Cautionary statement

This presentation contains forward looking statements that are subject to risk factors associated with, amongst other things, the economic and business circumstances occurring from time to time in the countries and sectors in which Johnson Matthey operates. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a wide range of variables which could cause actual results to differ materially from those currently anticipated and you should therefore not place reliance on any forward-looking statements made. Johnson Matthey will not update forward-looking statements contained in this document or any other forward-looking statement it may make.
# Agenda

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<th>Presenters</th>
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<td>09:30</td>
<td>Introduction and group strategy</td>
<td>Robert MacLeod</td>
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<td>10:00</td>
<td>Financial strategy</td>
<td>Anna Manz</td>
</tr>
<tr>
<td>10:20</td>
<td>Q&amp;A</td>
<td></td>
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<tr>
<td><strong>10:50</strong></td>
<td><strong>Break</strong></td>
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<td>11:10</td>
<td>Clean Air</td>
<td>John Walker</td>
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<td>11:30</td>
<td>Battery Materials</td>
<td>Robert MacLeod</td>
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<tr>
<td>11:50</td>
<td>Q&amp;A</td>
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<td><strong>12:10</strong></td>
<td><strong>Lunch</strong></td>
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<td>13:00</td>
<td>Sector breakout sessions</td>
<td>Sector CEOs</td>
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<td>14:20</td>
<td><strong>Break</strong></td>
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<tr>
<td>14:35</td>
<td>Sector breakout sessions</td>
<td>Sector CEOs</td>
</tr>
<tr>
<td>16:00</td>
<td>Concluding remarks and Q&amp;A</td>
<td>Robert MacLeod</td>
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</tbody>
</table>
Delivering sustainable growth and value

Robert MacLeod
Chief Executive
A world that’s cleaner and healthier; today and for future generations.
Sustained growth fuelled by key megatrends

- Climate change
- Energy transition
- Population and longevity
- Resource challenges
We contribute to the UN sustainable development goals

87% of sales from products contributing to the UN SDGs

Clean Air

Efficient Natural Resources

Health

New Markets

JM

UN Sustainable Development Goals

A world that's cleaner and healthier; today and for future generations

Note: 2018/19 sales excluding precious metals
Making the world cleaner and healthier

34,500 tonnes of CO₂ saved per annum by our new UK renewable energy contract

3.4m tonnes of pollutants removed by our emission control catalysts

11 million gallons of renewable jet fuel produced per annum using our technology

181,000 lives positively impacted by drugs containing our API products

10.1m tonnes of greenhouse gases removed by our technology

87% of sales contribute to the UN Sustainable Development Goals

Note: Performance in 2018/19
Addressing megatrends with our science

**Megatrends**
- Climate change
- Energy transition
- Population and longevity
- Resource challenges

**Science**
- Applying our *world class science* to solve our customers’ *complex problems*
- Creating *customised solutions* that make a real difference to the world
- **Driving value**

**Customers**

**Resource allocation**
- Rigorous, effective *resource allocation* to address megatrends
- Driving *high returns*
- Creating an *agile* and *efficient* organisation
- Investing in *sustainable innovations* of the future

**Driving sustained growth and value creation**
The spine of science running through our sectors

### Our core capabilities

<table>
<thead>
<tr>
<th>Material design and engineering</th>
<th>Chemical synthesis</th>
<th>Characterisation and modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrochemistry</td>
<td>Process optimisation</td>
<td>Surface chemistry and coatings</td>
</tr>
<tr>
<td>Pgm chemistry and metallurgy</td>
<td>Catalysis and advanced materials</td>
<td>Product formulation</td>
</tr>
</tbody>
</table>

### Clever application

- Customised solutions
- New and next generation products
- Scale up of complex manufacturing
Solving our customers’ complex problems

For example in Battery Materials

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Designing the cathode material</td>
</tr>
<tr>
<td>2</td>
<td>Making the cathode material</td>
</tr>
<tr>
<td>3</td>
<td>Evaluating the cathode material</td>
</tr>
<tr>
<td>4</td>
<td>Testing the cathode in battery format</td>
</tr>
<tr>
<td>5</td>
<td>Enhancing the process through optimisation and repetition</td>
</tr>
</tbody>
</table>

