



**SOUTHERN  
PALLADIUM**



**28 October 2024**

**ASX:SPD, JSE:SDL**

**ACN: 646 399 891**

### **Corporate Directory**

**Executive Chairman**  
Roger Baxter

**Managing Director**  
Johan Odendaal

**Non-Executive Directors**  
Mike Stirzaker  
Rob Thomson  
Daan van Heerden  
Lindi Nkosi-Thomas

**Company Secretary**  
Andrew Cooke

**Top 5 Shareholders**  
Nicolas Daniel Resources Pty Ltd  
Nurinox Investments Pty Ltd  
Robert Napier Keith  
Legacy Platinum Corporation  
HSBC Custody Nominees (Aus) Ltd

### **Company Overview**

Dual-listed platinum group metal (PGM) company developing the advanced Bengwenyama PGM project, particularly rich in palladium/rhodium, located in South Africa's prolific Bushveld Complex.

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## **Prefeasibility Study Results: Project NPV<sub>8</sub> of USD1.059bn Maiden JORC Ore Reserve of 6.29 million oz @ 6.17g/t PGM (6E)**

### **Key Study Parameters**

- Prefeasibility Study (PFS) completed for the 70% owned Bengwenyama Platinum Group Metal (PGM) project indicates very attractive economics justifying development of the project.
- The life of mine (LoM) from the UG2 reef alone is estimated at 29 years with a total of approximately 45 million tonnes mined (~8.88 Moz 6E\*) for an average annual steady state saleable product of 400Koz PGM (6E basis\*) with cash costs firmly at the low end of the global cost curve a result of high delivered grade and shallow mining depths.
- Strategically situated amongst other Tier 1 operations on the Bushveld's Eastern Limb and owned by major mining companies. All necessary infrastructure (water, power, roads, services, and skilled labour force) already in place. Mining and processing are amenable to proven technology.

### **Financial Returns**

- Post-tax ungeared NPV<sub>8</sub> (real) of USD1.059 billion based on conservative long term commodity price assumptions (Pt US\$1200/oz, Pd US\$1100/oz, Rh US\$6,200/oz).
- Post-tax IRR of ~28%.
- Post-tax capital payback of ~3.5 years from first concentrate production.
- LoM EBITDA totalling ~USD5.6 billion.

### **Physical Parameters**

- Development of a ~2.4 Mtpa UG2 reef two decline underground mining operation with mill feed head grade of 6.10g/t (6E) averaging over LoM
- Conventional flotation and spiral plant to deliver a marketable PGM concentrate (~85% recovery for PGM) and a 42% chrome concentrate for sale to export markets.
- Initial Capital of ~USD385 million (including a 15% contingency)
- Low LoM cash costs for operations of ~USD644/6E oz (~ZAR2,609/t)
- LoM AISC of ~USD800/6E oz
- High LoM EBITDA Margin of ~50%

# Bengwenyama Project

## Production Confidence Levels

- Percentage of JORC Measured and Indicated Resources used in the PFS LoM diluted mine plan is 87% (Inferred 13%) over the first five years, 94% (Inferred 6%) over the first 10 years and 74% (Inferred 26%) over the estimated 29-year mine life.
- Mine scheduling has targeted high grades initially from the shallow area of the UG2 reef with run of mine (RoM) at an average feed grade over the first 10 years of 6.3g/t (6E\*).
- Average processing recovery of 85% over the life of mine from testwork demonstrates amenability to conventional processing technology adopted in the South African platinum industry.

**\*Note:**

**7E or 6E+Au in this document refers to platinum, palladium, rhodium, ruthenium, iridium, osmium and gold.**

**6E or 5E+Au refers to platinum, palladium, rhodium, ruthenium, iridium and gold and;**

**4e or 3E+Au refers to platinum, palladium, rhodium and gold**

## Environmental Social Governance

- Widespread community and Traditional Council engagement has been established.
- Extensive environmental baseline studies have been completed across the Project Area.
- Heritage clearances have been completed over the Project development and operations area.
- Environmental Impact Assessment (EIA) was submitted on 11 July 2024, with the Department of Mineral Resources and Energy (DMRE) issuing an acknowledgment on 17 July 2024.
- Additional applications for a Waste Management License (WML) will be submitted to manage waste products and geochemical hazards.
- An Integrated Water and Waste Management Plan (IWWMP) has been initiated, as per GNR 267 of 2017, to regulate water use activities.
- Closure costs for the LoM are estimated at R90.921 million (USD4.65 million) as of April 2024, compiled by OMI Solutions (Pty) Ltd.
- Social and Labour Plan (SLP) has been developed in line with the Mining Charter and MPRDA requirements to support community development.
- On September 29, 2023, Southern Palladium officially submitted its application for a Mining Right (refer ASX Announcement 2 October 2023), a decision by the DMRE is anticipated Q2 2025.

## Financial Investment Decision and Value Drivers

- Commencement of feasibility study work to commence in early 2025 in parallel with project construction funding discussions with financiers leading to the Financial Investment Decision (FID).
- Debt financing alternatives already progressed with the appointment of Blackbird Partners.
- Feasibility critical path study work includes metallurgical and geotechnical assessments. Drilling required for both assessments to commence as soon as practicable, subject to statutory approvals.
- FID discussions proposed in late 2025 subject to statutory approvals.
- Key value drivers during 2025 are the granting of the mining right, concentrate offtake outcomes and completion of a definitive feasibility study (DFS).

## Value-Adding Opportunities Prior to Financial Investment Decision

- Value-adding opportunities to be carried out by Q1 2025 to be included as part of the FID. This work is expected to make project funding more attractive by either decreasing the ramp up period to full production or by decreasing the up-front capital requirement (or a combination of both).

**The assessments to be investigated include:-**

- accessing the orebody with a single decline initially into the shallower sections of the orebody;
- increasing underground development for initial mine stopes by providing twin drives to enable greater ore and waste extraction until steady state mining is achieved;
- possible use of idle concentrate plant within trucking distance from the Project;
- increasing the rate of early development, including haulages and raises;
- adopting a mining contractor strategy for the underground development work;
- a two-stage processing plant construction with an initial 100,000 tpm plant, followed by second 100,000 tpm processing to match the production profile;
- adopting ore sorters to reduce the feed and increase the head grade thus requiring a smaller processing plant; and
- the utilisation of renewable energy sources.

## Key PFS Outcomes and Assumptions

The PFS confirms that the Bengwenyama Project is a globally significant Tier 1 PGM Project and presents a commercially viable development opportunity. A summary of the initial physical and financial evaluation of the Project at a 2.4 Mtpa throughput rate is indicated in Table 1 with additional details provided in the PFS Executive Summary. It is compared with the results delivered from the scoping study (SS) in February 2024. The peak funding requirement is USD452 million (inclusive of contingencies), with a pay-back period of 6.0 years from start of mining or 6.5 years from start of construction. Early revenue growth was supported by a combination of higher measured resource grades, an accelerated ramp-up that increased throughput (yielding more ounces), and a projected higher rhodium price. The UG2 basket price of USD 1,557 per 6E oz is a conservative estimate compared to the current spot price of USD 1,348 per 6E oz (As at 26 October 2024), especially considering that we are at the bottom of the cycle. More detailed information was gathered on the PFS labour costs. The accuracy of the labour cost estimate has been significantly enhanced by reviewing and refining labour requirements, adjusting salary rates based on benchmarks from existing operations, and aligning job gradings with industry standards.

Table 1: Key PFS Valuation Metrics

Production Metrics	Unit	SS	PFS
Life of Mine	Years	36	29
Life of Mine Ore Tonnes Mined	kt	51,896	45,262
Processing Rate	ktpa	2,040	2,400
Total 6E Oz in Mine Plan*	koz	10,740	8,876
6E Grade Delivered to Plant	g/t	6.42	6.10
6E Recovered grade	g/t	5.33	5.18
6E Recovery	%	81%	85%
Total 6E Oz Recovered	koz	8,897	7,545
PGM Concentrate	kt	1,326	1,987
Chromite Concentrate	kt	3,767	6,083
Financial Metrics			
Basket Price	USD/6E oz	1,529	1,557
Exchange Rate	ZAR/USD	18.87	19.57
<b>All In Sustaining Costs ("AISC")</b>	<b>USD/6E oz</b>	<b>836</b>	<b>800</b>
Average AISC First 5 Years	USD/6E oz	836	829
Average AISC First 10 Years	USD/6E oz	844	843
Net free cashflow (pre-tax)	USD million	4,295	4,660
Net free cashflow (post-tax)	USD million	3,132	3,403
EBITDA	USD million	5,213	5,607
Payback Period from Ground Break	Years	5.5	6.5
Payback Period from First Mining	Years	6.5	6.0
Payback Period from First Plant Production	Years	4.5	3.5
<b>Peak Funding Requirement</b>	<b>USD million</b>	<b>403</b>	<b>452</b>
NPV 8% (pre-tax)	USD million	1,043	1,562
<b>NPV 8% (post-tax)</b>	<b>USD million</b>	<b>698</b>	<b>1,059</b>
IRR (pre-tax)	%	24%	33%
<b>IRR (post-tax)</b>	<b>%</b>	<b>21%</b>	<b>28%</b>
Capital Cost Estimate			
Initial Mining Capital	USD million	126	96
Initial Plant	USD million	99	129
Initial TSF	USD million	23	42
Initial Shared Capital	USD million	98	63
<b>Total Initial Capital Excluding Contingencies</b>	<b>USD million</b>	<b>346</b>	<b>330</b>
Initial Capital Contingencies	USD million	62	55
<b>Total Initial Capital</b>	<b>USD million</b>	<b>409</b>	<b>385</b>
Key Environmental and Social Statistics			
Life of Mine State Royalties & Corporate Taxes	USD million	1,770	1,902
Life of Mine Expenditure	USD million	7,339	5,868
Life of Mine Total Economic Value Add	USD million	9,109	7,770

