



# Strategic Report

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

The Strategic Report from page 2 to page 97 was approved by the board on 30th May 2019 and is signed on its behalf by:

**Robert MacLeod**  
Chief Executive



## Contents

4	JM in profile	60	People
6	Chairman's statement	61	A culture for success
10	Chief Executive's statement	69	Health and safety
13	Group Management Committee (GMC)	74	Recognising our people
14	Our strategy	76	Financial performance review
22	Our business model	77	Group performance review
24	Our sustainability framework	78	Sector performance review
28	Our stakeholders	80	Clean Air
30	Our KPIs	82	Efficient Natural Resources
34	Science	83	Health
40	Customers	84	New Markets
48	Operations	86	Financial review
56	Environmental management	90	Treasury policies and going concern
		91	Risks and uncertainties

# JM in profile

## Johnson Matthey is a global leader in science that makes the world cleaner and healthier.

### What we do

We use our cutting edge science to create solutions to our customers' complex problems. Our science has a global impact in areas that include low emission transport, pharmaceuticals and chemical processing. We apply it in a way that makes the most efficient use of the planet's natural resources.

### Our major markets

We serve customers in the global automotive, chemicals, pharmaceuticals and other industrial markets. Through the quality of our science, our problem-solving ability and strong customer relationships, we hold leading positions in all our major markets.

### Our growth opportunities

We target high growth opportunities that will deliver attractive returns for our shareholders 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.

### Our key highlights

#### Sales<sup>1</sup>

excluding precious metals

**£4.2<sup>bn</sup>**

#### Operating profit

reported

**£531<sup>m</sup>**

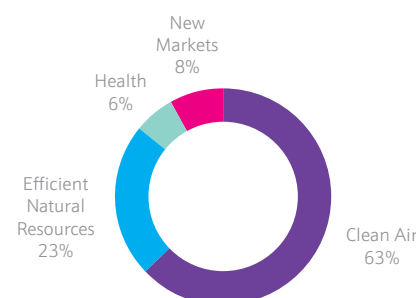
#### Operating profit

underlying

**£566<sup>m</sup>**

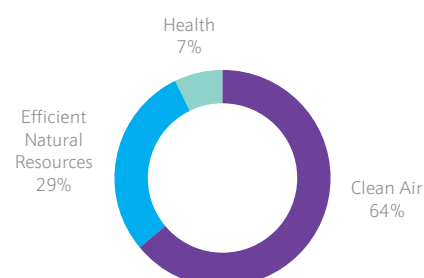
#### Sales by sector

excluding precious metals



#### Operating profit (excluding corporate)

underlying



<sup>1</sup> The group believes that sales excluding precious metals is a better measure of the underlying performance of the group than revenue. Total revenue can be heavily distorted by year on year fluctuations in the market prices of precious metals and, in many cases, the value of precious metals is passed directly on to our customers.

## Our business

### Clean Air

Strategy to deliver sustained growth

- A global leader in catalysts and catalyst systems to reduce emissions from vehicles and industry.
- Creates value from high technology catalyst formulations and systems to meet legislated limits for emissions around the world.
- 13 manufacturing facilities in 12 countries.
- Nine technical centres in eight countries.

See pages 80 and 81 for more information

### Efficient Natural Resources

Strategy to deliver market leading growth

- Creates value from efficient use and transformation of critical natural resources including oil, gas, biomass and platinum group metals (pgms).
- Leading market positions across four global businesses: Catalyst Technologies, Pgm Services, Advanced Glass Technologies and Diagnostic Services.
- 18 manufacturing facilities in eight countries.
- Two technical centres in the UK.

See pages 82 and 83 for more information

Over

30

locations

14,800

people

## Where we operate



### North America

**11** major manufacturing facilities  
**33%** of group sales  
**23%** of employees



### Europe

**14** major manufacturing facilities  
**47%** of group sales  
**53%** of employees

### Rest of Asia

**6** major manufacturing facilities  
**8%** of group sales  
**10%** of employees

### China

**5** major manufacturing facilities  
**7%** of group sales  
**9%** of employees

### Rest of World

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

## Health

Strategy to deliver break out growth

- Leading provider of solutions to the complex problems of both generic and innovator companies.
- Develops and manufactures active pharmaceutical ingredients (APIs) for a variety of treatments.
- Operates in the large and growing outsourced small molecule API market.
- Four manufacturing facilities in two countries.
- Three technical centres in three countries.

✚ See pages 83 and 84 for more information

## New Markets

Strategy to deliver break out growth in battery materials, with market leading cathode material technology

- Accessing new areas of potential growth aligned to global priorities of cleaner air, improved health and more efficient use of natural resources.

✚ See pages 84 and 85 for more information

## Group functions

- Provide common standards to leverage efficiency and create value across the group's sectors.
- Includes global science and technology function which drives innovation and leads R&D in core science and business areas. Supports technology development in sectors.



# Chairman's statement

## Making a huge contribution to a more sustainable future

I'm delighted to be writing to you – shareholders, employees and other interested followers – for the first time as Chairman of Johnson Matthey.

**Johnson Matthey is a remarkable company.**

In a world where many companies are just waking up to sustainability, JM has been punching above its weight on this for years. We make a huge contribution to a more sustainable future, through making the world cleaner and healthier. And we are better qualified to do this than most other companies; we have catalysts that make your car less polluting, ground breaking new technology to take your household waste and turn it into jet fuel and molecules that help combat cancer.

Balancing human prosperity with climate stability – it's the challenge facing us all and it needs nations, industry and individuals to pull together. It is clear that sustainable technologies play a huge part in tackling this and so will JM with the work we do at the leading edge of modern catalysis, process engineering, electrochemistry and synthetic organic chemistry.

We operate in today's technology hot spots and that's why we will continue to make a measurable contribution to a sustainable future. The United Nations Sustainable Development Goals (UN SDGs) provide us with that measure and this year alone, over 87% of our sales came from products that tackle those globally shared goals. So it's not just talk. JM's commitment is lived out through our contribution today and through our investments in sustainable innovations of the future.

### One year in

I'm now one year into my role as Chairman. Before I joined JM I knew it as a company with deeply talented, competent people that translate science into sustainable solutions. I'm pleased to say that over the past year those prior perceptions have been well and truly confirmed and JM is even better than I had thought.

I have made it a priority to really get under the skin of JM over the last year. I met the company's 80 or so senior leaders at their recent annual conference. I was struck by their energy, enthusiasm and real engagement in the company and its future. And all this at a time when JM is undergoing a fundamental change; professionalising its core systems and processes to drive efficiency and value, while continuing to deliver this year's results and shape new business areas for accelerated growth.

I've also spent time at our corporate R&D centre in Sonning, UK, visiting our impressive laboratories there and getting into deep conversation with our brilliant scientists and engineers about their research work. JM is a community of very innovative people. Their deep scientific knowledge and how to use it to solve a customer's problem is JM's unique strength. It is something that takes time to build, is extremely difficult for others to replicate and it's in our DNA.



**Patrick Thomas**  
Chairman

Customers choose to work with JM because of our world class technologies and the relationships they have with our people. That's how we've earned our leading positions in the vast majority of the markets that we serve. But JM does not over shout about what it does. We take great pride in being the company behind the things our customers are most proud of. We want to make heroes out of our customers – and that's what we do.

I've also met shareholders, which left me confident that they are committed for the long term. As you'd expect, discussions covered a broad range of topics from how we are looking at our culture, how we think about sustainability and how we are balancing and prioritising investments across our business opportunities. I was pleased to hear about their interest in our R&D and their support for the investments and changes we are making to grow our business.

We have good mechanisms in place for the board to understand the views of our shareholders and, alongside these, I will continue to be available to our major shareholders throughout the year and look forward to meeting more of you at our AGM in July.

## My first year – two minutes to reflect on 365 days

### Q. What makes JM special?

The massive contribution it is already making to a more sustainable future by applying its brilliant science. And the potential this holds for the long term.

### Q. What are your top three highlights from your first year?

- Meeting JM's people, hearing their stories and feeling their passion and energy for what the company is doing.
- Working as a board in which there is a real feeling of a team effort.
- Sustaining our year on year delivery of dividend growth for our shareholders.

### Q. How many shareholders have you met?

About 30% of our shareholding – a two way dialogue and having the opportunity to understand their views first hand is really crucial, particularly at this time of inflexion as we drive value in Clean Air and invest appropriately to maximise our success in new areas like battery materials.

### Q. What are the board's top three priorities for next year?

- Keep on supporting Robert, the Group Management Committee and senior leaders in their execution of strategy by asking the right questions of them so that we challenge in a constructive way that drives results.
- Continue to evolve our risk management approach by introducing further rigour and more ongoing discussion.
- Getting across our role in monitoring and shaping the culture of JM by always thinking about the tone we are setting and through incorporating more formalised 'culture health checks' in the board agenda.

✦ See page 104 for more information

## Chairman's statement continued

### The job of the board

Robert and the senior management team have continued to deliver our strategy for sustained growth and value creation – and with that, a strong set of financial results. Our job as a board is to actively engage in the development of strategy, provide challenge and ask useful questions. During the year we have done so across a series of strategic topics – in the development of our Battery Materials business, for example, where, by a process of iterative and constructive debate, we have supported the team as they made huge advancements this year, in line with our strategic plans for this business.

One area where we are placing increasing focus as a board, is more active and regular risk management in our meeting agendas through the coming year. This will provide greater rigour to ensure we are looking at our business through a risk management lens at all times and translating this through to real business results.

The board is deeply involved in upholding governance. We've spent time this year looking at the evolving corporate governance scene and at our business in the context of the revised UK Corporate Governance Code. Of particular interest is corporate culture and I was pleased to learn that work was already under way prior to my joining JM and ahead of the revised code which we will report against next year.

We have varied and well balanced expertise, experience and diversity on our board which was boosted at the beginning of April 2019 when we welcomed Xiaozhi Liu as a Non-Executive Director. Her joining coincided with our board visit to JM's site in Shanghai and was extremely well received by the local team as a strong statement of our commitment to the Chinese market. I am very pleased to welcome Xiaozhi to our board. We are already benefiting from her experience and perspective, and from her deep knowledge and understanding of the evolution of the powertrain in different markets of the world.

With the current dynamics and seismic shifts in the automotive industry that lie ahead, it is great to have Xiaozhi in the team.

At the end of the AGM in July, Odile Desforges will step down as a Non-Executive Director after six years as a member of our board. Odile has contributed significantly, particularly with her valuable automotive industry insights; we will miss her and wish her well for the future.

More recently, in May 2019, we announced that Doug Webb will be joining us as a Non-Executive Director from 2nd September 2019. From July 2020 he will also chair our Audit Committee, as Alan Ferguson will be stepping down at that point, after just over nine years on our board. Doug's strong background in finance coupled with his deep understanding of the technology and engineering sectors will complement the experience of our board and I look forward to working with him.

I'm pleased that Alan will be with us for just over another year as we will continue to benefit from his insight and ensure a smooth handover to Doug. Although somewhat premature, I'd like to express gratitude to Alan on behalf of the board for his significant and valuable contributions. Alan will be succeeded as Senior Independent Director by John O'Higgins.

### A culture for success

In my experience, the culture at JM is open and inclusive where people really enjoy working together. We place huge importance on creating a culture of doing what's right and speaking out if things are not. We put people's health and safety first and JM, like any company engaged in potentially hazardous operations, must manage the associated risks. Nothing we do is worth getting hurt for and that is the tone I set – talking safety when I visit our sites and not being afraid to challenge or question on safety matters. I want everyone in JM to be empowered to do the same.

### JM Awards – January 2019

I was honoured to spend time with so many incredible JM people from across the world and to celebrate their amazing achievements. The setting was awe inspiring too – London's Natural History Museum where we sat underneath Hope, the iconic blue whale skeleton. What a fitting environment to celebrate talented people who are making a genuine and tangible contribution to a more sustainable future.



Explore more

Find out more about the 2019 JM Awards  
[matthey.com/jm-awards](https://matthey.com/jm-awards)



## A long term view

JM is a company that delivers sustained growth and value, driving strong returns. Growth comes through innovation and is supported by our commitment to substantial investment in R&D. In a business like ours – one with 200+ years of history – we take a long term view. Our considered investments over many years in fuel cell technology and, more recently in new chemical process technologies, pharmaceutical APIs and battery materials, exemplify this. In that sense we are not tactical, but with the level and pace of change going on in our major markets and with our customers, we are, as always, responding with flexibility and agility.

Underlying earnings per share grew 10% this year and on a reported basis they were up 39%. In light of our strong performance, continued delivery against our strategy and confidence in the group's future growth prospects, the board is proposing a 7% increase in the ordinary dividend.

Sustained year on year dividend growth is a hallmark of JM. I believe we are one of only a handful of companies in the FTSE that has delivered continued growth in its dividend over the last 30 years.

## A successful future ahead

I'd like to finish by personally thanking our shareholders for placing their confidence in us – and that includes the several thousand of our employees who own company shares. I'm pleased to say that your company remains in good shape. We have a clear strategy, grounded with the world class science needed to tackle our planet's most important social and environmental challenges. That is why I am confident of a successful future ahead for JM.

I also want to say a huge thank you to every single JM employee around the world for steering JM through these times of flux and change to deliver what we promised – growth for our shareholders, brilliant products and services for our customers and a continued contribution to a more sustainable future for all.

My final message is to everyone on our planet, and one which I make on behalf of the 14,800 people in JM...

This year, we've made your world a cleaner and healthier place.



**Patrick Thomas**  
Chairman



## Board visit to China – April 2019

We had a hugely valuable visit to some of JM's major operations in China. I really enjoyed spending time with our employees on tours of our facilities, in discussions on our business strategies and over lunchtimes and in the evenings. It's given me a much better understanding of JM's culture and a much deeper understanding of our markets in China. Our trip was timed to perfection too, as it coincided with Xiaozhi Liu, our newest Non-Executive Director, joining the board.

# Chief Executive's statement

## Using our science to make the world cleaner and healthier

**As 2018/19 drew to a close, we sat down with Robert MacLeod to ask him about progress during the year, his expectations for 2019/20 and his perspective on JM's relevance in today's changing world.**

### **How have global megatrends developed for JM over the last year?**

We have an inspiring vision at JM – for a world that is cleaner and healthier, today and for future generations. JM, and what we bring to the world, is arguably more relevant than ever before. Over the last 12 months, we have seen public awareness of, and action on, the world's global challenges increase. The next generation is speaking out on global issues such as climate change and air pollution, and it is these that JM can, and is, using its science to solve.

### **Focus continues on air quality and emissions – how is JM part of the solution?**

The need to improve air quality across the world is leading to tighter emissions standards in many countries. In the longer term this will inevitably lead to a shift towards zero emission transportation, with more customers moving to electric vehicles. However, in the short term the need to significantly reduce emissions from gasoline and diesel vehicles is presenting an opportunity for JM; we are part of the solution.

Our Clean Air business is fabulous. It performed strongly this year despite the weaker global car market. In response to air quality concerns surrounding diesel cars, car buyers in Europe are increasingly favouring petrol engines. In addition, in Europe and Asia, tighter legislation is coming into force for petrol cars and we have reallocated our R&D spend accordingly in order that we can meet these more challenging requirements. Having said that, our R&D investment in diesel technology in prior years has reaped rewards as we have significantly extended our leadership in the market for light duty diesel cars in Europe. Now, around two thirds of all new diesel cars produced in Europe have JM's catalysts on them. Tighter legislation and JM technology means that diesel car emissions are lower than ever before and, in some cases, these cars produce less harmful particulate and NOx pollutants than their petrol counterparts. That means, those people for whom driving a diesel is the most economic choice, can do it in a less environmentally damaging way.

In China and India, our car and truck customers are also getting ready for the introduction of new regulations which begin to be implemented from July this year.

We are therefore expanding our manufacturing capacity for emission control catalysts with major new plants in Europe, China and India; the plants in Europe and China will come on line in 2019/20.

The global automotive industry is going through a once in a lifetime transition. Consumer buying patterns are less predictable and the automotive supply chain, JM included, is being more considered in making investments. With less inherent flexibility throughout the supply chain and less predictable consumer behaviour, JM is supporting our customers, the car companies, as we navigate this mobility transition together.

### **What impact is that having on your other automotive facing businesses?**

The technology used to power our cars is evolving and diversifying, from primarily internal combustion engines to hybrids, battery electric and even fuel cells. JM is very well positioned with our broad portfolio of powertrain technology solutions – emission control, battery materials, fuel cell components – and strong relationships with vehicle manufacturers.

In our Battery Materials business we are using our science and technology expertise to enable the greater adoption of long range pure battery electric vehicles (BEVs) that meet consumers' performance expectations on range, charge time and safety. We are doing this through great technology which we are scaling up and commercialising in line with the predicted acceleration in EV ownership over the next decade.

Our portfolio of leading, ultra high energy density cathode battery materials, which we call eLNO, are next generation – so not designed to compete with materials our competitors have on the market today – and will suit a range of EV applications.

Over the past 12 months, we have made significant progress in commercialising eLNO. We continue to test our materials with our target customers and feedback remains very positive. They are increasingly looking for customised solutions to their problems and this plays right to our strengths. So we have been tailoring eLNO and are building application centres to support our customers' testing.



**Robert MacLeod**  
Chief Executive

In order to manufacture our materials at scale, we have chosen a site in Konin, Poland for our first 10,000 metric tonnes commercial plant as it is close to major customers in the BEV supply chain and we expect to start construction later in 2019/20. The site has the potential for expansion to 100,000 metric tonnes, and we are carefully considering how we could scale our business beyond our initial 10,000 metric tonnes.

At the time we announced our plant location, we also secured our first long term supply agreement with Nemaska Lithium for raw materials – another important step in the road to commercialisation. And we are doing a lot of work to ensure our raw materials sourcing is responsible and in line with our sustainability principles. At the other end of the value chain, we have R&D work under way on battery materials recycling where we are combining our knowledge of battery materials with our many decades of experience in recycling pgms.

In addition, we continue to invest in fuel cell technology which can also be used to power electric vehicles. Fuel cells use hydrogen as a fuel to generate electricity with the only by product being water and so tick the box as a solution for low emission transport. JM has strong technology in this space and in September 2018 we joined the Hydrogen Council so we could work with other industrial players in enabling the uptake of hydrogen as an energy source in transportation, and a wide range of other applications.

So as you can see, we've come a long way and our customers are happy – one of them said that we were a "preferred cathode material company to work with" because of our fast response, willingness to customise the product and our ongoing investment in the science. It's great to hear that we're adding value, which goes back to the core of our strategy – science and technology that helps our customers solve complex problems.

[+ See pages 45 to 47 for our long term view](#)

## Have you delivered operational performance in line with your plans this year?

Yes, we certainly have; 2018/19 has been another successful year for Johnson Matthey. We have made further progress in delivering our strategy of sustained growth and value creation in line with the plans we laid out in 2017, and on strengthening the platform that will enable further long term growth.

We have continued to invest in our world class science and scientists to deliver leading technology into the attractive and growing markets in which we play.

Delivery of our strategy is underpinned by the fundamental changes we are making across all aspects of the group. These are making our business more agile and efficient, and giving us greater capability to deal with the fast changing world around us. We have invested in safety, our people, processes and systems while continuing to target further improvement.

We've delivered a strong set of numbers this year, in line with what we promised, despite a more challenging external environment. This demonstrates the resilience of the group and our ability to adapt and flex to support our customers' needs. It is also reflected in how we are effectively managing the continuing uncertainty in relation to Brexit in our business and with our customers.

If I look across our four sectors, Clean Air performed strongly and we remain excited by the growth opportunity in Battery Materials. We made further investments in Health to develop our pipeline of products. In Efficient Natural Resources, we continue to drive efficiencies while focusing on high growth market segments, although some unscheduled downtime at our UK pgm refinery this year did impact our precious metal working capital. To support our long term growth, and as we broaden our presence in sustainable technologies, we are also developing innovative solutions for fuel cells and battery materials recycling.

[+ See pages 78 to 85 for more information](#)

## And on those ambitions, all geared to sustainable technologies – what progress are you making there?

We are proud of our sustainable technologies and we have six sustainable business goals to direct our progress. This year we've continued to add to our portfolio of technologies and products, not to mention all the work that we are doing in our existing businesses which have a substantial impact upon building a cleaner, healthier world.

We've commercialised a new technology, developed together with BP, to transform household waste into diesel and jet fuels. This is an exciting opportunity for us and we have a licensing agreement with Fulcrum BioEnergy, a biofuel producer, which plans to build a plant in the US using our technology.

We also announced a new strategic partnership with Immunomedics for the large scale production of a drug linker used in a treatment for breast cancer.

[+ See pages 19 and 20 for more information](#)

All the work we do is about delivering outcomes that are valued by our customers and contribute to a more sustainable future for people. We measure our contribution by aligning to the UN SDGs and have set ourselves a goal to double it between 2017 and 2025. We've done well this year, increasing our contribution to over 87% of our sales.

[+ See pages 24 to 27](#)



## Chief Executive's statement continued

At the same time, our customers are getting more tuned in to sustainability. So we are broadening and deepening our approach throughout our whole value chain. This not only enables us to give reassurance to our customers but more excitingly, it unlocks further opportunities for commercial advantage through innovating new sustainable technologies.

So you will see us up our ambition further in this space – right through the whole value chain.

### You talked earlier about the changes you are making to be more flexible and agile. Tell us more?

Sure. We have a number of what we call 'strategy enablers' – a series of programmes that are fundamentally changing how we work. These are bringing consistent approaches and standard processes across JM; delivering operational efficiency, allowing us to be more flexible and agile.

We are achieving this in many ways, for example, through the deployment of a single global enterprise resource planning (ERP) system (SAP) system. The first implementation was successfully completed during the year and we will roll it out across the group over the next few years.

Our procurement programme is also enabling us to drive further efficiencies and savings. Furthermore, through better underlying data and standardised processes, we are gaining an improved understanding of customer and product profitability.

At the same time, we are building capability, not only in procurement, but in other areas including supply chain, capital project delivery and change management which is supporting the delivery of our strategy.

### And how are JM employees supporting the strategy?

JM is full of inspiring and talented people. I've really enjoyed spending more time at our sites this year talking to employees about JM's strategy and their work, answering their questions and listening to their feedback on what they think it's like to work at JM. In September 2018, we also repeated our employee opinion survey. This gives us a good steer on where we are doing well and not so well, and where we need to prioritise. There were plenty of positives – our people told us that they have a better understanding and more connection with our strategy and that we take health and safety and doing the right thing seriously. But overall, they told us they were less engaged than two years prior. As I reflected on these results, I am not so surprised given the broad changes we are making, although it is something I am determined to reverse. We have actions under way and we are going to check in on how we are doing by conducting a pulse survey later this year.

Our people are key in delivering our strategy and vision, and we are doing a lot to create a culture of success. It started last year when we refreshed our values to support the delivery of our strategy, create an inclusive environment and guide us to act safely, ethically and more sustainably. Since then, we've been taking them deep into JM, holding workshops with our staff to explore the behaviours that support our values. We've also been embedding them into our people processes – from performance management and our development programmes, to recruitment and recognition – and we refreshed our code of ethics this year to guide us all in doing the right thing. As we move through different phases of our strategy, I also continue to evolve the shape and mix of skills in the management team to ensure we have the right team to deliver on our ambitions.

Driving the right behaviours in health and safety is a major priority and despite our continued focus, disappointingly our recordable incident rate has remained flat over the last year.

We are injecting new focus on safety leadership and engagement and will continue our efforts to manage our process safety risks by building on the improvements we achieved this year.

See pages 60 to 75

### Finally, what is the group outlook and priorities for 2019/20 and beyond?

For the year ending 31st March 2020, we expect growth in operating performance at constant rates to be within our medium term guidance of mid to high single digit growth.

At current foreign exchange rates (£:\$ 1.295, £:€ 1.157, £:RMB 8.72), translational foreign exchange movements for the year ending 31st March 2020 are expected to adversely impact sales and underlying operating profit by £6 million and £2 million respectively.

#### Building on the board's priorities outlined by Patrick on page 7, our priorities for 2019/20 (pages 16 and 17) are to:

- Continue to develop our science and technology to create the sustainable technologies of the future.
- Deliver in line with our strategic plans for each of our sectors so that we delight our customers with our brilliant products.
- Meet the milestones for our groupwide enabler programmes to drive further efficiencies.
- Involve and engage all our people in building our culture of success where we are safe, ethical and more sustainable.

In doing this, we will continue to strengthen our platform for growth.

We have an amazing vision, a winning strategy and the global drivers of our business are fundamentally strong. Today we face an unprecedented need for new technology to meet global issues. Working together, inspired thinking and the application of scientific knowledge can help us to overcome these challenges and shape a better future for all.



**Robert MacLeod**  
Chief Executive



From left to right: John Walker, Annette Kelleher, Jane Toogood, Robert MacLeod, Anna Manz, Jason Apter, Simon Farrant

## Group Management Committee (GMC)

### **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 is directing our strategy to deliver sustained growth in our largest business sector.

### **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. Robert also has executive level responsibility for our New Markets Sector, environment, health and safety and our sustainable business framework. Currently (since May 2019), our corporate R&D function is reporting to Robert while we are in the process of recruiting a Chief Technology Officer.

### **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 the group's strategic planning and corporate development activities, IT function and our operational efficiency initiatives.

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

Joined the GMC: March 2018

Jason joined JM in March 2018 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.

## Our approach

The following pages demonstrate how our integrated offer is connected from our strategy to our KPIs.



# Our strategy

## Creating long term value and a better future

Our strategy is to use our world class science to solve customers' complex problems. This creates long term value for our shareholders and a cleaner, healthier planet for everyone.

A cleaner, healthier world today and for future generations

Use our world class science to solve customers' complex problems

Delivered through four global sectors

**Clean Air**

Sustained growth

**Efficient Natural Resources**

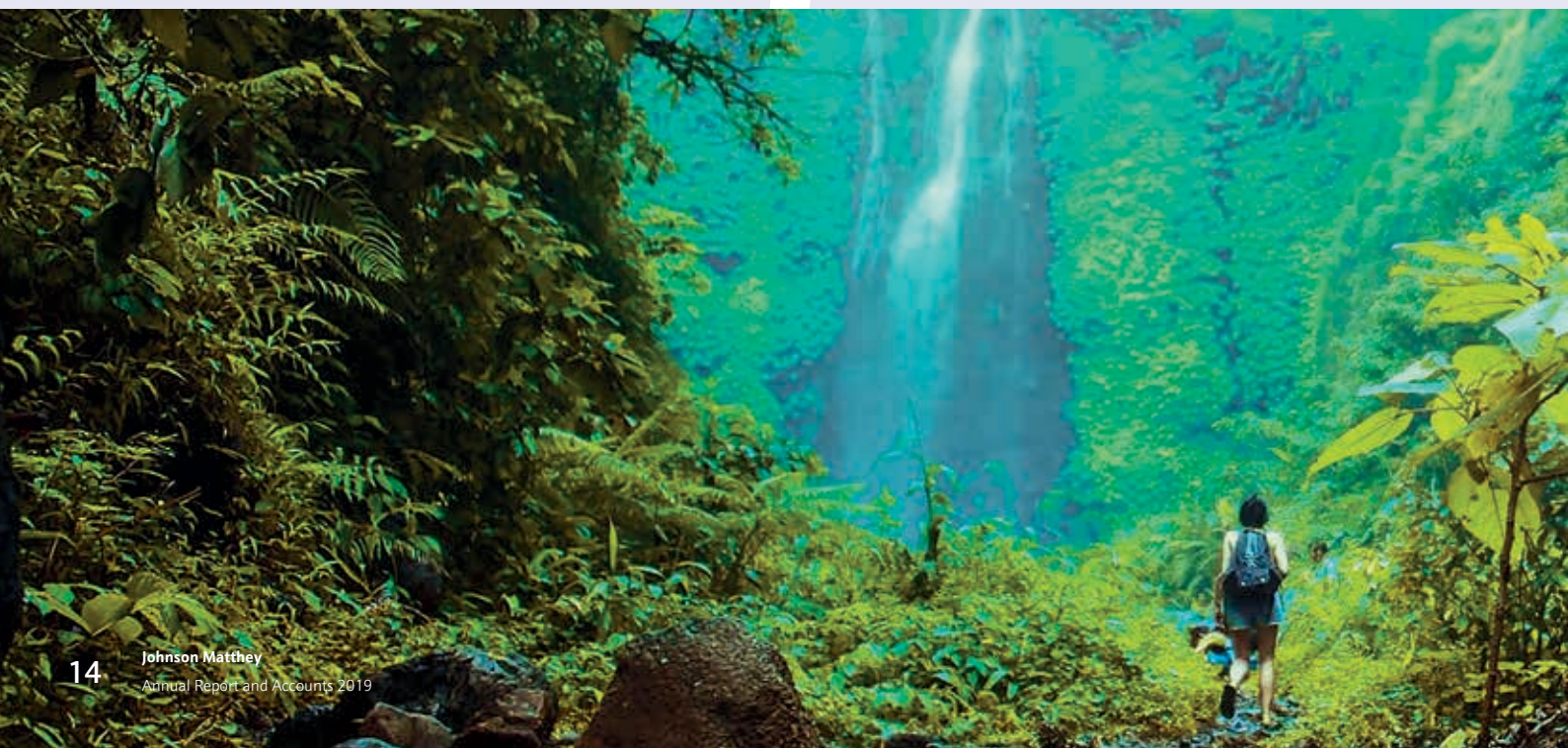
Market leading growth

**Health**

Break out growth

**New Markets**

Break out growth in battery materials





**Enabled by**

Science and  
technology

Rigorous resource  
allocation

Efficiency and  
excellence

Values-driven culture

**Underpinned by being safe,  
more sustainable and doing the right thing**

By 2025 we will have:

- Enhanced technology leadership in our targeted markets.
- Three substantial, growing sectors with sizeable new opportunities realised through our New Markets Sector.
- Excellence in everything we do.

Driving attractive returns:

- Expanding return on invested capital (ROIC) to 20%.
- Mid to high single digit EPS CAGR.
- Progressive dividend.

Have made the world a  
cleaner and healthier place

## Our strategy continued

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.

### Our focus areas

#### Clean Air

Sustained growth

##### Strategic plan

- Maintain technology leadership through R&D.
- Market share gains (already secured) in Europe.
- Tighter legislation in Europe requiring higher value products.
- Tighter legislation in Asia (China and India) driving significantly higher value per vehicle.
- Consistent growth in light and heavy duty catalyst markets in North America.
- Operational efficiency activities that support margin and ROIC.

##### Outcome

World class science creates substantial market share gains for JM and, coupled with legislative change, drives sustained growth.

#### Efficient Natural Resources

Market leading growth

##### Strategic plan

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

##### Outcome

Above market growth through leading positions supported by world class science; enhanced performance through more efficient operations.

#### Health

Break out growth

##### Strategic plan

- Enhancing our capabilities in particle engineering to improve our position as a partner of choice with innovator customers.
- Driving value from existing generics business.
- Commercialising our pipeline of new generic and innovator products.

##### Outcome

Development partner of choice for customers. Our pipeline of new generic products adds circa £100 million to operating profit by 2025.

#### New Markets

Break out growth in battery materials

##### Strategic plan

- Commercialising our leading eLNO ultra high energy density next generation cathode material.
- Scale up through demo, pilot and full production scale; significant ongoing investment to build manufacturing capacity.
- Continued investment in next generation, best in class high energy battery materials.

##### Outcome

JM has market leading product and share of next generation high energy density battery vehicle market.

### Our progress and priorities

#### Progress in 2018/19

- Grew light duty diesel market share in Europe by 20 percentage points to circa 65%.
- Maintained margin of circa 14% through optimised cost base and processes.
- Construction in Poland and China to expand capacity under way.
- Have won expected business in China light duty.

+ Pages 80 and 81

#### Priorities for 2019/20

- Maintain technology leadership to support future growth.
- Complete and ramp up new manufacturing capacity.
- Drive further efficiencies.

#### Progress in 2018/19

- Won first licences for new sustainable technologies including to convert waste to aviation fuel.
- Ran the business more efficiently through:
  - Simplifying product portfolio;
  - Operational improvements, including procurement;
  - Delivering cost savings from restructuring programme.
- Customer survey to drive deeper engagement and improve customer experience.
- Weaker performance in Advanced Glass Technologies due to market slowdown and loss of market share.
- Weaker performance in precious metal working capital due to unscheduled refinery downtime.

+ Pages 82 and 83

#### Priorities for 2019/20

- Continue investment in pgm refineries.
- Targeted investment in new technologies (such as battery materials recycling).
- Drive further efficiencies.

#### Progress in 2018/19

- Grew generics API pipeline to 46 products; including one new product which has launched:
  - Substantially on track although delays to some products.
- Progressed innovator API pipeline; three nearing commercialisation.
- Optimised manufacturing footprint:
  - Completed closure of Riverside plant in US;
  - Ramped up Annan UK plant and made first commercial sales.

