



Johnson Matthey
Inspiring science, enhancing life

PGM Services seminar: driving long-term sustainable value creation

27th June 2024

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Today's agenda



01 Introduction

02 PGM markets

03 PGM Services overview

04 Financials

05 Conclusion

01. Introduction



Liam Condon
Chief Executive

Catalysing the net zero transition

Our aspiration is to lead across our four businesses

Clean Air

Leading in autocatalyst markets

Catalyst Technologies

#1 in syngas-based chemicals and fuels technology

Hydrogen Technologies

Market leader in performance components for fuel cells and electrolysers

PGM Services (Platinum Group Metals Services)

#1 recycler of PGMs¹

PGMs have been the backbone of JM for over 200 years

Foundational PGM ecosystem supporting Clean Air, Catalyst Technologies and Hydrogen Technologies

1

World-class R&D drives sustainable competitive advantage

2

Full-service offering providing one of the world's first truly circular economies

3

PGM Services – highly profitable and cash generative

4

Johnson Matthey is a world leader in PGMs

Portfolio transitioning and growing over time

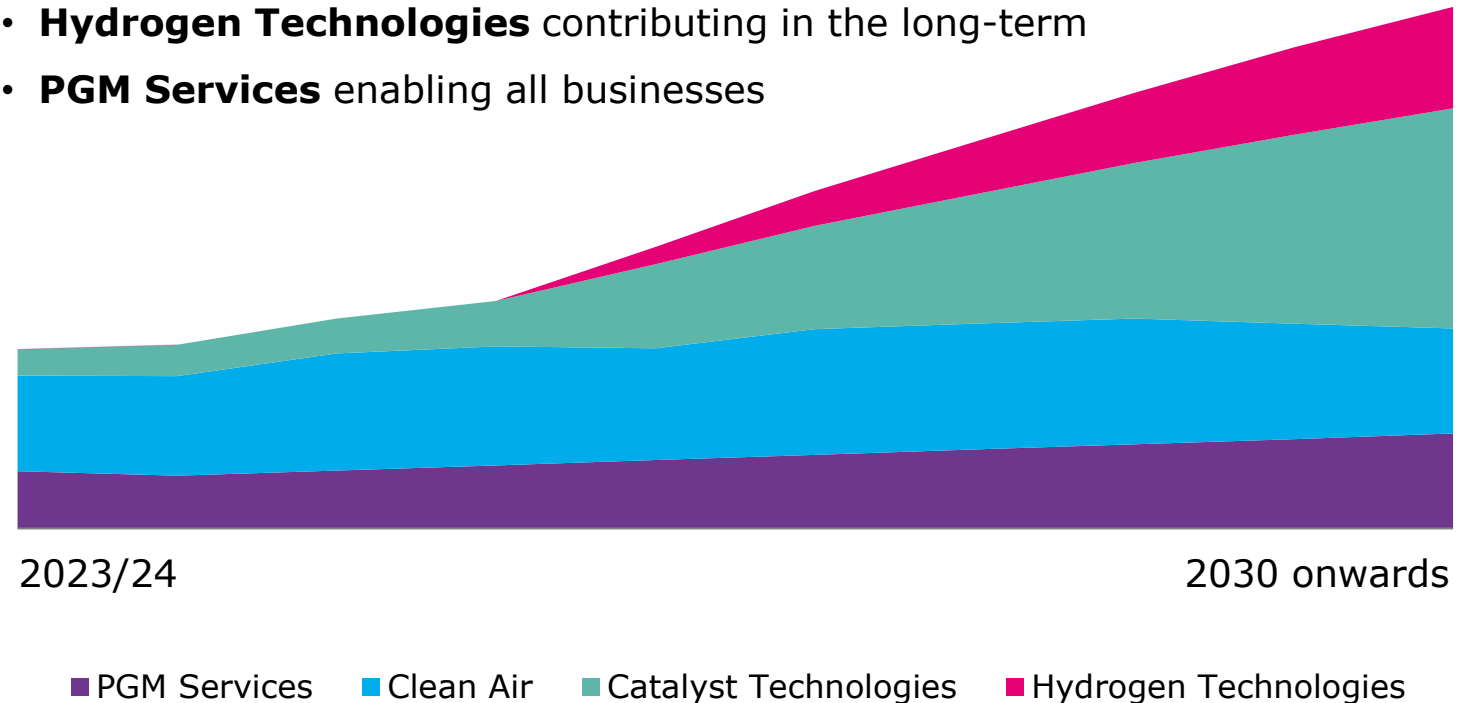
Accelerating to high single digit growth¹ over the medium-term, and strong long-term growth

Beyond 2030, growth businesses expected to be **bigger than the size of JM today...**

Illustrative chart

Development of underlying operating profit

- **Clean Air** efficiencies and **Catalyst Technologies** driving near and mid-term growth
- **Hydrogen Technologies** contributing in the long-term
- **PGM Services** enabling all businesses



1. At constant precious metal prices and FX rates (2023/24 average). Baseline is underlying operating profit on a continuing basis excluding Value Businesses (£381m in 2023/24).