- Material design and engineering
- Chemical synthesis
- Characterisation and modelling
- Electrochemistry
- Process optimisation
- Surface chemistry and coatings
- Pgm chemistry and metallurgy
- Catalysis and advanced materials
- Product formulation

[Diagram showing the process steps]
Our world class science gives us leading positions in the markets in which we operate

**Science** gives us *leading market positions*

**Clean Air**
- One of three global players in Clean Air
  - #1 Diesel
- Strong position in gasoline

**Efficient Natural Resources**
- Strong segment shares
  - #1 Methanol
  - #1 Pgms
  - #1 Oxo alcohols
  - #1 Formaldehyde
  - #1 SNG / #1 BDO

**Health**
- #1 controlled substances in Europe

*Sustained competitive advantage* through **R&D investment** at *5% of sales*
Our business strategy

Sustained growth and value creation from:

Applying world class science to solve customers’ complex problems
Creating long term value

Delivering attractive growth and returns

- Mid to high single digit EPS CAGR
- ROIC to 20%
- Progressive dividend

Delivery of strategy underpinned by fundamental changes across all aspects of the group
We are transforming JM...

Creating an environment for our people to succeed

Embedding sustainability in everything we do

Driving efficiencies with new systems and ways of working

People

Culture

Efficiency

• Strengthening our platform for growth
• Creating a more sustainable business
• Greater standardisation and efficiency
• Empowering people
• Faster decision making

...to create an agile and efficient business, giving us flexibility to consistently deliver
We are successfully executing our strategy

Delivering on expectations in Clean Air

Built platform for stronger growth in Efficient Natural Resources

Operational improvements and pipeline development in Health

Significant progress in Battery Materials

Delivered 5% annualised EPS growth since 2017 despite a tougher macro environment
Delivering sustained growth and value

Sustained growth in **Clean Air** over the next decade

Mid to high single digit growth in **Efficient Natural Resources**

Passed the point of inflection for breakout growth in **Health**

Strong progress in **Battery Materials** to build a leading position

**Efficiencies** remain a strong focus
Clean Air: sustained growth for the next decade

### 2025 outcomes

<table>
<thead>
<tr>
<th>Asia more than doubles in size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe maintains size despite diesel decline</td>
</tr>
<tr>
<td>Americas driven by GDP growth</td>
</tr>
<tr>
<td>Margins maintained through focus on efficiency</td>
</tr>
</tbody>
</table>

Mid single digit growth in operating performance to 2025
Efficient Natural Resources: market leading growth

2025 outcomes

- Positioned in higher growth segments
- Continue to evolve our existing strengths
- New technologies
- Increased efficiency of operations

Mid to high single digit growth in operating performance to 2025
Health: passed inflection for breakout growth

2025 outcomes

- Enhancing the performance of our base business
- Delivering growth from our new product pipeline
- Building capabilities to support our customers

Delivering c.£100m additional operating profit by 2025
Battery Materials: breakout growth

2025 outcomes

- Maintained our technology leadership
- Qualified on customer platforms
- Commercial scale capacity

Well positioned for breakout growth
Megatrends drive growth opportunities for science-led solutions

**Short term**
- Growth in Clean Air Europe and Asia
- Catalyst technologies
  - Health

**Medium term**
- Clean Air Asia
  - Catalyst technologies including new licensing
    - Health
    - Battery Materials
    - Fuel Cells

**Long term**
- Catalyst technologies including new licensing
  - Health
  - Battery Materials and recycling
  - Hydrogen economy
Sustained growth and value

- Successfully executing our strategy
- Addressing megatrends with our science
- Spine of science running through our sectors
- A more agile and efficient business

Mid to high single digit EPS CAGR
Expanding ROIC to 20%
Progressive dividend
Driving shareholder value