+ Pages 83 and 84

#### Priorities for 2019/20

- Complete ramp up at Annan, UK.
- Progress new product pipeline in line with strategy.
- Enhance capability.

#### Progress in 2018/19

- Continued to test eLNO materials and tailor them for customers with positive feedback.
- Started to build the first of our three announced customer application centres.
- Scaled up eLNO manufacture from lab to pilot plant.
- Selected site in Poland for first 10,000 metric tonnes commercial plant; site provides potential for expansion up to 100,000 metric tonnes.
- Signed first long term supply agreement for raw materials with Nemaska Lithium.

+ Pages 84 and 85

#### Priorities for 2019/20

- Further progress on customer qualification.
- Start construction of first commercial plant and determine plans for further scale up.
- Invest in customer application centres.

## Enabled by

## Science and technology

## Strategic outcome

- Sustained market leading positions.

## Progress in 2018/19

- Delivered new market leading technologies across all four sectors.
- Identified 12 new growth opportunities which are at various stages of investment.
- Won multiple external awards for our science.
- Rolled out new career framework to develop our scientists.

➤ Pages 34 to 39

## Priorities for 2019/20

- Achieve technology milestones in:
  - Battery materials;
  - Battery materials recycling;
  - Gasoline technology for Euro 7;
  - Health new product pipeline.
- Deliver action plans for new future growth opportunities.

## Sustainable business

## Strategic outcome

- Sustainability leadership.

## Progress in 2018/19

- Progress made towards three of six sustainable business goals; those relating to:
  - Reducing our greenhouse gas emissions.
  - Increasing contribution of sales to the UN SDGs.
  - Number of volunteering days by our people.
- Those relating to health and safety and to employee engagement were broadly unchanged.

➤ Pages 24 to 27, 31 to 33 and 238

## Priorities for 2019/20

- Continue to embed sustainability into our businesses and functions to make continued progress towards achieving sustainable business goals.

## Efficiency and excellence

## Strategic outcome

- £60 million of savings through procurement.
- More agile and efficient.

## Progress in 2018/19

- £26 million of procurement savings.
- First ERP system roll out.
- First standard customer satisfaction survey carried out in one sector.
- Restructuring programme substantially complete with vast majority of circa £25 million annualised cost savings.

➤ Pages 43 to 44 and 49 to 53

## Priorities for 2019/20

- Deliver additional savings, similar to 2018/19, through procurement.
- Roll out ERP system as planned.
- Deliver further efficiency benefits and extend customer satisfaction survey to all sectors.

## Values-driven culture

## Strategic outcome

- Peer group leading health and safety performance.
- Engaged and enabled workforce.

## Progress in 2018/19

- Improvement in leading indicators – 50% increase in learning events.
- Process safety risk reduced – 75% of maximum credible event (MCE) assessment actions closed.
- Overall behavioural safety performance flat.
- Second global employee opinion survey showed marginally lower engagement score, action plans in place.
- Rolled out new values and started to embed into business processes.

➤ Pages 60 to 75

## Priorities for 2019/20

- Achieve targeted improvement in our environment, health and safety leading indicators.
- Deliver process safety and life saving policies action plan.
- Improve engagement and enablement of employees from targeted actions following 2018 survey feedback as evidenced by a 2% improvement measured through a 2019 pulse survey.
- Continue to embed our values and explain JM's strategy so employees are clear on their role in delivering it.

## Clean air for all

## Direct impact of JM's products

3.43 million tonnes of pollutants removed.

## Longer healthier lives

## Direct impact of JM's products

181,000 lives positively impacted by new APIs launched since 2015.

## Shaping a new era of clean energy

## Direct impact of JM's products

10.1 million tonnes (CO<sub>2</sub> equivalent) of greenhouse gases removed.

## Achieving more from less

## Direct impact of JM's products

216,000 tonnes (CO<sub>2</sub> equivalent) of greenhouse gases avoided.

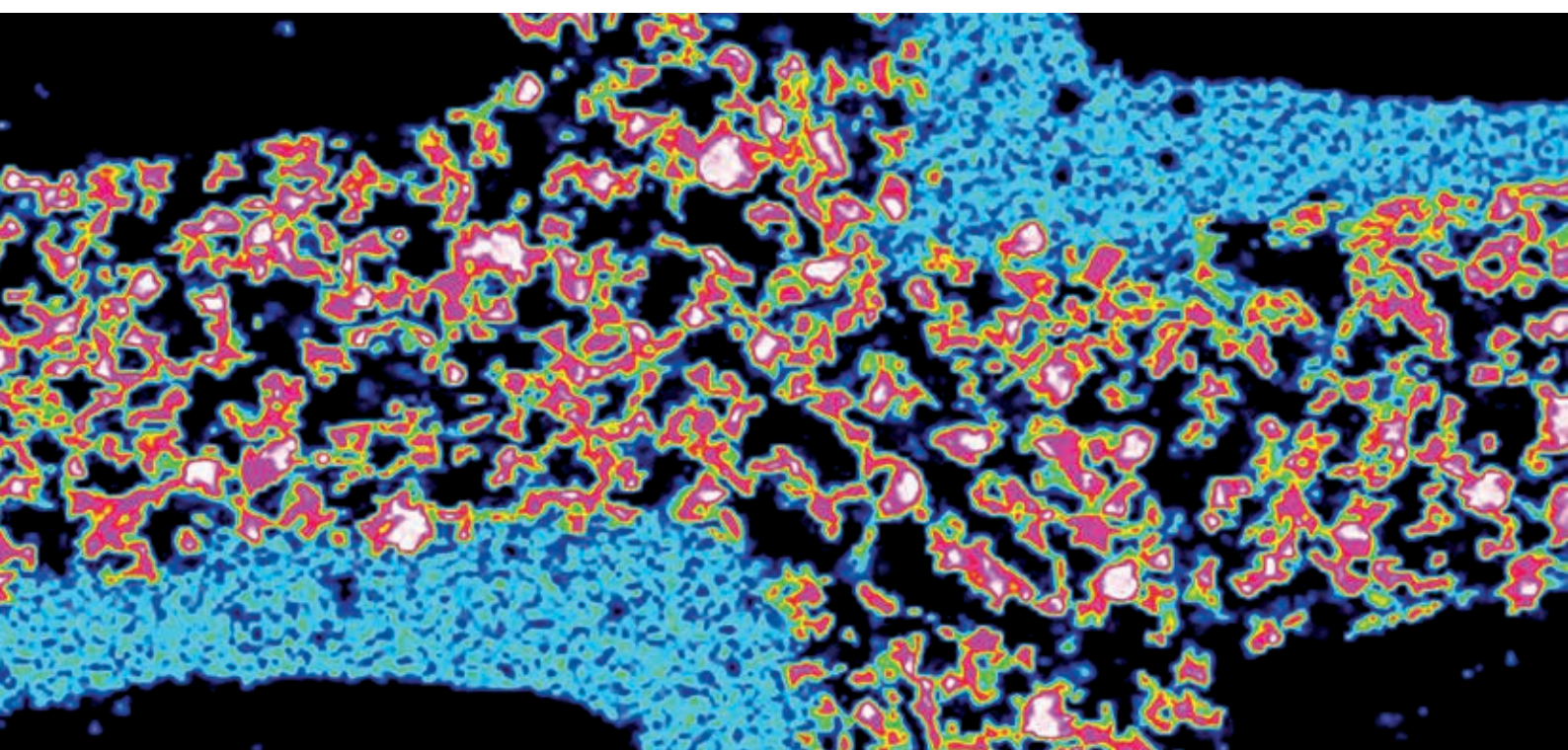
➤ Page 44

## Delivering a cleaner, healthier world



## Our strategy in action

# Progressing our strategy to deliver our vision for a cleaner, healthier world



## Clean Air

### Advanced SCR. The special science solution that means no more dirty diesel

In Europe, diesel cars have received a lot of bad press because of the impact of their emissions on urban air quality compared with their petrol counterparts.

But for some people, those who drive a lot of miles, the higher fuel economy of diesel makes diesel powered cars cheaper, over the long term, to run. Higher fuel economy means CO<sub>2</sub> emissions from a diesel car are lower too. So the incentive was there to clean up diesel and give consumers a viable choice that was better for their health, the planet and their pocket.

Regulators, quite rightly, also responded and set tighter emission limits to protect our health. Meeting these posed a technical challenge... exactly the sort of thing that JM loves best!

JM has applied its science and successfully reduced NO<sub>x</sub> emissions by a further 50%. In doing so, we have developed the most advanced catalyst system for diesel vehicles yet. Auto makers agree and have made it their number one choice. As a result, JM's market position has increased by some 20 percentage points, to around 65%.

This all means a new diesel car in 2019 can run just as clean as its petrol equivalent. So consumers no longer need to choose between economics and the environment.

## Efficient Natural Resources

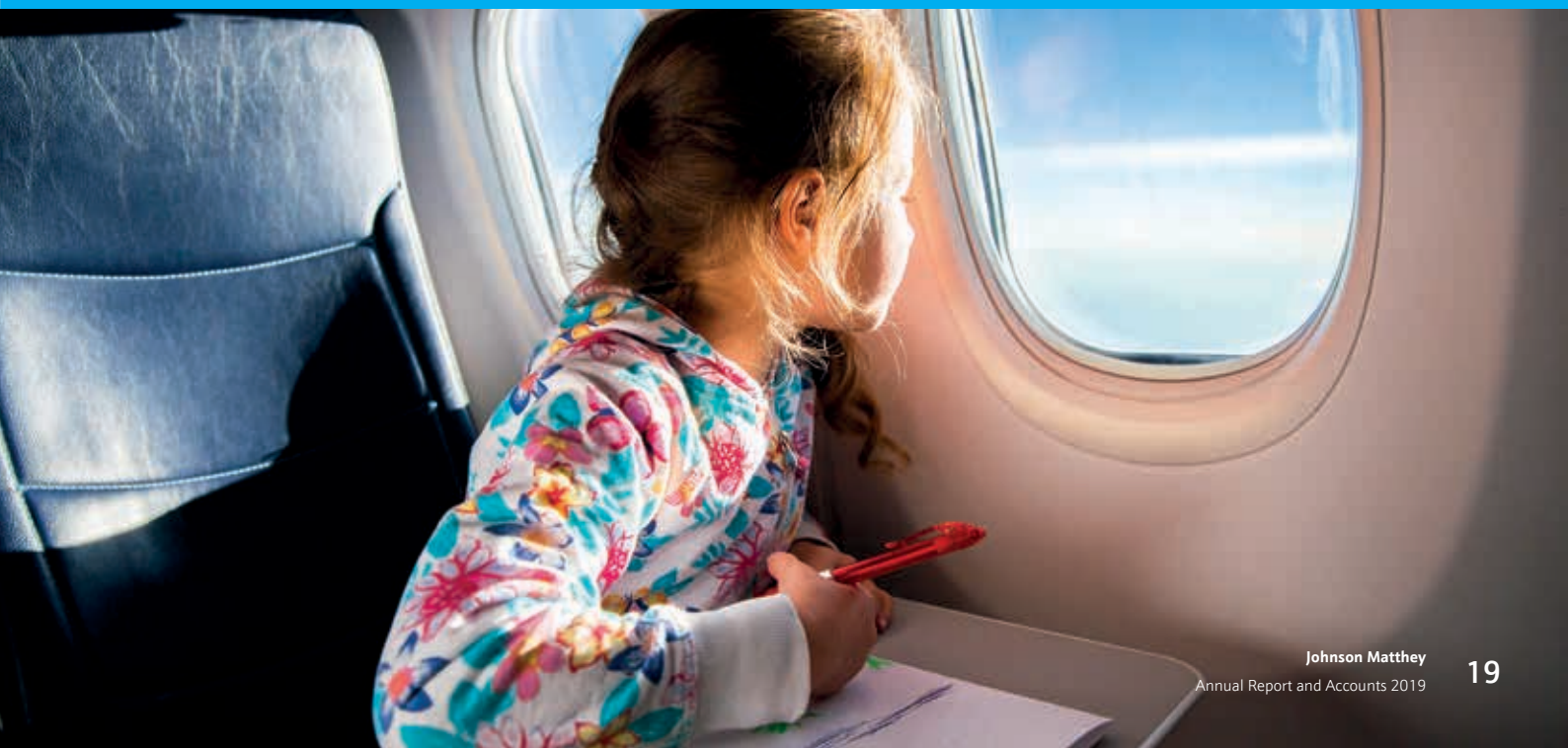
# Using household waste to power planes – a new trick for old technology

Fischer Tropsch (FT) technology is not new. First developed in Germany in the early 20th century, it was used to convert synthesis gas (a mixture of carbon monoxide, carbon dioxide and hydrogen) into hydrocarbons. Fast forward many decades and JM joined forces with fellow British long server, BP, to demonstrate FT technology at a plant in Alaska.

But with fluctuating economics for oil and greater impetus for more sustainable technologies and circular thinking, JM and BP saw a new application for FT technology... converting everyday household waste into high grade aviation fuel.

Together we have brought to market a process to do just that. At its heart is novel reactor technology and a high activity catalyst which ensures that turning waste into jet fuel is not only good for the environment, it's economically attractive too. The new process is three times more productive than traditional technology and requires only half the capital expenditure.

And that's why Fulcrum BioEnergy Inc. has licensed it and is building the first commercial scale plant in Sierra Nevada, USA due to start production in early 2020. It will convert around 175,000 tonnes of household waste into some 11 million gallons of fuel each year; enough to fuel a plane for more than 180 return flights between London and New York.





## Health

# Helping to change the lives of people affected by breast cancer

Unique expertise in the development, scale up and manufacture of complex molecules is what JM brings to both innovator and generic pharmaceutical customers in the attractive and growing small molecule API segment.

And that's why Immunomedics has chosen JM as its strategic manufacturing partner for the large scale production of the drug linker used in IMMU-32. IMMU-32 is Immunomedics' breakthrough therapy for metastatic triple negative breast cancer. IMMU-32 is classified as an antibody drug conjugate (ADC) which means that, unlike typical chemotherapy, it is intended to target and kill only cancer cells and spare the body's healthy cells. This significantly cuts down on side effects experienced by patients.

JM's role in getting this breakthrough treatment to patients will be to manufacture the drug linker used in the IMMU-132 ADC.

Linkers are a critical component of ADCs, providing the bridge for the antibody to selectively deliver the drug to tumour cells and at tumour sites. This significantly reduces the amount of the drug that enters the body, minimising harmful side effects.

Thanks to JM's early R&D work, we have already improved the productivity of the manufacturing process over 20-fold and have provided the necessary quantities of API to treat patients in clinical trials.

The IMMU-132 treatment is at the forefront of new cancer therapies and with one woman losing the battle against this devastating disease every single day, JM is excited to be contributing our science and technology through this partnership.



## New Markets

# A battery material capable of powering a revolution

Battery technology is going through a period of transformation, and this change is bringing a future in which EVs are the norm, closer every day.

At JM we asked ourselves what it would take to develop a cathode material that would support a lithium-ion battery to enable electric vehicle usage on a grand scale. We looked at a number of strategic factors that are crucial to the success of electric vehicles – total cost of ownership, driving range, safety, acceleration, recharging – and developed our new cathode material, eLNO, with these consumer priorities in mind.

But for EV adoption to really take off, consumers – unsurprisingly – want to pay the same price as they do for a regular vehicle, or close

to it, and they want to have the same refuelling costs, whether their vehicle uses petrol, diesel, or electricity. Achieving this is a key differentiator with JM's eLNO, which has an ultra high energy density compared with both current materials, and our competitors' next generation materials.

And we're pressing ahead with scaling up of this transformative product at our pilot facility in the North East of England. We're also investing in a 10,000 metric tonnes commercial scale facility in Poland (with potential to expand to 100,000 metric tonnes), with the plant due to come online in 2021/22, and we expect to have our material powering EV platforms soon after.



**We are continuing to innovate, as we have done for over 200 years, with science-led products like the advanced SCR, FT technology, the drug linker for IMM-32 and eLNO.**

All meet a critical need for our customers, for society and consumers, and are helping make the world a cleaner and a healthier place today and for future generations.

# Our business model

## A better future

We create long term value for our shareholders and society.

### Our resources and relationships

#### Knowhow and intellectual capital

JM's competitive advantage is its science and technology. We use our industry leading capabilities across our sectors to create sustainable solutions. 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

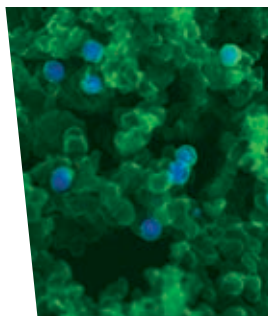
We source raw materials responsibly and use them as efficiently as possible. We also recycle platinum group metals (pgms).

#### Manufacturing operations

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

#### People

Our 14,800 people share a passion for making a difference to the world. They bring the talent, expertise and innovative thinking needed to drive growth and efficiency in JM.



#### Science

Our science is world class. We invest in it and in our scientific talent. Our skills and knowledge are acknowledged across the scientific community and amongst customers.

We have nine core science capabilities (see page 35) which provide us with fundamental insights about materials, their design and then the control of their activity through chemical and functional manipulation.



#### Customers

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

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

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



#### Operations

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 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.



#### 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.

Our people are motivated by working for a company that is making the world cleaner and healthier. This is an important differentiator in attracting and retaining the very best.

#### Underpinned by our values

Our values provide the strong foundation, shaping the right culture to deliver our strategy.

Protecting people  
and the planet

Acting with  
integrity

## 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 focus on building on a more sustainable business, drive us towards our vision for a cleaner, healthier world.

Our competitive advantage is in combining knowledge of the fundamental science with commercial and scalable solutions, which can be customised for 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 science.

[+ See pages 34 to 39 for more information](#)

We work closely with our customers 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 products 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.

[+ See pages 40 to 47 for more information](#)

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.

[+ See pages 48 to 59 for more information](#)

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.

[+ See pages 60 to 75 for more information](#)

### How we create and share value

#### For society

##### Value we create

- Cleaner, healthier world.

##### Value we share

Operational carbon footprint

**2.9 tonnes CO<sub>2</sub> eq**  
per tonnes of output

Positive impact of JM's products

**87.3%**  
sales from products contributing to UN SDGs

#### For shareholders and other stakeholders

##### Value we create

- Attractive returns.
- Taxes paid to authorities.

##### Value we share

Sales growth

**10% to £4.2bn**

ROIC

**16.4%**

Underlying operating profit margin

**13.4%**

Average working capital (excluding precious metals)

**59 days**

Underlying earnings per share

**228.8p**

#### For our people

##### Value we create

- Strong culture.
- Employment and opportunities.

##### Value we share

Health and safety lost time injury and illness rate (LTIIR) of

**0.53**

Employee engagement score of

**59%**

#### For our company

##### Value we create

- Cash to reinvest in our science, infrastructure and people.

##### Value we share

Technology leadership through R&D investment

**£190m**

[+ See pages 30 to 33 for key performance indicators](#)

Working together

Innovating and improving

Owning what we do



# Our sustainability framework

## The path to our vision

Through leading edge science and technology.

**Our sustainable business framework is all about embedding our vision for a cleaner, healthier world through all aspects of our business and supply chains. We have six goals to 2025 which we use to measure our progress towards our vision.**

The route to a more sustainable future brings many challenges that must be tackled. In setting our vision for a cleaner, healthier world, we have made it our business to use our cutting edge science to create sustainable technologies that contribute to the solution.

Sustainability is therefore an integral part of our strategy and governance. It is at the heart of our brand and our employee promise. It is engrained in our company values.

It is clear that society is becoming more aware and active in the drive for sustainable development. Consumers want to know that the things they buy are produced in a socially and environmentally responsible way.

This is increasingly impacting business to business organisations like JM and that's why we believe the sustainability credentials associated with our science-led solutions will become more and more attractive to customers and consumers.

At the same time, this increased demand for sustainable products requires us to focus beyond our operations and products and consider the whole of our value chain.

Therefore, when we reached the end of our first sustainable business programme in 2017, we designed the next leg of our groupwide programme to address our whole value chain (page 25). We aligned this with the material issues faced by our broader stakeholders (page 27) and oriented our ambitions with the UN SDGs.

➤ See page 238 for a summary of our performance towards our six sustainable business goals

### Our six sustainable business goals

JM goal

Health and safety  
**1**



For health and safety, aspire to zero harm.

➤ Read more on pages 69 to 73

➤ Page 32

Our people  
**2**



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

➤ Read more on pages 60 to 69

➤ Page 32

Low carbon operations  
**3**



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

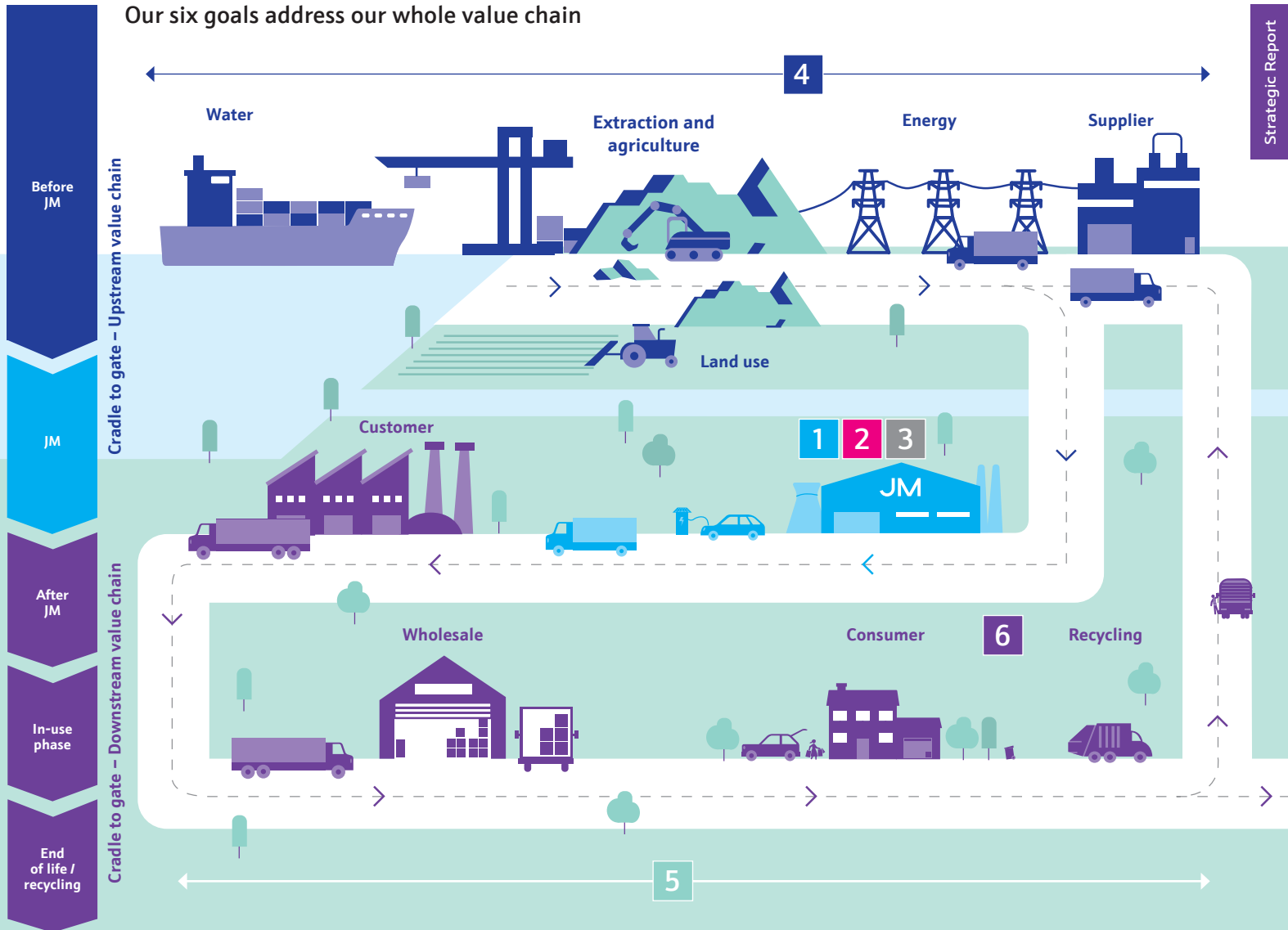
➤ Read more on pages 52 and 57

➤ Page 31

UN SDG



Our six goals address our whole value chain



Responsible sourcing

4

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

+ Read more on page 50

k Page 32



Sustainable products

5

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

+ Read more on pages 26 and 44

k Page 31



Community engagement

6

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

+ Read more on page 67

k Page 33



## Our sustainability framework continued

# Sustainable technologies with impact

## Our contribution to the UN SDGs.

The UN SDGs are a collection of 17 global goals set by the United Nations General Assembly in 2015. They contain 169 sub targets to be achieved by 2030. JM is already making a significant impact. In 2018/19, 87.3% of our sales (2017/18: 86.9%) came from products and services that positively contributed to the UN SDGs.

### How JM products and services support the aims of the UN SDGs

The UN SDGs cover social and economic development issues including poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanisation, environment and social justice.

The figure below shows the breakdown of JM's sales across its businesses in 2018/19 and their relative contribution to each of the UN SDGs. The larger the coloured circle, the greater the sales value.

Sustainable products

5





## Meeting stakeholders' expectations

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 2018/19 we carried out an internal review which considered feedback from stakeholders gained through our interactions with them during the year.

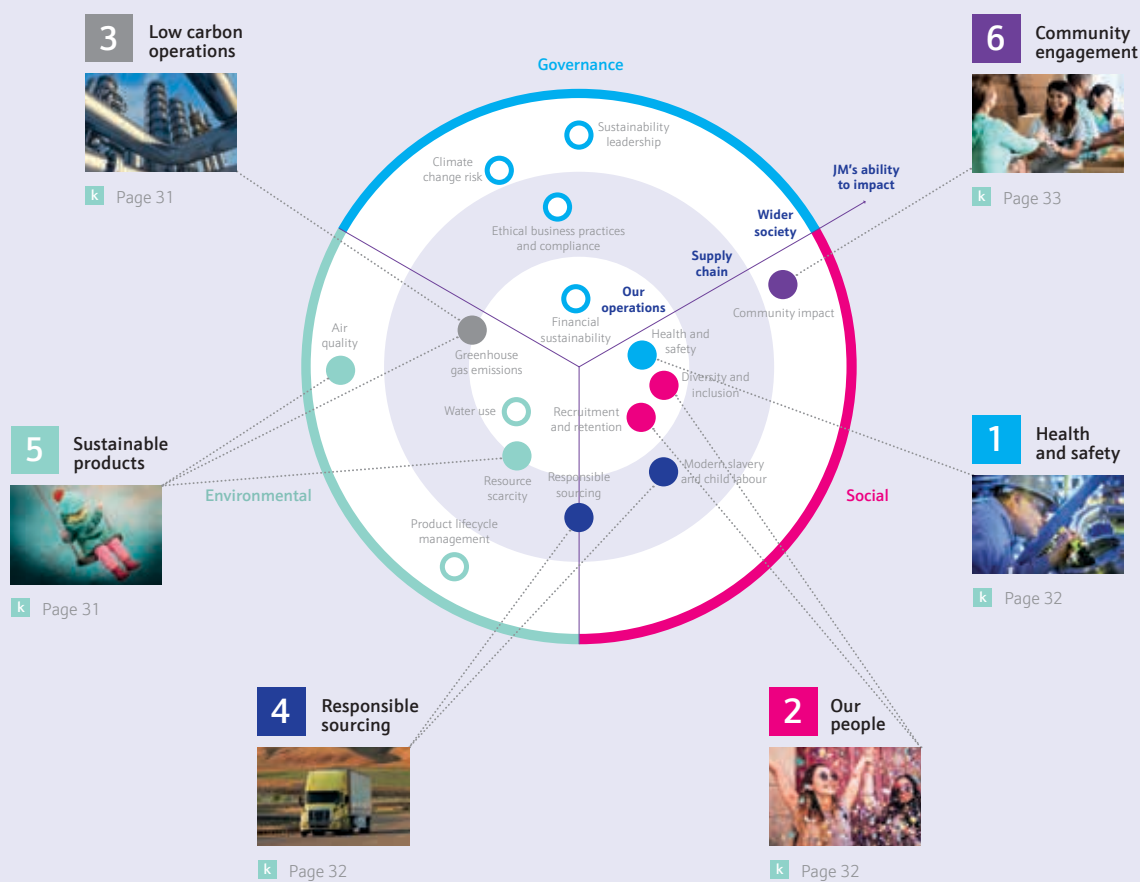
## What matters most

Through talking to stakeholders, JM has identified the topics that are 'material' to them. Our goals align with those topics.

**+** Pages 240 and 241: 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. It shows how we have aligned these to our six sustainable business goals.



# Our stakeholders

## Working together

Shaping our strategy with our stakeholders.

### Our key stakeholders

### Why we engage

#### Customers

+ See pages 40 to 47    k 3 See page 94

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

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

#### Investors

+ See pages 73 and 118    k 2 See page 94

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.

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

#### Governments and trade associations

+ See page 73    k 4 See page 94

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.

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 and society can provide opportunities for growth.

#### Suppliers and other partners

+ See pages 37 and 49 to 51    k 5 See page 94

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 people

+ See page 60 to 75    k 6 See page 95

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, more sustainable and supportive culture contributes directly to JM's success.

#### Communities

+ See page 67    k 9 See page 95

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 stakeholders are crucial to our long term success.

Their views inform and help shape our strategy. We work with them as we execute it; they input into it and benefit from the value it creates. 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.

Page 73: Communicating with external stakeholders

### Our impact

We provide world class scientific solutions that make the world cleaner and healthier.

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.

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.

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

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

### Working together

#### Developing a hydrogen economy

Much of what we do and where we are investing are already supporting global moves towards greener economies and will continue to deliver important offerings in the future. But we can't go it alone. That's why we join with others who share our purpose and complement our expertise.

In September 2018 we became a steering member of the Hydrogen Council, the largest industry-led effort seeking to develop the hydrogen economy. A substantial increase in the use of hydrogen as a source of energy would make a meaningful contribution to reducing greenhouse gases.

Being on the Hydrogen Council provides much deeper insight for JM's business on different global strategies and also allows us to forge important alliances and partnerships. And with JM's technologies, we have an important role to play in this area.

Also in September 2018, ITM Power, the energy storage and clean fuel company, opened its seventh public access hydrogen refuelling station (HRS) at JM's site in Swindon, UK, the home of our fuel cell component manufacturing facility.

The station uses electricity, via a renewable energy contract, and water to generate hydrogen on site with no need for deliveries.

This HRS is the first of two stations in the UK to be deployed as part of the pan European H2ME2 project, which was funded by the European Fuel Cell and Hydrogen Joint Undertaking and the Office of Low Emission Vehicles.

More than 60 people, including representatives from JM, gathered at the opening in Swindon. The opening was also supported by Toyota, Hyundai and Honda who also presented and participated in a Q&A session. Following this, the attendees were invited to take a test drive in a fuel cell electric vehicle on a short route nearby.





# Our KPIs

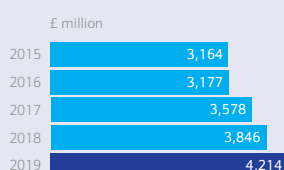
## How we measure performance

We have 13 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

### Performance in 2018/19

## £4,214m



### 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.

In 2018/19, sales at constant currency grew by 10% to £4,214 million (2017/18: 7%) with good growth across all four sectors. Growth in Clean Air and New Markets was double digit.

[+ Pages 77 to 89](#)

## 13.4%



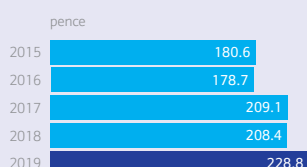
### Underlying operating profit margin

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 added products for our customers, and as we introduce new products through innovation to serve our customers' changing needs.

In 2018/19, underlying operating margin was broadly stable at 13.4% (2017/18: 13.6%) as we balanced improving efficiency with investing for future growth.

[+ Pages 77 to 89](#)

## 228.8p



### 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 increased by 10% to 228.8 pence. It grew ahead of underlying operating profit, benefiting from a lower tax rate. A reconciliation from underlying profit for the year to profit for the year is given in note 4 on page 179.

[+ Pages 179 and 183](#)



### 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 of equity, excluding post tax pension net assets, plus net debt for the same period. ROIC for individual sectors is calculated using average monthly segmental net assets as the denominator.

\* We have changed our definition of ROIC this year to exclude net pension assets as these are not operating assets.

The group's ROIC\* decreased from 17.0% to 16.4%, mainly a result of both higher capex, and higher precious metal working capital through the year which was due to unscheduled downtime at our UK pgm refinery.

[+ Page 89](#)

## 59 days



### Average working capital (excluding precious metals)

Average working capital days (as defined on page 189) 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.

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

[+ Page 89](#)

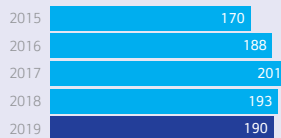
## Group non-financial objectives

### Science

#### Performance in 2018/19

**£190m**

£ million



#### 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 was broadly maintained at £190 million as we continued to invest in more efficient and targeted ways.

