

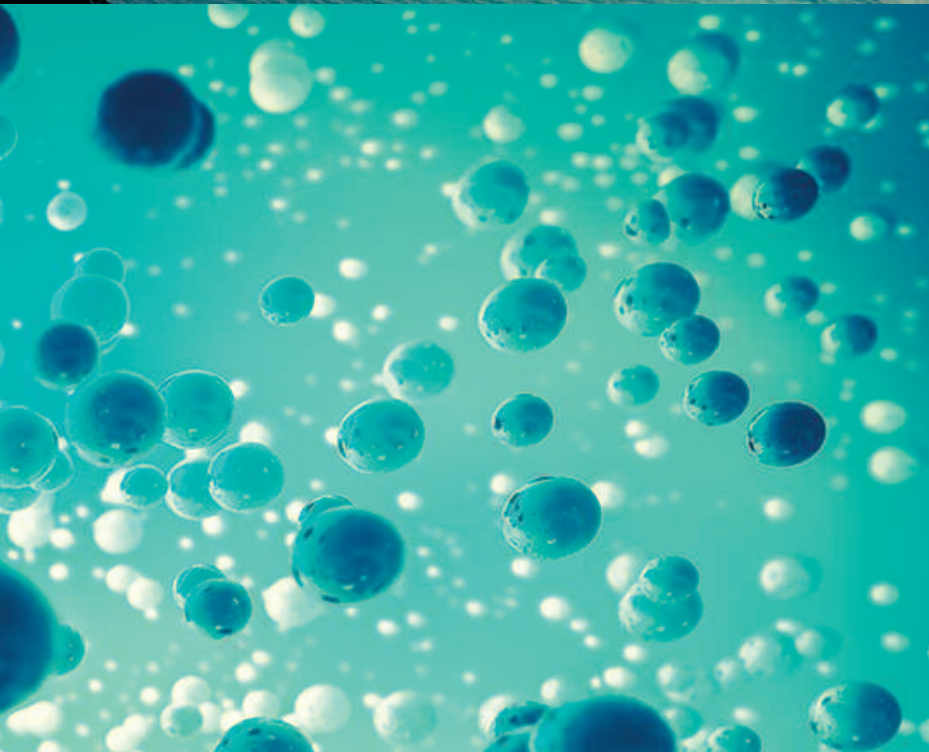
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# Strategic Report



Here we explain  
how we use our  
inspiring science  
to enhance life.



The Strategic Report from page 2 to page 81 was approved by the board on 30th May 2018 and is signed on its behalf by:

**Robert MacLeod**  
Chief Executive

# JM in profile

Johnson Matthey is a global leader in science that makes the world cleaner and healthier. With over 200 years of sustained innovation and technological breakthroughs, our solutions improve the performance, function and safety of our customers' products.

**14,000**  
people

More than  
**30**  
locations

Our science has a global impact in areas such as low emission transport, pharmaceuticals, chemical processing and making the most efficient use of the planet's natural resources.

Our strategy to deliver sustained growth and value creation for shareholders drives attractive returns over the medium term: mid to high single digit compound annual growth in earnings per share, ROIC expanding to 20% and, as a result, a progressive dividend.

Today more than 14,000 Johnson Matthey professionals collaborate with our network of customers and partners to make a real difference to the world around us.

## North America

12 major manufacturing facilities  
33% of group sales  
24% of employees

## Europe

14 major manufacturing facilities  
39% of group sales  
53% of employees

## China

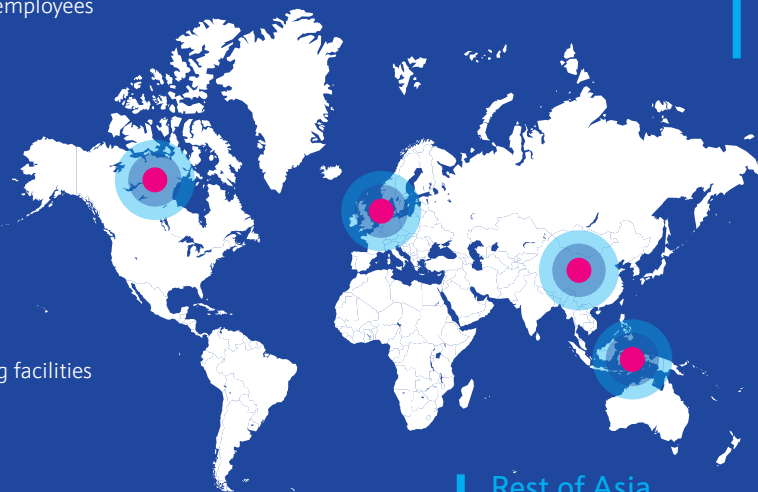
5 major manufacturing facilities  
10% of group sales  
8% of employees

## Rest of World

5 major manufacturing facilities  
9% of group sales  
5% of employees

## Rest of Asia

6 major manufacturing facilities  
9% of group sales  
10% of employees



# Johnson Matthey

Clean Air	Efficient Natural Resources	Health	New Markets	Group Functions
<ul style="list-style-type: none"> <li>A global leader in catalysts and catalyst systems for vehicles and industry</li> <li>Creating value from high technology catalyst formulations and systems to meet legislated limits for emissions around the world</li> <li>13 manufacturing facilities in 12 countries</li> <li>Nine technical centres in eight countries</li> <li>Strategy to deliver sustained growth</li> </ul>	<ul style="list-style-type: none"> <li>Creating value from efficient use and transformation of critical natural resources including oil, gas, biomass and platinum group metals (pgms)</li> <li>Leading positions across four global businesses: Catalyst Technologies, Pgm Services, Advanced Glass Technologies and Diagnostic Services</li> <li>18 manufacturing facilities in eight countries</li> <li>Two technical centres in the UK</li> <li>Strategy to deliver market leading growth</li> </ul>	<ul style="list-style-type: none"> <li>Leading provider of complex chemistry solutions to generic and innovator pharmaceutical companies</li> <li>Develops and manufactures active pharmaceutical ingredients (APIs) for a range of treatments</li> <li>Operates in the large and growing outsourced small molecule API market</li> <li>Five manufacturing facilities in two countries</li> <li>Three technical centres in three countries</li> <li>Strategy to deliver break out growth</li> </ul>	<ul style="list-style-type: none"> <li>Accessing new areas of potential growth aligned to global priorities of cleaner air, improved health and more efficient use of natural resources</li> <li>Strategy to deliver break out growth in battery materials, with market leading cathode material technology</li> </ul>	<ul style="list-style-type: none"> <li>Provide common standards to leverage efficiency and create value across the group's sectors</li> <li>Includes global science and technology function which drives innovation and leads R&amp;D in core science and business areas. Supports technology development in sectors</li> </ul>

Strategic Report

Governance

Accounts

Other Information

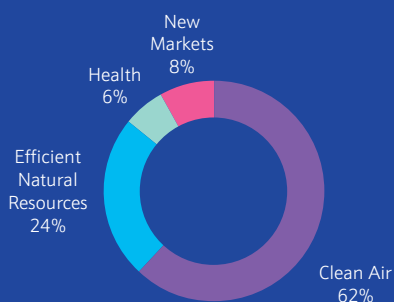
**Sales**  
excluding precious metals

**£3.8bn**

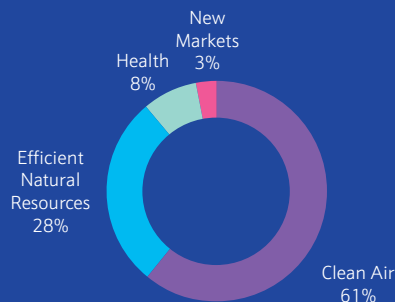
**Operating profit**  
underlying

**£525m**

**Sales by sector**  
excluding precious metals



**Operating profit excluding corporate**  
underlying



# Chairman's statement

This is my last statement to shareholders after seven years as your Chairman. I must start by saying what a pleasure and privilege it has been to chair the board of a company as special as Johnson Matthey. I leave in the knowledge that with a strong management team, a sound strategy and a very experienced new Chairman to take over running the board, the company is set for further growth and success in the years ahead.

During the last year, Robert and the management team set out a clear strategy for sustained growth and value creation. Together with JM's 14,000 people they have successfully embarked on delivering that strategy, applying world class science to solve complex problems for our customers. As a result, the company has continued to make an important contribution to making the world a cleaner and healthier place, enhancing the lives of millions of people around the world.

With the aim of achieving more effective focus, the group was reorganised in the year into four sectors: Clean Air, Efficient Natural Resources, Health and New Markets, which includes our Battery Materials business.

Air quality has remained an intensifying global issue. Our Clean Air Sector continues to work closely with our customers to enable the current generations of internal combustion engines to respond to changing legislation and consumer demand.

Our strategy is delivering the capacity, technology and efficiency improvements that will enable us to sustain growth in this key group business for at least the next decade.

At the same time, and in response to the concern about air quality, the automotive market has accelerated its long term plans for replacement of the internal combustion engine. JM has put itself at the forefront of this process, developing a leading battery chemicals technology needed to make it happen. A key focus for the board is now ensuring that we manage investment in capacity and commercialisation to ensure we deliver our next generation technology to our customers as the market for battery electric vehicles begins significantly to grow.

Elsewhere, our Efficient Natural Resources and Health Sectors bring diversity and added fire power to the group's portfolio. Both serve growing markets in which they hold technology leadership positions and have made solid progress on deploying our strategy during the year.

Alongside the development and implementation of strategy sector by sector, we have continued the process of making JM a more agile, flexible and efficient company, ready and able to cope with the demands of the growth we expect to deliver.



**Tim Stevenson**  
Chairman

# JM has continued to make an important contribution to making the world a cleaner, healthier place

## Committed to sustainable business

Ever since our business was founded in 1817, JM has made a significant contribution to sustainability: long before the word 'sustainability' became common in corporate language, it was an intrinsic part of JM's culture.

Our Sustainability 2017 programme came to an end on 31st March 2017 and, as we reported last year, we achieved our specific goals in relation to embedding sustainability into the way we do business. This is now exemplified in our vision and brand, through the focus of our sectors and is explicit in the delivery of our group strategy. I am delighted that we are now able, in this annual report, to share our sustainable business ambitions for the period to 2025. Aligned to our business strategy and framed as a series of six challenging goals, it will drive us towards sustainability leadership across our whole value chain.

## Great people and the right culture

Since I joined the business seven years ago I have always been struck by the pride and commitment that our people bring to their work; they are proud of the positive impact the company has on the world and are deeply committed to making sure JM continues to be successful. In this context, the board has had particular focus on a number of key areas over the course of the last year. First, on a redoubling of our effort to drive the right health and safety behaviours; our performance this year was unchanged and so there is more work for us to do in this area. Second, on training and development of our people and effective succession planning. Third, on the reinforcement of a healthy and positive culture across the business, with particular focus on the board's key theme of 'doing the right thing'. In the latter, we have expanded and further embedded our ethics and compliance programme to ensure we are a responsible partner for our customers and that we stand up well to the increasing external scrutiny on corporations. Our board and senior team are clear about the role they play in all this; we are setting the right tone from the top to create a culture that drives success on all fronts.

## An effective board

We operate in an increasingly complex world of operational, commercial, geopolitical, environmental and financial opportunities and risks. A key job for the board is to ensure that the executive is enabled to manage the group's businesses effectively through the challenge that this difficult mix can create. With an appropriate balance of skills, diversity and experience, the board has become increasingly effective in carrying out this role. We make sure our Non-Executive Directors have a thorough understanding of JM's strategic priorities, in particular through focused teach-ins on specific areas of our business and markets.

A very positive external review, this year, of the work of the board underlined the board's open and collegiate way of working.

In November 2017, after five years on our board, Colin Matthews stepped down as a Non-Executive Director and Chairman of our Remuneration Committee. Colin contributed significantly during his time on the board; his wise counsel will be missed. Following his retirement, the board appointed Chris Mottershead as Chairman of the Remuneration Committee.

In November we were delighted to welcome John O'Higgins as a Non-Executive Director. He brings a combination of strong business credentials and deep industrial experience.

## A new Chairman

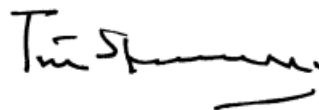
In July 2018, at the close of this year's annual general meeting, I will step down after seven years as your Chairman and hand over to Patrick Thomas. Patrick joins the board as Non-Executive Director and Chairman Designate on 1st June 2018. I am delighted that my colleagues have chosen him to succeed me. He has substantial experience in leading international speciality chemicals businesses and an impressive track record of driving growth through science and innovation across global markets. His extensive board experience and recent executive leadership of major global organisations means he will be a great asset to JM. I wish him every success in his role.

## Shareholder returns

Underlying earnings per share were flat this year as translational foreign exchange benefits were offset by higher net finance charges and a higher underlying tax rate. Nevertheless, confident in our prospects, the board is recommending a 7% increase in the final dividend.

## JM is well set for the future

Johnson Matthey is a great business with a proud history. Our 200<sup>th</sup> anniversary in 2017 was a remarkable achievement. World class science and a sure ability to spot opportunities have been at the base of the company's consistent delivery and success. I am confident that can continue long into the future.



Tim Stevenson  
Chairman

## Strategic Report

## Delivering our strategy – progress and priorities

Strategy	Strategic outcome	Progress in 2017/18	Priorities for 2018/19
<b>Sustained growth in Clean Air</b>	Market share gains. Expanded, enhanced capacity to meet growing demand.	<ul style="list-style-type: none"> <li>On track to move to circa 65% share of Light Duty diesel in Europe.</li> <li>Increased efficiency of manufacturing footprint and processes.</li> <li>Secured majority of expected platform wins in China and approved new plant to meet demand.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to enhance efficiency through procurement and automation in order to deliver broadly stable operating margin in 2018/19.</li> <li>Continued capital investment to deliver against customer needs.</li> <li>Secure new business wins in Light Duty Europe and in China.</li> </ul>
<b>Market leading growth in Efficient Natural Resources</b>	Growth ahead of market and enhanced margin.	<ul style="list-style-type: none"> <li>Managed the business more efficiently through: <ul style="list-style-type: none"> <li>Simplifying product and customer portfolio.</li> <li>Improved working capital management.</li> </ul> </li> <li>In addition, delivered cost savings from restructuring programme.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to grow sales ahead of market.</li> <li>Leverage efficiency actions to deliver enhanced margin (before restructuring benefits).</li> </ul>
<b>Break out growth in Health</b>	Be development partner of choice for innovator and generic companies and deliver £100 million additional operating profit by 2025.	<ul style="list-style-type: none"> <li>Jason Apter appointed Sector Chief Executive in March 2018.</li> <li>R&amp;D investment in new generic API product pipeline on track.</li> <li>Optimising manufacturing footprint.</li> </ul>	<ul style="list-style-type: none"> <li>Deliver value from manufacturing footprint optimisation.</li> <li>Continue to mature our generics pipeline.</li> </ul>
<b>Break out growth in New Markets from battery materials</b>	Focus on next generation high energy density market. Deliver leading product to gain share of next generation high energy density battery electric vehicle market.	<ul style="list-style-type: none"> <li>Stepped up R&amp;D investment to continue eLNO™s technology leadership.</li> <li>Further testing of eLNO by customers with continued positive feedback.</li> <li>Building out infrastructure: <ul style="list-style-type: none"> <li>Approved plans to build demonstration scale plant in the UK and first customer application centre.</li> <li>Design underway of first commercial plant, located in Europe and due to start production in 2021/22.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Progress technology development and infrastructure build out in order to commence sales of product for 'A cycle' testing with customers.</li> </ul>
<b>Relentless focus on operational efficiency</b>	Deliver £60 million savings through procurement.	<ul style="list-style-type: none"> <li>£12 million of cost savings from our restructuring programme in 2017/18.</li> <li>Continued focus on efficiency through: <ul style="list-style-type: none"> <li>Accelerated roll out of global procurement function.</li> <li>Continued investment in core IT systems upgrade.</li> <li>Improved average non-precious metal working capital days to 62 days (2016/17: 69 days).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Deliver additional £13 million restructuring savings to benefit 2018/19.</li> <li>Deliver savings from procurement.</li> <li>Roll out first and second waves of IT core systems.</li> </ul>
<b>Science and technology</b>	Sustain market leading positions.	Increased visibility across our R&D portfolio and polarised investment process. Developed eLNO market leading battery material product.	Further targeting of investments to high growth opportunities. Continued development of eLNO.
<b>Sustainable business</b>	Sustainability leadership.	Developed and launched new sustainable business framework and six goals to 2025.	Make progress towards achieving sustainable business goals throughout our businesses globally (see pages 16 and 17).
<b>Investing in our people and creating the right culture</b>	Peer group leading health and safety performance. Engaged and enabled workforce.	Continued emphasis on behavioural health and safety programmes although health and safety performance was flat. Engaged employees in strategy and priorities. Refreshed values.	Shape culture through: <ul style="list-style-type: none"> <li>Continued emphasis on health and safety, including process safety, to drive improved performance.</li> <li>Engaging our people. Roll out new values and behaviours and carry out second global opinion survey.</li> </ul>

# Chief Executive's statement

Q&A with  
Robert MacLeod

## **JM refreshed its strategy over the last 12 months. What has stayed the same and what has changed?**

The core of our strategy is largely unchanged: applying our science to solve our customers' complex and challenging problems. In refreshing it, we have sharpened its focus and set out clear plans that will deliver sustained growth and value creation for shareholders.

Our strategy stems from our vision for a cleaner, healthier world. So, we are investing in areas where our inspiring science enhances life: through cleaner air, improving people's health and by conserving our planet's critical natural resources. These are areas that will help us continue to build a sustainable business and accelerate our growth.

Today our science is world class and we will continue to invest in our science and technology to ensure that we maintain and enhance our world class capabilities. By applying it to the complex problems faced by our customers, we sustain leading positions in markets that are growing, driven by technology and therefore attract high margins. This is the source of the attractive return profile we generate in our business.

In refreshing our strategy, we have identified the areas where our technology will drive growth. Linked to this, we have also dialled up our efforts to operate more effectively across the group. These programmes will help us realise benefits across the whole group, enabling us to run the business more effectively and making us more agile and responsive to our customers.

The enthusiasm and contribution of JM's people are central across all aspects of our strategy, so no change there. But we are placing much more emphasis on helping them connect their contribution to our goals, on developing their capabilities and on developing the right culture; one that encourages us all to work together safely, sustainably, ethically and with respect for each other.



**Robert MacLeod**  
Chief Executive



## Strategic Report

### Would you say you've delivered operational performance in 2017/18 in line with your plans for the group?

Yes, we absolutely have. It has been a good year where we have achieved our short term objectives and have made significant progress in building the platform that enables us to execute our strategy through 2018/19 and beyond.

We started the year by reorganising into four new sectors: Clean Air, Efficient Natural Resources, Health and New Markets. These are aligned to the global challenges we tackle. Having developed the long term strategies for each of our sectors, we have moved swiftly into execution mode and are making good early progress.

We also have made significant strides forward on our groupwide enablers. We have accelerated the roll out of a global procurement function which is well on track to deliver around £60 million of savings over the next three years. We have initiated our Commercial Excellence programme and progressed our upgrade of IT systems. In addition, we have realised cost savings from our group restructuring programme.

Numbers wise, we have delivered sales and underlying operating profit in line with our expectations at the start of the year, and I am especially pleased with our disciplined management of working capital. Together, this demonstrates the sound running and management of the business.

If I look across our four sectors, once again Clean Air had a strong year. We improved the quality of our Efficient Natural Resources business and in Health we are better positioned as we optimise our manufacturing footprint and continue to progress our substantial active pharmaceutical ingredient (API) pipeline. The further development of our next generation battery material was a highlight this year and I am really excited about the speed of progress we are making and the plans we have to commercialise this product.

### Building on your last point, one can't escape headlines about air quality, vehicle emissions and how electric cars are the future. This clearly has implications for Johnson Matthey so can you explain your strategic priorities in this context?

When it comes to air quality, JM is part of the solution. We are working with our customers to meet the ever tighter emissions legislation as legislators push to improve air quality in cities. In Europe, we have developed products that enable emissions from diesel cars to be the same as those from petrol cars and, of course, that are lower than ever before.

We have been working alongside customers in the automotive supply chain for almost 50 years and are a trusted partner on technology. So as their markets and products are changing, we are expanding our portfolio with technologies to reduce and eliminate emissions that span the full range of powertrain options.

In our Clean Air Sector, our technology leadership, investments and focus on efficiency mean we have secured significant market share gains in Europe. These will deliver growth in the short to medium term, even as consumers' preferences move away from diesel powered cars. At the same time, we are actioning our strategic plans that will drive strong growth in the medium to longer term in Asia when the tighter emissions legislation comes into force in India and China.

Our progress in developing our Battery Materials business this year has been tremendous. This is JM science at its best. We have harnessed the full JM science and technology arsenal and our expert people across the whole company. In doing so, we have moved rapidly this year to become a technology leader. Our class leading material, which we call eLNO™, is delighting our customers in qualification tests and we announced our plans to significantly ramp up our investment to commercialise our eLNO technology. eLNO is not a product for today's market which focuses on hybrid vehicles; it is designed to enable large scale adoption of pure battery electric vehicles with greater range and lifetime. Our strategic plans are timed to deliver the very best performing technology to our customers as the market moves into high growth.

# Clear strategy and plans for growth; delivery underway and on track

## What investments are required in these areas, and across JM as a whole, to support your future growth?

Investment in our science and technology across all of JM, of course. I can't emphasise enough how good we are at translating our world class science expertise into solutions across the group and through our sectors. It is how we differentiate ourselves in our markets, and our refreshed strategy is providing us with increased focus and discipline in investing our R&D spend into areas of higher potential future growth. One such area is in our Health Sector where we are investing in our pipeline of new generic API products.

In addition to investments in battery materials manufacturing, we are making important investments in Efficient Natural Resources' facilities and have major capacity expansions in Poland and China for Clean Air.

We also continue to invest in strengthening the core of JM to simplify the way we do things, bring consistency to common processes and generate savings which we can reinvest in the business.

Our investments will enable us to capture growth in our markets and ensure we run our business as safely and effectively as possible. And underpinning all this is the investment we are making in our people.

## Can you tell us more about your people and the JM culture?

Great people are the force behind JM and so it is really important we get this right. Our employee survey, which we ran in November 2016, gave us a valuable steer on how well we are doing and over the last year we have done a lot of work in response to what we heard from our people. There were a lot of positives, but they also said they wanted to be clearer about our strategy so we are spending time not only to help them understand it, but to provide a clear line of sight between our strategy and their individual goals, helping them connect their contribution directly to JM's achievements and vision. At the same time, we are creating a more consistent approach across all areas relating to talent. There is more for us to do, but we are well on our way.

Beyond putting the right processes in place, we are doing a lot to make sure we have the right culture. Alongside our strategy refresh we have also refreshed our company values. That's not a decision we took lightly. But in doing so we now have a stronger set of values, and the behaviours that put them into action, that are true to our vision, will guide us to act ethically and support us in delivering our strategy.

Our culture and values must also drive the right behaviours when it comes to health and safety; it is a major priority for us and our performance this year was unchanged. I am determined that we must do better.

## Now that your Sustainability 2017 programme has come to a close, have you put anything else in its place?

Yes, we have. We have much to contribute to a more sustainable future.

Sustainability 2017 engaged our people and transformed our sustainability performance. It laid the foundations for our new brand and our vision; our refreshed business strategy has stemmed from these.

And now we have put in place our new sustainable business framework which, through its six challenging goals, continues our sustainability commitment but is more outward looking – towards our customers, communities and supply chains. It drives sustainable business practices for internal and external stakeholders, throughout JM's value chain. It also includes an important ambition: to make JM a truly diverse and inclusive organisation.

## JM celebrated its 200<sup>th</sup> anniversary in 2017. With the celebrations now drawn to a close, what would you call out as the highlights?

Reaching 200 is a rare achievement for a company and we were determined to recognise and engage our people and look to the future. In May 2017 we launched our new brand – inspiring science, enhancing life – which encapsulates what we do best and the positive impact we have on the world. It is already helping us build a stronger presence in our markets, connect with our customers and attract and retain great people.

Then on 19th July, the 200<sup>th</sup> day of our 200<sup>th</sup> year, everyone in JM around the world joined together for our global celebration during which we 'followed the sun', from Melbourne, Australia to San Diego, USA, with a broadcast live to staff for 24 hours. It was a really amazing day.

We closed events with our JM200 Awards which recognised the incredible work and contribution of our people. We announced our winners at a ceremony held at the Royal Institution in London, which made for a memorable and fitting end to our anniversary year.

## Strategic Report

### Finally, your thoughts on 2018/19 and beyond?

In July, at our AGM we will say goodbye to Tim Stevenson, our Chairman of seven years. It has been a huge privilege and pleasure for me to work with Tim during that time, including over the last four years in my role as Chief Executive. I'd like to offer him my personal thanks, and extend those of everyone associated with JM, for all that he has done for the company. We will miss him and wish him the all very best for the future.

We welcome Patrick Thomas as our new Chairman who brings a wealth of experience which I know will be extremely valuable to JM at this stage in its development. I am really looking forward to working with Patrick to take the business forward.

Our key priorities for 2018/19 are to deliver in line with our strategic plans for each of our sectors, continue to develop our technology and meet the milestones for our groupwide enabler programmes, as outlined on page 8. And we must focus our people: embedding our values to create a safer and ethical culture, acting on what they have said through our survey and ensuring everyone understands how they contribute to Johnson Matthey's success.


So, 2018/19 should see us continue to build our stronger business platform for the future. JM is a great company with strong opportunities for growth and a strategy that I am confident we will deliver. In doing so we will achieve our potential as a business, make our mark and leave the world a cleaner, healthier place.

### Outlook for the year ending 31st March 2019

We expect growth in operating performance at constant rates to be in line with our medium term guidance of mid to high single digit growth.

We expect the second half performance to be stronger mainly reflecting our normal seasonality.

At current foreign exchange rates, (£:\$ 1.354, £:€ 1.143, £:RMB 8.62), translational foreign exchange movements for the year ending 31st March 2019 are expected to adversely impact sales and underlying operating profit by £41 million and £6 million respectively.

 Pages 65 to 69 for the outlook for our four sectors



**Robert MacLeod**  
Chief Executive



# Group Management Committee (GMC)

From left to right

**Matthew Harwood, Chief Strategy and Corporate Development Officer**

Joined the GMC: August 2017

Matthew joined JM in August 2017. Prior to JM he was at Petrofac. Matthew leads the group's strategic planning and corporate development activities and works with the Sector Chief Executives to develop the strategy for our sectors.

**Alan Nelson, Chief Technology Officer and Sector Chief Executive, New Markets**

Joined the GMC: June 2015

Alan joined JM in June 2015 as Chief Technology Officer and now also leads our Battery Materials business and the rest of our New Markets Sector. Previously with The Dow Chemical Company, he leads our innovation portfolio, directs global research efforts and leads the implementation of business plans into new markets. He is also responsible for our sustainable business framework.

**Annette Kelleher, Chief HR Officer**

Joined the GMC: May 2013

Annette is our Chief HR Officer, leading the group's people strategy. Joining from Pilkington Glass in May 2013, Annette is responsible for the programmes to build talent and capabilities across JM in line with our group strategy.

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

Joined the GMC: March 2016

Jane joined JM from Borealis in March 2016 and leads the Efficient Natural Resources Sector, directing the strategy to deliver market leading growth. Jane also chairs the Brexit working group.

**Robert MacLeod, Chief Executive**

Joined the GMC and the board: June 2009

Having joined JM as Group Finance Director in 2009, Robert has been leading JM since June 2014 when he became Chief Executive.

**Anna Manz, Chief Financial Officer**

Joined the GMC and the board: October 2016

Anna joined JM as Chief Financial Officer in October 2016 to lead the group's finance activities, risks and controls. Joining from Diageo, Anna also leads our efforts to drive excellence and efficiency across JM's business.

**Jason Apter, Sector Chief Executive, Health**

Joined the GMC: March 2018

Jason joined JM in March of this year to lead the Health Sector. Bringing experience from the healthcare and life science industry from MilliporeSigma, Jason leads the strategy to deliver complex chemistry solutions for our customers.

**Simon Farrant, General Counsel and Company Secretary**

Joined the GMC: July 2007

Simon joined JM in 1994 as Senior Legal Adviser and became Company Secretary in 2001. Simon heads up our company secretarial and legal activities, including on ethics and compliance. He also acts as secretary to the board and its committees.

**John Walker, Sector Chief Executive, Clean Air**

Joined the GMC and board: October 2013

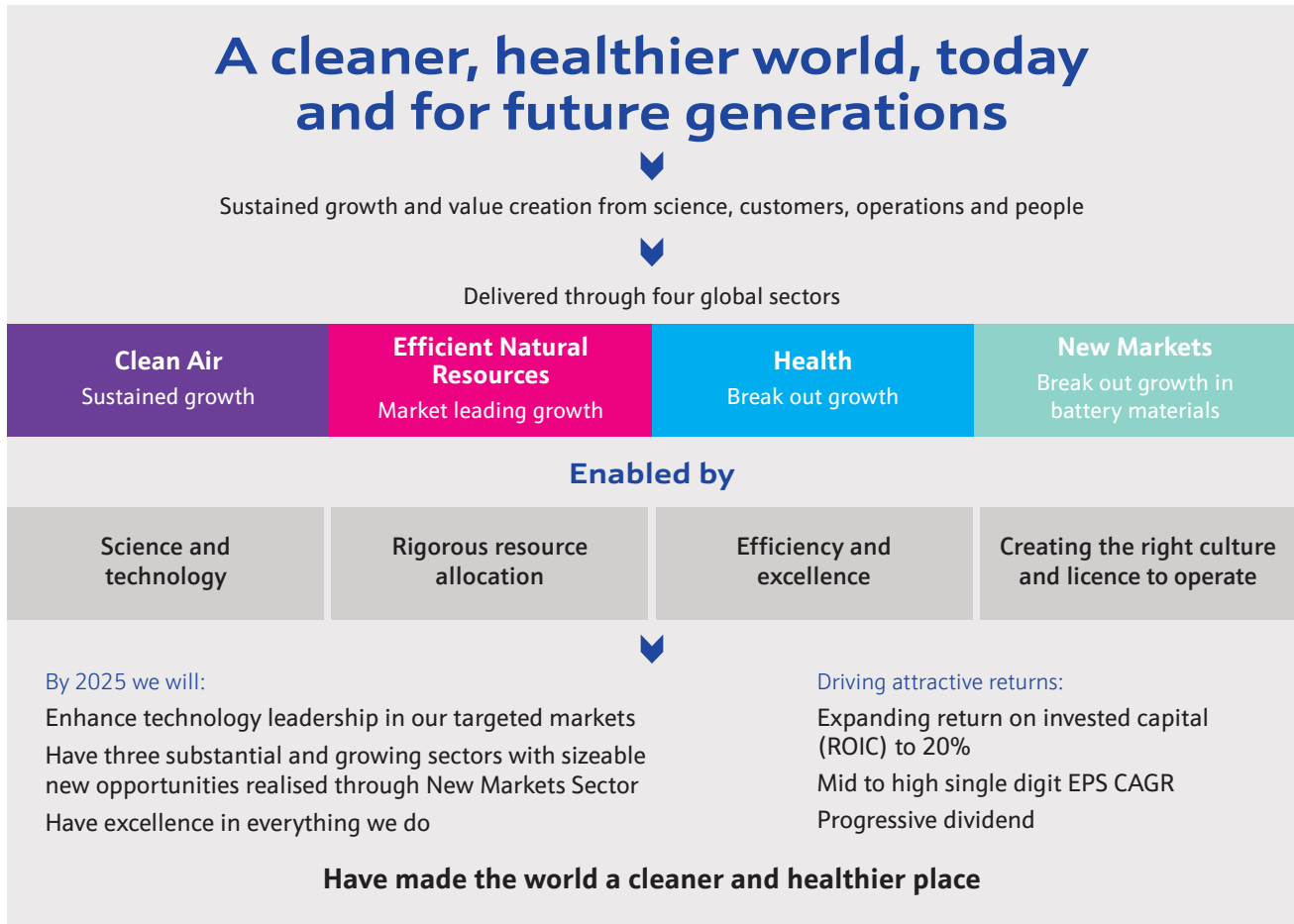
John joined JM in 1984 and has led our Clean Air Sector since 2009 after heading up its Asian business for many years. John also has board level responsibility for environment, health and safety.



