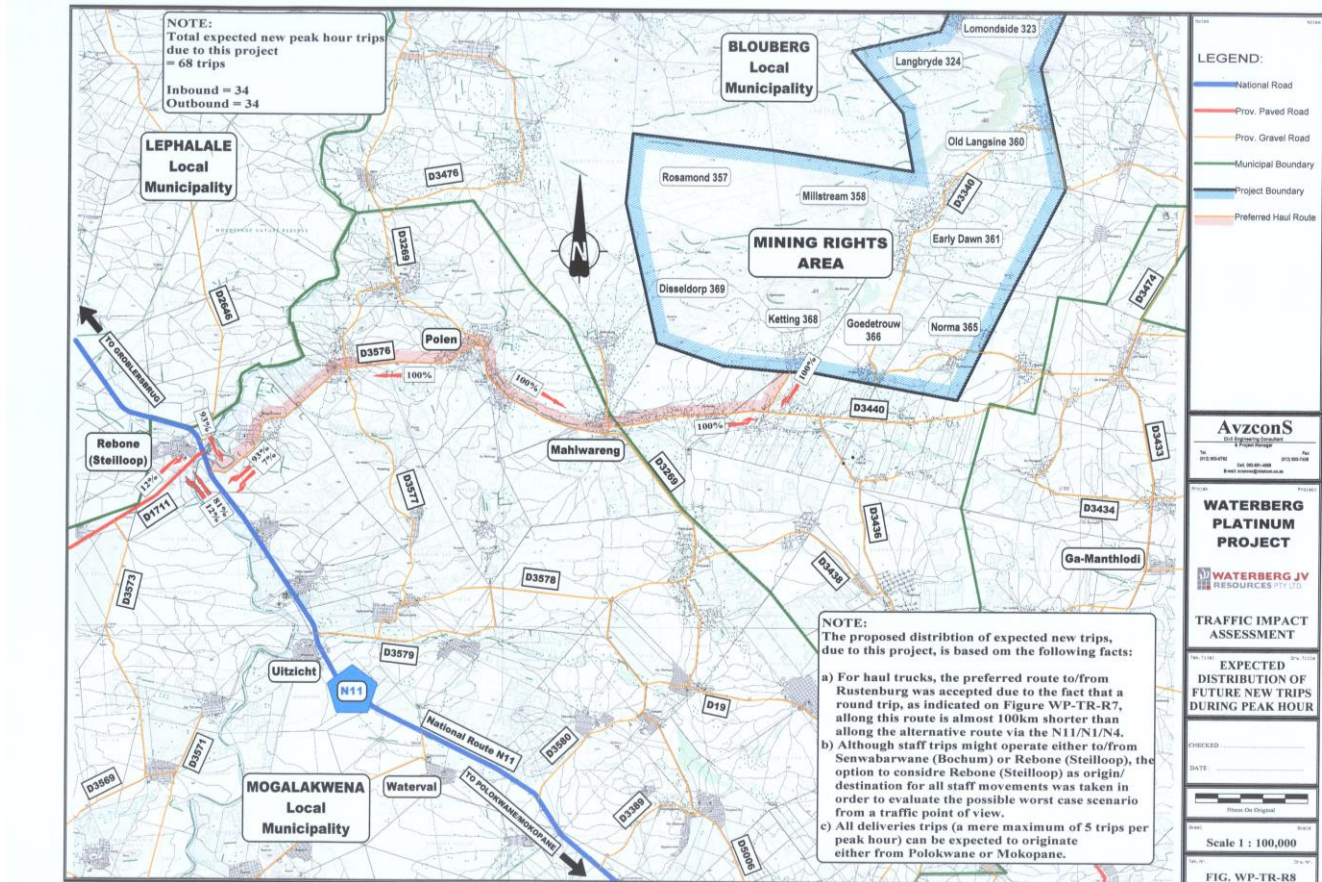
# Concentrate Plant and Process

Process Plant 4.8M Tonnes Per Year, Standard Process



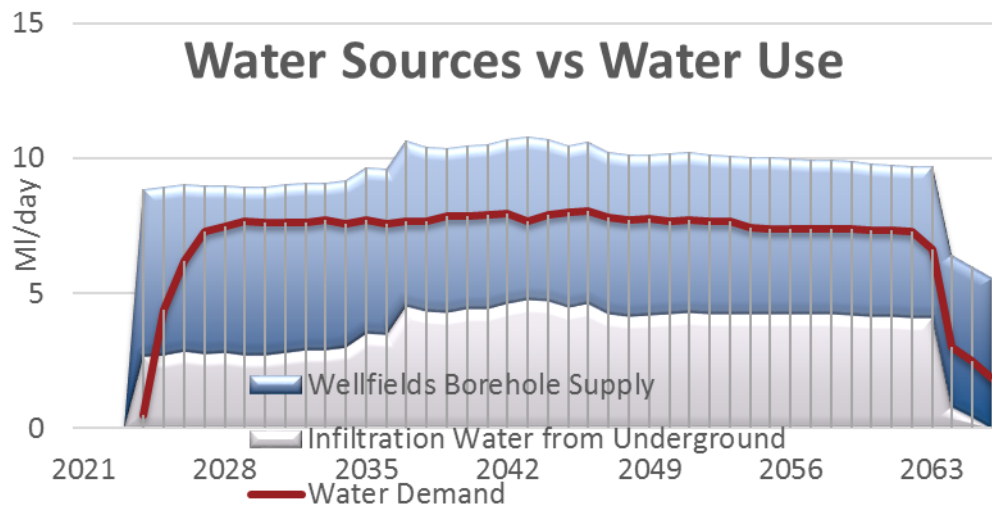
# Access Road and Surface Corridors

## Surface Infrastructure: 35KM of Road Improvements



# Bulk Water: More Than Enough