[+ Pages 34 to 39](#)

### Customers

Customer satisfaction  
(out of 10)

**8.3**

#### Customer satisfaction

Applying our world class science efficiently to solve our customers' complex problems creates leading market positions for JM. We track customer satisfaction as a measure of how we are maintaining our competitive advantage and to understand the health of our future business.

We use an external supplier to ensure a consistent and independent survey. We receive high quality analytics and feedback which is used to drive clear actions in the business.

In 2018/19 we carried out our first standardised customer satisfaction survey with customers representing circa 80% of sales in Efficient Natural Resources. Our score of 8.3 out of 10 is above the industry norm of 7.6 and is a pleasing result. We will report this KPI as a measure across all four sectors next year.

[+ Page 44](#)

% sales from products  
contributing to UN SDGs

**87.3%**

#### 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). A detailed definition of this KPI is provided on pages 236 and 237.

In 2018/19 the percentage of sales from products that positively contributed to the UN SDGs was 87.3%, up from 86.9% last year. Our sustainable business goal is to increase this to >90% by 2025.

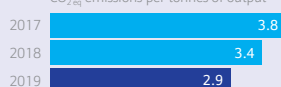
[+ Pages 18 to 21, 25, 26, 43 and 44](#)

**5**

### Operations

**2.9 tonnes CO<sub>2</sub> (eq)**

CO<sub>2</sub>eq emissions per tonnes of output



#### 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. It is a measure of the carbon intensity of our operations. We normalise our carbon emissions based on production output which we define as 'tonnes of manufactured product sold externally'. Only sold products manufactured on JM premises are included. A detailed definition of this KPI is provided on pages 235 and 236.

This year the group's operational carbon footprint per unit of production output reduced from 3.4 to 2.9 tonnes CO<sub>2</sub> equivalent per tonnes of output. This is due to us increasing the proportion of our electricity that is derived from renewable sources.

[+ Pages 52, 53, 56 and 57](#)

**3**

## Our KPIs continued

## Group non-financial objectives

## Operations (continued)

Performance in 2018/19

% strategic suppliers assessed  
since 1st April 2017

**17%**

% in compliance with JM  
Supplier Code of Conduct

**76%**

### Responsible sourcing – strategic suppliers assessed and in compliance with JM Supplier Code of Conduct

We seek to ensure sustainable and responsible business practices in our supply chains through measuring the percentage of our Tier 1 strategic suppliers assessed and compliant with JM's Supplier Code of Conduct. A detailed definition of this KPI is given on page 236.

Since the programme was introduced in 2017, we have assessed 17% of our Tier 1 strategic suppliers and of those, 76% were fully compliant with our Supplier Code of Conduct.

+ Page 50

**4**

## People

### LTIIR of 0.53



### 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 235.

\* Restated, see page 73.

The group's LTIIR was broadly flat this year at 0.53. We are disappointed in our performance against this lagging indicator; we understand the drivers of this and are tackling it. Encouragingly, our leading indicators of performance are improving.

+ Pages 69 to 73: Our approach to health and safety

**1**

**59%**

### 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 page 64.

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

A detailed definition of this KPI is provided on page 235.

Our employee engagement score in September 2018 was 59% (November 2016: 62%). We have action plans in place that continue to focus on improving the effectiveness of our employee engagement activities with the aim of increasing our employee engagement score.

+ Pages 60 to 69 and 74 and 75: Further details of what we've been doing to engage our people over the last year

**2**

## Group non-financial objectives

## People (continued)

Performance in 2018/19

Volunteering days taken  
by JM employees

1,116

## Volunteering in the community

Caring for others in our communities is part of our culture and is reflected in our values. That's why we support employee volunteering and allow our people two days of paid volunteering leave each year. We measure the number of volunteering days taken by JM's employees per year.

This is part of our wider target of achieving a cumulative total of 50,000 days between 1st April 2017 and 31st March 2025. A detailed definition of this KPI is given on page 237.

In 2018/19 JM employees took 1,116 volunteering days (2017/18: 678 days). This increase is pleasing as we started to raise awareness of the benefits of volunteering during the year. We have also simplified the process of volunteering with a global employee online system for employees to register and track their volunteering.

When combined with the days taken in 2018/19, JM employees have taken 1,794 days of paid volunteering leave.

+ Page 67

6

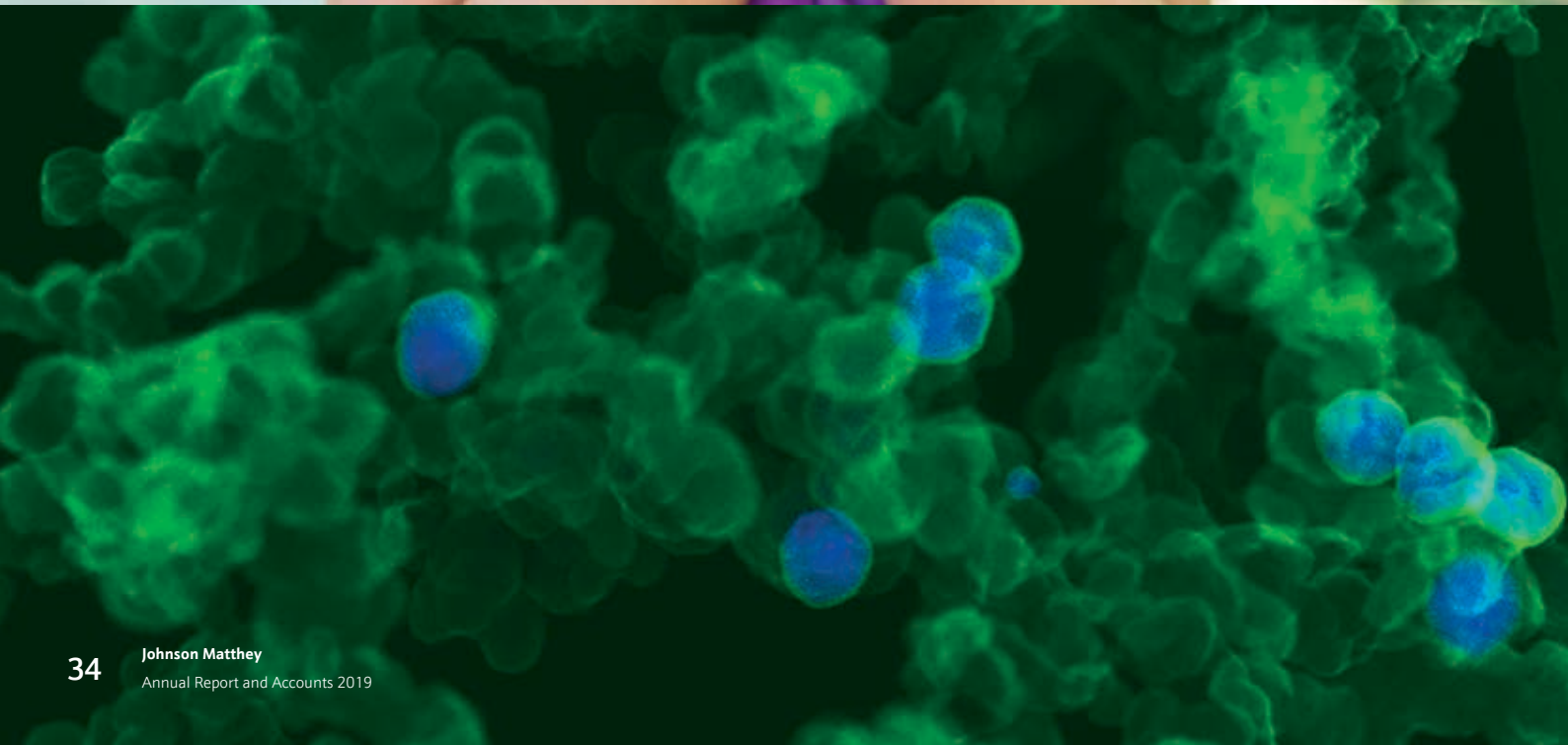
## Non-financial information statement

JM has a range of different of policies and standards in place to manage our principal risks, and which form part of our internal control framework. These are referenced throughout the Strategic Report. The table below shows how we meet the non-financial reporting requirements contained in sections 414CA and 414CB of the Companies Act 2006. It summarises the material policies identified in line with these reporting requirements and is intended to help our stakeholders understand our position on non-financial matters.

Reporting requirement	Policies and standards that govern our approach and controls	Relevant principal risk	Page reference
Environmental matters	• Environment, Health and Safety Policy*	4	69
	• Policy on animal testing*		55
	• Ethical and Sustainable Procurement Policy*		50
	• Supplier Code of Conduct*		50 to 51
Employees	• Code of ethics*	6	68
	• Equal Opportunities and Training and Development of People Policies*		65
	• Global Flexible Working Policy		69
	• Board Diversity Policy*		113, 121
	• Speak up process		68 to 69
	• Environment, Health and Safety Policy*		69
	• Eight lifesaving policies		69
	• Working Together Policy		69
	• Global Parental Leave Policy		69
	• Mental wellbeing commitment		69
	• Investigations Policy		69
	• Corporate Governance Framework		108 to 109
Social matters	• Employee Volunteering Policy	6	67
Respect for human rights	• Modern Slavery Statement*	10	51
	• Code of ethics*		68
	• Data Protection Policy and Employee Privacy Notice		69
	• Ethical and Sustainable Procurement Policy*		50
	• Supplier Code of Conduct*		50 to 51
Anti-corruption and anti-bribery matters	• Anti-Bribery and Corruption Policy	10	69
	• Code of ethics*		68
	• Trade and Export Controls Policy		69
	• Investigations Policy		69
	• Financial Crime Policy		69
	• Tax strategy		88
	• Conflict of Interests Policy		69
	• Competition Law Policy		69
Due diligence and outcome	–		–
Business model	–	1 2 3 4 5 6 7 8 9 10 11 12 13	22 to 23

\* Available on our website





Science and technology, and our ability to translate them into solutions for our customers, are our competitive advantage

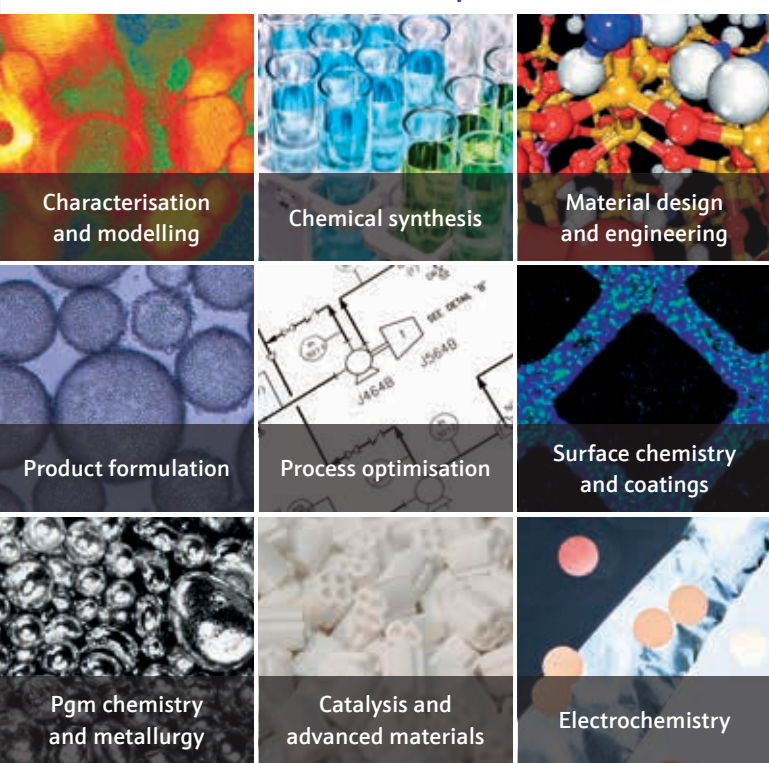
# Science

Our people deliver world class science which creates differentiation that supports high margins and leading market positions for JM.

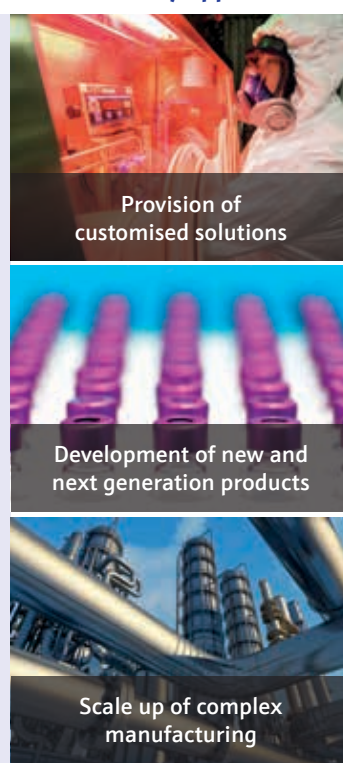
Nine core areas of scientific capability, developed over many years, form the foundation of our knowledge, and we draw on them again and again across our businesses and products. We interweave these capabilities into products and services that solve our customers' challenging problems. We focus on the complex and the difficult. And we win based on our technology. Our scientific capabilities provide the opportunities for us to drive growth.

We have over 1,500 dedicated scientists in Johnson Matthey with wide ranging expertise who give us a diverse perspective on the problems we tackle. These scientists collaborate to understand the fundamentals of what's required, explore innovative solutions and deliver the outcomes our customers need. We understand what is happening at the sub-micron level, so we can address complex problems at a global scale.

## World class science capabilities



## Cleverly applied



## Value for JM



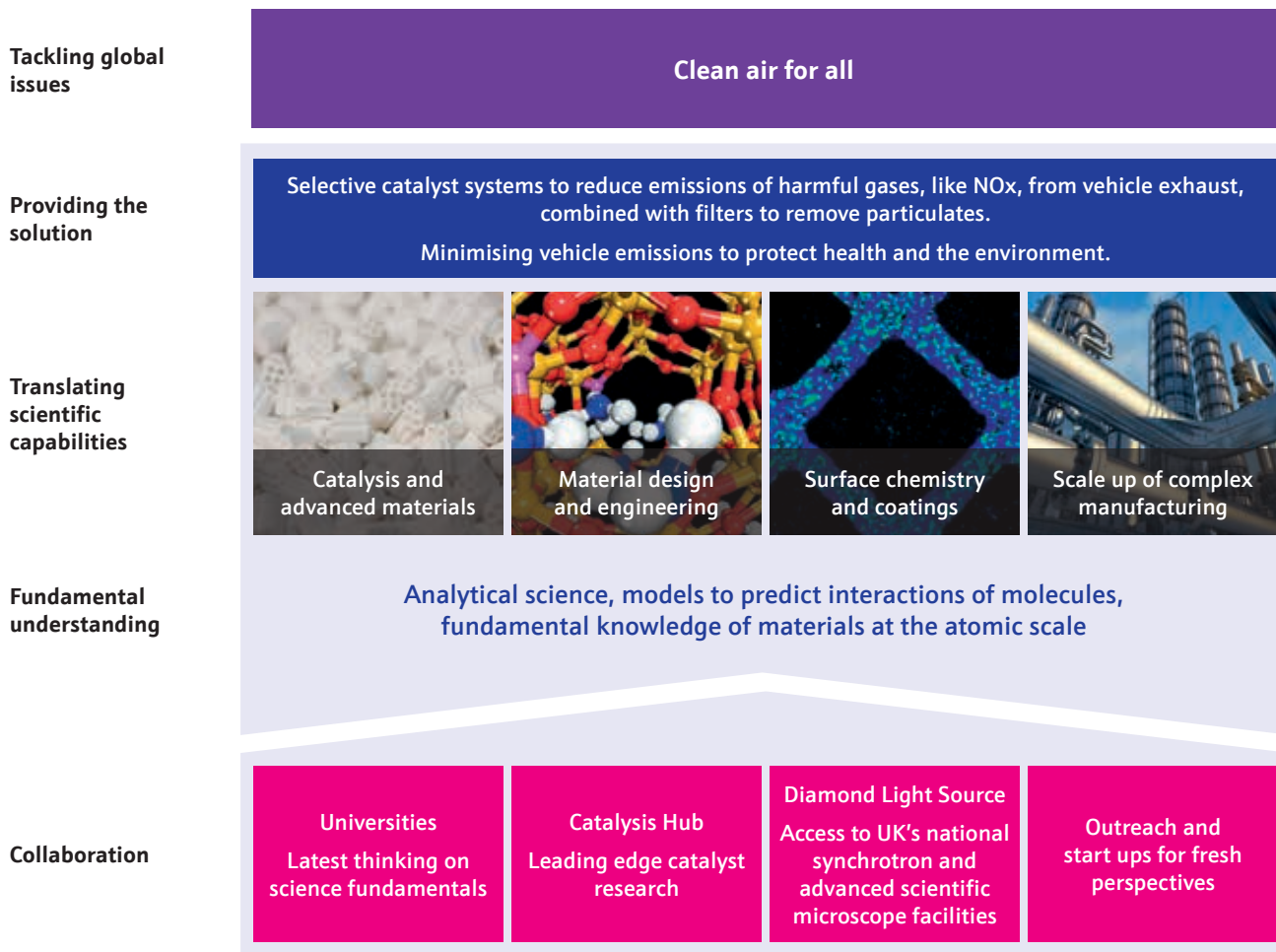


## Science continued

### The science behind our products

Our scientists draw on a range of skills to design and produce functional materials, including catalysts, with the required performance. We design molecules and understand how they react, and we deliver them in a form that our customers can use. We test their performance from lab scale to manufacturing, ensuring safe handling, operation and disposal.

### Our science in action



### How we innovate

Having people with such a diverse range of scientific knowledge and experience concentrated at our R&D locations creates opportunities for innovation. We share our knowledge across the company and reach out externally to complement the skill sets we have:

- Supporting PhD students and collaboration with universities to give us access to specialist equipment and science.
- Setting challenges and running ideation campaigns to bring people together with different perspectives on a problem.
- Investing in organisations and facilities, such as the UK synchrotron facility and Catalysis Hub, to build relationships, understanding and access to assets needed.
- Scouting for the best partners where we identify an opportunity to grow.

# Catacel SSR – shaping a new era of clean energy

Hydrogen is a versatile energy source which offers an important route in the transition to clean, low carbon power.

Today it is used primarily in oil refineries to remove sulphur from fuels and for ammonia and methanol production. But if future predictions on alternative routes to energy are realised, ten times the current amount of hydrogen will be required. JM already supplies catalysts, in the form of pellets, to produce hydrogen by reacting steam at high temperature and pressure with methane from natural gas (steam reforming). Using this existing knowledge and our world class science, we've developed a new high performance engineered catalytic solution for hydrogen production.

We call it Catacel Structured Steam Reforming (SSR). Why? Because it is a coated, metal foil based, engineered catalyst that is an alternative to the conventional ceramic pellet impregnated with a catalyst.



**Watch:** How Catacel SSR is changing the game for steam reforming  
[matthey.com/new-era-clean-energy](https://matthey.com/new-era-clean-energy)

The outcome for customers is increased plant throughput of up to 20%, without capital investment of a new plant, less wear and tear on the reformer reactor tubes and fuel savings.

So how does it work? The design of the catalyst is a balance between many competing requirements such as its strength, how heat is transferred, how active it is and how evenly gases flow in and around it. The engineered structure of Catacel SSR enables it to stretch many of the limitations imposed by ceramic pellets.

In developing a product like this we draw on a wide range of skills and our collaborations both in-house and through our close liaison with universities and research institutes. And by scaling up the manufacture of the catalyst and designing it as a drop in substitute, our customers have the choice to move seamlessly from pellets to Catacel SSR.

The science and technology behind Catacel SSR, and the customer value it creates, gained external recognition this year when it was awarded as winner of the IChemE Oil and Gas Award 2018.

**We recognise that some of the best ideas will come from open innovation. So we look for partnerships and collaboration in the broader world of innovation.**

This means we stimulate thought and hear about new approaches first hand. A few of the ways we have been reaching out to the wider innovation community include:

## #cleanairtech

We ran a meet up event called 'The air that we breathe' at London Tech Week 2018 and commissioned a White Paper on clean air technology. We brought together over 50 people all focused on cleaning our air and, together, we catalysed a clean air tech community, #cleanairtech, of start ups, like minded corporations, academics, regulators and influencers. The group looked at issues of air quality measurement, the cost of poor air quality, products and solutions that are being worked on, and leading the drive to improve air quality. Such collaborative working groups give us a freshness in our approach to tackling some of the world's biggest problems.

[matthey.com/cleanairtech](https://matthey.com/cleanairtech)

## Smogathon

We joined the Poland Smogathon event in 2018, which focuses on innovations in air purification. As a partner at the event, we selected challenges and were part of the panel reviewing solutions being pitched by start up companies. This is a great way of hearing about new and exciting ideas to tackle air pollution and support those who present the best projects. We are also able to share our expertise in the field of air purification, providing advice and insights to startups and the broader technical community.

<https://smogathon.com>

## Axisinnovation

We have connected with the innovation ecosystem of Israel, a country renowned as a source of innovative technology and business models, seeking out technologies that relate to our agrochemical and air purification activities. Tapping into this ecosystem, which includes universities, start ups, institutes and accelerators, helped us understand how we can contribute. We are now looking to strengthen our links further and develop mutually beneficial partnerships.

<https://www.axisinnovation.com/jmevent>



## Science continued

### Managing science and technology

In 2018/19 we invested £190 million in R&D, including £19 million of capitalised R&D, which represents around 5% of our annual sales (2017/18: £193 million, including £18 million of capitalised R&D, representing 5% of annual sales). We maintained our investment this year as we continued to invest in a more efficient and targeted way, and in alignment with our strategic aims. In this way, we continue to make excellent progress to sharpen our focus on creating value from our leading technology.

Our strategy, aligned with our vision for a world that's cleaner and healthier, helps us focus our science and technology. We use technology road mapping as a tool to identify future growth opportunities for our business and how to deliver them. Technology road mapping facilitates high quality conversations across our sectors and functions about the future of our business. It allows us to map our core capabilities against future opportunity and helps us identify capabilities we can add to enable or accelerate progress. During the last year we have developed road maps that define market drivers, products and the capabilities we will need to innovate across our business.

For us, innovation is the realisation of value from knowledge, and road maps help us to identify where and how to invest in our R&D. Our new product introduction process supports this and is used by our businesses in delivering their strategic plans.

These roadmaps also enable forward looking conversations with current and future customers to identify new product and market opportunities for JM to extend its competitive advantage through our world class science and technology.

## Gasoline particulate filters – cleaning the air we breathe

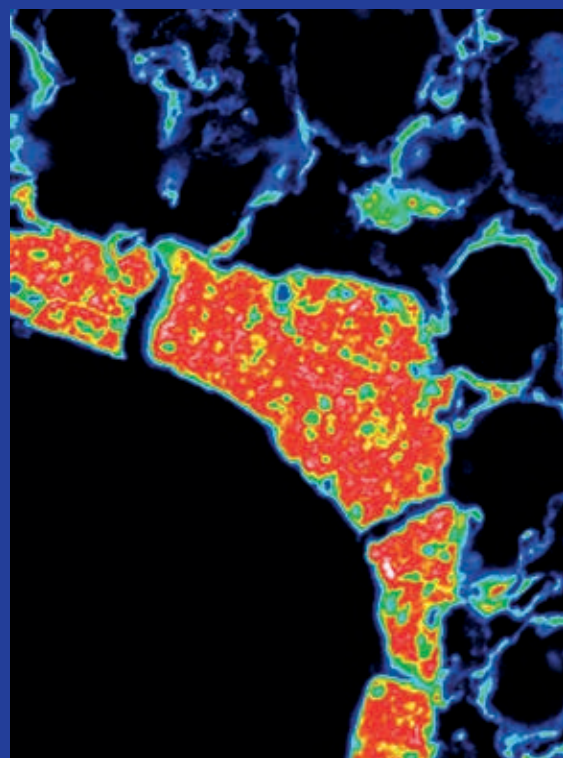
Increasing numbers of petrol (gasoline) vehicles on our roads and the advent of tighter legislation to control their exhaust emissions bring new challenges in cleaning the air.

Gasoline direct injection engines are very efficient, meaning less CO<sub>2</sub> is emitted. But there is a downside; more and smaller particles of soot are produced which are harmful to our health and need to be removed from the exhaust gases. That's why JM has developed a three way filter which acts as both a three way catalyst to significantly reduce harmful gaseous emissions and as a filter to take out the vast numbers of small, fine particles.

Working closely with our customers, we have developed and designed our technology to meet their requirements for catalyst activity and filtration efficiency while minimising the impact on exhaust gas flow.

Many aspects of scientific knowledge must coincide to deliver an engineered product that is fit for purpose. We use advanced imaging techniques to build up a picture of the filter structure, in collaboration with academic experts. We use computers to model how gas flows through the filter walls and along its channels; we formulate catalyst material with long lasting activity; and we evaluate different coating techniques to give a highly effective active coated surface which promotes filtration efficiency but doesn't block up the filter. And to do all this we rely on cutting edge capability in computational modelling and advanced microscopy.

As a result, we have developed gasoline particulate filters that meet the Euro 6d Final legislation, the toughest in the world for particulate number emissions, in both laboratory testing and when tested in real world driving conditions on the road.



# Active pharmaceutical ingredients – helping people live longer healthier lives

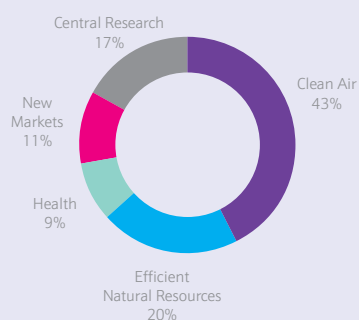
Our aim is to make the world a cleaner, healthier place, and we are proud of the positive impact our science can make on the air, the resources of the world and the health of people around us.

The active pharmaceutical ingredients (APIs) we make are the power behind life changing therapeutics such as apomorphine which is used to treat the symptoms of Parkinson's disease. Treated with this active ingredient, people with severe Parkinson's disease can regain their independence and continue to do the things they enjoy. Our APIs are also found in drugs that are used to manage Duchenne muscular dystrophy, a genetic disorder in children where progressive muscle degeneration causes weakness. It is the complex API molecules that cause the therapeutic effect and our ability to manufacture them reliably and effectively means adults and children can live more fulfilling lives.

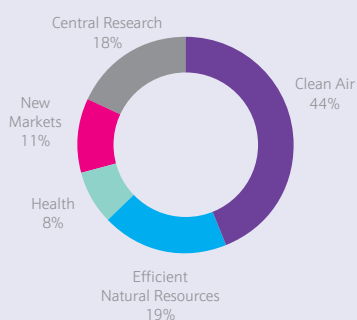
JM helps pharmaceutical customers to develop and bring to the marketplace the active ingredients for these life changing drugs. Pharmaceutical ingredients are usually molecules with complex structures and often require many different reaction steps and purification. We use our scientific skill and creativity to find the shortest, most precise and efficient reaction pathways. And from there we develop effective, reliable routes to manufacture high quality complex molecules – molecules that have a profound impact on many people's lives.



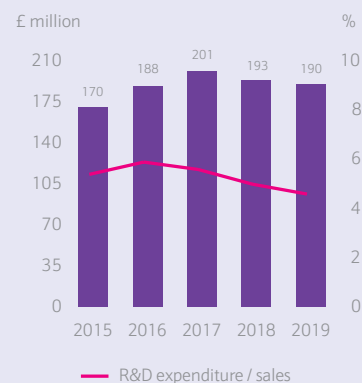
**R&D employees**



**Distribution of R&D expenditure**



**Gross R&D expenditure**









Putting our inspiring science to work for our customers

# Customers

Collaboration and strong relationships with our customers are crucial. Together, we put our inspiring science to work to enhance life.

Using our science to solve our customers' complex problems is at the heart of our strategy. Choosing JM enables our customers to bring their products and ideas 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.

Directed by our vision for a cleaner, healthier world, we operate in growing markets. The breadth of our markets and the depth of our science give us strength.

And we're challenging ourselves to improve. Through our Commercial Excellence programme (pages 43 and 44), we are growing our people, delivering an enhanced experience all round for our customers and, at the same time, creating more value for JM.

Our products and services do amazing things when our customers use them – this is one of the major ways we make the world cleaner and healthier. So we are measuring this through our sustainable business goal 5, and aim to double the positive impact our products and services have by 2025.

## Sustainable business goals

Sustainable products

5

## Our global markets and segments

The markets we serve are directed by our science and driven by our technology. As a result, we create leading technology positions, often in niches within larger markets.

These markets aggregate into four main global economic segments through which our science can enable prosperity and a cleaner, healthier world. 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 monitor the critical raw materials and commodities used in these spaces. In the case of platinum group metals (pgms), we are a globally recognised expert in their market fundamentals and applications.



## Customers continued

## Segment trends and dynamics

**Transport**

The automotive industry continues to experience a period of unprecedented change. Economic weakness coupled with powertrain shifts and legislative change (including subsidies) are impacting the industry. As a result, the total production of light duty vehicles (LDVs) fell slightly this year to just under 94 million units<sup>1</sup>. The LDV market (covering all powertrains) is expected to return to growth in the medium term, ~2.4%<sup>1</sup> compound annual growth (CAGR), with total production passing 100 million units<sup>1</sup> in the early 2020s. However, longer term, LDV growth is expected to slow with an increasing proportion of the population living in cities, and consumer behaviour shifting towards different vehicle ownership models, car sharing and alternative modes of transport, for example, cycling.

But for those vehicles that are produced, alternative powertrains are expected to become an increasing part of the mix. Analysts expect a move away from pure internal combustion engine (ICE) vehicles over time, with hybrid, battery electric (BEVs) and / or fuel cell electric vehicles (FCEVs) becoming more common. These powertrain shifts, together with the emergence of innovative vehicle ownership and access models, along with a rising degree of connectedness and automation, are transforming the mobility landscape.

Heavy duty vehicle (HDV) production was 3.7 million units in 2018/19<sup>1</sup> and this remains a cyclical market.

While vehicle production is a growth driver for JM, next generation, tighter emission control legislation, particularly in Asia, is an additional, more significant opportunity for us.

This mobility transition is not expected to be quick, with most market evolution studies showing a gradual uptake of alternative powertrains in LDVs through the 2020s. JM assumes BEV penetration of ~6% by 2025 and notes the high degree of uncertainty associated with these projections. 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 are the dominant global energy source today (~81% 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 the contribution of coal and oil in the world's energy mix to fall, with natural gas expected to become the fastest growing fossil fuel, maintaining its share (~20%) of the global energy mix. This implies strong growth in renewables and other low carbon fuels (including nuclear).

We maintain a focus on this segment as it informs us about changes in the interconnected transport and chemicals markets. This evolution also touches our applications in the stationary energy space, along with several other products and services.

**Chemicals**

There are a number of competing factors impacting the oil market. In the near term, we expect oil prices to continue to recover from their recent lows followed by much more modest growth<sup>3</sup> towards a plateau and potential decline in the longer term.

The outlook for natural gas is expected to be very modest<sup>3</sup>. However, short term pricing, especially in North America, remains subdued.

Downstream products have benefited from low input prices over recent years, but those advantages are beginning to pass. Through 2022/23, refining and (petro)chemical catalyst growth is assumed to remain in the 3-4% range<sup>4</sup>, with specific rates for each catalytic area. Growth at 3% is expected in areas such as ammonia and oxidation processes.

Legislation on sulphur may help accelerate growth in fuels, but this impact is still to be determined.

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.

**Healthcare**

Global population and life expectancy continue to rise, with a range of medical interventions required to service increasingly old and wealthy populations. To support this trend, healthcare spending is expected to grow in the mid single digits (GDP+) through 2025<sup>5</sup>.

For JM, the active pharmaceutical ingredient (API) contract development and manufacturing organisation market continues to be a focus for our Health Sector. Growth in this market is expected to be in the 7-8% CAGR, with some areas within it growing at 10+%. Outlook in the US and European regions remains strong.

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 these markets, commodity prices will play an important role in determining the speed of transition and the technological solutions that are adopted.

We continue to focus on our traditional platinum group metal (pgm) markets and closely watch the evolution of platinum, palladium and rhodium prices as they react to changes in the automotive market. Beyond these traditional metals, we also track movements in the key battery cathode materials (e.g. lithium, cobalt and nickel) and note the recent decline in pricing for these elements.

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>1</sup> JM automotive market assumptions / LMC Automotive.

<sup>2</sup> McKinsey Energy Insights – Global Energy Perspective 2019.

<sup>3</sup> BP Energy Outlook, 2019 ([www.bp.com/en/global/corporate/energy-economics/energy-outlook.html](http://www.bp.com/en/global/corporate/energy-economics/energy-outlook.html)).

<sup>4</sup> IHS Chemicals.

<sup>5</sup> EvaluatePharma.