Anna Manz
Chief Financial Officer
2019/20 guidance unchanged for first half and full year

- Operating performance to be slightly below the prior year in **Clean Air**
- Better performance and continue to anticipate sales growth with operating performance growth ahead of sales in **Efficient Natural Resources**
- Broadly stable sales and double digit operating performance growth in **Health**
- Sales and operating performance growth in **New Markets**

Mid to high single digit growth in operating performance with performance to be more heavily weighted to the second half
Delivery of strategy underpinned by my three focus areas

- Drive increasing business wide efficiency
- Disciplined management of working capital
- Rigorous resource allocation
Building a more efficient business for the long term

Annualised benefits from group programmes (£m)

£105m previously announced group programmes

£145m

Extra £40m savings taking total procurement savings to £100m

Around two thirds to benefit the income statement; one third capex

Most being reinvested

27
Building a better business for the long term

01 Standardised systems and processes
02 Manufacturing
03 Procurement
04 Working capital
Disciplined management of working capital – non precious metal

High performance culture

Procurement excellence

Manufacturing excellence

Commercial excellence

Enabled by single, global ERP system

Average working capital days excluding precious metals

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>Medium term target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days</td>
<td>70</td>
<td>69</td>
<td>62</td>
<td>59</td>
<td>50</td>
</tr>
</tbody>
</table>

• 11 day improvement in average working capital days since 2016, a total of £120m
• Continue to drive improvement in average working capital days to a medium term target of 50 days
Precious metal working capital to improve by c.£350m

**Reducing refining backlogs**
- Progress on track
- Complex process
- Refineries sized to support Clean Air

**Investing to improve refineries**
- £100m investment over 3 years
- Improving resilience and efficiency of refineries
- Neutral impact on ROIC

Expect reduction in backlogs of c.£250m from FY 2018/19

Delivering a further c.£100m improvement in working capital from efficiencies
## Investing for growth, efficiency and returns

<table>
<thead>
<tr>
<th>Category</th>
<th>FY19/20</th>
<th>FY20/21</th>
<th>FY21/22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maintenance capex</strong></td>
<td></td>
<td><strong>Maintenance capex</strong> of 0.8-0.9 depreciation includes maintenance capex plus smaller growth projects</td>
<td></td>
</tr>
<tr>
<td><strong>Clean Air</strong></td>
<td></td>
<td><strong>Clean Air plants</strong> in Poland, China and India (£200m remaining)</td>
<td></td>
</tr>
<tr>
<td><strong>Efficient Natural Resources</strong></td>
<td></td>
<td><strong>Update our pgm refineries</strong> (£70m remaining)</td>
<td></td>
</tr>
<tr>
<td><strong>Battery Materials</strong></td>
<td></td>
<td><strong>Commercialisation of battery materials</strong> to commercial 1 plant (£280m(^1) remaining)</td>
<td></td>
</tr>
<tr>
<td><strong>Corporate</strong></td>
<td></td>
<td><strong>Upgrade of our IT systems</strong> (£100m remaining)</td>
<td></td>
</tr>
</tbody>
</table>

1. Includes capex and capitalised development

- **High ROIC business**
- **ROIC neutral**
- **Investing for breakout growth**
- **Driving efficiency and cost savings**

**Notes:**
- Up to £500m
Clear path to deliver 20% ROIC target

16.4% ROIC at FY 18/19

Efficient Natural Resources

Clean Air
High ROIC and investing in flexible and efficient plants to maintain returns

Efficient Natural Resources
Reduction in backlogs; investment in refineries; licensing and new technologies

Health
Launch of new products from fully invested pipeline
How we think about ROIC strategically

- Portfolio of businesses
- World class science
- Leading positions in our key markets
- Managing portfolio through lifecycles
- Allocate resources appropriately through lifecycles
- 20% ROIC businesses at scale

JM is a 20% ROIC business
Clean Air: sustained growth for the next decade

John Walker – Sector Chief Executive, Clean Air
Clean Air leadership team

**John Walker**

John joined in 1984 and appointed Executive Director in 2013

35 years’ experience and held a series of positions within the sector in the US, Asia and Europe