Strategic Report

# Our strategy for sustained growth and value creation

**JM's competitive advantage is our world class science and technology. We use it to create long term value for our shareholders and a cleaner, healthier planet for everyone.**



## Groupwide enablers

### Support strategic delivery and generate savings to reinvest and drive growth in the business

Science and technology	Investment in world class science that delivers market leading positions
Rigorous resource allocation	Targeting the highest growth opportunities that deliver the most attractive returns in areas where our inspiring science enhances life
Efficiency and excellence	Common standards and processes, enabled by IT Developing future talent Improving working capital management Savings from procurement Optimising JM's value share from commercial relationships
Creating the right culture and licence to operate	Delivering our brand promise No compromise on health and safety 'Doing the right thing' without question Engaged and enabled people, ready to play their part

## Clean Air

Sustained growth from:

- Market share gains (already secured) in Europe
- Tighter legislation in Europe requiring higher value products
- Tighter legislation in Asia (China and India)
- Consistent growth in light duty catalyst market in North America
- Operational efficiency activities that support margin and ROIC

## Efficient Natural Resources

Market leading growth from:

- Focused investment in R&D to maintain and extend technology leadership
- Outperforming in selected, high growth segments
- Increased efficiency to enhance performance
- Extending capabilities into adjacent markets, geographies and technologies

## Health

Break out growth from:

- Enhancing our position as a technology partner of choice with innovator customers
- Driving value from existing generics business
- Commercialising our pipeline of new generic products

## New Markets

Break out growth in battery materials from:

- Commercialising our leading eLNO high energy cathode material
- Scale up through demo, pilot and full production scale; investment of more than £200 million from mid 2018
- Continued investment in next generation, best in class high energy battery materials
- Continuing to position other new businesses for growth

Our strategy directs investment choices across the group so that our people can translate our world class science and technology as efficiently as possible to solve our customers' complex problems and tackle major global challenges: the need for clean air, improved healthcare and the most efficient use of our planet's natural resources.

Our strategy will deliver sustained growth and value creation through:

- Investment in science and technology which accelerates growth and creates leadership
- Serving customers in growing, high margin, technology driven markets, aligned to global challenges and delivered through our four sectors
- Operating with a relentless focus on efficiency and excellence; maximising synergies and driving standard processes and ways of working where it makes sense to do so
- Attracting and retaining the best people into a culture that is true to our vision and that breeds success

View the presentation and transcript from our Capital Markets Day in September 2017



Strategic Report

# A new sustainable business framework to support value creation

**With our science, understanding and vision, we believe we have much to contribute to a more sustainable future.**

In March 2017 we came to the end of our Sustainability 2017 programme. In realising our Sustainability 2017 Vision, we engaged our people, made Johnson Matthey a safer place to work and built our reputation as a world leading manufacturer of sustainable technologies. Over ten years we transformed our business and our sustainability performance, halving our operational carbon footprint and our use of energy and water per unit of sales.

Sustainability 2017 laid the foundations for our new brand: inspiring science, enhancing life; and our vision for a cleaner, healthier world. Our refreshed business strategy has stemmed from these.

All of this provided a powerful impetus for rethinking our business and how we wanted to further embed and integrate sustainability. It was time to move forward and increase our ambition for building a sustainable business.

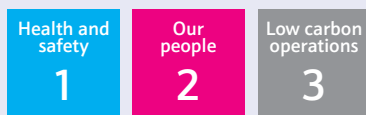
## Several inputs steered our new sustainable business framework

In developing the next phase of our sustainable business framework, we recognised that the world had moved on. External stakeholder expectations had increased, and customers and investors now are looking increasingly for evidence of sustainable practices. Regulation has also increased in our field. And in the bottom line savings of £142 million that we achieved during Sustainability 2017, we knew that a new framework would once again provide business benefits.

We also considered the UN Sustainable Development Goals (UN SDGs) and identified six of the UN SDGs where we can make the biggest positive impact. The six are:



## Our sustainable business goals – what have we continued and what’s new?



**Goal 1: For health and safety, aspire to zero harm.**

This goal continues our Sustainability 2017 target. It is the same goal with the same ambitious KPIs and target. We measure our lost time injury and illness rate (LTIIR) and total recordable injury and illness rate (TRIIR).

**Goal 2: Ensure JM is a truly inclusive organisation that fosters employee engagement and development within a diverse and global workforce.**

This is a new goal which acknowledges the crucial role our people play in delivering our vision and strategy.

**Goal 3: Reduce our greenhouse gas (GHG) emissions per unit of production output by 25%.**

This goal continues our commitment to reducing the environmental impact we have through GHG emissions from our operations. Whilst similar to our 2017 target (where we measured GHG emissions relative to sales), in our goal to 2025 we are measuring relative to production output to drive operational improvements further and reduce the impact of our business on climate change.

## Our framework and our six new sustainable business goals

The outcome is a new sustainable business framework aligned to our brand, vision and strategy. It continues our sustainability commitment but is more outward looking – towards our customers, communities and supply chains. It drives sustainable business practices for internal and external stakeholders, throughout JM's value chain.

The framework comprises six new goals:

	Sustainable business goal	Sustainable business KPIs	Baseline	2016/17	2017/18	2025 target
Health and safety <b>1</b>	For health and safety, aspire to zero harm	Annual TRIIR	TRIIR in 2016/17	1.00	0.93	0.6
		Annual LTIIR	LTIIR in 2016/17	0.48	0.48	0.2
		Annual OSHA severity rate	Rate in 2016/17	11.2	12.2	6.0
Our people <b>2</b>	Ensure JM is truly inclusive, fostering employee engagement and development within a diverse global workforce	Employee engagement index score (%)	2016/17	61%	–	73%
		Employee enablement index score (%)	2016/17	62%	–	72%
		Diversity and inclusion plan implementation (%)	2016/17	0%	13%	100%
Low carbon operations <b>3</b>	Reduce our greenhouse gas (GHG) emissions per unit of production output by 25%	Annual GHG emissions (Scope 1+2) / tonnes manufactured product sold	CO <sub>2</sub> eq emissions intensity for 2016/17	3.8	3.4	2.8
Responsible sourcing <b>4</b>	Improve sustainable business practices in our supply chains	Tier 1 strategic suppliers assessed and compliant with Supplier Code of Conduct	% of Tier 1 strategic suppliers assessed in 2017/18	Not measured	11%	100%
			% of these compliant with the code	Not measured	73%	100%
Sustainable products <b>5</b>	Double the positive impact that JM's products make to a cleaner, healthier world	Annual sales giving contribution to UN SDGs	2017/18 sales data against UN SDG indicators (% of group sales)	Not measured	85.8%	>90%
		Annual aggregation of product sustainability benefits in key areas	Tonnes of pollutants removed	Not measured	3.31m	6.62m
			Number of lives positively impacted	Not measured	138,000	920,000
		Tonnes of GHGs removed (CO <sub>2</sub> eq)	Not measured	10.6m	21.2m	
Community engagement <b>6</b>	Increase our volunteer work within our local communities	Cumulative number of volunteer days across JM	Number of employee volunteer days across JM in 2017/18	Not measured	678	50,000



**Goal 4: Improve sustainable business practices in our supply chains and, through collaboration, ensure full compliance with our minimum standards from strategic suppliers.**

Goal 4 is new. Through our Supplier Code of Conduct (in place since 2017) and other responsible sourcing policies, goal 4 will bring about a new standard of transparency and vigilance.

**Goal 5: Double the positive impact that JM's products, services and technologies make to a cleaner, healthier world.**

Goal 5 is also new. Here we aim to double the impact that our products, services and technologies can make on a cleaner, healthier world.

It drives us towards our JM vision.

**Supported by our new sustainable business framework of six goals, we believe we can achieve our vision through our inspiring science; our collaboration with customers; our operations and their commitment to sustainable practices; and our great people.**

**Goal 6: Increase the use of volunteer hours to support our community and charity partners through the JM employee volunteering programme.**

Goal 6 is new and continues our community involvement with a formal target. Through this target we aim to support our communities and also provide personal development opportunities for our people.



# How we create value

## What we use

### Knowhow and intellectual capital

JM's competitive advantage is its science and technology. We use our industry leading capabilities across our sectors. We own patents covering our science, technology and processes.

### Financial

We invest for growth using equity from our shareholders, raised debt and cash flow delivered by our sectors.

### Customer relationships

We draw on our deep relationships with customers to understand how best to apply our science to solve their problems.

### Natural resources

We source raw materials responsibly and use them as efficiently as possible. We also recycle platinum group metals (pgms).

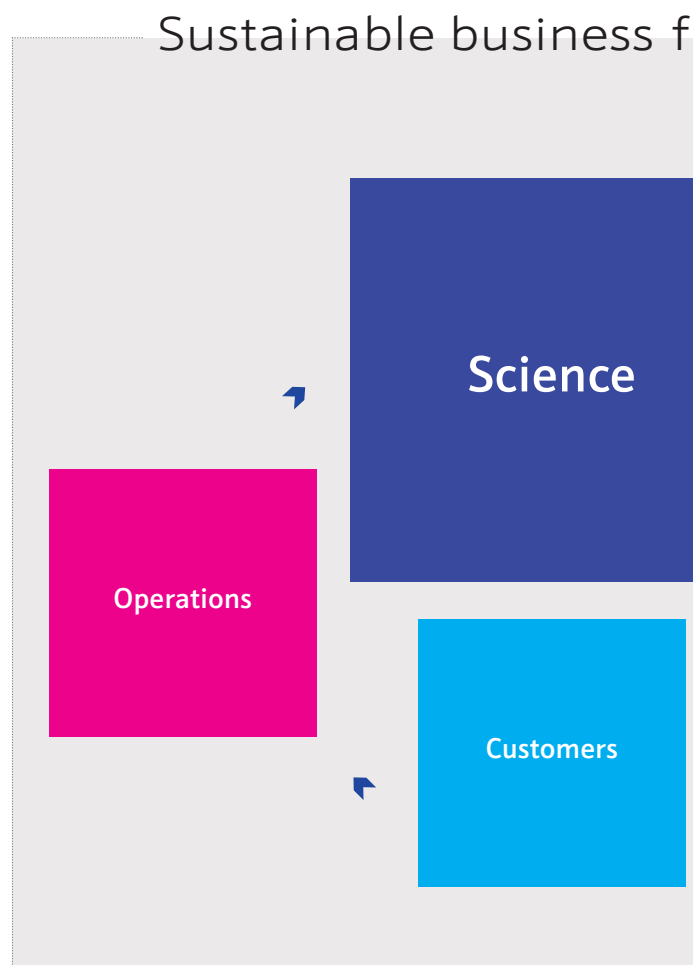
### Manufacturing operations

We have a global network of manufacturing plants, application centres and laboratories.

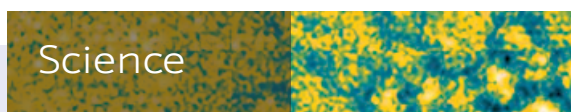
### People

Our 14,000 people bring the talent, expertise and innovative thinking needed to drive growth and efficiency in JM.

**We create sustained value and growth through the effective use of our resources and our relationships. We act in line with our core values which, together with our sustainable business goals, drive us towards our vision for a cleaner, healthier world.**



## How we use it



Our science has been established over many years. We invest in it and in our scientific talent. Our skill and knowledge is acknowledged across the scientific community and amongst customers.

We have a set of nine core science capabilities (see page 26) which we use across JM. They provide us with fundamental insights about materials, their design and then the control of their activity through chemical and functional manipulation.

Our competitive advantage is in combining knowledge of the fundamental science with commercial and scalable solutions, potentially customised for each and every customer.

This combination enables us to outperform in our target markets, and creates high barriers to entry.

Our customers choose us because of our technology.

Pages 25 to 31



Our science directs where we play. We apply it in technology driven markets and generate high margins from it. This drives high returns.

Our customers are mostly other industrial companies, operating in the transport, energy, chemicals and healthcare segments.

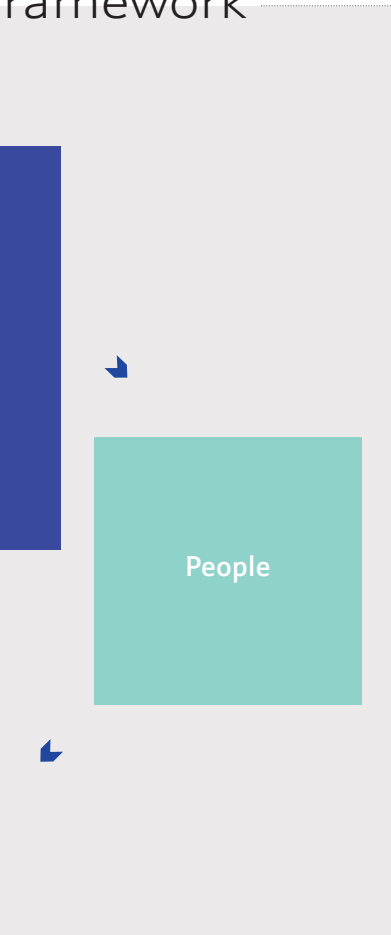
We work closely with them to develop solutions which enable them to bring their products to market faster, improve the performance of their products and reduce their environmental impact.

We provide them with functional components that help them create more sustainable products and solutions. We also provide specialist services such as the refining and recycling of pgms and process technology used to design chemical plants.

Collaboration and strong relationships with our customers are crucial in providing a high quality tailored service. Together, we put our inspiring science to work to enhance life.

Pages 32 to 37

# framework



## The value we create

## How we measure value

Outcomes	Key performance indicators
<b>For society</b> Cleaner, healthier world	Operational carbon footprint Positive impact of JM's products
<b>For shareholders and other stakeholders</b> Attractive returns Taxes paid to authorities	Sales growth Underlying operating profit margin growth Underlying earnings per share ROIC Average working capital (excluding precious metals)
<b>For our people</b> Strong culture Employment and opportunities	Health and safety Employee engagement
<b>For our company</b> Cash to reinvest in our science, infrastructure and people	Technology leadership through R&D investment

Key performance indicators  
 Pages 22 to 24



## Operations

We continue to improve our global standards and systems to enable us to operate every aspect of our business efficiently: from strategy to supply chain, from innovation to IT.

Our global manufacturing operations create highly specified physical products for our customers.

We manufacture efficiently and responsibly to drive economic and environmental performance and have programmes in place to optimise our manufacturing assets.

We invest in our manufacturing capacity to meet customers' future demand and have the ability to flex our cost base if our markets slow.

We demand high returns from our investments, with a target of at least 20%, which drives continued improvement in operational efficiency.

Pages 38 to 47



## People

Everyone in JM plays their part in taking ideas from the lab to full scale commercial success.

We hire the best people with the right skills and support them in an innovative culture that encourages them to develop and grow.

We are driven by values which means we always keep each other safe, work with clear intentions and respect, and do the right thing for our people and our planet.

They are supporting us as we are evolving to take decisions more quickly, to be more open-minded to new possibilities, to share more and stay confident through times of uncertainty.

Our values provide the strong foundation from which we are creating a cleaner, healthier world.

Our people are motivated by working for a company that is 'making a difference' and this is an important differentiator in attracting and retaining the very best.

Pages 48 to 59

Strategic Report

# Shaping our strategy with our stakeholders

**Our vision is for a world that's cleaner and healthier, today and for future generations and our strategy is designed to achieve it. Our stakeholders are crucial to our long term success. Their views inform and help shape our strategy. We work together with them as we execute it; they input into it and benefit from the value it creates.**

 Pages 18 and 19: How we create value

We always seek to engage with and listen to our stakeholders to understand their views. We tailor this in different ways for our different stakeholders so that it encourages them to share with us what they expect or need from us, or tell us about any concerns.

## Customers

By working closely with our customers, we aim to provide them with the best solutions and excellent service.

## Investors

JM is listed on the London Stock Exchange and is a constituent of the FTSE 100. We provide investors with fair, balanced and understandable information about the company, its performance and prospects. We encourage two way conversation and regularly seek their feedback.

## Governments and trade associations

We inform and contribute to debate, mostly in areas where our science and technology expertise can have a positive impact. We see our role as being a technical expert.

### Why we engage

Understanding customers' complex problems helps us research, develop and apply our science to give them the best solution to their challenges.

By providing open and transparent information and engaging in two way dialogue, investors are able to make informed investment decisions.


Policy and regulatory changes affect many aspects of our business. They create a framework in which we must operate and their impact on our customers can provide opportunities for growth.

### Our impact


We provide class leading scientific solutions that contribute to a cleaner, healthier world.

Feedback from investors forms part of the board's strategic discussions.

By sharing information about what is technically possible, we have provided useful insight for policymakers in areas such as vehicle emissions legislation.

 Pages 32 to 37

 Page 55

 Page 55

 Page 23

 Pages 97 and 98

**3** **5**

 Pages 22 to 24

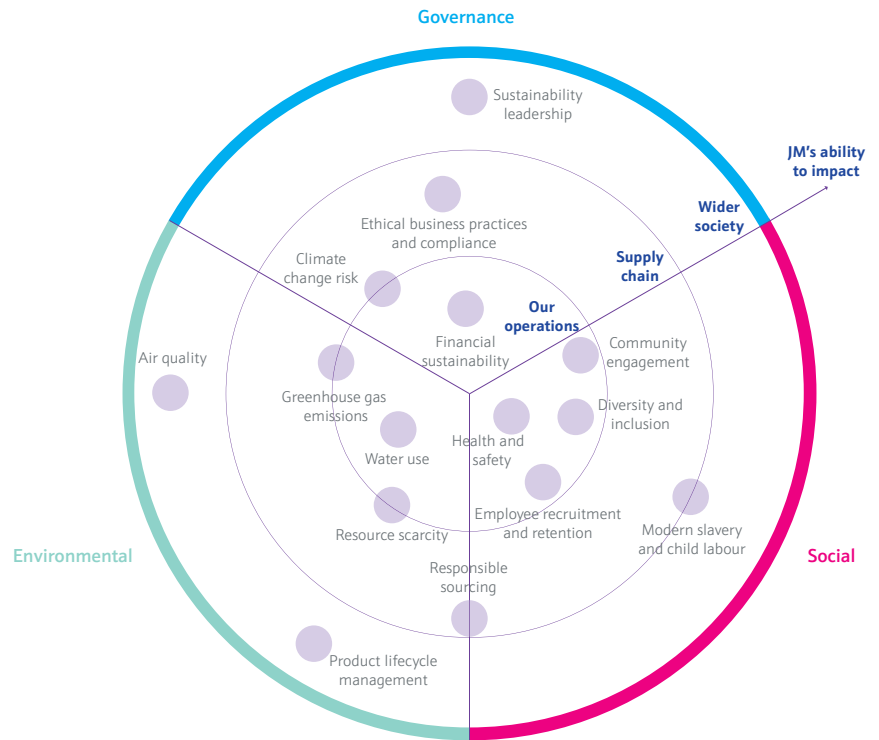
## What matters most

Our regular materiality assessment helps us to focus on the areas that matter most to our stakeholders and where we make the greatest positive or negative contribution to society. From it we define our material areas. We review them every year, either by engaging with our stakeholders through an external consultancy or by conducting our own internal review. In 2017/18 we carried out an internal review which considered feedback from stakeholders gained through our interactions with them during the year.

Pages 204 and 205: GRI Standard Content Index

## Materiality map

The map below highlights the areas of focus for JM which we have identified as key to our business and most important to our stakeholders.



## Suppliers and other partners

We work closely with our core suppliers. We also participate in collaborative scientific programmes with other companies and academic experts.

Dialogue with suppliers is essential to mitigate risks in the value chain and ensure a responsible approach. Collaborative relationships with other science experts in industry and academia furthers our technical expertise.

Our Supplier Code of Conduct aims to ensure responsible behaviours in our value chains. Our scientific collaborations create mutually beneficial outcomes for JM and our partners.

Pages 28 and 29

Pages 40 to 42

4

## Our people

Our people drive our business. We want them to be engaged with our vision and to feel confident that they are coming to work in a safe, ethical and inclusive environment.

High levels of engagement and enablement in a safe, sustainable and supportive culture contributes directly to JM's success.

Our employee engagement survey helps us to focus on the areas that matter most to our people.

Pages 48 to 59

Page 24

1 2

## Communities

Our operations are part of local communities around the world. We strive to be a good citizen and provide high quality employment opportunities.

We engage with communities to understand how we can make a positive impact, in line with our vision for a cleaner, healthier world.

Our community investments around the world support local projects through provision of cash and through volunteering.

Pages 54 and 55

6

Strategic Report

# How we measure performance

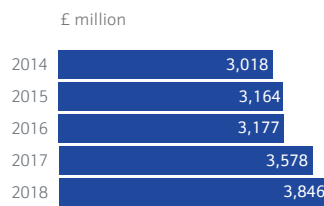
## We have ten key performance indicators (KPIs) which we use to measure our financial and non-financial performance.

Our KPIs measure progress against our strategy. Our performance against our KPIs is explained below.

### Group financial objectives

#### Growth in sales excluding precious metals (sales)

Monitoring sales growth at constant currency is a measure of the growth of the business. In many cases, variations in the value of the precious metals contained within our products are passed directly on to our customers. Therefore to measure the growth of the group, we use sales excluding the value of precious metals.



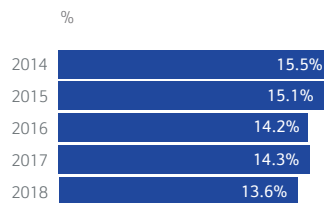
#### Performance in 2017/18

In 2017/18, sales grew by 8% to £3,846 million including a translational foreign exchange benefit of £33 million. Excluding this, sales grew by 7% (2016/17: 3%), with good growth in Clean Air, Efficient Natural Resources and Health partially offset by lower sales in New Markets.

[Pages 60 to 73](#)

#### Underlying operating profit margin

Underlying operating profit margin is a measure of how we convert our sales into underlying operating profit and a measure of efficiency in our business. We aim to increase our operating margin year on year as we: improve our efficiency to take costs out, improve our effectiveness as we focus on higher value add products for our customers, and as we introduce new products through innovation to serve our customers' changing needs.



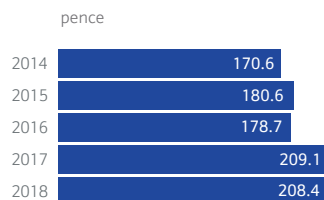
In 2017/18, underlying operating margin declined to 13.6% (2016/17: 14.3%). This was due in part to lower margin in Efficient Natural Resources, impacted by reduced licensing income year on year and where we invested in the business to improve its effectiveness and efficiency. Margin also declined in Health as we took actions, with associated costs, to optimise our manufacturing footprint.

[Pages 60 to 73](#)

#### Underlying earnings per share

Underlying earnings per share is the principal measure used to assess the overall profitability of the group. The following items are excluded from underlying earnings as they do not allow for a consistent comparison of performance between financial years:

- Amortisation and impairment of intangible assets arising on acquisition of businesses (acquired intangibles).
- Major impairment and restructuring charges.
- Profit or loss on disposal of businesses.
- Gain or loss on significant legal proceedings together with associated legal costs.
- Tax on the above and major tax items arising from changes in legislation.

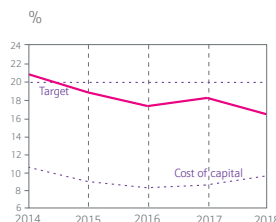


This year, underlying earnings per share decreased to 208.4 pence due to underlying operating profit growth of 2% offset by higher net finance charges and a higher underlying tax rate. A reconciliation from underlying profit for the year to profit for the year attributable to equity shareholders is given in note 4 on page 153.

[Page 153](#)

#### Return on invested capital (ROIC)

JM's business model of applying world class science efficiently to solve customers' complex problems generates high returns. We define ROIC as underlying operating profit divided by the monthly average capital employed, defined as equity plus net debt. ROIC for individual sectors is calculated using average monthly segmental net assets as the denominator.



The group's ROIC decreased from 18.2% to 16.4%, mainly due to an increase in the UK pension fund asset and higher precious metal working capital through the year.

[Page 73](#)

#### Average working capital (excluding precious metals)

Average working capital days (as defined on page 191) is a measure of efficiency in the business with lower days driving higher returns and a healthier liquidity position for the group. We exclude precious metals as our precious metal working capital is a function of our customers' choices and therefore not fully under our control. It can have a material effect on the group's working capital days.

# 62 days

Our average working capital days (excluding precious metal) improved by 7 days. This reflects our continued focus on, and disciplined management of, working capital across JM.

[Page 73](#)

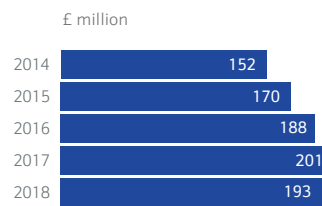
## Group non-financial objectives

### Science

Performance in 2017/18

#### Gross research and development expenditure

Johnson Matthey's strategy delivers sustainable growth through applying science and technology to meet the global challenges and opportunities from clean air, improved health and efficient use of natural resources. To maintain our competitive advantage and enable future growth, we invest in research and development.



The group's research and development expenditure decreased this year by 4% to £193 million, although our output was maintained, as we increased our focus and discipline in investing into areas of higher potential future growth.

[Pages 25 to 31](#)

### Customers

#### Positive impact of JM's products

JM uses its science and technology expertise to create products that have a positive impact on the planet. We track progress towards our vision for a cleaner, healthier world by measuring the percentage of our sales that come from products that make a positive contribution to the UN's sustainable development goals (UN SDGs).

% sales from products contributing to UN SDGs

# 85.8%

In 2017/18 the percentage of sales from products that positively contributed to the UN SDGs was 85.8%. Our sustainable business goal is to increase this to >90% by 2025.

[Pages 17, 35 and 202](#)

5

We are developing a KPI relating to a common, groupwide customer satisfaction measure (see page 35). We aim to report this KPI next year.

### Operations

#### Operational carbon footprint per unit of production output

Our operational carbon footprint, reported in tonnes of carbon dioxide equivalent (CO<sub>2</sub> eq), includes Scope 1 and Scope 2 emissions. We normalise our carbon emissions based on production output. The denominator is defined as 'tonnes of manufactured product sold externally' and only sold products manufactured on JM premises are included. A detailed definition of this KPI is provided on pages 201 and 202.

CO<sub>2</sub> eq emissions intensity

# 3.4

This year the group's operational carbon footprint per unit of production output reduced from 3.8 to 3.4 tonnes CO<sub>2</sub> equivalent per tonnes of output. This is due to concerted action across our operations as described on pages 39 and 40.

[Pages 39, 40, 47, 201 and 202](#)

3

We are developing a KPI relating to the Overall Equipment Effectiveness (OEE) of our manufacturing operations. This measures the percentage of manufacturing time that is truly productive. We aim to report this KPI next year.

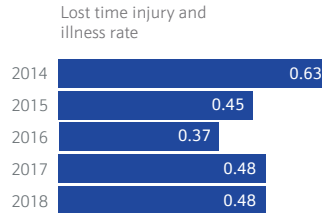
Strategic Report

People

**Health and safety**

Making sure our people go home in the same, or better, state than when they came to work is everyone's responsibility in JM. That's why we place huge emphasis on health and safety. We drive the right behaviours through our values and through health and safety programmes across the group. Rigorous health and safety systems apply across all facilities and we actively manage our safety performance through monitoring the incidence and causes of accidents that result in lost time.

Lost time injury and illness rate (LTIIR) is defined as the number of lost workday cases per 200,000 hours worked in a rolling year. A detailed definition of this KPI is provided on page 201.



The group's LTIIR was unchanged this year at 0.48 although we continued to focus on improving behavioural safety across JM. We continue to build a world class health and safety culture. However, this year we saw our performance plateau. Actions have been taken and new measures put in place to ensure that we improve our performance.

➤ Pages 49 to 51: Our approach to health and safety

1

**Employee engagement**

An engaged workforce is a key driver of performance. Our global yourSay survey, carried out every two years, looks at the key drivers of employee engagement. Further details are provided on pages 52 to 55.

We use employee engagement as a measure of how committed and motivated our people are to give their best to Johnson Matthey.



Our employee engagement score in November 2016 was 61%. This was our first ever survey and we will carry out our second in September 2018.

➤ Pages 52 to 57: Further details of what we've been doing to engage our people over the last year

2

**Sustainable business goals**

Progress towards four of our six sustainable business goals is described in the above KPIs. Our progress towards the remaining two goals is as follows:

**4** Our responsible sourcing goal measures improvements in sustainable business practices in our supply chains. We track the percentage of Tier 1 strategic suppliers assessed and compliant with JM's Supplier Code of Conduct. 2017/18 is our first year of measurement. In the year, 11% of Tier 1 strategic suppliers were assessed and of those 11%, 73% were compliant with the JM code.