## Science and technology enabling change

The four economic segments we serve are undergoing major change as a result of global sustainability megatrends. Science and technology is enabling and driving the pace of change. We apply our scientific capabilities, via our four sectors, into markets within these segments. We create new products and services that, through our customers' business activities, are making the world cleaner and healthier.

JM science	World class science capabilities			
	Clean Air	Efficient Natural Resources	Health	New Markets
JM sectors				
Activity	Catalysts and technologies that abate emissions.	Products and processes that transform, conserve and recycle scarce resources using less energy and fewer raw materials.	Core capabilities in complex chemistry, manufacturing and scale up to create active pharmaceutical ingredients and other solutions for niche areas.	Applying our science into emerging opportunities, such as battery materials and fuel cells.
Segments served	<ul style="list-style-type: none"> <li>• Transport.</li> <li>• Energy.</li> </ul>	<ul style="list-style-type: none"> <li>• Chemicals.</li> <li>• Energy.</li> <li>• Transport.</li> <li>• Healthcare.</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare.</li> </ul>	<ul style="list-style-type: none"> <li>• Energy.</li> <li>• Transport.</li> <li>• Healthcare.</li> <li>• Chemicals.</li> </ul>
Impact	Cleaner air / Cleaner energy / Achieving more from less / Enhanced health and quality of life			
Outcome	Cleaner, healthier world			

The 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.

Many of the customers we serve operate in two adjacent segments and / or markets. 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 adjacent segments. These insights drive business development and create JM's uniqueness in its markets.

Working with our customers across a range of markets and understanding their needs gives us a balanced and robust business. Through serving broad markets, the opportunities to apply our science and technology are greater and our contribution to a cleaner, healthier world is increased.

### The value we create for customers

Across our offerings, our customers 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.

We work with customers to codevelop solutions that maximise this performance advantage. 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.

### Our customer centric approach to creating value through commercial excellence

JM's competitive advantage is our distinctive, world class scientific and technical capabilities and how we translate them into solutions for our customers. Together with providing them with high quality products and services, we continue to deepen our understanding of their needs and ensure that we capture our fair share of the value we create for them.

Our Commercial Excellence programme, now in its second year, is focused on driving continuous improvement through the lens of our customers to support their growth and maintain our competitive advantage. The programme delivers value through: building commercial capability across JM; enhancing our ability to make value based data driven decisions; measuring and responding to customer satisfaction; and operating leading sales and marketing processes to enable us to provide a seamless service to our customers.

## Customers continued

The programme is already delivering benefits through supporting sales and market share growth in our sectors. During the year we launched the JM sales academy to grow our commercial people, equipping them with leading skills to further develop and enhance their capability. Around 350 customer facing employees from three sectors have so far attended the first module across Europe, the US and Asia. They gave positive feedback that the knowledge and skills provided will help improve their job performance. Furthermore, the new frameworks and processes developed and launched through the programme are already being used by commercial teams to deliver improved outcomes with customers.

Further modules of the sales academy will roll out in September 2019, providing more depth to our strategic account management process across the group.

We have also developed a framework for producing and improving propositions to customers, to increase customer centricity. The customer value proposition is designed to identify help communicate how we can create value for a customer in a meaningful and impactful way. Well thought through proposals, and the propositions in them, support customer growth and in turn create value for JM.

Over the last year we have introduced a consistent measure of customer satisfaction across JM to allow us to understand what our perceived strengths are, highlight areas where we need to improve and deliver even better outcomes for our customers. We use an independent external organisation that is a specialist in running customer feedback programmes in the business to business manufacturing market.

We piloted this customer satisfaction survey across our Efficient Natural Resources Sector in November 2018, with a very encouraging response rate of 58%. The sector received an overall rating of 8.3 out of 10 from customers, which is well above an industry norm of 7.6. The survey has provided rich and insightful information which has translated into actionable outcomes for the commercial teams to implement. Teams have also shared their continuous improvement feedback actions with their customers and our proactive approach has been positively received. During 2019/20 we will survey customers of our three other sectors, Clean Air, Health and New Markets, and follow up with a repeat survey for Efficient Natural Resources, creating stronger relationships built on trust, consultation and partnership.

In a world where the pace of change will continue, we are ensuring that we stay fit and agile to understand our customers' complex problems and continue to provide valuable solutions to those challenges.

### Beyond customer value – our progress towards a cleaner, healthier world

The value we create for our customers drives growth in our business and returns for our shareholders. But our science-led products and services have a much broader positive impact, driving us towards our vision for a cleaner, healthier world. We want that positive impact to grow.

That's why we have a goal to double the positive contribution of our products by 2025, aligned to the United Nations Sustainable Development Goals (UN SDGs). Thus, our sustainable business goal 5 has two streams by which we are measuring 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 SDGs. The percentage measure is a key performance indicator for the group as detailed on page 31. Our contribution has increased this year supported mainly by stronger sales of emission control catalysts.

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

- The tonnes of pollutants (oxides of nitrogen, carbon monoxide, hydrocarbons, particulate matter) removed by our products. Here, the overall tonnes of pollutants removed by our products fell very slightly this year because lower numbers of vehicles were produced globally (see page 81).
- The number of lives impacted by our recently launched pharmaceutical products. Our positive impact was greater this year due to increased use of therapies that include our APIs.
- The quantity of greenhouse gases (GHGs) removed or reduced (CO<sub>2</sub> equivalent) by our products. This year, the tonnes of GHGs removed by our products was slightly down due to a lower contribution from our nitrous oxide abatement technologies.
- The quantity of GHGs avoided (CO<sub>2</sub> equivalent) by our products. An increased number of tonnes of GHGs were avoided this year due to the action of our products. This was principally due to greater demand for our fuel cell components.

Sustainable business goal	Sustainable business KPIs <sup>1</sup>	Baseline	2017/18	2018/19	2025 target
<div>Sustainable products</div> <div>5</div> <div>Double the positive impact that JM's products make on a cleaner, healthier world</div>	Annual sales giving contribution to UN SDGs	2017/18 sales data against UN SDG indicators (% of group sales)	86.9%	87.3%	>90%
	Annual aggregation of product sustainability benefits in key areas	2017/18 data relating to: Tonnes of pollutants removed	3.54m	3.43m	7.08m
		Number of lives positively impacted	138,000	181,000	920,000
		Tonnes of GHGs removed (CO <sub>2</sub> eq)	10.6m	10.1m	21.2m
		Tonnes of GHGs avoided (CO <sub>2</sub> eq)	213,000	216,000	426,000

<sup>1</sup> For full details and definition, see pages 236 and 237.

■ Performance against all six of our sustainable business goals is detailed on pages 31 to 33 and on page 238

# Long term view

## Shaping a new era of clean energy

The world is moving towards a lower carbon, more sustainable future. Here we look at some aspects of this incoming energy revolution and the key role that JM and its technologies will play within it.

### Driving towards a sustainable future

The world is at the start of an energy revolution – the biggest energy transformation since the Industrial Revolution during which the use of fossil fuels drove growth and prosperity. It is only relatively recently that we have started to understand the implications of the potential global temperature increases.

The country signatories of the 2015 Paris Agreement committed to aim to hold increases in global average temperature to “well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C”. Then, in October 2018, the Intergovernmental Panel on Climate Change (IPCC) issued a Special Report. In it, they said that to achieve no, or limited, overshoot of 1.5°C, global net anthropogenic CO<sub>2</sub> emissions must decline by about 45% from 2010 levels by 2030, and reach net zero by around 2050. A number of countries and regions including France, Sweden, Norway, the European Union (EU) and New Zealand, are now committing to, or considering moves towards, net zero carbon and / or greenhouse gas (GHG) emissions. In May 2019, the UK Committee on Climate Change, which is the independent adviser on climate change to the UK Government, called for the UK to continue to lead the global fight against rising global temperatures by tightening GHG emission targets to net zero by 2050.

But what will it cost to move towards net zero, and how does this compare with the impact if we don't manage to limit the global temperature increase?

The Energy Transitions Institute estimates that reaching net zero CO<sub>2</sub> emissions by 2050 would cost around 0.5% of global GDP, or around 0.425 trillion US dollars.

And what do we get in return for this? Researchers at Stanford University estimate that the benefits of remaining within a 1.5°C temperature increase to be of the order of tens of trillions of US dollars. So, on top of the other benefits, there is a very good economic return on the climate stabilisation investments.

It is good to hear governments talking openly about the need to tackle global temperature increases as high level commitments, together with robust and far reaching policy, will be essential if we are to create the markets that will deliver the necessary low carbon technologies.

The good news is that we don't have to wait for new technologies to start to reduce the global carbon footprint – we can move towards tackling climate change by a combination of implementing the technologies we have today and developing new, low carbon technologies for the future. For example, the IPCC report points out that the greater the emission reductions achieved by 2030, the better the chance to limit the global temperature increase to 1.5°C.

So let's consider the current situation in some key areas, discuss how we expect this to evolve and take a look at the significant contributions that JM's science and technologies are making, and will continue to make, towards a cleaner, healthier world.

### Reducing the carbon footprint of transportation

Globally, transportation is responsible for around 25% of CO<sub>2</sub> emissions, with the majority from the on-road movement of people and goods. Regulators are driving down the permitted levels of CO<sub>2</sub> emitted from vehicle tailpipes; for example, the EU recently approved legislation to reduce the CO<sub>2</sub> emissions from passenger cars by 37.5% from the 2021 baseline of 95 g/km. Such regulations will be met by a combination of approaches; incoming vehicles powered by internal combustion engines will become more fuel efficient through innovation in areas such as engine, tyre and transmission development, and vehicle light weighting by using new materials including composites. However, a more fuel efficient engine generates lower temperature exhaust gases and this makes controlling the associated pollutants more difficult.

### JM technology is part of the solution

JM has risen to this challenge by developing new emission control catalysts capable of operating at lower and lower temperatures, supporting our customers, the car companies, as they reduce the CO<sub>2</sub> emissions of the vehicles they produce. Plug-in hybrid electric vehicles, in particular, carry out an even higher number of starts at lower temperatures (cold starts), especially when driving in the city. And we are developing emission control catalysts that are further optimised for cold start performance for this type of vehicle.



## Customers continued

The need for vehicles with lower CO<sub>2</sub> emissions will also increase the rate at which so-called zero emission vehicles (ZEVs) are introduced. Current legislation regards ZEVs as vehicles that do not emit any criteria pollutants, such as carbon monoxide, unburned hydrocarbons and oxides of nitrogen (NOx), and that do not emit any CO<sub>2</sub> from their tailpipe. Both battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) are ZEVs by this definition. Of course, the true CO<sub>2</sub> footprint of such vehicles needs to consider factors such as how much CO<sub>2</sub> was released when generating the electricity used to charge the battery or, in the case of FCEVs, to make the hydrogen (along with emissions during the manufacture of the BEV or FCEV itself, including its powertrain). Over time, these other life cycle emissions will reduce further, for example as we use more renewables to generate electricity (see later). So the life cycle CO<sub>2</sub> benefits of BEVs and FCEVs over vehicles powered by internal combustion engines will increase further.

### Enabling battery electric vehicle uptake

JM is developing next generation battery materials with improved energy density (so the mileage of BEVs between charges can be increased), pulse power (for improved acceleration) and safety, while minimising the use of expensive and relatively scarce raw materials such as cobalt. JM's leading ultra high energy density eLNO family of cathode active materials is delivering improvements in all of these critical performance areas. Raw material sourcing is becoming increasingly important in the battery materials area, and here JM's years of experience in sourcing platinum group metals (pgms) will continue to stand us in good stead. Another similarity between the battery materials and pgm areas is the acknowledged need to recycle critical raw materials; JM is a world leader in the recycling of pgms, and we are applying our expertise to explore opportunities in battery materials recycling.

Such innovations are essential to drive the kind of BEV uptake that will be required to meet incoming CO<sub>2</sub> regulations, and, alongside the ongoing reductions in the carbon intensity of electricity generation, deliver step changes in the CO<sub>2</sub> profile of transportation.

We will, therefore, see significant increases in the number of BEVs on our roads as we move towards a lower carbon future and JM technology will make important contributions here.

However, some vehicles, such as long haul trucks, are unlikely to adopt battery technology since the very high daily mileages driven by these trucks would require very large, heavy and expensive batteries to match the requirements of these duty cycles. In addition, tremendous amounts of energy would need to be transferred to the battery in a very short time during battery recharging, in order to meet the needs of the vehicle owners to maintain the very high utilisation of these vehicles.

### Hydrogen powered fuel cells are a complementary solution

One alternative with the potential to enable the decarbonisation of long haul trucking is the fuel cell powertrain. Hydrogen (when pressurised in storage tanks) has a much higher energy density than batteries and refuelling with hydrogen can be carried out in a similar timeframe to filling current fuel tanks. Fuel cells also match the needs of cars covering large annual distances, where the long range and fast refuelling advantages make a compelling combination. In addition, we are starting to see the introduction of fuel cell powered locomotives, which could provide a cheaper route than electrification to decarbonise rail transport.

So fuel cells will work alongside batteries to play an important role in reducing the CO<sub>2</sub> footprint of ground transportation. Furthermore, FCEVs also have a battery, so there are some very direct synergies between the two technology approaches.

In the fuel cells area, JM is developing the platinum containing catalysts and membranes which make up the membrane electrode assembly (MEA). This is the component at the very heart of a fuel cell within which the input hydrogen and oxygen are reacted together electrochemically to produce water, electricity and heat. In this area we are focusing on aspects such as improving the efficiency and long term durability of the MEA, along with reducing the platinum content of the catalyst to lower the cost of fuel cell systems. Once again, JM will be a critical part of the solution as fuel cells enable substantial carbon reductions in transportation and other applications.

In the broad transition towards renewable chemicals and fuels, JM's expertise in catalysis, purification and process technology development will be enablers. Our recently announced projects, with BP and Fulcrum BioEnergy to convert waste into aviation fuel, and with Virent for the production of renewable feedstocks and fuels, are testament to this and we continue to invest and collaborate to explore future process technology options.

### The broader role for hydrogen in global decarbonisation

Many countries are now looking at how hydrogen can help their broader decarbonisation efforts as hydrogen is an extremely flexible energy vector with a substantial role to play. For example, there is a shift away from electricity generation from fossil fuels (especially coal) and towards increased use of renewable sources such as solar and wind power. The UK, for example, halved the carbon intensity of its electricity generation between 2013 and 2017 as a result of decreasing coal use and increasing renewables. It has plans to reduce this by a further 90% between now and 2050. However, increasing the reliance of electricity generation on renewables brings with it the need for large scale and long term energy storage since the sun doesn't always shine and the wind doesn't always blow.

To ensure the wheels of industry keep turning and the lights in our homes stay on, regardless of the weather, we will need to store and transport very large amounts of energy. Hydrogen is likely to play a key role here. That's because it is uniquely able to provide underground storage of a zero carbon fuel at the multi-terawatt hour scale required for interseasonal energy storage. This underground hydrogen storage can be in depleted gas fields or salt caverns, depending on local geological conditions. And for those unfamiliar with a terawatt hour... one terawatt hour is a billion kilowatt hours. Boiling the water in a kettle uses about 0.1 kilowatt hours of energy; so one terawatt hour of energy is enough to boil 10 billion kettles!

So hydrogen has great potential as a large scale source of energy. It also has great potential to drive substantial reductions in the carbon emissions associated with domestic heating, enable the decarbonisation of high temperature industrial processes and provide flexible, dispatchable power generation.

## Hydrogen has a role to play

Many countries are now looking at how hydrogen can help their broader decarbonisation efforts as hydrogen is an extremely flexible energy vector with a substantial role to play. That's because it is uniquely able to provide underground storage of a zero carbon fuel at large scale.



With such a key role to play across multiple sectors, cost effective production of low carbon hydrogen at scale is essential to enable the transition to a global low carbon economy. Indeed, the UK's Committee on Climate Change recently stated that moving from a 2050 target of 80% carbon emissions reduction to the recently proposed net zero target "changes hydrogen from being an option, to an integral part of the strategy".

## But where is all this low carbon hydrogen going to come from?

Hydrogen can be produced in different ways. Today most of it is manufactured by steam methane reforming (SMR), in which natural gas at high temperature is converted to hydrogen and CO<sub>2</sub>. JM has developed a new, class leading process to produce low carbon hydrogen (LCH) from methane using a process technology called a gas heated reformer. This approach gives a higher hydrogen yield and is more energy efficient than existing SMR technologies. And, crucially, this JM process is easier and cheaper to decarbonise through carbon capture and storage (CCS), a technique which captures the CO<sub>2</sub> produced along with the hydrogen, and subsequently stores it.

We are making good progress with this technology – for example, in November 2018, JM received a grant from the UK Department for Business, Energy and Industrial Strategy (BEIS) to understand the costs and performance for our LCH solution at large scale.

Then in March 2019, JM was part of two consortia that were awarded additional grants under the BEIS hydrogen supply competition for low carbon projects to develop the technology further.

There are several areas in the hydrogen economy and its associated value chains which present significant opportunities for JM. That's why we recently joined the Hydrogen Council, a global initiative of leading energy, transport and industry companies with a united vision and long term ambition for hydrogen to foster the energy transition. The ambitions of the companies in the Hydrogen Council are to:

- Accelerate their significant investment in the development and commercialisation of the hydrogen and fuel cell sectors.
- Encourage key stakeholders to increase their backing of hydrogen as part of the future energy mix with appropriate policies and supporting schemes.

In September 2018, Robert MacLeod joined fellow CEOs and senior representatives of the other 32 members (which include Air Liquide, Audi, BMW, Bosch, Daimler, Honda, Hyundai, Shell, Sinopec, Toyota and 3M) at the annual Hydrogen Council CEO event in San Francisco, USA. While there, Robert joined discussions reflecting on the work completed by the Council thus far and meetings on strategy and new ideas to accelerate the Council's ambitions.

## Low carbon hydrogen

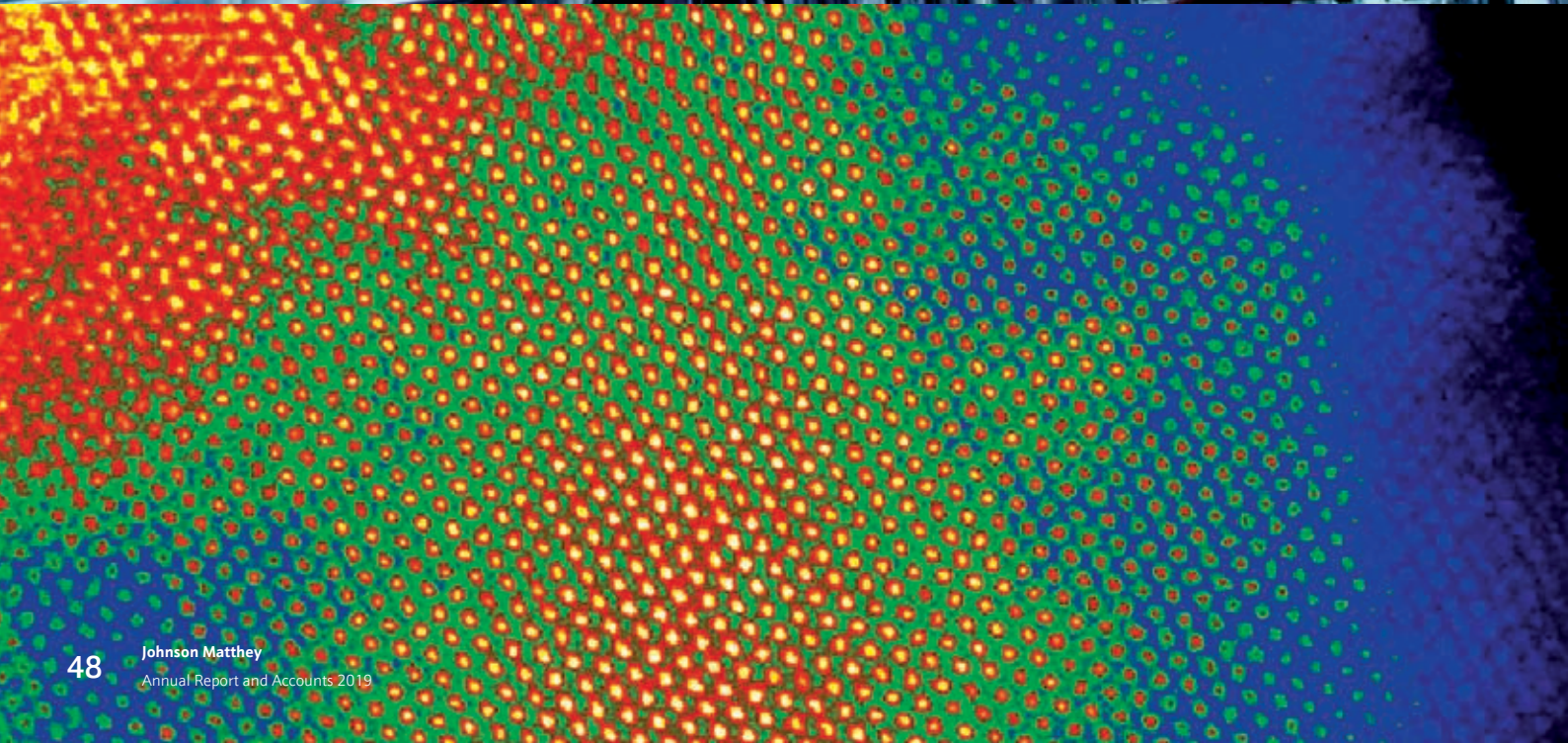
JM has developed a new, class leading process to produce low carbon hydrogen from methane. This approach gives a higher hydrogen yield and is more energy efficient than existing technologies. And, crucially, this JM process is easier and cheaper to decarbonise through carbon capture and storage.

# The future looks bright

## The challenges to tackle climate change issues are significant, but so are the opportunities.

JM's expertise in emission control, catalysis, process technology (through, for example, making industrial processes more energy efficient), hydrogen generation, battery materials and fuel cells are already supporting global moves towards greener economies. Driven by our vision and strategy, we will continue to use our inspiring science to create the solutions that will shape and enable a new era of clean energy.







Our vision for a cleaner, healthier world requires us to operate our business responsibly and with a relentless focus on safety, efficiency and excellence

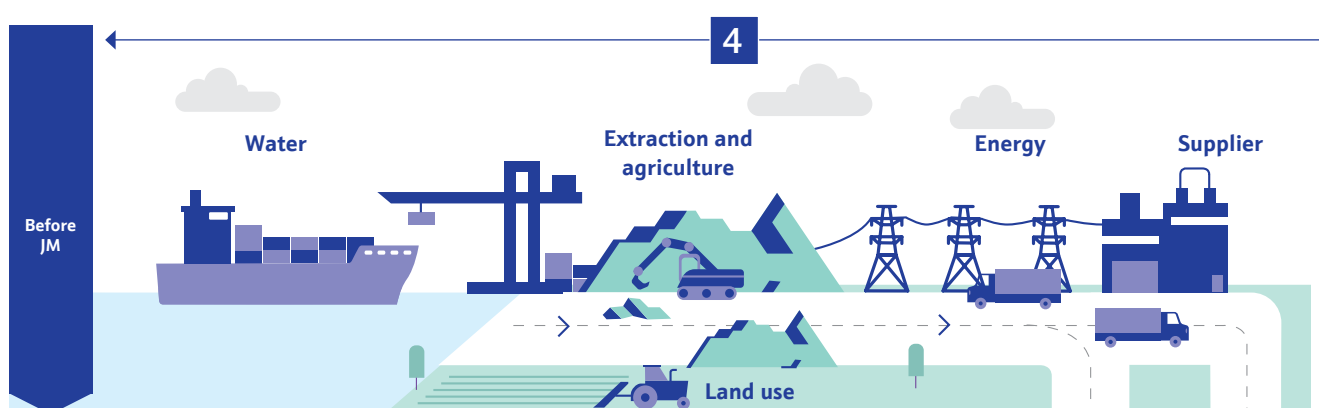
Sustainable business goals

Low carbon operations	Responsible sourcing
3	4

# Operations

This focus on safety, responsible business practices, efficiency and excellence cuts across everything we do, from common systems and core processes to the way we manage and drive the environmental performance of our assets. It extends beyond our gates and spans our whole value chain: from 'before JM' and how we source raw materials; how we run every aspect of our operations at 'JM'; and 'after JM', when our products are used by our customers at the end of our products' useful life.

## Before JM – Our value chain



The value chain for the commodities that go into our products comprises our suppliers, and we have policies and processes in place to manage our key relationships and risks within both our Procurement function and as part of our ethics and compliance framework.

### Procurement

Our business requires us to purchase a broad range of materials, goods and services including:

- Bespoke to commodity raw materials and metals to support laboratory to full production scale operations;
- Non-production items (including technical laboratory equipment, logistics and warehousing, professional services, maintenance items, utilities, IT and telecommunications and facilities management);
- Capital expenditure from individual production equipment to complete manufacturing facilities.

Leveraging the category management approach, our role as procurement business partners is to enable our business to innovate, identify and manage related risks, secure optimal supply and provide commercial agility to enable best value for the near and longer term. We also aim to apply JM's core values, according to the principles in our code of ethics, in our supply chains as well as our own operations.



## Operations continued

In 2017/18 we launched our Procurement Excellence programme to drive further value and efficiency through a standardised and consolidated approach across JM. Our annual purchases, excluding precious metal and substrate, are about £1.5 billion. These purchases are made across 118 sites, with historically each site accountable, for the most part, for its own purchases. This has, in the past, limited our ability to leverage our purchases across the group.

Over the last year we have continued to roll out our global procurement strategy and have begun to execute against it. We have made excellent initial progress by bringing together our existing procurement community and by building new capability to ensure that we capture the opportunities in full.

Our Procurement Excellence programme is forging the concept of a One Procurement Community, with one face to market which is able to partner with the business to leverage the scale and capabilities of the company and our value chains to create enhanced value.

The Procurement Excellence 2025 strategic programme is enabled by eight key pillars, aligned with and embedded in the business, which include Responsible Sourcing and Supplier Partnerships.

We are already seeing cost management and value creation successes across all of our major spend categories.

We are on track to deliver our goal of saving more than £60 million over three years.

**4**

### Responsible sourcing

Responsible sourcing is a key pillar of our Procurement Excellence programme, as well as one of our sustainable business goals (goal 4). This is how we seek to understand and appropriately manage our environmental and social impacts 'before JM' in our value chain, and work to improve sustainable business practices among our supplier partners.

Some of our suppliers operate in countries where there are high risks of human rights, environmental or business ethics abuses, and we are committed to ensuring that such abuses do not enter our supply chain.

We have a JM Supplier Code of Conduct, issued in 2017 and available on our website in English, German, Japanese, Polish and Mandarin to which we expect all our suppliers to comply. Our Supplier Sustainable Development Programme enables us to monitor whether our suppliers are following our code of conduct; it also 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 report annually on the numbers of strategic Tier 1 suppliers assessed and of those, how many meet our responsible supplier compliance criteria.

[matthey.com/supplier-code-of-conduct](https://matthey.com/supplier-code-of-conduct)

	Sustainable business goal	Sustainable business KPIs	Baseline	2018/19	2025 target
	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	17%	100%
			% of these compliant with the code	76%	100%

Performance against all six of our sustainable business goals is detailed on pages 31 to 33 and 238

### Supplier sustainability assessments 2018/19

Sustainable business topic of concern	Number of suppliers assessed for this concern	Number of new non-conformances identified in 2018/19	Total number of non-conformances open at 31st March 2019
Child labour	78	–	–
Forced labour	78	–	–
Wages and working hours	78	1	1
Discrimination	78	1	1
Freedom of association	78	–	–
Health and safety	78	27	31
Environmental	78	–	–
Anti-bribery and corruption	78	5	5

In 2018/19, we assessed 78 suppliers using a combination of desktop self-assessment questionnaires and formal on-site audits. The table above summarises the governance topics evaluated for each supplier and where non-conformances were identified. We have not identified any incidences of child labour or forced labour in our value chain.

Included in these were 13 strategic Tier 1 supplier assessments which contribute to our goal 4 target. Over the last three years we have assessed 17% of suppliers classified in this way. Of those assessed, 76% complied with the expectations of JM's Code of Conduct.

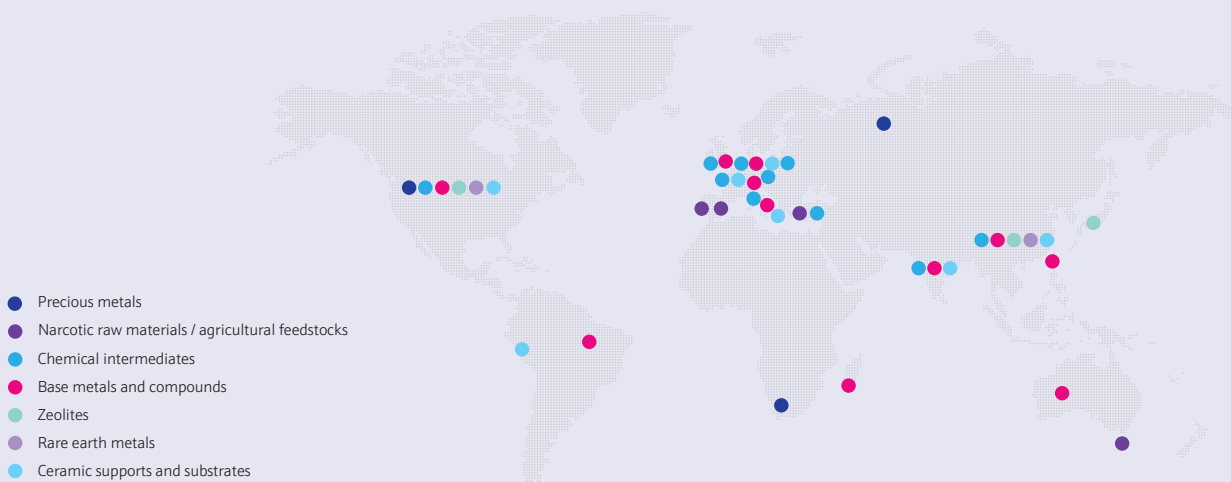
### Human rights

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.

## 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 94) 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.



## 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.

The UK Modern Slavery Act 2015 requires certain UK 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. Steps we are taking include public policies and codes (including our code of ethics and Supplier Code of Conduct), implementing an independent confidential 'speak up' line available to all stakeholders to report concerns and grievance and running our Supplier Sustainable Development Programme.

[matthey.com/modern-slavery](https://matthey.com/modern-slavery)

## Conflict minerals

The term 'conflict minerals' refers to tin, tungsten, tantalum and gold (3TG) which originate 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.

Our conflict minerals due diligence process is based on the Organization for Economic Co-operation and Development (OECD) Guidelines and 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.

We aim only to use material from refiners and smelters which conform to the Responsible Minerals Assurance Process (RMAP) assessment protocols and are listed on the RMI (Responsible Minerals Initiative) database. We have identified 157 3TG smelters across all tiers of our supply chain and 97% are listed as conformant with the RMAP process, an increase of 8% on the previous year.

We also 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 86 customer requests for information, an increase of 23% on the previous year.

[matthey.com/conflict-minerals](https://matthey.com/conflict-minerals)

## Critical metals for battery materials

During the year we have broadened our due diligence activities in our minerals supply chains to include the active ingredients that go into our cathode materials for batteries: lithium, cobalt and nickel. At present, the 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 serious human rights abuses.

We are committed to using only cobalt, lithium and nickel that have been ethically sourced. We have worked with third party experts RCS Global to develop and implement a world leading due diligence programme which ensures that we have full transparency 'back to mine' for all the materials that contain lithium, cobalt and nickel that are going into our cathode products.

Our critical minerals supplier audit programme conforms to the standard laid out in the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (third edition) and provides assurance against the standards laid out in our Supplier Code of Conduct. All on site audits of JM suppliers for battery materials are completed by RCS Global to the ISO 19011 standard.

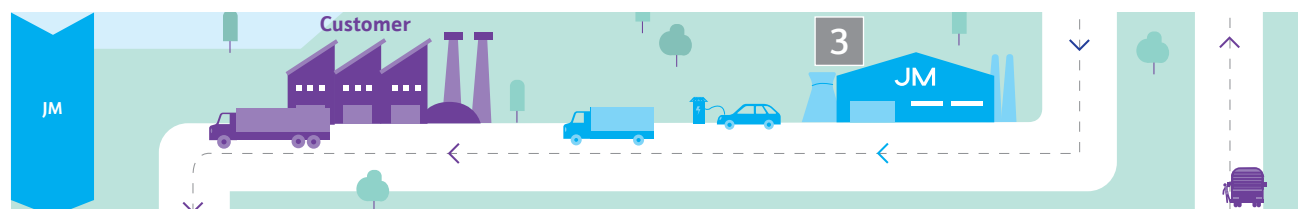
[www.rcsglobal.com](https://www.rcsglobal.com)

## Platinum group metals

We continue to monitor carefully our supply chains for platinum group metals (pgms). We work collaboratively with both our customers and peer pgm fabricator companies to ensure that our sourcing from mines in South Africa and elsewhere is ethical and responsible.