Note: Illustration excludes Value Businesses and Corporate.

02. PGM markets

Alastair Judge
PGM Services
Chief Executive



PGMs have unique properties

The five core PGMs

44

Ru

Ruthenium

45

Rh

Rhodium

46

Pd

Palladium

77

Ir

Iridium

78

Pt

Platinum



- ▶ Highly **active catalysts**
- ▶ **Durable** in extremely harsh conditions
- ▶ Highly **efficient** – a little goes a long way
- ▶ **Recyclable** – a truly circular economy

PGMs are critical to many high-performance applications today



Automotive emissions control



Fuels and chemicals production
(e.g. sustainable aviation fuel)



Hydrogen **fuel cells** and
electrolysers



Electronics



Life-saving pharmaceuticals



Medical devices

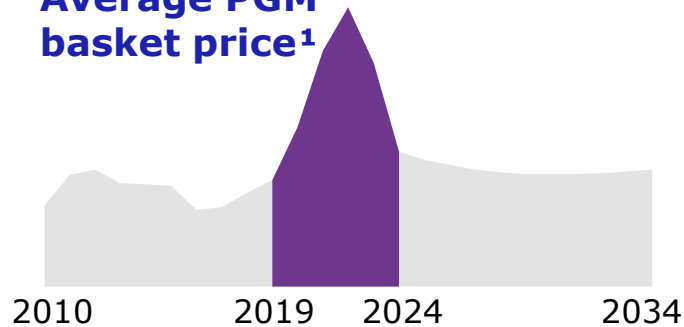
Attractive backdrop for emerging PGM applications

New PGM applications driven by:



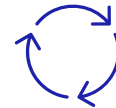
Normalised PGM price environment making the economics attractive

Average PGM basket price¹



The net zero transition

- Energy
- Transport
- Industry



Established supply chains

with full circularity



Legislative environment

e.g. critical minerals policies in the US, EU and UK



New PGM applications are fuelling demand

PGMs in the net zero transition



Hydrogen production

Hydrogen carriers

Emissions abatement

Purification

Biomass utilisation



Fuel cells vehicles

Synthetic fuels (e.g. SAF)

Advanced biofuels

Emissions abatement

Ignition and sensing



Process catalysts

Pharmaceutical catalysts

Plastics recycling

Agrochemical precursors

Emissions and waste treatment

Case study: PGM demand for sustainable aviation fuel production

28th November 2023

Virgin Atlantic's 'Flight 100'