Successfully led the Clean Air Sector through many transitions, influencing the strategic direction and growing it into a significant global business

To retire and step down from the board on 31st March 2020

**Joan Braca**

Joan joins on 1 October 2019 as Sector Chief Executive, Clean Air

20 years’ experience in speciality chemicals with Dow Chemical and Rohm & Haas Company

Significant experience in running complex businesses, driving growth in emerging markets and delivering efficiencies in mature markets

Most recently worked for Tate & Lyle
Clean Air: strongly positioned for sustained growth

Sales 2018/19 by sub-business

Leadership in catalysts to reduce emissions from vehicles

Growth driven by consumer desire for cleaner air and legislation

2018/19 ROIC of 30%

Note: 2018/19 sales excluding precious metals
Delivering on our expectations

Progress since 2017

- Strong growth in European light duty achieved, driven by 20ppt share gain in diesel
- On track with strategy in Asia and winning our share of China 6 business and in India winning BS 6
- Class 8 up-cycle in North America successfully delivered without adding new manufacturing capacity
- New plants in Poland, China and India commissioned in next 12 months
- Margin around 14% and strong ROIC maintained
Growth for the next decade driven mainly by legislation

<table>
<thead>
<tr>
<th></th>
<th>2019/20</th>
<th>2020/21 to 2024/25</th>
<th>2025/26 to 2028/29</th>
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</thead>
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<tr>
<td><strong>Europe</strong></td>
<td>GPF fitment increases</td>
<td>Diesel decline and continued BEV penetration</td>
<td>Further value expected from Euro 7</td>
</tr>
<tr>
<td></td>
<td>Diesel share of the market continues to fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Americas</strong></td>
<td>Declining Class 8 heavy duty cycle</td>
<td>Class 8 heavy duty cycle</td>
<td>GPF adoption (LEV III)</td>
</tr>
<tr>
<td></td>
<td>Additional unit per HD vehicle (CARB 2024)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td>Additional units per HD vehicle (China VI and India VI)</td>
<td>Value per LD vehicle doubled (China 6)</td>
<td>Further value expected from China 7, Japan Post JP18 and Thailand Euro 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thailand (Euro 5)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Growth 2018/19 to 2028/29 refers to operating performance. BEV: battery electric vehicle; GPF: gasoline particulate filter; CARB: California Air Resources Board; LEV: Low emission vehicle.
Europe maintains size to 2025 despite light duty diesel decline

**Light duty small decline**

Share in light duty gasoline and diesel remain stable

Decline in light duty diesel share of the market

Increasing fitment of gasoline particulate filters

**Heavy duty to grow**

European heavy duty will grow steadily with GDP
Western Europe light duty diesel share

Western Europe light duty fuel mix
% Vehicles sold (diesel and diesel hybrid)

Diesel share of light duty Western Europe assumed to decline to 25% by 2025\(^1\) and 10% by 2030

1ppt shift from diesel to gasoline impacts gross profit by c.£4m

---

1. Equivalent to c.20% of light duty passenger car sales
## Europe: key assumptions

### Key assumptions

<table>
<thead>
<tr>
<th>Vehicle production</th>
<th>• &lt;1% light duty vehicle production growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel share of market</td>
<td>• Diesel share of light duty vehicles in Western Europe declines to c.25% by 2025¹</td>
</tr>
</tbody>
</table>
| Value uplift       | • Up to 2x value per light duty gasoline vehicle  
                      • Up to 1.5x value per light duty diesel vehicle  
                      • Hybrid neutral |
| BEV penetration    | • 9% by 2025 |
| JM market share    | • Maintain share in light duty diesel and gasoline vehicles to 2025 |

---

¹ Equivalent to c.20% of light duty passenger car sales
Americas: driven by GDP growth in absence of legislation changes

Overall growth in Americas in line with GDP to 2025

Without major legislation changes, no significant movement in key value drivers
## Americas: key assumptions