**6** Our community engagement goal measures the cumulative number of volunteer days undertaken by JM's employees. Our target is 50,000 days by 2025. In 2017/18, the first year of our goal, our employees undertook 678 volunteer days.

# Science

World class science and technology is at our core. We have world class scientists and we use our world class expertise to solve complex problems for our customers, drive growth for JM and help make the world cleaner and healthier. In a world which is becoming increasingly challenging, our expertise in science and our ability to scale it up, is a competitive advantage. That competitive advantage enables us to build close collaborative relationships with current and future customers.



Strategic Report

# We apply our science and technology expertise in high margin, technology driven growth markets.

We choose markets where the combination of our broad expertise and our customer focus gives us leadership. We then sustain our leadership positions through a virtuous circle of investment in research and development.

### Our science and technology is our source of competitive advantage

We invest in it and in our talent. Our skill and knowledge are acknowledged across the academic and commercial scientific community and amongst our customers.

We have nine core areas of world class scientific capability, developed over many years. Together they give us the ability to provide fundamental insights about materials, their design and then the control of their activity through chemical and functional manipulation.

But it is not just about these scientific capabilities alone. Our competitive advantage is in combining knowledge of the fundamental science and technology, with commercial and scalable solutions, potentially customised for each and every customer. This combination allows us to outperform in our target markets and creates high barriers to entry.

We focus on the complex and the difficult. And we don't compete on price – we win based on our technology. Our scientific capabilities give us the opportunities to drive growth.

### World class science capabilities

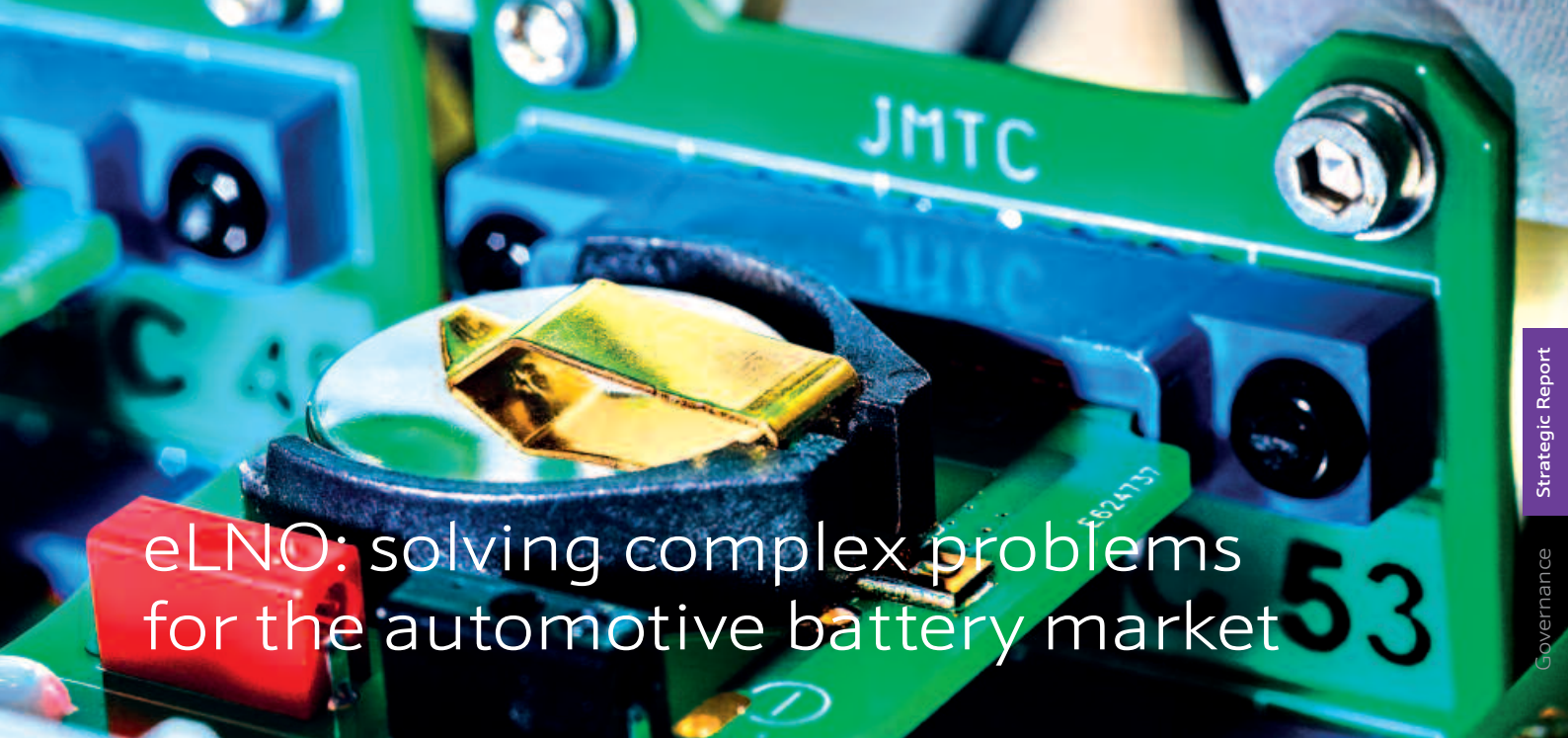
 Characterisation and modelling	 Chemical synthesis	 Material design and engineering
 Product formulation	 Process optimisation	 Surface chemistry and coatings
 Pgm chemistry and metallurgy	 Catalysis and advanced materials	 Electrochemistry

### Cleverly applied

 Provision of customised solutions
 Development of new and next generation products
 Scale up of complex manufacturing

### Value for JM

Solutions for customers



# eLNO: solving complex problems for the automotive battery market

**Enabling people to breathe cleaner air is close to our heart and evident in many of our current markets and products. As alternative powertrains, such as battery powered vehicles, become more mainstream and governments legislate to support their adoption, our researchers are at the forefront of technological advances and development of materials – providing customers with the performance and consumers with the confidence required of battery powered vehicles. Adoption of battery powered vehicles will have a positive impact on cleaner air, and that’s important to us.**

Last September, we announced our investment in automotive battery materials and the new cathode material – eLNO™.

We developed this material through a truly collaborative programme, from nine locations across the UK, Germany and North America, applying our knowledge of base metal chemistry, formulation and testing, modelling and electrochemistry across the materials supply chain. Our relationship with the automotive industry, and understanding their requirements for energy density, power, lifetime and security of supply for materials, have focused our effort on the key enablers for this technology. Our innovation delivers a step change in energy density that, in the end, improves both performance and cost to drive mass electric vehicle adoption across vehicle platforms.

More than a materials manufacturer, we are committed to using our core competencies to understand electrode structure and applications testing to further drive up energy density of our cathode materials. Together, our knowledge of materials engineering, coatings science and electrochemistry span all aspects important to battery material performance.

This deep appreciation of how the cathode material operates and the structure and function of the materials at an atomic scale means we can model and predict how changes to the material affect performance. Combined with applications testing we understand how our materials perform under different operating conditions which enables us to deliver the material’s performance, lifetime and safety specifications required by our customers.

We use this expertise to optimise our materials for different automotive customers and platforms. Working with our teams on formulation, scale up, applications testing, and manufacturing means we can translate these insights into a deliverable product. In 2016, the battery market represented 50% of the global cobalt demand, compared to 36% of the global lithium demand. With the recent increase in cobalt prices, our ability to thrift cobalt, much like we’ve done in platinum group metals in autocatalysts for well over 40 years, is a key market differentiator for JM.

Strategic Report

**Innovating to realise value**

Innovation is realising value from knowledge. We do this by identifying a customer need and understanding the value that can be delivered through applying our science. This could be a new technology in a new area or a next generation product developed through refining and optimising. We focus on solutions for cleaner air, improving people's health and the most efficient use of our planet's natural resources. Our strength comes from the interrelationship of our world class science capabilities and the value they deliver when applied to a solution to a customer's complex, difficult problem.

We do not innovate in isolation and it's our strength of understanding across the value chain that accelerates our progress. We work closely with universities around the world to supplement our knowledge. We also sponsor students through their PhDs which allows us to access a stream of talented young scientists and engineers at the forefront of scientific discovery.

We are proud of our science and technology. Success comes from combining our core capabilities with smart manufacturing to develop new products and processes. This approach is important from initial R&D right through to customer support and collaboration.

Our broad science capabilities enable us to design new materials. Our deep expertise in characterisation and modelling underpins everything. We use this capability to understand processes and chemistry at atomic level. Then, by combining it with our access to world class capabilities in computational modelling, we can predict how materials and catalysts will behave, deliver results faster and supply better performing, longer lasting, more cost effective products.

**Opening innovation with a new approach to collaboration**

We believe that collaboration and diversity are central to effective innovation. Bringing in new skills, fresh thinking and different perspectives is crucial. If you can combine and apply that breadth of knowledge and knowhow, you can create exponential value.

Among the many industry verticals in which we operate, the agricultural sector is familiar to us. We bring our world leading catalytic science to the manufacture of fertilisers and other agrochemical intermediates. Now we are exploring ways to use our broader capabilities, from formulations and coatings to advanced manufacturing techniques, to help develop new opportunities and address critical market challenges in the agriculture market. There is no monopoly on great ideas.

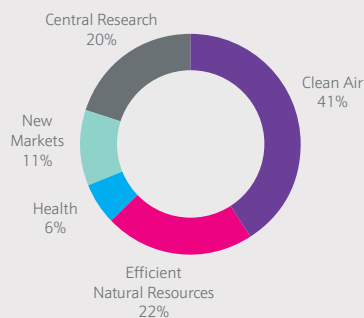
That's why, alongside the work we do within JM, we're building external partnerships with activities like our AgTech pilot programme with Cranfield University. Earlier this year, we sought applications from entrepreneurs, start-ups or businesses especially working in certain specific agricultural areas. Three companies were chosen and given an opportunity to develop their product or idea within an intense programme of collaboration and scientific and management support.

**Investing in the areas of highest potential growth**

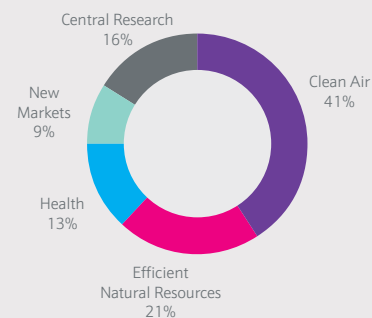
Science lies at the heart of our company. We invested £193 million in R&D in 2017/18, including £18 million of capitalised R&D, which represents 5% of sales. Our spend was 4% lower than last year, although our output was maintained, as we invested with greater discipline and efficiency into areas of higher potential return.

To ensure our R&D investment is accelerating revenue growth opportunities as effectively as possible, we apply a high level of rigour to manage and prioritise our R&D programmes. Delivery of our vision for a cleaner, healthier world requires an innovation strategy to prioritise and manage our technology investments. By looking at our strategic aims as an organisation, we can map the technologies, areas of expertise and investment we need.

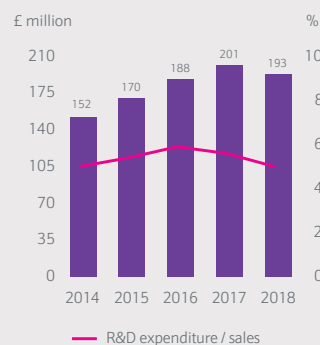
**R&D employees**



**Distribution of R&D expenditure**



**Gross R&D expenditure**



The commercial and technical leadership teams work closely to ensure objectives are aligned.

We apply active R&D portfolio management with stage gating processes and a cross cutting approach for discovering new innovations and customer solutions. This ensures we're creating new sources of growth through innovation and aligning our investments to drive higher returns. This requires a strong relationship between R&D and new business development to drive opportunity assessment in new technologies and new markets, in line with our group strategy. Our Chief Technology Officer ensures that we have the right expertise and the right oversight to investigate the opportunities in our businesses and deliver customer focused technology.

The project portfolio is underpinned by a robust New Product Introduction (NPI) process, and is reviewed to ensure it will deliver our growth ambitions from the next generation of products, to step-out technology. Having this visibility of our R&D investments means we can make sure the balance of projects is right to meet our strategic growth plans.

The majority of our 1,450 science and technology employees are based in our businesses, developing products and processes for our customers. They are supported with fundamental science from our corporate research facilities in the UK, USA and South Africa (as detailed on the map below). Together we collaborate to deliver world class science that our businesses can convert to customer solutions.

The research we undertake covers development of the next generation of products in close liaison with our customers, through to supporting the advancement of our underpinning capabilities and fundamental research to keep us at the forefront of our fields. Externally, we partner with other organisations in funded programmes supported by the UK, EU and USA, giving us access to a wider talent pool of exceptional scientists, and allowing us to explore new opportunities through collaboration whilst sharing risk.



**Savannah, USA**

- Zeolite design and manufacturing support
- Analytical chemistry



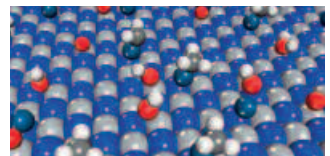
**Billingham, UK**

- Manufacturing science centre
- Zeolite powder R&D
- Reactor engineering



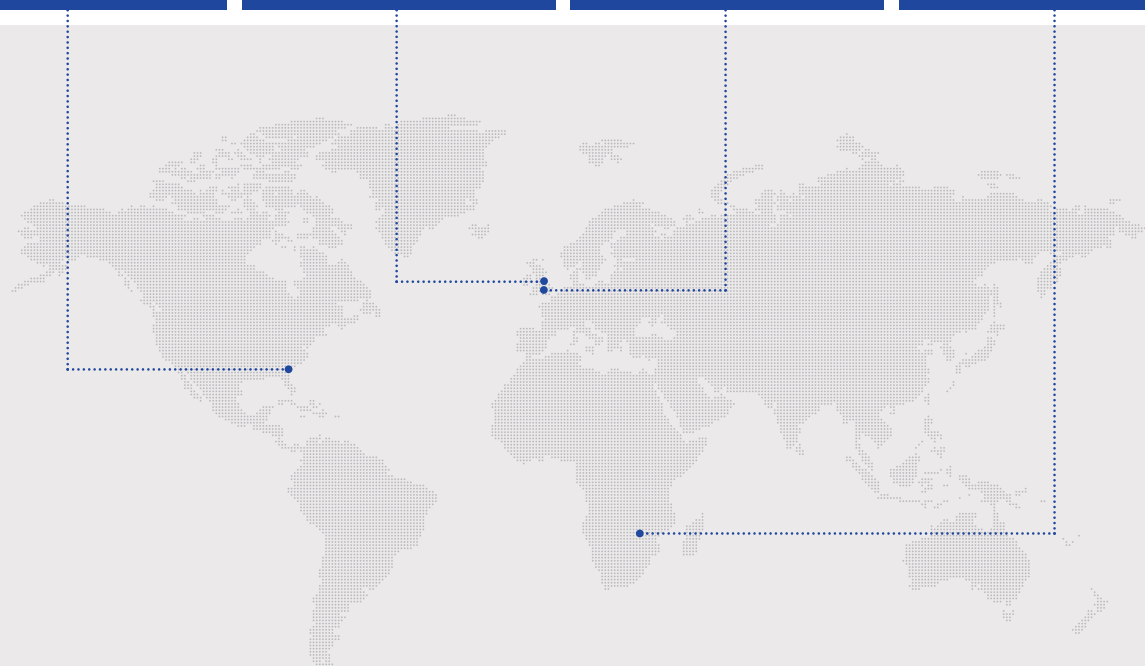
**Sonning, UK**

- Catalysts and materials
- Advanced materials characterisation
- Refining



**Pretoria, South Africa**

- Computational modelling
- Materials design



## Applying our science to new areas

**Platinum group metal (pgm) chemistry is an area of deep and longstanding expertise for JM and we look for new areas where our experience can bring benefit. One such example is an escape hood used by first responders to protect them from carbon monoxide (CO) poisoning. The problem with conventional solutions was that the catalyst for removing the CO gas was deactivated by components in the carbon adsorbent used in the masks.**

Through accessing our breadth of science capabilities and collaboration with our customer, Avon Protection, a novel pgm catalyst on a specially designed support was developed. Begun as a project funded by Anglo Platinum, our scientists screened a wide range of established and innovative materials for ambient temperature CO oxidation to find the best catalyst for use under these challenging conditions.

Our analytical experts were called in to extensively characterise the catalyst to evaluate its behaviour under different conditions. This enabled our scientists to understand the interactions between the pgm and the support and then optimise the pgm concentration whilst maintaining activity for CO reduction, which led to reduce costs.

For manufacture and scale up, our pgm and materials experts collaborated with their JM colleagues with expertise in process optimisation and powder forming to meet the customer's requirements. The outcome was a route to scale up and manufacture established in line with customer specifications and expected customer demand.

Using our catalysts, Avon Protection were able to develop the award winning Avon Protection NH15 Combo Escape Hood, a stable and lightweight hood which provides portable protection from chemical, biological, radiological and nuclear (CBRN) poisoning. In addition, and uniquely in such a small and lightweight device, it provides protection from CO poisoning.

To date, JM has provided enough catalyst for 40,000 respiratory protection devices, providing reassurance to emergency personnel who find themselves in dangerous situations daily. Thanks to JM's catalyst, these front-line people have at least 15 minutes of breathable air, providing time to get themselves to safety.

**Clever science is not all we do. At JM we develop technology solutions to complex problems which involve engineering and design of processes and reactors. Being able to do this alongside our knowledge of materials and reactions means we can gather the insight needed to make innovative changes. We applied this approach to the development of a new reactor for Fischer Tropsch technology to economically produce sustainable fuels from feedstock sources such as renewable biomass, municipal solid waste (MSW) and flared associated natural gas.**

In collaboration with BP we combined expertise in catalyst development, catalyst manufacture, plant design, process development, process design and modelling to develop an optimised Fischer Tropsch catalyst with a unique reaction enhancement device (which we call a CAN) inserted into a multi tubular fixed bed reactor. The reactor was designed to carefully manage heat transfer and pressure drop. The catalyst particle size was optimised to give excellent activity and selectivity without compromising the functionality of the reactor.

This work took many years to come to fruition, but has resulted in a system that delivers three times the productivity of a conventional multi tubular fixed bed reactor. This reduces capital expenditure by half and reduces ongoing plant operating costs. This also makes the technology more attractive and economical from small scale suitable for MSW based projects, to world scale natural gas based projects.

We are proud to have been double award winners with our partner BP, landing the Research Project Award and the Oil and Gas Award at the prestigious IChemE Awards in November 2017.

We are now progressing to build commercial size units and to licence the technology from small to large units worldwide.

## Chemical reactors: innovation by design





# Customers

Collaboration and strong relationships with our customers are crucial in providing a high quality tailored service. Together, we put our inspiring science to work to enhance life.

We work closely with them, applying our science and technology to develop solutions which enable them to bring their products to market faster, improve the performance of their products and reduce their environmental impact. This creates value for them; and it creates value for JM – through high margin products from which we generate strong returns.

Our Commercial Excellence programme (page 35), launched in 2017/18, is a key enabler of our strategy. Through it we will deliver an enhanced experience all round for our customers and at the same time, create more value for JM.

In serving our customers, we also contribute to making the world a cleaner, healthier place. Through our new sustainable business goal 5, we are quantifying the positive impact our products and services have and aim to double that between now and 2025.

## Sustainable business goals

Sustainable products  
5

# Putting our inspiring science to work for our customers

The markets we serve are directed by our science and are driven by our technology. As a result, we create leading technology positions, often in niche global sub-markets that form part of larger markets.

The markets we serve aggregate into four main global economic segments, each crucial to the development of prosperity and wellbeing. They are:

- **Transport** (principally automotive, with some marine and aerospace).
- **Energy** (fuels and electricity generation).
- **Chemicals** (including agrochemicals, food and beverage).
- **Healthcare** (both pharmaceuticals and medical).

Beyond these we also think about the critical raw materials and commodities used in these spaces.

## Segment trends and dynamics

### Transport

The automotive industry continues to grow. Light duty vehicle (LDV) production reached almost 95 million units in 2017/18<sup>1</sup> and is expected to pass 100 million units in the early 2020s (~2.4% compound annual growth (CAGR))<sup>1</sup>. Asia is fuelling this expansion, with Europe and America growing at a more subdued pace. Heavy duty vehicle (HDV) production was 3.3 million units in 2017/18<sup>1</sup>. This remains a cyclical market with growth in Asia underpinning current expansion. Whilst vehicle production is a growth driver for JM, next generation, tighter emission control legislation in the European, North American and Asian markets is an additional, more significant opportunity for us.

Beyond current evolution pathways, the emergence of new powertrain technologies, innovative vehicle ownership and access models, along with a rising degree of connectedness and automation, is transforming the mobility landscape. Analysts expect a move away from pure internal combustion engine (ICE) vehicles over time, with hybrid, battery electric and / or fuel cell vehicles becoming more common.

This transition is not expected to be quick, with most market evolution studies showing a gradual uptake of alternative powertrains in LDVs through the 2020s. The transition for HDVs is expected to be more gradual. Alternative powertrains are also starting to appear in other forms of transport (e.g. trains) and industrial applications (e.g. fork-lift trucks). For JM, this means expanding our offering, applying our science to develop solutions to enable and deal with the expected uptick in demand and a potential shift into new applications.

### Energy

Fossil fuels remain the dominant global energy source today (~85% of primary energy<sup>2</sup>), but the rise of renewables, the drive for energy efficiency, along with the possibility of cost effective energy storage is changing that dynamic. Most analysts expect natural gas to become the fastest growing fossil fuel (~1.5% CAGR for piped gas and ~3.0% CAGR for liquefied natural gas<sup>2</sup>), with the share of coal and oil in the world's energy mix falling. This implies growth in renewables and other low carbon fuels (including nuclear). For JM, this evolution touches our applications in the stationary energy space across several other products and services. We remain focused on this market as it will also potentially inform us about changes in the interconnected transport and chemicals markets.

### Chemicals

Oil demand is predicted to grow by around 0.7% between 2015 and 2035<sup>2</sup>, with production rising from ~96 million barrels per day (mmbbls/d) to ~106mmbbls/d in 2035<sup>2</sup>. Growth in natural gas is expected to be stronger, rising at around 1.6%<sup>2</sup>. This would take gas demand from 336 billion cubic feet per day (Bcf/d) in 2015 to around 462 Bcf/d in 2035<sup>2</sup>.

Downstream products have benefited from these low input prices, but those advantages are beginning to pass and the perception about overcapacity / low utilisation rates remain. Petrochemical end markets are expected to grow over the coming years with compound annual growth rates of between 2% (fertilisers) and 7% (engineered polymers)<sup>3</sup>. New capacity additions in the US (gas price advantage), Middle East and Asia are expected over the coming years. Associated pricing changes linked to demand shifts may also impact the chemicals markets in which we play (e.g. methanol, ammonia).

These evolutions impact the profitable pathways and catalytic transformation routes that we try to serve. As a business, we will continue to target the highest growth and most profitable segments to ensure that critical raw materials are used and transformed in the most efficient manner possible.

#### Sources

1 LMC Automotive.

2 BP Energy Outlook, 2018 ([www.bp.com/en/global/corporate/energy-economics/energy-outlook.html](http://www.bp.com/en/global/corporate/energy-economics/energy-outlook.html)).

3 IHS Chemicals.



Strategic Report

**Healthcare**

The global population continues to rise with people living to an older age. To service this trend, a range of interventions are being requested. Additional medications are required to keep people healthy for longer, additional pressure is put on scarce food and water resources, more devices are being used to improve quality of life. However, the pressure to deliver these interventions at a low cost is growing.

The global pharmaceuticals market is expected to grow at 6% per annum, from \$650 billion today to more than \$820 billion by 2020<sup>4</sup> and with growth in that market outstripping global GDP growth (of ~3% per annum over the period<sup>5</sup>). The largest markets remain the US and Europe, which together account for about two thirds of the global market. The market for generic pharmaceuticals accounts for about one third of the total pharma market today and is forecast to experience equivalent or higher growth rates than the pharma industry overall (ranging from 5 to 9% between forecasts<sup>4</sup>).

JM will continue to focus on how we can serve this growing market through our differentiated science and technology, helping to deliver the products that our growing population requires.

**Critical raw materials**

Within the evolving market dynamics described above, commodity prices will play an important role. We already see the commodity cycle starting to turn with higher metal prices seen during the 2017 calendar year. Oil prices are starting to rise (moving beyond \$70 per barrel for the first time since late 2014), while gas prices, especially in North America have remained subdued at around \$3/mmbtu (US Henry Hub). Beyond these traditional commodities we are also seeing upward pressure on the key inputs to battery cathode materials (e.g. lithium in 2017, cobalt and nickel more recently). These prices and their movements will impact decisions about how our key end markets evolve and which technologies / pathways come to dominate over time. JM will continue to focus on the most efficient use and transformation of critical raw materials and we will position our business (including our refining expertise) to respond and react to these trends.

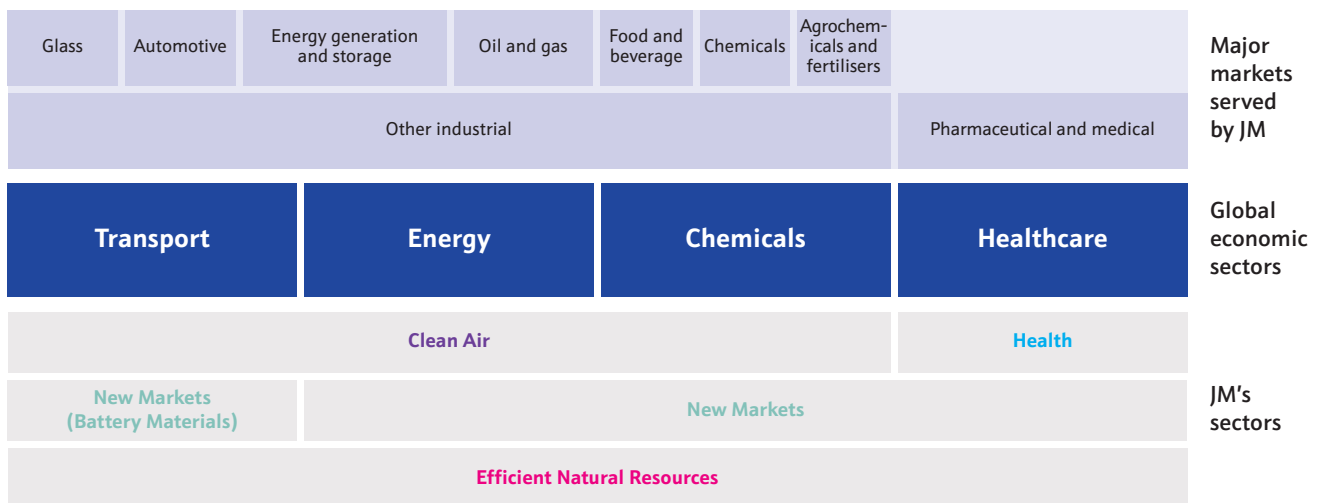
Sources

<sup>4</sup> EvaluatePharma.

<sup>5</sup> BP Energy Outlook, 2018 ([www.bp.com/en/global/corporate/energy-economics/energy-outlook.html](http://www.bp.com/en/global/corporate/energy-economics/energy-outlook.html)).

**The breadth of JM is a source of strength**

The four economic segments we serve are undergoing major change; change that is driven and enabled by technology. We apply our scientific skills, via our sectors, into markets within these segments to create new products and services that improve lives, improve efficiency and reduce environmental impact.



- Our Clean Air Sector abates emissions from the transport, energy and chemicals segments.
- Our Efficient Natural Resources Sector has businesses supplying products and processes that conserve scarce resources, enabling the manufacture of chemicals, fertilisers, fuels and glass using less energy and fewer raw materials.

- It also has our platinum group metal recycling business.
- Our Health Sector draws on core capabilities in complex chemistry, manufacturing and scale up to create solutions for niche areas within the pharmaceutical industry.
- Our New Markets Sector applies our science into emerging opportunities across all segments.

This breadth is a source of strength for JM. The markets and segments we serve are amongst the most important in the world economy, are universal and supported by strong macro drivers. Maintaining this broad market exposure and managing the balance of our business across these segments of the world economy is part of our strategy.

The four segments are complementary. Many of the customers we serve operate in two adjacent segments: for example, fuel companies also have chemical operations; chemical companies manufacture pharmaceutical ingredients. We bring market, technical and regulatory insights from each segment and apply it to the adjacent segments. These insights drive business development.

### What we sell and how we work with our customers

Across all our markets, we have two fundamental customer offerings.

1. **Functional components** that our customers incorporate into the products they manufacture. These components are fundamental to the performance of our customer's product. Examples are: electrode tips for cardiac ablation, emission control catalysts for engines, active pharmaceutical ingredients for pain treatment, protective coatings for automotive glass, cathode materials for batteries.

For these types of product, most of what we sell we have developed and formulated specifically for an individual customer's application, in collaboration with our customer.

2. **Process technologies** that our customers use to enhance the efficiency, economics and sustainability of their manufacturing processes. In these cases, our technology is used to make the customer's product rather than being part of the finished product.

We develop manufacturing processes, including the catalysts that enable them, both for customer-proprietary products (e.g. pharmaceutical actives) and for chemicals and fuels (e.g. methanol, ethylene glycol). For processes we develop ourselves, we either licence to our customers or operate them ourselves in our own facilities. When we develop processes for customer-proprietary products we work under contract development agreements.

Our Pgm Refining and Recycling business uses a JM-developed and operated process. We provide a service for our customers (including other JM businesses) where we transform their materials to produce high value product.

Across these offerings, our customers, in the most part, value the performance of our technology in their applications. The performance of our products delivers different advantages to our customers by:

- Translating directly into the performance of their product.
- Enhancing the reliability of their production.
- Increasing their efficiency.
- Enabling them to reduce the overall cost of their product.

Maximising this performance advantage through codevelopment is the basis of the way we work with our customers. This collaborative development requires strong, long term relationships based on mutual commitment, risk sharing and trust.

In addition to performance, customers also come to JM for additional sources of value: speed and efficiency in development, reliability, responsiveness in problem solving, security and flexibility.

We work with our customers across a range of markets, understanding the needs of each sector and customer. This approach gives us a business that is balanced and robust. Through serving broad markets, the opportunities to apply our science and technology are greater and our contribution to a cleaner, healthier world is increased.

### Driving commercial excellence

We have distinctive scientific and technical capabilities which we translate into solutions for our customers. It is important that, together with providing them high quality products and service, we capture our fair share of the value we create for customers.

Our Commercial Excellence programme is focused on doing just that. It is a key enabler of our strategy and was launched in 2017/18. The overall objective of the programme is to deliver value by building the commercial capability across JM; enhancing our ability to make value based data driven decisions; measuring and responding to customer satisfaction; improving our sales and marketing processes and leveraging digital technology where appropriate.