First **100% SAF-powered**
transatlantic flight by a
commercial airline

Enabled by innovative **PGM-based
BioForming® technology**

Pathway to **100% drop-in SAF**

Converts residual biomass sugars into sustainable fuels

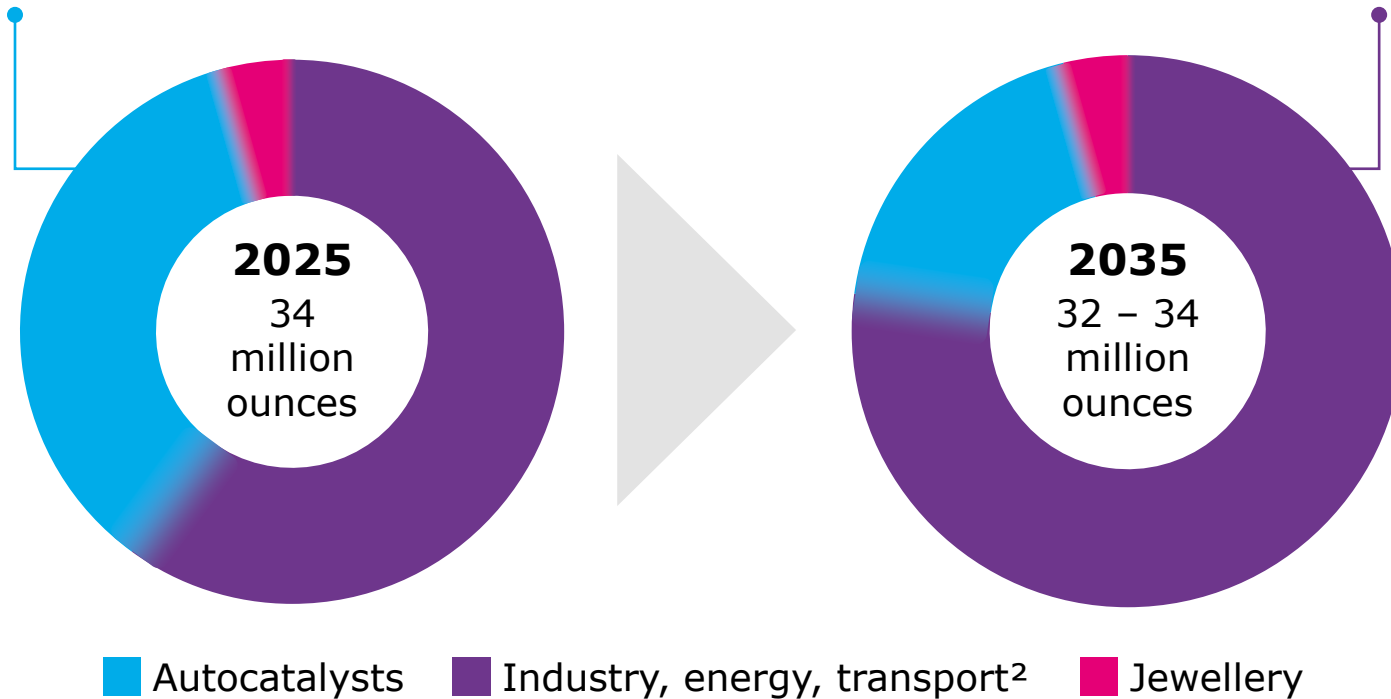
Uses a **PGM catalyst**

The overall value of PGM applications will increase

Gross PGM market demand¹

Low value PGM salt precursors for autocatalysts

High value PGM products



Today

Autocatalyst products are **>1/3** of PGM demand today but relatively **low value**

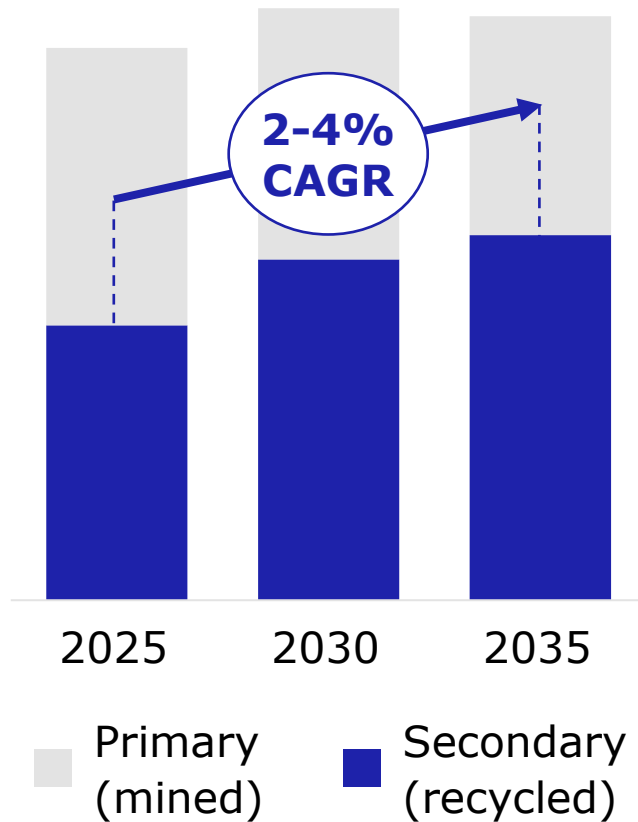
Going forward

Demand for **new high value PGM products**

- **High tech** products
- **Increasing size of the value pool**
- **Value to JM multiples higher** than autocat and independent of PGM price