### Key assumptions

<table>
<thead>
<tr>
<th>Category</th>
<th>Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vehicle production</strong></td>
<td>• &lt;1% light duty vehicle production growth</td>
</tr>
<tr>
<td><strong>Value uplift</strong></td>
<td>• Up to 1.2x value uplift per heavy duty vehicle (CARB 2024)</td>
</tr>
<tr>
<td></td>
<td>• Small value uplift across light duty vehicles from 2025/26 (LEV III)</td>
</tr>
<tr>
<td><strong>BEV penetration</strong></td>
<td>• 3% by 2025</td>
</tr>
<tr>
<td><strong>JM market share</strong></td>
<td>• Stable market share in light duty gasoline, light duty diesel and heavy duty diesel in 2025</td>
</tr>
</tbody>
</table>
Asia to more than double in size by 2025

**Heavy duty**
Tripling of value per vehicle in China and India
- China VIa nationwide from 2021 and China VIb from 2023
- India BSVI from 2020

**Light duty**
Doubling of value in China and India
- China VIa nationwide from 2021 and China VIb from 2023
- India BSVI from 2020
Asia: key assumptions

<table>
<thead>
<tr>
<th>Key assumptions</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vehicle production</strong></td>
<td>&lt;3% light duty vehicle production growth</td>
</tr>
</tbody>
</table>
| **Value uplift**                 | Up to 2x value per light duty vehicle (China 6)  
Up to 3x value per heavy duty vehicle (China VI and India 6) |
| **BEV penetration**              | 13% by 2025 |
| **JM market share**              | Slight share gains in both light and heavy duty in China by 2025 |
Global BEV penetration is accelerating

Expected global BEV penetration (%)

JM assumes 7% global BEV penetration by 2025:

- China: 13%
- Europe: 9%
- US: 3%

Source: Various external industry sources and internal estimates. Pie charts not to scale.
Customer focused and positioned for success

Science to drive leadership

Efficient, flexible manufacturing

Procurement
Investing in science to drive leadership

Research and development (£m)

- **Clean Air**: c.£85m R&D
- 44%
- £190m

- Clean Air
- Efficient Natural Resources
- Health
- New Markets
- Central

Note: 2018/19 data

Growth driven by legislation

Technology driven leadership

Leading diesel technology driving share gains

Positioning in gasoline for leadership
## Global, efficient and flexible manufacturing to maximise returns

<table>
<thead>
<tr>
<th>Global, efficient footprint</th>
<th>3 new world class plants in Poland, China and India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully flexible manufacturing</td>
<td>Identical customer experiences Standard plant operating model</td>
</tr>
<tr>
<td>Standardised manufacturing processes</td>
<td>Optimise production between locations Increasing capacity in existing plants</td>
</tr>
</tbody>
</table>

**Right sized, global and efficient footprint**
Clean Air Poland: a world class manufacturing facility

Poland plant

Automated end to end process

Successful customer audit

Flexible, efficient manufacturing

Commissioning underway
## Procurement integral to the strategy

| Integral part of strategic decision making | Involved in new product introduction  
|                                          | Better solutions for the customer |
| Strategic partnering with vendors         | Delivers better service and quality to customers |
| Creating agility in the organisation     | Capacity to invest or improve margin  
|                                          | Ability to deal with unforeseen events |
Consistent value creation from a global leader

- Asia more than doubles in size
- Europe maintains size to 2025 despite diesel decline
- Americas driven by GDP growth
- Margins maintained through focus on efficiency

Flexible and agile business positioned for the future

Mid single digit growth in operating performance to 2025
Battery Materials: breakout growth

Robert MacLeod
Chief Executive
Battery Materials leadership

Christian Günther,
Chief Executive, Battery Materials

Christian joins on 4th November as Sector Chief Executive, Battery Materials

Strong background in science and successful track record in the development and leadership of large, global technology businesses

Most recently worked for Tasnee, a Saudi Arabian company with a wide range of activities in chemicals, petrochemicals, plastics, battery manufacturing and environmental technologies
The external environment continues to drive towards electrification

- Energy transition
- Consumer behaviour
- Tightening legislation
- Government incentives
Solving our customers’ complex problems

- Range anxiety
- Total cost of ownership
- Need to develop high nickel materials
- OEMs demanding greater customisation
Cathode materials: complexity gives opportunity to capture value...