Sources vs. Uses, Included Community Water Improvements



**Surplus: 3.0+ MI/day**

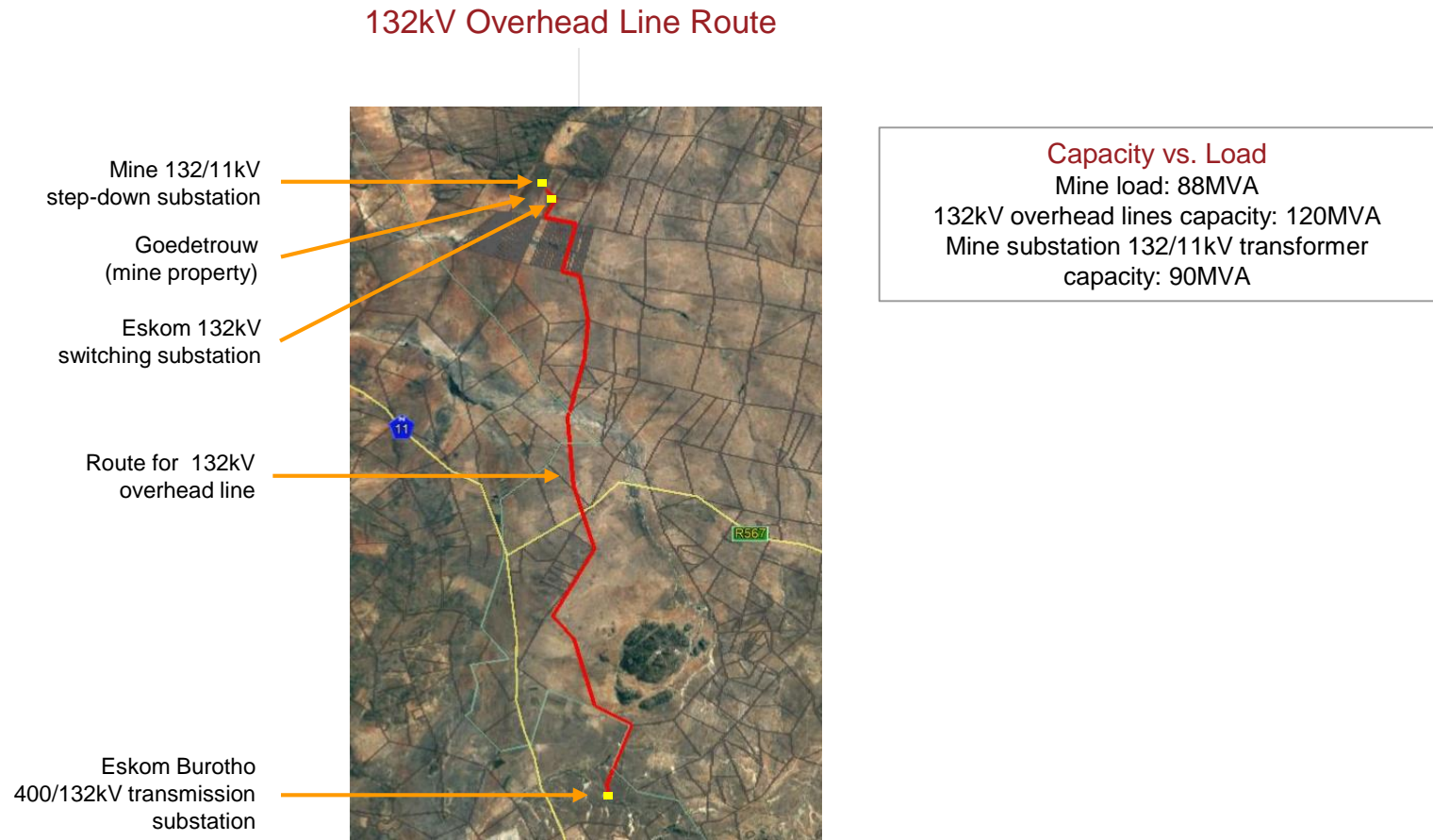
**NOTES :** Infiltration Water increases toward end of mine life if pumping from Central and South continues  
Infiltration is steady state average for Central and South

