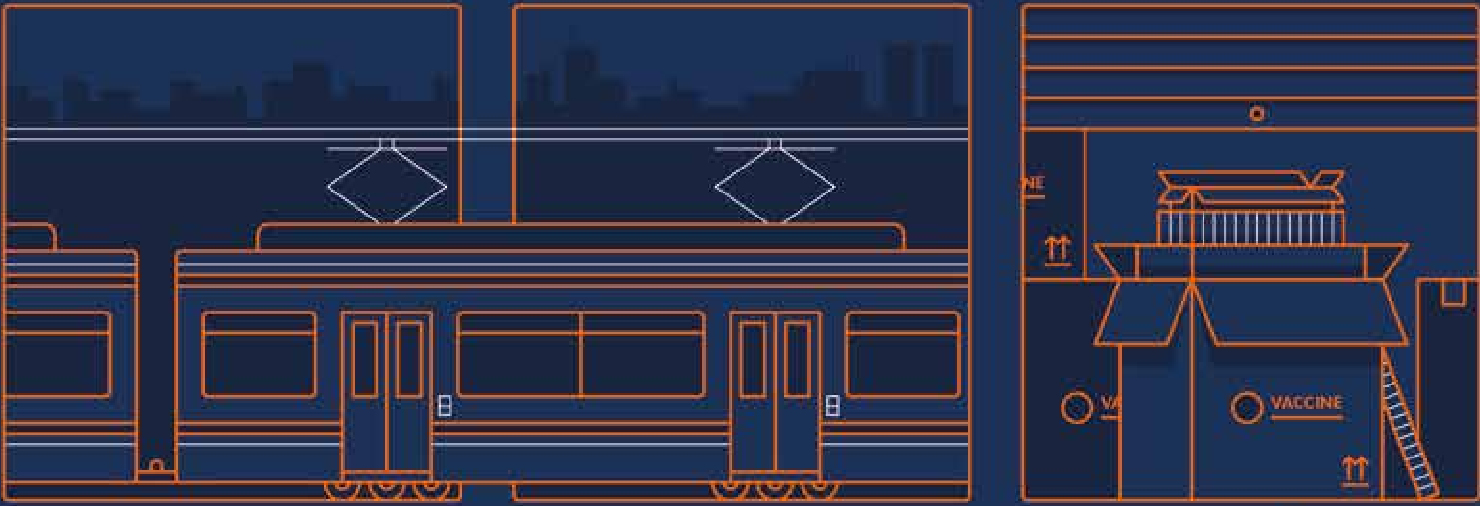
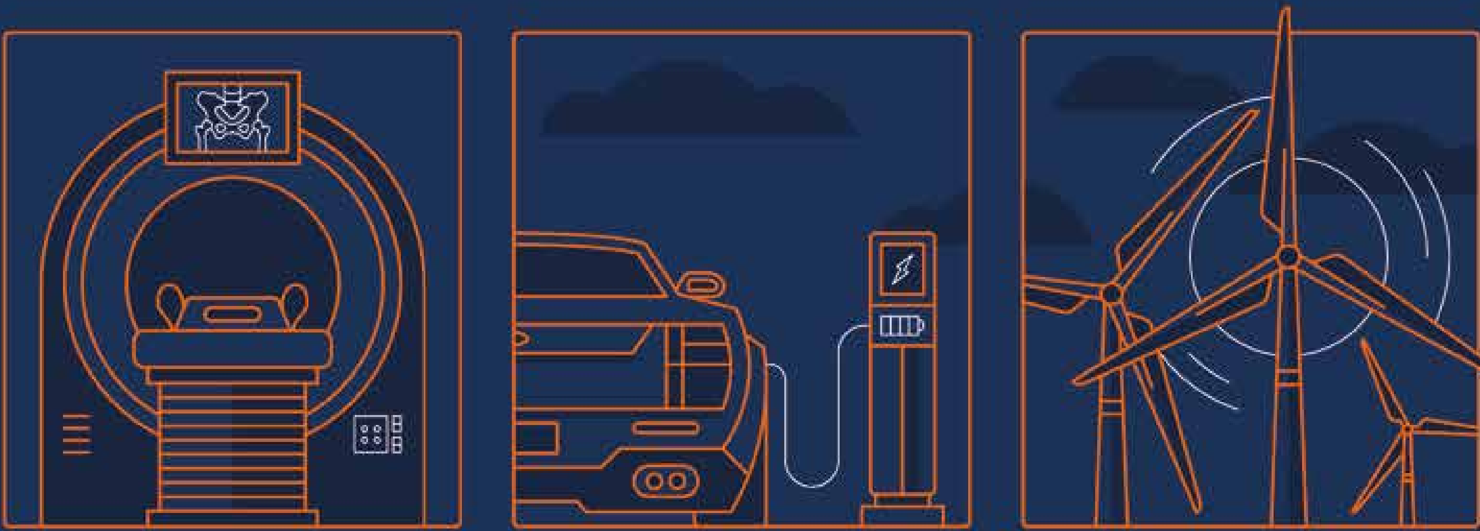