The programme has made good early progress. We are investing in growing our people and our commercial function. We will be launching our commercial academy this coming year to support the development of our commercial people across JM. We are also improving the consistency of our data analytics to inform our commercial decisions.

We have started work to establish a consistent measure of customer satisfaction across JM so that we can enhance the experience our customers have when buying from us. The programme is on track to deliver benefits over the coming year.

### Measuring our impact beyond customer value

The value we create for our customers drives growth in our business and returns for our shareholders. But our products and services have a much broader positive impact, making our air cleaner, improving people's health and conserving the world's natural resources. We want that positive contribution to grow.

As part of our new sustainable business framework we have set a goal to double the positive contribution of our products by 2025. This, our sustainable business goal 5, has two streams by which we will track our progress.

The first shows our global impact by measuring the absolute and percentage of JM's sales that have a direct contribution to the UN Sustainable Development Goals. The percentage measure is a key performance indicator for the group as detailed on page 23.

The second relates to JM's vision for a cleaner, healthier world. Our goal is to at least double:

1. The tonnes of pollutants (oxides of nitrogen, carbon monoxide, hydrocarbons, particulate matter) removed by our products, thereby making the world cleaner.
2. The number of lives impacted by our pharmaceutical products, thereby making the world healthier.
3. The quantity of greenhouse gases removed or reduced (CO<sub>2</sub> equivalent) by our products, thereby taking climate action.

Our baseline measures are outlined on page 17.

We are excited to introduce our sustainable business goal 5. It will be a positive driver for our business performance and, crucially, provides a tangible measure of progress towards our vision for a cleaner, healthier world.



## Long term view Technologies for clean transportation – JM brings insight as the powertrain evolves

**Automotive powertrain technology has seen many developments in the 50 years that Johnson Matthey has been involved in, shaped largely by societal requirements for cleaner vehicles. The coming decades will see even bigger changes. JM is in a uniquely powerful position to understand these changes and to grow our business further by providing new technologies to enable them.**

**Our insights into these new demands are broad and deep. We understand the big trends in regulations, in driver expectations, in the strategies of vehicle manufacturers and in the capabilities of the new technologies available to the manufacturers. These trends determine the demand for our technologies.**

### Understanding our customers and their value chains

Johnson Matthey brings deep insight into how these market trends translate into performance requirements for all our automotive powertrain-enabling products and the technical support our customers need. We work from market needs, through system performance requirements and into the design of materials at the atomic scale. We can then scale our science from the lab, through vehicle testing, to production processes for millions of engines a year – which itself requires intimate understanding of our customers' preferences and their ways of working.

A key JM strength is our relationship with vehicle manufacturers, built on 50 years of collaboration at all stages of technology development from design, through application, scale up, testing and into mass production. We understand how they work, their time cycles and their technology needs.

Our relationships up the supply chain are equally important. Securing and managing reliable, ethical supplies of metals and other raw materials will be just as important for batteries as it is for our emission control catalyst and fuel cell businesses. The automotive supply chain is highly integrated, but is evolving, with more emphasis on lifetime stewardship and circular supply chains. JM has the experience and structures for this way of working from our precious metal businesses, including recycling emission control catalysts.

As the supply chain evolves, we stay aware of who is making the critical decisions and on what basis. Decisions on required performance standards, technology selection, supplier selection and system optimisation are made between different functions within companies and between companies and different stages in the supply chain. We maintain a broad set of contacts in order to participate fully in this decision making process.

### An 'all options' approach to technology

As we plan for success in future powertrain markets, the experience that JM applies to technology road mapping is very broad. We supply all the transport applications currently using internal combustion engines, everything from scooters to the largest container ships. Thus, we know the performance demands and design cycles for the full range of land and water based transport. We combine this with our practical experience of all the options for clean energy storage and powertrains, across combustion engines, batteries and fuel cells. We believe that over time, everything will become electrified but in different ways, at different speeds and to different degrees. Internal combustion engines will remain important in all transport sectors for decades, increasingly in hybrid systems, and fuel cells will come in too – particularly for heavy and long haul vehicles. The world will need all options and all options represent opportunities for JM.

This 'all options' view shapes our strategic planning process. It determines the portfolio of technologies and businesses that we develop. It determines the way that we use our understanding of the various alternative technologies to develop and market the technologies. It determines the flexibility we maintain in resource planning to place bets on the most promising technologies and retain the options we need to maintain our strong position in the market regardless of the shape of future demand.

## Following policy and regulation

In looking at where JM's scientific and manufacturing capabilities can create most value as powertrain technologies evolve, a vital perspective for us is regulations. Standards are set for new vehicles and limits on pollutant emissions have been the primary driver for JM. They will be in the future, too, but other regulatory and policy areas are becoming equally important. There are four aspects of policy that we follow and interpret:

1. Although our catalyst technology has enabled a 100-fold reduction in emissions from vehicles since the 1970s, many cities around the world still suffer from poor air quality caused in part by vehicle exhaust gases. Therefore, new vehicle emissions regulations will continue to tighten and will be a significant driver of demand for our products. The most important trend for the future is not the further reduction of the headline emissions limits, although this will continue, but in the shift to testing and compliance regimes that better reflect emissions in 'real world' use. These new tests require higher system performance across a wider range of conditions and as a result, demand more JM technology.
2. In recent years, regulations on the efficiency of new vehicles, as measured by CO<sub>2</sub> emissions, have become an equally important factor in powertrain design. More efficient engines demand more efficient emissions control – for example, exhaust gas temperatures are lower on more fuel efficient vehicles, so the catalysts need to work at these lower temperatures. Hybrid powertrains place new demands on the after-treatment system. Electric vehicle investment and introduction is being driven by fleet CO<sub>2</sub> limits, creating new demand for battery materials and fuel cells.
3. As well as the regulations on new vehicles, the market is shaped by incentives for drivers to buy low or zero emission vehicles. These may be financial, in the form of purchase grants or preferential tax rates. In some countries, drivers of low emission vehicles are granted perks such as access to bus lanes. These incentives shape demand in local markets and can be important in the early adoption of new technologies.

4. For the future, we see cities as increasingly important in driving and shaping demand for clean vehicles. In most parts of the world, city authorities are responsible for ensuring air quality. To meet legal requirements and the expectations of their citizens, they are increasingly offering incentives for cleaner vehicles and applying penalties or even bans to dirtier ones. We've been working with cities for decades to improve their air quality, retrofitting emissions control to buses and supporting Low Emission Zones.

Knowing where the greatest air quality problems are, where the political will to solve them is strongest and what the practical technologies are to address the problems efficiently, enables JM to see where the next market demand will be.

## Total cost of ownership is key

We assess the regulatory landscape but we are careful not to lose sight of what technology can be practically and profitably incorporated in a vehicle and what the people who buy the vehicles most value. The market is constrained by two simple and related principles: people can't buy it if the manufacturers aren't offering it and manufacturers can't sell it if people don't want it. Consequently, we believe that the total cost of ownership will continue to be the primary criterion in vehicle purchases. As such, we assess the effect of each new technology on the cost of developing, manufacturing, fuelling and maintaining each class of vehicle.

When it comes to zero emission vehicles, we consider a third constraint: people won't buy it if they can't recharge or refuel it. As such, we are monitoring and participating in projects to develop infrastructure for charging battery electric vehicles and for refuelling fuel cell electric vehicles.

## Seeing the whole system, from well to wheel

Our market view on transport trends is not confined to vehicle technology. JM has fuels related businesses and technologies too. These have an important part to play in reducing emissions from transport and, at the same time, give a perspective on the environmental impact of transport that greatly strengthens the view we have on vehicle technology.

JM has fuel processing expertise and our process catalyst technology is important for making the hydrogen that removes sulphur from fuel. By combining the views we gain from the fuels value chain with our vehicles knowledge, we understand the full impact – environmental, economic, consumer – of all the potential technical solutions. JM has technology for the manufacture of synthetic fuels, bio fuels, gaseous fuels and, particularly importantly, hydrogen. Uniquely, we have technology for all the major manufacturing paths for hydrogen. Being able to see the whole system, 'well to wheel', we can assess costs and trade-offs and we can see how these translate into the potential demand for our technologies.

## Future mobility models

Finally, we make sure that we pay attention to the way that vehicles will be used in the future because this will affect the way they are bought and the way they are designed. Cars bought to be used in fleets of shared vehicles may be designed with the same considerations that now apply to commercial vehicles – cost per mile, durability, availability / up-time. It is important that we understand which aspects of our very successful heavy duty business we will need to apply to light duty. Autonomy will be an enabler of shared mobility and will also lead to a change in drive cycles and vehicle design, so autonomous vehicles will have different power requirements. Connectivity, as well as being an enabler of vehicle autonomy, provides new opportunities for monitoring and regulating vehicles and their emissions in use. In turn, this is likely to promote the adoption of more low emission technologies.

Our automotive facing businesses have been designed from inception to anticipate and respond to change. Change brings continuous demand for new technology, and it is in the development and application of new technology that JM creates value.

We cannot accurately predict the rate of growth in electric drivetrains but we foresee a period of fundamental transformation in the automotive market. It brings opportunities for us to advance our business and our vision for a cleaner, healthier world. And JM is embracing it, knowing that we are uniquely well placed to understand and deliver the technologies the market will require.



# Operations

Our vision for a cleaner, healthier world demands us to operate our business responsibly and with a relentless focus on efficiency and excellence. This cuts across everything we do: from common systems and core processes to the way we manage and drive the environmental performance of our assets.

## Sustainable business goals

Low carbon operations

3

Responsible sourcing

4

# Driving responsible and effective operations

As a global group, we seek to maximise synergies across our businesses so we put in place standard processes and ways of working where it makes sense for us to do so.

Our focus is end-to-end operational efficiency; it's not cost-cutting and it's not a project. Through this we are driving sustained improvements across every aspect of how we run our business, and therefore the benefits are broader than cost.

This approach has two main themes. Firstly, we're simplifying and automating common processes. It doesn't deliver monetary savings per se, but it frees up our people to target them against our biggest business opportunities.

Secondly, we are ensuring common standards and ways of working across JM. This will improve our performance by accelerating the best of JM around the group rapidly.

## Simplifying and automating

This year we have continued to invest in upgrading our core IT systems to reduce complexity across the group and make us more agile and responsive to our customers. We are introducing a global business solution to standardise and simplify business processes, data and systems across JM. The single groupwide platform supports all our global operations, giving us a full view of all our businesses. Implementation is on track and we will start our roll out during 2018/19. We expect to be complete by end 2021/22.

## Common standards and ways of working

Group led excellence programmes are in place to target specific areas where we see an opportunity to rapidly make efficiency gains by ensuring common standards and ways of working across JM. A group led approach enables us to deploy best practice quickly and effectively across our operations.

**Manufacturing Excellence**, which has been in place since 2012, encourages a continuous improvement culture to enhance the efficiency and long term profitability of our manufacturing operations. Progress is measured against ten criteria. The highest performing

sites can work towards Silver, Gold or Platinum levels of status. Since 2012, over £100 million in savings have been delivered collectively by sites that have achieved those levels.

**Procurement** is a key global activity and by managing it with a strategic and category led approach, significant savings can be achieved. Professionalising procurement within JM not only reduces cost, but it also means that we manage our suppliers better, which has many additional benefits, including reducing supply chain risk. We purchase state of the art equipment which meets the latest environmental, health and safety standards.

We have activated a Procurement Excellence programme with the goal of saving more than £60 million over the next three years. Our annual purchases, excluding precious metal and substrate, are about £1.5 billion. These purchases are made across 118 sites, historically with each site accountable, for the most part, for its own purchases. This has, in the past, limited our ability to consolidate our understanding of purchases across the group.

Over the last year we have begun to move to a global procurement strategy and have started to capture this data on a consistent basis to fully understand where the procurement opportunity lies. We have begun to execute against this opportunity and have made excellent early progress in bringing together our existing procurement community and in building new capability to ensure that we capture it in full. We will continue to roll out our global procurement function during 2018/19 to realise savings and enhance our supply chain performance.

## Responsible operations

Our technology is used by customers every day to create products that have a direct benefit on the environment, preventing millions of tonnes of pollutants from entering the atmosphere. We also have a responsibility to ensure the way we make these technologies is responsible and environmentally conscious too.

In the course of our now completed ten-year strategy, Sustainability 2017, we halved our operational carbon footprint and our use of energy and water per unit of sales. These efforts, combined with those in our Manufacturing Excellence programme, delivered bottom line savings of £142 million.

But now we want to go further. Building on the impressive achievements of Sustainability 2017, we have set ourselves more stringent targets to 2025 and are incorporating a stronger external focus.

In developing our six goals for sustainable business to 2025, we defined two goals that are linked to our operations, both at group and site level. One is our goal to reduce our greenhouse gas emissions by 25% per unit of production output (goal 3), an ambition that forms part of our approach to low carbon operations. The second is to improve sustainable business practices in our supply chains (goal 4).

Three of our four other goals – covering health and safety (goal 1), employee engagement (goal 2) and volunteering in the community (goal 6) – are explained in the People section of this report on pages 48 to 59. Goal 5, which aims to increase the positive contribution of our products to a cleaner, healthier world, is explained in the Customers section of this report on page 35.

## 3 Climate change action through reducing greenhouse gas emissions

We have set ourselves a new carbon intensity goal in which we aim to reduce our greenhouse gas (GHG) emissions per unit of production output by 25% (sustainable business goal 3). Monitoring our emissions as a function of production output, rather than sales, will allow us to capture any operational efficiency improvements more authentically. The new carbon intensity goal also reflects the type that companies are setting in order to qualify as a Science Based Target using the Sectoral Decarbonisation Approach.

## Strategic Report

Our ambitious target was based on an assessment of potential installations and energy procurement opportunities across our sites and a consideration of the targets being set by peer companies.


We are including Scope 1 and 2 (direct and indirect) emissions in our goal, which covers our entire use of fossil fuels, electricity from all sources and emissions of all major GHGs. To improve our data collection and help drive improvements, we have installed a groupwide environmental data reporting tool to our sustainability management platform, Enablon. The tool was operational from 1st April 2018 and enables us to increase the frequency of our internal reporting.

In recent years, we have increased our use of renewable energy on our sites. For example, at our pgm refinery and chemicals plant at West Deptford, New Jersey, USA, we source 17% of our electricity from an adjacent photovoltaic plant, saving 861 tonnes of GHG emissions in 2017/18. Also in the US, all our sites in the Philadelphia region will be purchasing zero carbon electricity from grid suppliers from April 2018; this is expected to reduce the group's carbon footprint by 7% over the next year. And five of our UK sites (Royston, Brimsdown, Sonning, Swindon and Edinburgh) have been purchasing renewable electricity (wind power) from the National Grid since April 2016, making CO<sub>2</sub> equivalent emissions savings of over 40,000 tonnes in 2017/18. This has been achieved through an agreement with Ørsted, who supply Renewable Energy Guarantee of Origin (REGO) certified wind power from the West of Duddon Sands Offshore Wind Farm near Blackpool and the London Array Offshore Windfarm in the River Thames estuary.

In Skopje, Macedonia, our site installed a new waste water treatment plant in 2017. The factory first opened in November 2013 and had been growing. Consequently, the previous waste water treatment plant was unable to meet the demands of the site in terms of quantity and type of waste water handled – it could only treat sanitary water. This left the site having to send over 300 m<sup>3</sup> of effluent to neighbouring Serbia every month – a distance of 450 km.

The Skopje site worked with waste water specialist EnviroChemie to create a treatment facility specific to the site's needs. In the first year of operation (July 2017 to March 2018), the new plant has achieved 162 tonnes of CO<sub>2</sub> savings and cost savings of over €900,000.

Other examples of our work to reduce energy use and emissions include our platinum group metal fabricated products plant in Royston, UK, where we have made a 655 MWh reduction in energy use. This was achieved through a comprehensive package of measures including installing solar photovoltaic panels, replacing a furnace and upgrading the lighting and pump scheduling. We are also making good use of solar energy at five sites, while at our Royston, UK site we are linking solar panels to our air conditioning systems to reduce energy consumption. One of our sites has a wind turbine and we have also refurbished office buildings increasing insulation, installing LED lighting and replacing the windows to improve working conditions whilst saving energy.

 Page 45: More on our greenhouse gas performance

### Understanding potential impacts of climate change on our business

We disclose our environment, social and governance (ESG) performance through the CDP climate change programme, which looks at risks and opportunities of climate from the world's largest companies on behalf of institutional investors.

 [matthey.com/cpd-investor](http://matthey.com/cpd-investor)

We also participate in benchmarking studies to deepen our knowledge and compare our progress against our peers. A changing global climate brings with it a number of risks and opportunities for Johnson Matthey, which we continually consider and review annually as part of our CDP disclosure. The most significant of these continue to be environmental legislation and water availability.

Johnson Matthey is also a signatory of L'Appel de Paris (the Paris Pledge for Action), committing us to play our part in delivering the agreement's ambition to limit global temperature rise to 2°C. Our sustainable business goal 3 supports this.

### Water risk

Water is an essential resource. The World Resource Institute (WRI) reported in June 2016 that in the industrialised world, fresh water is becoming scarcer due to increased demand and higher pollution levels. Availability is often transient, dependent on changing weather patterns.

A reliable supply of fresh water is required by all our manufacturing sites and, often in considerably greater quantities, by our strategic suppliers. To examine our exposure, we periodically undertake water stress surveys of our business. We also report our principal water risk publicly through the annual CDP Water survey.

 [matthey.com/cdp-water](http://matthey.com/cdp-water)

In 2016/17 we conducted a survey using the World Business Council for Sustainable Development (WBCSD) Global Water Tool™ (version 1.3). Of the 66 principal sites surveyed, 15 were identified as being in regions of extreme water stress. Our water usage in most of these locations is very low. However, there are four where we are close to using the locally available freshwater supply per capita: Taloja, India; Yantai, China; New Mexico, USA; Brimsdown, UK. We are using the data from the survey to prioritise water conservation projects for the sites that are at the greatest risk of an interruption to supply.

Our facility in Taloja, India was assessed by the WBCSD Water Tool survey to be our highest water stressed manufacturing plant. To meet the ever increasing demands of the local waste water treatment facility that treats all waste water on the industrial park in which our facility is located, we are in the early stages of installing a water treatment / recycling plant with the aim of making the plant 'zero liquid discharge' (ZLD).

Our largest risk to water is in our supply chain, where we are exposed to industries that are significant water users, such as mining and agriculture. The next step is to gather the exact locations of our strategic suppliers' facilities and evaluate them with the WBCSD tool.

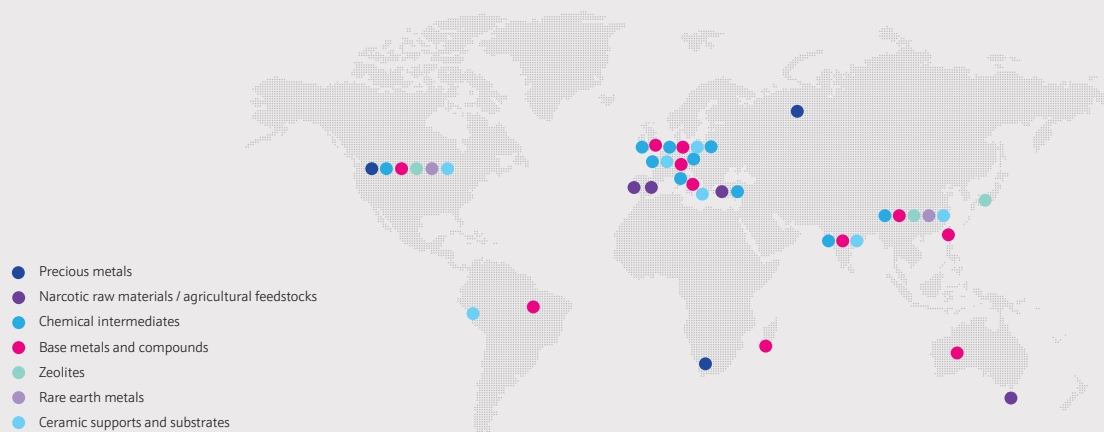
## 4 Responsible sourcing

The second part of our operational sustainable business goals concerns responsible sourcing. Under goal 4, we aim to improve sustainable business practices in our supply chains. Through collaboration, we will ensure full compliance with our minimum standards from strategic Tier 1 suppliers.

This due diligence is not new to us but it is the first time we have framed it as a formal sustainability goal, with clear measures to show our progress. Our goal is to achieve compliance among 100% of our Tier 1 strategic suppliers by 2025.

### Where we source strategic raw materials

We procure goods and services globally and our supply chains are multi-tiered. Sourcing of strategic materials is a principal risk (see page 79) and monitoring and understanding the risk is challenging but essential. Some of our strategic raw materials are available from only a limited number of countries. The countries we rely on for these materials are highlighted in the map below.



Several factors have led us to select responsible sourcing as a goal. Regulation of supply chains is increasing, for example in the areas of conflict minerals and modern slavery. And we are aware that some of our suppliers are located in high risk countries. We launched our Supplier Code of Conduct in September 2017; it is available on our website in English, German, Japanese, Polish and Mandarin. We will report annually on the numbers of strategic Tier 1 suppliers assessed and of those, how many meet our responsible supplier compliance criteria. We have put in place a Supplier Sustainable Development Programme (SSDP). This business tool enables us to classify risk in our suppliers, determine what level of due diligence is required, identify corrective actions and follow up on progress. We will track the number of suppliers that have signed up to the code and the number assessed during the last three years.

In 2017/18, 97 supplier sustainability assessments were undertaken across our sectors. These comprised formal on-site audits, desktop assessments and supplier

self-assessments. These assessments represent approximately 30% of JM's direct materials spend with suppliers. The table below represents the responses from JM's sectors. We have not identified any incidences of child labour or forced labour in our value chain.

In 2017/18, 26 strategic Tier 1 supplier assessments were undertaken to check compliance against the JM Supplier Code of Conduct. This represents approximately 11% of suppliers classified in this way. Of those assessed, 73% were in compliance with the expectations of JM's code.

#### Modern slavery

Research from the Walk Free Foundation shows that over 40 million people worldwide are trapped in some form of modern slavery, including forced labour. This is an important social issue and JM is proactively taking steps to ensure high ethical standards throughout our value chain, including through our sustainable business goal 4 on responsible sourcing.

We support the principles set out in the UN Universal Declaration of Human Rights and the International Labour Organisation Core Conventions, including the conventions on child labour, forced labour, non-discrimination, freedom of association and collective bargaining.

We also support the principles endorsed under the UN Global Compact and the UN Guiding Principles on Business and Human Rights (the 'Ruggie' Principles). We are working to embed them throughout our operations and whenever we enter into business in a new territory, make an acquisition or enter a joint venture. There were no human rights grievance reports made against Johnson Matthey during the year.

The UK Modern Slavery Act 2015 requires UK listed companies to make an annual statement describing the steps they have taken during the year to ensure that slavery and human trafficking are not taking place, either in their businesses or their supply chains.

Our annual statement is posted on our website and details the steps we are taking. They include our policies and codes (including our code of ethics and confidential 'speak up' line), details of our supply chain governance team and the Supplier Sustainable Development Programme. In order to improve standards in our supply chains, in 2017/18, we have undertaken a risk mapping exercise and identified suppliers where we need to focus our attention.

Sustainable business topic of concern	Number of suppliers assessed for this concern	Number of new non-conformances identified in 2017/18	Total number of non-conformances open at 31st March 2018
Child labour	97	–	–
Forced labour	97	–	–
Wages and working hours	97	3	3
Discrimination	97	–	–
Freedom of association	82	–	–
Health and safety	97	45	25
Environmental	82	5	2
Other – anti-bribery and corruption, supply chain standards	35	5	2



## Strategic Report

The criteria considered in the assessment included industries that are considered high risk, country corruption risk and country modern slavery risk. By undertaking this due diligence, we can understand and address potential impacts on human rights and ensure that there is no enslaved labour within our supply chains.

### Conflict minerals

The term 'conflict minerals' refers to tin, tungsten, tantalum and gold which originated from the Democratic Republic of Congo (DRC) and surrounding countries, in particular from areas of military conflict where most mining is artisanal and linked to serious human rights abuses.

We have established a process for due diligence of all conflict minerals based on the Organisation for Economic Co-operation and Development (OECD) Guidelines which includes keeping records that enable us to track the suppliers of all the raw materials we use and identify which smelter the conflict minerals came from. We are working towards being compliant with the new European Union Conflict mineral regulation, which was enacted in July 2017, ahead of the January 2021 deadline.

Of the smelters identified throughout all tiers of our supply chain, 89% are listed as conformant with the Responsible Minerals Assurance Process (RMAP) assessment protocols on the RMI (Responsible Minerals Initiative) database and we expect this to increase as more refiners and smelters join the programme and become RMAP-conformant. We use our in-house database to respond to customer requests for information on conflict minerals in our products and to provide them with a tailored answer to any query they have. This year we have responded to around 70 customer requests for information.

We are also extending our minerals supply chain due diligence activity to include cobalt. Cobalt is used in a range of applications from battery technology, industrial catalyst to health care. At present the Democratic Republic of the Congo (DRC) holds about 50% of the global reserves of cobalt. Although there are some mining companies which are operating ethically in the country, there is a significant amount of illegal artisanal mining in uncontrolled conditions leading to a number of human rights concerns.

A number of voluntary responsible supply chain schemes for cobalt are springing up but they are not yet harmonised or universally applied; we are currently evaluating participating actively in the Responsible Cobalt Initiative.



### The pgm supply chain

One example where we are taking a proactive approach is in the platinum group metal (pgm) supply chain. We have worked closely with some of our automotive customers to address concerns that they raised relating to the pgm supply chain in South Africa. A collaborative visit facilitated by JM, resulted in direct dialogue between the pgm mining companies, JM and these key customers. This allowed our customers to see and hear first hand the challenges of operating within that industry and in the complex South African economic, social and political context. A clear action plan has been agreed.

In addition, we have worked with peer pgm fabricator companies to develop a single consistent due diligence approach to be taken by all when assessing pgm supply from South Africa. This fabricator working group, liaising through the International Platinum Group Metals Association (IPA), is establishing a systemic 'one mine, one audit' approach from late 2018. This will ensure supply chain partners are assessed and audited in a more consistent, efficient and effective manner. Ultimately, this will lead to improvements in standards of business conduct throughout the value chain.

Our business is highly diverse, both in the range of our manufactured products and the markets we serve. Our supply chains are correspondingly complex and we are aware that we still have a significant amount of work to do in improving sustainable business practices in those supply chains. Our supply chain governance team, which is integrated into our Procurement Excellence programme, is driving this forward.

### Product lifecycle management

The products we sell to our customers often form an important part of the end product supplied to the user. For example, we supply catalytic coated substrate as a component for engine emission control systems for car manufacturers.

The catalyst is incorporated into the catalytic converter in the exhaust system of a car which is bought by the end user who drives it. We do not manufacture the car, but we are concerned with the whole life of the catalyst until the end of its life, and beyond, e.g. to recovery of components for subsequent reuse.

This 'whole life' responsibility is what we call product lifecycle management, also known as product stewardship. We set ourselves high standards: our customers want to see evidence that we understand any hazards inherent in our products and that, through understanding their uses, we can, in turn, help them manage any consequent risks. Equally, our external stakeholders want assurance that the potential impacts – on the environment, our employees and downstream users – are well managed. Some stakeholders are starting to demand that chemical companies like ourselves move towards safer chemistries.

Internally, our product lifecycle management supports our value of protecting people and the planet. More pragmatically, it is essential to our business that we identify and mitigate any risk to our portfolio. Our social licence to operate depends on our compliance with safety regulations and, of powerful importance, our voluntary stewardship of our products all the way down the value chain.

It is important we design in green chemistries at the start of a product's life. Recently we have developed a sustainability checklist as part of our New Product Introduction (NPI) process. The checklist contains a series of questions about health and safety, environmental, social and financial issues which must be answered before the project can progress to the next stage of the NPI process. The checklist is now being evaluated by teams in JM's sectors.

### Our management systems

We implement our product lifecycle management through well established systems to ensure the sound management of our products throughout their lifecycle. We have groupwide policies and guidance which align our approach with the global framework set by the Strategic Approach to International Chemicals Management (SAICM) to promote chemical safety around the world. The Strategic Approach, begun in 2006, is hosted by the UN Environment Programme.

We have procedures in place at group and sector level to identify regulatory obligations, both future and current, and create the documentation necessary to ensure compliance. Our internal committees assess hazard and exposure data to identify opportunities for risk reduction in our operations. Potential new products are assessed at an early stage of their development against safety and regulatory criteria, with higher hazard products being put through more detailed assessments. Finally, business compliance with lifecycle management policies forms part of our environment, health and safety (EHS) audit.

### Our three areas of focus

As part of our work on product lifecycle management, we have three current areas of focus. The first is active horizon scanning which identifies proposed regulatory developments that could impact our sites and products and the raw materials we use. Linked to this is our second area of focus: early identification of new regulatory pressures for our customers that our existing or new technologies may be able to overcome.

Our third area of focus is 'high hazard' substances – chemicals with significant potential to harm human health or the environment and how we ensure appropriate investment in researching less hazardous alternatives. On the basis of elevated concern on a substance's hazards, regulators may require companies to generate extensive data packages to underpin detailed risk assessments. If a true risk is identified they could take action that effectively eliminates use of the substances in that market. All of our businesses could be affected by these changes and we follow developments closely.

Our policies, especially on NPI, emphasise the expectation that we actively investigate the availability of safer alternatives to our use of high hazard substances. For example, our Finnish business identified a risk to its portfolio as a critical component of its resin bead manufacturing process would face severe restriction in Europe due to it being considered a substance of very high concern (SVHC). Unlike our key competitors, rather than apply for authorisation to continue use of this hazardous substance, which would be an expensive and time consuming process with an uncertain and time-limited authorisation outcome, we decided to alter our manufacturing process.

The development work took time and money, but the project to move to a safer process gained financial support from the Finnish authorities. Customers were fully informed of the rationale for the change; we retained their orders and they in turn retained theirs.

### Pgm user guide

During the year JM provided significant input into a comprehensive user guide to pgms. 'Safe Use of Platinum Group Metals in the Workplace' was published by the IPA in December 2017 and is intended to advance awareness of the hazards and risks associated with occupational exposure to pgms and how to manage them effectively. This is an important and directly relevant piece of work, as many JM sites handle pgms, and one of the eight occupational illnesses reported in 2017/18 related to pgm exposure. The user guide provides practical advice on workplace monitoring, the medical surveillance of workers, control measures, training and regulatory controls. It is available on the IPA website and we have advised our sites to consider the new guidance in their pgm management programmes, subject to local law.