Water Sources	MI/day	Water Use	MI/day
Infiltration / Fissure Water	3.9	Evaporation	0.6
Available from Boreholes	6.2	Underground Losses	0.0
Rain	0.0	Cement Bonding	2.6
		Service Water Losses	0.1
		Ventilation Losses	0.7
		TSF	1.8
		TSF Seepage	0.2
		Water in Concentrate	0.1
		Community Water Supply	0.3
<b>TOTAL</b>	<b>10.1</b>	<b>TOTAL</b>	<b>6.40</b>



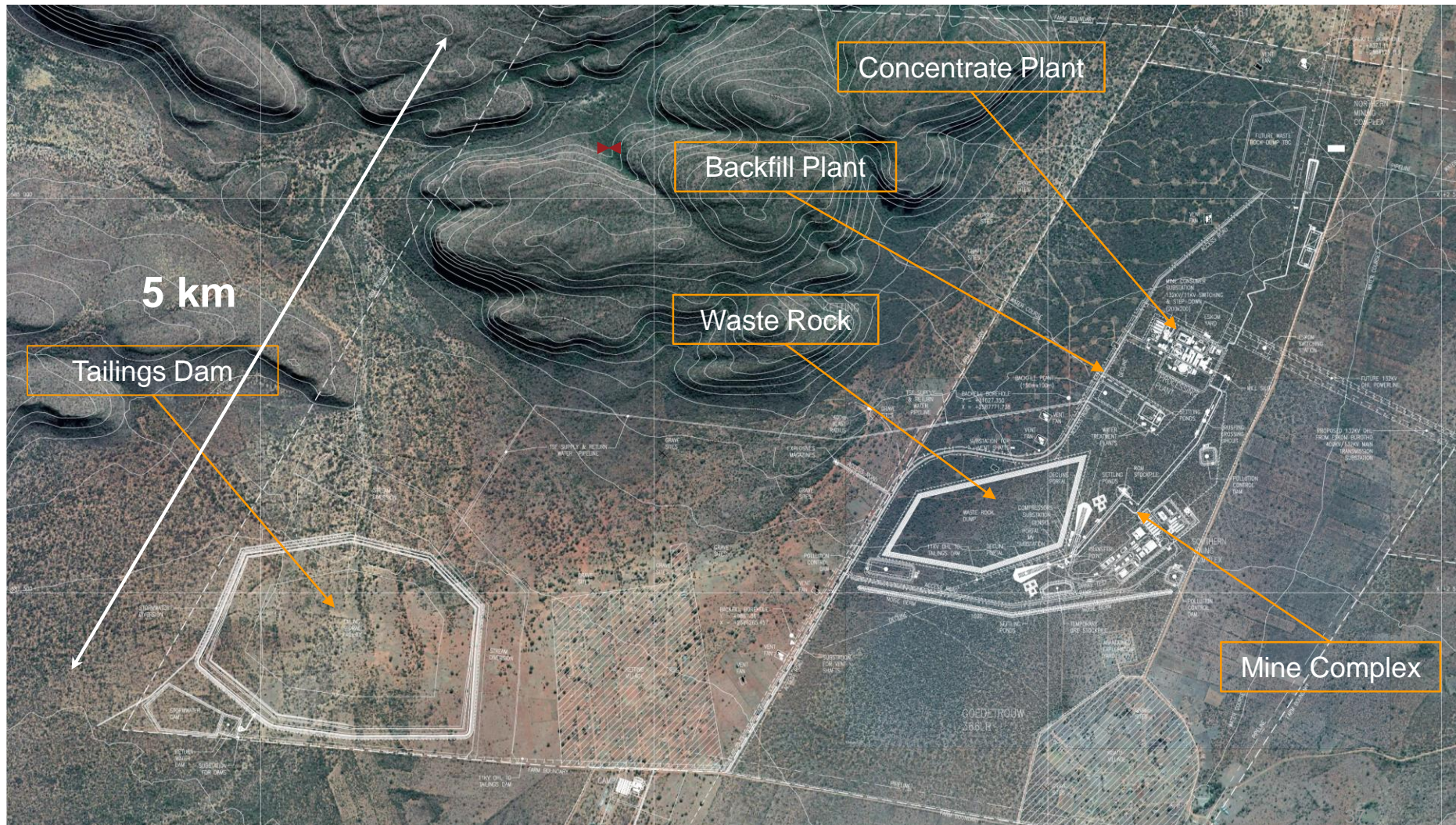
# Bulk Electricity Supply: Self-Build Status Awarded