## Bengwenyama Maiden JORC Probable Reserve

The 6E Ore Reserves for the Project consist of Measured and Indicated Resources from the UG2 reef only. The Ore Reserve classification was conducted by converting Measured and Indicated Mineral Resources to Probable Ore Reserves. Table 2 provides a detailed summary of the tonnage, grades and content for Probable Ore Reserves within the Bengwenyama Project.

Table 2: Ore Reserve Estimation as at 23 October 2024 (UG2 reef)

Ore Reserve Category	Tonnes	Pt	Pd	Rh	Au	Ir	Os	Ru	4E	6E	Cu	Ni	Cr <sub>2</sub> O <sub>3</sub>	Moz(6E)
	Mt	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(%)	(%)	(%)	
Probable	31.72	2.34	2.33	0.48	0.07	0.16	-	0.78	5.22	6.17	0.02	0.12	19.03	6.29
<b>Total</b>	<b>31.72</b>	<b>2.34</b>	<b>2.33</b>	<b>0.48</b>	<b>0.07</b>	<b>0.16</b>	<b>-</b>	<b>0.78</b>	<b>5.22</b>	<b>6.17</b>	<b>0.02</b>	<b>0.12</b>	<b>19.03</b>	<b>6.29</b>

**Notes:**

1. The Ore Reserve estimation included diluted Measured and Indicated Mineral Resources only.
2. No Inferred Mineral Resources have been included in the Ore Reserve.
3. The Ore Reserve estimation was completed using a 6E basket price (before payabilities) of USD1,557/oz over the LoM.

**Southern Palladium** (ASX: SPD; JSE: SDL, “Southern Palladium” or the “Company”) is pleased to announce the outcome of its Pre-feasibility Study of its 70% owned Bengwenyama Project located on the Eastern Limb of the Bushveld Complex in South Africa which holds approximately 72% of the world’s platinum group minerals (“PGM”) resources.

**The Managing Director, Johan Odendaal, said:** “Today, we are proud to announce the results of the Prefeasibility Study (PFS) for the Bengwenyama Project, which marks a significant step forward in advancing the project. Since the Scoping Study, we have identified several opportunities to enhance the physical and financial metrics, including:-

- completing the drilling program;
- increasing resource confidence;
- identifying footwall mineralization in the UG2 reef,
- optimising the initial secondary decline to reduce development time;
- accelerating the production build-up;
- increasing average annual production;
- completing chrome metallurgical tests to improve recovery understanding;
- changing the mining method;
- significantly increasing the detail and accuracy of the technical work.

Over the first five years of the Project, 87% of ore production will come from JORC Measured and Indicated resource classifications, and 94% over the first 10 years. JORC Measured and Indicated resources account for 74% of the total planned ore production over the LoM. Additionally, we are excited to announce a maiden JORC Probable Reserve of 6.29Moz @ 6.17g/t PGE (6E) on the UG2 reef over a 1 m stoping width.

This maiden Reserve is underpinned by the substantial Mineral Resource update announced in October 2024, which saw the total resource increase to 40Moz, including 7.92Moz @ 9.653g/t PGE (6E) in the JORC Measured and Indicated categories. This represents a notable leap in resource confidence since our initial 18.8Moz Inferred Resource reported in July 2021. The successful conversion of Measured and Indicated Resources to Probable Reserves is a testament to our focused resource definition drilling program over the past two years.

Extensive metallurgical testing during the PFS phase has further de-risked the Project, demonstrating high and consistent recoveries for both PGMs and chrome. Notably, the Project’s post-tax net present value (“NPV”) has increased by 52% to USD1.059 billion, up from USD698 million in the Scoping Study. Capital costs for the plant and infrastructure have been refined, decreasing by 6% to USD385 million. This figure includes a 15% contingency.



With an estimated all-in sustaining cost of USD800/oz (6E), the Bengwenyama Project will be positioned in the lowest quartile of the platinum industry cost curve, highlighting its competitive advantage.

The PFS results are compelling and firmly establish Bengwenyama as a Tier 1 PGM asset. The study confirms the commercial viability of the Project, and we are now preparing to progress to a definitive feasibility study (“DFS”), which is expected to be completed in 2025. Additionally, during the last quarter of 2024, we will explore further value-adding opportunities ahead of the financial investment decision. We have also made progress in advancing debt financing options with the appointment of Blackbird Partners.

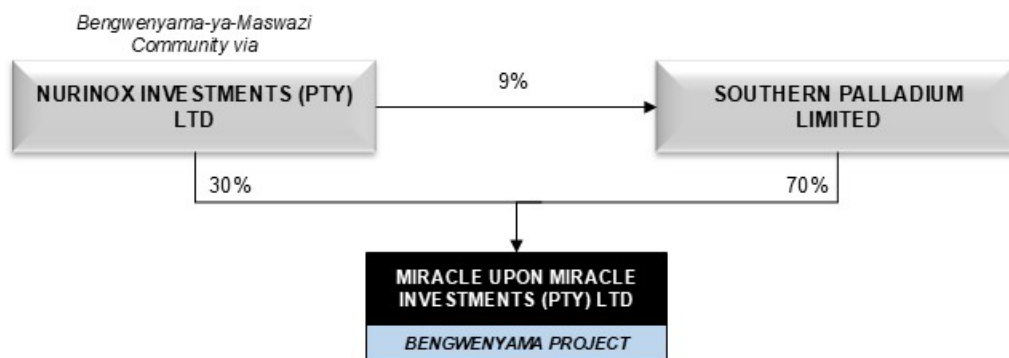
In the past two years, the Company has demonstrated rapid resource growth and exploration success, and we remain committed to maximising shareholder returns as we continue to unlock the full potential of this world-class asset.”

## Prefeasibility Study summary

### INTRODUCTION

Today, Southern Palladium announced the results of the pre-feasibility study for its 70%-owned Bengwenyama Project, located on the Eastern Limb of the Bushveld Complex in South Africa, which contains approximately 72% of the world's platinum group metals (“PGM”) resources. Figure 1 illustrates the Southern Palladium Interest in the Bengwenyama Project.

Figure 1: Southern Palladium Interest in the Bengwenyama Project



The October 2024 pre-feasibility study (PFS) builds on the February 2024 updated scoping study, which provided an initial 36-year evaluation of the Bengwenyama Project based on the December 2023 mineral resource estimate of 26.22Moz. The UG2 Scoping Study outcomes included a total recovered production of 8.90Moz (6E) from the UG2 Reef, 54% of which was classified as JORC Indicated mineralisation, over the 36-year evaluation period.

Average annual PGM production was approximately 330,000 ozpa at an average AISC of USD836/ 6E ounce. The scoping study's post-tax financial metrics included an NPV<sub>8</sub> of US\$700m, a post tax IRR of 21%, and a payback period of 6.5 years from the commencement of mining. Based on these results, the SPD board approved advancing the Project to a pre-feasibility study level.

Opportunities to improve upon the scoping study physical and financial metrics were identified at the time included:-

- completed the drilling programme increasing the confidence levels in the resource;
- identify footwall mineralisation in the UG2 reef;
- move the initial secondary decline to shorten the development time;
- steepen the production build-up;

- increase the average annual production;
- complete chrome metallurgical tests to better understand recovery;
- change in mining method; and
- overall increase in detail and accuracy of technical work.

A number of specialists and consultants were involved in the completion of the PFS on the Project. These are listed in Table 3. Minxcon was the lead consultant and the Mineral Resource estimate, environmental social governance (ESG) aspects, mine design and scheduling, infrastructure and processing designs, operating and capital cost estimates and financial modelling, and PFS reviewed by SRK Consulting (South Africa) (Pty) Ltd.