The IPA guide is the most visible of our recent efforts in this area, but we continue to work with peer companies in trade associations and consortia to develop best practice on stewardship.

### Priority substance management

We have set up a committee to review certain high hazard substances of relevance to JM in order to ensure there is appropriate recognition of the risks from developing new products using these substances. The PARS (Prior Approval Required Substances) Committee decides on whether the risks (i.e. EHS, sustainability, financial, reputational) are sufficiently high that a senior leader is required to issue a time-limited approval to use the substance in NPI projects. The committee has reviewed its first tranche of substances and has concluded that a small number of relevant substances either face regulatory pressures of sufficient magnitude in the foreseeable future, or are sufficiently hazardous that they should be PARS listed. Although focused on NPI, existing uses of a PARS substance will consequently face additional scrutiny.

We use or manufacture only a very limited number of substances considered regulated<sup>1</sup>, or of international concern<sup>2</sup>. As a proportion of our portfolio, approximately 5% of products consist of, or use in their production, such substances.

Looking ahead to the next year, we plan to improve our audit programme for product lifecycle management. At present, it forms part of the EHS audits of our sites. We are now reviewing how we manage our product lifecycle work across the group and will embed our findings in a more targeted audit programme on this specific issue. This will enable us to be proactive across all our sites and businesses and to provide more consistent information to our customers. And in the medium term, we recognise that we have more work to do on end of life solutions for our products, with, among other things, improved recycling.


As the UK prepares to leave the EU, we have made plans for Brexit and are in a good position to manage the effects on our European operations. We are actively supporting the UK government in understanding the potential impact of the various options being considered.

### Product lifecycle performance

We made good progress during 2017/18. We completed our 1 to 100 tonne per annum substance registrations for our operations in the EU in good time for the May 2018 deadline under the REACH requirements (the European Regulation on the registration, evaluation, authorisation and restriction of chemicals). Work is also progressing on preparing registrations for a small number of priority chemicals in South Korea. In the US, the US Toxic Substances Control Act (TSCA) was recently subject to a major update and we have responded to the resetting of the TSCA Inventory per the deadlines.

We use a systematic product responsibility reporting scheme to monitor the performance of our operations and maintain surveillance of the company's products and services.

In 2017/18, there were no notifications of significant end user health effects involving our products. We did not identify any non-compliance with regulations or voluntary codes concerning health and safety impacts of products and services or product and service information, labelling and marketing communications.

 Policy on animal testing: [matthey.com/stewardship-testing](http://matthey.com/stewardship-testing)

<sup>1</sup> e.g. SVHCs under REACH, RoHS or California Prop 65 listed substances.

<sup>2</sup> e.g. controlled by the Montreal Protocol, Stockholm and Rotterdam Conventions, GHS category 1A/1B carcinogens, mutagens or reprotoxins, etc.

# Environmental performance

## Environmental performance summary

		2018	2017	% change
Operational carbon footprint (Scope 1 and 2 market method)	thousand tonnes CO <sub>2</sub> equivalent	<b>445</b>	469 <sup>1</sup>	-5
Energy consumption	thousands GJ	<b>5,104</b>	5,147 <sup>2</sup>	-1
Electricity consumption	thousands GJ	<b>2,055</b>	1,955	+5
Natural gas consumption	thousands GJ	<b>2,722</b>	2,872 <sup>2</sup>	-5
Total waste sent off site	tonnes	<b>71,787</b>	70,200 <sup>3,4</sup>	+2
Total hazardous waste sent off site <sup>5</sup>	tonnes	<b>44,020</b>	43,542	+1
Waste to landfill	tonnes	<b>6,271</b>	6,894 <sup>3</sup>	-9
Water withdrawal	thousands m <sup>3</sup>	<b>2,729</b>	2,643	+3

<sup>1</sup> Carbon footprint data for 2016/17 has been restated using updated methodology to be used to 2025, see further details on page 201.

<sup>2</sup> Restated to reflect updated conversion factors.

<sup>3</sup> Excludes 17,682 tonnes of uncontaminated soil from a construction project in Redwitz, Germany in 2016/17 which was classified as non-hazardous waste to landfill under local law.

<sup>4</sup> Restated to include additional waste stream omitted last year.

<sup>5</sup> Excludes hazardous waste sent for beneficial reuse.

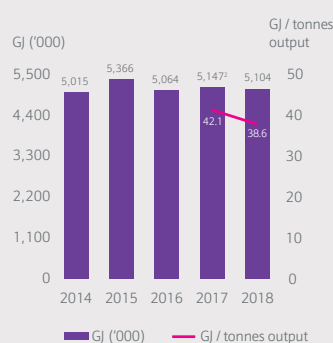
All percentages and ratios in this section are calculated on unrounded numbers.

We have group policies, processes and systems in place to manage our environmental performance and help us realise continuous improvement. In addition to process improvement efforts, the efficiency and longevity of equipment are considered in purchasing decisions and for large capital expenditure projects.

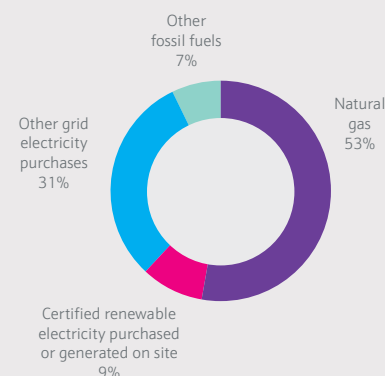
The company also provides environmental policies on areas including emissions to atmosphere, energy management, waste management, protection of waste water discharge systems and discharges to surface and ground water. These policies provide the guiding principles necessary to ensure that high standards are achieved at all our sites around the world.

All our major manufacturing sites are required to maintain certification to the ISO 14001 environmental management system as a means of setting, maintaining and improving standards. The group also requires new or acquired sites to achieve ISO 14001 certification within two years of beneficial operation or acquisition; 89% of such sites are ISO 14001 compliant.

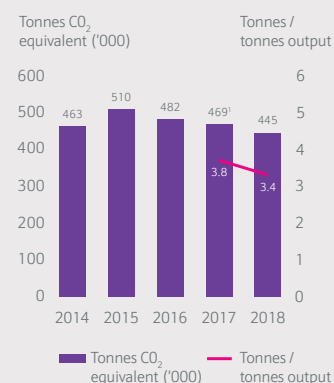
### Energy consumption



### Energy consumption



### Carbon footprint



<sup>2</sup> Restated to reflect updated conversion factors.

<sup>1</sup> Restated using updated methodology to be used to 2025, see further details on page 201.

Going beyond this, 12% of our manufacturing sites are also ISO 50001 compliant. ISO 50001 builds on ISO 14001 and looks specifically at the development of energy management systems to systematically and continuously improve energy efficiency. Our manufacturing sites in Macedonia, South Africa and our major sites in Germany have all achieved this standard.

Every year we undertake a comprehensive review of group environmental performance across all our manufacturing, R&D facilities and large offices that are under our financial control.

### Energy consumption

Group product output grew by 8% in the year. By contrast we recorded a 1% absolute decrease in energy usage within our facilities this year.

The make-up of our energy purchases changed in 2017/18 as our combined heat and power (CHP) plant in Royston, UK was out of service for much of the year as we are replacing it with a new CHP. Electricity usage across the group rose by 5% whilst gas usage declined by a similar amount. 0.2% of our electricity came from local solar power facilities that are not grid connected, a 14% rise on last year (see further details on page 40). In total, 467,960 GJ (21%) of the electricity we consumed during the year came from certified renewable energy sources for which JM is in possession of the associated Renewable Energy Certificates.

### 3 Greenhouse gas emissions

We report greenhouse gas emissions from our manufacturing processes and energy usage in accordance with the 2015 revision of the Greenhouse Gas Protocol ([www.ghgprotocol.org](http://www.ghgprotocol.org)). Our total operational carbon footprint is based on:

- Scope 1 emissions – generated by the direct burning of fuel (predominantly natural gas) and process derived greenhouse gas emissions (CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> and refrigerants).
- Scope 2 emissions – generated from grid electricity and steam use at our facilities.

Although we dual report our Scope 2 emissions, in 2017/18 we have switched to using Scope 2 calculated by a market based method. This reflects the emissions of the electricity we are actually buying more accurately than using location based emissions factors. Market data is available for 57% of our sites and is obtained from local suppliers, energy contractual documents and website declarations. At 80% of sites where competitive electricity purchasing markets are operational, the carbon intensity of electricity we purchased was lower than the national or regional average. Thus, Scope 2 carbon footprint calculated by the market method is 10% lower than the location based method.

21% of grid electricity was purchased on zero carbon tariffs in 2017/18. We expect this percentage to increase in 2018/19 as several of our Pennsylvania area sites switch suppliers.

Our absolute carbon footprint using the market method decreased by 5% in 2017/18. Using less gas and processing cleaner feeds in our pgm refinery yielded a 6% reduction in our Scope 1 carbon footprint. We purchase zero carbon electricity at many of our UK sites. A reduction in the carbon intensity of our electricity purchases around the globe led to a 4% drop in Scope 2 emissions, despite a 5% increase in electricity usage. Relative to production output, our carbon footprint decreased by 12%.

 Pages 39 and 40: Details of our actions to reduce greenhouse gas emissions

### Carbon footprint

	2018 thousand tonnes CO <sub>2</sub> equivalent	2018 % of total carbon footprint	2017 thousand tonnes CO <sub>2</sub> equivalent <sup>1</sup>	2017 % of total carbon footprint
Scope 1	215	48%	229	49%
Scope 2 (market based method)	230	52%	240	51%
Scope 2 (location based method)	279	56%	286	56%
Scope 3 (from electricity transmission and distribution)	20	n/a	22	n/a
<b>Total operational carbon footprint (Scope 1 and 2 market based method)</b>	<b>445</b>	<b>100%</b>	<b>469</b>	<b>100%</b>
<b>Total operational carbon footprint (Scope 1 and 2 location based method)</b>	<b>494</b>	<b>100%</b>	<b>515</b>	<b>100%</b>

<sup>1</sup> Restated using updated methodology to be used to 2025, see further details on page 201.

Strategic Report

Other emissions to air

Emissions from our operations are typically licensed by local regulations and are generated from a number of sources including combustion processes, materials handling and chemical reactions. All sites monitor emissions to ensure compliance with local regulations and set their own absolute targets aimed at reducing significant emissions as part of their local environment, health and safety improvement plans.

Significant developments were made in systems to abate emissions to air. In Germany, new ammonia abatement systems were installed and in China both oxides of nitrogen (NOx) and volatile organic compound (VOC) abatement systems are being installed. The total investment for these systems is around £6.4 million. The VOC abatement system in China was our Clean Air Sector's first VOC abatement system, which allows JM to go beyond compliance and protect the local atmosphere. New government legislation in China means that all our sites in Shanghai will be subject to mandatory NOx, oxides of sulphur (SOx) and VOC reporting going forward.

In 2017/18, our reported NOx (NO + NO<sub>2</sub>) emissions were 383 tonnes, up 10% on the previous year due to an increase in production in our Catalyst Technologies business. Our total SO<sub>2</sub> emissions decreased by 13% to 44 tonnes due to change in the type of material processed through our pgm refinery in Brimsdown, UK.

Our emissions of VOCs decreased by 24% to 101 tonnes. This mainly resulted from a review of the efficiency of the vacuum pumps scrubbing the emissions at our Health Sector's sites.

Our emissions to air data disclosed here are comprised of data from 39% of our manufacturing sites. Within these numbers, we believe we have captured our material emissions across the group but will be working to increase coverage of our emissions to air reporting over the coming year to confirm this.

Waste

In 2016/17 we introduced a more detailed reporting system for waste disposal across the group, allowing us to better track and report the considerable efforts our sites are making in minimising their waste streams and disposing of waste in the most responsible way. We continued to focus on better waste reporting this year and have needed to restate our 2016/17 data to include some waste streams that were previously omitted. We have had our reporting of total solid waste and total hazardous waste data externally assured for the first time in 2017/18.

We disposed of 71,787 tonnes of waste via third parties in 2017/18. Of this 79% is liquid waste, largely dilute aqueous waste coming from our UK pgm refineries. 65% of our total waste sent off site was classified as hazardous waste. 96% of our hazardous waste is very dilute aqueous waste, 65% of which comes from our pgm refinery in the UK and is tankered off site for treatment by third parties; we are actively investigating alternative ways to deal with this waste stream in future years. Only 1,822 tonnes of our hazardous waste is solid material that is not reused or recycled after it has been sent off site. 2% of our hazardous waste was shipped internationally for disposal. This is a 33% drop on last year due to less waste being shipped internationally, mainly from our Clitheroe, UK site.

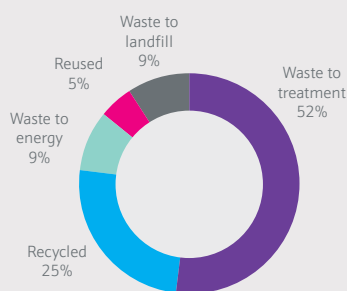
Of the total waste sent off site for treatment, 5% was sent for reuse by others, 25% for recycling, 9% for energy recovery and 9% was sent to landfill. The remainder was sent directly to third parties that offer a variety of treatment and incineration services.

We also incinerated 7,075 tonnes of waste within our own facilities, principally waste sent to our refineries for precious metal recovery.

Other emissions to air

		2018	2017	% change
NOx	tonnes	383	348	+10
SOx	tonnes	44	51	-13
VOC	tonnes	101	132	-24

Where our waste goes



Total waste to landfill



<sup>1</sup> Excludes 17,682 tonnes of uncontaminated soil from a construction project in Redwitz, Germany which was classified as non-hazardous waste to landfill under local law.

## Water withdrawal

Water withdrawal increased slightly this year to 2.7 million m<sup>3</sup>, a 3% increase in absolute terms but a 5% decrease relative to production output. 91% was supplied by local municipal water authorities, 7% was abstracted from groundwater and 2% was abstracted from fresh surface water.

40% sites operate their own waste water treatment facilities treating 1.2 million m<sup>3</sup> of waste water per year, a 3% increase on last year. 27% of the water treated on site is recycled back into our processes rather than being discharged as effluent, reducing the sites' water demand. Our Clitheroe, UK site is leading our initiatives, recycling 64% of its water treated on site.

Our total effluent increased by 1% to 1.6 million m<sup>3</sup> in 2017/18 after data from 2016/17 was restated due to inaccurate billing to our Germiston, South Africa site by its local authority. 86% of our total effluent was discharged to local authority sewers after treatment and in accordance with local discharge consent agreements. The remainder was discharged to surface water courses after treatment and within quality limits set by local water authorities.

Our total consumption (water withdrawn less water discharged) was 1.1 million m<sup>3</sup>, a 7% increase on last year. More information is available on our website in our CDP disclosure.



[matthey.com/cdp-water](https://matthey.com/cdp-water)

The chemical oxygen demand (COD) test is commonly used to indirectly measure the amount of organic compounds in water and is a useful measure of water quality. In 2017/18 the group discharged organic chemicals equivalent to an average COD of 197 mg/L into water courses, as regulated by local emission limits at each manufacturing facility.

This average COD was calculated from readings collected at sites representing 65% of our total water discharged. Some of our sites use a different measure of water quality which cannot be translated directly to a COD calculation and are therefore not included in this measurement.

## Environmental incidents

Johnson Matthey has a robust and effective management system that requires all sites to report environmental incidents to our Group EHS department. All spills that occur on unmade ground or near drinking water sources are classified as significant. One site (Royston, UK) has self-reported an incident to the local authorities in 2017/18 which is still under investigation.

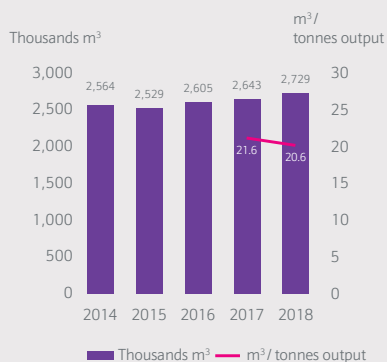
During 2017/18, we received one fine for an environmental permitting requirement breach, which had no environmental impact. This was at our Clean Air plant in Shanghai, where we had begun work to construct a new production line prior to receiving an environmental permit from the Environmental Protection Bureau. The permit was granted retrospectively but the business was fined RMB 1.998 million (approximately £220,000). The management error that led to the breach was subsequently investigated and actioned.

## Environmental performance – priorities for 2018/19

More regular reporting by sites throughout the year (using the recently launched Enablon reporting tool) will enable areas of improvement to be identified and implemented more quickly. It will also allow us to report data from a greater proportion of sites for some areas, such as other emissions to air.

Additionally, we will review and update some environmental policies and their associated guidance.

## Water withdrawal



## Environmental spills

Location	Volume (litres)	Material	Impact
Royston, UK	2,000	Chemicals	Under investigation



# People

Our people are key in delivering our strategy and achieving our vision. We want to harness their commitment to our sustainability goals. At the same time, we want them to be confident that they are coming to work in a safe and healthy environment, with a strong ethical culture, clear values and a positive approach to diversity and inclusion.

## Sustainable business goals

Health and safety <b>1</b>	Our people <b>2</b>	Community engagement <b>6</b>
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## Our values

Protecting people and the planet	Acting with integrity	Working together	Innovating and improving	Owning what we do
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# Creating the right culture

No compromise on health and safety; doing the right thing without question; engaged and enabled people, ready to play their part.

Three of our 2025 goals relate to people and cover health and safety, employee engagement and volunteering in the community. They continue work already in place and build on our achievements. For example, under our Sustainability 2017 programme, we reduced lost time injury and illness rates by 25% and occupational health incidents by 75%. But now we are setting the bar higher for ourselves and there are significant new inclusions in our targets.

As a company handling chemicals and hazardous materials, we must maintain and continuously improve our health surveillance systems and preventative actions.

## 1 Keeping our people healthy and safe

Our vision is for a cleaner and healthier world. As we embark on our sustainable business framework, health and safety – and our aspiration to zero harm – heads the list of our six new goals to 2025. We are building on decades of hard work to enhance health and safety. However, we saw our performance plateau in 2017/18 so much remains to be done in an area where both leadership and employee awareness must always be active and alert.

During the last year we created a strategic environment, health and safety (EHS) leadership committee that developed and approved a three year EHS roadmap, taking us up to 2021. We have analysed our current position in key areas such as process safety, lifesaving policies, occupational health and EHS capability and have defined where we want to be by 2021. These clear targets and the interim milestones will shape our activities over the next years.

Our roadmap to 2021 has four main elements: leadership and personal ownership, managing key risks, management processes and the effectiveness of our EHS staff. While formal tasks have been set for all four elements and their components, what underpins the whole roadmap is personal engagement with the plan.

We expect our leaders to 'walk the talk', for example, through site visits and getting involved in questions, conversations and updates.

We also expect our line managers to take responsibility and give continuous emphasis and clarity on health and safety requirements. And employees are being empowered to participate actively in EHS activities. We are placing a special emphasis on what we call high potential learning events, where we can draw lessons from incidents and risky behaviour. Across JM, everyone is required to follow five clear and simple safety principles and with a health and safety element a requirement of all employees' performance reviews, we ensure it remains firmly on everyone's radar and that they are clear about what is expected from them.

We have designated a core group of our health and safety policies as 'lifesaving policies'. These policies cover known dangers, where policy breaches could endanger life or lead to serious injury. We have eight lifesaving policies covering areas such as process isolation, permit to work, driving, working at height, guarding dangerous machinery and isolating electrical equipment, and have refreshed them during the year. They are available in local languages and we are providing guidance to our sites on how to implement them, using tools such as e-learning, gap assessments and internal audits. The first e-learning module was an overall awareness on all eight of our lifesaving policies and was completed by about 8,000 staff who had access via e-mail. For staff without e-mail, internal briefings were carried out.

The main causes of injuries across JM are slips, trips and falls, hand injuries and ergonomic problems. We have set a behaviour standard in order to prevent injury, the task now is to ensure that employees remain aware of their personal safety at all times, and that of their colleagues. We know from our EHS audits which sites have the highest rates of injury and where they stand in meeting our behaviour standard. To improve performance on these sites, we have introduced safety improvement plans.

These are special short term safety plans specific to a particular site based on its risk profile and EHS performance in lagging and leading indicators. These special plans are over and above our annual EHS plans.

## My Team, My Responsibility

We have continued to implement My Team, My Responsibility, the training programme that builds on our EHS behaviour awareness programme and aligns with our EHS behaviour standard. The training supports work we have already done to encourage employees to take personal responsibility for safety. Team leaders receive training on how to deliver the interactive programme. Back at their local site, team action plans are developed, along with how they will be tracked. These are later submitted to a third party consultancy for audit. The aim of the programme is to help us identify preventative measures to avoid incidents from happening in the first place. It also builds the skills and confidence of team leaders, removes employee reluctance to speak up and make the right behaviours second nature. We plan to complete the implementation of this by end of 2018.

## Process safety risk management

One area of special concern for us is process safety risk management (PSRM), which is all about how we safely manage our most hazardous processes. We are committed to improving safety by embedding process safety capability in our sites through training at all levels. We have completed PSRM training for 96 of our senior executives and also 312 of our site leadership teams. This training was developed with Cogent Skills in the UK and meets the national training standards for process safety. A PSRM experts group has been established which holds regular meetings to discuss strategy and implementation.



Strategic Report

During the year we have updated our own PSRM Policy which defines 'applicable processes', i.e. those with high hazards such as flammable gas and toxic liquids, and also provided detailed guidance for this. We have completed maximum credible event (MCE) studies and gap assessments against our PSRM Policy. We also have developed a process safety audit protocol and audited selected sites.

The focus for the coming year is the completion of the action plans from the MCE studies and the gap assessments against our PSRM Policy, training our process safety champions and embedding process safety indicators. We are also reviewing the resources we have on PSRM and plan to meet the requirements for these with in-house capabilities or through external recruitment.

Occupational health

Occupational health also remains important for us. While the number of occupational illnesses reported each year remains low, we remain vigilant on both known and recently emerging types of illness.

Our approach to occupational health is covered at the group and business level. At group level, for example, we set policy and provide guidance for the management of chemical exposure, which is implemented at our sites. Chemical exposure is a major area of focus for us and incidents are declining.

We continue to conduct work on key areas such as platinum salt exposure because platinum salt sensitivity can occur in some, but not all, employees who are exposed to certain types of platinum salts during the course of their work. We have improved our management of platinum salts and are working with the International Platinum Group Metals Association (IPA) to gain a better understanding of the epidemiology of those at higher risk of sensitisation.

We are seeing an increase in mental health incidents involving stress and we are responding with research and planned action. Following a pilot survey, we identified three factors that are leading to stress in our workplaces: work relationships, work pressures and organisational change. Until recently, companies have not recognised sufficiently the toll that mental health issues are taking. In the UK alone, over 11 million working days a year are lost because of a mental health problem, with one in four people affected.

We are putting in place employee assistance programmes (EAPs) in all of our major countries to support our people. EAPs are voluntary, work-based programmes that offer free and confidential assessments, short term counselling support, referrals and follow-up services to employees who have personal and / or work related problems.

Ergonomics and the prevention of musculoskeletal disorders also remain an area of focus for us. These are tackled at the level of our businesses based on guidance that is provided at group level.

Driving improvement

We provide ongoing training on health and safety to maintain employees' awareness towards known risks and advise on the top injury trends. Our Enablon health and safety reporting platform is used for reporting and analysing risks, which helps us target areas of concern.

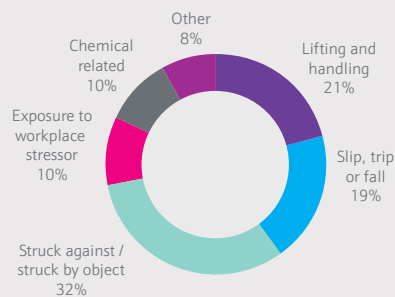
In September 2017 we held a three day conference and training session in North America, attended by 23 EHS professionals and 23 operational staff. During the conference attendees shared best practice, networked and obtained a deeper understanding of the JM EHS strategy, enabling them to better drive EHS performance in their areas.

We have an ongoing programme of regular EHS assurance audits which are undertaken using global protocols. In 2017/18, we undertook 26 audits at our manufacturing and R&D facilities.

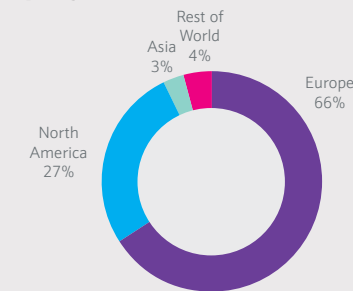
44% of our manufacturing sites are compliant with BS OHSAS 18001, the internationally recognised British Standard that sets out requirements for occupational health and safety management good practice.

In addition, our group occupational health and policy director visits up to five sites a year to audit their occupational health programmes. Occupational health consultants have been appointed in Europe, India, the US and China. They provide help in identifying local problems and implementing solutions.

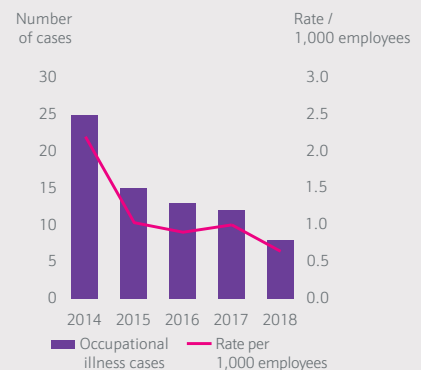
Lost time injuries and illnesses by event type



Lost time injuries and illnesses by region



Occupational illness cases



All of our manufacturing sites have formal health and safety committees to help monitor, collect feedback and advise on occupational safety programmes. They are led by site senior management and meet on a regular basis to cascade plans and ideas to and from our workforce. Over half of our manufacturing sites have a formal joint worker-management health and safety committee comprised of representatives from both staff level and management grades, covering 67% of employees globally.

### Health and safety performance

Our renewed emphasis over the last year has led to a slight improvement in our TRIIR and occupational illness performance. However, our LTIIR of 0.48 was the same as last year. Over the same period, our TRIIR improved from 1.00 to 0.93, a decrease of 7%. There was a total of 68 lost time accidents and illnesses across the group during 2017/18. There were no employee fatalities in the year; the last employee fatality at Johnson Matthey occurred in July 2015. Our performance is summarised in the charts below.

Our construction projects use a contractor workforce and we work hard to ensure the safety of all contractors who work for us. Overall, contractor LTIIR dropped from 3.15 to 0.74. We saw a rise from six lost time incidents involving contractors during 2016/17 to eight during 2017/18.

The drop in contractor LTIIR was due to improved classification and reporting of contractor hours worked, which increased from 381,359 during 2016/17 to 2,171,462 during 2017/18. There were no contractor fatalities in 2017/18; the last one occurred in October 2010.

The number of occupational illnesses reported during 2017/18 was eight, giving a rate of 0.64 illnesses per 1,000 employees in 2017/18 (compared with 1.0 in 2016/17). Of the eight, six were in Europe and two were in North America. By gender, five were males and three were females. No contractor illnesses were reported in 2017/18.

Our overall number of occupational illnesses remains very low and we expect to see annual fluctuations as the figures are subject to statistical variation. We use a health scorecard system developed by the UK Chemical Industries Association to monitor our health performance. This year 64 sites completed the scorecard questionnaire, compared to 69 sites the previous year. Of these, 64% reported average scores of A or B (which corresponds to best practice), the same figure as in the previous year; 30% reported average C scores (which corresponds to our current minimum target score), compared to 26% in the previous year; and 6% reported an average D score (below our current minimum standards), compared to 9% the previous year.

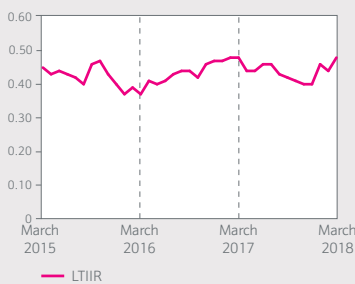
The survey continued to reveal mental wellbeing programmes as the least well performing area of occupational health. It was also the lowest performing topic from sites reporting A and B scores. We are aware of a rising incidence of mental ill health and are conducting internal research to help tackle the problem and provide proactive guidance (as described above).

Alongside our other health and safety performance metrics, we also monitor our OSHA severity rate. The severity rate from the US Occupational Safety and Health Administration (OSHA) is a calculation that gives us an average of the number of lost work days per recordable incident and as such, provides an indication of how critical each injury and illness is. The premise is that an incident that resulted in an employee missing time from work to heal and recover has greater significance than one where the employee can immediately return to work. It is therefore a useful metric for us as we strive to reduce the severity of the incidents that occur at our facilities by improving our workplaces and our behaviours to avoid incurring these more significant incidents.

	2017	At 31st March 2018
OSHA severity	11.2	12.2

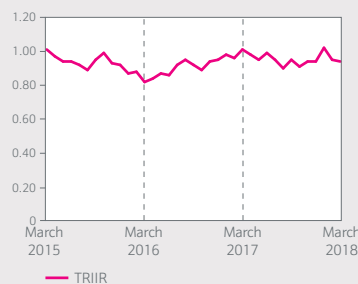
### Lost time injury and illness rate (LTIIR)

per 200,000 working hours in a rolling year



### Total recordable injury and illness rate (TRIIR)

per 200,000 working hours in a rolling year



### Trade union committee representation

31 of our manufacturing sites have active trade unions and 26 of them have a trade union representative on their local health and safety committee. 22 sites have formal trade union agreements that cover health and safety topics (listed in the table below).

### Topics covered by trade union agreements

Topic	% of sites covered
Use of personal protective equipment	86
Participation of worker representatives in health and safety inspections and investigations	82
Training and education	95
Complaints mechanisms	64
The right to refuse unsafe work	95
Periodic inspections	82

## Strategic Report

### Our People Strategy

We want our people to feel that JM is a great place to work, where working safely is a priority, where diversity is valued, and working collaboratively is very much encouraged, all within an environment that promotes growth and development.

Our aim is to become an employer of choice. We have refreshed our company brand, making it more relevant to existing employees and new recruits. Linked to this is our employee value proposition (EVP); this is the essence of how we position ourselves as a company with a unique set of benefits which an employee receives in return for the skills, capabilities and experience they bring to Johnson Matthey. We have begun work on our EVP and plan to develop it further in the coming year.

Guiding our HR practices is our people strategy, which has five pillars:

- attracting and recruiting talent;
- developing and supporting our people;
- rewarding and retaining them;
- embedding our culture and values; and
- supporting change.