Bulk Electricity Overview – Eskom Plan Established





# Surface Infrastructure





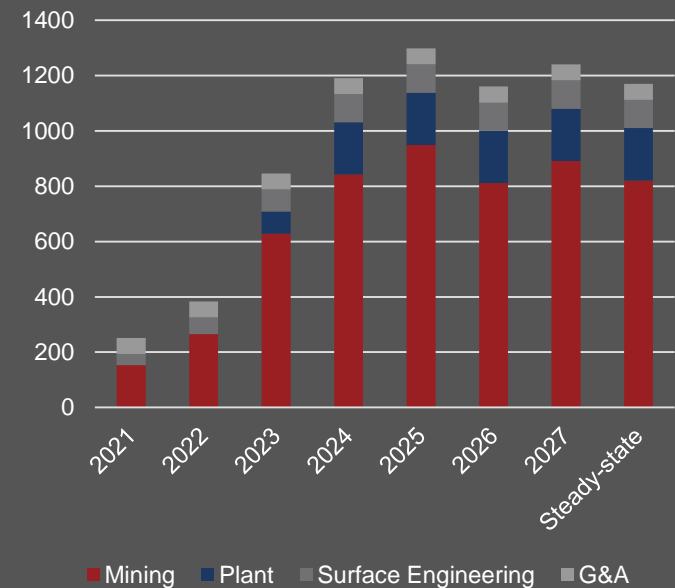
# Training and Workforce Plan

## Local Employment Opportunities

- Some 1 170 workers in long-term operations – meaningful long-term economic and social impact
- Staged approach to employment – engaging locals, nationals and contractors
- Customized learning pathways will be developed / deployed that align to and recognize the Mining Qualifications Authority (MQA) credentials / certificates
- Global training partner – Sudbury, Canada based NORCAT.



Labour Headcount



# Share Structure and Capital Markets

As of November 15, 2019

Stock Symbol	PLG:NYSE.A PTM:TSX
Share Price	USD \$1.40
52 week high/low	USD \$2.17 / \$1.04
Issued and Outstanding	58,581,827
Options	1,554,000
Restricted Share Units	223,443
Fully Diluted	60,359,270
Market Capitalization	USD \$80M

## Debt

\$20M USD Secured Debt (Sprott Lending)  
August 2021 + Option to Extend One Year  
\$20M USD 6 7/8% Convertible Senior  
Subordinated Notes, 2022

## Major Shareholders

Hosken Consolidated Investments Ltd.  
(HCI:JSE), Franklin Templeton, Liberty Metals



# Conclusions

- Waterberg DFS confirms large scale, high margin project with a significant mine life of over 40 years.
- Annual projected steady state production of 420,000 ounce/year 4E with a \$640 USD on-site life of mine average cash cost putting it in the lowest quartile of PGM mines globally.
- Financial returns are very attractive at 20%+ IRR Post Tax and NPV8 of \$982M USD with expected peak funding of \$617M USD.
- Palladium is forecasted to have a particularly tight market in the years ahead.
- Implats development option and construction decision pending in late 2019/early 2020.