Table 3: Consultants and Specialists Involved in PFS Study

Project Team	Company
Environmental Assessment Practitioner	OMI Solutions (Pty) Ltd
Air Quality Impact Assessment	Eco Elementum (Pty) Ltd
Noise Quality Impact Assessment	Eco Elementum (Pty) Ltd
Groundwater (Geohydrology) Impact Assessment	MVB Consulting (Pty) Ltd
Waste Assessment	Eco Elementum (Pty) Ltd
Surface Water (Hydrology) Impact Assessment and Stormwater Management Plan	Hydrospatial (Pty) Ltd
Water Resource and Hydropedology Impact Assessment	Land Matters Environmental Consulting (Pty) Ltd
Soil and Agricultural Ecosystem Impact Assessment	Land Matters Environmental Consulting (Pty) Ltd
Terrestrial Biodiversity Impact Assessment	Field and Form Landscape Science & Trogon Biodiversity
Aquatic Impact Assessment	Ecology International (Pty) Ltd
Visual Impact Assessment	Eco Elementum (Pty) Ltd
Socio-Economic Impact Assessment	Niara Environmental Consulting (Pty) Ltd
Phase 1 Heritage Impact Assessment	Land Matters Environmental Consulting (Pty) Ltd
Desktop Palaeontological Impact Assessment	Prof. Marion Bamford
Traffic Assessment	SA Traffic Surveys (Pty) Ltd
Blasting Assessment	Blast Management Consulting
Financial Provision	OMI Solutions (Pty) Ltd
Electrical, Control and Instrumentation Design	Paddy Keys & Associates
Tailings Storage Facility Design	Entail (Pty) Ltd
Surface Water Management and TSF Slurry and Return Water System Design	Eco-Elementum (Pty) Ltd
TSF Dewatering Plant	Tailex (Pty) Ltd
Surface Geotechnical Investigation	Bear-GeoConsult (Pty) Ltd
Geophysical Survey	New Resolution Geophysics
Diamond Core Drilling	Geomechanics
Drillhole Collar Survey	Aero Geomatics
Wireline Logging	Wireline Workshop
Assaying	ALS Minerals (part of ALS Limited)
Mineral Resource Estimate 3rd Party Review	ExplorMine Consultants
Geotechnical considerations and recommendations	Open House Management Services
Bond Ball Work Index testwork (comminution), initial rougher and cleaner kinetic testwork (floatation)	SGS South Africa
Milling curve testwork, rougher kinetic and locked cycle testwork (floatation) and mineralogical analysis	Suntech Geomet Laboratories
Mineral Resource estimate, ESG aspects, mine design and scheduling, infrastructure and processing designs, operating and capital cost estimates and financial modelling	Minxcon (Pty) Ltd

In line with the opportunities identified, SPD announced significant progress at the Bengwenyama Project on 27 August 2024. The UG2 Reef, which is the main focus of the PFS, saw a 25% increase in the Measured and Indicated (M&I) Mineral Resource to 8.17 Moz (7E) at an impressive grade of 9.89 g/t over a reef width of 73 cm.

Notably, 28% of this UG2 M&I Mineral Resource is now classified as Measured, further boosting confidence in the Project's potential. The total UG2 Mineral Resource, including Measured, Indicated, and Inferred categories, stood at 24.81 Moz. When combined with the Merensky Reef Resource, the total Mineral Resource amounted to 35.32 Moz, reinforcing the robust nature of the Bengwenyama Project.

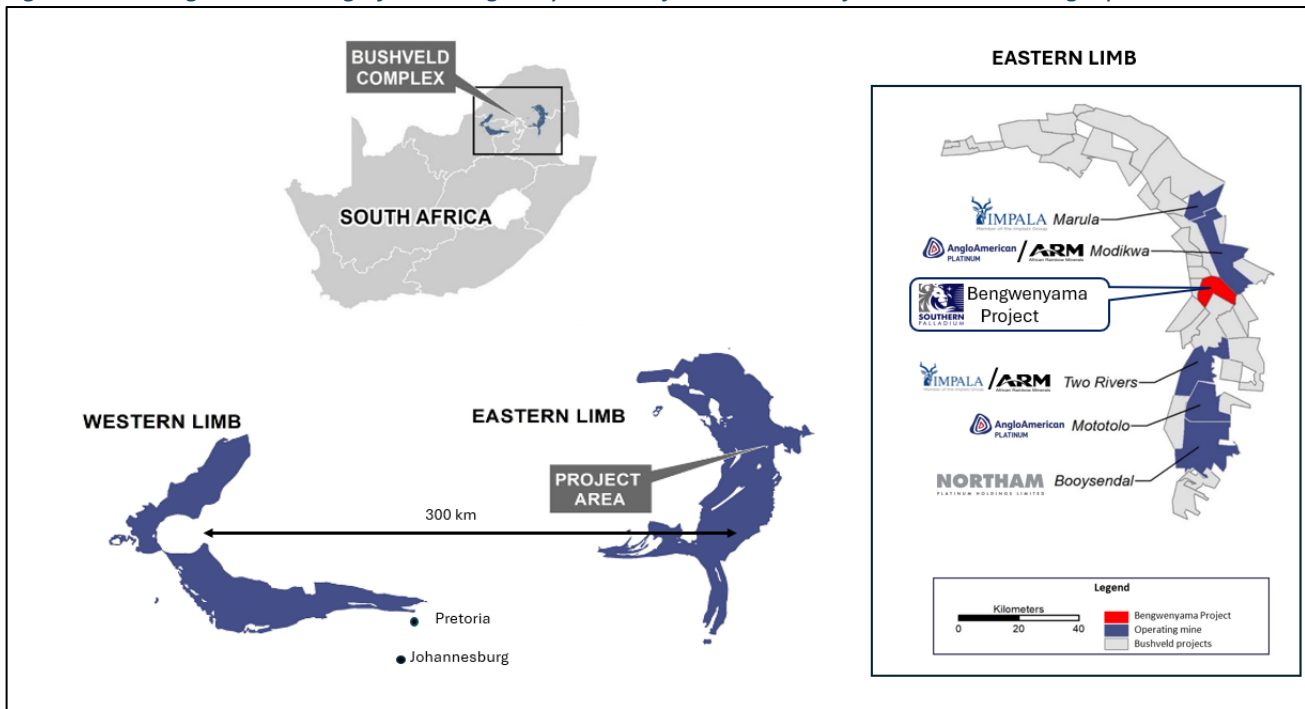
Additionally, all UG2 Exploration Targets, including those within Nooitverwacht, were successfully converted into Inferred Mineral Resources, representing an 81% increase in Inferred Resource. A subsequent announcement on 23 October 2024 focused primarily on the Merensky Reef, which brought the total combined UG2 and Merensky Reef Mineral Resource (Measured, Indicated, and Inferred) for the Bengwenyama Project to 40.25 Moz.

Importantly for this PFS, geologists identified consistent UG2 footwall mineralisation, which has now been estimated and included as a separate mining cut estimate. This includes 40 cm of mineralised UG2 footwall pyroxenite, increasing both the width of the mineralisation and the metal content of the UG2 mineable potential by approximately 700 Koz, in addition to the identified Mineral Resource estimate.

## PROJECT LOCATION

The Project Area is located in the Greater Tubatse and Sekhukhune District Municipalities, in the Limpopo Province of South Africa, covering 5,280 hectares. Strategically positioned amidst major platinum mining operations on the farms Nooitverwacht 324 KT ('Nooitverwacht') and Eerstegeluk 327 KT ('Eerstegeluk'), the Project has the potential to stimulate economic growth and development in rural areas with high unemployment rates by creating significant job opportunities. The strategic positioning of the Bengwenyama Project amidst major platinum mining operations is illustrated in Figure 2.

Figure 2: Strategic Positioning of the Bengwenyama Project Amidst Major Platinum Mining Operations



It is located less than 10 km from the regional town of Steelpoort and benefits from excellent infrastructure, including grid power, sealed roads, and water supply, all within a few kilometres from the Project site. Additionally, a skilled workforce is available locally.