The last year has seen considerable progress.

We have launched our first ever JM wide global graduate development programme. The two-year programme has been rolled out in the UK, the US and China, with programme managers in each of the countries. We select high calibre graduates from partner universities who are deployed in one of three disciplines – science, engineering and operations or commercial. Graduates work on stretch projects with defined objectives for three eight-month rotations. After the third rotation, we will consider permanent placement in JM based on what is appropriate for the next phase in their career development. We are making a significant investment in the programme to make it a highly positive experience for the new recruits in the expectation that they will want to make their future careers with us. Alongside this we are improving the consistency of our global recruitment processes and we have launched a single recruitment website for JM. We are also developing a global onboarding programme for all new recruits.

To support our business and growth ambitions, it's important for us to ensure our people understand the career development opportunities that exist across JM. We are also keen to unlock the potential we have within the company and ensure that all employees are enabled to reach their career aspirations.

With this in mind, over the last year we have undertaken a job classification project to enable us to develop a new globally consistent framework of career paths and a common, globally applied job grading system.

All sectors and global functions have been working together to identify the various different roles we have within the organisation and to systematically classify them into a common structure that will operate globally across JM.

We have classified the various roles across the organisation into:

- Job families - a broad grouping of jobs where the type of work performed and knowledge, skills and expertise are related (e.g. Finance); and
- Job disciplines – a narrower grouping of jobs with similar characteristics within a given job family (e.g. Accounting and Control is an example of a job discipline within the Finance job family).

This job classification forms the basis on which CareerPath frameworks and Global Grade systems are established. The CareerPath framework is a tool to help give employees better clarity on the different career steps available in Johnson Matthey across different functional areas. In the past, it has been difficult for people to know how to progress in JM because of a lack of common CareerPaths across our different businesses, countries and functions.

We are piloting a new R&D CareerPath framework that focuses on career steps within the R&D job family. This CareerPath highlights key accountabilities and competencies (technical and behavioural) that are expected at each career level in the R&D job family so it can enable better career aspirations, more meaningful career conversations about opportunities for development and how to match ambitions with the needs and goals of JM as a whole. Once the pilot is complete, we will create CareerPaths in all other job family areas within JM.

We develop employees at all levels of our organisation so that they are equipped with the knowledge and skills our company needs and to improve their career satisfaction.

With a fresh look at the JM strategic drivers and skills needed for the future, we are developing a new leadership development strategy. This includes a series of programmes designed to shift mindsets towards those required for leading through

change. These will be targeted across our leadership pipeline, from first time managers to executives, and will seek to equip leaders to deal with the full range and context of JM's business operations.

This past year we have launched a new pilot development programme for middle level leaders and redesigned the development programme for our senior level executives. This senior executive programme will launch in 2018, along with a new pilot development programme for employees taking on a leadership role for the first time.

As part of our strategic pillar to develop and support our people, we are developing an enhanced approach to performance management under a programme called Inspiring Performance. The decentralisation of our sites meant that, in the past, performance management was handled at a local level, with a lack of global consistency. We are now well advanced in a programme of improving performance management and ensuring it is globally consistent for our management and staff level employees.

We are committed to inspiring, growing and investing in our people, cultivating a continuous feedback culture that empowers employees and leaders to set stretching and achievable outcomes that meet strategic goals. The business goals in JM, and of each of our sectors and global functions are cascaded down so that employees are able to link their personal objectives to business objectives – aligning company and individual aspirations so that our people can see how they can contribute to JM's goals.

We continue to work to ensure that our reward and benefit packages are in line with the location markets. In the past year, we have realigned our UK Pension Scheme to make sure it is more sustainable for the future.

We are working to develop our global wellbeing framework further so that we can support our employees in the areas of emotional, financial, physical and social wellbeing.

There is clear evidence that wellbeing programmes do impact attraction and retention and play a significant role in ongoing employee engagement. As a result, well designed and coherent wellbeing programmes go beyond their proven ability to improve healthcare risks and are now more firmly linked to the business metrics that are a product of a competitive EVP.

In the last year, we reshaped our business into four new sectors. Change is always unsettling to employees and our HR team is providing support to our people as our business transformational change programmes are implemented.

We are taking a holistic view and approach to managing change. We are creating communications toolkits across the businesses and functions to support them in helping employees to understand our new strategy and the reasons for change. The toolkit breaks down the core messages and explains how to cascade to our people.

## 2 Employee engagement

The driving force behind JM is our employees who bring our inspiring science to life every day. Their engagement, last measured in 2016, is evident, but we know we can do better and have made it one of our sustainable business goals. We plan to ensure that Johnson Matthey is truly inclusive, fostering employee engagement and development within a diverse and global workforce (goal 2).

Clear values are essential for securing engagement. As part of our strategy review during 2017/18, we recognised that our previous set of values did not fully support our new strategy and were sometimes confusing. Following internal research and feedback, we have developed a refreshed set of values. They are defined as:

- protecting people and the planet;
- acting with integrity;
- working together;
- innovating and improving; and
- owning what we do.

For each of our values, we have also defined the four or five types of behaviour needed to achieve them, expressed as actions. The behaviours will help people to know what is expected of them and 'what good looks like'. The new values were launched in April 2018 and a programme of work to embed them is underway.

### Engagement survey

Our first global employee engagement survey was conducted in November 2016 and managed for us by employment consultancy Korn Ferry Hay Group. Overall, we scored 61% for employee engagement and 62% for employee enablement, slightly below the industry average. These form the baseline for our sustainable business goal 2.

'Engagement' encourages our people to contribute actively to our success, while 'enablement' measures how we are creating an environment where people can perform at their best.

The survey revealed 'health and safety' and 'doing the right thing' as company strengths. However, we received mixed ratings on clarity around our strategy and the openness and transparency of communications across the company. We made these priorities for action and have developed a far reaching, two-year engagement programme. Our second engagement survey will take place in September 2018.

### JM200

In 2017, the company celebrated its 200<sup>th</sup> anniversary.

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It provided an opportunity for employees to unite as one company to celebrate our success and the positive contribution we make through our science to a cleaner, healthier world.

At the end of our anniversary year, we held an awards ceremony at the Royal Institution in London. The new 'JM200 Awards' recognised the best examples of our people applying Johnson Matthey's values and vision in their everyday work.

The awards, which are set to become an annual event, brought together over 100 shortlisted employees from around the world in an evening of celebration and networking, together with – most appropriately – live science experiments.

## 2 Diversity and inclusion

Diversity and inclusion (D&I) forms part of our drive towards wider employee engagement. There is convincing research from consultants CEB (now Gartner) and McKinsey that companies with high levels of diversity and inclusion see greater employee contributions to the organisation and experience improved retention and morale.

We also believe that it is ethically right and are committed to developing a truly inclusive culture. That means providing equal opportunities for everyone, regardless of their ethnic origin, age, disability, religion, gender identity or sexual orientation.

In line with our Equal Opportunities Policy, we recruit, train and develop employees who are the best suited to the requirements of the job role, regardless of gender, ethnic origin, age, religion or belief, marriage or civil partnership, pregnancy or maternity, sexual orientation, gender identity or disability.

People with disabilities can often be denied a fair chance at work because of misconceptions about their capabilities, and we work to enhance their opportunities by attempting, wherever possible, to overcome the obstacles. This might mean modifying equipment, restructuring jobs or improving access to premises, provided such action does not compromise health and safety standards. This is set out in our policy, which extends to employees who have become disabled during their employment and who will be offered employment opportunities consistent with their capabilities. We would also look to make reasonable adjustments for new recruits.

 [matthey.com/diversity](http://matthey.com/diversity)

We have set up a D&I taskforce and developed a D&I action plan, which launched with JM's D&I month in May 2018.

The D&I action plan has five elements: training and development; standards; data; leadership accountability; and recruitment. Among our targets we plan to add awareness training for the organisation, include D&I content in all our leadership development courses, make D&I part of our global induction process and provide training in unconscious bias for employees involved in recruitment. We will track our progress against this detailed D&I plan using our own criteria with the aim of achieving 100% completion of the plan by 2025 (our sustainable business goal 2).

### Employee resource groups

There is much for us to do to become a truly diverse and inclusive organisation but we have made a good start. We have set up two employee resource groups (ERGs). The first is Pride in JM (inviting LGBT+ membership, together with 'allies' or supporters), which launched in October 2017. Pride in JM is working to create a network of LGBT+ role models and foster inclusivity. It also aims to become an employer of choice, with a place in the top 100 index of UK charity Stonewall (with whom we are partnering) within three years.

## Strategic Report

Our second ERG is a women's group, Netw@rked, launched in Royston, UK in July 2017. A global group is now being formed with the aims of networking, personal empowerment and increasing the proportion of women in the company to reflect the talent pool in society.

The groups have been welcomed by employees – "vital to both increasing confidence and awareness of various groups", in the words of one employee. Next on our list is the formation of a disabilities employee resource group.

### Gender pay gap report

In March 2018, we published our first gender pay gap report, covering UK employees. It showed a median gender pay gap of 9.2%, reducing to 4.7% if pay before any salary sacrifice deductions for voluntary benefits is considered. Our figures compare favourably to the average pay gap for UK companies, which is of 18.8%.

 [matthey.com/gender-pay-gap-17](http://matthey.com/gender-pay-gap-17)

We are working to close the gender pay gap and gender imbalance through our D&I action plan. We are also boosting our investment in apprentice and graduate outreach and encouraging more women into these roles in STEM areas (science, technology, engineering and mathematics).

Over the next year, we plan to roll out our unconscious bias training to our ethics ambassadors, hiring managers and the HR function. We will also complete our global flexible working policy and roll it out.

### Ethics and compliance

A strong culture of 'doing the right thing' will be critical to achieving our vision and strategy. Our aim is to eliminate ethical lapses and breaches of compliance and in doing so, turn our reputation for doing the right thing to our strategic advantage.

Our ethics and compliance strategy has two pillars: (i) promoting an ethical culture across the company; and (ii) implementing a compliance programme underpinned by a framework applied to each risk area.

One of the main ways we promote an ethical culture at JM is through our global code of ethics, 'Doing the Right Thing', which is central to the way we act as a company. The code is available in 22 languages and contains information and resources that enable our employees to make the right choices in line with

our values and demonstrate the highest standards of integrity and ethical behaviour. We plan to refresh our existing code during 2018 in line with best practice.

We have a network of over 85 ethics ambassadors who play an important role in bringing our code of ethics to life, supporting senior leaders with their responsibilities for ethics and compliance and promoting a good ethical culture. In March 2018, we hosted a global conference for our ambassadors to share experiences, best practices and shared challenges whilst strengthening the ethics ambassador network.

Within Johnson Matthey we promote a 'speak up' culture encouraging everyone to speak up when they have a concern or are unsure about something. We encourage individuals to do this through their local management, ethics ambassador, or HR or legal function wherever possible. We also provide employees (and third parties) with an independently run speak up helpline (which can also be accessed online) where concerns can be raised. This helpline also allows individuals, where local law permits, to remain anonymous. The helpline is available to everyone and not just Johnson Matthey employees. An Ethics Panel made up of senior leaders meets monthly to provide oversight of investigations into all speak ups received. The panel reports three times a year to the board with a particular focus on identifying themes and opportunities to continually look to improve the way we do things in JM.

During 2017/18, 144 speak ups were received and investigated which, given our size, is in line with the industry norm in terms of volume (see charts on page 59). We view the increasing numbers as a positive reflection of the confidence in and awareness of the process and many recommendations arising from investigations have been actioned in our businesses.

Everyone within Johnson Matthey has undertaken training on our global code of ethics. Additionally, targeted compliance training is provided to people whose roles expose them to specific risk areas. We regularly review our training and communications materials and methods for delivery to ensure they remain relevant to the risks our business and employees face.

In order to have an effective ethics and compliance programme we have developed, and continue to review, a compliance programme framework

applied to each risk area. These risk areas include bribery and corruption, data protection, export controls and sanctions, conflicts of interest, competition / anti-trust, financial crime (including the new Corporate Criminal Offence of failing to prevent the facilitation of tax evasion), modern slavery (see pages 43 and 44 and activities regulated by the UK Financial Conduct Authority).

Data protection is now subject to sweeping change in Europe, thanks to the EU General Data Protection Regulation (GDPR), which came into force in May 2018. We have an ongoing programme of work to ensure that we are in line with GDPR. Upholding high standards of data privacy and information security is a key focus of our business and we will continue building on this to enhance the privacy culture throughout our organisation.

We are part way through a strategic review of all the third party intermediaries (TPIs) JM uses, initially looking at those that are the highest risk. Focusing deeply on these relationships and, where appropriate, challenging the rationale for them enables us both to mitigate and better manage bribery risks associated with using them, as well as realise commercial benefits from cost savings and improved direct knowledge of our customers and how they operate.

## 6 Engaging with the community

We have a long tradition of community engagement. We work with charities, organisations and schools to help develop the local economy, protect the environment, promote science education and enhance health and nutrition.

In 2017/18, we donated £680,000 to charities, a small decline on the previous year. The major elements of our spend were on STEM education and on health and nutrition. We have a policy which entitles all our permanent employees to two days of paid leave each year, during normal working hours, to support projects and charities in their local communities.

During the year, our people took 678 paid volunteering days. Using the group average cost of an employee per day, this is equivalent to £152,000 in in-kind giving to our local communities. 53% of volunteers' time was spent supporting STEM education in local schools, 14% was spent working on local community development and 12% on contributing to the education of disadvantaged people.

Now, as part of our sustainable business framework, we are reinvigorating our commitment to community investment and hope to increase the number of sites that are active in their local community. We have set ourselves a formal target to increase our volunteer work with local communities; our 2025 goal is 50,000 cumulative volunteer days (goal 6). We are encouraging HR teams and general managers at our sites to promote employee volunteering and are asking employees themselves to identify opportunities for local volunteering that aligns with our strategic aims.

We have set up a new online system on our employee intranet, MyJM, to make it easier for employees to record their volunteering activities. We have also updated our Community Investment Policy and Volunteer Guidelines.

We have continued to support the global children's development charity, Plan International. Together we are working on an education programme in Sierra Leone to train women teachers. In a country where 73% of girls have dropped out of school by the age of 11 and with 92% of teachers being men, there is an overwhelming need for more female teachers to ensure girls are not left behind in their education. Working with Plan International and the Open University, the programme is on track and it is estimated that over 120,000 children will directly benefit over the next ten years. In March 2017, 480 women enrolled in teacher training

college and JM has supported the cost of their tuition fees, learning materials and transport. So far, 476 of them have graduated to their second year. After their third year of training, these young women will be qualified to teach in primary schools. During the year we donated £28,000 to Plan International in support of this, and other projects.

We support employees' fundraising efforts for good causes and match donations up to £1,000 per employee per year (up to a total of £70,000 per annum for the group as a whole). In the last year, employees raised £38,000 for charities and JM matched their contributions. These company-matched contributions are included in our total company donations figure.

### Communicating with external stakeholders

We maintain ongoing communications with our external stakeholders and update them on our activities through regular publications (including this report), our website, surveys and topic specific meetings. We outline details of our major stakeholders on pages 20 and 21.

We are also active members of a number of trade associations which help us to understand, inform and contribute to issues and discussions that are relevant to our stakeholders. Associations we have worked with in 2017/18 include the UK Chemical Industries Association, the Diesel Technology Forum, the Society of Motor Manufacturers and Traders,

the Association for Emission Control by Catalyst, the International Platinum Group Metals Association, the European Precious Metals Federation, the Platinum Group Metals Health Science Research Group of the International Precious Metals Institute in the US, Eurometaux (which represents the European non-ferrous metals industry) and CEFIC (the European Chemical Industry Council). Shareholders are an important stakeholder group. We meet with our major shareholders regularly, as described in the Corporate Governance Report.

 Pages 97 and 98

For investors particularly interested in ethical and socially responsible investments, we meet with specialists from their organisations to discuss sustainability and corporate social responsibility (CSR) issues where applicable and participate in key sustainable investment benchmarking studies. These include the Carbon Disclosure Project (CDP), the Dow Jones Sustainability Index (DJSI), FTSE4Good and Business in the Community.

In March 2017, we received an 'AAA' ESG rating from investment index provider MSCI for the fifth consecutive year. This is the highest possible rating for a company's risk and performance against a range of environmental, social and governance (ESG) factors, and one that places us above our chemical industry peers. We are a constituent of the FTSE4Good UK 50 Index.

### Community investment summary

	Investment in 2017/18 £'000	%
<b>Direct expenditure</b>		
Donations to Plan International	28	3%
Other corporate donations	272	33%
Donations by sites to local charities and community projects	380	46%
<b>Indirect expenditure</b>		
Employee volunteering	152	18%
<b>Total group</b>	<b>832</b>	

39% of our sites had a site-specific local community engagement and development plan that was active during the year. Topics included in the plans were:

Community engagement topic	% sites including topic in their plan
Social impact assessments, including gender impact assessments	23%
Environmental impact assessments and ongoing monitoring	64%
Public disclosure of results of environmental and social impact assessments	23%
Local community development programmes based on local communities' needs	82%
Stakeholder engagement plans based on stakeholder mapping	27%
Broad based local community consultation committees and processes that include vulnerable groups	32%
Works councils, occupational health and safety committees and other worker representation bodies to deal with impacts	50%
Formal local community grievance processes	23%



## Chasing the Sun

For 24 hours, we followed the sun. Sites from Melbourne in Australia to San Diego, USA marked JM's bicentennial year in a way that reflected the local culture at their site and the diversity across the company. We captured events in a live 24 hour broadcast whilst employees shared their experiences with each other through photos, videos and social media posts.

Our vision was at the heart of the celebrations, with many sites planting trees to mirror our commitment to a cleaner, healthier world.

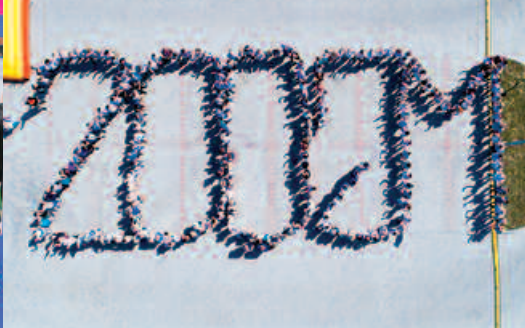


# Celebrating 200 years of inspiring science

2017 was Johnson Matthey's 200<sup>th</sup> anniversary; an impressive milestone worthy of a unique celebration.

It was an opportunity to engage and involve our people in our rich heritage, our strategy for growth and mark our commitment to making the world a cleaner and healthier place.

On 19th July 2017, the 200<sup>th</sup> day of our 200<sup>th</sup> year, employees from our sites across the globe came together as one JM.



Watch our 200<sup>th</sup> anniversary video

# Recognising JM and its people

**2017 was full of memorable events.** We published a book of our history, opened the market at the London Stock Exchange and shared historical memorabilia at our Annual General Meeting.

We closed the year by honouring perhaps the most important part of JM: the achievements of our people. The 'JM200 Awards' celebrated the incredible efforts and successes of our employees and were a fitting way to close our 200<sup>th</sup> anniversary year.



## Strategic Report

# People performance data

## Governance and Human Resources

As a global company, we maintain progressive HR standards backed by group policies. Our HR activities meet local statutory requirements and we often go beyond them to recognise best practice. Our global HR policies are applied across our sites and are supplemented by local policies. Site specific policies and procedures are explained at inductions and through staff handbooks.

Our HR policies and risks are reviewed in accordance with our governance framework, with the board responsible for overseeing the overall people strategy. In addition, the Nomination Committee oversees talent and succession decisions and the Remuneration Committee deals with remuneration policy.

There were no significant fines or non-monetary sanctions for non-compliance with laws and regulations during the year.

### New employees by age category

	Aged under 30			Aged 30 to 50			Aged over 50			Total	Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Europe	210	100	310	209	168	377	46	28	74	465	296
North America	114	53	167	98	37	135	40	10	50	252	100
Asia	111	25	136	175	52	227	6	0	6	292	77
Rest of World	21	6	27	27	13	40	0	0	0	48	19
<b>Total group</b>	<b>456</b>	<b>184</b>	<b>640</b>	<b>509</b>	<b>270</b>	<b>779</b>	<b>92</b>	<b>38</b>	<b>130</b>	<b>1,057</b>	<b>492</b>

### Attendance

Levels of attendance were reduced slightly this year. The average number of days lost per employee in 2017/18 due to sickness and unplanned absence was 5.7 days, up from 4.8 days in 2016/17. This represents 2.2% of lost time per employee in the working year.

### Average number of people employed

The following tables set out the average number of people employed by Johnson Matthey and the net change in the number of people employed during 2017/18 by geographical region and by employment contract.

### Average headcount 2017/18

	Permanent employees			Temporary contract employees			Total	Total
	Male	Female	Total	Male	Female	Total	Total	
Europe	4,614	1,751	6,365	176	124	300	6,665	
North America	2,376	649	3,025	18	11	29	3,054	
Asia	1,597	382	1,979	18	10	28	2,007	
Rest of World	400	183	583	8	2	10	593	
<b>Total group</b>	<b>8,987</b>	<b>2,965</b>	<b>11,952</b>	<b>220</b>	<b>147</b>	<b>367</b>	<b>12,319</b>	

### Annual change in people employed

During the year 459 people left our business through redundancy. This included reductions in New Markets (Battery Materials) in China and Canada, in Health in Europe and North America, as well as reductions due to a reorganisation following the formation of Efficient Natural Resources. We support our employees during their redundancy transition with practical help to find new roles, which often includes a mix of counselling and training in job search techniques, CV preparation and interview techniques.

### Net change between average headcount 2016/17 and 2017/18

	Permanent employees	Temporary contract employees	Total net change
Europe	+215	+4	+219
North America	+7	0	+7
Asia	-172	-4	-176
Rest of World	+47	+8	+55
<b>Total group</b>	<b>+97</b>	<b>+8</b>	<b>+105</b>

### Employee turnover by region

The high level of employee commitment and loyalty to the group continues to bring strength to our businesses. Voluntary staff turnover was low compared to many other organisations at 9.1% (2016/17: 8.9%). The total employee turnover figure increased slightly to 12.8% from 12.3% in 2016/17.

The following table sets out the employee turnover in 2017/18 by geographical region. The employee turnover figure is calculated by reference to the total number of leavers during the year expressed as a percentage of the average number of people employed during the year. The analysis does not include agency workers not directly employed by Johnson Matthey.

	Aged under 30			Aged 30 to 50			Aged over 50			Total leavers	Employee turnover	Voluntary employee turnover
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
Europe	96	58	154	228	130	358	157	48	205	717	10.8%	7.9%
North America	91	31	122	162	45	207	101	32	133	462	15.1%	10.8%
Asia	98	18	116	174	47	221	11	2	13	350	17.4%	11.6%
Rest of World	9	4	13	28	5	33	0	2	2	48	8.1%	4.9%
<b>Total group</b>	<b>294</b>	<b>111</b>	<b>405</b>	<b>592</b>	<b>227</b>	<b>819</b>	<b>269</b>	<b>84</b>	<b>353</b>	<b>1,577</b>	<b>12.8%</b>	<b>9.1%</b>

### Gender diversity statistics

The table below shows the gender breakdown of the group's employees as at 31st March 2018.

As at 31st March 2018	Male	Female	% Male	% Female
Board	6	3	67%	33%
GMC	6	3	67%	33%
Subsidiary directors	95	10	90%	10%
Senior managers	180	60	75%	25%
New recruits	1,057	492	68%	32%
<b>Total group</b>	<b>9,462</b>	<b>3,253</b>	<b>74%</b>	<b>26%</b>

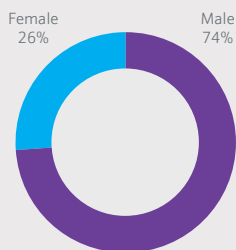
Some individuals are included in more than one category.

### Gender of people employed by employment type

As at 31st March 2018	Full time %		Part time %	
	Male	Female	Male	Female
Europe	73%	27%	25%	75%
North America	79%	21%	50%	50%
Asia	82%	18%	0%	100%
Rest of World	68%	32%	20%	80%
<b>Total group</b>	<b>76%</b>	<b>24%</b>	<b>28%</b>	<b>72%</b>

### Percentage of people employed by gender

As at 31st March 2018	% Male	% Female
Europe	71%	29%
North America	78%	22%
Asia	82%	18%
Rest of World	68%	32%
<b>Total group</b>	<b>74%</b>	<b>26%</b>



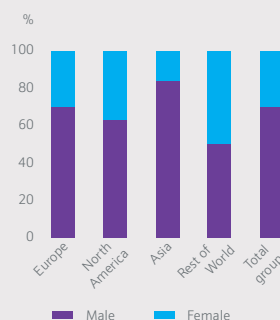
### Trade union representation

26% of our employees (2016/17: 26%) belong to a recognised trade union. We have positive and constructive relations with all the recognised trade unions that collectively represent our employees. The following table sets out the average number and percentage of employees who were covered by collective bargaining arrangements and represented by trade unions by geographical region in 2017/18. During the year no working time was lost due to employee action.

	Permanent employees	Represented	% Represented
Europe	6,365	2,138	34%
North America	3,025	514	17%
Asia	1,979	97	5%
Rest of World	583	308	53%
<b>Total group</b>	<b>11,952</b>	<b>3,057</b>	<b>26%</b>

### Average number of contractors employed

	Male	Female	Total
Europe	608	264	872
North America	48	28	76
Asia	107	21	128
Rest of World	23	23	46
<b>Total group</b>	<b>786</b>	<b>336</b>	<b>1,122</b>



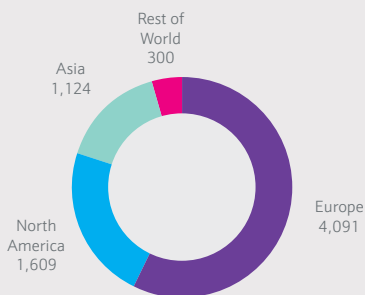
### Speak up reports

In 2017/18 there were a total of 144 speak up reports, an increase of 92% on the 75 cases in the previous year (see page 54). 63% of these were closed in the year. We consider the increase in the number of speak ups to be a signal of the increasing confidence in and awareness of our speak up processes since the launch of our code of ethics in 2015.

Concern / allegation raised	Number of cases
Bribery and corruption / supply chain	15
Business and financial reporting	2
Computer, email and internet use	4
Confidential information and intellectual property	8
Conflict of interest	17
Discrimination including harassment and retaliation	63
Environment, health and safety	16
Fraud	7
Misconduct or inappropriate behaviour	6
Other or general query	4
Violence or threat	2

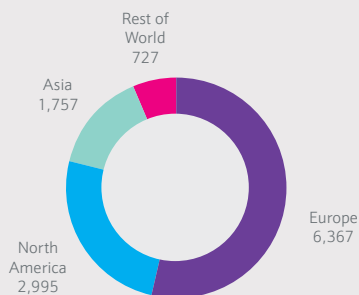
### Anti-bribery and corruption training by region

number of employees



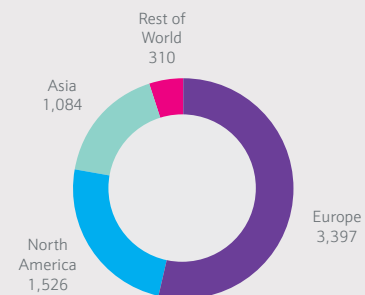
### Code of ethics training by region

number of employees



### Competition law training by region

number of employees



# Financial performance review

Johnson Matthey had a good year. We have made significant progress in executing our strategy and delivered a financial performance in line with our expectations at the start of the year.

## Group performance review

Reported results		Year ended 31st March		% change
		2018	2017	
Revenue	£ million	<b>14,122</b>	12,031	+17
Operating profit	£ million	<b>359</b>	493	-27
Profit before tax (PBT)	£ million	<b>320</b>	462	-31
Earnings per share (EPS)	pence	<b>155.2</b>	201.2	-23
Ordinary dividend per share	pence	<b>80.0</b>	75.0	+7

Underlying <sup>1</sup> performance		Year ended 31st March		% change	% change, constant rates <sup>2</sup>
		2018	2017		
Sales excluding precious metals (Sales)	£ million	<b>3,846</b>	3,578	+8	+7
Operating profit	£ million	<b>525</b>	513	+2	-
Profit before tax	£ million	<b>486</b>	482	+1	-1
Earnings per share	pence	<b>208.4</b>	209.1	-	-

## 2017/18 highlights

### Underlying performance

- Sales grew 7% at constant rates<sup>2</sup>, slightly ahead of our expectations with 8% growth in the second half.
- Underlying operating profit was flat at constant rates, impacted by the US post-retirement medical plan credit (PRMB) in the prior period. Excluding this, operating profit grew 4%<sup>3</sup>.
- Underlying EPS was flat as translational foreign exchange benefits were offset by higher net finance charges and a higher underlying tax rate.
- Free cash flow of £136 million (2016/17: £230 million) was impacted by the expected working capital outflow.
- Average working capital days excluding precious metals reduced by 7 days for the year to 62 days.
- Return on invested capital (ROIC) decreased from 18.2% to 16.4%, mainly due to an increase in the UK pension fund asset and higher precious metal working capital through the year.
- Strong balance sheet with net debt of £679 million; net debt (including post tax pension deficits) to EBITDA of 1.1 times.

### Reported results

- Reported revenue was up 17% primarily driven by higher precious metal prices.
- Reported operating profit of £359 million. This includes major impairment and restructuring charges of £90 million (see page 71 for details) and a £50 million charge relating to a legal settlement as announced in February 2018.
- Reported EPS was therefore down 23%, reflecting the lower operating profit, partly offset by a £24 million tax credit in relation to the change in US tax legislation.
- Cash inflow from operating activities of £386 million.
- Recommended final dividend up 7% to 58.25 pence reflecting continued confidence in our prospects.

#### Notes:

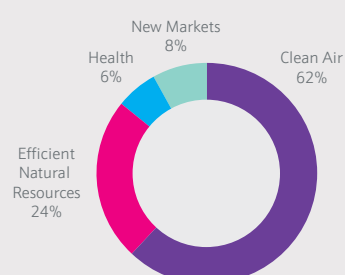
<sup>1</sup> Underlying is before amortisation of acquired intangibles, major impairment and restructuring charges, profit or loss on disposal of businesses, gain or loss on significant legal proceedings together with associated legal costs, significant tax rate changes and, where relevant, related tax effects. For reconciliation see note 4 on page 153.

<sup>2</sup> Unless otherwise stated, sales and operating profit commentary refers to performance at constant rates. Growth at constant rates excludes the translation impact of foreign exchange movements, with 2016/17 results converted at 2017/18 average exchange rates.