## Operations continued

## The heart of our value chain: JM's operations



**Our own operations are at the centre of our value chain. It is here that we have the greatest control over our environmental impacts.**

**+** Pages 56 to 59 – our environmental performance

### Manufacturing Excellence

In 2012, we put in place our Manufacturing Excellence programme to encourage a culture of continuous improvement to drive operational efficiency and reduce cost. During 2018/19, our production output of sold product increased by 7%. Despite this, we have also seen a 6% improvement in energy efficiency (36.4 GJ/tonne) and 10% improvement in water efficiency (18.6 m<sup>3</sup>/tonne) across the group. Our waste efficiency (0.6 tonnes/tonnes of production output) worsened by 11% this year, mainly due to an increase in waste for one of our operations (see waste performance pages 58 and 59).

There are multiple separate goals within the overall Manufacturing Excellence programme. One of the many methodologies used to bring visibility to our operations is the adoption of a system of identifying new opportunities for improvement by hands-on scrutiny and review on the factory floor. These are called 'gemba' walks in Lean management, from a Japanese term, meaning 'the actual place'. The concept assists in collaboratively seeking out improvements.

We also run a recognition programme known as MEER – Manufacturing Excellence Efficiency Recognition – which makes awards to our highest performing sites at three levels: silver, gold and platinum. This past year, three manufacturing sites were awarded with silver MEER status (West Whiteland in the US, Clitheroe in the UK, Taloja in India) and two manufacturing sites were awarded gold status (Panki in India, Queretaro in Mexico). The Panki site met strict criteria within ten stringent improvement goals – a result of hard work by the team there, under the guidance of our Group Continuous Improvement team.

'Gemba' walks were a clear enabler of the improvements and Panki realised efficiency savings in excess of £1 million.

Training is also provided under the Manufacturing Excellence programme. Our global manufacturing leadership programme runs alongside ongoing training of manufacturing leaders to identify personnel who are ready for higher roles.

We are pleased with the results that Manufacturing Excellence is bringing. It is developing the next generation of operational leaders, sharing best practice and standardising tools and processes – in short, establishing our factories for the future.

### 2018/19

JM production output of sold product	7% increase vs 2017/18
Energy efficiency	6% improvement vs 2017/18
Water efficiency	10% improvement vs 2017/18
Waste efficiency	11% less efficient vs 2017/18

## 3

## Low carbon operations

Goal 3 – one of our six goals for sustainable business to 2025 – concerns low carbon operation. Here our goal is to reduce our greenhouse gas emissions by 25% per unit of production output, an ambition that forms part of our approach to low carbon operations. We are achieving it through a combination of energy efficiency savings through our Manufacturing Excellence Programme and cost effective, low carbon electricity purchases by our Procurement function.

	Sustainable business goal	Sustainable business KPIs	Baseline	2018/19	2025 target
<div>Low carbon operations</div> <div>3</div>	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	2.9	2.8

+ Performance against all six of our sustainable business goals is detailed on pages 31 to 33 and 238

Setting ourselves a greenhouse gas emissions target as a function of production output (intensity target), rather than as an absolute value, allows us to monitor any operational efficiency improvements while also growing our business.

Our target considered the operational plans in our strategy and was based on an assessment of potential installations and energy procurement opportunities across our manufacturing footprint. We will continue to review in the coming year.

## Renewable energy

28% of the electricity we consumed during the year came from certified renewable energy sources for which JM has the associated Renewable Energy Certificates, saving us around 47,000 tonnes of GHG emissions, compared to purchasing grid average electricity in those countries.

During the year we have continued to negotiate additional renewable electricity contracts at key locations, to increase this percentage even more next year, in line with our goal 3 for 2025.

Since 1st April 2019, all our UK sites have been operating on renewable electricity. The energy source has a Renewable Energy Guarantee of Origin (REGO) certificate, the highest form of renewable energy validation.

We are now buying our electricity from Drax Power Station in Yorkshire which has the biggest renewable generator in the UK and is the largest decarbonisation project in Europe. It uses sustainable biomass from forests that absorb more carbon than is emitted when the biomass is burnt for power.

## Safe use of substances and metals

We seek to replace 'high hazard' substances – chemicals with significant potential to harm human health or the environment – where safer and economic alternatives are available. When replacement is not possible, through detailed risk assessment backed by extensive data packages, we ensure robust risk management measures are identified and in place. If a true risk is identified, industry regulators could take action that effectively eliminates use of the substances in that market. We work actively with other companies to provide regulators with the best available information on industry practice such that any regulatory restrictions are evidence based.

Our policies, especially on new product innovation, emphasise the need to investigate whether safer alternatives are available.

We have set up a dedicated committee known as PARS (Prior Approval Required Substances) to review certain high hazard substances of relevance to JM in order to rate the risks in using them to develop new products. The committee has established its initial index of substances that need internal approval before they are used, and further substance nominations will be reviewed in the coming months. Approval to use, if given, will be time limited. We are driving a more considered evaluation of the justifications for use for these high hazard PARS substances and we will continue to embed our PARS approach in the coming year, with further PARS-related training being rolled out.

Many JM sites handle pgms. As part of our approach to responsible operations, we have provided significant input into a comprehensive user guide to pgms ('Safe Use of Platinum Group Metals in the Workplace', International Platinum Group Metals Association (IPA), 2017). The user guide provides practical advice on workplace monitoring, the medical surveillance of workers, control measures, training and regulatory controls.

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.

+ See more on our safety processes under 'Health and safety' pages 69 to 73

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.

<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.



## Operations continued

## After JM – Our value chain



**Immediately downstream of our operations are our customers. We work closely and collaboratively with them to develop the products they need to go into their own manufacturing.**

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. So our responsibilities extend far downstream of our own operations.

More broadly, JM, as a leading global recycler of pgms, has a significant role in the value chain of the global pgm industries. Our pgm recycling and refining operations process a wide range of pgm containing materials, including emission control catalysts at the end of a vehicle's life and other pgm containing catalysts and products.

### Product stewardship and toxicology

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 us, move towards safer chemistries.

We continue to strengthen our understanding of our toxicology and communicate the hazards of JM products to customers. At the same time, we use that knowledge to move us towards safer, more sustainable chemistries. We consider legal compliance simply as a minimum requirement, as legal developments may not have kept fully up to speed with the science as it develops. As we research and develop our products, we may be better placed than regulators to react quickly to new science and take the right decisions for people and the planet more rapidly.

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, and product stewardship is now better integrated into new product innovation. We are developing a groupwide product stewardship IT system to allow sites to manage inventory and know the properties of the materials they are handling. We plan to launch the new system during 2019/20.


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. We plan to create a separate audit process for product stewardship.

### Product lifecycle regulatory compliance

We made good progress during 2018/19. 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). We realise that one scenario of Brexit is a situation which could mean there is divergence of regulations. We would support the chemical industry in its case for regulatory consistency and continuity. Regardless of the political outcome, we would like to see a 'UK REACH' equivalence, with equal standards that would enable us to secure access to the EU marketplace. We will continue to monitor the changes to the regulations to ensure we maintain our compliance with the specific regulation.

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 2018/19, 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)

### Third party intermediaries

JM uses third party intermediaries (TPIs) to support our business and our customers, and has policies and processes in place to manage the risks, especially in the area of bribery and corruption. During the year, we concluded our strategic review of all our high risk TPIs and reduced their number by 70%. The new standards, together with ongoing monitoring processes, have been firmly embedded in our sectors and a corresponding onboarding process will be undertaken for future TPIs. Our derisking activities are already bringing results and are hugely significant in protecting the reputation of JM.

### Climate change disclosures and benchmarking

We disclose our environment, social and governance (ESG) performance through the Carbon Disclosure Project (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/cdp-investor](http://matthey.com/cdp-investor)

A changing global climate brings with it a number of risks and opportunities for JM, which we continually consider and review annually as part of our CDP disclosure. The most significant of these continues to be tightening clean air environmental legislation.

JM 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 and through our science and technology we are enabling solutions to reduce greenhouse gases (see page 44).

Water is an essential resource, which is also impacted by climate change. The World Resources Institute 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 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; and 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.

To this end, this year we have built a new, above-ground freshwater ring main at our Brimsdown facility in the UK to replace ageing pipework buried deep below the plant. It came into operation early in 2019 and we have already seen a significant decrease in water withdrawals at the plant, indicating there was leakage in the old pipework.

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.

# Environmental management

## Environmental performance summary

	% change	2019	2018	% change
Goal 3: carbon footprint per mass sales	Tonnes CO <sub>2</sub> per tonne sales	<b>2.9</b>	3.4	-12
Operational carbon footprint (Scope 1 and 2 market method)	thousand tonnes CO <sub>2</sub> equivalent	<b>414</b>	445	-6
Energy consumption	thousands GJ	<b>5,144</b>	5,104	+1
Electricity consumption	thousands GJ	<b>2,170</b>	2,055	+6
Natural gas consumption	thousands GJ	<b>2,608</b>	2,722	-4
Total waste sent off site	tonnes	<b>84,824</b>	71,787	+18
Total hazardous waste sent off site <sup>1</sup>	tonnes	<b>57,087</b>	44,020	+30
Waste to landfill	tonnes	<b>3,886</b>	6,271	-38
Water withdrawal	thousands m <sup>3</sup>	<b>2,630</b>	2,729	-4

<sup>1</sup> Excludes hazardous waste sent for beneficial reuse.

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

### Environmental management governance

We have group policies, processes and systems to provide the guiding principles necessary to ensure that high standards of environmental protection are achieved at all our sites.

The company 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.

Regulatory requirements for environmental protection increase each year in the territories where JM operates. This year, as part of our internal governance programme, we have engaged third party consultants to undertake a number of comprehensive compliance reviews in North America and China.

In addition to these reviews, we have updated our corporate environmental standards in part to reflect the changing regulatory requirements and to tighten our internal environmental management standards across the group.

As an example, in addition to our legal requirements to engage with regulators this year, our UK pgm refining facility has invited inspectors from UK environmental agencies to visit more frequently to help drive continuous improvement. This has resulted in the implementation of a new waste tracking system to improve internal and external reporting of waste.

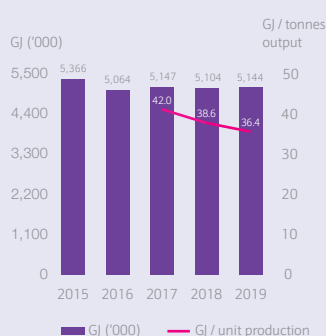
All our major manufacturing sites are required to maintain certification to the ISO 14001 environmental management system as a means of setting, maintaining and improving standards.

The group also requires new or acquired sites to achieve ISO 14001 certification within two years of beneficial operation or acquisition; 86% of sites are currently ISO 14001 compliant.

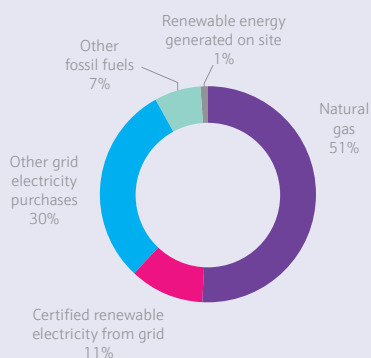
Going beyond this, 10% of our manufacturing sites are also ISO 50001 compliant. ISO 50001 builds on ISO 14001 and looks specifically at the development of energy management systems to systematically and continuously improve energy efficiency. Our manufacturing sites in North Macedonia, South Africa and our major sites in Germany have all achieved this standard.

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

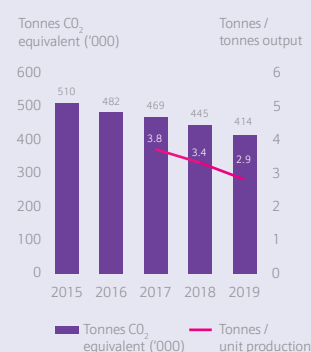
### Energy consumption



### Energy mix



### Operational carbon footprint



During the year we have introduced a new software system across JM to collect and manage key environmental data. This will enable us to improve the quality of the information collected and increase visibility of performance on demand across JM so that we can take appropriate action to address any negative trends more quickly.

### Energy consumption

Energy is a valuable resource on which we spent £64 million in 2018/19. We recorded a 1% absolute increase in energy usage within our facilities during the year but a 6% decrease in energy consumption per unit of production, partly through our focus on manufacturing excellence (see page 52).

Electricity usage across the group rose by 6% while gas usage declined by 4%. 1.2% of our electricity came from local solar power facilities that are not grid connected. In total, 28% (601,427 GJ) of the electricity we consumed during the year came from certified renewable energy sources for which JM owns the associated Renewable Energy Certificates.

Our electricity consumption increased principally because the combined heat and power (CHP) plants which we use to generate electricity to power our facilities in Royston and Brimsdown, UK were out of service during the year. These CHP plants underwent a significant efficiency upgrade and are expected to return to operation in early 2019/20. This should substantially reduce energy costs but may have a negative impact on our operational carbon footprint.

## 3

### Greenhouse gas emissions

Our headline environmental KPI is a measure of our operational carbon footprint. In 2017 we set ourselves the target of reducing our Scope 1 and 2 carbon footprint by 25% per unit of sold manufactured product by 2025 (goal 3).

We have enthusiastically embraced this challenge, and our successes in procuring low carbon electricity to power our plants have enabled us to achieve 93% of target after two years.

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)) dual reporting methodology. 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.

Competitive electricity markets for the supply of grid electricity are operational at 78% of our sites and at 67% of these sites, the carbon intensity of electricity we purchased was lower than the national or regional average. 21% of our sites, responsible for 39% of all our grid electricity purchases, are purchasing zero carbon grid electricity.

Thus, our Scope 2 carbon footprint calculated by the market method is 10% lower than that calculated by the location based method.

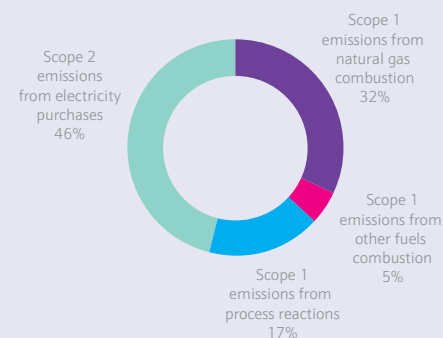
Our Scope 1 and 2 carbon footprint calculated by the market method decreased by 6% in 2018/19 whereas our carbon footprint calculated using the location method reduced by 1%. This was mostly a result of our sites in the Philadelphia area switching to a zero carbon electricity contract from April 2018. As of April 2019, all of our UK sites are operating on renewable electricity, so we are expecting the differential between our carbon footprints calculated by the two methods to increase next year. Our focus on procuring electricity derived from renewable sources (page 53) means that for the first time our Scope 1 carbon footprint is higher than our Scope 2 carbon footprint.

### 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 licenced 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.

### Operational carbon footprint

	2019 thousand tonnes CO <sub>2</sub> equivalent	2019 % of total carbon footprint	2018 thousand tonnes CO <sub>2</sub> equivalent	2018 % of total carbon footprint
Scope 1	224	54%	215	48%
Scope 2 (market based method)	191	46%	230	52%
Scope 2 (location based method)	272	55%	279	56%
Scope 3 (from electricity transmission and distribution)	22	n/a	20	n/a
<b>Total operational carbon footprint (Scope 1 and 2 market based method)</b>	<b>414</b>	<b>100%</b>	<b>445</b>	<b>100%</b>
<b>Total operational carbon footprint (Scope 1 and 2 location based method)</b>	<b>496</b>	<b>100%</b>	<b>494</b>	<b>100%</b>





## Environmental management continued

We continue to look for ways to reduce the emissions to air from our manufacturing activities. In China we began operating equipment to prevent volatile organic compounds (VOCs) emissions from our Shanghai, China sites. At our Health Sector facility in West Deptford, USA we implemented a project to replace the existing air abatement equipment with more modern and more reliable equipment. The investment has led to better control of local air emissions.

In 2018/19, our reported NO<sub>x</sub> (NO + NO<sub>2</sub>) emissions were 538 tonnes, up 41% on the previous year due to increased production in our Catalyst Technologies business.

Our total SO<sub>2</sub> emissions increased by 39% to 62 tonnes due to one of our large manufacturing sites reporting emissions for the first time.

Our emissions of VOCs remained broadly flat at 101 tonnes.

Our emissions to air data covers 56% of our manufacturing sites and engine test facilities. Within these numbers, we believe we have captured the majority of emissions across the group but will be working to increase coverage of our emissions to air reporting over the coming year to confirm this.

		2019	2018	% change
NO <sub>x</sub>	tonnes	<b>538</b>	383	+41
SO <sub>x</sub>	tonnes	<b>62</b>	44	+39
VOCs	tonnes	<b>101</b>	100	+2

### Waste disposal

We disposed of 84,824 tonnes of waste via third parties in 2018/19, an increase of 18% on the previous year. Over half of this (54%) is waste from our UK pgm refinery, largely liquid hazardous waste. This waste material is designated as hazardous due to its corrosive nature. It currently cannot be treated by our on site effluent treatment plant. The increase is due to the rerouting of additional refining effluent waste stream to tankered waste due to increased levels of metal contamination.

Of the total waste sent off site for treatment, 34% was sent for reuse or recycling. Excluding waste from our UK pgm refinery, almost 60% of our waste was reused or recycled off site.

Our total waste sent to landfill this year decreased by 38%. We now have only one plant (based in the USA) which has a significant waste stream which is being sent to landfill; we continue to investigate alternative means to treat and dispose of this material.

70% (57,087 tonnes) of our total waste sent off site was classified as hazardous waste. 94% of our hazardous waste is liquid waste and over half of it comes from our pgm refinery in the UK.

Only 3,185 tonnes (6%) of our hazardous waste is solid material that is not reused after it has been sent off site. 1,668 tonnes of our hazardous waste was shipped internationally for disposal, 3% of all our hazardous waste.

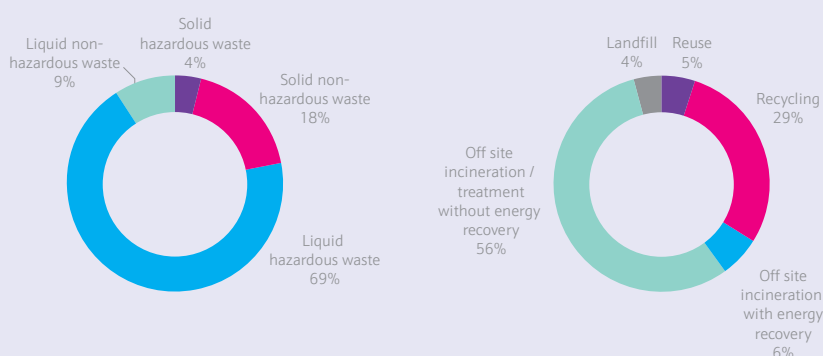
We also incinerated 3,642 tonnes of waste within our own facilities, principally waste sent to our refineries for precious metal recovery.

### Water withdrawal

Water withdrawal decreased this year to 2.6 million m<sup>3</sup>, a 10% decrease relative to production output. 92% was supplied by local municipal water authorities, 6% was abstracted from ground water and 2% was abstracted from fresh surface water.

50% of our manufacturing sites operate their own waste water treatment facilities treating 1.2 million m<sup>3</sup> of waste water per year, no change since last year. 19% 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 54% of its water treated on site.

### Total waste disposed of by third parties



Our total effluent increased by 5% to 1.7 million m<sup>3</sup> in 2018/19 due to increase in reported effluent at Clitheroe. 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 net freshwater consumption (water withdrawn that is not returned directly to the environment for reuse at least as clean as it was when it was withdrawn) was 2.36 million m<sup>3</sup>, a 6% decrease 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 2018/19 the group discharged organic chemicals equivalent to an average COD of 171 mg/L into water courses, as regulated by local emission limits at each manufacturing facility, a decrease of 9% on the previous year.

This average COD was calculated from readings collected at sites representing 79% of our total water discharged, a 22% increase in coverage on last year. 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.

This year we have installed new waste water treatment at our Shanghai, China sites. Mechanical vapour recompression systems have been installed to reduce the salt content and eliminate chloride ions in the sites' waste water. A similar system is being considered at the Taloja site in India. A comprehensive waste water monitoring system has been installed at the Taloja site to keep track of its waste water discharge to the common treatment plant of the industrial zone where the site operates. The system provides continuous monitoring and is linked to the local environment regulator for its monitoring of the discharge trade effluent quality.

### Environmental incidents

JM has a robust and effective management system that requires all sites to report environmental incidents to our Group Environment, Health and Safety department. All spills that occur on unmade ground or near drinking water sources are classified as significant.

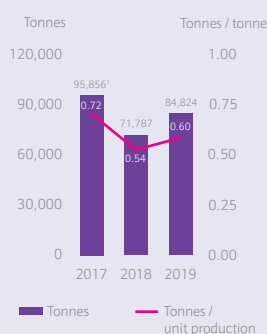
During 2018/19 we received one fine due to power outages at our precious metal refinery in West Deptford, USA. It was determined that our process air emission abatement plants were not operating correctly during power outages at the site and this resulted in excess air emissions. A fine of US \$60,000 (approximately £46,000) was issued by the local regulator.

There was one significant spill during the year. A fault in the fire detection system at our Health Sector's West Deptford facility resulted in the site's fire water and foam deluge system activating. The system contained approximately 25,000 gallons of water and foam of which most was retained in the storm water pad. A small amount of the material was not contained and approximately 20 gallons of the foam and water mixture made its way into a local creek. The incident was voluntarily reported to the local regulator. No action was taken by the regulator in this case.

### Environmental spills

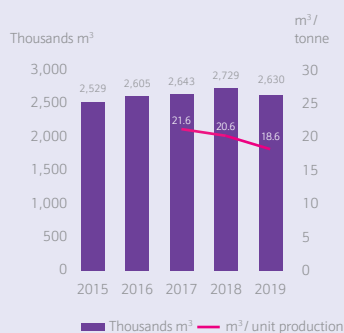
Location	Volume (litres)	Material	Impact
West Deptford, USA	100	Chemicals	Under investigation

### Total waste



<sup>1</sup> Includes 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









Our people are at the heart of JM's business strategy. For us to deliver solutions from our world class science and realise our vision, we are creating a culture in which people can be successful; one which attracts, retains and develops the very best talent

# People

## Sustainable business goals

Health and safety 1	Our people 2	Community engagement 6
------------------------	-----------------	---------------------------

Market, economic and technological trends, and what these are demanding of JM, are having a significant impact on the people agenda, and for this reason it is a strategic pillar to which all organisation objectives are aligned.

### A culture for success

The environment we create through our values is fundamental to the success of our organisation. They shape how people behave with each other, with our customers and with our other stakeholders. Our values drive individual and collective actions that help create a safe working environment and an ethical, diverse and inclusive organisation. When successfully embedded and lived, they determine the kind of company that JM is to work for.

Our values are aligned to the needs of our long term strategy and we are embedding them into all our people processes. We define our values as:

- Protecting people and the planet.
- Acting with integrity.
- Working together.
- Innovating and improving.
- Owning what we do.

Our culture at JM sets safety, wellbeing, inclusion and collaboration as priorities, using our diversity as a strength and challenging ourselves to be open, efficient, ethical and personally responsible. With this culture, we are well placed to deliver on our vision to make the world a cleaner, healthier place and solve the complex problems of our customers – it is a culture for success.

## Our values

Protecting people and the planet	Acting with integrity	Working together	Innovating and improving	Owning what we do
We practice the <b>highest standards of health and safety, promote wellbeing</b> for people both inside and outside of work, and seek <b>to safeguard our planet.</b>	We <b>do the right thing</b> , for people and for the world. We <b>do what we say we'll do</b> , expect the same of each other and <b>speak up when there's a problem.</b> We place importance on relationships internally and externally, <b>treating others with respect and care.</b>	We <b>encourage collaboration inside JM and out</b> , sharing and <b>embracing diverse viewpoints.</b> We tackle problems together, put our ideas into practice and <b>take pride in combining our contributions</b> to create something better for JM and our customers.	We adapt and <b>embrace new ideas</b> to make us stronger and our world cleaner and healthier. We are <b>confident and resilient through change; growing and developing ourselves and JM</b> , to ensure we are a <b>leader</b> in our chosen markets.	We <b>take accountability</b> for our own work, and know we are also part of something bigger. We <b>take the initiative, seek clarity and demand high standards</b> from ourselves and our colleagues.



## People continued

### A great place to work

Executing our strategy needs a workforce that is highly engaged, diverse and inclusive with the best talent across our global organisation.

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 together is very much encouraged, all within an environment that promotes growth and development.

We enable this with a people strategy and key aims which define an aligned set of global processes, programmes and systems that support our people to fully engage with the business priorities through which we execute our strategy.

These key aims are to:

- Attract and retain the best talent.
- Develop all employees to deliver high levels of performance and achieve their career potential.
- Create an environment where our employees are recognised and rewarded for their overall contributions to JM.
- Foster a culture where values matter and guide people to do the right things.
- Support employees through an evolution of change and transformation.

We are implementing progressive, global people policies and practices that will help us realise our vision. We offer excellent opportunities that enable people to fully develop and realise their potential with JM, through contributing to a more sustainable future, while having a meaningful career.

Our people policies meet local statutory requirements and we often go beyond them to recognise best practice. Our policies and procedures are a combination of global, country and some site specific. When staff are inducted into JM, we fully explain those that are relevant to them. We review our people policies and risks in accordance with our governance framework, with the board being responsible for overseeing the overall people strategy. The Nomination Committee oversees talent and succession plans, and decisions. The Remuneration Committee is responsible for overseeing and ensuring the Remuneration Policy is adhered to.

### Attracting and retaining the best

Talent is critical to enable us to maintain our world class science and leading market positions. Our headcount has increased over the last year, reflecting the growth in our business. In our more established locations we have remained stable. The increases have been in India, North Macedonia and Poland.

Levels of recruitment have increased, driven by business growth in some regions (as detailed above) and the need to build capability in certain functions such as IT and Information Security, Procurement and Finance to support our transformation programmes. In 2018/19, the total number of internal appointments and promotions increased from 595 to 874. This reflects a deliberate attempt to maximise opportunities for our current employees by offering them further career development opportunities. We have been successful in attracting women into JM; the percentage of female hires is above our overall company total of 27%. Currently, a lower proportion of women in JM overall occupy science, technology and engineering roles. We aim to address that through our diversity and inclusion aspirations and roadmap to 2025 (pages 65 and 66).

At the same time as hiring for immediate business requirements, we are also investing in our future talent pipeline. Following the successful launch of our global graduate rotational programme last year, we are continuing to hire graduates into science, operations and commercial disciplines. A new cohort of 37 graduates are set to join JM in the UK, US and China in this cycle. Of this group, 58% are female compared with 39% in the previous year. Our female graduate diversity compares very favourably with other chemical and engineering companies. The number of females choosing to study STEM subjects at university undergraduate level remains low. Although this is a challenge for us, we are increasing our efforts to position JM as an employer of choice.

Overall voluntary attrition has increased slightly this year compared with last. This is partly due to the highly competitive new markets we are operating in and the changes we are experiencing. We have also seen an increase in the numbers of people leaving us in their first two years.

We are addressing this through our work to define our employee promise and our broader investments in our people processes. These are all focused on ensuring we can attract and retain the skills we need to deliver our business strategy.

There have been a small number of restructuring programmes across the business and this, coupled with retirements in the year, takes our total employee turnover to 13.2%.

### Employee promise

We have a compelling case to sell as an employer. We are developing our employee promise that will help us attract and retain the very best talent. It will make the most of our unique purpose and provide more clarity for employees on what they can expect from JM as an employer and what we expect from them in return. The employee promise will be launched in the coming year and will emphasise themes such as personal autonomy, collaboration and purpose. We have engaged our existing workforce in the creation of our employee promise through workshops that have been held globally as well as using insight from the external recruitment market.

### Reward and recognition

We continue to work hard to ensure that our reward and benefit packages are competitively aligned with local markets. We have refreshed our online benefits portal 'Elements' and this is now available to all employees globally.

Internal and external research is showing us that employee recognition can significantly improve engagement and promote innovation.

We celebrate our achievements with the annual JM global awards. They highlight activities that provide inspiring evidence of our values and how our employees are living them. This year we presented eight awards including the Chief Executive's Award for Outstanding Contribution (see pages 74 and 75). The awards were announced at the Natural History Museum in London in January 2019.

A formal event and prestigious venue are not in themselves essential to recognition. We are also piloting a more informal 'Say thanks' programme, which enables employees to give and share recognition. The 'Say thanks' tools include a recognition portal, e-cards and awards that can be redeemed in the form of small gifts.

## Number of staff\* as at 31st March

	2018				2019			
	Permanent employees	Temporary employees	Agency employees	Total	Permanent employees	Temporary employees	Agency employees	Total
Europe	6,460	342	926	7,728	<b>6,714</b>	<b>397</b>	<b>1,185</b>	<b>8,296</b>
North America	3,028	20	92	3,140	<b>3,105</b>	<b>13</b>	<b>51</b>	<b>3,169</b>
Asia	2,236	32	330	2,598	<b>2,376</b>	<b>73</b>	<b>159</b>	<b>2,608</b>
Rest of World	595	2	67	664	<b>662</b>	<b>59</b>	<b>1</b>	<b>722</b>
<b>Total group</b>	<b>12,319</b>	<b>396</b>	<b>1,415</b>	<b>14,130</b>	<b>12,857</b>	<b>542</b>	<b>1,396</b>	<b>14,795</b>

\* For definitions, see page 234

## New joiners by gender and age

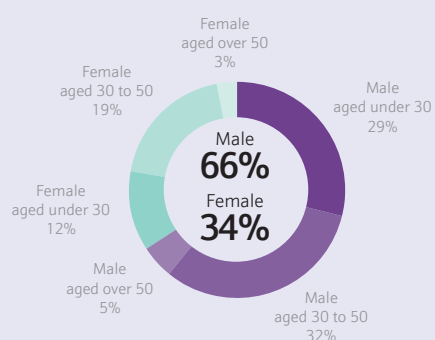
	Male				Female				Aged under 30	Aged 30 to 50	Aged over 50	Total new joiners
	Aged under 30	Aged 30 to 50	Aged over 50	Total	Aged under 30	Aged 30 to 50	Aged over 50	Total				
2018	456	509	92	1,057	184	270	38	492	640	779	130	1,549
<b>2019</b>	<b>696</b>	<b>777</b>	<b>135</b>	<b>1,608</b>	<b>293</b>	<b>446</b>	<b>77</b>	<b>816</b>	<b>989</b>	<b>1,223</b>	<b>212</b>	<b>2,424</b>

## Employee turnover by region

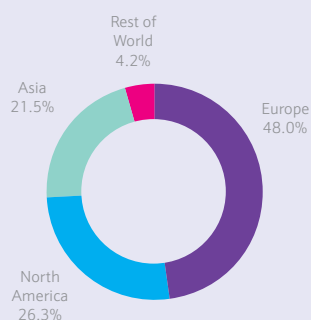
	2018			2019		
	Voluntary leavers	Voluntary employee turnover %	Total employee turnover %	Voluntary leavers	Voluntary employee turnover %	Total employee turnover %
Europe	526	7.9%	10.8%	<b>597</b>	<b>8.7%</b>	<b>10.7%</b>
North America	330	10.8%	15.1%	<b>382</b>	<b>12.5%</b>	<b>18.3%</b>
Asia	233	11.6%	17.4%	<b>312</b>	<b>13.1%</b>	<b>14.7%</b>
Rest of World	29	4.9%	8.1%	<b>55</b>	<b>8.4%</b>	<b>9.8%</b>
<b>Total group</b>	<b>1,118</b>	<b>9.1%</b>	<b>12.8%</b>	<b>1,346</b>	<b>10.4%</b>	<b>13.2%</b>

Of the total voluntary leavers, 669 (54%) had less than two years' service (2018: 471, 42%)

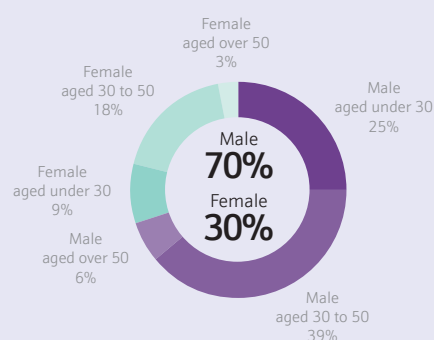
## New employees in 2018/19 by gender and age



## New employees by region



## Voluntary employee turnover in 2018/19 by gender and age



## People continued

### Talent management

We have refreshed our approach to talent management to better define the talent pools we need for future business requirements and to support our people in reaching their full potential, whether that is in specialist or management disciplines. This approach to reviewing our talent and supporting people's development is fundamental in enabling us to understand what talent we have, what we need for the future and how we address capability gaps.

We are prioritising the importance of our performance and development conversations in JM. We have already streamlined our performance management and development processes into one global approach. We are monitoring the number of performance discussions through our management grade population to evaluate the effectiveness of this process.