## PROJECT FEATURES

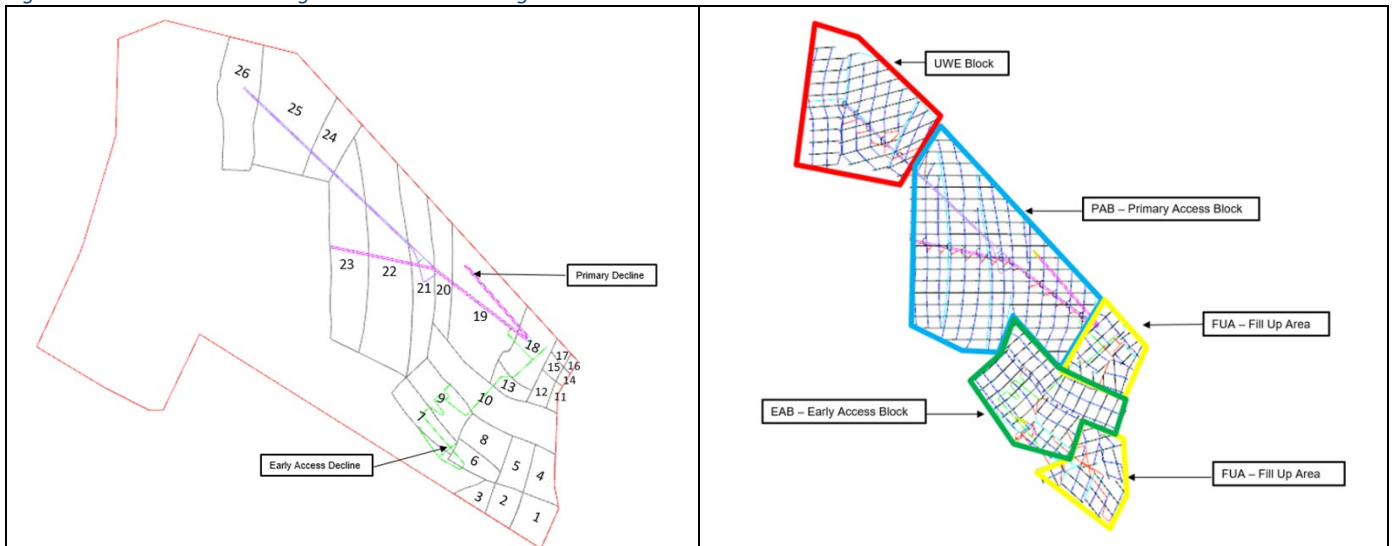
### Mining Access and Schedule

For the PFS, production from the Bengwenyama Project is sourced only from the UG2 reef, and mainly on the shallower farm, Eerstegeluk. The production profile of the Project demonstrates an annual production range of 2.4 mtpa from conventional underground stoping with a 1.0 m stoping width accessed through two decline access points, the early access development and the primary access development. First reef will be accessed at a vertical depth of just 50 m.

The early access development will consist of a two-barrel, early access decline with a 5 m x 4 m decline and a return airway with dimension of 4 m x 4 m, sunk at an angle of 5.7°, providing access to the UG2 reef. This will allow for optimal manoeuvrability of trackless equipment and extended tyre life. The primary access development will also consist of a two-barrel decline with two 6 m x 4 m end sizes, sunk at 9°, designated for transport of men and material and a conveyor belt for the transport of ore and waste.



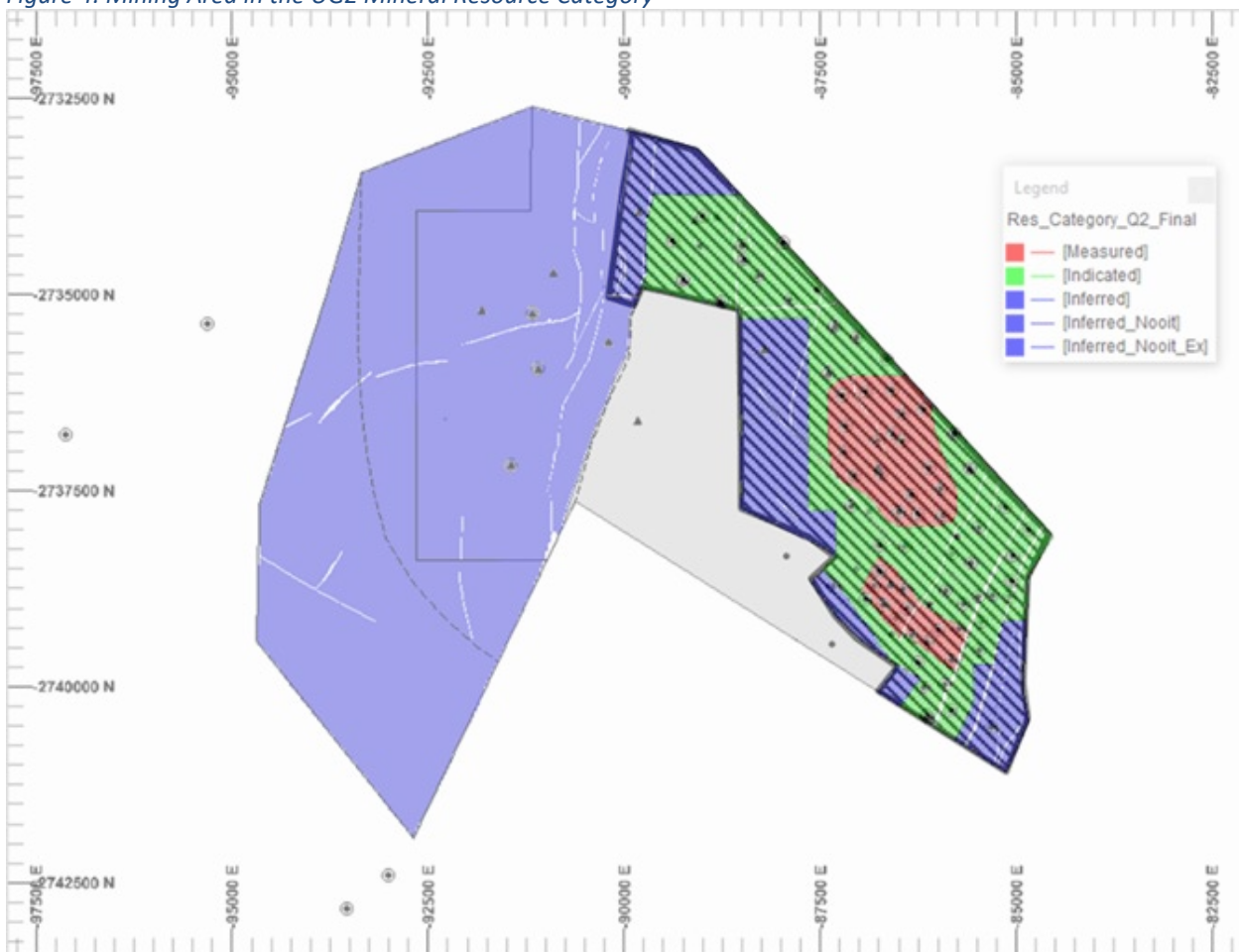
Figure 3: Decline Access Arrangement and Mine Design Areas



The selected mining method for the underground operations for the Bengwenyama Project is a hybrid approach optimised for narrow reef orebodies, combining mechanised development with conventional stoping, typically utilised by neighbouring mines Modikwa and Marula. This method enhances ore extraction while minimising dilution, supporting the safety and efficiency of mining operations.

The mining area in the UG2 Mineral Resource category is illustrated in Figure 4.

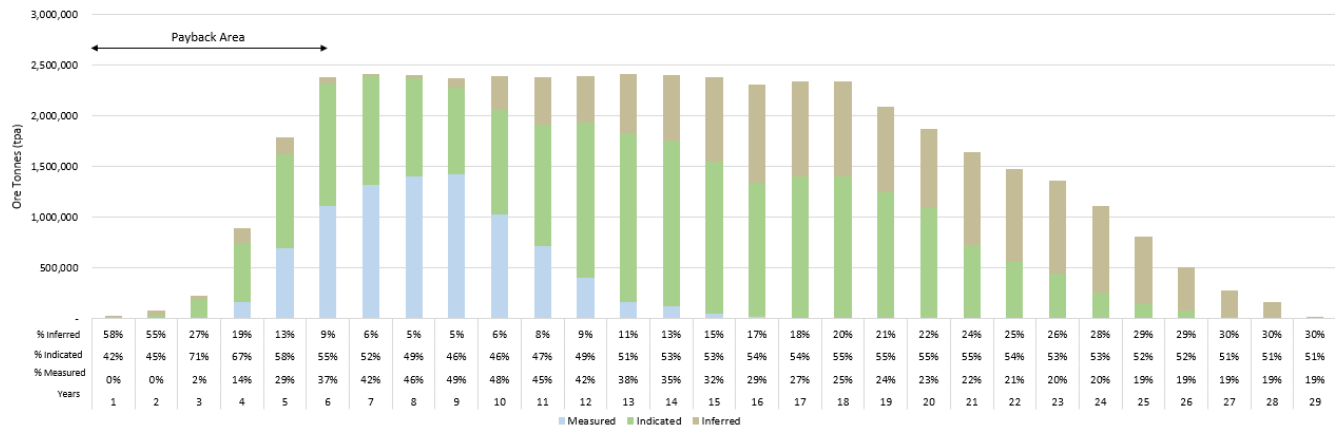
Figure 4: Mining Area in the UG2 Mineral Resource Category



Ore production tonnes over the first five years is achieved with 87% coming from JORC Measured and Indicated resource classifications and over the first 10 years coming from 94% JORC Measured and Indicated resource classifications. JORC Measured and Indicated resources comprise 74% of the overall LoM ore production.