Secondary (recycled) supply is growing

Global refining volumes¹



Increasing demand for secondary (recycled) metal

c.80%
lower cost of
production²

up to **98%**
lower carbon
footprint³

Circular
supply chain

Global supply
security

...driving growth for JM

Regions: US, UK, Europe, Asia

PGM markets are critical to the net zero transition

PGM markets have longevity



New high value PGM applications are emerging



Demand for recycled metal is growing



03. PGM Services overview

Alastair Judge
PGM Services
Chief Executive



PGM Services: a world leader in PGMs

World-class R&D
and technical expertise
in PGM applications



Global footprint
for PGM refining and
products manufacture



'Go-to' experts
globally for PGM
management



Full-service offering
with embedded
circularity



PGM Services: a highly profitable business

**c.£13bn of sales
including precious metal¹
in 2023/24**

JM

PGM Services 2023/24

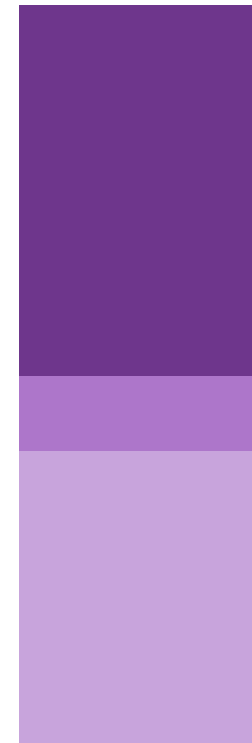
Sales £462m

Operating profit £164m

EBITDA margin 42.0%

PGM Services sales

£462m



Refining

World's largest secondary PGM refiner

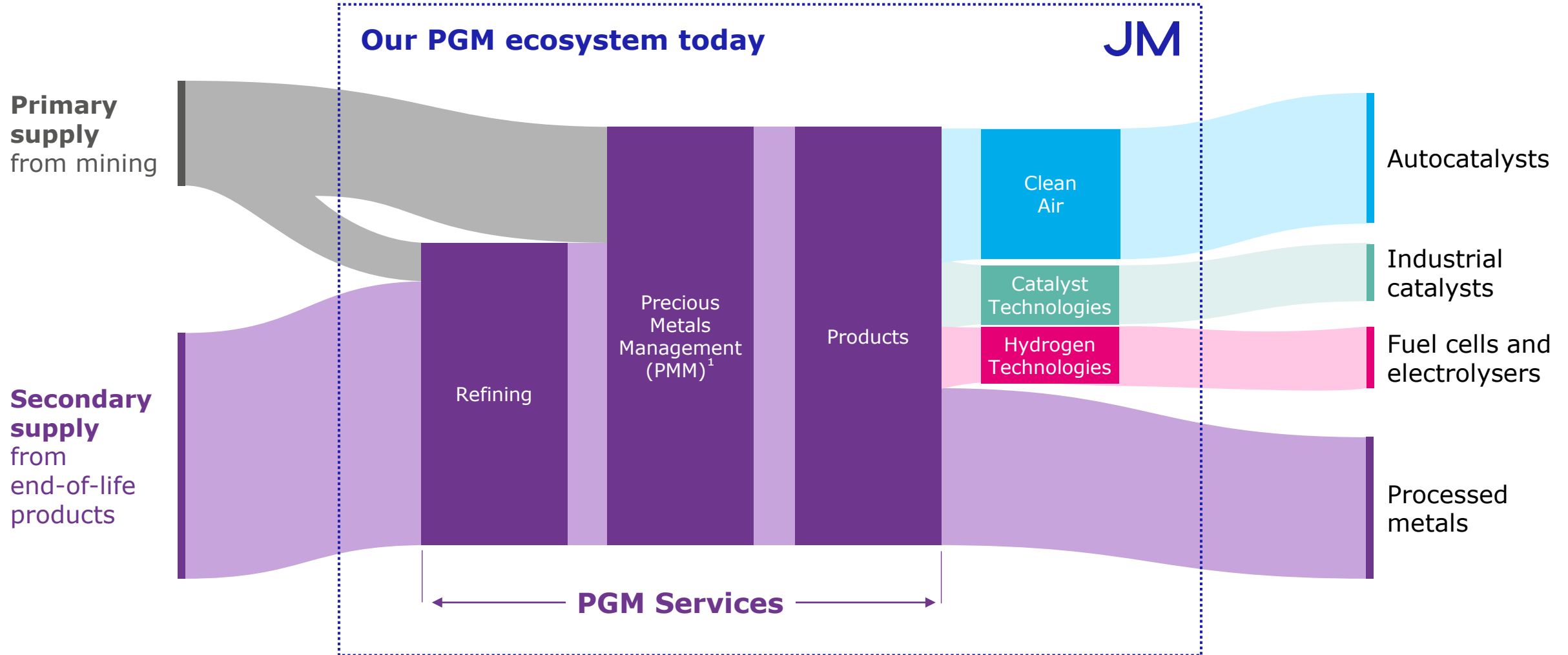
Precious Metals Management (PMM)

Global liquidity hub for PGMs

Products

PGM chemicals and metal alloying

Operating across the whole PGM value chain



Refining: the world's largest secondary PGM refiner

c.2x capacity of nearest competitor

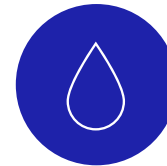
Processing of complex, high margin feeds



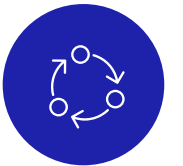
Trusted partner, with long-standing relationships