## 2

### Employee engagement

In a period of change, it is especially important to know whether our employees are engaged as we continue to evolve as an organisation. Every two years we conduct an employee survey, known as yourSay, and we welcome employee feedback and insights. The results of our 2018 survey provided rich data, confirmed our achievements and highlighted areas where we still have more work to do.

There were variations across our four business sectors and functions and analysis of the data has allowed us to create new action plans to respond to the findings and continue to shape future efforts to support our goal of making JM the place to work.

The scores on employee understanding of our strategy have risen – showing that we have responded well to calls in 2016 for better clarity and communication. Our efforts on these priority areas were recognised and we are continuing to make improvements. The results for health and safety and ethics were once again higher than the industry norms, and our work-life balance score has also improved.

However, the 'employee engagement' measure – indicating how committed and motivated our people are – has dropped by three percentage points since 2016 from 62% to 59%. Our 'employee enablement' score – showing whether people feel they have the right resources, support and work environment to perform at their best – was flat at 63%. These scores are unsurprising, given the fundamental changes we are making across all aspects of JM, and the survey results have enabled us to chart a course for improvement.

Employee engagement is a group non-financial KPI and is one of our sustainable business goals. In 2019 we will conduct an interim pulse employee survey aligned to the key drivers of engagement and enablement in JM.

Our aim is to improve our scores for engagement and enablement by two percentage points as a result of the targeted actions in response to employees' feedback in the 2018 survey.

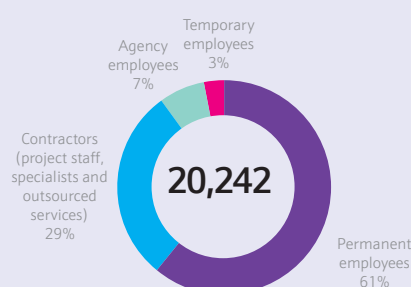
### Training and career development

We continue to invest in resources and programmes to develop capability and leadership so that we support all employee groups in being able to fully realise their career aspirations with us and perform at the highest levels. Career development was highlighted as an important theme in our 2018 employee survey.

Our Aspire leadership development programmes, launched in 2018, represent JM's ambition to develop all levels of leaders to be great coaches and role models, which will help to drive the business performance and growth that will deliver our vision and strategy. The programmes align and interconnect and, to date, we have launched programmes for our mid level and executive level leaders. During 2019, we aim to launch our senior leader programme and will pilot a new programme for first time leaders.

We launched the R&D career path earlier this year to further develop our technical capabilities and to support people in this function to achieve their potential and career goals. We are building a sales academy to strengthen our commercial capability. In addition, we are investing in the capability of our line managers so they can have better development and career conversations with their employees.

### Average full time equivalent workers\* on JM sites during 2018/19



### Gender of people employed by employment type

As at 31st March 2019	Full time		Part time	
	% Male	% Female	% Male	% Female
Europe	72%	28%	22%	78%
North America	77%	23%	46%	54%
Asia	82%	18%	10%	90%
Rest of World	66%	34%	51%	49%
<b>Total group</b>	<b>75%</b>	<b>25%</b>	<b>28%</b>	<b>72%</b>

### Percentage of people employed by gender

As at 31st March 2019	% Male	% Female
Europe	69%	31%
North America	77%	23%
Asia	82%	18%
Rest of World	65%	35%
<b>Total group</b>	<b>73%</b>	<b>27%</b>

\* For definitions, see page 234.

We also launched two new digital e-learning platforms in 2018 called 'myCareer' and 'iLearn'. These provide our employees with on demand learning tools, materials and resources that are focused on general business skills, career and leadership development. The platforms can be accessed anywhere, anytime, allowing employees to continuously learn and take more active ownership of their development.

### Embedding our values and protecting our culture

Research from GreenBiz and other organisations shows that people may want to work for companies with sustainability credentials. On this, JM offers a compelling proposition. We emphasise this in our values, particularly that of protecting people and the planet, and we show that in being part of JM, our workforce is making a real difference to the world.

In the past year, we have been engaging our workforce in our values and how we embed them in our everyday behaviours. We held 27 workshops at 18 of our sites. The workshops revealed a strong sense of purpose around our vision but also revealed that there is more to do to really create a culture within which people can be successful and feel engaged.

Taking this on board, we created a values toolkit for managers to help them communicate our values to their teams and create a momentum in applying them day to day – in other words, using the values to guide the behaviours we want to see employees now practising.

Together, our values and employee behaviours create our distinctive corporate culture. We have also embedded values into our performance management process to ensure we are rewarding and recognising our role models and we will continue to embed them across all our people processes in 2019/20.

## 2

### Diversity and inclusion (D&I)

Our values are critical to creating a diverse, inclusive and safe environment. 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.

There is significant research that demonstrates the impact an effective D&I strategy can have on business performance. In JM, D&I is integral to the very essence of who we are. Our unique vision means that D&I needs to be at the bedrock of our culture.

We have made progress on this agenda; as part of our sustainable business framework, we have set a goal to foster a truly inclusive culture by 2025; we offer a range of D&I programmes to raise awareness and help educate our people; our revised talent processes provide a foundation for D&I; and we have been successful in attracting female candidates into JM as outlined on page 62.

However, clearer outcomes and better coordination is needed to fully embed this agenda and keep pace with other quality organisations. With this we have refreshed our ambition:

'D&I forms the core foundation of who we are in Johnson Matthey and our vision for a world that's cleaner and healthier; today and for future generations. D&I enables our innovation and agility because of the value we place on diversity of all kinds. Our leadership team enables strong business performance because they empower and engage their teams by role modelling inclusion in their everyday conversations. Our shareholders and customers trust us because our rich diversity is a hallmark of a sustainable, well run business.'

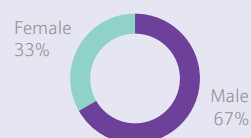
### Gender diversity statistics

The table below shows the gender breakdown of the group's employees as at 31st March 2019.

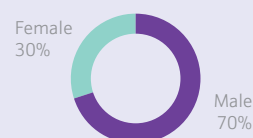
As at 31st March 2019	Male	Female	Total
Board	6	3	9
GMC	7	3	10
Subsidiary directors	108	10	118
Senior managers*	48	16	64
New recruits	1,608	816	2,424
<b>Total group</b>	<b>9,797</b>	<b>3,602</b>	<b>13,399</b>

\* Senior managers is defined as the direct reports of the GMC. Some individuals are included in more than one category.

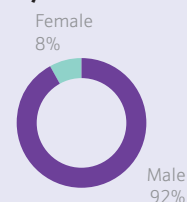
#### Board



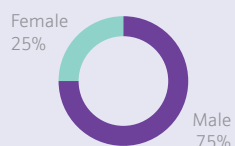
#### GMC



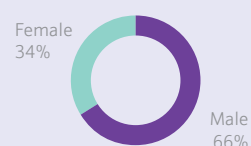
#### Subsidiary directors



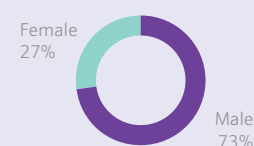
#### Senior managers\*



#### New recruits



#### Total group





## People continued

'Our reputation for an environment where difference matters means as an employer, we stand out from the crowd and attract a broad talent pool. Integral to our culture are two fundamental beliefs that all differences matter and that all people are valued. Our integrity is a direct result of ensuring that all voices, however quiet, are heard. In JM everyone thrives and brings their full-self to work'.

We have created a refreshed roadmap to execute our ambition from which objectives will be cascaded and monitored via business reviews. This roadmap outlines the outcomes we will achieve over a three year period and specific actions we will take to build awareness, create more diversity and embed a culture of inclusion.

To better measure our progress against our sustainable business goal, we have introduced a target based upon the Refinitiv Diversity & Inclusion Index. This internationally recognised standard is very comprehensive and helps us benchmark against the full range of activities within our D&I agenda. The methodology can be downloaded at:

<https://www.refinitiv.com/en/financial-data/indices/diversity-and-inclusion-index>

We are looking to improve our overall score, from a 2017/18 baseline, by 40% by 2025. Based on today's rankings that would place JM in the top 100 companies globally.

### Task force and employee resource groups

We have a D&I task force made up of volunteers from around the world who act as a sounding board and forum through which we engage the wider organisation. We also have four employee resource groups.

Pride in JM launched in October 2017 to support LGBT+ employees and allies. Good progress has been made over the last year, with a global committee set up and a local chapter in Devon, US being developed.

The Black Employee Network followed in December 2018, with the aims of promoting JM as a diverse employer and improving the recruitment, retention and development of black employees at JM.

Supporting UN Sustainable Development Goal 5 on gender equality, a Gender Equality Network launched in March 2019 to advance gender balance in JM. The group is seeking a greater balance of male and female employees across all roles (including leadership and manufacturing), and the appropriate facilities for working mothers.

Most recently, in May 2019, our DiversAbility employee resource group was launched to support people in JM who have physical, mental and social health conditions and help the company to maximise the use of their talents.

### Gender pay gap

In March 2019, we published our second gender pay gap report, covering UK employees. Our UK gender pay gap has narrowed from 9.2% to 8.5% and we continue to be well placed when compared with the national average gender pay gap of 17.9%.

Our gender pay gap is largely down to female under-representation and the gender split in our different functions – we have fewer women than men in our science, technology and engineering jobs. This, in turn, reflects a gender bias in university education; only 24% of UK graduates studying science, technology, engineering and maths (STEM) subjects are women. Our manufacturing jobs, often with a shift allowance, are also dominated by men.

As at 31st March 2019, women represent 27% of UK employees (25% of senior management and 33% of the board). We are taking steps to tackle the root causes of gender imbalance, the pay gap and female under-representation through our D&I and talent action plans.

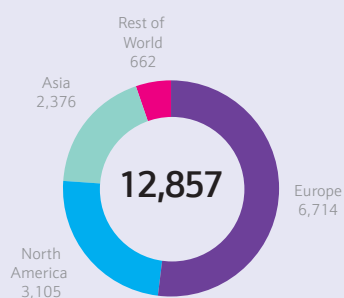
Our efforts were recognised in a report by independent consultancy Equileap in 2018, which ranked JM at number 75 in a listing of top performing companies. Over 3,000 public companies were researched and ranked, with scores based on a wide variety of factors. It was a significant achievement to have performed so well against thousands of other companies, but the report has also reminded us of the work still to be done.

[matthey.com/gender-pay-18](https://matthey.com/gender-pay-18)

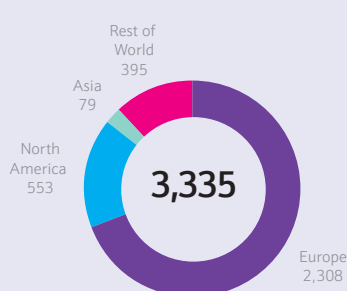
### Trade union representation

26% of our employees (2017/18: 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 2018/19.

#### Permanent employees



#### Represented



#### % Represented

	% represented
Europe	34%
North America	18%
Asia	3%
Rest of World	60%
<b>Total group</b>	<b>26%</b>

## 6

## Volunteering and STEM – connecting with our communities for social impact

If more girls chose to study science at university, the female talent pool would grow and with it, female representation in companies like our own. Through our school and university outreach activities, we are encouraging girls to think about a career in STEM areas.

Volunteering has a part to play here and JM employees are entitled to two days of paid volunteering leave a year. There is a pipeline of scientific talent in JM which this year we have used to greater effect through volunteering in schools. 235 days were dedicated by our employees to inspire young people in science careers; 60 employees alone from our North of England sites supported over 700 students to improve their understanding of, and interest in, science.

Volunteering leave can be spent in many other ways and, supported by our refreshed global volunteering policy, this year our employees volunteered a total of 1,116 days around the world – a 65% increase from last year – and we are working to improve even further so we can achieve our sustainable business goal to donate a cumulative 50,000 volunteer days by 2025.

But encouraging our employees to use their volunteering entitlement is just one part of our community engagement. The history of our community investment shows an abiding and consistent desire to do good, and this will never change.

We have donated money through partnerships, and company time through volunteering. We have given back to our communities because it's the right thing to do.

During 2018/19 a global team has formed to create a new strategic framework for social investment at JM with a clear and distinct aim; to create global impact through science education.

In our ambition to improve access to a quality science education for all, we are looking at the many reasons for low uptake of STEM subjects. They include gender inequality, distance from school and negative perceptions of what a career in science can offer. Another issue is quality of STEM teaching, which may arise from out of date learning materials, inadequate science equipment and a lack of science education standards. Our new strategic framework will help enable us to tackle both the barriers to access and inclusion and the barriers to quality STEM education.

The passion of our people remains the foothold of our success and JM is proud to have matched almost £80,000

raised by our employees this year – our best ever match giving performance and almost double last year's figure. Mountains were climbed and marathons run; one employee completed a parachute jump and another zip-lined over the river Clyde in Scotland. The personal goals achieved by our employees this year have been a driving inspiration behind JM's new social impact ambition. Our direct company donations in 2018/19 were £840,000, up 24% on last year. Including employee volunteering time, our total community investment in 2018/19 was £1.1 million (2017/18: £0.83 million).

We believe that science education is a catalyst for a cleaner, healthier world. With our sustainable business goal on volunteering in place, embedded in a strategic framework and powered by our people's drive to deliver solutions, we have a clear direction ahead of us. Working together across our sites globally, we aim to be actively implementing our framework midway through 2019/20, exploring new ways of protecting this planet, and continuing our history of finding solutions to some of the world's greatest challenges.

### Community investment summary

	Investment in 2018/19 £'000	Investment in 2017/18 £'000	% change
<b>Direct expenditure</b>	<b>840</b>	<b>680</b>	<b>+24</b>
Corporate donations to charities	331	300	+10
Donations by sites to local charities and community projects	509	380	+34
<b>Indirect expenditure</b>	<b>249</b>	<b>152</b>	<b>+64</b>
Employee volunteering time	249	152	+64
<b>Total group</b>	<b>1,089</b>	<b>832</b>	<b>+31</b>

## 1,500 hours that made a difference in San Diego

At our annual JM Awards ceremony in January, we were proud to announce a team from San Diego as the winners of our 'working together: in our communities' award. Through 1,500 hours of community volunteering, employees in San Diego have worked with over 1,000 students, cleaned beaches, worked at local food banks, and supported hundreds of local residents who were struggling to survive. They donated their £5,000 prize to the San Diego Youth Services shelter for homeless teenagers.

✦ See pages 74 and 75



## People continued

### Acting with integrity

A strong culture of 'doing the right thing' is shaped by our value of acting with integrity and we believe it is 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 into our strategic advantage.

Our approach to this 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.

Our global code of ethics, 'Doing the Right Thing', is central to the way we act as a company and one of the main ways we promote an ethical culture. The code is available in 22 languages and contains information and resources that help our employees to make decisions in line with our values and demonstrate the highest standards of integrity and ethical behaviour.

In December 2018 we published a refreshed code of ethics – on our website and in hard copy, bringing it up to date to reflect new legislation and our redefined company values, and to bring scenarios to life so that employees can easily see how the code applies to ethical behaviour and choices in real working situations that are relevant in JM today.

In April 2019 we launched our online ethics and compliance training for the year. All employees are required to take a code of ethics module every year, reinforcing basics and taking a deeper dive into a selection of topics chosen every year.

Everyone is also required to complete the code acknowledgment each year confirming that they will work in accordance with the commitments in the code. 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.

We have a growing network of approximately 115 ethics ambassadors located throughout our business globally. They are a sounding board for employees and provide guidance on where to go for help or to raise a concern. This year, they played an important role in bringing our refreshed code of ethics to life, supporting senior leaders with their responsibilities for ethics and compliance and promoting a good ethical culture. They took a key part in hosting launch events during which people were encouraged to get to know their way around the refreshed code while recycling their paper copies of the 2015 code.

Within JM 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, 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 those employees directly employed by JM. 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.

### Speak up reports

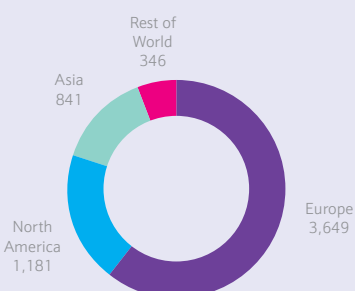
During 2018/19, 125 speak ups were received and investigated which, given our size, is in line with the industry norm in terms of volume (see table below).

Concern / allegation raised	Number of cases
Bribery and corruption / supply chain	9
Business and financial reporting	8
Computer, email and internet use	1
Confidential Information and intellectual property	2
Conflict of interest	10
Data protection	1
Discrimination including harassment and retaliation	47
Environment, health and safety	8
Fraud, money laundering and embezzlement	6
Employee rights	9
Insider trading	1
Misconduct or inappropriate behaviour	8
Other or general query	8
Physical assets	1
Violence or threats	6

We note the number in the 'discrimination' category is high in relation to the other categories and, upon investigation, we found a number of these related to broad employee relations issues which were subsequently addressed.

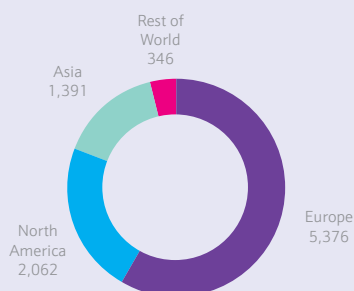
### Anti-bribery and corruption training by region

number of employees



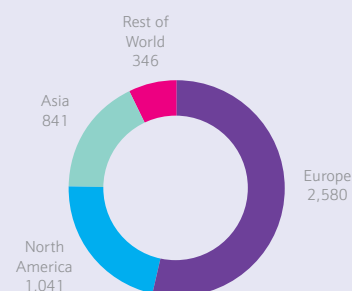
### Code of ethics training by region

number of employees



### Competition law training by region

number of employees



We view the total number of speak ups (125) as a positive reflection of the confidence in the process and many recommendations arising from investigations have been actioned in our businesses.

In order to have an effective ethics and compliance programme we apply our compliance programme framework to each risk area, which includes having policies and training in place. We keep the programme under continuous review. The risk areas include bribery and corruption, data protection, export controls and sanctions, conflicts of interest, competition / anti-trust, financial crime (including the recently introduced corporate criminal offence of failing to prevent the facilitation of tax evasion), modern slavery (see page 51) and activities regulated by the UK Financial Conduct Authority.

A new data protection law came into force in the EU in May 2018. Known as the General Data Protection Regulation or GDPR, it is designed to protect the personal data and privacy of all EU citizens.

In response, we have developed and issued our global data protection policy and are implementing a global programme to adjust our processes to meet requirements under the new legislation. This includes focused training for employees who handle personal data at work to help them understand what they should do to ensure a culture of data privacy and information security throughout our organisation.

## Supporting employee wellbeing

As we execute our strategy, the accompanying changes, through growth, business transformation and new programmes, all make an impact. Against this background, employee wellbeing is particularly important. An independent global survey across 21 industries showed that employees are looking to their employers for a commitment to health and wellbeing. At the same time, organisations that actively promote health and safety will find their employees significantly more likely to be engaged. In response, we have developed a global wellbeing framework to support our employees in their emotional, financial, physical and social wellbeing. Our principal themes for 2019 are: mental health; work-life harmony; musculoskeletal disorders; and cancer awareness. We have introduced a support service called Assist. This is confidential and globally available 24 hours per day.

This year we have also introduced global flexible working policies. New working arrangements will allow employees to have some level of influence over how, when and where they work and provide arrangements for parental and bereavement leave. All this represents an improvement over purely statutory obligations and marks a significant step forward in how we look after our people and their families in an inclusive way.

In the UK, as uncertainty surrounding the UK's withdrawal from the EU remains, we continue to support our employees who are EU nationals working in the UK and our UK citizens working in the EU. We also provide information and take the opportunity to engage with our people to help them understand what the developments and different scenarios could mean for them. Our Brexit working group works closely with our HR team to ensure we are able to navigate the best outcome for our people.

## Mental health

External research indicates that one in four people will suffer from mental ill health in the course of any one year. But indicators of poor mental wellbeing sometimes go unnoticed, as those who are suffering can be reluctant to admit to a change in mental health because of a fear of stigma or discrimination.

In April 2019 our Chief Executive, on behalf of the whole company, committed to creating a climate of greater openness on mental wellbeing, as well as providing support to anyone who would like it.

As part of our commitment, we are taking action in a number of areas. We are also working with the UK mental health campaign, Time to Change, and will be making a public commitment on its website by signing its employer pledge.

## 1

## Health and safety

The first of our sustainable business goals is to aspire to zero harm in matters of health and safety. The goal has ambitious KPIs and we track any injuries and illnesses using common safety indicators. We have rolling safety programmes and continue to launch new safety campaigns and programmes to refresh awareness and deepen our safety culture among employees.

We are committed to conducting all our activities in ways that achieve high standards of health and safety for all employees and those affected by our operations. We want to achieve year on year improvements in performance as we progress towards our 'zero harm' goal.

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 environment, health and safety (EHS) activities and draw lessons from any near miss incidents.

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.

Accompanying our Group Environmental, Health and Safety Policy, we have a core group of eight of our health and safety policies which we call 'lifesaving policies'. These policies cover high risk areas, where policy breaches could endanger life or lead to serious injury. They are available in local languages and we have continued to provide guidance to our sites on how to implement them, using tools such as e-learning, gap assessments and internal audits. All sites have action plans for the implementation of our lifesaving policies and good progress is being made against those plans. In addition, e-learning modules on three of the policies were rolled out this year to employees to raise their awareness.

There are two broad areas of focus for us in workplace health and safety. The first is process safety, which is about how we safely manage our most hazardous processes. The second area is occupational health and safety which is about incidents that happen more frequently but are less severe, like slips, trips, falls, cut injuries, sprains and strains. We have more work to do in our safety behavioural programmes to drive more ownership for personal safety throughout all levels of the organisation.



## People continued

### Process safety

We introduced a new process safety risk management strategy in 2017, followed by a new process safety severity rate indicator in April 2018, and early signs of a reduction in severity rates are emerging as shown in the chart below. We still have more work to do to ensure we are accurately capturing the data and to maintain our good progress to reduce the severity rate further.

Our process safety risk management (PSRM) is based on a framework developed by the Centre for Chemical Process Safety (CCPS). We have created a working infrastructure, with a group process safety team, subcommittees with defined responsibilities, selected site process safety champions and provided JM specific training; 112 senior managers, 312 site leadership teams and 96 process safety champions have all been trained.

We have conducted site surveys to identify sites with process safety risks – and whether the risks are high, medium or low – to enable us to target our process safety efforts. All these sites have carried out maximum credible event (MCE) studies. Several high risks were identified with many actions; around 80% of these have now been completed which has resulted in significant reduction of risk. Any process safety event and its severity rate are logged in our specialist reporting system to ensure a standardised approach.

Eight of our high risk sites had a PSRM audit in 2018/19, providing useful indications of where approaches to process safety needed to be strengthened. We have also created a new protocol for our process safety audit, based on our process safety framework and aligned with the CCPS.

Other activities include: a pilot for our process safety competency assurance programme, with individual site personnel assessments; ongoing roll out of our risk related process safety and engineering standards which cover topics common across JM such as pressure relief; and implementation of lagging and leading process safety indicators.

### Improving safety behaviour

The second area of focus is 'behavioural' – simple accidents like tripping over that could be avoided with greater awareness of the risk. Around three quarters of our injuries are due to behaviour and the main types are: sprains and strains; slips, trips and falls; and hand injuries.

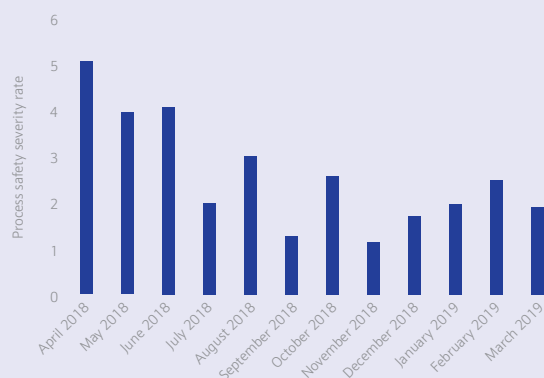
Over the last ten years, we have seen a long term reduction of 50% in lost time incident rates but the figure has been flat over the last few years. Among our efforts to reverse this, we identified the 12 sites that had poor leading and lagging indicators and put in place targeted safety improvement plans. All have now seen a good reduction in injury rates, and seven out of the 12 sites have reduced their total recordable injury rate by more than 40%.

We have continued to emphasise the benefit of learning events to help bring down our total recordable injury rates. This year we reported a greater number of learning events, where we looked at near misses, unsafe conditions and unsafe acts – injuries that had been avoided, but sometimes only just. There are valuable lessons to be learnt here and these events have been successful in reducing injury rates.

Safety can be improved and maintained both by a leadership approach and on the ground through engaging people in safety, providing training and raising their awareness. At the leadership end of the spectrum, we have an EHS leadership committee in place which assists the company in meeting its EHS responsibilities and in creating a positive safety culture across the whole of JM. Site visits, having safety conversations, personal safety messages and reviews of EHS actions all highlight the visible involvement of leadership.

At the same time, EHS leadership training has been integrated into JM leadership programmes at all levels, and a global EHS induction programme for leaders and managers has recently been developed. Regional EHS conferences with site operations have been set up, with the first taking place in September 2018.

### Process safety severity rate



### Trade union committee representation

23 (43%) of our manufacturing sites have active trade unions and 74% of them have a trade union representative on their local health and safety committee. 78% of sites have formal trade union agreements that cover health and safety topics (listed in the table on the below).

### Topics covered by trade union agreements

Topic	% of sites covered
Use of personal protective equipment	71
Participation of worker representatives in health and safety inspections and investigations	88
Training and education	82
Complaints mechanisms	82
The right to refuse unsafe work	94
Periodic inspections	82

At the onsite local level we have completed the rollout of 'My Team, My Responsibility', a training scheme that builds on our EHS behaviour awareness programme and aligns with our EHS behaviour standard. All sites have benefited and there have been some outstanding successes.

### Occupational health

Occupational health also remains very important for us. The number of occupational illnesses reported each year remains low, and while the number of occupational health cases has come down from 25 in 2013/14 to 21 in 2018/19, we saw a year on year rise from 2017/18. We are seeing an increase in work related stress cases, though the overall number is small. There is better awareness and we are encouraging our staff to report these cases, but we are taking the increase seriously.

We have identified three factors that are leading to stress in our workplaces: work relationships; work pressures; and organisational change. In the UK alone, over 11 million working days a year are lost because of mental health problems, with one in four people affected.

During the year we began to introduce a number of programmes and services globally across JM to support the health and wellbeing of our people, with more to follow in 2019/20. These are explained more fully on page 69.

We tackle occupational health at both group and site 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 as 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.

Ergonomics remains a focus area. Lack of correct physical movement – at a workstation, in a lab or on the factory floor – can lead to musculoskeletal disorders. We issue guidance at group level which is then implemented at site level. To enhance our assessment of ergonomic risks, this year we ran a trial of the Humantech system across 20 of our sites globally in JM. The system provides online awareness and risk assessment training as well as risk assessment survey records and reporting. After this successful pilot, we are now implementing the programme in all sectors at most of our sites.

We have also updated our policy and guidance on industrial hygiene – the recognition and control of environmental factors that may cause sickness – and are now rolling them out, with an emphasis on training and collaboration among employees.

### Driving further 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.

We have an ongoing programme of regular EHS assurance audits which are undertaken using global protocols. In 2018/19, we undertook 26 audits (including eight process safety audits) at our manufacturing and R&D facilities and completed 14 audit action reviews.

A total of 40% of our manufacturing sites are compliant with BS OHSAS 18001, the internationally recognised British Standard that sets out requirements for good practice in occupational health and safety management.

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 81% of employees globally.

### My Team, My Responsibility brings improvement in EHS culture

In Pennsylvania, US, a behaviour based safety team ran the 'My Team, My Responsibility' programme for all the departments at three of our sites. Around 70 supervisors were trained. The programme strengthened the supervisor / employee relationship, encouraged novel thinking on EHS topics and raised safety awareness. At the same time, the employee recognition scheme was refreshed. As a result of the programme, the EHS culture maturity rose from level two to level four and the people involved were winners in the 'protecting people and the planet' category at our annual JM awards.



## People continued

In 2019/20 we will continue to focus on process safety and occupational health and safety. We have introduced EHS personal safety action plans for our GMC leaders and at all levels down to our frontline leaders. Their plans include practical activities to promote a proactive safety culture by demonstrating more visible, higher quality safety leadership. The successful outcome for us is greater employee engagement and, in turn, improved EHS performance. We are also increasing the regularity and quality of our EHS communications with targeted and measurable campaigns to drive awareness, engagement and personal ownership.

### 1

#### Health and safety performance

During the year, reported injuries across JM were of relatively low severity (none were life threatening or life altering) but disappointingly, despite continued focus on health and safety over the last year, our lagging indicators of performance for employees continued to be flat. Our lost time injury and illness rate (LTIIR) of 0.53 and total recordable injury and illness rate (TRIIR) of 0.97 were both marginally higher than last year (2017/18: LTIIR 0.52<sup>1</sup>, TRIIR 0.96<sup>1</sup>). When we analyse our performance further, we can see that this plateauing is isolated to a combination of poor performance at two sites and an increase in work related stress cases in the UK; if we exclude occupational related stress cases this year, our LTIIR was 0.45.

Interventions are already well under way; both sites are on safety improvement plans and we are rolling out a range of wellbeing support services and activities.

There were a total of 80 lost time accidents and illnesses across the group during 2018/19. 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.

More positively, in the year we saw a 50% increase in the number of EHS learning events that were reported. This leading performance indicator shows that we are making progress in increasing awareness of potential 'near miss' incidents and that we are developing and embedding an EHS culture across JM. Our leaders also had a greater number of safety conversations during the year.

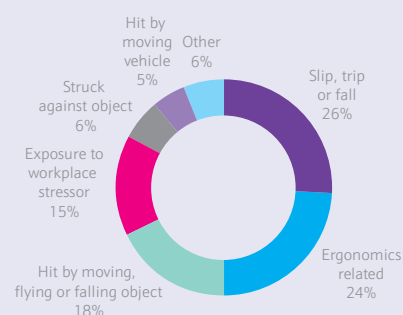
Our construction projects use a contractor workforce and we work hard to ensure the safety of all contractors who work for us. Overall, contractor LTIIR dropped from 0.74 to 0.40. Lost time incidents involving contractors fell during 2018/19 to six (2017/18: eight). This improvement in performance comes from focusing on and auditing our lifesaving policies and was achieved despite a 39% increase in reported contractor hours worked from 2,171,462 during 2017/18 to 3,009,338 in 2018/19. This reflects the increased activity due to increased capital investment across the group. There were no contractor fatalities in 2018/19; the last one occurred in October 2010.

The number of occupational illnesses reported during 2018/19 was 21, giving a rate of 0.140 illnesses per 200,000 working hours in a rolling year in 2018/19 (compared with 0.085 in 2017/18). Of the 21, 13 were in Europe and eight were in North America. No contractor illnesses were reported in 2018/19.

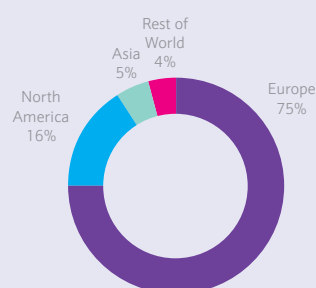
Our overall number of occupational illnesses remains low although there has been a noticeable increase in cases this year, principally due to increased reporting of work related mental wellbeing cases which represented 13 of the 21 cases reported. All 13 were in the UK. We have been aware of the rising trend in reported cases of mental ill health in the UK and have focused efforts to tackle the problem, support our people and provide proactive guidance (as described on page 69) across JM globally.

We have continued to use a health scorecard system developed by the UK Chemical Industries Association to monitor our health performance. This year 61 sites completed the scorecard questionnaire, compared with 64 sites the previous year. Of these, 64% reported scores of A or B (which corresponds to best practice); 30% reported C scores (which corresponds to our current minimum target score); and 6% reported an average D score (below our current minimum standards).

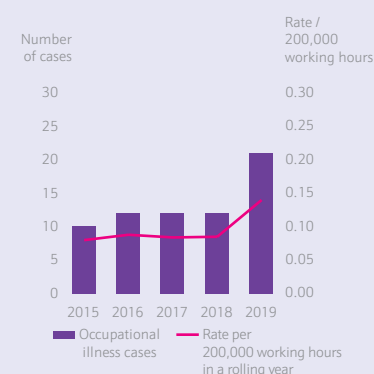
#### Lost time injuries and illnesses by event type



#### Lost time injuries and illnesses by region



#### Occupational illness cases



	Sustainable business goal	Sustainable business KPIs	Baseline	2018/19	2025 target
<div>Health and safety</div> <div>1</div>	For health and safety, aspire to zero harm	Annual TRIIR	TRIIR in 2016/17	0.97	0.6
		Annual LTIIR	LTIIR in 2016/17	0.53	0.2
		Annual OSHA severity rate	Rate in 2016/17	27.9	6.0

+ Performance against all six of our sustainable business goals is detailed on pages 31 to 33 and 238

All scores were in line with the previous year although within these, occupational illness leadership was a topic which reported a lower performance and so is an area we will focus on in the coming year.