Down dip extensions to existing resources and mining of the Merensky Reef have the potential to keep PGM production at steady state beyond year 19. The Mineral Resource category diluted LoM plan and cumulative contribution by category is illustrated in Figure 5.

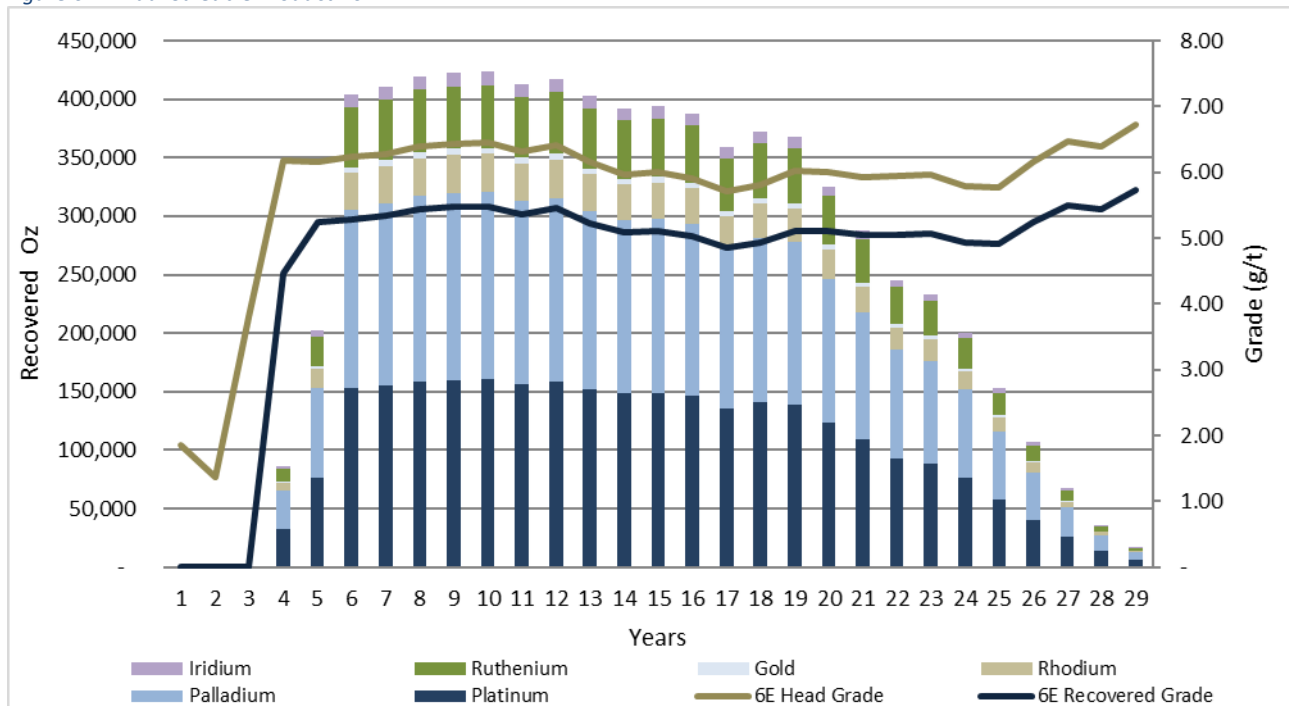
Figure 5: Mineral Resource Category Diluted Life of Mine Plan and Cumulative Contribution by Category.



### Processing

The Bengwenyama Project is located close to other, similar PGM operations. The Bushveld Complex has been mined extensively for multiple decades for the extraction of PGM minerals from the UG2 reef. Standard technology has been established and has been optimised with current state-of-the-art technology involving MF2 (2x Mill and Float process) processing infrastructure with an average recovery rate of 85%. Steady state saleable product is estimated at just above 400,000 ozpa as illustrated in Figure 6. Chrome is a byproduct from the UG2 Chromitite seam and will add significantly to PGM revenue streams.

Figure 6: Annual Saleable Product - 6E



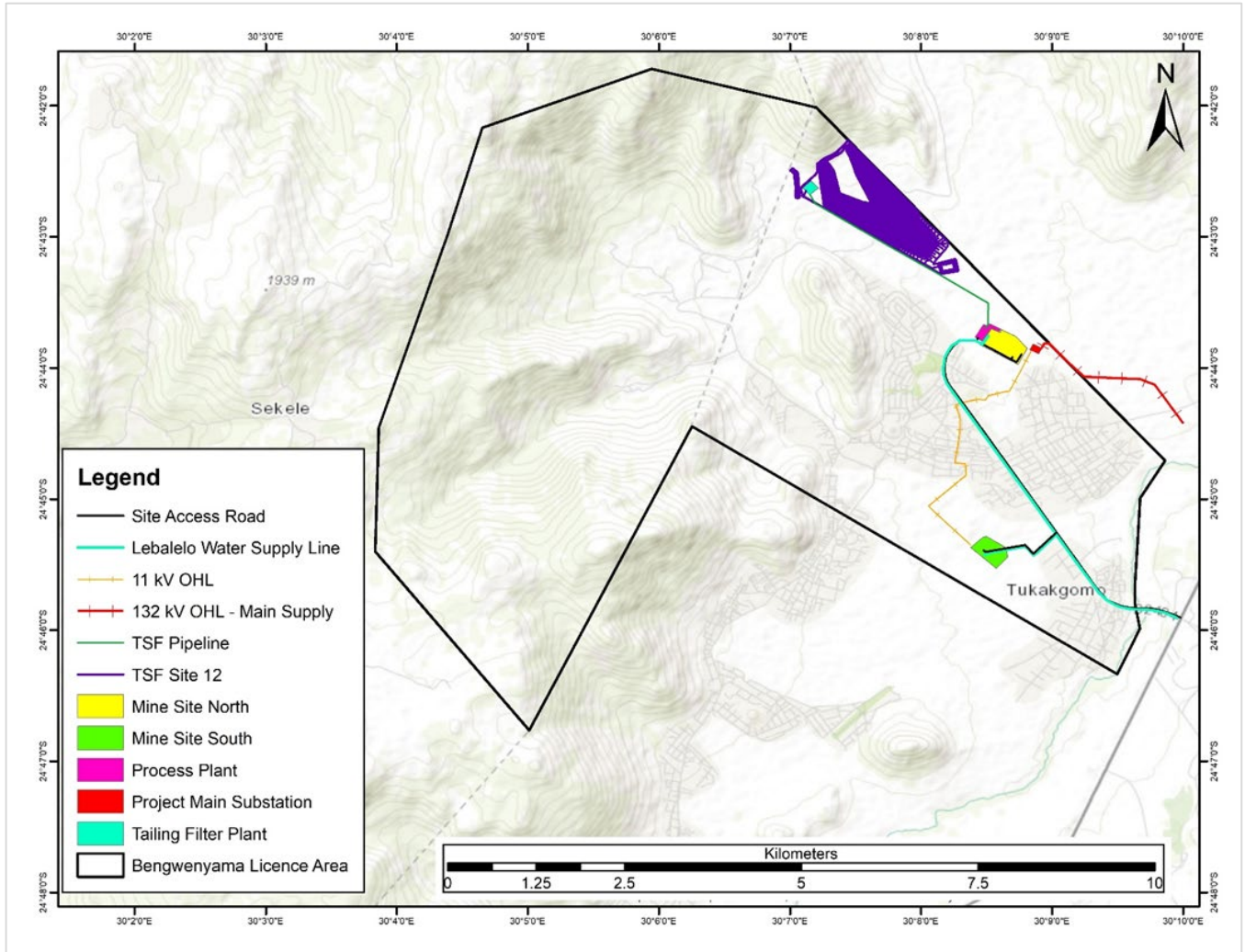
Source: Minxcon Scoping Study Update, February 2024

The tailings storage facility (TSF) is expected to have at least 45 Mt of storage capacity and a maximum height of 82 m, with the potential of expandability. The preliminary outcome from the tailings storage study favoured dry stacking. Despite the expectedly higher cost of implementing dry-stacking technology, the site is expected to provide storage for the current LoM without having to expand outside of the mine lease boundary.

### Mine Infrastructure and Services

The Project is accessed through a regional road (R555) and forms part of the established paved road network. The R555 is the main route to the Project Area, which heads 27 km northeast from the town of Middelburg, before reaching the town of Burgersfort, a paved district road leads towards the Eerstegeluk farm, the location of the Bengwenyama Project.