Refining PGMs to up to 99.95% purity

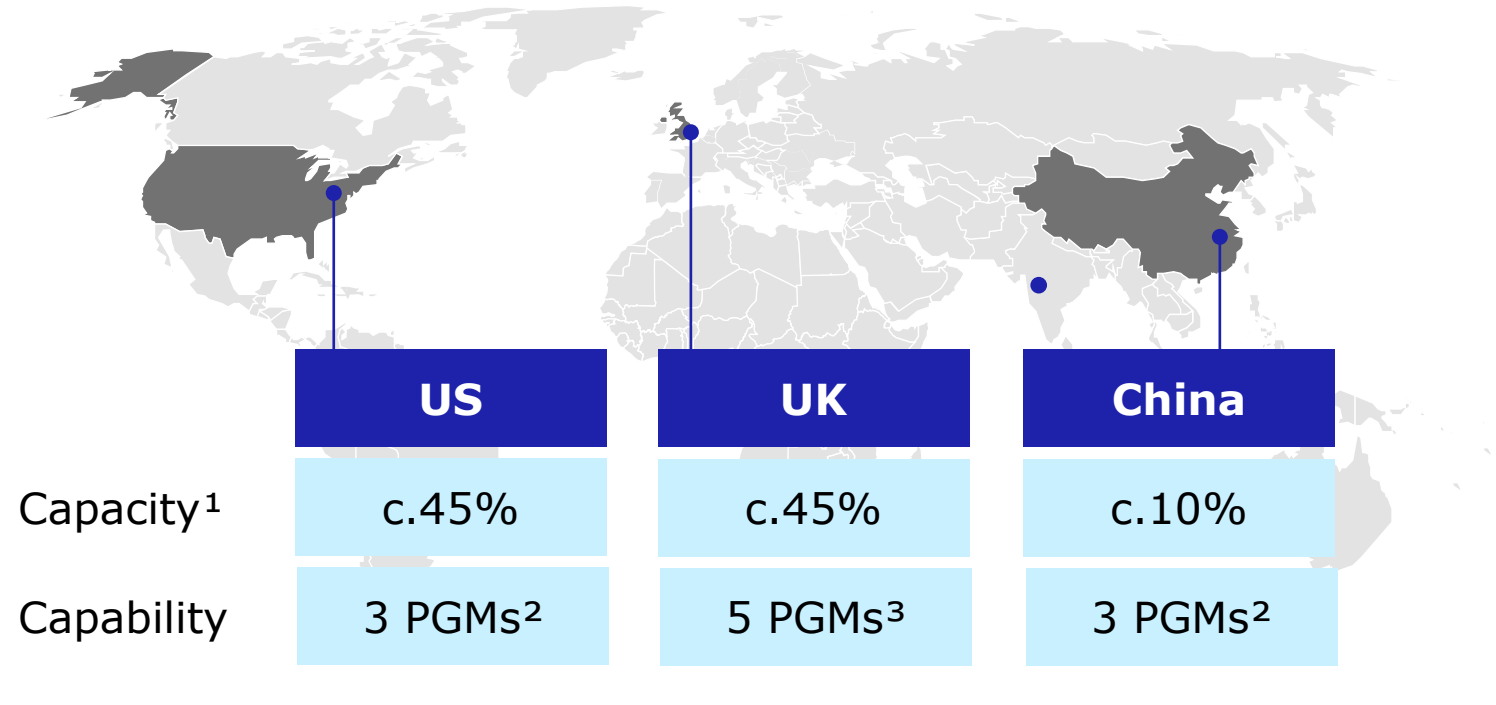


Technical excellence, enabling circular economy



Refining: leveraging our global footprint and extensive partnership network

Three JM PGM refineries...



Other market players:



Heraeus

BASF

...plus an extensive network of **long-term partnerships**



>30
years



>35
years



>35
years



>30
years

Refining: investing in our new world-class refinery



Improved working capital

>£250m working capital benefit



Increased efficiency

Faster average cycle times¹



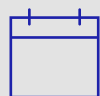
Better safety

90% reduction in process safety event severity²



Improved sustainability

c.10% lower Scope 1 GHG emissions



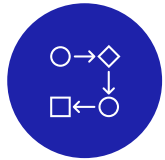
Start commissioning by end of 2025/26



c.£250m further investment to 2026/27

PMM: the global liquidity hub for PGMs

The 'go-to experts' for PGMs globally



Efficient sourcing and management of low carbon PGMs



World leading PGM market research



Solutions to manage price and supply chain risk



Liquidity for the broader market

**>10 million ounces of PGM flow
across our trading desks per year¹**



Products: a leader in converting PGMs into high value products

Chemicals

Development of **PGM chemicals and catalysts** to help customers manufacture products

End markets include:

Pharmaceutical

Aerospace

Hydrogen

Agrochemical

Automotive

Petrochemicals

Metal alloying

Supply of **PGM and alloy components** to industrial markets

End markets include:

Aviation

Jewellery

Medical devices

Electronics

Example customers and partners

 NOVARTIS


syngenta



Honeywell

Lilly



SIEMENS



CORNING



TIFFANY & CO.