*Technology is a key differentiator*

*Customised solutions*

*Reliability of supply chain*

*Long lead time to qualification*

...which plays to our strengths
eLNO: a next generation material to enable long range, pure BEV

eLNO, our portfolio of next generation, leading, ultra high energy density cathode material

Expected ultra high energy density market by 2030:

- 500kt to 1,800kt
- (total market of 1,700kt to 2,700kt)

Energy density and commercial introduction

<table>
<thead>
<tr>
<th>Past</th>
<th>Today</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMO</td>
<td>NMC 532 NMC 622 NCA</td>
<td>eLNO NMC 811 Advanced NCA</td>
</tr>
</tbody>
</table>

Wh/kg (not to scale)
eLNO can solve many of the current challenges for BEV penetration

Properties OEMs optimise on

- Energy density
- Power
- Stability
- Cobalt content

A portfolio of eLNO materials

eLNO is structurally more customisable than other materials, enabling customers to deliver leading performance

Long range, pure BEV
Customisation is key to capturing value

Tailoring eLNO to meet customer requirements

Technology expertise enables rapid development and customisation

Committed to customisation with positive customer feedback:

"JM is a preferred cathode material company to work with due to fast response, willingness to customise the product [and] investing in science"

No single material meets the needs of all customers
World class application and testing facilities

**Enabling customised development**

- Building **best in class** application and testing facilities
- Enables development of **tailored solutions**
- Supports **new process** and **material development**
- Capability to fabricate and test **large format cells**

**Designed with customers to their specifications**
Breakout growth: making significant progress

Progress

- Positive customer feedback and progressed to **full cell testing** with two parties

- Investing for **commercialisation**
  - Pilot plant operational
  - FEED work well advanced on first commercial plant

- Progress on sourcing key **raw materials**

- Evaluating best **options for scale up**

Note: FEED (front end engineering design)
Commercialisation: bringing a viable product to market

Achievements

Today
- Pilot plant operational
- First UK application centre operational
- First commercial plant progressing

On track to deliver

2020
- Further application and testing capacity

2022
- Commercial plant, up to 10kt
  - Sufficient for c.100k pure battery electric vehicles

2024
- Supplying platforms

Ongoing work as we consider options to scale up

£50m spend to date
- £300m spend remaining

Note: Includes capex and capitalised development of £280m and operating expenditure of £20m
Building a scalable business

Scale up beyond our first commercial plant likely to be **phased**

**Matching capacity** to market demand

Enables the use of the most **modern process technology** to improve returns profile

Resources to be allocated in a **disciplined manner** and in line with our capital allocation framework
Conclusion

- Maintained technology leadership
- Customer testing and customisation continues
- Commercialisation progressing as planned
- Progressing scale up plans

Well positioned for breakout growth
Efficient Natural Resources

Jane Toogood
Sector Chief Executive, Efficient Natural Resources
Efficient Natural Resources leadership

Jane Toogood,
Sector Chief Executive

Joined in February 2016 as Divisional Director, Precious Metal Products

Sector Chief Executive, Efficient Natural Resources from April 2017

Efficient Natural Resources formed from Process Technologies and Precious Metal Products businesses combined

30 years of experience in the chemicals industry, covering multiple industry sectors

Non-Executive Director of Victrex Plc
Upgrading our guidance

- Took over a declining business
- Stabilised and delivering on strategy
- Our technologies accelerate growth
- Future growth driven by megatrends

Confident in mid to high single digit growth in operating performance to 2025
We create value from the efficient transformation and use of natural resources:

- Demand and consumer concern for the **planet** is increasing
- Efficient Natural Resources allows our customers to use those resources both **efficiently** and **cleanly**
- Using our **core chemistry** and technology expertise to solve **complex** problems through close **collaboration** with customers
Efficient Natural Resources

Sales 2018/19 by sub-business

- **£991m**
  - 57%
  - 28%
  - 8%
  - 7%

- **Catalyst Technologies**
  - Chemical and refinery catalysts and process technology

- **Platinum Group Metal Services**
  - Strategic service to the group and the world’s leading secondary refiner of pgms; precious metal products and business solutions

- **Advanced Glass Technologies**
  - Advanced glass materials and conductive inks for use in auto glass and other industries

- **Diagnostic Services**
  - Specialised detection, diagnostic and measurement solutions for use in the petroleum industry

**2018/19 ROIC of 12.6%**

Note: Sales excluding precious metals
Our strategy to deliver sustained market outperformance

01. **Maximise growth** through differentiated investment by segment and region

02. **Deliver value through focus on efficiency**

03. **Focused investment** in R&D to maintain & extend technology leadership

04. **Explore step change growth opportunities** by extending our capabilities

Mid to high single digit growth in operating performance to 2025
Significant strategic progress

<table>
<thead>
<tr>
<th>Focus</th>
<th>Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a robust and <strong>sustainable</strong> business</td>
<td>Stabilised performance with operating profit 2 year <strong>CAGR of 5%</strong></td>
</tr>
<tr>
<td>Focus on <strong>efficiencies</strong></td>
<td>Restructuring programme completed</td>
</tr>
<tr>
<td></td>
<td>Product portfolio rationalisation</td>
</tr>
<tr>
<td></td>
<td>Investing into refineries</td>
</tr>
<tr>
<td>Using existing technologies and investing in <strong>new technologies</strong></td>
<td>Developed and commercialised new license technologies</td>
</tr>
<tr>
<td></td>
<td>• Mono ethylene glycol</td>
</tr>
<tr>
<td></td>
<td>• Waste to aviation fuel</td>
</tr>
</tbody>
</table>
Drivers of near term growth – continuing to evolve our existing strengths

**Examples**

**Formaldehyde**
Cleaner, more efficient process
JM has leading technology

**Additives**
Debottlenecking has increased capacity

**Licensing**
will drive steady value as plants are built

---

**Technology leadership positions**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>#1</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>#1</td>
</tr>
<tr>
<td>Gas processing</td>
<td>#1</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>#1</td>
</tr>
<tr>
<td>FCC additives</td>
<td>#1</td>
</tr>
<tr>
<td>PGM Services</td>
<td>#1</td>
</tr>
</tbody>
</table>

---

We evolve in line with customers needs and create value through efficiencies

**Driving growth**
Extending our technologies to accelerate near term growth

**Mono ethylene glycol (MEG) technology**

**MEG is a key industrial chemical**
- Used in production of polyesters and fibre applications
- Our technology allows MEG to be produced from coal, natural gas or biomass
- Customers able to maximise feedstock conversion and reduce utility consumption

**Fischer Tropsch (FT cans) technology**

**Waste to aviation fuel**
- License FT cans technology to Fulcrum BioEnergy Inc
- First commercial scale plant to begin production 2020
- 175,000 tonnes of waste into 11 million gallons of fuel each year

Extending our technologies into new applications and markets to accelerate growth in the medium term
Opportunities for our science in the future

Drives by megatrends

- Climate change
- Energy transition

Building on existing expertise

- Advanced technology in gas heated reforming
- Pgm recycling

Hydrogen

Battery materials recycling
Conclusion

Mid to high single digit growth in operating performance to 2025
Health: delivering breakout growth

Jason Apter
Chief Executive, Health
Health leadership

Jason Apter,
Sector Chief Executive

Joined JM in March 2018 as Sector Chief Executive

Over 20 years’ experience working across a variety of industry segments, including 9 years in life sciences

Extensive experience in driving innovation, growth and operational effectiveness
Applying science and innovation to provide solutions to our customers