Figure 7: Project Infrastructure Layout



Power will be supplied to the Project through a 132 kV overhead lines connected to the national grid. A transmission line running in close proximity to the Project (+/- 3.5 km) is fed by the Merensky and Mampuru transmission and distribution substations. Synchronised back-up generators will feed into the Bengwenyama distribution substations. A full load list has been drafted and early indications for the total installed power is estimated at 64.6 MW with a power draw of 43.4 MW. An application has been submitted to Eskom (local power utility) on the 29th of August 2024, for the supply of power as well as obtaining the required cost estimate letter ("CEL") from the utility to determine the detailed requirements to establish the access to the grid.

A study has been completed to assess potential carbon emission reduction strategies as well as alternative energy solutions for the project. This included an energy needs assessment, resource and technology assessment, energy modelling, local grid assessment and concept solar PV design. This will be further optimised and assessed during the following study phase.

Process water will be sourced from the Lebalelo Water User Association, a local water supply authority supplying water to local communities, neighbouring mining operations, and agricultural activities in the area. A Lebalelo pipeline is located in close proximity (roughly 3.5 km from main points of consumption) to the Project. Early indications are that the peak total water requirement for the Project will be approximately 294,711 m<sup>3</sup>/month. Potable water will be sourced directly form the water supply scheme.

## **ENVIRONMENTAL AND MINING APPROVALS**

The Environmental Impact Assessment (“EIA”) phase was completed on 11 July 2004 and the DMRE acknowledgement letter was issued on 17 July 2024. Additional permit applications are in progress and will be completed at a later stage and include a Waste Management Licence (“WML”) in terms of the National Environmental Management: Waste Act, 2008 and a Water Use Licence (“WUL”) in terms of section 21 of the National Water Act, 1998.

An integrated Water and Waste Management Plan (“IWWMP”) as per the requirements of GNR 267 of 2017 has been initiated as part of the process to authorise all planned water use activities.

A Waste Management License application will be lodged with the competent authority to manage waste products and geochemical hazards.

## **SOCIAL RESPONSIBILITY AND SUSTAINABILITY**

A social and labour plan (“SLP”) has been developed for the Project in compliance with the requirements of the MPRDA. Southern Palladium’s management recognises the importance of close collaboration with the single community involved with the Project. The essence of the Community is deeply embedded in the development of the Project. SPD’s focus is to deliver a sustainable operation and provide economic benefits to the region.

## **CAPITAL COST ESTIMATE**

The capital cost estimate (“CCE”) was principally compiled for the two declines, processing plant, process plant infrastructure and other related infrastructure and covers all the costs associated with the construction and associated expenditure required for an underground mining operation with a production capacity of 2.4Mtpa.

The estimate includes all costs associated with access; bulk services (power and water); surface and underground mining infrastructure and facilities; process plant and supporting infrastructure, TSF, general supporting infrastructure, and engineering procurement, construction management (“EPCM”).

The capital expenditure for the Project over the LoM is sub-divided into mining, plant and shared infrastructure capital, as indicated in Table 1.

Table 4: Project Capital Expenditure

Capital Expenditure	ZARm	USDm
<b>Initial Capital</b>		
Direct Mining Capital	1,429	73
Capitalised Development	449	23
Plant Capital	2,519	129
TSF Capital	820	42
Shared Infrastructure Capital	1,240	63
Contingency	1,079	55
<b>Total Initial Capital</b>	<b>7,536</b>	<b>385</b>
<b>Ongoing Capital</b>		
Direct Mining Capital	693	35
Capitalised Development	463	24
Plant Capital	-	-
TSF Capital	388	20
Ongoing Shared Capital	42	2
Contingency	251	13
<b>Total Ongoing Capital</b>	<b>1,837</b>	<b>94</b>
<b>Stay-in-Business Capital</b>		
<b>Total Stay-in-Business Capital</b>	<b>9,171</b>	<b>469</b>

The study capital costs estimates are assessed to have an accuracy of  $\pm 15 - 25\%$ . The total initial capital for the Project, calculated as direct capital in years one to four (year first metal is produced), is estimated at ZAR6,456 million or USD330 million excluding contingencies and ZAR7,736 million or USD385 million including contingencies.

Ongoing capital is defined as direct Project capital after year four. Stay in business capital or sustaining capital consists of renewals and replacement costs over the LoM. A 20% contingency has been applied on all mining and shared infrastructure capital (initial and ongoing) and 15% on plant and TSF capital.

## OPERATIONAL COST ESTIMATE

The Minxcon first-principles activity-based cost model was utilised to calculate operating costs for the underground and the processing operations. The cost model utilises the mine and engineering design criteria and production schedule inputs to derive cost rates for the mining, engineering and processing activities.

The costs for labour, equipment, consumables, services and utilities have been sourced from quotations, actual industry stores costs, industry rates and utility rates. Where costs could not be obtained from these sources, benchmarking with similar-sized projects and operations was conducted. The study operating costs estimates are assessed to have an accuracy of  $\pm 15\% - 25\%$ . The operating cost summary is detailed in Table 4 inclusive of contingencies.



Table 5: Operating Cost Summary

Description	Total LoM	Per Milled t	6E Oz Recovered	% of AISC
Unit	ZAR Million	ZAR/t	ZAR/6E oz	%
Mining	52,007	1,149	6,893	44.0%
Processing	18,537	410	2,457	15.7%
Central & Technical Services	24,521	542	3,250	20.8%
<b>Cash Operating Costs</b>	<b>95,065</b>	<b>2,100</b>	<b>12,600</b>	<b>80.5%</b>
Royalties	12,630	279	1,674	10.7%
Off-Mine Operating Costs	1,154	26	153	1.0%
Sustaining Capital	9,171	203	1,215	7.8%
Rehabilitation	80	2	11	0.1%
<b>AISC</b>	<b>118,099</b>	<b>2,609</b>	<b>15,653</b>	<b>100.0%</b>
Unit	USD Million	USD/t	USD/6E oz	%
Mining	2,657	58.7	352	44.0%
Processing	947	20.9	126	15.7%
Central & Technical Services	1,253	27.7	166	20.8%
<b>Cash Operating Costs</b>	<b>4,857</b>	<b>107.3</b>	<b>644</b>	<b>80.5%</b>
Royalties	645	14.3	86	10.7%
Off-Mine Operating Costs	59	1.3	8	1.0%
Sustaining Capital	469	10.4	62	7.8%
Rehabilitation	4	0.1	1	0.1%
<b>AISC</b>	<b>6,034</b>	<b>133.3</b>	<b>800</b>	<b>100.0%</b>

#### FINANCIAL COST INDICATORS

Costs reported for the Project are displayed per milled tonne and per recovered 6E ounce in Table 5. It should be noted that costs are inclusive of contingencies.

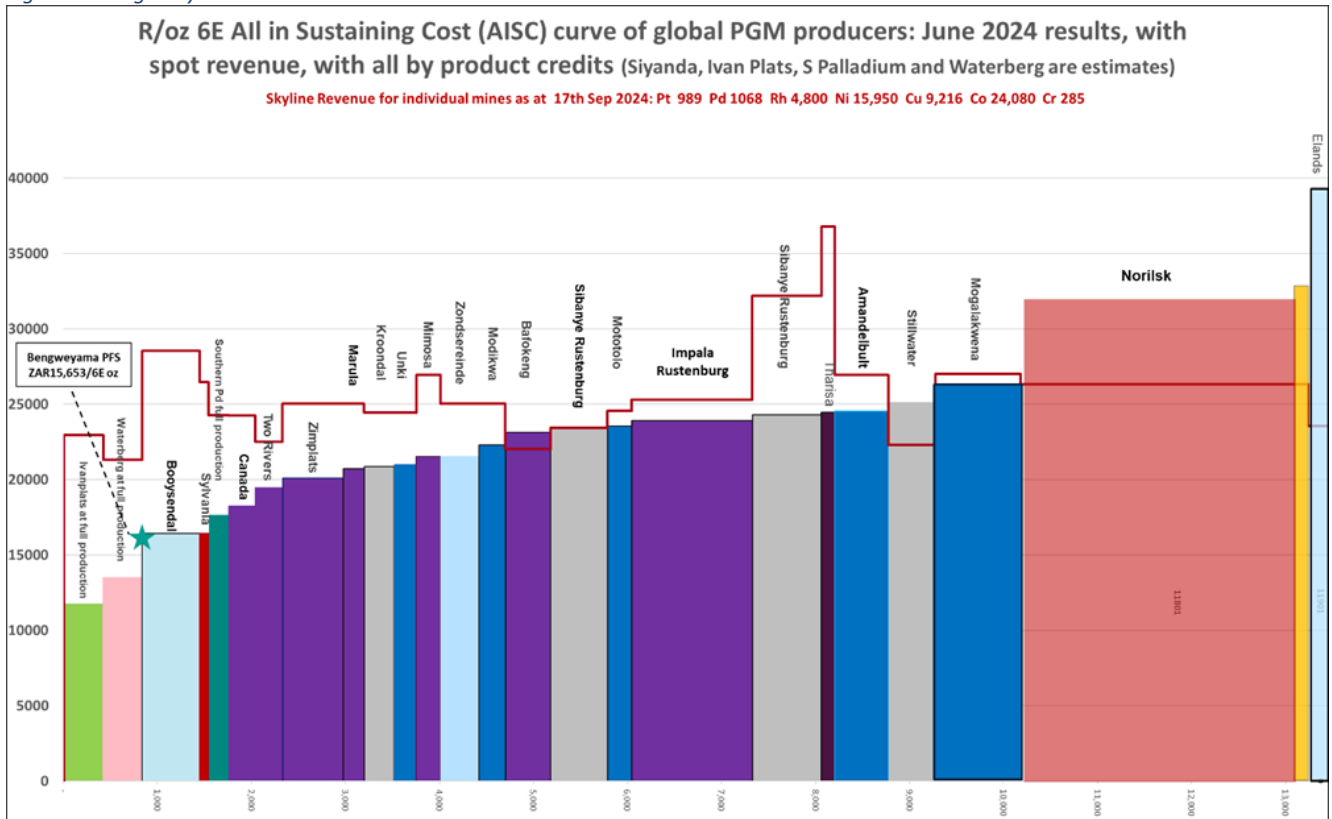
Table 6: Project Cost Indicators (Weighted Average over Life of Mine)