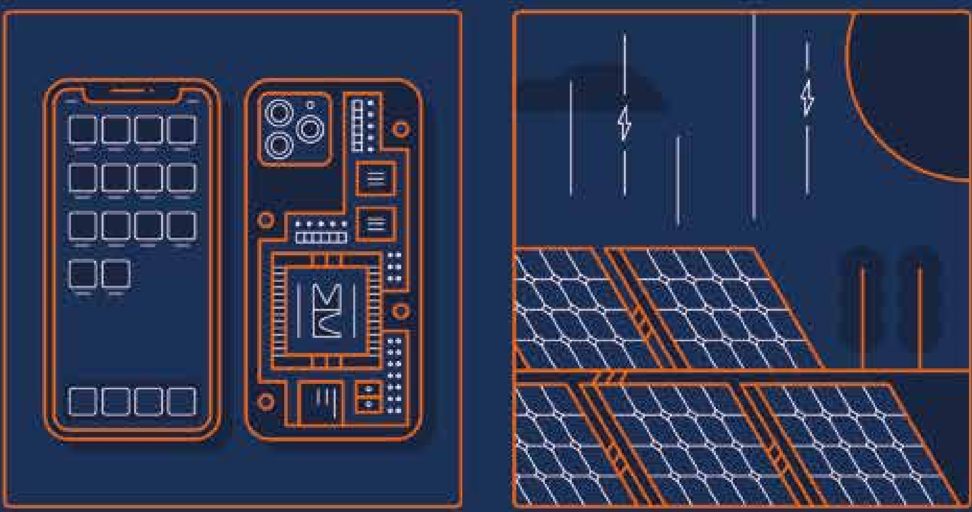