World leading R&D expertise underpinning our market position

Leader in **complex PGM chemistry**

Developed over many decades – **hard to replicate**

c.1,500 granted patents in technologies enabled by PGMs

>2,400 R&D employees and engineers across JM

Driving new, high value PGM applications

Shared technology capabilities at the heart of the group:



Advanced metals chemistry



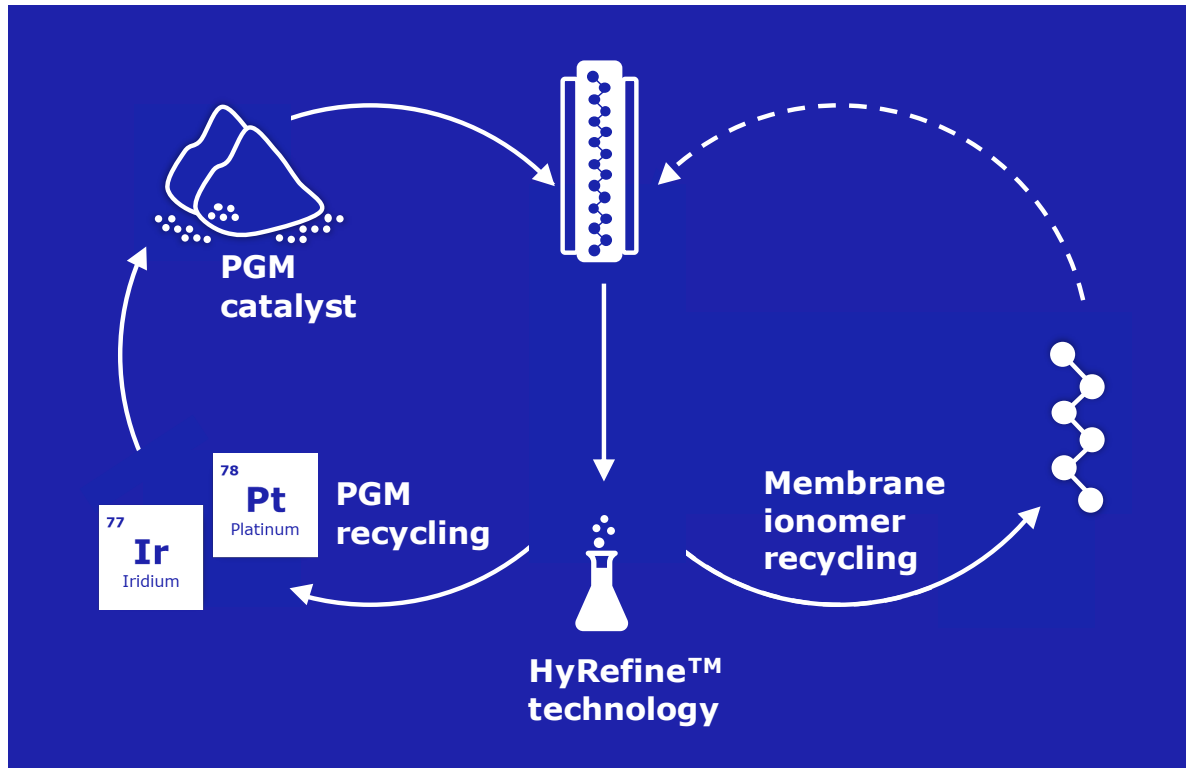
Catalysis



Process engineering

Applying our R&D expertise to new markets: JM's HyRefine™ technology

Recycling both the PGMs and membrane ionomer from fuel cell and electrolyser materials