# Appendix

Waterberg Definitive Feasibility Study  
September 2019

# Resources

## T-Zone and F-Zone Mineral Resource Estimate 2.5 g/t 4E Cut-Off

T Zone at 2.5 g/t (4E) Cut-off											
Mineral Resource Category	Cut-off	Tonnage	Grade							Metal	
	4E		Pt	Pd	Rh	Au	4E	Cu	Ni	4E	
	g/t	t	g/t	g/t	g/t	g/t	g/t	%	%	kg	Moz
Measured	2.5	4,443,483	1.17	2.12	0.05	0.87	4.20	0.150	0.080	18,663	0.600
Indicated	2.5	17,026,142	1.37	2.34	0.03	0.88	4.61	0.200	0.094	78,491	2.524
<b>M+I</b>	<b>2.5</b>	<b>21,469,25</b>	<b>1.34</b>	<b>2.29</b>	<b>0.03</b>	<b>0.88</b>	<b>4.53</b>	<b>0.189</b>	<b>0.091</b>	<b>97,154</b>	<b>3.124</b>
Inferred	2.5	21,829,698	1.15	1.92	0.03	0.76	3.86	0.198	0.098	84,263	2.709
F Zone at 2.5 g/t (4E) Cut-off											
Mineral Resource Category	Cut-off	Tonnage	Grade							Metal	
	4E		Pt	Pd	Rh	Au	4E	Cu	Ni	4E	
	g/t	t	g/t	g/t	g/t	g/t	g/t	%	%	kg	Moz
Measured	2.5	54,072,600	0.95	2.20	0.05	0.16	3.36	0.087	0.202	181,704	5.842
Indicated	2.5	166,895,635	0.95	2.09	0.05	0.15	3.24	0.090	0.186	540,691	17.384
<b>M+I</b>	<b>2.5</b>	<b>220,968,235</b>	<b>0.95</b>	<b>2.12</b>	<b>0.05</b>	<b>0.15</b>	<b>3.27</b>	<b>0.089</b>	<b>0.190</b>	<b>722,395</b>	<b>23.226</b>
Inferred	2.5	44,836,851	0.87	1.92	0.05	0.14	2.98	0.064	0.169	133,705	4.299

# Resources

Total Mineral Resource Estimate

2.5 g/t Cut-Off

Waterberg Aggregate Total 2.5 g/t Cut-off											
Mineral Resource Category	Cut-off	Tonnage	Grade							Metal	
	4E		Pt	Pd	Rh	Au	4E	Cu	Ni	4E	
	g/t	t	g/t	g/t	g/t	g/t	g/t	%	%	kg	Moz
Measured	2.5	58,516,083	0.97	2.19	0.05	0.21	3.42	0.092	0.193	200,367	6.442
Indicated	2.5	183,921,777	0.99	2.11	0.05	0.22	3.37	0.100	0.177	619,182	19.908
<b>M+I</b>	<b>2.5</b>	<b>242,437,860</b>	<b>0.98</b>	<b>2.13</b>	<b>0.05</b>	<b>0.22</b>	<b>3.38</b>	<b>0.098</b>	<b>0.181</b>	<b>819,549</b>	<b>26.350</b>
Inferred	2.5	66,666,549	0.96	1.92	0.04	0.34	3.27	0.108	0.146	217,968	7.008

# Prill Sprints

Prill Split Waterberg Project Aggregate				
Mineral Resource Category	Pt	Pd	Rh	Au
	%	%	%	%
Measured	28.2	64.4	1.5	5.9
Indicated	29.4	62.6	1.5	6.5
<b>M+I</b>	<b>29.1</b>	<b>63.0</b>	<b>1.5</b>	<b>6.4</b>
Inferred	29.5	58.9	1.2	10.4