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. 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. The rise in our rate this year comes from a combination of the increased number of work related stress cases and the fact that these cases have required longer periods of time off work. Excluding work related stress cases, our OSHA severity rate is 24.4.

## 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 28 and 29.

We are also active members of a number of trade associations and groups which help us to understand, inform and contribute to issues and discussions that are relevant to our stakeholders. Associations we have worked with in 2018/19 include the UK Chemical Industries Association, The European Chemical Industry Council (CEFIC), 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, Eurometaux (which represents the European non-ferrous metals industry), and Aldersgate Group. In September 2018, we joined the Hydrogen Council as a steering member (see page 29).

Shareholders are an important stakeholder group. We meet with our major shareholders regularly, as described in the Corporate Governance Report.

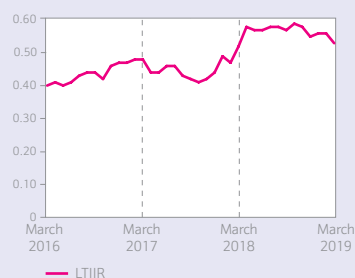
+ Pages 117 and 118

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

In March 2018, we received an 'AAA' ESG rating from investment index provider MSCI for the seventh consecutive year. This is the highest possible rating for a company's risk and performance against a range of environmental, social and governance factors, and one that places us above our chemical industry peers. We are a constituent of the FTSE4Good UK 50 Index.

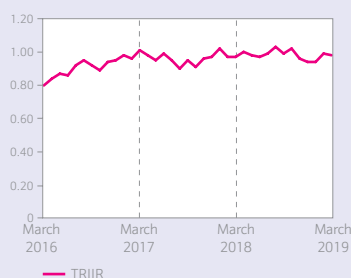
### Lost time injury and illness rate (LTIIR)<sup>1</sup>

per 200,000 working hours in a rolling year



### Total recordable injury and illness rate (TRIIR)<sup>1</sup>

per 200,000 working hours in a rolling year



### OSHA severity rate

	At 31st March		
	2017	2018	2019
OSHA severity	18.5 <sup>1</sup>	18.4 <sup>1</sup>	27.9

<sup>1</sup> Restated due to incidents that were reported after the year end.

<sup>1</sup> Data for 2017/18 has been restated due to injuries and illnesses that were reported or reclassified after the year end.



# Recognising our people

Our JM Awards categories are aligned with our values, which guide the behaviours of everyone in the business. The winners have been recognised as individuals who truly embody the core of what JM is and strives to be.

## Protecting people and the planet

This award recognises achievements and significant contributions to improving health and safety and / or safeguarding the environment. The winning projects demonstrated visionary and leading commitment to enabling a cleaner, healthier world through driving progress in reducing environmental impact or improving health, safety and employee wellbeing.



## Owning what we do

"Owning what we do" focuses on areas of our business which link directly with fulfilling our strategic goals, taking accountability for driving business performance and leading in line with our vision, strategy and values. The winners of this category went the extra mile to achieve the very highest standards and deliver what they promised.



## Innovating and improving: operations

This award focuses on how hard work, including practices, processes, systems, methods and business models, has led to manufacturing and / or value adding improvements in efficiency for a team, a site or the company as a whole.



## Working together: in our communities

The winner of this category recognises community investment initiatives that make a positive impact to local communities.



## Acting with integrity

"Acting with Integrity" can take many forms, from engagement and the way we treat each other, to the decisions we make about the way we do business. This award recognises an individual who takes action to ensure JM is doing the right thing. This has been at the core of JM since its foundation and is key to ensuring we build and protect our reputation. Our winner advocates integrity, inclusivity and respect for others through their everyday activities.



**" As a young female scientist at the start of my career, I found it a privilege to be part of the awards and meet world class scientists who pioneer research to protect our planet.**

**" The JM Awards has shown me the remarkable things we can do when we work together, and that we are a global family which continues to grow, innovate, connect and celebrate our achievements. "**

Emma Gledhill, Scientist

#### Explore more

Find out more about the 2019 JM Awards  
[matthey.com/jm-awards](https://matthey.com/jm-awards)



### Innovating and improving: science and technology

This category recognises the value that new ideas and innovations in science and technology bring to Johnson Matthey and our customers, and the value created when we improve our working practices. Innovations and improvements can arise from a single eureka moment, or from extensive collaborations with colleagues and customers. However they emerge, they strengthen our technology portfolio and enhance our reputation, and business or process performance. Our winners were part of a team that has shown how an innovative approach can be used to create valuable opportunities for Johnson Matthey.



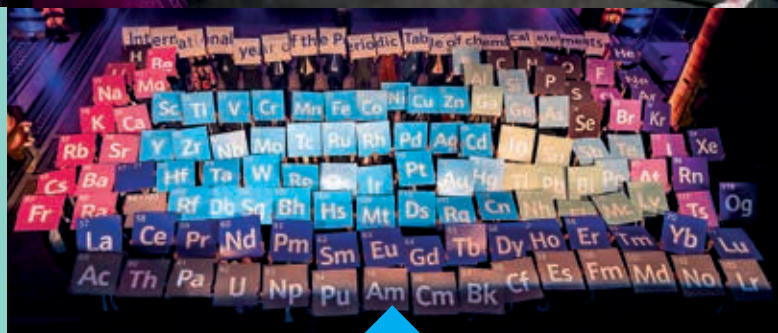
### Working together: in business

This category recognises the very best examples of working together in JM. Collaboration can happen at all levels and is often a part of what we do day to day; this award was given to employees that go above and beyond expectations and that have a real impact on the success of the company.



### Chief Executive's award for outstanding contribution

This award pays tribute to the immense contribution our people make to JM's success. Today we have an exceptionally diverse and global workforce and our tradition of engaging, developing and recognising the best of our people is continued through this award. This peer nominated award gave our people the opportunity to champion a colleague and tell us how they have inspired or excelled by taking initiative and carrying on responsibilities beyond their regular job, in a way that embodies JM's culture and values.



### A human periodic table

To celebrate the 150th year of chemistry's most iconic image in true JM style, we created our very own human periodic table. With a little help from 150 finalists, judges and guests under one giant blue whale, we snapped the memorable image from the balcony above Hintze Hall at London's Natural History Museum.







# Financial performance review

## Group performance review

### Reported results

		Year ended 31st March		
		2019	2018	% change
Revenue <sup>1</sup>	£ million	<b>10,745</b>	10,274	+5
Operating profit	£ million	<b>531</b>	359	+48
Profit before tax (PBT)	£ million	<b>488</b>	320	+53
Earnings per share (EPS)	pence	<b>215.2</b>	155.2	+39
Ordinary dividend per share	pence	<b>85.5</b>	80.0	+7

### Underlying performance<sup>2</sup>

		Year ended 31st March			
		2019	2018	% change	% change, constant rates <sup>3</sup>
Sales excluding precious metals (Sales) <sup>4</sup>	£ million	<b>4,214</b>	3,846	+10	+10
Operating profit	£ million	<b>566</b>	525	+8	+8
Profit before tax	£ million	<b>523</b>	486	+8	+7
Earnings per share	pence	<b>228.8</b>	208.4	+10	

#### Notes

<sup>1</sup> Revenue for the year ended 31st March 2018 has been restated, see note 39 on page 220.

<sup>2</sup> Underlying is before profit or loss on disposal of businesses, gain or loss on significant legal proceedings together with associated legal costs, amortisation of acquired intangibles, major impairment and restructuring charges and, where relevant, related tax effects and significant tax rate changes. For definitions and reconciliation of other non-GAAP measures, see note 4 on page 179.

<sup>3</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 2017/18 results converted at 2018/19 average exchange rates.

<sup>4</sup> Revenue excluding sales of precious metals to customers and the precious metal content of products sold to customers.

## Summary

### Underlying performance<sup>2</sup>

- Sales grew 10% and underlying operating profit grew 8% at constant rates<sup>3</sup> driven by strong growth in Clean Air.
- Underlying EPS was up 10% and ahead of operating profit, benefiting from a lower tax rate.
- Free cash was an outflow of £13 million, impacted by platinum group metal (pgm) refinery downtime, driving higher precious metal working capital and higher capex.
- Average working capital days excluding precious metals improved by three days to 59 days.
- Return on invested capital (ROIC)\*, excluding net pension assets, decreased from 17.0% to 16.4% mainly due to higher precious metal working capital.
- Strong balance sheet with net debt of £866 million; net debt to EBITDA of 1.3 times.

### Reported results

- Reported revenue increased 5%.
- Reported operating profit was £531 million, up 48%. In the prior year, we recognised a major impairment and restructuring charge of £90 million, and a legal settlement of £50 million.
- Reported EPS was therefore up 39%, reflecting the higher operating profit in the current year.
- Cash inflow from operating activities was £334 million.
- Recommended ordinary dividend up 7% to 85.5 pence for the full year, reflecting our strong performance and confidence in the group's future prospects.

\* Underlying operating profit divided by the monthly average of equity, excluding post tax pension net assets, plus net debt for the same period. We have changed our definition of ROIC to exclude net pension assets as these are not operating assets.



# Sector performance review

Performance summary by sector

## Clean Air

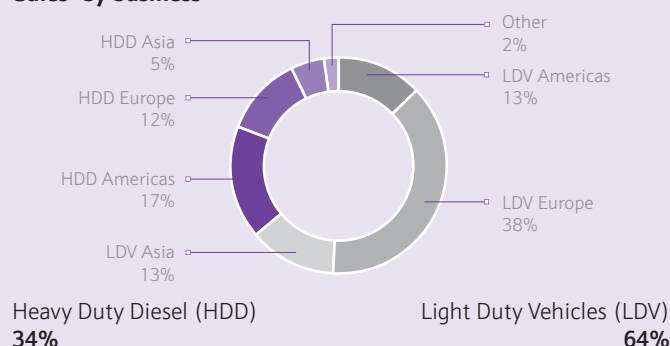
£2,720<sup>m</sup>

Sales<sup>1</sup> **+11%**<sup>2</sup>

£393<sup>m</sup>

Operating profit<sup>3</sup> **+13%**<sup>2</sup>

### 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.

### Customer profile

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

### Major competitors

- BASF
- Umicore
- Cataler

Margin 14.4%

Return on invested capital 30.0%

Employees 5,919

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

<sup>2</sup> At constant rates (see note 3 on page 77).

<sup>3</sup> Underlying (see note 2 on page 77).

## Efficient Natural Resources

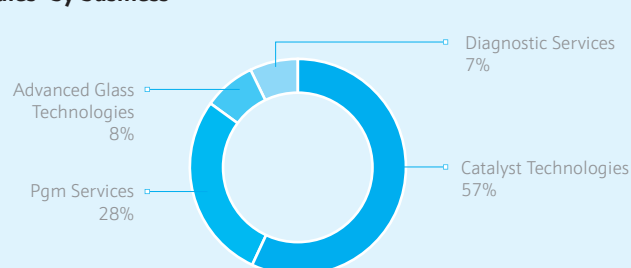
£991<sup>m</sup>

Sales<sup>1</sup> **+4%**<sup>2</sup>

£181<sup>m</sup>

Operating profit<sup>3</sup> **+15%**<sup>2</sup>

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



- 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.
- **Diagnostic Services** – for the oil and gas industry.

### 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 18.3%

Return on invested capital 12.6%

Employees 3,645

## Health

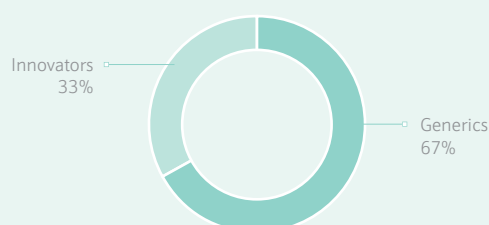
£257<sup>m</sup>

Sales<sup>1</sup> +3%<sup>2</sup>

£43<sup>m</sup>

Operating profit<sup>3</sup> -4%<sup>2</sup>

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



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

### Customer profile

- Generic pharmaceutical companies.
- Innovator pharmaceutical companies.

### Major competitors

- |             |           |           |
|-------------|-----------|-----------|
| • Noramco   | • Cambrex | • Hovione |
| • Francopia | • AMRI    | • Almac   |
| • Siegfried | • Alcam   |           |

Margin 16.7%

Return on invested capital 9.0%

Employees 858

## New Markets

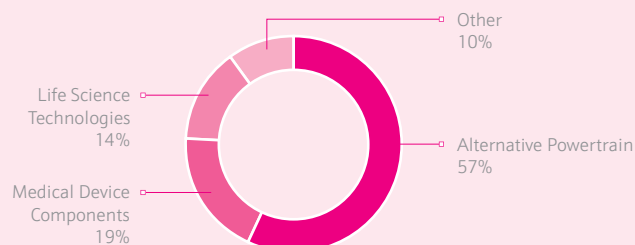
£362<sup>m</sup>

Sales<sup>1</sup> +17%<sup>2</sup>

£2<sup>m</sup>

Operating profit<sup>3</sup> -85%<sup>2</sup>

### 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, including eLNO, our leading ultra high energy density cathode material, 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 | • BMZ     | • Heraeus |
| • BASF    | • WL Gore | • Evonik  |
| • LG      | • 3M      |           |

Margin 0.7%

Return on invested capital 1.1%

Employees 1,934

## Financial performance review continued

## Operating results by sector

## Clean Air

	Year ended 31st March			
	2019 £ million	2018 £ million	% change	% change, constant rates
<b>Sales</b>				
LDV Europe	1,031	855	+20	+21
LDV Asia	361	351	+3	+3
LDV Americas	346	358	-3	-4
<b>Total Light Duty Vehicle Catalysts</b>	<b>1,738</b>	1,564	+11	+12
HDD Americas	476	395	+20	+19
HDD Europe	334	320	+4	+4
HDD Asia	128	131	-2	-1
<b>Total Heavy Duty Diesel Catalysts</b>	<b>938</b>	846	+11	+11
Other – stationary	44	44	-	-
<b>Total sales</b>	<b>2,720</b>	2,454	+11	+11
<b>Underlying operating profit</b>	<b>393</b>	349	+13	+13
<b>Margin</b>	<b>14.4%</b>	14.2%		
<b>Return on invested capital (ROIC)</b>	<b>30.0%</b>	30.5%		
<b>Reported operating profit</b>	<b>390</b>	296	+32	

## Double digit sales growth in both LDV and HDD catalysts

- Light Duty Europe sales up 21% with strong growth in both diesel and gasoline.
- Achieved share gains in European light duty diesel and a market share of circa 65% at March 2019.
- Light Duty Asia sales grew 3%, ahead of market production.
- Light Duty Americas sales were down 4% driven by weaker diesel sales.
- Sales of HDD catalysts were up 11% primarily due to continued strength in higher value US Class 8.
- Operating profit was up 13% and margin improved 0.2 percentage points to 14.4%.

## Light Duty Vehicle (LDV) Catalysts

Our LDV Catalyst business provides catalysts for emission control after-treatment systems that reduce emissions for cars and other light duty vehicles powered by diesel and gasoline. The business grew 12%, well ahead of the decline in global vehicle production.

In Europe, where diesel accounts for around 85% of our LDV business, sales grew 21% primarily driven by our diesel market share gains.

Sales of diesel catalysts were up 22% reflecting our market share gains and were significantly ahead of diesel market production which declined 9% year on year. As expected, we achieved the circa 20 percentage point increase in our market share from 45% to circa 65% by the end of the financial year. There was also a small benefit from higher value sales of more complex catalyst systems.

In Western Europe, diesel accounted for 35% of new passenger car sales in 2018/19 compared with 42% in the last financial year. Light duty commercial vehicles remain largely diesel today.

When these are included, the overall share of diesel sales in Western Europe was 42% for 2018/19, compared with 49% in 2017/18. These trends do not change our assumption of a diesel share of around 25% of total light duty vehicles and 20% of cars in 2025.

Sales of gasoline catalysts were up 18%, well ahead of market production. Growth was driven by an improved sales mix with an increased number of high value coated gasoline particulate filters (GPFs) sold in the period. We expect the number of vehicles with coated GPFs to increase in the medium term, significantly increasing our sales value per gasoline vehicle.



The World Harmonised Light Duty Testing Procedure (WLTP) was introduced from September 2018. There was some disruption to phasing of European automotive production and sales, but we experienced no material impact on our business in the year. In the longer term, due to the different technical requirements to meet these standards, some auto original equipment manufacturers (OEMs) have changed solutions. Consequently, as we previously indicated, our anticipated five percentage point market share gain in gasoline will not be achieved by 2020/21. We continue to increase R&D spend on gasoline catalysts given the development of the market.

Sales in Asia LDV grew at 3%, ahead of the decline in market production. Within this, sales in China declined 5%, broadly in line with the market which slowed significantly during the second half of our financial year. China currently represents a small portion of our Clean Air Sector and therefore the impact of the Chinese market decline was not material. Over the medium term, our Asian business will double in size as we capture growth from tightening legislation, particularly in China and India.

Sales in Americas LDV were down 4% while market production was flat. This was driven by a weaker performance in diesel following strong growth in the prior year and the ramp down of a platform.

### Heavy Duty Diesel (HDD) Catalysts

Our HDD Catalyst business provides catalysts for emission control after-treatment systems that reduce emissions for trucks, buses and non-road equipment. The business had another good year with sales growing 11%, significantly ahead of global market production, driven by strong growth in the higher value US Class 8 market.

The Americas HDD Catalyst business grew sales 19%. Sales of catalysts for Class 8 trucks were broadly in line with market production of 22% and we continue to expect high levels of production to peak in the middle of the 2019 calendar year.

Sales in our European HDD Catalyst business grew 4%, ahead of the market. This outperformance was driven by the increase in the proportion of sales related to higher value non-road extruded products.

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

		Year ended 31st March		
		2019 millions	2018 millions	% change
North America	Sales	20.6	20.8	-1
	Production	16.9	16.9	-
Total Europe	Sales	20.4	20.8	-2
	Production	22.0	22.2	-1
Asia	Sales	43.4	44.8	-3
	Production	47.2	48.8	-3
Global	Sales	93.0	95.8	-3
	Production	91.8	94.0	-2

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

		Year ended 31st March		
		2019 thousands	2018 thousands	% change
North America	Sales	615	535	+15
	Production	624	540	+16
Total Europe	Sales	506	502	+1
	Production	645	653	-1
Asia	Sales	2,257	2,297	-2
	Production	2,298	2,314	-1
Global	Sales	3,515	3,450	+2
	Production	3,710	3,631	+2

\* Source: LMC Automotive.

Sales in the Asian HDD Catalyst business were broadly flat, in line with the market. In China, sales fell 10%, also in line with the market. This followed a period of strong production growth driven by increased demand for trucks as a result of loading limit legislation. We continue to see strong sales growth in India from a low base.

### Underlying operating profit

Operating profit grew 13% and margin improved by 0.2 percentage points, benefiting from volume leverage.

### ROIC

ROIC, excluding net pension assets, was down slightly at 30.0% reflecting higher precious metal working capital.

### Outlook

We expect a year of more modest growth in 2019/20, weighted to the first half as we realise the benefit of annualised share gains, partly offset by reinvestment into R&D, our ERP system and new manufacturing capacity. We anticipate that these investments for growth and efficiency will lead to a slightly lower margin than in 2018/19. Beyond 2019/20, we expect sales and operating profit growth to be increasingly driven by the introduction of new legislation in China and India.

## Financial performance review continued

## Efficient Natural Resources

	Year ended 31st March			
	2019 £ million	2018 £ million	% change	% change, constant rates
<b>Sales</b>				
Catalyst Technologies	567	564	-	+1
Pgm Services	281	253	+11	+10
Advanced Glass Technologies	75	82	-9	-9
Diagnostic Services	68	57	+21	+24
<b>Total sales</b>	<b>991</b>	<b>956</b>	<b>+4</b>	<b>+4</b>
<b>Underlying operating profit</b>	<b>181</b>	<b>158</b>	<b>+15</b>	<b>+15</b>
<b>Margin</b>	<b>18.3%</b>	<b>16.5%</b>		
<b>Return on invested capital (ROIC)</b>	<b>12.6%</b>	<b>11.8%</b>		
<b>Reported operating profit</b>	<b>175</b>	<b>138</b>	<b>+27</b>	

## Growth in sales and margin improved

- Sales growth driven by double digit growth in catalyst refills and higher average pgm prices, partly offset by lower catalyst first fills.
- Operating profit grew strongly and margin improved by 1.8 percentage points to 18.3%, benefiting from higher average pgm prices and net benefits from improved efficiency partly offset by reinvestment in the safety and resilience of our pgm refineries and weaker performance in Advanced Glass Technologies.

## Catalyst Technologies

Our Catalyst Technologies business licenses technology and manufactures speciality catalysts and additives for the chemicals and oil and gas industries. Sales were broadly flat with double digit growth in refill catalysts offset by lower sales from first fill catalysts while licensing was stable at a low level.

Refill catalysts and additives is recurring business which makes up the majority of sales within our Catalyst Technologies business. Sales grew double digit, outperforming our markets in aggregate. We saw very strong performance in methanol but weaker performance in ammonia, primarily driven by the phasing of customers' orders. There was also good growth, above the market, in catalysts for petrochemical and hydrogen plants.

Sales of catalyst first fills were significantly down. These are one-off in nature and driven by the start up of new plants. Sales of methanol first fills were lower following increased activity in 2017/18 as industry capacity came on stream and hydrogen first fills were also down reflecting a large order in 2017/18.

Our licensing business is dependent on new plant builds and income is recognised over the period of construction.

In the year, licensing income was stable and activity around new plant builds, particularly for the technologies we license, remains subdued. We signed five new licences in the period which include our newly developed technologies such as mono ethylene glycol and waste to aviation fuel. Whilst we do not expect a material recovery in licensing income in the near term, we are pleased with our progress in developing and commercialising new technologies.

## Pgm Services

Our Pgm Services business primarily provides a strategic service to the group, mainly supporting Clean Air with security of metal supply in a volatile market. This business is expected to grow at low single digits over the medium term. It comprises our pgm refining and recycling activities and produces chemical and industrial products containing pgms.

In the period, sales grew 10%. We saw strong growth in our refining and trading businesses due to higher and more volatile average pgm prices. Average palladium and rhodium prices were up 20% and 83% respectively, while the platinum price declined 11% compared to the same period last year. Sales of chemical products grew slightly driven by growth in Clean Air which uses pgm materials in its catalyst products. However, sales of industrial products containing pgms were down.

In the period, we had unscheduled downtime in one of our pgm refineries which, in conjunction with higher average pgm prices, resulted in a significant increase in precious metal working capital. We expect to make progress in reducing our precious metal working capital in our refineries during 2019/20 and anticipate being at normalised levels by the end of 2020/21. We are improving the performance of our refineries and, as previously stated, we are investing to ensure our assets operate effectively and reliably, improving returns. This programme amounts to around £100 million over three years and is already included within our group capex guidance.

## Advanced Glass Technologies

Advanced Glass Technologies mainly provides black obscuration enamels and silver paste for automotive glass applications. Sales declined primarily driven by the automotive segment reflecting a slowdown in global car production and weaker performance in China, partly due to destocking in the supply chain. Demand for non-automotive enamels and ceramics was also lower.

## Diagnostic Services

Diagnostic Services provides specialised detection, diagnostic and measurement solutions for our customers in the petroleum industry. Our Diagnostic Services business grew strongly. The higher oil price drove greater activity in the upstream oil and gas industry leading to higher capital investment and increased operating expenditure by our customers. This resulted in improved demand for our services.

## Underlying operating profit

Operating profit was up 15% and margin improved by 1.8 percentage points, benefiting by around £16 million from higher pgm prices, around £7 million of savings from the restructuring programme and further net benefits from improved efficiency across the sector of which around £5 million will not repeat. This was partly offset by higher operating costs in the pgm refineries and investment in their safety and resilience.

## ROIC

ROIC, excluding net pension assets was up by 0.8 percentage points to 12.6% reflecting higher operating profit.

## Outlook

In 2019/20, we expect sales growth with operating profit growth ahead of sales as we continue to drive efficiencies in our business and maintain our focus on higher growth segments.

## Health

	Year ended 31st March			
	2019 £ million	2018 £ million	% change	% change, constant rates
<b>Sales</b>				
Generics	171	173	-1	-2
Innovators	86	74	+16	+14
<b>Total sales</b>	<b>257</b>	<b>247</b>	<b>+4</b>	<b>+3</b>
<b>Underlying operating profit</b>	<b>43</b>	<b>44</b>	<b>-3</b>	<b>-4</b>
<b>Margin</b>	<b>16.7%</b>	<b>18.0%</b>		
<b>Return on invested capital (ROIC)</b>	<b>9.0%</b>	<b>8.4%</b>		
<b>Reported operating profit / (loss)</b>	<b>50</b>	<b>(12)</b>	<b>n/a</b>	

## Sales growth with operating profit slightly down

- Generics sales were broadly flat whilst Innovators continued to grow.
- Operating profit was slightly down as expected and margin was 1.3 percentage points lower. This was mainly due to a weaker product mix because of a continued decline in high margin products as they moved through their lifecycle and net costs associated with footprint optimisation.
- There are 46 molecules in our generic API pipeline, which includes one launch in the year. We remain on track to deliver an additional £100 million of operating profit by 2025.

## Generics

Our Generics business develops and manufactures generic active pharmaceutical ingredients (APIs) for a variety of treatments. Sales were broadly flat, with a mixed performance across the business.

Sales of controlled APIs grew slightly. We saw sales growth in bulk opiates in Europe with strong demand from one key customer following a weaker prior year. Sales of speciality opiates also grew, primarily driven by buprenorphine with higher volumes supported by increased capacity from the ramp up of our manufacturing site in Annan, UK. Our sales of APIs for ADHD treatments were flat. Although we saw a reduction in pricing and volumes of certain high margin ADHD APIs as they move through their natural lifecycle, we benefited from a new customer launch following a recent product approval.

Our non-controlled APIs declined as expected. This primarily reflected a reduction in sales of dofetilide as new competitors for our customer entered the market.

## Innovators

Our Innovators business performed well. We saw growth from sales of APIs where our customers are increasing volumes as they move into late stage testing ahead of commercialisation.

In the period, we also announced a strategic manufacturing partnership with Immunomedics for the manufacture of a drug linker used in the production of an immuno-oncology treatment for triple negative breast cancer. The drug is currently under review with the US Food and Drug Administration (FDA).

## API product pipeline

We continued to invest in our new product pipeline across both our Generics and Innovators businesses, and this is substantially on track. We have 46 products in our pipeline of generic APIs (31st March 2018: 39 products), which includes one product that launched in the year and four that moved into regulatory stage. Within our pipeline of innovator APIs, three products are nearing commercial launch with new drug approvals (NDAs) filed with the FDA by our customers.

## Financial performance review continued

### Underlying operating profit

Operating profit was slightly down and margin decreased by 1.3 percentage points. This mainly reflected a significant decline in high margin products as they moved through their natural lifecycle. Operating profit was also impacted by net costs associated with the optimisation of our manufacturing footprint due to the closure of Riverside, US and ramp up of Annan, UK. Whilst the optimisation delivered savings of £15 million in the year and will deliver significant benefits over the medium term, associated one-off costs in the period outweighed early savings.

### ROIC

Return on invested capital, excluding net pension assets, improved 0.6 percentage points to 9.0% due to footprint optimisation.

### Outlook

In 2019/20, we expect sales to be broadly stable whilst operating profit will grow double digit, primarily due to cost savings associated with footprint optimisation.

### New Markets

	Year ended 31st March			
	2019 £ million	2018 £ million	% change	% change, constant rates
<b>Sales</b>				
Alternative Powertrain	206	156	+32	+33
Medical Device Components	70	74	-5	-6
Life Science Technologies	49	45	+10	+12
Other	37	37	-1	-1
<b>Total sales</b>	<b>362</b>	<b>312</b>	<b>+16</b>	<b>+17</b>
<b>Underlying operating profit</b>	<b>2</b>	<b>17</b>	<b>-85</b>	<b>-85</b>
<b>Margin</b>	<b>0.7%</b>	<b>5.3%</b>		
<b>Return on invested capital (ROIC)</b>	<b>1.1%</b>	<b>7.9%</b>		
<b>Reported operating loss</b>	<b>(15)</b>	<b>(20)</b>	<b>+29</b>	

### Strong sales growth; commercialisation of eLNO on track

- Sales growth driven by strong demand for our non-automotive battery systems and fuel cells.
- Operating profit declined 85% due to further investment in our Battery Materials business and weaker profitability in Medical Device Components.
- Continued progress in commercialising eLNO with board approval for the initial capital investment and site selection for our first commercial plant.

### Alternative Powertrain

Our Alternative Powertrain business provides battery systems for a range of applications, fuel cell technologies and battery materials for automotive applications. Our battery materials business comprises lithium iron phosphate (LFP) materials as well as eLNO, our portfolio of leading ultra high energy density materials. Alternative Powertrain sales grew over 30% driven by significant growth in battery systems for e-bikes and continued momentum in fuel cells.

### Commercialisation of eLNO

We are making good progress in the development and commercialisation of eLNO which will compete with future materials such as NMC 811.

We continue to test our materials with our target customers and feedback remains very positive. It is especially pleasing that as the market for cathode materials develops, auto OEMs are increasingly looking for customised solutions to solve their specific problems, which plays to our strengths in science and technology.

Consequently, we have been tailoring eLNO for our customers and now have a portfolio of materials. As we progress through various stages of testing, we will work with customers to test eLNO in their own specific applications. To facilitate this, we are constructing three customer application centres – two in the UK and one in Japan. One of the UK centres will be completed in 2019 and the remaining two centres will be completed in 2020.



In scaling up, we have moved from lab scale to our pilot plant which is now complete. We recently selected a site in Poland for the first 10,000 metric tonnes commercial plant, which has the potential for expansion to 100,000 metric tonnes, and we are carefully considering how we scale beyond our initial 10,000 metric tonnes. We also signed our first long term supply agreement for raw materials with Nemaska Lithium.

#### **Lithium iron phosphate**

In battery materials, sales of lithium iron phosphate remained at a low level and were flat year on year.

#### **Fuel Cells**

Fuel Cells is now profitable, with improved demand for non-automotive applications and new business wins in China resulting in sales growth of 41%. We are also investing in new capacity to support growth in demand.

#### **Medical Device Components**

Our Medical Device Components business leverages our science and technology to develop products found in devices used in medical procedures. Sales declined 6% due to quality issues which have now been resolved and an increase in dual sourcing from our customers.

#### **Life Science Technologies**

Our Life Science Technologies business provides advanced catalysts to the pharmaceutical and agricultural chemicals markets. Sales grew 12% in the period, supported by sales to two large customers.

#### **Underlying operating profit**

Operating profit declined 85% and margin reduced by 4.6 percentage points to 0.7%. This was impacted by higher costs in our Battery Materials business as we continue to build strategic customer relationships to support commercialisation of eLNO. The margin was further affected by the quality issues and dual sourcing in Medical Device Components and a strong increase in lower margin Battery Systems sales.

#### **ROIC**

ROIC declined to 1.1% reflecting lower operating profit.

#### **Outlook**

New Markets is expected to deliver sales and operating profit growth in 2019/20.

# Financial review

**Overall, we have had a good year and, despite challenges in some of our end markets, we are doing exactly as we said.**

At constant rates, our sales excluding precious metals were up 10% and underlying operating profit was up 8%. Underlying EPS was up 10% and the board has recommended an increase of 7% in the final dividend. Further aspects of the group's financial performance in 2018/19 are outlined below.

## IFRS 15 and related statements

IFRS 15, Revenue from Contracts with Customers, is effective for annual reporting periods beginning on or after 1st January 2018 and replaces IAS 18, Revenue. IFRS 15 provides a principles-based approach for revenue recognition. As part of considering the impact of IFRS 15 we have also performed a detailed review of how we account for commodity contracts, which has resulted in a change to the way we are presenting our accounts.

We have concluded that swaps and sale and repurchase agreements entered into by our Platinum Group Metals Services business within Efficient Natural Resources should not be included within statutory revenue. Consequently, we have excluded these transactions from statutory revenue in 2019, and we have also fully restated the prior year financial statements to reflect these changes. This results in both years now being presented on a consistent basis.

The impact of these restatements is to reduce revenue and cost of sales by £3.9 billion for the year ended 31st March 2018. There is no impact on sales excluding precious metals, operating profit, working capital, cashflows or net assets. The overall impact on equity is less than £5 million. Historic business performance measures communicated by Johnson Matthey are unchanged. Full details are given in note 39 on page 220.

## IFRS 16

IFRS 16 is effective from 1st April 2019 and replaces IAS 17, Leases. There is no impact on the year ended 31st March 2019. Upon transition, the group will recognise right-of-use assets and lease liabilities of approximately £75 million on the balance sheet.