- **Population and longevity** driving increased demand for more effective and affordable treatments

- Advances in novel drugs driving growth in **highly potent** drug substances and **more complex** small molecule solutions

- Continued pressure on more affordable healthcare solutions driving demand for **generic versions** of **existing drugs**
Our business at a glance

Sales 2018/19 by sub-business

£257m

33% Generics
67% Innovators

Note: 2018/19 sales excluding precious metals

Generic
Controlled substances (84%)
Non controlled substances (16%)

Innovators
Clinical development (24%)
Commercial API (76%)

2018/19 ROIC of 9%
### Strong position in attractive market niches

<table>
<thead>
<tr>
<th>Market position</th>
<th>Generics</th>
<th>Innovators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers to entry</td>
<td>Leader in controlled substances</td>
<td>Complex and high potency small molecules</td>
</tr>
<tr>
<td>Growth drivers</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>New applications</td>
<td>Clinical development services</td>
</tr>
<tr>
<td></td>
<td>New product pipeline</td>
<td>New product pipeline</td>
</tr>
</tbody>
</table>

Served through a common development and manufacturing base
Our strategy for breakout growth

01 Enhancing performance of base business

02 Expanding our new product pipeline, including new applications, in our generics business

03 Expanding our new product pipeline in our innovators business

04 Building our capabilities to better support our customers for future growth

Generic and innovator product pipeline to deliver an additional c.£100m operating profit by 2025
Significant progress against our strategy

**Focus**
- Optimise *base business*
- Expand *new product pipeline*
- Building *capabilities to better support customers*

**Delivered**
- Footprint rationalisation
- Productivity improvements
- Procurement initiatives
- 2 new applications
- 1 new generic launch
- 10 generics in regulatory approval
- 4 late stage innovator programmes
- High potent drug manufacturing
- Particle technology
- Process chemistry
Driving operational improvements to optimise our base business

**Footprint**
- Riverside closure
- Annan ramp up

**Productivity**
- Process simplification
- Capacity optimisation

**Procurement**
- Narcotic raw material
- Indirect spending

New leadership team with relentless focus on execution
Delivering on our product pipeline

**New application**

- New drug approval using existing controlled drug substance
- New ADHD treatment with novel controlled release profile

**New generic launch**

- Developed non-controlled molecule for new generic launch
- Complex molecule used in treatment of acute myeloid leukemia

**Late stage innovator**

- Development and manufacturing partner for submitted new drug approval
- Novel immunotherapy (antibody drug conjugate) in oncology
Generics and innovators pipeline to deliver an additional c.£100m operating profit per year by 2025

Number of generic and innovator products by expected launch date and value¹ (Total products: 75)

<table>
<thead>
<tr>
<th>Potential product operating profit p.a.</th>
<th>Expected time until launch</th>
<th>2019/20 to 2021/22</th>
<th>2022/23 to 2024/25</th>
<th>2025/26+</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;£5m</td>
<td>Already launched</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£2.5-5m</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£0-2.5m</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Size of bubbles proportional to number of products
2. Current pipeline as at September 2019
3. New applications already launched are part of base and therefore not included in £100m operating profit by 2025
Expanding our science capabilities to solve our customers’ problems

**Our core capabilities**

<table>
<thead>
<tr>
<th>Material design and engineering</th>
<th>Chemical synthesis</th>
<th>Characterisation and modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrochemistry</td>
<td>Process optimisation</td>
<td>Surface chemistry and coatings</td>
</tr>
<tr>
<td>Pgm chemistry and metallurgy</td>
<td>Catalysis and advanced materials</td>
<td>Product formulation</td>
</tr>
</tbody>
</table>

**Expanding capabilities**

- Particle technology
- High potent manufacturing
- Continuous flow
Conclusion

Population and longevity driving more complex, high potency, targeted APIs

World class science to solve our customers’ complex problems

Opportunity to expand our capabilities

Passed inflexion point and now delivering growth

Generic and innovator pipeline to deliver c.£100m additional operating profit per year by 2025