## NOTES:

1. 4E elements are platinum, palladium, rhodium and gold.
2. Cut-offs for Mineral Resources were established by a QP after a review of potential operating costs and other factors.
3. Conversion factor used for kilograms ("kg") to ounces ("oz") is 32.15076
4. A 5% and 7% geological loss was applied to the Measured/Indicated and Inferred Mineral Resources categories, respectively.
5. The Mineral Resources are classified in accordance with the National Instrument for the Standards of Disclosure for Mineral projects within Canada, 2011 ("NI 43-101"). Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability and Inferred Mineral Resources have a high degree of uncertainty.
6. The Mineral Resources are provided on a 100% Project basis, Inferred and Indicated categories are separate and the estimates have an effective date of 4 September 2019.
7. Mineral Resources were completed by Mr. CJ Muller of CJM Consulting.
8. Mineral Resources were estimated using kriging methods for geological domains created in Datamine from 441 mother holes and 583 deflections. A process of geological modelling and creation of grade shells using indicating kriging was completed in the estimation process.
9. The Mineral Resources may be materially affected by metal prices, exchange rates, labour costs, electricity supply issues or many other factors detailed in the Company's 2018 Annual Information Form.
10. The data that formed the basis of the Mineral Resources estimate are the drill holes drilled by Platinum Group as project operator, which consist of geological logs, drill hole collars surveys, downhole surveys and assay data. The area where each layer was present was delineated after examination of the intersections in the various drill holes.
11. Numbers may not add due to rounding.

# Reserves

## Proven Mineral Reserve Estimate

2.5 g/t 4E Cut-Off

Proven Mineral Reserve Estimate at 2.5 g/t 4E cut-off										
		Pt	Pd	Rh	Au	4E	Cu	Ni	4E Metal	
Zone	Tonnes	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(%)	(%)	Kg	Moz
T Zone	3,963,694	1.02	1.84	0.04	0.73	3.63	0.13	0.07	14,404	0.463
F Central	17,411,606	0.94	2.18	0.05	0.14	3.31	0.07	0.18	57,738	1.856
F South	-	-	-	-	-	-	-	-	-	-
F North	16,637,670	0.85	2.03	0.05	0.16	3.09	0.10	0.20	51,378	1.652
F Boundary North	4,975,853	0.97	2.00	0.05	0.16	3.18	0.10	0.22	15,847	0.509
F Boundary South	5,294,116	1.04	2.32	0.05	0.18	3.59	0.08	0.19	19,020	0.611
<b>F Zone Total</b>	<b>44,319,244</b>	<b>0.92</b>	<b>2.12</b>	<b>0.05</b>	<b>0.16</b>	<b>3.25</b>	<b>0.09</b>	<b>0.20</b>	<b>143,982</b>	<b>4.629</b>
<b>Waterberg Total</b>	<b>48,282,938</b>	<b>0.93</b>	<b>2.10</b>	<b>0.05</b>	<b>0.20</b>	<b>3.28</b>	<b>0.09</b>	<b>0.19</b>	<b>158,387</b>	<b>5.092</b>

### NOTES:

1. The estimated Mineral Reserves have an effective date of 04 September 2019.
2. A 2.5 g/t 4E stope cut-off grade was used for mine planning for the T Zone and the F Zone Mineral Reserves estimate. The cut-off grade considered April 2018 metal spot prices.
3. Tonnes and grade estimates include planned dilution, geological losses, external overbreak dilution, and mining losses.
4. 4E elements are platinum, palladium, rhodium and gold.
5. Numbers may not add due to rounding.
6. Based on 100% Project Basis