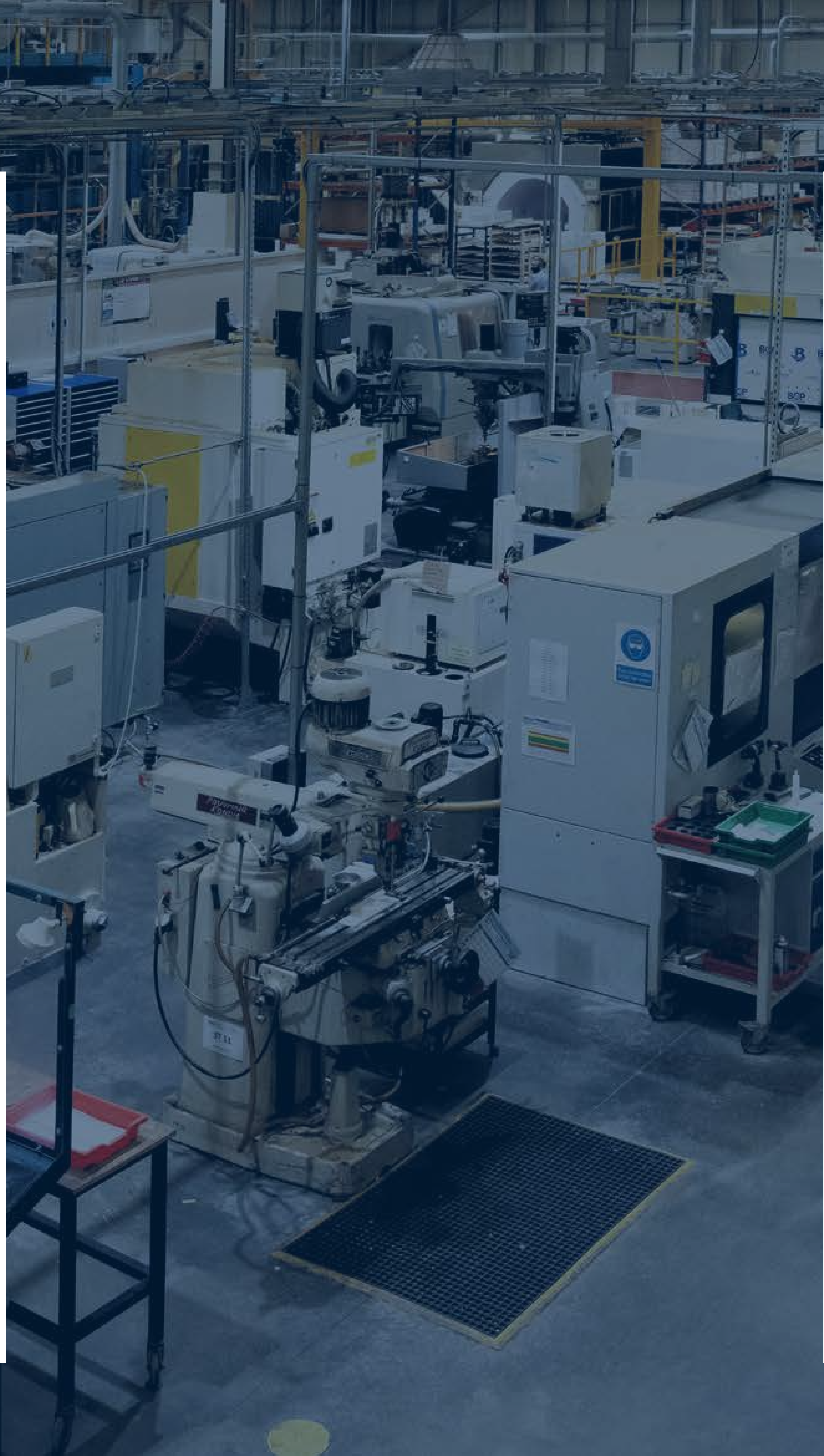


Materials advancement for a sustainable future

ANNUAL REPORT 2021



Morgan
Advanced Materials



CONTENTS

"WE HAVE WORKED HARD TO BUILD OUR CAPABILITIES AND IMPROVE OUR PROCESSES, AND THIS FOUNDATION HAS ENABLED US TO DELIVER STRONG ORGANIC GROWTH AND EXPAND OUR MARGINS, DESPITE SOME OF THE SUPPLY CHAIN CHALLENGES AS THE GLOBAL ECONOMY RECOVERS."

Pete Raby
Chief Executive Officer

Significant trends shape our modern world, accelerating the demand for new and more sustainable advanced materials.

At Morgan Advanced Materials, we use advanced carbon and ceramics materials to support the move to a more sustainable world. Our people are driven to solve complex customer problems: from managing heat and enabling greener technologies, to supporting improved medical diagnostics and protecting life.

Our purpose is 'to use advanced materials to make the world more sustainable, and to improve the quality of life'. This purpose is underpinned by our safe, ethical and inclusive culture, embraced by our 7,800 employees spanning over 25 countries. Working across many industries and in a number of markets, we deliver the materials science and technologies the world needs now.

OUR STRATEGY

We are a global advanced manufacturing organisation with leading capabilities in three areas: materials science, application engineering and customer focus.

Read more on page 10

OUR BUSINESS MODEL

We operate as two global divisions and five global business units. We empower our global business unit teams, giving them considerable autonomy and enabling them to act quickly and support their customer needs. Our broad manufacturing footprint enables us to supply customers locally from a short supply chain.

Read more on pages 14 to 15

OUR ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) CREDENTIALS

In line with our purpose we have set stretching ESG goals:

- To improve the way we manufacture and design our products, seeking sustainable manufacturing processes and better environmental outcomes for the customer;
- To enhance social factors to keep our people safe, and to ensure we provide meaningful work that contributes to an improved society and enables the communities where we live and work to thrive;
- To deliver robust governance ensuring we operate to high ethical standards and meet our local, regional and global obligations as a UK listed global Group.