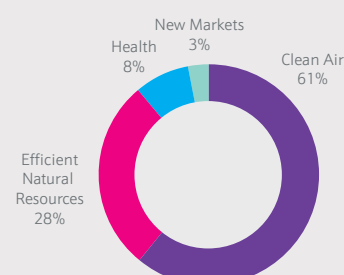
<sup>3</sup> See page 72 for further details of performance excluding the 2016/17 US post-retirement medical plan credit.

For definitions and reconciliations of other non-GAAP measures see page 191.

### Sales by sector



### Underlying operating profit excluding corporate



Strategic Report

# Sector performance review

## Performance summary by sector

### Clean Air

**£2,454m**    **£349m**

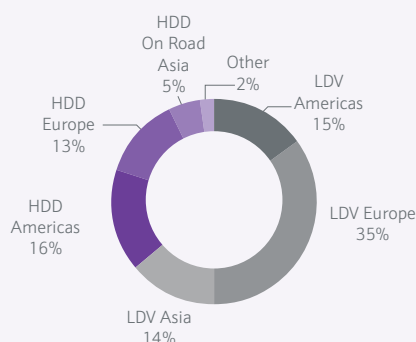
Sales<sup>1</sup> +9%<sup>2</sup>    Operating profit<sup>3</sup> +7%<sup>2</sup>

### Efficient Natural Resources

**£956m**    **£158m**

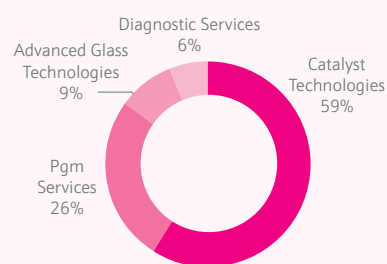
Sales<sup>1</sup> +4%<sup>2</sup>    Operating profit<sup>3</sup> -4%<sup>2</sup>

#### Sales<sup>1</sup> by business



**Heavy Duty Diesel (HDD) 34%**    **Light Duty Vehicles (LDV) 64%**

#### Sales<sup>1</sup> by business



- A global leader providing catalysts to reduce harmful emissions from vehicles
- **Light Duty Vehicles** – catalysts for gasoline and diesel light duty vehicles, including hybrids
- **Heavy Duty Diesel** – catalyst systems for diesel powered trucks and buses and non-road machinery
- **Other** – catalyst systems for stationary equipment

- Creating value from efficient use and transformation of critical natural resources including oil, gas, biomass and platinum group metals (pgms)
- **Catalyst Technologies** – manufactures speciality catalysts and additives, licenses process technology and delivers services to the chemical and oil & gas industry
- **Pgm Services** – marketing, distribution, refining and recycling of pgms, fabricates products using precious metals and related materials and manufactures pgm chemicals
- **Advanced Glass Technologies** – precious metal pastes and enamels primarily for the automotive industry

#### Customer profile

- Car companies
- Heavy duty truck and engine manufacturers
- Local Chinese producers
- Global customer base

#### Major competitors

- BASF
- Umicore
- Cataler

**Margin 14.2%**

**Return on invested capital 30.8%**

**Employees 5,470**

#### Customer profile

- JM businesses and their customers
- Chemical companies
- Engineering contractors
- Oil and gas companies
- Industrial pgm users
- End of life autocatalyst collectors
- Automotive industry suppliers

#### Major competitors

- Haldor Topsøe
- Albemarle
- Umicore
- Clariant
- Grace
- Ferro
- BASF
- UOP
- DuPont
- Lurgi
- Heraeus

**Margin 16.5%**

**Return on invested capital 12.0%**

**Employees 3,711**

<sup>1</sup> Sales excluding precious metals.

<sup>2</sup> At constant rates (see note 2 on page 61).

<sup>3</sup> Underlying (see note 1 on page 61).

## Health

# £247m

Sales<sup>1</sup> +6%<sup>2</sup>

# £44m

Operating profit<sup>3</sup> -13%<sup>2</sup>

## New Markets

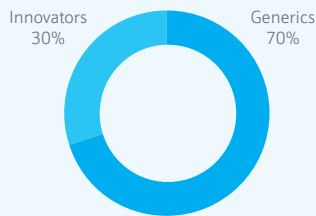
# £312m

Sales<sup>1</sup> -2%<sup>2</sup>

# £17m

Operating profit<sup>3</sup> +34%<sup>2</sup>

### Sales<sup>1</sup> by business



- Leading provider of complex chemistry solutions to generic and innovator pharmaceutical companies
- Develops and manufactures active pharmaceutical ingredients (APIs) for a variety of treatments
- Operates in the large and growing outsourced small molecule API market
- Providing solutions to the complex problems of both generic and innovator companies

### Customer profile

- Multiple small and large branded generic pharmaceutical companies
- Innovative pharmaceutical companies developing novel products

### Major competitors

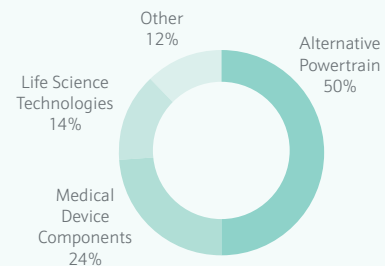
- Noramco
- Cambrex
- Hovione
- Francopia
- AMRI
- Almac
- Siegfried
- Alcami

Margin 18.0%

Return on invested capital 8.4%

Employees 964

### Sales<sup>1</sup> by business



- Accessing new areas of potential growth aligned to global priorities of cleaner air, improved health and more efficient use of natural resources
- **Alternative Powertrain** – provides battery materials for automotive applications, battery systems for a range of applications and fuel cell technologies
- **Medical Device Components** – leverages our science and technology to develop products found in devices used in medical procedures
- **Life Science Technologies** – provides advanced catalysts to the pharmaceutical and agricultural chemicals markets

### Customer profile

- Automotive and heavy duty vehicle companies
- Lithium-ion cell manufacturers
- Fuel cell manufacturers
- High performance cordless tool and niche transport manufacturers
- Medical device companies
- Pharmaceutical, fine chemical and agrochemical companies

### Major competitors

- Umicore
- BASF
- LG
- BMZ
- WL Gore
- 3M
- Heraeus
- Evonik

Margin 5.3%

Return on invested capital 8.1%

Employees 1,714

## Strategic Report

## Operating results by sector

## Clean Air

	Year ended 31st March		% change	% change, constant rates
	2018	2017 restated <sup>1</sup>		
	£ million	£ million		
Sales				
LDV Europe	855	828	+3	-
LDV Asia	351	338	+4	+4
LDV Americas	358	334	+7	+9
<b>Total Light Duty Vehicle (LDV) Catalysts</b>	<b>1,564</b>	1,500	+4	+3
HDD Americas	395	330	+20	+22
HDD Europe	320	259	+23	+20
HDD Asia	131	93	+40	+42
<b>Total Heavy Duty Diesel (HDD) Catalysts</b>	<b>846</b>	682	+24	+24
Other – stationary	44	42	+7	+6
<b>Total sales</b>	<b>2,454</b>	2,224	+10	+9
<b>Underlying operating profit</b>	<b>349</b>	318	+10	+7
<b>Margin</b>	<b>14.2%</b>	14.3%		
Margin excl. PRMB	14.2%	14.0%		
<b>Return on invested capital (ROIC)</b>	<b>30.8%</b>	30.7%		

<sup>1</sup> Restated to reflect a change in group structure.

## Strong sales growth led by double digit growth in HDD catalysts in every region

- Light Duty Europe sales were flat but with a stronger second half. Very strong growth in gasoline offset by a decline in diesel.
- Light Duty Americas sales growth ahead of vehicle production driven by a favourable mix.
- Light Duty Asia sales growth ahead of vehicle production helped by higher substrate content.
- Sales of HDD catalysts were strong across the board and ahead of truck production, helped by a strong Class 8 market, ramp up of business wins in Europe and strong production growth in Asia.
- Excluding the US post-retirement medical benefit (PRMB) plan credit in the prior period, operating profit grew by 9% with margin improving by 0.2 percentage points to 14.2%.

## Light Duty Vehicle (LDV) Catalysts

Our LDV Catalyst business provides catalysts for cars and other light duty vehicles powered by gasoline and diesel. The business grew ahead of global vehicle production.

In Europe, where diesel accounts for approximately 80% of our LDV business, we maintained sales as significant growth in gasoline offset slightly lower sales in diesel.

Sales of diesel catalysts were down 4%, mainly reflecting the impact of lower substrate costs which are passed through directly to customers.

Volume and sales growth excluding substrate were down 1%, broadly in line with market production which was flat year on year. One customer delayed a diesel platform launch from December 2017 to March 2018, which has affected the phasing of our share gains though we remain on track to reach circa 65% by March 2019.

In Western Europe, diesel accounted for 42% of new car sales in 2017/18 compared with 49% in the last financial year. Light duty commercial vehicles remain overwhelmingly diesel today. When these are included the overall share of diesel sales in Western Europe was 48% for 2017/18, compared with 54% in 2016/17.

Diesel's proportion of new car sales has continued to decline and in April 2018 represented 37% of sales. These trends do not change our assumptions of a diesel share of around 25% of total light duty vehicles and 20% of cars by 2025.

Across Europe, production of diesel light duty vehicles for 2017/18 was 10.1 million out of a total of 22.3 million, representing 45%. For 2016/17, 10.1 million diesel light duty vehicles were produced out of a total of 21.8 million, representing 46%.

Sales of catalysts for gasoline vehicles were up 23%, well ahead of the 4% growth in market production. We achieved volume growth ahead of market production and saw an improved sales mix as we applied our science to help customers with solutions for larger and more complex platforms.

As we have outlined, our growth in LDV Europe will be driven, in both diesel and gasoline, by a combination of share gains and increasing value per catalyst over the next few years. Sales in our Asia LDV catalyst business also grew ahead of market production driven by higher substrate content in China, which is passed directly to customers. Excluding substrate, our sales in Asia were flat.

Sales in our Americas LDV catalyst business grew well ahead of market production led by significant growth in sales of catalysts for diesel platforms, which have a higher value.

### Heavy Duty Diesel (HDD) Catalysts

Our HDD business provides catalysts for trucks, buses and non-road equipment. The business had a very strong year, growing significantly ahead of market production in Europe and Asia and benefiting from strong production growth in the Americas, particularly for large (Class 8) trucks.

Our Americas HDD catalyst business saw very strong growth of 22% led by the continued recovery of the Class 8 truck market. Sales of catalysts for Class 8 trucks were in line with the 30% growth in production over the year. We expect the current high levels of production to continue until the end of the 2018 calendar year with year on year growth slowing significantly as it laps a higher base. Catalyst sales to smaller Class 4 to 7 trucks grew slightly.

### Operating profit

Operating profit grew by 7% and margin was broadly maintained. Excluding the US post-retirement medical benefit plan credit in the prior period, margin improved by 0.2 percentage points. Margin was negatively impacted by an adverse platform mix in European Light Duty but this was more than offset by benefits from transactional foreign exchange and from operational gearing in our Americas HDD business given the strong sales growth.

### Estimated LDV sales and production (number of light duty vehicles)\*

		Year ended 31st March		
		2018	2017	%
		millions	millions	change
North America	Sales	20.8	21.1	-1
	Production	17.0	17.9	-5
Total Europe	Sales	20.7	20.2	+3
	Production	22.3	21.8	+2
Asia	Sales	44.1	43.1	+2
	Production	49.3	48.4	+2
Global	Sales	93.6	92.3	+1
	Production	94.6	93.3	+1

\* Source: LMC Automotive.

### Estimated HDD truck sales and production (number of trucks)\*

		Year ended 31st March		
		2018	2017	%
		thousands	thousands	change
North America	Sales	540	479	+13
	Production	540	457	+18
Total Europe	Sales	457	425	+7
	Production	593	565	+5
Asia	Sales	2,019	1,650	+22
	Production	2,092	1,710	+22
Global	Sales	3,112	2,633	+18
	Production	3,321	2,801	+19

\* Source: LMC Automotive.

Our European HDD catalyst business continued to outperform, growing sales by 20% in a market with only a 5% increase in truck production. This outperformance was driven by the ramp up of production from business wins in the last financial year and a continued increase in the proportion of our sales related to higher value products, both coated and extruded.

Our Asian HDD catalyst business continues to grow rapidly from a small base. Sales in China increased by more than 50%, led by high levels of truck production as the impact of loading limits continued to push demand for more trucks and an increase in the catalyst value per vehicle.

### ROIC

Return on invested capital was maintained at 30.8%.

### Outlook

Clean Air is expected to deliver a strong 2018/19 as significant share gains in Light Duty Europe come through. We will mitigate the additional costs from serving these share gains through increased efficiency in our manufacturing footprint and processes. We had previously expected that margin would be negatively impacted by up to one percentage point but we now expect to maintain margin in 2018/19.



## Strategic Report

## Efficient Natural Resources

	Year ended 31st March		% change	% change, constant rates
	2018	2017 restated <sup>1</sup>		
	£ million	£ million		
<b>Sales</b>				
Catalyst Technologies	564	542	+4	+3
Pgm Services	253	234	+8	+9
Advanced Glass Technologies	82	85	-4	-6
Diagnostic Services	57	58	-2	-2
<b>Total sales</b>	<b>956</b>	<b>919</b>	<b>+4</b>	<b>+4</b>
<b>Underlying operating profit</b>	<b>158</b>	<b>163</b>	<b>-3</b>	<b>-4</b>
<b>Margin</b>	<b>16.5%</b>	<b>17.7%</b>		
Margin excl. PRMB	16.5%	17.2%		
<b>Return on invested capital (ROIC)</b>	<b>12.0%</b>	<b>13.4%</b>		

<sup>1</sup> Restated to reflect a change in group structure.

## Good sales growth with efficiencies driving margin improvement in the second half

- Sales growth driven by strong demand for catalyst refills and growth in Pgm (Platinum group metal) Services partly offset by the expected significant decline in licensing income.
- Excluding the US post-retirement medical benefit plan credit in the prior period, operating profit declined 2% and margin was only 0.7 percentage points lower at 16.5% despite the significant decline in licensing experienced in the year.
- We are starting to see the benefits of actions we have taken, including restructuring, destocking and product rationalisation, to improve the quality of the business.

## Catalyst Technologies

Sales in our Catalyst Technologies business, which licenses technology and manufactures speciality catalysts and additives for the chemicals and oil and gas industry, grew 3%. Excluding licensing, the business grew strongly, outperforming its markets in aggregate.

As expected we saw a significant decline in licensing income. Licensing activity remained subdued with limited new plant builds, especially for the technologies we license. We do not anticipate any further decline in the business and whilst we see some early signs of improved activity in certain markets (e.g. methanol), we do not expect a material recovery in licensing income in the near term.

Sales of catalyst first fills were stable, supported in the second half by the increased activity in methanol driven by increased industry capacity coming on stream.

Growth was led by high single digit sales growth in refill catalysts and additives. Sales of refill catalysts to ammonia plants were strong, with customers having delayed turnarounds in 2016/17. Additives sales also grew strongly, mainly driven by deteriorating feed quality which resulted in increased demand for environmental additives to remove SO<sub>x</sub> (oxides of sulphur) impurities. Sales of refill catalysts to methanol and hydrogen plants were lower due to the cyclical nature of our customers' orders.

## Pgm Services

Sales in Pgm Services increased 9%. Our Pgm Refining and Recycling business benefited from higher pgm prices with average palladium and rhodium prices up 39% and 79% respectively, while platinum prices decreased 6%, compared to 2016/17. Volumes were up, supported by good demand for refining of autocatalyst scrap in North America, driven in part by higher metal prices. Our precious metal management activities benefited from the volatility in the precious metal prices over the year.

Sales of chemical products also grew strongly, supported by growth in our Clean Air Sector, which uses pgm materials in its catalyst products. Sales of industrial products containing pgms were down in the year as the business focused on rationalising its product portfolio.

## Advanced Glass Technologies

Sales in our Advanced Glass Technologies business, which primarily provides black obscuration enamels and silver paste for automotive glass applications, declined despite a slight increase in global car production. The decline was principally due to destocking in the supply chain in China following a build-up of inventory at the end of the 2016 calendar year.

## Diagnostic Services

Sales in Diagnostic Services were broadly flat as increased activity in the global reservoir market, leading to higher sales of our tracer technologies, was offset by lower equipment sales.

## Operating profit

As expected, operating profit and margin declined. Excluding the US post-retirement medical benefit plan credit in the prior period, margin was down by 0.7 percentage points. In line with our strategy, we made significant progress in improving the efficiency and quality of our business. This came with some additional costs in the period, principally in relation to destocking. Additionally, as expected, licensing income was significantly down. These more than offset the benefit of higher precious metal prices, transactional foreign exchange and the delivery of the expected cost savings.

## ROIC

Return on invested capital declined 1.4 percentage points to 12.0% impacted by higher precious metal working capital especially through the second half. This was driven by increased precious metal prices and reduced liquidity in these markets.

## Outlook

In 2018/19, we expect slight sales growth and we will continue to improve the quality of our business as we focus our resources on areas of higher future growth. Operating profit will grow ahead of sales. In addition, we will also benefit from £7 million of cost savings in relation to the restructuring programme started in 2017/18.

## Health

	Year ended 31st March		% change	% change, constant rates
	2018 £ million	2017 restated <sup>1</sup> £ million		
<b>Sales</b>				
Generics	173	174	-	+1
Innovators	74	62	+19	+20
<b>Total sales</b>	<b>247</b>	236	+5	+6
<b>Underlying operating profit</b>	<b>44</b>	52	-14	-13
<b>Margin</b>	<b>18.0%</b>	21.9%		
Margin excl. PRMB	18.0%	20.9%		
<b>Return on invested capital (ROIC)</b>	<b>8.4%</b>	10.5%		

<sup>1</sup> Restated to reflect a change in group structure.

## Good sales growth but operating profit impacted by inefficiencies in manufacturing

- Sales growth driven by active pharmaceutical ingredients (APIs) for innovators and non-controlled generics, but partly offset by lower sales of controlled generic APIs.
- Excluding the US post-retirement medical benefit plan credit in the prior period, operating profit declined 9% and margin was 2.9 percentage points lower at 18.0% as the benefits of improved pricing and increased profit shares were more than offset by higher manufacturing costs.
- As we build our platform for break out growth, we started to optimise our manufacturing footprint, including developing our new plant in Annan, UK, and announcing the closure of our Riverside, US plant. This optimisation has associated costs in the short term including higher operating costs in Annan and inventory write downs as we drive efficiency across sites.

## Generics

In our Generics business, where we develop and manufacture generic APIs for a variety of treatments, sales were flat with a mixed performance in the business.

Sales of controlled APIs were down. Our speciality opiate sales grew strongly led by customer orders ahead of an anticipated product launch. However, this was offset by lower sales in relation to ADHD APIs in the US and to bulk opiates in Europe. Our sales of ADHD APIs were impacted by the end of a profit share agreement during the year along with increased competition in the US market which continued from the second half of 2016/17.

Non-controlled APIs grew strongly, driven primarily by an increased profit share contribution from dofetilide, which was launched by our customer in June 2016. This remained the only true generic on the market throughout 2017/18 but two competitors have now received US Food and Drug Administration (FDA) approval and are expected to launch in the first half of 2018/19. This will impact our sales and operating profit in 2018/19.

We invested £16 million in the year on our new API product pipeline. This development of a broader, deeper product portfolio continued in line with our plans to scale the business with three submissions for regulatory approval within the year.

## Innovators

Sales in our Innovators business grew strongly. This was mainly driven by improved pricing and volumes of APIs for branded drugs in commercial production. We continue to invest in growing our innovator product pipeline utilising our chemistry strengths to develop complex APIs for our customers.

## Strategic Report

### Operating profit

Operating profit, excluding the US post-retirement medical benefit plan credit in the prior period, was down 9% and margin declined 2.9 percentage points. Improved pricing and increased profit shares benefited margin. However, these were more than offset by additional costs as we optimise our manufacturing footprint, including higher operating costs associated with our plant in Annan, UK coming on stream and inventory write downs as we drive efficiency across sites.

### ROIC

Return on invested capital declined 2.1 percentage points to 8.4% driven by the lower operating profit.

### Outlook

In 2018/19, sales in our Health Sector are expected to be broadly stable. However, operating profit will be down, particularly in the first half. Several API products with high margin or profit sharing agreements move into decline in 2018/19, reflecting normal product lifecycles of generics, while launches of new API products only have a small contribution in the year. The optimisation of our manufacturing footprint partly mitigates this decline, as it will generate a small net benefit in 2018/19 and a significant benefit once Annan is fully operational in 2020/21.

## New Markets

	Year ended 31st March		% change	% change, constant rates
	2018 £ million	2017 restated <sup>1</sup> £ million		
<b>Sales</b>				
Alternative Powertrain	156	160	-2	-7
Medical Device Components	74	69	+8	+8
Life Science Technologies	45	48	-7	-8
Other	37	31	+18	+19
<b>Total sales</b>	<b>312</b>	<b>308</b>	<b>+1</b>	<b>-2</b>
<b>Underlying operating profit</b>	<b>17</b>	<b>12</b>	<b>+37</b>	<b>+34</b>
<b>Margin</b>	<b>5.3%</b>	<b>4.0%</b>		
Margin excl. PRMB	5.3%	3.3%		
<b>Return on invested capital (ROIC)</b>	<b>8.1%</b>	<b>6.2%</b>		

<sup>1</sup> Restated to reflect a change in group structure.

### Lower LFP sales led to a small sales decline; significant progress in developing eLNO

- Significant decline of lithium iron phosphate (LFP) battery materials was partially offset by strong growth in fuel cells and Medical Device Components.
- Excluding the US post-retirement medical benefit plan credit in the prior period, operating profit grew by 60% reflecting comparison against a £5 million impairment charge in the second half of last year.
- Significant progress in developing eLNO and our strategy to commercialise this market leading next generation product.

## Alternative Powertrain

Our Alternative Powertrain business provides battery materials for automotive applications, battery systems for a range of applications and fuel cell technologies.

Sales were down 7% as the decline in LFP battery material sales more than offset significant growth in fuel cell products. As expected, the business grew sales in the second half following stronger orders for battery system products.

Sales of our LFP battery materials continue to be subdued as the number of platforms we serve is significantly lower than in previous years. This primarily reflects changes in electric vehicle tax incentives in China which has led to increased substitution of LFP by high energy materials. While a recovery in our LFP sales is expected in the medium term, led by demand for our next generation LFP for a range of higher value hybrid applications, we do not see a recovery in the near term given the current competitive landscape and price points.

We continue to make significant progress in the development of our ultra-high energy density battery material, eLNO, as discussed on pages 8 and 10.

Sales of fuel cell products grew by over 50% in the year, helped by increased volumes to stationary applications for existing and new customers. Sales of battery system products were flat following a strong second half as expected.

## Medical Device Components

Our Medical Device Components business leverages our science and technology to develop products found in devices used in medical procedures. Sales growth was strong across product areas, including for example, components for cochlear implants to aid hearing. Growth was driven by customer growth as demand for our products across the world continues to expand.

## Life Science Technologies

Our Life Science Technologies business provides advanced catalysts to the pharmaceutical and agricultural chemicals markets. As expected, sales were lower in the period reflecting lower sales to two large customers.

## Operating profit

Operating profit grew by 34%, helped by comparison against a £5 million impairment charge last year. Excluding this, operating profit was flat as strong growth in medical device components and improved profitability in fuel cells was offset by the decline in LFP sales and by increased development costs for our eLNO battery material.

## ROIC

Return on invested capital increased to 8.1% reflecting the improvement in operating profit.

## Outlook

New Markets is expected to deliver sales and operating profit growth in 2018/19 led by continued growth in fuel cells and Medical Device Components and a stronger year for battery systems.

# Financial review

## Introduction

Johnson Matthey delivered results in line with expectations in 2017/18. At constant rates, sales grew 7% and underlying operating profit was flat. Further aspects of the group's financial performance in 2017/18 are outlined below.

## Corporate

In line with our guidance, corporate costs in the period were £43 million which was an increase of £11 million from 2016/17. This was driven by additional spend on central programmes that will deliver operational excellence and efficiency across the group, including rolling out the global procurement programme, and higher legal costs.

Corporate costs are expected to be higher in 2018/19 reflecting further investment in group efficiency programmes and our IT systems.

## Research and development (R&D)

We invested £193 million on R&D in the period, including £18 million of capitalised R&D, representing 5% of sales.

This was 4% lower than last year, reflecting more focused and disciplined investment into areas of higher potential return. Key areas of spend included next generation technologies in Clean Air, our Health API product pipeline and development of our eLNO battery material.

## Foreign exchange

The calculation of growth at constant rates excludes the impact of foreign exchange movements arising from the translation of overseas subsidiaries' profit into sterling (see note 2 on page 61). The group does not hedge the impact of translation effects on the income statement.

The principal overseas currencies, which represented 86% of non-sterling denominated underlying operating profit in the year ended 31st March 2018, were:

	Share of 2017/18 non-sterling denominated underlying operating profit	Average exchange rate Year ended 31st March		% change
		2018	2017	
US dollar	38%	<b>1.328</b>	1.308	+2
Euro	35%	<b>1.134</b>	1.191	-5
Chinese renminbi	13%	<b>8.79</b>	8.79	-



**Anna Manz**  
Chief Financial Officer

# We had a good year, delivering results in line with our expectations at the start of the year

In our first half, sterling decreased in value against most major currencies compared to the half year ended 30th September 2016. However, this partly reversed in the second half of the year especially in relation to the US dollar. This meant that overall the impact of exchange rates increased sales and underlying operating profit for the year as a whole by £33 million and £9 million respectively following an £86 million and £18 million benefit respectively in our first half.

If current exchange rates (£:\$ 1.354, £:€ 1.143, £:RMB 8.62) are maintained throughout the year ending 31st March 2019, foreign currency translation will have a negative impact of approximately £6 million on underlying operating profit. A one cent change in the average US dollar and euro exchange rates each has an impact of approximately £2 million and £2 million respectively on full year underlying operating profit and a ten fen change in the average rate of the Chinese renminbi has an impact of approximately £1 million.

## Pgm prices

Higher average pgm prices benefited operating profit by around £15 million in the year in Efficient Natural Resources.

## Reconciliation of underlying operating profit to operating profit

	Year ended 31st March	
	2018 £ million	2017 £ million
Underlying operating profit	525	513
Amortisation of acquired intangibles <sup>1</sup>	(19)	(20)
Major impairment and restructuring charges <sup>1</sup>	(90)	-
Loss on disposal of businesses <sup>1</sup>	(7)	-
Loss on significant legal proceedings <sup>1</sup>	(50)	-
<b>Operating profit</b>	<b>359</b>	<b>493</b>

<sup>1</sup> For further detail on these items please see notes 5 to 8 on pages 153 and 154.

## Legal settlement

As announced in February 2018, a lawsuit against a group company, Johnson Matthey Inc. was settled on mutually acceptable terms with no admission of fault. Under the settlement agreement, we have recognised a charge of £50 million in connection with resolution of the lawsuit. This charge has been excluded from underlying operating profit for the year ended 31st March 2018.

## Major impairment and restructuring costs

We have taken restructuring and impairment charges of £90 million in the year, as we execute our strategy and build our platform for future growth. Cash spend was £13 million and in 2018/19 cash spend on restructuring is expected to be £10 million.

The implementation of our group restructuring programme resulted in costs of £43 million, which was below our previous guidance of £50 – 65 million. This programme delivered £12 million of cost savings in 2017/18. We remain on track to deliver around £25 million of annualised cost savings.

In March 2018 we notified employees at our Health Sector Riverside, US facility of our intention to close the plant, as we continue our strategic focus on speciality, low volume, complex APIs. The closure of Riverside led to a charge of £36 million. We expect the plant to cease production by the end of the first half of 2018/19. This is a key part of our plan to optimise our Health manufacturing footprint, which will deliver a small net benefit in 2018/19.

We have also impaired goodwill by £11 million relating to our Water Technologies business within New Markets reflecting lower growth assumptions for this business.

£ million	Impairment and restructuring charge	Associated total cash costs
Group restructuring programme	43	19
Health – Closure of Riverside, US	36	4
New Markets - Impairment of Water	11	-
<b>Total</b>	<b>90</b>	<b>23</b>

## Loss on disposal of businesses

On 31st January 2018, the group sold its UK automotive battery systems business for net proceeds of £5 million which resulted in a loss on sale of £7 million. This is excluded from underlying operating profit.

## Finance charges

Net finance charges in the year amounted to £38 million, up from £31 million in 2016/17. This was the result of higher precious metal funding costs.

We anticipate that net finance charges will be slightly higher in 2018/19 due to rising US interest rates and higher borrowing costs as we expand in China. These will be only partly offset by lower precious metal funding costs.

 The five year record can be found online at: [matthey.com/five-year-record](http://matthey.com/five-year-record)

## Strategic Report

### Taxation

The effective tax rate on reported profit for the year was 6.9%, a reduction of 9.8% from 2016/17.

The lowering of the US federal tax rate led to a revaluation of our US deferred tax assets and liabilities, which has resulted in a £24 million non-cash benefit in the income tax expense line in the income statement for the year ended 31st March 2018. Of this, £23 million has been excluded from the tax on underlying profit.

Tax on underlying profit was 17.7%, an increase of 0.7% from 2016/17.

We currently expect the tax rate on underlying profit for the year ending 31st March 2019 to be around 16%, due to changes in the US tax legislation.

### Our approach to tax

Johnson Matthey has developed a reputation over the last 200 years for integrity and our people take pride in doing the right thing across all aspects of our business. These principles underpin our approach to the management of tax.

We want to be clear and open on our approach so that our stakeholders understand it. Today we have operations in over 30 countries and, for each of those countries, we endeavour to pay our fair share of tax. We follow the laws of the relevant country and our group tax strategy so that we pay the correct and appropriate amount of tax at the right time.

Through implementation of our tax strategy we plan to:

- Optimise global tax incentives and exemptions, such as those which support the research and development of our next generation of sustainable technologies. We will only engage in tax planning which is supported by a clear commercial rationale.
- Have clear and consistent tax policies and procedures to support our business strategy. All our tax policies and guidelines are managed and maintained by our professional tax function which is supported by external advisers. This ensures compliance and allows us to properly respond to global tax changes and developments.
- Proactively identify, evaluate, manage and monitor tax risks arising from our business operations to ensure they remain in line with the group's risk appetite, seeking external advice where necessary.
- Ensure that all tax returns are accurate, complete and are submitted in a timely manner through the activation of a thorough tax risk compliance management process.
- Maintain open, positive and cooperative relationships with governments and global tax authorities.