# Reserves

## Probable Mineral Reserve Estimate

2.5 g/t 4E Cut-Off

Probable Mineral Reserve Estimate at 2.5 g/t 4E cut-off										
		Pt	Pd	Rh	Au	4E	Cu	Ni	4E Metal	
Zone	Tonnes	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(%)	(%)	Kg	Moz
T Zone	12 936 870	1.23	2.10	0.02	0.82	4.17	0.19	0.09	53,987	1.736
F Central	52 719 731	0.86	1.97	0.05	0.14	3.02	0.07	0.18	158,611	5.099
F South	15 653 961	1.06	2.03	0.05	0.15	3.29	0.04	0.13	51,411	1.653
F North	36 984 230	0.90	2.12	0.05	0.16	3.23	0.09	0.20	119,450	3.840
F Boundary North	13 312 581	0.98	1.91	0.05	0.17	3.11	0.10	0.23	41,369	1.330
F Boundary South	7 616 744	0.92	1.89	0.04	0.13	2.98	0.06	0.18	22,737	0.731
<b>F Zone Total</b>	<b>126 287 248</b>	<b>0.91</b>	<b>2.01</b>	<b>0.05</b>	<b>0.15</b>	<b>3.12</b>	<b>0.08</b>	<b>0.18</b>	<b>393,578</b>	<b>12.654</b>
<b>Waterberg Total</b>	<b>139 224 118</b>	<b>0.94</b>	<b>2.02</b>	<b>0.05</b>	<b>0.21</b>	<b>3.22</b>	<b>0.09</b>	<b>0.18</b>	<b>447,564</b>	<b>14.390</b>

### NOTES:

1. The estimated Mineral Reserves have an effective date of 04 September 2019.
2. A 2.5 g/t 4E stope cut-off grade was used for mine planning for the T Zone and the F Zone Mineral Reserves estimate. The cut-off grade considered April 2018 metal spot prices.
3. Tonnes and grade estimates include planned dilution, geological losses, external overbreak dilution, and mining losses.
4. 4E elements are platinum, palladium, rhodium and gold.
5. Numbers may not add due to rounding.
6. Based on 100% Project Basis.

# Reserves

Proven & Probable Mineral Reserve

Estimate at 2.5 g/t 4E cut-off

Total Estimated Mineral Reserve at 2.5 g/t 4E cut-off										
		Pt	Pd	Rh	Au	4E	Cu	Ni	4E Metal	
Zone	Tonnes	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(%)	(%)	Kg	Moz
T Zone	16 900 564	1.18	2.04	0.03	0.80	4.05	0.18	0.09	68,391	2.199
F Central	70 131 337	0.88	2.02	0.05	0.14	3.09	0.07	0.18	216,349	6.956
F South	15 653 961	1.06	2.03	0.05	0.15	3.29	0.04	0.13	51,411	1.653
F North	53 621 900	0.88	2.09	0.05	0.16	3.18	0.10	0.20	170,828	5.492
F Boundary North	18 288 434	0.98	1.93	0.05	0.17	3.13	0.10	0.23	57,216	1.840
F Boundary South	12 910 859	0.97	2.06	0.05	0.15	3.23	0.07	0.19	41,756	1.342
F Zone Total	170 606 492	0.91	2.04	0.05	0.15	3.15	0.08	0.19	537,560	17.283
Waterberg Total	187 507 056	0.94	2.04	0.05	0.21	3.24	0.09	0.18	605,951	19.482

## NOTES:

1. The estimated Mineral Reserves have an effective date of September 4, 2019.
2. A 2.5 g/t 4E stope cut-off grade was used for mine planning for the T Zone and the F Zone Mineral Reserves estimate. The cut-off grade considered April 2018 metal spot prices.
3. Tonnes and grade estimates include planned dilution, geological losses, external overbreak dilution, and mining losses.
4. 4E elements are platinum, palladium, rhodium and gold.
5. Numbers may not add due to rounding.



# Project Capital Breakdown

Cost Area	ZAR Total (ZAR million Real)	USD Total (US\$ million Real)
Underground Mining	6,097	406
Concentrator	2,580	172
Shared Services and Infrastructure	682	45
Regional Infrastructure	1,229	82
Site Support Services	234	16
Project Delivery Management	654	44
Other Capitalised Costs	331	22
Provisions	1,298	87
Total Project Capital (excl. Capitalised OpEx)	13,105	874
Capitalised Operating Costs	3,453	230
Total Project Capital (incl. Capitalised OpEx)	16,559	1,104
Peak Funding (Spot Prices)	9,255	617

## NOTES:

1. Project Capital is defined as all required capital expenditure until the Project achieves 70% of planned steady-state production. This is projected to occur from January 2020 to December 2025.
2. A US\$/ZAR exchange rate of 15.00 is used in all cost conversions.
3. Post December 2025, the DFS estimates stay-in-business or sustaining capital for the LOM at US\$ 1.44 billion (ZAR 21.6 billion).
4. The DFS estimates peak funding at US\$ 617 million (ZAR 9.26 billion) at Spot Prices, and US\$ 667 million (ZAR 10.26 billion) at Three Year Trailing Prices. This includes all spend offset by revenue.