Read more on page 17

2021 HIGHLIGHTS

ADJUSTED PERFORMANCE[1]

REVENUE
£950.5m
2020: £910.7m | 2019: £1,049.5m

GROUP ADJUSTED OPERATING PROFIT[1]
£124.5m
2020: £91.7m | 2019: £134.2m

ADJUSTED EPS[1]
27.2p
2020: 19.0p | 2019: 28.0p

TOTAL DIVIDEND PER SHARE
9.1p
2020: 5.5p | 2019: 4.0p

STATUTORY PERFORMANCE

OPERATING PROFIT/(LOSS)
£113.1m
2020: £(1.8)m | 2019: £126.1m

PROFIT/(LOSS) BEFORE TAX
£104.3m
2020: £(13.1)m | 2019: £109.7m

CONTINUING EPS
23.9p
2020: (8.6)p | 2019: 25.2p

CONTINUING AND DISCONTINUED EPS
25.9p
2020: (7.9)p | 2019: 25.7p

HEALTH, SAFETY AND ENVIRONMENTAL PERFORMANCE

LOST-TIME ACCIDENT FREQUENCY
per 100,000 hours worked
0.22
2020: 0.18 | 2019: 0.14

ABSOLUTE CO_2e[2]
Tonnes
229,887
2020: 276,678 | 2019: 318,842

1. Throughout the Annual Report, including the Strategic Report, adjusted measures are used to describe the Group's financial performance. These adjusted measures are not recognised under IFRS or other generally accepted accounting principles (GAAP). These measures are shown because the Directors consider they provide useful information to shareholders, including additional insight into ongoing trading and year-on-year comparisons. These non-GAAP measures should be viewed as complementary to, not replacements for, the comparable GAAP measures. Throughout this Report these non-GAAP measures are clearly identified by an asterisk (*) where they appear in text, and by a footnote where they appear in tables and charts. Definitions and reconciliations of these non-GAAP measures to the relevant GAAP measures can be found in the Group Financial Review on pages 55 to 57.
2. Absolute CO_2e has replaced energy intensity as a key measure of environmental performance. The Directors consider this to be a more stringent metric as the business continues to grow and it is aligned to our 2030 targets.

CHAIRMAN'S STATEMENT

"I AM PLEASED TO INTRODUCE MORGAN'S ANNUAL REPORT FOR 2021. OUR PEOPLE AND BUSINESS MODEL SHOWED THE GROUP'S RESILIENCE FOLLOWING THE CHALLENGES OF 2020."

Douglas Caster CBE FIET
Chairman

In 2021 we continued to make good progress in delivering our strategy and the results demonstrate that we are well positioned for the long term.

I am proud of the way our people have performed during the challenging environment owing to the COVID-19 pandemic and achieved the results for 2021 which demonstrate increasing demand for our products, driving increases in revenues, profitability and cash flows.

SAFETY OF OUR PEOPLE

The people in our business have shown strength and stamina facing the challenges of 2021. COVID-19 protocols are still in place across all our sites, and we have experienced temporary interruptions during peak infection periods. Demand for our products has increased through the year and sites are operating at full capacity in some instances. I would like to thank our people for their hard work and commitment.

The first imperative is the safety of our people and I am disappointed that during 2021 our safety performance dipped. Supporting executive management, your Board has spent a significant amount of time discussing safety performance and overseeing a new approach to safety culture. These discussions have emphasised a more holistic approach to safety, and this now encompasses greater focus on the wellbeing of our people. My fellow non-executive Directors and I will continue to support management to achieve a position of 'zero harm'.

ENVIRONMENT AND STRATEGY

We are working to reduce the Group's environmental impact, and this has become an increasingly important area not only for you, our shareholders, but also our customers, suppliers and employees. I am pleased by the progress we have made to date and the opportunities we have identified for the future. Not only are we making our manufacturing processes more efficient and reducing our CO_2e emissions, but more importantly our products, which have properties to withstand heat and endure other extreme environments, assist our customers in reducing their environmental impact, either by lasting longer or improving the efficient use of resources.