For the year ending 31st March 2020, we anticipate an increase in underlying operating profit of £2 million and an additional interest cost of £3 million. Consequently, the group estimates that profit before tax will be reduced by approximately £1 million for the year ending 31st March 2020 as a result of adopting IFRS 16.

## Corporate

Corporate costs in the period were £53 million, an increase of £10 million from 2017/18 due to higher legal costs and costs associated with building further capability within group functions. Corporate costs are expected to be slightly higher in 2019/20.

## Research and development (R&D)

We invested £190 million in R&D in the period, including £19 million of capitalised R&D, around 5% of sales. Spend was broadly flat partly due to more focused investment. Key areas of spend included next generation technologies in Clean Air, improving the efficiency and resiliency of our refineries in Efficient Natural Resources, our Health API product pipeline and investment in 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. The group does not hedge the impact of translation effects on the income statement.

The principal overseas currencies, which represented 85% of non-sterling denominated underlying operating profit in the year ended 31st March 2019, were:

	Share of 2018/19 non-sterling denominated underlying operating profit	Average exchange rate Year ended 31st March		
		2019	2018	% change
US dollar	39%	<b>1.310</b>	1.328	-1
Euro	37%	<b>1.134</b>	1.134	–
Chinese renminbi	9%	<b>8.81</b>	8.79	–

Overall, for the year as a whole, the impact of exchange rates decreased sales by £3 million and increased underlying operating profit by £1 million, following a £27 million and a £4 million decrease respectively in our first half.

If current exchange rates (£:\$ 1.295, £:€ 1.157, £:RMB 8.72) are maintained throughout the year ending 31st March 2020, foreign currency translation will have a negative impact of approximately £2 million on underlying operating profit. A one cent change in the average US dollar and euro exchange rates each have an impact of approximately £2 million 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 £16 million in the period in Efficient Natural Resources.



**Anna Manz**  
Chief Financial Officer

### Reconciliation of underlying operating profit to operating profit (£ million)

	Year ended 31st March	
	2019	2018
Underlying operating profit	<b>566</b>	525
Loss on disposal of businesses <sup>1</sup>	<b>(12)</b>	(7)
Loss on significant legal proceedings <sup>1</sup>	<b>(17)</b>	(50)
Amortisation of acquired intangibles	<b>(14)</b>	(19)
Major impairment and restructuring charges <sup>1</sup>	<b>8</b>	(90)
<b>Operating profit</b>	<b>531</b>	359

<sup>1</sup> For further details on these items please see notes 5 and 6 on page 179 and note 8 on page 180.

### Summary of efficiency initiatives

**Global procurement** – as our global procurement process builds, we are beginning to realise benefits and are on track to deliver the expected £60 million of savings over three years, with three quarters benefiting the income statement. In 2018/19, we achieved £26 million of savings, of which £19 million benefited the income statement. We anticipate a similar level of savings in 2019/20.

**Group restructuring programme** – this is substantially complete with delivery of the vast majority of annualised cost savings of around £25 million.

**Health footprint optimisation** – closure of our manufacturing plant in Riverside, US, is now complete as we build our platform for breakout growth.

Initiative £ million	Total	Achieved in the year	Achieved to date
Procurement	60	26	28
Restructuring	25	12	24
Footprint optimisation	20	15	15
<b>Total</b>	<b>105</b>	<b>53</b>	<b>67</b>

### Major impairment and restructuring charges

We had no major impairment and restructuring charges in the year ended 31st March 2019. Cash spend in relation to ongoing restructuring in 2018/19 was £8 million.

Our group restructuring programme is expected to deliver annualised cost savings of around £25 million and is substantially complete, having delivered £24 million of savings in 2018/19.

The closure of our manufacturing plant in Riverside, US, is now complete and we expect to deliver annualised cost savings of £20 million, having delivered £15 million of savings in 2018/19.

See below for a breakdown showing the cost, cash costs and cost savings achieved to date:

Year ended 31st March 2019 £ million	Impairment and restructuring credit	Cash costs
Group restructuring programme	<b>(1)</b>	<b>5</b>
Health – Closure of Riverside, US	<b>(7)</b>	<b>3</b>
<b>Total</b>	<b>(8)</b>	<b>8</b>

Year ended 31st March 2018 £ million	Impairment and restructuring charge	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

Profit or loss on disposal of businesses is shown separately on the face of the income statement and excluded from underlying operating profit. On 1st February 2019, the group sold its water disinfection business, Miox. After costs, the net proceeds were £2 million which resulted in a loss on sale of £12 million. In the prior year, the group sold its UK automotive battery systems business. After costs, the net proceeds were £5 million which resulted in a loss on sale of £7 million.

### Finance charges

Net finance charges in the period amounted to £43 million, up from £38 million in 2017/18. This was primarily driven by higher precious metal funding costs following downtime during the first half in one of our pgm refineries.

We anticipate that net finance charges will be significantly higher in 2019/20 due to higher average net debt as we invest for future growth, higher precious metal funding costs and the impact of IFRS 16.

## Financial review continued

### Taxation

The effective tax rate on reported profit for the year was 15.3%, up from 6.9% for the year ended 31st March 2018.

The tax charge on underlying profit before tax was £83 million, an effective tax rate of 15.9%, down from 17.7% for the year ended 31st March 2018. This decrease was primarily due to changes in the US tax legislation and the mix of profits by country.

We currently expect the tax rate on underlying profit for the year ending 31st March 2020 to be around 16%.

### 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 have taken steps to put in place adequate procedures to prevent the facilitation of tax evasion.

### Post-employment benefits

#### IFRS – accounting basis

At 31st March 2019, 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 £159 million.

The cost of providing post-employment benefits in the period was £56 million, down from £69 million last year, primarily reflecting a decrease in the current service cost due to a change derisking the UK plan.

On 26th October 2018, the High Court ruled that UK defined benefit pension schemes should be amended to equalise pension benefits for men and women in relation to guaranteed minimum pensions. The past service credit includes a charge of £1 million in respect of this ruling. The additional liabilities have been treated as a plan amendment and, therefore, this past service cost has been reflected in the income statement.

#### 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 2018 revealed a deficit of £34 million, or a surplus of £9 million after taking account of the future additional deficit funding contributions from the special purpose vehicle set up in January 2013. The valuation results as at 1st April 2018 allowed for the equalisation of Guaranteed Pension.

The last triennial actuarial valuation of the cash balance section as at 1st April 2018 revealed a surplus of £0.2 million.

In order to reduce the company's long term pension risk exposure a number of changes to the UK pension scheme became effective from 1st July 2018, including:

- Contributions from those employees who remain in the career average section increased and will further rise over the next few years to help fund the increased cost of providing these benefits.
- The accrual rate in the career average section reduced from 1/80th to 1/100th for each year of future service after this date.
- New benefit levels with varying employee contribution rates were introduced in the cash balance section.
- Employees in the career average section were given the option of switching to the cash balance section.

The latest actuarial valuations of our two US pension schemes showed a deficit of £2 million at 1st July 2018, an improvement from an £11 million deficit at 1st July 2017.

### Capital expenditure

Capital expenditure was £323 million in the year, 2.1 times depreciation and amortisation (excluding amortisation of acquired intangibles). In the period, projects included:

- Clean Air manufacturing plants in Poland, China and India. This increased capacity will drive efficiency and improve flexibility, enabling us to support demand from tightening legislation in Europe and Asia.



- Investment in development and commercialisation of eLNO. We completed our pilot plant and began construction of three customer application centres – two in the UK and one in Japan. We selected a site in Poland for the first 10,000 metric tonnes commercial plant, which has the potential for expansion to 100,000 metric tonnes. The first commercial plant is on track to start production in 2021/22 and supply platforms in production in 2022/23.
- Upgrading our core IT business systems.
- Investment in our Health manufacturing and development facilities in Annan, UK and continued investment in our API product pipeline.
- Improving the efficiency and resilience of our pgm refineries within Efficient Natural Resources.

Capital expenditure for 2019/20 is expected to be up to £500 million as our investments into growth projects increase. Key projects include:

- Investment in eLNO as we continue to commercialise our market-leading ultra high energy battery cathode material.
- Clean Air plants in Poland, China and India to meet the growing demand.
- Upgrade of our IT systems as we continue to roll out our single global ERP system, with eight roll outs in 2019/20.

Depreciation and amortisation (excluding amortisation of acquired intangibles) is expected to increase by around £16 million in 2019/20 primarily as we depreciate our investment in upgrading our core IT systems.

### Free cash flow and working capital

Free cash flow was an outflow of £13 million. This was due to a working capital outflow of £224 million, of which £198 million related to precious metal primarily reflecting downtime at one of our pgm refineries during the first half.

Excluding precious metal, working capital days improved to 48 days compared to 50 days at 31st March 2018, better than our target for year-end working capital days excluding precious metal of 50 to 60 days.

Average working capital days excluding precious metals improved by three days to 59 days, despite planned inventory build ahead of the first implementation of SAP and the UK's planned withdrawal from the European Union.

### Dividend

The board has recommended an increase of 7% in the final dividend to 62.25 pence per share. Together with the interim dividend of 23.25 pence per share this gives a total ordinary dividend for the year ended 31st March 2019 of 85.5 pence per share (2017/18: 80.0 pence per share). Subject to approval by shareholders, the final dividend will be paid to shareholders on 6th August 2019, with an ex dividend date of 6th June 2019.

### Return on invested capital (ROIC)

ROIC excluding net pension fund assets slightly declined to 16.4% from 17.0% at 31st March 2018 driven by higher precious metal working capital. ROIC including net pension fund assets would have been 15.4% compared with 16.4% at full year 2017/18.

### Capital structure

Net debt at 31st March 2019 was £866 million. This is a decrease of £170 million from 30th September 2018 and an increase of £187 million from 31st March 2018. Net debt increases to £912 million when adjusted for the post tax pension deficits. The group's net debt (including post tax pension deficits) to EBITDA was 1.3 times (31st March 2018: 1.1 times). Our target range is 1.5 to 2.0 times, as this ensures we have flexibility to invest further in the future growth of the business.

### Contingent liabilities

The group is involved in various disputes and claims which arise from time to time in the course of its business including, for example, in relation to commercial matters, product quality or liability, employee matters and tax audits. The group is also involved from time to time in the course of its business in legal proceedings and actions, engagement with regulatory authorities and in dispute resolution processes. These are reviewed on a regular basis and, where possible, an estimate is made of the potential financial impact on the group. In appropriate cases a provision is recognised based on advice, best estimates and management judgement. Where it is too early to determine the likely outcome of these matters, no provision is made. Whilst the group cannot predict the outcome of any current or future such matters with any certainty, it currently believes the likelihood of any material liabilities to be low, and that such liabilities, if any, will not have a material adverse effect on its consolidated income, financial position or cash flows.

On a specific matter, Johnson Matthey previously disclosed that it had been informed by two customers of failures in certain engine systems for which the group supplied a particular coated substrate as a component for their customers' emissions after-treatment systems. The particular coated substrate was sold to only these two customers. Johnson Matthey has not been contacted by any regulatory authority about these engine system failures. The reported failures have not been demonstrated to be due to the coated substrate supplied by Johnson Matthey. In the period, we settled with one of these customers on mutually acceptable terms with no admission of fault. Under this settlement, Johnson Matthey recognised a charge of £17 million in the year ended 31st March 2019 and made the associated cash settlement post year end. This charge has been excluded from underlying operating profit.

Having reviewed its contractual obligations and the information currently available to it, the group believes it has defensible warranty positions in respect of its supplies of coated substrate for the after-treatment systems in the affected engines remaining at issue (as it believes it had in respect of the matter settled in the period). If required, it will vigorously assert its available contractual protections and defences. The outcome of any discussions relating to the matters raised is not certain, nor is the group able to make a reliable estimate of the possible financial impact at this stage, if any. While Johnson Matthey works with all its customers to ensure appropriate product quality, we have not received claims in respect of other emissions after-treatment components from these or any other customers. Our vision is for a world that's cleaner and healthier; today and for future generations. We are committed to improving air quality and we work constructively with our customers to achieve this.

# Treasury policies and going concern

## Treasury policies and financial risk management

Group Treasury is a centralised function within JM 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 2019 the group had cash and cash equivalents of £378 million and £597 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 2019 are illustrated in the chart below.

Of the committed bank facilities, £114 million have a final maturity date within the 15 months to 30th June 2020 (the going concern period). These will be refinanced in the first quarter of 2019/20 for a further three years with long term relationship banks. In addition, £107 million term debt matures in December 2019 which was pre-financed in 2018/19

## 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 for the foreseeable future and so determine that it is appropriate to prepare the accounts on a going concern basis.

## Foreign currency risk

JM's operations are located in over 30 locations, 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 2019 are shown on pages 192 and 207.

## Interest rate risk

At 31st March 2019 the group had net borrowings of £866 million of which 94% was at fixed rates with an average interest rate of 3.1%. The remaining 6% 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 JM'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.

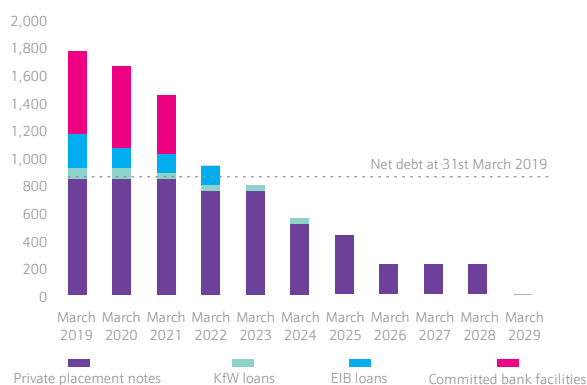
## Credit risk

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 93 to 96: Our principal risks](#)

## Maturity profile of debt facilities



# Risks and uncertainties

## A holistic approach to managing risk

Risk is central to the creation and delivery of our strategy. We have an established risk management and internal controls framework to identify, assess, mitigate and monitor the risks and uncertainties facing our business which enables us to create and protect value. Our approach to risk provides meaningful challenge to our sectors, functions and to our Group Management Committee (GMC) and board, to help them make informed decisions.

During the year we have:

- Scrutinised our forward looking risks which confirmed our coverage of emerging risk.
- Conducted a JM-wide root cause analysis on our group and sector risks and uncertainties which has informed our audit plan and controls assessment.
- Explicitly identified and considered opportunities, including them as part of our mitigations.
- Reviewed the link between our principal risks and the policies and processes identified to mitigate them so that we could focus our key control questionnaire on confirming these policies and processes were embedded.
- Implemented a 'named owner' requirement for individual controls to further embed our requirements for transparency, ownership and accountability of risk.
- Invested in skills and technology to further improve our risks forecasting and management capability.

## The effective management of risk enables JM to:

- Deliver our strategic objectives.
- Improve our decision making, planning and prioritisation.
- Pursue opportunities while continuing to mitigate our risks in a rapidly changing external environment.
- Implement controls to mitigate or prevent risks from materialising.
- Consider risk and reward and implement controls in the areas that matter most to us.
- Comply with UK Corporate Governance Code requirements.

## Risk management framework and process

The risk management framework incorporates both a top down approach to identify the company's principal risks and a bottom up approach to identify operational risks.

Our board has overall responsibility for JM's risk management process. Together with the GMC, they perform a robust assessment of the principal risks facing the business twice a year. The GMC also focuses on selected risks. The risk reviews are embedded within the relevant business and / or functional review to ensure that the risks and our response to them is considered in the context of our strategy, our values and our strategic objectives.

## Risk management framework



## Risks and uncertainties continued

Functional leaders, sector and site teams are responsible for identifying and assessing their risks, considering the likelihood of occurrence and the potential impact to JM. Sector risks are aggregated and analysed for trends and anomalies across the sectors and group; this is fed back to sector leadership teams so that insights can be incorporated in key activities such as strategic planning and budgeting.

The role of the Corporate Assurance and Risk team is to constructively challenge and assist sectors and functions in considering the range of risks identified and their materiality. The team particularly focuses on the progress of mitigating projects and programmes, their implementation and their likely effectiveness in reducing risk in line with our risk appetite.

We are developing robust qualitative and quantitative modelling techniques to identify and assess any risks that may impede delivery of our strategic objectives. All risks are described, analysed and reported using a standardised framework across the business. Likelihood of occurrence and the potential impact to the company are considered and scored using impact measures including financial, operational, reputational and people factors. The effectiveness and adequacy of controls are assessed regularly with assigned owners and reported at least twice a year.

### Evolution of our framework during 2018/19

We continually strive to improve risk management and have made the following enhancements over the last 12 months:

- To ensure greater transparency in our assessment of emerging risks and in response to the 2018 UK Corporate Governance Code, we conducted specific risk sessions to ensure our GMC and board understood the new requirements, our approach and their role.
- We applied greater scrutiny on defining and assessing the effectiveness of mitigating activity.
- We applied additional analysis on sub sector risks such as root cause and correlation against their likely principal risks to provide additional information as to where our risks are originating from and how we can effectively mitigate them.

- We further embedded the bottom up risk management process to ensure that our sector risks are adequately consolidated and reviewed by sector and group leadership twice a year.
- We continually reviewed internal and external environment changes / movements at the board and GMC to ensure that the top down risk management process is fully informed.
- We identified and considered likely opportunities to leverage and ultimately create value.
- We continued to lead open and honest conversations with the business to drive deeper, more informed and challenging discussions.

➤ See pages 110 and 111 to read how these risks relate to the board activities

### Our principal risks and uncertainties

We critically assess our principal risks to ensure that we continually reflect on the challenges facing our business and the changes that we need to make in response.

We consider our principal risks and uncertainties alongside our strategic and business plans to ensure our risk coverage and analysis supports decision making, and to inform our audit efforts. This year we sought external advice to ensure we were managing our cyber risk effectively. We also gave specific and detailed consideration as to whether metal liquidity and supply should be considered a principal risk.

Ensuring a reliable supply of platinum group metals remains an area of importance for JM. This includes anticipating our customers' demands at the same time as having a detailed understanding of metal mining and supply. While the gross risk associated with metal supply, price and liquidity is significant, we concluded that the risk is being adequately mitigated through a number of activities including persistent monitoring of triggers that may cause deviation from our forecasts.

We sought external assurance on our plans to modernise and improve our IT infrastructure, specifically to gain assurance that the modernised estate would have the resilience to respond to the scale, sophistication and impact of future cyber threats.

### Risk process





We have concluded that for the most part, our key areas of risk remain unchanged. In all cases, we continue to review and refine the documented mitigations for each risk. We continue to report whether the risk profile is increasing, decreasing or remaining constant. This provides our board and our shareholders with greater transparency and useful insight into our risks and what we are doing about them.

Changes, additions and remarks on our principal risks and uncertainties in 2018/19:

- As a result of our root cause analyses, we have broadened the scope of our former principal risk, 'failure of significant sites', specifically to recognise the vital nature of our day to day manufacturing activity, associated risks, and extensive associated controls. We have created a new 'failure to maintain operations' principal risk in which 'failure of critical sites' has been included.
- Metal liquidity and supply – acknowledging the critical nature of metal raw materials to our manufacturing operations, we decided to assess whether 'metal liquidity and supply' should be a principal risk in its own right. While it was agreed that it should not, additional controls have been agreed to provide further assurance and will be managed under our 'sourcing of strategic materials' principal risk.
- Brexit – although JM relies extensively on an agile, flexible supply chain, we have paid significant attention to the potential impact a 'no-deal' Brexit may bring. Our well established Brexit working group, which is composed of a number of functional and sector experts, has assessed the implications of a 'no-deal'. A number of mitigating activities were put in place ahead of 29th March 2019 in preparation for this eventuality, for example through building inventory.

As part of the preparations, the project team conducted scenario analysis to assess the impact of individual risks and combinations of risks, and as the probability of a hard Brexit (without a transition agreement recognising the existing trading rules) increased, the working group approved the acceleration of the project team's contingency plans, with the primary objective of ensuring the continuity of the European business across the whole business model. To that end, we remain comfortable that our current contingency planning will be effective should the UK exit the EU without a deal. We remain vigilant and alert to changes in the UK and EU's stance on Brexit and the potential implications these may have on our operations.

- Battery Materials – recognising the significant strategic potential of our Battery Materials business, we are creating a leading practice risk and governance capability to focus on managing programme and business risks. Our priority is to ensure that business and programme risks receive appropriate management attention and are addressed quickly and effectively in this complex environment.
- Emerging risks – understanding future risks and our ability to respond is supported by all our principal risks, but with specific analysis of our three forward-looking risks; 'future growth', 'existing market outlook' and 'maintaining competitive advantage'. As well as providing us with assurance that our strategy is effective and achievable, these risks have played a central role and source of insight for our viability modelling. The viability statement is shown on page 97.

The following table sets out the principal risks and uncertainties facing the group, the mitigating actions we have in place. It also details any profile changes for each principal risk during the course of the year.

Our risks are not listed from greatest to lowest risk. We list our strategic risks first followed by operational risks. To help understand the potential impact of our risks on our strategy, each risk has a GMC owner who is responsible for the risk and to ensure controls are adequate and prioritised effectively. Additionally, each risk is linked to one or more of our strategy pillars – Science, Customers, Operations, People, which are annotated below.

#### Key

**S** Science

**C** Customers

**O** Operations

**P** People

## 1 Existing market outlook

**S C P**

### Risk and impact

The impact of change in the key business assumptions is either unplanned or unforeseen and we are not agile enough to respond.

This risk would include legislative changes caused by Brexit, other market movements outside of our predictions, and other trends such as the imposition of tariffs, US protectionism or Chinese and global slowdown.

**GMC owner**  
Anna Manz

### Mitigation

- Understanding the key drivers and 'severe yet plausible' scenarios.
- Integrate strategic risk within the strategic planning process to enable improved consideration of different market outcomes.
- Define triggers and having formed plans in response to them.
- Monitoring changes to those drivers and adjusting business plans accordingly.
- Technology road mapping to understand our response to evolution in our markets and associated scientific and technological requirements.

### Changes since 2018 annual report

Market conditions have become more uncertain since last year with the possibility of a global slowdown. We monitor global economic factors closely so that we can understand the potential effects of slower global or regional economies on our businesses and implement plans to respond. Although a global slowdown appears more likely by consensus, JM's portfolio infers a degree of protection, given the variety of our investments.

## Risks and uncertainties continued

## Key

**S** Science  
**C** Customers

**O** Operations  
**P** People

**2 Future growth****S C O P****Risk and impact**

Failure to deliver planned growth and value creation as outlined at Capital Markets Day in September 2017 through ineffective execution.

**GMC owner**  
**Robert MacLeod**

**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 projects and talent identified to support realisation of the strategy.
- Project management office (PMO) to ensure appropriate governance is in place and plans are delivering to expected timelines.

**Changes since 2018 annual report**

In executing our organic growth strategy, we are making major capital investments and so we are significantly enhancing our capital project delivery programme to manage this risk.

**3 Maintaining our competitive advantage****S C O****Risk and impact**

Failure to maintain our competitive advantage in existing markets, and as a result, not meeting customers' evolving needs as efficiently or effectively as our competitors.

**GMC owner**  
**Jane Toogood**

**Mitigation**

- Investment in our customer understanding capability.
- Continual engagement and feedback with our customers at multiple levels within our business and theirs.
- Research and development and capital investment processes to ensure resource is prioritised against the areas of greatest opportunity.
- Benchmark efficiency of business processes.

**Changes since 2018 annual report**

We are delivering major capability building programmes including Commercial, Procurement and Manufacturing Excellence. This enables more effective capital allocation decisions. These programmes and processes are now largely established and our focus is on ensuring these are embedded and their benefits realised.

**4 Environment, health and safety (EHS)****O P****Risk and impact**

Our business operations are subject to a wide range of challenging health, safety and environmental laws, standards and regulations from government and non-governmental bodies around the world.

If we fail to operate safely we could injure our people and breach applicable laws which could adversely impact our employees, result in lost production time and potentially attract negative interest from the media and regulators.

**GMC owner**  
**Robert MacLeod**

**Mitigation**

- Carry out robust process safety audits on high risk sites to enhance and assure the work we do to make our manufacturing processes as safe as possible.
- Implement safety culture programme and behavioural standards.
- Implement process safety programme.
- Determine the cause of incidents and accidents and develop remediation plans.
- Ensure, through ongoing investment, that equipment continues to be appropriate.
- Continued training and awareness activities.

**Changes since 2018 annual report**

Health and safety continue to be our absolute priority across the business. Execution and embedding of all EHS plans continue to be tracked and monitored on a regular basis.

As part of our commitment to make the world cleaner and healthier, we are extending our understanding of the impact of our operations with further focus through our environmental and sustainability programmes.

**5 Sourcing of strategic materials****S C O****Risk and impact**

Due to the nature of our operations, JM has limited suppliers from which to source certain strategic raw materials including precious metals. Any significant breakdown in the supply of these materials would lead to an inability to manufacture and satisfy customer demand.

**GMC owner**  
**John Walker**

**Mitigation**

- Model alternative supply strategies with expected demand.
- Continually investigate alternative materials as part of research and development.
- Review critical suppliers annually, and apply appropriate mitigating actions.
- Include long term demand for precious metal in JM's ten year strategic plan.
- Invest in pgm refining business.
- Further strengthen supplier relationship management and review regularly to discuss supplier capacity constraints.

**Changes since 2018 annual report**

This risk now includes additional mitigations to enhance assurance over metal liquidity and supply. This includes additional modelling and stress testing of the market and our metal demands of our current and future operations.

## Key

**S** Science  
**C** Customers

**O** Operations  
**P** People

## 6 People

P

### Risk and impact

To successfully execute our strategy and deliver growth, we need to ensure that we have the breadth and depth of leadership and the appropriate skills and capabilities to drive a healthy, motivated and engaged workforce.

**GMC owner**  
Annette Kelleher

### Mitigation

- Leadership development programmes.
- Embed JM values and behaviours in all internal processes including hiring and performance reviews.
- Develop high level capability plans to support strategic plans.
- Conduct global employee opinion survey every two years followed by development and delivery of targeted action plans.
- Wellbeing programme.

### Changes since 2018 annual report

We are continuing to invest in our leadership through development programmes to ensure we have the skills and capabilities to deliver our strategy and are growing talent through robust succession planning to build our future leaders.

We carried out a global employee survey, identified improvement areas and developed action plans which are now in progress. These plans include a programme focused on supporting our people's health and wellbeing.

## 7 Security of metal and highly regulated substances

O

### 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.

**GMC owner**  
Jane Toogood

### Mitigation

- Continue execution of the security improvement roadmap.
- Implement group security policies across all sites.
- Carry out inventory stock takes.
- Ongoing security awareness campaigns and training.
- Security audits.

### Changes since 2018 annual report

Level of risk remains consistent as we continue to execute our security improvement roadmap.

## 8 Intellectual capital management

S O

### Risk and impact

Failure to adequately manage our own, and third party, intellectual capital, knowledge and information could lead to a loss in business advantage, loss of freedom to operate and reputational damage associated with litigation.

**GMC owner**  
Simon Farrant

### Mitigation

- Implement business intellectual capital management strategy.
- Use intellectual capital lawyers to provide specialist guidance.
- Portfolio management of intellectual capital through new technology solution.
- Invest in cyber security (see risk 13).

### Changes since 2018 annual report

We have continued to develop market leading products using our world class science capabilities. We protect our inventions and knowhow, although our markets remain challenging, crowded and litigious.

## 9 Failure to maintain operations

C O

### Risk and impact

We may experience interruptions and / or delays in the manufacturing and supply of our products resulting in lost sales affecting our reputation and revenue growth.

**GMC owner**  
John Walker

### Mitigation

- Ensure regular maintenance of critical machinery.
- Continue to invest in infrastructure.
- Adhere to high technical standards.
- Implement Procurement Excellence programme.
- Insurance coverage in place.
- Implement Group Business Continuity Policy and manual across all sites.
- Continue to develop comprehensive response plans and test annually.

### Changes since 2018 annual report

We have broadened the scope of our original risk, 'failure of significant sites', to recognise the vital nature of our day to day manufacturing activities, associated risks and extensive associated controls. We are investing in our pgm refineries and our preventative maintenance planning work.

## Risks and uncertainties continued

## Key

**S** Science  
**C** Customers

**O** Operations  
**P** People

10 Ethics and compliance <span>C O P</span>		
<p><b>Risk and impact</b></p> <p>Failure to comply with ethical and regulatory compliance standards leading to reputational damage, possible criminal / legal exposure for the company or for individuals.</p> <p><b>GMC owner</b> Simon Farrant</p>	<p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Implement refreshed code of ethics supported by training, and tone from the top set by senior leadership.</li> <li>Suite of legal compliance policies and procedures in place.</li> <li>Use internal and external subject matter experts to identify risks, set standards and provide advice and training.</li> <li>Implement ethical working practices certification.</li> </ul>	<p><b>Changes since 2018 annual report</b></p> <p>This risk is continually assessed given the evolving regulatory and business background.</p>
11 Business transition <span>O P</span>		
<p><b>Risk and impact</b></p> <p>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 group wide standardisation of some activities, directed by strong functional leaders, to ensure best practice is used and maintained across the group.</p> <p>The risk is that we fail to deliver transformational change, fail to achieve efficiencies and have a disengaged workforce.</p> <p><b>GMC owner</b> Robert MacLeod</p>	<p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Strategic PMO to drive appropriate governance across all workstreams.</li> <li>Implement project management framework across all key initiatives.</li> <li>Expert third party assurance on key change programmes, including ERP (SAP) go-live at key sites, assured by expert third parties.</li> <li>Communicate with and engage employees to drive functional engagement.</li> </ul>	<p><b>Changes since 2018 annual report</b></p> <p>This risk has been updated as we continue to evolve the way in which we run our business. We are managing this risk through our upgraded PMO which ensures we have targeted action plans, employee communications and wellbeing programmes to support our workforce.</p>
12 Product quality <span>S C O</span>		
<p><b>Risk and impact</b></p> <p>Our products are used in a wide range of applications, processes and systems. The safety and quality of these products are crucial to ensuring they operate as intended.</p> <p>Should a product fail to perform as expected, we could be responsible for harming consumers or exposed to liability claims. This could lead to loss of future business, reputational damage and loss of licence to operate.</p> <p><b>GMC owner</b> Jason Apter</p>	<p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Monitor and report quality performance, taking corrective action where required.</li> <li>Implement quality management system.</li> <li>Continue to develop robust manufacturing systems supported by standardised processes.</li> <li>Robust supplier contract terms and conditions.</li> </ul>	<p><b>Changes since 2018 annual report</b></p> <p>Risk remains consistent as the regulatory environment continues to tighten and our customers are experiencing greater scrutiny. JM has continued to make significant progress in embedding a global quality management system supported with training and regular communications.</p>
13 Applications, systems and cyber <span>O P</span>		
<p><b>Risk and impact</b></p> <p>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.</p> <p><b>GMC owner</b> Anna Manz</p>	<p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Deliver of our cyber security and infrastructure improvement investment to increase resilience.</li> <li>Implement key policies and standards across JM.</li> <li>Continue to invest in information systems, monitoring and assurance to support our data security strategy.</li> <li>Input and assurance from third party specialists.</li> </ul>	<p><b>Changes since 2018 annual report</b></p> <p>We are continuing to invest heavily in our IT infrastructure to provide better visibility and controls to support a more efficient business.</p>



## Viability

In accordance with provision C.2.2 of the 2016 Corporate Governance Code, 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;
- The board and GMC perform a robust assessment of the principal risks facing the business twice a year. The GMC also focuses on selected risks at each of its meetings;
- In October and April, 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 are conducted by the Corporate Assurance and Risk team, the results of which were presented to and discussed by the GMC. This includes assessment of root cause, controls effectiveness, and assurance.

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 Chief Executive and Chief Financial Officer in full 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 2022 is an appropriate period over which to assess the group's viability. As part of our long term strategy 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 as we are confident with the accuracy of the forecast over this period.

In making the assessment, we have considered a number of severe but plausible stress scenarios linked to the group's principal risks, specifically risks 1, 2 and 3. We have analysed the impact of the following three hypothetical stress scenarios plus all of them occurring at the same time.

Scenario 1: The impact of change in key business assumptions is either unplanned or unforeseen and JM is not agile enough to respond. Under this scenario we evaluated the impact of a downgrade in the global economic outlook and potential for recession in key markets and from adverse events and movements in commodity markets. As well as the possible impact from a faster than expected uptake of electric vehicles.

Scenario 2: Failure to grow through new opportunities as a result of ineffective execution. This scenario assesses failing to deliver new growth in new markets and technologies.

Scenario 3: Failure to maintain competitive advantage in existing markets and, as a result, not meeting customers' evolving needs as effectively as competitors. This scenario assesses the impact from a hard Brexit, cyber and intellectual property related risks including poor management of capital projects, significant production losses due to downtime at a major site and the inability to improve certain businesses or sites.

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. We are, however, 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, and that the combination of factors required to impose this stress is both extremely significant, and very unlikely.

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.