# Price Deck **Assumptions**

Parameter	Unit	Spot Prices (Sept 4, 2019)	Three Year Trailing Prices (Sept 4, 2019)
US\$ / ZAR (Long-term Real)	US\$/ZAR (Real July 2019)	15.00	15.95
Platinum	US\$/oz (Real July 2019)	980	931
Palladium	US\$/oz (Real July 2019)	1,546	1,055
Gold	US\$/oz (Real July 2019)	1,548	1,318
Rhodium	US\$/oz (Real July 2019)	5,036	1,930
Basket Price (4E)	US\$/oz (Real July 2019)	1,425	1,045
Copper	US\$/lb (Real July 2019)	2.56	2.87
Nickel	US\$/lb (Real July 2019)	8.10	5.56
Smelter Payability: 4E Metal	% Gross Sale Value	85%	85%
Smelter Payability: Copper	% Gross Sale Value	73%	73%
Smelter Payability: Nickel	% Gross Sale Value	68%	68%

# Operating Costs

On-Site Operating Cost Rates per Area in ZAR and USD

Area	Average LOM (ZAR/t milled)	Average LOM (US\$/t milled)
Mining	345	23.01
Milling & Processing	132	8.79
Engineering & Infrastructure	116	7.76
General & Admin	19	1.25
<b>Total OPEX Cost</b>	<b>612</b>	<b>40.80</b>

# Operating Costs

Total Cash Cost Rates in USD/4E Ounce

Cost Area	Spot Prices (US\$/4E oz Real)	3-Year Trailing Average Prices (US\$/4E oz Real)
On-Site Costs	487	457
Smelting, Refining and Transport Costs	302	457
Royalties & Production Taxes	88	54
less By-Product Credits	(236)	(184)
<b>Total Project Operating Costs</b>	<b>640</b>	<b>554</b>

# Sensitivity Analysis

NPV - Discount Rate

Metric	Discount Rate	Unit of Measure	Spot Prices	Three Year Trailing Prices
Net Present Value US\$ (Post-Tax)	Undiscounted	US\$ million	6,613	3,489
	4%	US\$ million	2,390	1,106
	6%	US\$ million	1,516	623
	8%	US\$ million	982	333
	10%	US\$ million	641	152
	12%	US\$ million	415	35
Net Present Value ZAR (Post-Tax)	Undiscounted	ZAR million	99,201	56,021
	4%	ZAR million	35,857	17,979
	6%	ZAR million	22,747	10,259
	8%	ZAR million	14,736	5,616
	10%	ZAR million	9,618	2,710
	12%	ZAR million	6,220	829

# Sensitivity Analysis

## Scenario 1 (Spot Prices)

Parameters	Increase/ (Decrease)	NPV @ 8% (US\$ million)	NPV @ 8% (ZAR million)	IRR (% Real)	Payback Period <sup>(1)</sup> (years)
Metal Prices	(20%)	408	6,122	13.7	11.0
	(10%)	695	10,423	17.3	9.4
	-	982	14,736	20.7	8.4
	10%	1,272	19,079	23.9	7.8
	20%	1,564	23,458	27.0	7.4
4E Head Grade	(20%)	437	6,550	14.1	10.8
	(10%)	709	10,630	17.5	9.3
	-	982	14,736	20.7	8.4
	10%	1,257	18,857	23.7	7.8
	20%	1,533	22,991	26.6	7.5
Project CapEx	(20%)	1,141	17,114	26.4	7.4
	(10%)	1,062	15,925	23.3	7.8
	-	982	14,736	20.7	8.4
	10%	903	13,547	18.6	9.0
	20%	824	12,358	16.9	9.7
OpEx	(20%)	1,273	19,098	23.3	7.9
	(10%)	1,128	16,917	22.1	8.1
	-	982	14,736	20.7	8.4
	10%	837	12,555	19.3	8.7
	20%	692	10,374	17.8	9.1

NOTE: <sup>1</sup>From the date of first construction.



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Thank you