During 2021, we set our execution priorities for the next three years and these are explained in more detail in the Chief Executive Officer's Report. Following the restructuring and efficiency programme which completed in 2021, we are well positioned for growth and will focus on opportunities to innovate in faster-growing markets, whilst further developing our service to customers.

I strongly believe that the next phase of our strategy, whilst including stretching targets for our environmental performance and focus on our people and their safety, supports Morgan's purpose to use advanced materials to make the world more sustainable, and to improve the quality of life.

FINANCIAL PERFORMANCE

Morgan's financial health has improved significantly during recent years, and this is reflected in a progressive dividend payment policy. The Board considers the allocation of capital carefully and the investments needed for the future of the business. The Group has made good progress in reducing debt, proactively managing the defined benefit pension deficit and improving cash generation.

BOARD CHANGES

Later this year, we will say goodbye to Peter Turner who has been Chief Financial Officer since 2016. On behalf of the Board I would like to thank Peter for his support and significant contribution to the Group over the last five years. Peter has worked tirelessly and successfully to strengthen the financial position of the Group, and his calm and rigorous leadership has been invaluable to the Board and executive team. He leaves the Group much stronger and healthier than when he arrived, and we wish him well in his retirement.

Richard Armitage will join the Board as Chief Financial Officer in May 2022 and we look forward to welcoming him to the Group.

OUTLOOK

The global business environment continues to be challenging. The role of the Board is more important than ever in assisting executive management to navigate through the competing priorities of managing the business day to day, whilst continuously looking to the future in order to secure the Group's position. The fulfilment of our purpose, execution of our strategy and focus on environmental, social and governance matters support the position of the Group for the long term, and I am confident for the future.

Douglas Caster CBE FIET
Chairman

SECTION 172 STATEMENT

STATEMENT BY THE DIRECTORS IN PERFORMANCE OF THEIR STATUTORY DUTIES IN ACCORDANCE WITH SECTION 172(1) COMPANIES ACT 2006

The Board is committed to the creation of value through sustainable growth. When making decisions and considering key matters of business, the Board considers the implications of its decisions for the long term; takes account of the interests of the Group's key stakeholders and how decisions might impact them; and has regard to the need to maintain high standards of business conduct and our commitment to environmental, social and governance (ESG) matters.

HOW THE BOARD TAKES STAKEHOLDER INTERESTS AND OTHER MATTERS INTO ACCOUNT

All decisions and business conducted by the Board are considered in the context of Morgan Advanced Materials' overriding purpose to ensure alignment.

During 2021, the Board reviewed the Group's key stakeholders and confirmed that they continue to be its investors, customers, employees, suppliers, pensioners and pension trustees and communities. Our key stakeholders, why they are significant, the main methods we use to engage with them, and the issues of interest to them are set out on pages 6 and 7.

Further information on the mechanisms used by the Board to engage with key stakeholders, in particular with investors and the workforce, and details of the issues raised by them as a result of the engagement and the effectiveness of the methods of engagement, can be found on page 30 of the Sustainability and Responsibility section and pages 69 to 72 of the Corporate Governance Report.

HOW THE BOARD TAKES DECISIONS

A robust governance framework ensures that the appropriate decisions are referred to the Board for consideration. Further information on the Company's governance structures, delegation of authority and how the Board operates is set out in the Corporate Governance Report on pages 64 to 66. The Board reviews the Group's principal and emerging risks regularly and takes into account the Group's appetite for risk when taking decisions.

The Board spent time during 2021 engaging with a diverse cross-section of employees, as well as monitoring and assessing the Group's culture. These insights have informed the Board's discussion when assessing progress in relation to fostering a safe, ethical and diverse workplace. These interactions have also enabled the Board to understand the capabilities of the current and future leadership team and the extent to which employees understand and are aligned with the Group's strategic direction.

The principal matters and key decisions considered by the Board during 2021 are set out on pages 68 to 69 of the Corporate Governance Report.

CONSEQUENCE OF ANY DECISION IN THE LONG TERM

The Board considers the long-term success of the Group when conducting its business, for example, when monitoring the implementation of the Group strategy, approving investments in new product development, approving capital expenditure to upgrade plant and equipment and in overseeing the development of Morgan's people. Information on the Group's purpose and strategy, and how these serve to guide the long-term direction of the Group, is set out on page 10.