**80%**

Lower carbon footprint

**80%**

Less energy used

**68%**

Less water used

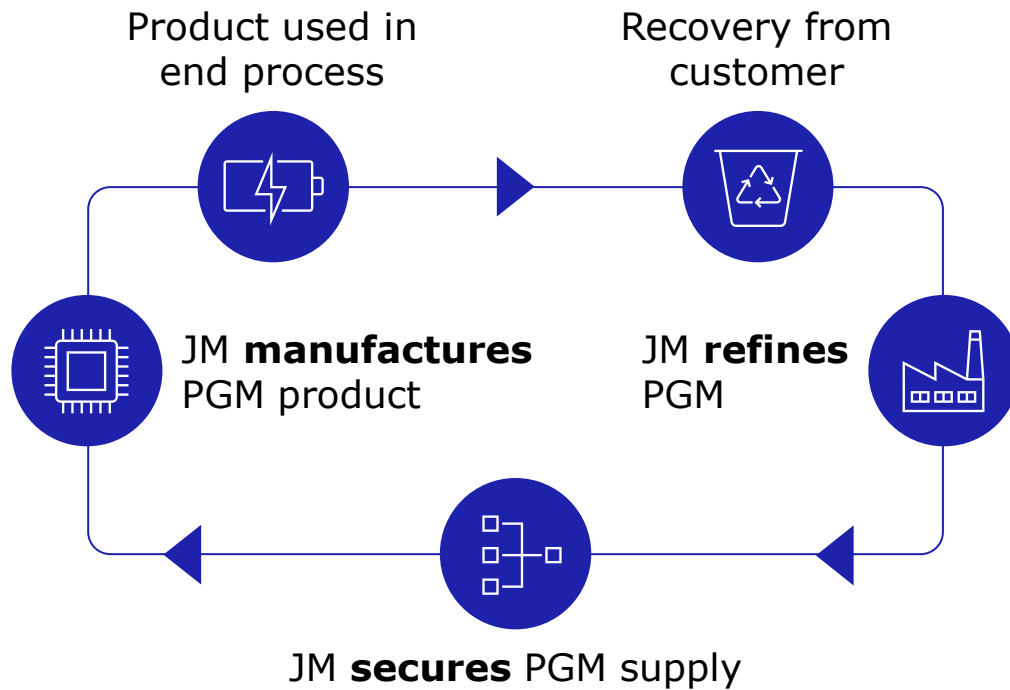
**84%**

Less waste produced



Driving value and growth through full-service offerings

Fully circular PGM offering



1

Bespoke **catalyst design and manufacture**

2

Embedded **circularity** route

3

Low carbon PGM supply options

4

Financing options through partners

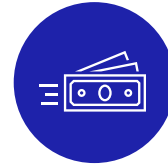
Customer-centric value proposition

World leading in PGMs

#1 secondary refiner of PGMs globally



Largest global liquidity hub for PGMs



Experts in developing high value products



Full-service model for customers



Underpinned by our 200 years' experience and leading technology in PGM chemistry

04. Financials

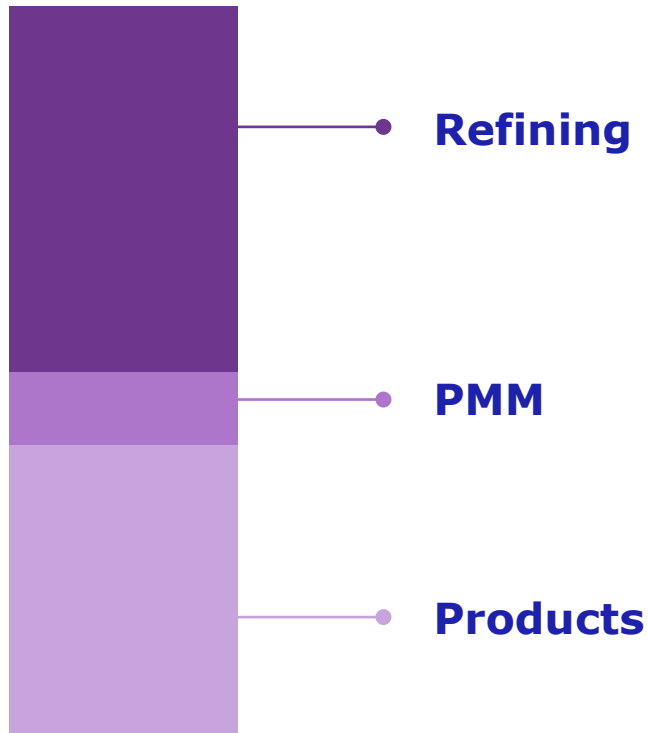


Stephen Oxley
Chief Financial
Officer

How we make money in PGM Services

2023/24 sales

£462m



Business model

- Retention of a small volume of refined metal
- Service fee

Impact of PGM prices

Sales and profit directly linked to **PGM price**

- Bid-offer spread in trading
- Volume of transactions

Sales and profit directly linked to **PGM price** and **volatility**

- Product manufacturing business
- Number of PGM applications
- Volume and price

No impact (pass through)