We also partake in constructive discussions on taxation policies that are relevant to our business. The board approves our tax strategy each year and reviews compliance against it on a regular basis. That way, our strategy will encompass any learning and remain relevant and consistent with our values. The tax strategy satisfies the requirements of UK Finance Act 2016. In line with our code of ethics and commitment to doing the right thing, together with the requirements of Part 3 of The Criminal Finances Act 2017, we are also taking steps to put in place adequate procedures to prevent the facilitation of tax evasion.

### 2016/17 US PRMB

Profit growth for the period was impacted by the comparison against a one-off gain of £17 million mainly following the implementation of an inflation cap on the US post-retirement medical benefit (PRMB) plan. The table below shows the impact of this by sector:

£ million	Year ended 31st March 2017 US PRMB gain
Clean Air	6
Efficient Natural Resources	5
Health	3
New Markets	2
Corporate	1
<b>Total</b>	<b>17</b>

The table below shows the performance excluding the impact of the PRMB:

Adjusted underlying operating profit growth	% change, at constant rates, excl. PRMB <sup>1</sup>
Clean Air	+9
Efficient Natural Resources	-2
Health	-9
New Markets	+60
<b>Group</b>	<b>+4</b>

<sup>1</sup> Excludes the translational FX impact on the PRMB as the impact is immaterial.

### Post-employment benefits

#### IFRS – accounting basis

At the year end the group's net post-employment benefit position, after taking account of the bonds held to fund the UK pension scheme deficit, was a surplus of £190 million, up from a surplus of £63 million at 31st March 2017. This increase in the surplus mainly reflects a reduction in obligations in the UK plan due to a 20 basis point increase in the real (after inflation) discount rate caused by rising corporate bond yields and falling market-implied inflation.

The cost of providing post-employment benefits in the year was £69 million, an increase of £23 million, mainly as a result of the impact of the £17 million one-off credit in the prior year in relation to the implementation of an inflation cap in the US post-retirement medical plan.

#### Actuarial – funding basis

The UK pension scheme has a legacy defined benefit career average section which was closed to new entrants on 1st October 2012 when a new defined benefit cash balance section was opened.

The last triennial actuarial valuation of the career average section as at 1st April 2015 revealed a deficit of £69 million, or £28 million after taking account of the future additional deficit funding contributions from the special purpose vehicle set up in January 2013. The latest valuation update of this section as at 1st April 2017 revealed a deficit of £67 million, or £22 million after taking account of the special purpose vehicle.

During the year a pension increase exchange exercise was conducted whereby current retirees were invited to exchange an inflationary-linked pension for a higher non-increasing pension.

The last triennial actuarial valuation of the cash balance section as at 1st April 2015 revealed a surplus of £2 million with the latest update as at 1st April 2017 showing a deficit of £3 million.

The latest actuarial valuations of our two US pension schemes showed a deficit of £11 million at 30th June 2017 up from a £2 million deficit at 30th June 2016.

The deterioration in the funding position of our defined benefit pension schemes is mainly due to a reduction in gilt yields and in the UK is also due to an increase in inflationary expectations, both of which increased the value placed on the liabilities.

### Capital expenditure

Capital expenditure was £217 million for the year ended 31st March 2018, 1.4 times depreciation and amortisation (excluding amortisation of acquired intangibles). In the year, key projects included:

- A new Clean Air manufacturing plant in Poland to support demand from tightening legislation and the significant share gains made in European Light Duty diesel while also enhancing our efficiency and operating flexibility.
- Continued investment in a new pgm catalyst plant in Germany to meet future demand for a range of products in our Catalyst Technologies business.
- Investment in our Health manufacturing and development facilities in Annan, UK and continued investment in our Health API product pipeline.
- Upgrading our core IT business systems to drive efficiency across the group.

Capital expenditure was below our previous guidance of £285 million for the year due to more rigorous capital allocation and lower than planned spend on our Poland Clean Air plant caused by permitting delays.

Capital expenditure for 2018/19 is expected to be around £390 million as our investments into growth projects increases. Key projects include:

- Clean Air plants in Poland and China to meet the growing demand for our technology.
- Investment in our eLNO demonstration and commercial plants as we commercialise our market leading product.
- Upgrading our core IT business systems.

Depreciation and amortisation (excluding amortisation of acquired intangibles) is expected to increase by around £7 million in 2018/19 primarily as we start depreciation of our investment in upgrading our core IT systems.

### Free cash flow and working capital

Free cash flow was £136 million. Within this, working capital outflows of £158 million were impacted by a precious metal outflow of £84 million driven by higher precious metal prices and volumes, and non-precious metal related outflows of £64 million.

Improvements in efficiency and better control of working capital have driven a reduction in working capital days as sales have grown. Excluding precious metal working capital days have improved to 50 days from 54 days at 31st March 2017. Average working capital days excluding precious metal decreased from 69 days to 62 days. Our target is for working capital excluding precious metal to be in the 50 to 60 day range.

### Dividend

The board has recommended an increase of 7% in the final dividend to 58.25 pence per share. Together with the interim dividend of 21.75 pence per share this gives a total ordinary dividend for the year ended 31st March 2018 of 80.0 pence per share (2016/17: 75.0 pence per share). Subject to approval by shareholders, the final dividend will be paid to shareholders on 7th August 2018, with an ex dividend date of 7th June 2018.

### Return on invested capital (ROIC)

ROIC declined to 16.4% from 18.2%, mainly due to an increase in the UK pension fund asset and higher precious metal working capital during the year. It was also impacted by higher levels of non-current assets reflecting increased investment to drive future growth.

### Capital structure

Net debt at 31st March 2018 was £679 million. This is down £212 million from 30th September 2017 and is a decrease of £37 million from 31st March 2017. Net debt increases to £725 million when adjusted for the post-tax pension deficits. The group's underlying EBITDA increased to £681 million (2016/17: £665 million). As a result, the group's net debt (including post tax pension deficits) to EBITDA was 1.1 times (2016/17: 1.1 times) and, whilst below our target range of 1.5 to 2.0 times, ensures we have flexibility to invest further in the future growth of the business.

### Contingent liability

Johnson Matthey has been informed of failures in certain engine systems for which the group supplied a particular coated substrate as a component for emissions after-treatment. The extent to which, if any, the reported failures are due to the coated substrate supplied by Johnson Matthey group companies has not been demonstrated. Potential solutions for the reported engine system issues and any associated costs have not yet been notified to the group. Johnson Matthey has not been contacted by any regulatory authority and no Johnson Matthey group company has been served with any contract dispute lawsuit, nor has any formal claim for recovery of identified costs been made at this point. Having reviewed its contractual obligations and the information currently available to it, the group believes that were it to be served with a contract dispute lawsuit, it would have defensible warranty positions in respect of its supplies of coated substrate for the after-treatment systems in the affected engines. If required, it will vigorously assert its available contractual protections and defences. The outcome of any discussions is not certain, nor is the group able to make a reliable estimate of the possible financial impact at this stage, if any.



# Treasury policies, going concern and viability

## Treasury policies and financial risk management

Group Treasury is a centralised function within Johnson Matthey based in the UK and US. The role of Group Treasury is to secure funding for the group, manage financial risks and provide treasury services to the group's operating businesses. Group Treasury is run as a service centre rather than a profit centre. The group does not undertake any speculative trading activity in financial instruments.

## Funding and liquidity risk

The group's policy on funding capacity is to ensure that we always have sufficient long term funding and committed bank facilities in place to meet foreseeable peak borrowing requirements.

At 31st March 2018 the group had cash and deposits of £329 million and £510 million of undrawn committed bank facilities available to meet future funding requirements. The group also has a number of uncommitted facilities, including overdrafts and metal lease lines, at its disposal. The maturity dates of the group's debt and committed borrowing facilities as at 31st March 2018 are illustrated in the chart on page 75.

Of the committed bank facilities, £155 million has a final maturity date within the 15 months to 30th June 2019 (the going concern period). £53 million of these committed bank facilities were refinanced in May 2018 for a further two years with a long term relationship bank.

## Going concern

The directors have assessed the future funding requirements of the group and the company and compared it to the level of long term debt and committed bank facilities for the 15 months from the balance sheet date. The assessment included a sensitivity analysis on the key factors which could affect future cash flow and funding requirements. Having undertaken this work, the directors are of the opinion that the group has adequate resources to fund its operations and so determine that it is appropriate to prepare the accounts on a going concern basis.

## Viability

In accordance with provision C.2.2 of the UK Corporate Governance Code 2016, the directors have assessed the viability of the company over a longer period than the 15 months covered by the 'Going Concern' statement.

During the year, the board has carried out a robust assessment of the principal risks affecting the company, particularly those which could threaten the business model. These risks and the actions taken to mitigate them are described in the section on risks and uncertainties. To reach the viability statement conclusion we have undertaken the following process:

- The Audit Committee annually reviews the risk management process to ensure its continuing effectiveness.
- A rolling programme is in place of deep dive reviews of principal risks. In each one, the board receives a presentation on the risk and mitigations from the GMC risk owner.
- Twice a year, a presentation is made to the board from the Group Assurance and Risk Director, explaining the process followed by management to identify, assess and manage risks throughout the business. At this time all of our principal risks are considered along with the linkages between them.
- Throughout the year, a number of deep dives into specific risk areas were conducted by the Corporate Assurance and Risk team, the results of which were presented to and discussed by the board.

The group's prospects are assessed through the annual strategic and business planning processes. This process includes a review of assumptions made and the ongoing assessment of annual and longer term plans, including appraisal of the group strategy and significant capital investment decisions. Reviews are led by the Group Chief Executive and Chief Financial Officer in conjunction with Sector Chief Executives. In addition, the board participates fully in the annual process by reviewing sector strategies throughout the year. During these reviews, the group's current position and its prospects over the forthcoming years are reviewed which allows reaffirmation of the group strategy.

The directors have determined that a three year period to 31st March 2021 is an appropriate period over which to assess the group's viability. As part of our long term planning, the group also prepares forecasts for longer periods than three years, but there is inevitably more uncertainty associated with longer time horizons. We have therefore chosen a three year horizon since this period is also aligned with our normal and well established business planning process which includes preparing and reviewing a three year plan each year.

In making the assessment, we have considered a number of severe but plausible stress scenarios linked to the group's principal risks. We have analysed the impact of the following three hypothetical stress scenarios plus all of them occurring at the same time.

Scenario 1: Business performance risks. Under this scenario we evaluated the possible impact from a faster than expected uptake of electric vehicles and the failure to grow existing businesses and to launch new products.

Scenario 2: Execution risks. This includes poor management of capital projects, significant production losses due to downtime at a major site and the inability to improve certain businesses or sites.

Scenario 3: External and macroeconomic risks. This scenario assesses the impact from a hard Brexit, cyber and IP related risks and from adverse events and movements in commodity markets.

All of our stress tests were derived through discussions with senior management and the board after considering our principal risks and uncertainties.

Our evaluation took account of the group's current financing arrangements and assumes that existing debt and borrowing facilities can be refinanced as they mature, but we have also considered the potential capacity for additional funding should this be required. Our stress testing showed that certain combinations of these hypothetical scenarios would increase JM's funding requirements substantially and risk breaching a key financial covenant, requiring additional funding and potentially mitigating actions in order to maintain sufficient headroom against the covenant limit.

However, we are satisfied that the mitigating actions and our capacity for additional financing will allow JM to effectively respond to the negative impact from a combination of these stress scenarios.

We have also undertaken a reverse stress test in order to identify what additional or alternative scenarios and circumstances would threaten our current financing arrangements.

Based on the results of our assessment, the directors have a reasonable expectation that the company will be able to continue in operation and meet its liabilities as they fall due over a period of at least three years.

### Foreign currency risk

Johnson Matthey's operations are located in over 30 countries, providing global coverage. A significant amount of profit is earned outside the UK. In order to protect the group's sterling balance sheet and reduce cash flow risk, the group has financed a significant portion of its investment in the US and Europe by borrowing US dollars and euros respectively. Additionally, the group uses foreign currency swaps to hedge a portion of its assets.

The group uses forward exchange contracts to hedge foreign exchange exposures arising on forecast receipts and payments in foreign currencies. Details of the contracts outstanding on 31st March 2018 are shown on pages 175 and 176.

### Interest rate risk

At 31st March 2018 the group had net borrowings of £679 million of which 99% was at fixed rates with an average interest rate of 3.1%. The remaining 1% of the group's net borrowings was funded on a floating rate basis. A 1% change in all interest rates would have an immaterial impact on underlying profit before tax.

### Precious metal prices

Fluctuations in precious metal prices have an impact on Johnson Matthey's financial results. Our policy for all manufacturing businesses is to limit this exposure by hedging against future price changes where such hedging can be done at acceptable cost. The group does not take material exposures on metal trading.

A proportion of the group's precious metal inventories are unhedged due to the ongoing risk over security of supply.

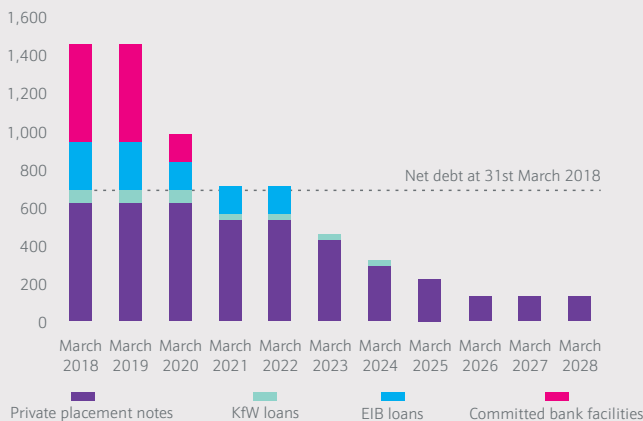
### Credit risk

The group is exposed to credit risk on its commercial and treasury activities. In both cases counterparties are assessed against the appropriate credit ratings, trading experience and market position. Credit limits are then defined and exposures monitored against these limits. In treasury and precious metal management, these exposures include the mark to market of outstanding transactions and potential settlement risks.

 Pages 76 to 81: Our principal risks

### Maturity profile of debt facilities

At 31st March 2018 exchange rates  
£ million



Strategic Report

# Risks and uncertainties

## A holistic approach to managing risk

Our approach to risk management focuses on identifying key risks early and action to reduce the likelihood of these having a detrimental effect on the business. During the year we:

- Continued to strengthen our processes, monitoring and reporting capabilities so that risks continue to be appropriately identified and managed. As with all Johnson Matthey processes, we regularly review our approach to ensure that it continues to meet business needs and supports the effective management of risks while meeting the requirements of the UK Corporate Governance Code.

The effective management of risk enables Johnson Matthey to:

- Improve our decision making, planning and prioritisation.
- Pursue opportunities while keeping risks at an acceptable level in a rapidly changing external environment.
- Effectively deal with risks should they materialise.
- Consider risk and reward and implement controls in the areas that matter most to us.

All this helps us to deliver our strategic objectives.

## Our risk framework

We operate a holistic risk management system that is applied throughout the business:



## How we manage risk

### Evolution of our framework

We recognise that risk management is an important part of our business and continually seek to improve our processes.

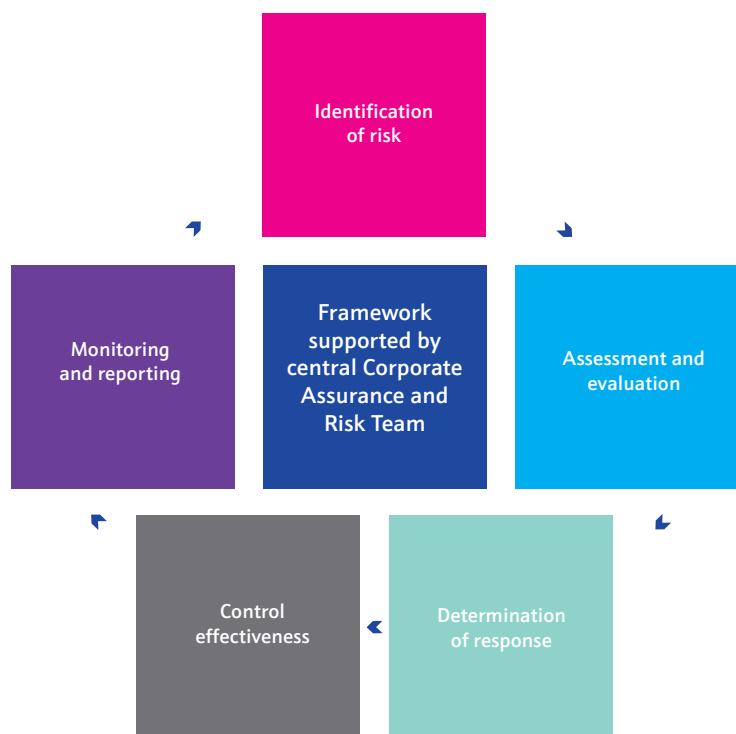
This year we have enhanced our existing processes by continuing to review and refine:

- Our bottom up risk management process, ensuring that our sectors have an embedded risk management process in their businesses which are consolidated and reviewed by the sector leadership twice a year. Training and facilitation is provided to support this.
- Our top down risk management process, to ensure that any risks not materialising through the bottom up process were captured through looking at the external environment and internal environment with the GMC and board.
- Following the revision of our strategy in 2017, we took a fresh look at our risks to confirm that these continued to be aligned to our strategy. With greater clarity of our strategic priorities, we have tightened our risks so that we can focus on understanding worst case scenarios that could threaten our business model, future performance, solvency or liquidity.
- Our approach has meant that we have effective risk related conversations and that these are embedded within the GMC and board agendas; and not just as specific discussions on risk.
- As a result of this activity, our assessment of our risks has changed, narrowing the focus towards the worst case scenario; and deeper more informed conversations that include constructive challenging debates.
- We have embedded risk mitigation monitoring in our business management processes. This therefore means that we are continually monitoring our mitigating activities as part of our normal course of business management and not waiting for a risk management process deep dive to flag progress against plan.
- Our new process puts significantly more focus on monitoring the quality of our mitigation plans. We have embedded continuous monitoring and improvement of the mitigation plans within the business, and ensure there is ongoing challenge to further improve effectiveness of the plans.

### Our risk process

Our risk process is designed to support everyone, at all levels of the business, in identifying and managing risks.

All risks, whether they are identified at the most senior level or throughout the business, are described, analysed and reported using a standard framework. The central Corporate Assurance and Risk team acts as an advisory function and provides independent challenge and review. Each of our business functions also participates in the process, identifying any risks that may prevent them achieving their objectives and describing these in terms of cause and consequence. These are scored using a variety of impact measures, including financial, operational, reputational and people factors. Controls for each risk are described and assessed. Each risk, at every level, has a designated owner who is responsible for ensuring the described controls are effective and efficient. We continually review the level of risk throughout the business and complete a formal submission every six months for reporting purposes (as illustrated in our risk framework opposite).



Strategic Report

Our principal risks and uncertainties

Understanding why and how our principal risks change

The ongoing review of our principal risks ensures that we reflect on the challenges facing our business and the changes that we have made to our business in response to those challenges.

We continually map our principal risks and uncertainties to strategic and business plans to ensure that we have appropriate coverage of risks. Following the revision of our strategy in 2017, we took a fresh look at our risks to confirm that these continued to be aligned to the strategy. With greater clarity of our strategic priorities we have better focused our risks, understanding the worst case scenarios that could threaten our business model, future performance, solvency or liquidity.

As a result of these exercises, we have concluded that for the most part, the overarching areas of risk remain unchanged. In all cases we continue to review and refine the documented mitigations for each risk.

We have also changed our risk reporting to consider whether the risk profile is increasing, decreasing or remaining constant. We believe that provides our board and shareholders greater transparency in reporting compared to reporting the gross or net risk as high, medium or low.

Changes to our principal risks and uncertainties in 2017/18:

- Future revenue growth. Now this is the risk specifically associated with our failure to deliver against the growth opportunities identified in our strategy. Previously it was defined more broadly as the risk associated with revenue growth opportunities, investment decisions, significant capital investment, mergers and acquisitions and research and development activities.

- Applications systems and cyber security. This was added to our principal risks during the year. The external cyber threat is increasing with more sophisticated attacks on a wide range of organisations. The elevation of this risk ensures that the board has greater visibility of the actions we take to mitigate the risk.

**Brexit**

Whilst not a principal risk and uncertainty, Johnson Matthey continues to monitor closely the potential EU exit (Brexit) risks through our businesses. Our well established Brexit working group is composed of a number of functional experts who look to mitigate risks for a range of Brexit scenarios with a specific focus on trade, regulation and our people. Whilst there remains a great deal of uncertainty as to what Brexit will mean for the company, the Brexit working group is developing and implementing plans to ensure Johnson Matthey is able to navigate the best possible outcome for our people, our business and our customers.

**The following table sets out the principal risks and uncertainties facing the group, the mitigating actions for each and an update on any change in the profile of each risk during the course of the year.**

Our risks are not listed from greatest risk to lowest risk; we list our strategic risks first, followed by operational risks. As explained above, we added applications, systems and cyber risk this year. It is our newest risk and so it is listed last.

**1 Existing market outlook**

**Risk and impact**

The risk of a change to the outlook for our key markets is either unplanned or unforeseen and as a result we are poorly positioned to respond.

This risk would include legislative change, for example as a result of Brexit or changes in customer or consumer behaviour impacting our business.

**Mitigation**

- Strategic planning process in place to assess and understand trends across our sectors and markets with an understanding and assessment of the impact of economic and geopolitical uncertainty and legislative changes.
- Plans in place to execute mitigation strategies.
- Mechanisms to monitor changes and launch mitigation actions if required.

**Changes since 2017 annual report**

As we continue to strengthen our strategic planning process, the robustness of our scenario planning is also increasing. However, uncertainty will always be present in the external environment. This risk is unchanged.

**2 Future growth**

**Risk and impact**

To deliver growth as communicated in our capital markets day, we are making significant investments in key growth opportunity areas. This risk considers the potential failure to deliver this growth and create value.

**Mitigation**

- A clear strategy, which is continuously reviewed in the light of new information, and a business review process to track execution of that strategy.
- Appropriate investment in R&D, capital and talent identified to support realisation of the strategy.
- Ongoing monitoring and review of new technologies and market competitiveness.
- Project Management Offices (PMOs) in place to ensure appropriate governance in place and plans are delivering to expected timelines.

**Changes since 2017 annual report**

This risk has been refined to consider our key growth areas as described in our capital markets day. This risk is therefore not directly comparable with that reported in 2016/17.

### 3 Maintaining our competitive advantage

#### Risk and impact

Failure to maintain our competitive advantage in existing markets and, as a result, not meeting customers' evolving needs as efficiently as our competitors.

#### Mitigation

- Strong customer relationships, built around technical proposition, reputation in the market and a high level of technical service.
- Regular strategy reviews to retest the external environment.
- Embedding analysis of competitor strategy and benchmarking relative performance.
- Strong balance sheet to support significant ongoing investment in R&D.
- Active prioritisation of R&D and capital investment to areas of greatest opportunity.

#### Changes since 2017 annual report

This risk is unchanged. We will continue to evolve our position to maintain our competitive advantage.

### 4 Environment, health and safety

#### Risk and impact

In common with other similar manufacturing companies, the group operates in a challenging safety environment that is subject to numerous health, safety and environmental laws, regulations and standards.

If we fail to operate safely we could injure our people. We could breach applicable laws, regulations and standards which could adversely impact our employees, result in lost production time and could attract negative media and regulator interest.

#### Mitigation

- Setting the tone from the top with senior managers leading by example.
- Understanding of our business risk profile.
- Systems and processes to facilitate adherence to corporate policies, procedures and standards.
- Ongoing investment in the business to ensure that our equipment is appropriate.
- Training and awareness activities.
- Risk, audit and safety checks.
- Safety culture programme and behavioural standards.
- Investigations to determine the cause of incidents and accidents and the development of remediation plans.
- An independent hotline for employees to report concerns.

#### Changes since 2017 annual report

This risk is unchanged. Health and safety continues to be our priority and we take our responsibility for environmental impact very seriously.

### 5 Sourcing of strategic materials

#### Risk and impact

As JM has limited suppliers from which to source certain strategic raw materials, any significant breakdown in the supply of these materials would lead to an inability to manufacture and satisfy customer demand.

#### Mitigation

- Strengthening supplier relationship management, regular reviews to discuss supplier capacity constraints.
- Continuing to build expertise in supply chain, logistics, procurement and trade export controls.
- Supplier quality management processes.
- Safety stocks held in strategic locations.
- Research and development to consider alternative materials.
- Business continuity management, identification of critical failure risks and plans in place to manage these.

#### Changes since 2017 annual report

This risk is inherent in our Automotive and Health related businesses, where validated materials are utilised in our products. Risk landscape unchanged.

### 6 People

#### Risk and impact

To execute the JM strategy and deliver growth, we need to ensure that we have the breadth and depth of leadership and the appropriate capabilities.

#### Mitigation

- Assessment of skills and capability requirements.
- JM leadership values and behaviours.
- Robust talent management processes.
- Leadership development programmes.
- Building high quality personal development plans in place for all leaders.

#### Changes since 2017 annual report

With greater clarity of our strategic priorities we have tightened this risk to focus on the skills and capabilities we need now and in the future. We are investing in our leadership and growing talent through robust succession planning to build our future leaders.

## Strategic Report

## 7 Security of metal and highly regulated substances

**Risk and impact**

On any given day, the group has significant quantities of high value precious metals or highly regulated substances on site and in transit; loss or theft due to a failure of the security management systems associated with the protection of metal or highly regulated substances may result in performance impact, reduced customer confidence and potential legal action.

**Mitigation**

- Assay and other process controls.
- Stock takes to check inventories.
- Security awareness campaigns and training.
- Security management systems and site security systems.
- Audits of site security systems and process controls.
- Use of approved carriers for transit.
- Liaison with local law enforcement for high risk sites.
- Insurance coverage for losses from theft or fraud.

**Changes since 2017 annual report**

As reflected at the half year, we saw this risk increase in response to the impact of the metal price on our balance sheet.

## 8 Intellectual capital management

**Risk and impact**

Failure to identify and protect the group's intellectual capital or failure to identify third party intellectual capital rights could lead to a loss in business advantage, loss of freedom to operate and reputational damage associated with litigation.

**Mitigation**

- Business intellectual capital management strategy.
- Ensuring we maintain a data security strategy to protect our intellectual capital.
- Investment in cyber security (see risk 13).
- Annual research and development and intellectual property reviews.
- Monitoring of third party intellectual capital.
- Use of intellectual capital lawyers to provide specialist guidance.
- Training and awareness.

**Changes since 2017 annual report**

We are developing market leading intellectual capital, through intellectual property, in the battery materials and health markets, both of which are crowded and litigious. Although cyber risk to our business is considered separately, it is also recognised as a threat to this risk area. As such we are investing in our mitigating activity to manage our increased risk profile.

## 9 Failure of significant sites

**Risk and impact**

Potential risks include a disruptive event such as fire, flood or earthquake, a major incident at site level such as an explosion or other events such as geopolitical instability.

The consequences associated with this risk include the impact on our ability to manufacture goods and satisfy customer demand.

**Mitigation**

- Assessment of significant sites.
- Business impact analysis for sites covering all activities, e.g. supply chain, production, commercial etc.
- Building plans that enable a comprehensive response to an event and annual testing.
- Insurance of activities.

**Changes since 2017 annual report**

Risk landscape unchanged.

## 10 Ethics and compliance

**Risk and impact**

Failure to comply with ethical and regulatory compliance standards leading to reputational damage, to civil or criminal legal exposure for the company or for individuals or to risk of contractual breach.

**Mitigation**

- Code of ethics and tone from the top set by senior leadership.
- Use of subject matter experts, internal and external, to identify risks, set standards and provide advice and training.
- Suite of legal compliance policies and procedures to mitigate key ethics and compliance risks.
- Code of ethics in place supported by online training and formal acknowledgement.
- Global network of ethics ambassadors.
- Independent confidential speak up hotline for employees, contractors and third parties.
- Investigation / response to all matters overseen by an Ethics Panel.

**Changes since 2017 annual report**

This risk is reassessed on an ongoing basis in the light of the evolving regulatory and business background. In response, we review our policies, processes and controls and amend these as appropriate.

Examples of this include General Data Protection Regulations (GDPR) and the CCO (Corporate Criminal Offence).

## 11 Business transition

### Risk and impact

To position the group for future growth and maximise available efficiencies, we continue to evolve the way in which we run our business. This includes standardising some activities across the group, directed by strong functional leaders, in order to ensure best practice is used and maintained across the group.

The risk is that we fail to achieve the benefits of these efficiencies, lose our business agility and / or fail to maintain a very high level of customer responsiveness.

### Mitigation

- Strategic PMO in place to monitor progress and provide assurance across the workstreams.
- Programme management in place for key initiatives, with group owners cascading plans and agreed deliverables with business leads.
- Audit of key projects with third party assurance where appropriate.
- Communication and employee engagement plans associated with key initiatives.

### Changes since 2017 annual report

Risk landscape unchanged. A number of programmes are in place to mitigate this risk.

## 12 Product quality

### Risk and impact

Our products are used in a wide range of applications, processes and systems. The safety and quality of these products is crucial to ensuring they operate as intended.

Should a product fail to perform as expected, we could be responsible for consumer harm or exposed to liability claims. This could lead to loss of future business, reputational damage and loss of licence to operate.

### Mitigation

- Regulatory framework for compliance in place.
- Developing robust new product introduction process and technical change processes.
- Developing robust manufacturing systems supported by standardised processes.
- Monitoring and reporting of quality performance, taking corrective action where required.
- Quality management systems in place supported by education and audit.
- Robust contract terms and conditions.

### Changes since 2017 annual report

The regulatory environment continues to tighten and our customers are experiencing greater scrutiny which has created pressure for our business.

## 13 Applications, systems and cyber

### Risk and impact

Risks that our applications and systems security is inadequate or fails to adapt to changing business requirements and / or external threats.

The impact of these may adversely affect our financial position and could harm our reputation.

### Mitigation

- Ensuring we maintain a data security strategy in line with the evolving threat.
- Investment in information security systems, monitoring and assurance in support of our data security strategy.
- Mapping of all at risk data and understanding of regulatory requirements.
- Maintenance of a breach reaction plan.

### Changes since 2017 annual report

The external cyber threat is increasing with more sophisticated attacks on a wide range of organisations. Against this backdrop we are investing in our IT infrastructure to support a more efficient business and, in doing so, we are increasing the global consistency and connectivity of our applications and infrastructure. As such, we have decided to elevate the risk of cyber attack from within the risk of failure of a critical site to a principal risk in its own right, to ensure greater board visibility.