KEY DECISIONS TAKEN DURING 2021

1. Approval of a new environmental, social and governance (ESG) strategy which set goals for 2030 in relation to safety performance, CO_2e emissions, water usage, employee engagement and diversity and inclusion.

   How the decision was taken: The strategy was developed by comparing the ESG areas that investors are focused on and how these are aligned with Morgan's business to determine five priority areas. The Board of Directors had oversight of the process to develop the strategy and reviews progress at each Board meeting.

How stakeholder interests were taken into account:

- Workforce – A cross-section of employees were asked for their views on the most important ESG issues to the business and this assessment was taken into account by the Board when selecting the main objectives of the ESG strategy and the key issues to focus on and improve;
- Customers – Our ESG performance is increasingly important to our customers who view us as partners who share the same values and approach to conducting business responsibly. This safeguards our customers' reputation and ensures that we remain a reliable party in their supply chain for the long term. Consequently, our customers expect us to be able to demonstrate ESG performance and plans for improvement;
- Suppliers – Our suppliers depend on our success and support the steps we take to maximise efficiency and remain competitive;
- Community – There is a widespread expectation that large corporates behave responsibly, minimise the use of resources and take steps towards a more sustainable future;
- Investors – The integration of ESG into our long-term business strategy responds to demands from investors for companies to manage the environmental impact, take care of their people and the communities in which they operate and behave responsibly, with a view to ensuring their long-term success.

  Impact of the decision: ESG targets for 2030 and aspirational goals for 2050 are set out on page 9 and in the Sustainability and Responsibility section.

2. Approval of a fresh approach to safety comprising a two-pronged strategy: (i) evolution to a caring culture and (ii) a new health and safety management system, with a long-term aspiration of 'zero harm'.

   How the decision was taken: In addition to the regular reports presented by executive management containing details of safety performance, the Board received an analysis of Morgan's position in relation to safety culture. The Board reviewed and approved the strategy.

How stakeholder interests were taken into account:

- Workforce – A detailed explanation of the Board's engagement with the workforce on safety is set out on page 70 of the Corporate Governance Report;
- Customers – We work with customers who expect us to manage our business responsibly and to demonstrate that we comply with their expectations so that they can demonstrate that there is a consistent and responsible approach to safety throughout their supply chain;
- Investors – Our investors expect us to implement safety policies and procedures and to improve safety performance in order to protect our reputation and preserve the value of their investment;
- Community – Contractors, visitors and other third parties enter our sites and business premises. The strategy ensures that the safety procedures and protocols apply consistently across our business to create a safe environment for all.

  Impact of the decision: The new strategy is being rolled out across the Group with activities and training to build a caring safety culture and develop standard safety systems across the Group. This is described further in the section on Health and Safety on pages 18 to 19 in the Sustainability and Responsibility Report.

3. Consideration of capital allocation taking into account the needs of the business in the shorter term and balancing these with the long-term sustainability of the Group and its responsibilities to our people and the society in which we operate.

   How the decision was taken: The Board received an evaluation, prepared by executive management, which set out a number of considerations including cash performance, level of financial indebtedness, position relative to financial covenants, contributions to the defined benefit pension schemes, dividend policy and investor needs, and proposals to invest to grow the business and to meet environmental and safety commitments.

How stakeholder interests were taken into account:

- Employees – The Board considered that investments in plant and machinery in order to improve safety, efficiency and environmental impact and production, and to grow the business, would benefit current employees by improving their safety and environment, whilst also safeguarding jobs for the future;
- Investors – Investor expectations in relation to the progression of dividend payments, both from a capital return perspective and as a signal of future performance, were taken into account and a dividend policy was discussed and agreed. The discussion included consideration of key questions around quantum, timing and dividend progression;
- Pensioners and pension trustees – The Company's obligations in relation to funding the defined benefit pension schemes were considered. In addition, the Board considered the likely impact of funding allocations to promote a stable and sustainable Company which would benefit pensioners and pension trustees in the longer term;
- Lenders/providers of debt – The impact of paying a dividend on whether the Company remained within the financial covenants agreed with lenders;
- Customers and suppliers – The Board determined that a prudent balance of reinvesting capital in the business with dividends paid to investors served these stakeholder groups' interests for the longer term.