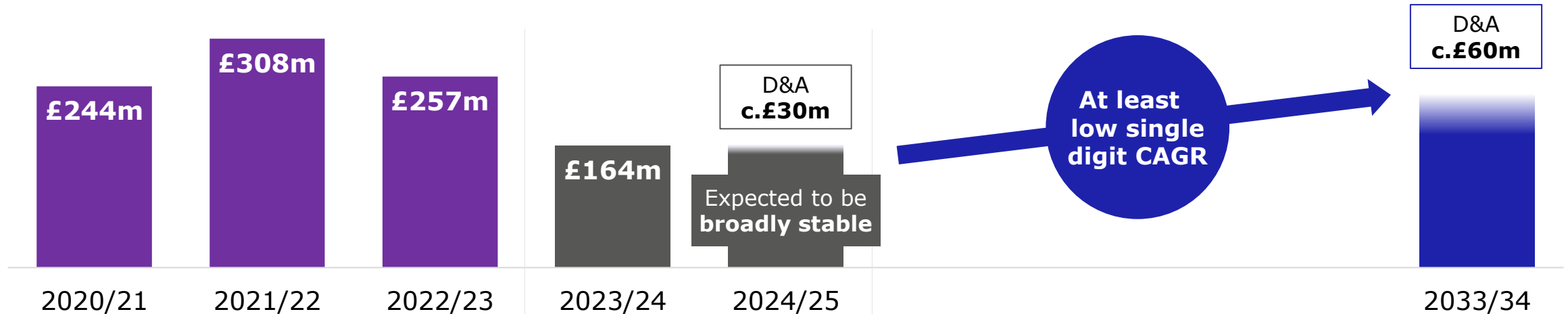
Delivering sustainable profit growth

PGM super-cycle

Stabilised earnings

Driving growth

PGM Services underlying operating profit



Exceptionally **high and volatile PGM prices** driving profit

Stabilised PGM prices
Refining volumes subdued
Driving efficiency

Growing **secondary supply**
Strong growth in **high value products**
Development of **full-service offering**
Benefits from new refinery

One-time investment into new refinery...

PGM Services 3 year capex

c.£350m



World-class refinery

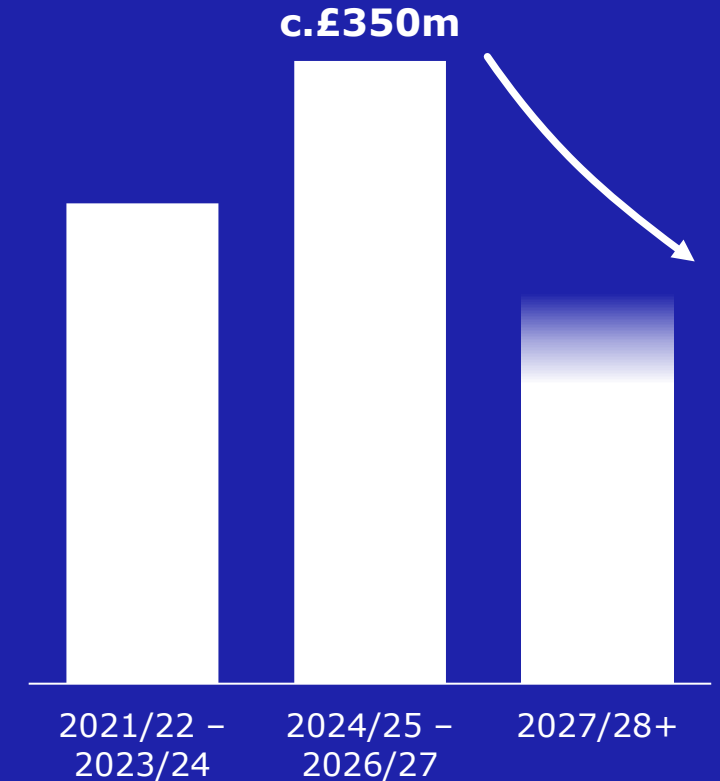
- **c.£250m** remaining capex
- Funded by **working capital improvement**
- Start commissioning by end of 2025/26
- World-class **safety** and **efficiency**
- Once-in-a-generation investment

Other

- Investment to support Products business
- Asset renewal programmes

2024/25 –
2026/27

...before capex transitions towards maintenance levels



Recent working capital dynamics have impacted group cash flow

Over the three years to 2023/24:

Refining backlogs increased c.£300m driven by ageing assets



Reduction in metal leases increased PGM Services working capital by £240m²



Lower metal prices increased PGM Services working capital by c.£500m (offsetting the benefit in Clean Air)



In future:

New world-class PGM refinery¹


Optimised metal funding

Stabilised metal prices

Delivering a significant improvement to free cash flow for the group

Driving long-term sustainable value creation

- 1 Increased volumes** in refining
- 2 Growth** through new applications
- Greater **efficiency**
- 4 High profitability**
- 5 Strong cash conversion**



**At least low
single digit CAGR
in operating profit
over the medium
to long-term**

04. Conclusion



Liam Condon
Chief Executive

PGM Services is key to our strategic success

		End of 2025/26	Medium to long-term
Capability	Start commissioning of new world-class PGM refinery	●	
Transformation	Achieve ICCA process safety event severity rate of 0.80¹	●	
	Deliver 32% reduction in scope 1 and 2 CO₂e emissions²	●	
Financial	At least low single digit CAGR in operating profit in PGM Services		●

Focused on delivering on our commitments

PGM Services is the backbone of JM

01

PGM markets have longevity

02

**JM is a leader in PGMs to help
enable the net zero transition**

03

**PGM Services is driving long-term
sustainable value creation**



Q&A