Description	Unit	Value
Average Basket Price	USD/6E oz	1,557
Average Exchange Rate	ZAR/USD	19.57
<b>Revenue</b>	<b>ZAR/Milled tonne</b>	<b>4,831</b>
Mine Cost	ZAR/Milled tonne	1,149
Plant Costs	ZAR/Milled tonne	410
Other Costs	ZAR/Milled tonne	542
Royalties	ZAR/Milled tonne	279
<b>Adjusted Operating Cost</b>	<b>ZAR/Milled tonne</b>	<b>2,379</b>
Sustaining Capex	ZAR/Milled tonne	203
Rehabilitation	ZAR/Milled tonne	2
Off-Mine Overheads	ZAR/Milled tonne	26
<b>All-in Sustaining Cost (AISC)</b>	<b>ZAR/Milled tonne</b>	<b>2,609</b>
Non-Sustaining Capex	ZAR/Milled tonne	207
Non-Current Costs	ZAR/Milled tonne	-
<b>All-in Cost (AIC)</b>	<b>ZAR/Milled tonne</b>	<b>2,816</b>
EBITDA*	ZAR/Milled tonne	2,425
EBITDA Margin	%	50%
4E oz Recovered	oz	6,387,863
<b>Revenue</b>	<b>USD/4E oz</b>	<b>1,749</b>
Mine Cost	USD/4E oz	416
Plant Costs	USD/4E oz	148
Other Costs	USD/4E oz	196
Royalties	USD/4E oz	101
<b>Adjusted Operating Cost</b>	<b>USD/4E oz</b>	<b>861</b>
Sustaining Capex	USD/4E oz	73
Reclamation	USD/4E oz	1
Off-Mine Overheads	USD/4E oz	9
<b>All-in Sustaining Cost (AISC)</b>	<b>USD/4E oz</b>	<b>945</b>
Non-Sustaining Capex	USD/4E oz	75
Non-Current Costs	USD/4E oz	-
<b>All-in Cost (AIC)</b>	<b>USD/4E oz</b>	<b>1,020</b>
EBITDA	USD/4E oz	878
6E oz Recovered	oz	7,544,915
<b>Revenue</b>	<b>USD/6E oz</b>	<b>1,481</b>
Mine Cost	USD/6E oz	352
Plant Costs	USD/6E oz	126
Other Costs	USD/6E oz	166
Royalties	USD/6E oz	86
<b>Adjusted Operating Cost</b>	<b>USD/6E oz</b>	<b>729</b>
Sustaining Capex	USD/6E oz	62
Reclamation	USD/6E oz	1
Off-Mine Overheads	USD/6E oz	8
<b>All-in Sustaining Cost (AISC)</b>	<b>USD/6E oz</b>	<b>800</b>
Non-Sustaining Capex	USD/6E oz	63
Non-Current Costs	USD/6E oz	-
<b>All-in Cost (AIC)</b>	<b>USD/6E oz</b>	<b>863</b>
EBITDA	USD/6E oz	743

## PROJECT POSITIONING

The Bengwenyama Project is estimated to be positioned in the lowest quartile of the PGM cost curve (R. Hochreiter, 2024) as illustrated in Figure 8. The 6E All-In Sustaining Costs (“AISC”) of the Project is estimated to approximate those of Northam’s Booyseendal operation.

Figure 8: Bengweyama Position on 6E Cost Curve

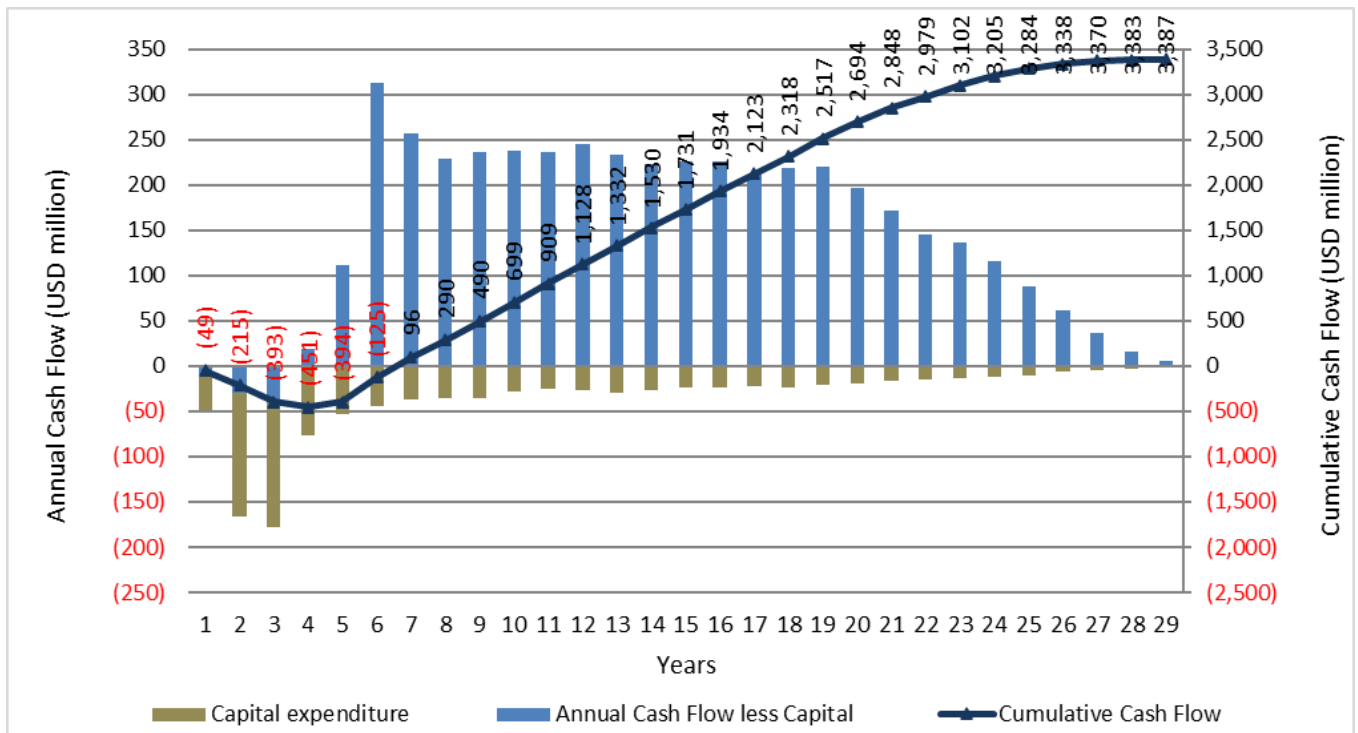


Source: Adapted from Rene Hochreiter (NOAH Capital Markets & Sieberana Research, 2024)

### CASHFLOW

The Project capital expenditure, cash flow, and cumulative cash flow over the LoM are displayed in Figure 9, on an annual basis in USD terms, respectively. The peak funding requirement is USD452 million (inclusive of contingencies), with a pay-back period of 6.0 years from start of mining or 6.5 years from start of construction.