  Impact of the decision: The Board approved the dividend policy.

4. Continuous review of the Group-wide restructuring programme to improve performance and support long-term growth which was approved and commenced in 2020, with the addition of further select small portfolio changes.

   How the decision was taken: The Board received progress reports on the implementation of the restructuring programme from the dedicated project manager at each Board meeting.

How stakeholder interests were taken into account:

- Employees – The Board considered the restructuring activities taken to be in the interests of employees in order to promote sustainable performance of the Group for the long term. The Board ensured that executive management provided clear and timely communication of the decisions which impacted specific sites, and that there was meaningful dialogue on the changes between employees, their representatives and management;
- Investors, customers, suppliers, pensioners and pension trustees and communities – The Board determined that the restructuring activities served these stakeholder groups' interests for the longer term.

  Impact of the decision: The restructuring programme efficiencies have contributed to the robustness of the Group which is well placed for growth and to serve customers' needs.

Further information on these significant decisions can be found throughout this Annual Report:

- The Chairman's Statement on page 3 and the Chief Executive Officer's Review on pages 8 to 9 provide information on the strategic context;
- The Review of Operations on pages 44 to 49 contains information on the restructuring programme;
- The Group Financial Review on pages 50 to 52 provides information on measures taken in relation to the Group's financial performance; and
- Pages 18 and 19 of the Sustainability and Responsibility section contain information on our safety policy and performance.

OUR STAKEHOLDERS

Our stakeholders are key to the delivery of our strategy. Below we set out the many ways we engage with stakeholders and why their engagement matters.