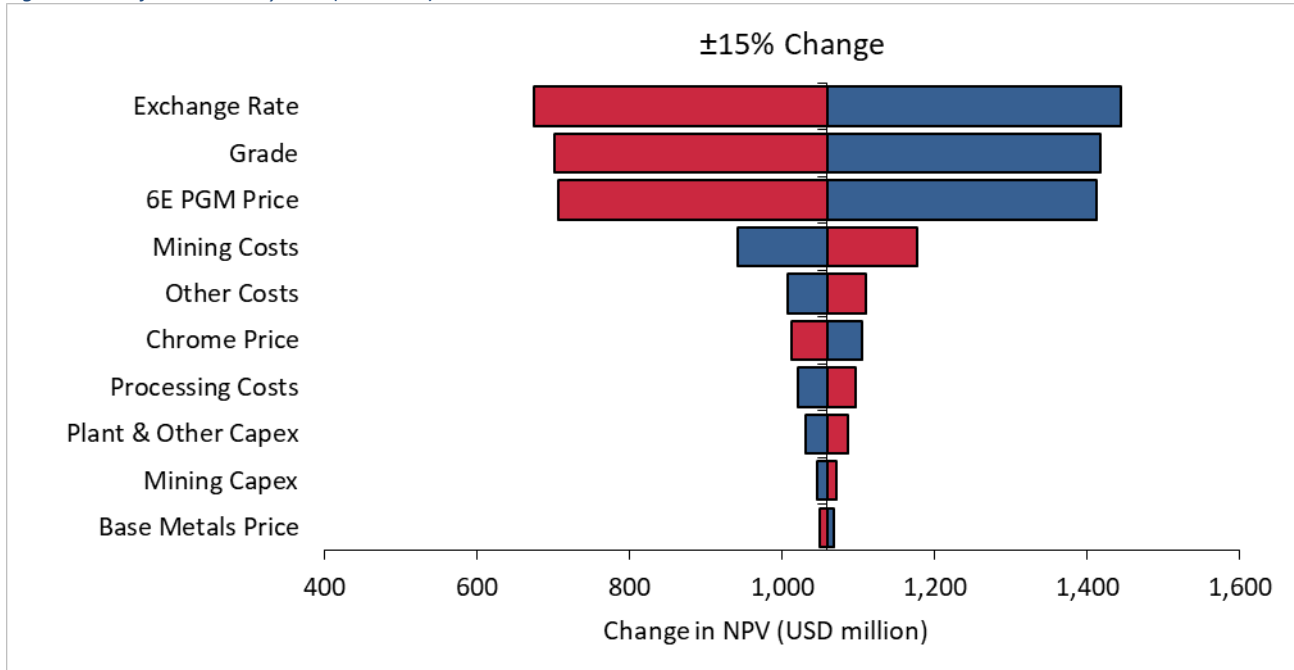
Figure 9: Annual and Cumulative Cash Flow - USD (Real Terms)



## SENSITIVITY ANALYSIS

Based on the real cash flow calculated in the financial model, consultants and Minxcon performed single-parameter sensitivity analyses to ascertain the impact on the NPV. The bars represent various inputs into the model; each being increased or decreased by 15%. The left-hand side of the graph indicates a negative 15% change in the input while the right-hand side of the graph indicating a positive 15% change in the input. A negative effect to the NPVs represented by red bars and a positive effect represented by blue bars. Exchange rate, grade and PGM prices have the largest impact on the Project's NPV, followed by the mining operating costs. The Project is least sensitive to the base metal prices, capital and processing operating costs.

Figure 10: Project Sensitivity USD (NPV8.0%)



### FINANCIAL INVESTMENT DECISION AND VALUE DRIVERS

- commencement of feasibility study work in early 2025 in parallel with project construction funding discussions with financiers leading to the Financial Investment Decision ("FID").
- debt financing alternatives already progressed with the appointment of Blackbird Partners.
- feasibility critical path study work includes metallurgical and geotechnical assessments. Drilling required for both assessments to start as soon as practicable subject to statutory approvals.
- FID proposed in late 2025 subject to statutory approvals.
- key value drivers during 2025 are the granting of the mining right and concentrate offtake arrangement.

### VALUE ADDING OPPORTUNITIES PRIOR TO FINANCIAL INVESTMENT DECISION

Minxcon was mandated to investigate value adding opportunities by Q1 2025 to be included in the DFS. This work is expected to make project funding more attractive by either decreasing the ramp up period to full production or by decreasing the up-front capital requirement (or a combination of both).

Aspects to be investigated to decrease the period to full production include:-

- accessing the orebody with a single decline initially into the shallow part of the orebody;
- increasing underground development for initial mine stopes by providing twin drives to enable greater ore and waste extraction until steady state mining is achieved; and
- increasing the rate of developing raises for ventilation

Aspects to be investigated to decrease upfront capital include:-

- adopting a mining contractor for the underground development work;
- a two-stage processing plant construction by an initial 100,000 tpm plant, followed by second 100,000 tpm processing to match the production profile;
- adopting ore sorters to reduce the feed to be processed in the plant thus requiring a smaller processing plant, this would also reduce the amount of waste for tailings disposal; and
- possible utilisation of idle concentrate plants within trucking distance.

## **REASONABLE BASIS TO ACHIEVE DEVELOPMENT FUNDING**

The Bengwenyama PGM Project's technical and economic fundamentals underpin various funding alternatives which are being investigated by the Company to the benefit of shareholders. Some of these alternatives will be determined once the value adding opportunities noted above have been assessed.

Whilst no formal funding discussions have commenced, the Company is engaging financial advisers to assist in assessing the various funding alternatives which include equity, debt, strategic partnership, off take arrangement and metal streaming.

The Company has formed the view that there is a reasonable basis to believe that future funding for development of the Project will be available when necessary due to the Project's world class scale, location amongst other Tier 1 producers, shallow depth and position as a low-cost producer due to the high PGM grade.

## **NEXT STEPS**

A preliminary development schedule has been compiled for the Project. The main activities forming part of the schedule includes:-

- issuing of Environmental Authorisation;
- issue of Mining Right;
- completion of required drilling (resource infill, metallurgical testwork, geotechnical and hydrogeological);
- definitive feasibility study
- final investment decision;
- mine development;
- construction; and
- commissioning and ramp-up

## **CONCLUSIONS AND RECOMMENDATIONS**

The PFS demonstrates that the Project is commercially viable and provides justification for the Project to progress to a DFS. A schedule and budget for the completion of a DFS for the Bengwenyama Project is being completed and will be reviewed for approval by SPD's Board.

## **JORC Competent Persons Statement**

### **Uwe Engelmann**

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Uwe Engelmann (BSc (Zoo. & Bot.), BSc Hons (Geol.), Pr.Sci.Nat. No. 400058/08, FGSSA). Mr. Engelmann is a director of Minxcon (Pty) Ltd and a member of the South African Council for Natural Scientific Professions. Minxcon provides geological consulting services to Southern Palladium Limited. Mr. Engelmann has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Engelmann consents to the inclusion in the report of the matters based on his



information in the form and context in which it appears. Mr Engelmann has a beneficial interest in Southern Palladium through a shareholding in Nicolas Daniel Resources Proprietary Limited.

#### **Daan van Heerden**

The scientific and technical information contained in this announcement has been reviewed, prepared, and approved by Mr Daan van Heerden (B Eng (Min.), MCom (Bus.Admin.), MMC, Pr.Eng. No. 20050318, AMMSA, FSAIMM). Mr van Heerden is a director of Minxcon (Pty) Ltd and a Registered Professional Engineer with the Engineering Council of South Africa, a Member of the Association of Mine Managers South African Council, as well as a Fellow Member of the South African Institute of Mining and Metallurgy. Minxcon provides geological consulting services to Southern Palladium Limited. Mr van Heerden has sufficient experience that is relevant to the styles of mineralisation and activities being undertaken to qualify as a Competent Person, as such term is defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. van Heerden consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. Mr. van Heerden has a beneficial interest in Southern Palladium through a shareholding in Nicolas Daniel Resources Proprietary Limited.

#### **For further information, please contact:**

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#### **Forward Looking Information and Cautionary Statements**

This prefeasibility study contains "forward-looking information" and "forward-looking statements" (collectively, "forward-looking information") within the meaning of applicable securities laws. This forward-looking information includes, but is not limited to, statements concerning the expected future performance of the Bengwenyama Project, anticipated production rates, resource estimates, mine life, financial projections, capital and operating costs, timelines, economic viability, and other similar statements.

Forward-looking information is based on various assumptions, estimates, and expectations of future performance, which are inherently subject to significant uncertainties and risks, including but not limited to those associated with the mining industry. These include:-

- variability in mineral resource estimates;
- the timing and successful completion of development and construction activities;
- risks related to fluctuations in commodity prices;
- political and regulatory changes in the jurisdictions where we operate;
- potential operational difficulties, including environmental and safety risks; and
- availability of financing and unforeseen financial requirements.

Although the company believes that the forward-looking information in this report is reasonable based on information currently available, actual results may differ materially from those anticipated in the statements. Readers are cautioned not to place undue reliance on forward-looking information, as it is not a guarantee of future performance.

The company disclaims any intention or obligation to update or revise forward-looking statements, whether as a result of new information, future events, or otherwise, except as required by applicable law.