WHO ARE OUR STAKEHOLDERS?	INVESTORS **Those who own shares or wish to own shares in Morgan Advanced Materials**	CUSTOMERS **Those who have purchased our products or will do so in the future**	EMPLOYEES **Anyone directly employed by Morgan Advanced Materials**	SUPPLIERS **Those from whom we purchase goods or services**	PENSIONERS AND PENSION TRUSTEES	COMMUNITIES **Those who live or operate in areas where we work – for example residents, businesses and charities**
WHY OUR STAKEHOLDERS ARE IMPORTANT TO US	Our investors provide capital for our business. We value this commitment and want to ensure investors have a deep understanding of our business, our strategy, the market environment and our governance arrangements. It is important to us that we foster an open and transparent relationship to enable investors to make effective investment decisions.	We aim to deliver great service so that our customers feel valued and choose us as their 'go-to' supplier. To do this effectively we need to listen to and engage with them. We develop relationships with our customers based on mutual trust and constructive dialogue. We have a diverse customer base across the globe, which we serve directly, and also through joint venture partnerships and local suppliers. We are seeing growing demand for advanced materials as customers push the boundaries of technology. We have been working closely with our customers to develop new solutions for their next generation of products and processes. We are providing products that are differentiated from those of our competitors.	Having people who bring a diverse range of talents and perspectives, and who feel engaged in their role, is of paramount importance to our long-term success. Our employees have been instrumental in making Morgan Advanced Materials the company it is today. They are key to driving the brand forward and ensuring it remains relevant in the future. We work to attract, develop and retain the right people and ensure they are in the right roles.	We believe in an open and collaborative business approach and seek opportunities for innovation. This collaborative approach is particularly important to ensure a more sustainable supply chain. We aim to use all our resources as efficiently as possible, minimising the environmental and social impact on ourselves, our suppliers, our customers and the world around us.	After more than 160 years in business, we would not be as strong as we are today without the combined efforts of all those who went before. By keeping our pension commitments, we honour the hard work and dedication of both current and past employees.	Our people live and work within wider communities and relationships with these communities are key in supporting our business for the future. Our relationship with local communities is mutually beneficial, offering us the ideal place to find the talent of tomorrow, while enabling our people to get involved in activities which directly benefit these communities. We seek to build trust by understanding the issues core to our communities, operating responsibly and addressing concerns that are material to them. We aim to create long-term relationships with the communities in which we operate, that drive positive change and help build a more sustainable future.
HOW WE ENGAGE WITH STAKEHOLDERS	We engage with our investors directly through both the formal presentation of results and investor roadshows. We also use these opportunities to talk about the future and the longer-term plans for our business. When asked, we complete investor questionnaires which give a further insight into key aspects of our business performance. We provide a dedicated section on our website which offers timely information on how we are performing against our stated ESG goals. We publish a yearly sustainability and responsibility report that details the progress we are making against our ESG targets, including full disclosure of metrics and ratings linked to environmental performance.	The relationship with our customers starts from the moment they look to find out about our products. We keep customers updated on the progress of our innovation and new product applications through digital and physical channels. Our sales and service colleagues also keep customers updated on the progress of manufacturing; sometimes working alongside the customer to fine-tune the product and production process. We also gather key feedback from customers about the service we provide and use this to help improve relationships and secure future business.	The Board is committed to fostering a safe, ethical and inclusive workplace and spends time engaging with a diverse cross-section of employees, as well as monitoring and assessing the Group's culture. These insights help inform the Board's discussions on health, safety and environmental matters, in monitoring progress in relation to embedding ethical conduct and implementation of the Morgan Code, and in strengthening the capabilities of our leaders and teams. At a local level, leadership teams use feedback from surveys, focus groups, pilot groups, manager one-to-one conversations and employee communications to shape engagement activities with employees. At a Group level, we solicit feedback through our social media channels both internally and externally, and through employee satisfaction platforms such as Glassdoor. At all levels we engage on subjects important to our people including: mental health at work, safety, the environment, developing a diverse and inclusive culture, and the important role of community and charity.	We treat our suppliers as an extension of our business and therefore expect them to uphold the same high standards we set for ourselves. To achieve this, we are in constant dialogue with our suppliers to address any issues and maintain productive relationships. We have published a new Supplier Code of Conduct which provides a set of minimum conduct standards that we expect from our suppliers globally. Our Supplier Code focuses on treating people fairly, complying with health and safety rules, protecting the environment, and adhering to important ethics and compliance obligations.	We engage with both current pensioners and those yet to retire through regular pension communications in conjunction with our pension trustees. New employees receive communications about our pension schemes in a bid to promote financial wellbeing.	Our aim is to have a positive impact on the communities we serve, from supporting job creation and skills advancement, to reducing energy and water consumption at our plants. All our efforts and engagements are governed by the Morgan Code, our purpose and our policies on the environment. As our sites and operations are spread across the globe, we have the opportunity to work with many communities. We pride ourselves on engaging at a local level and look to understand each community's priorities and concerns. We also support our employees' involvement in their local community, from charity giving to local fundraising, and from volunteering to health and wellbeing initiatives.
WHAT MATTERS TO OUR STAKEHOLDERS?	→ Capital gain through share price appreciation; → Capital return via dividends; → Profitability and business growth potential; → Quality of governance; → Responsibility and fairness; → The protection of the environment through the use of more sustainable materials and the reduction of carbon emissions, reduction in water use and improved waste management; → Demonstrating our 'good governance' approach throughout our decision making; → Demonstrating the positive contribution we make to society through the employment opportunities we provide, through our interactions with the communities where we have our sites and through the support we provide to our people.	→ Reliable and consistent service; → Quality products; → Product and process innovation; → Ability to solve complex problems; → Application engineering capabilities; → How we source our raw materials; → Environmental impact of the products we produce.	→ Meaningful roles linked to our purpose; → Flexible working; → Focus on wellbeing; → Career development; → A diverse and inclusive culture.	→ Human rights; → Environmental and climate impact; → Quality management; → Cost efficiency; → Ethical trading policies and sustainable sourcing; → Developing long-term relationships.	→ The commitment of the Company to ensure the pension scheme is fully funded and any deficit reduction plan is maintained.	→ Our commitment to the local environment; → Our conduct as a socially responsible organisation; → The positive impact we can have on the community living and working around us; → Employment opportunities.

CHIEF EXECUTIVE OFFICER'S REVIEW

"I AM EXTREMELY PROUD OF HOW OUR PEOPLE HAVE WORKED TOGETHER THIS YEAR, LOOKING OUT FOR EACH OTHER AND DELIVERING FOR OUR CUSTOMERS. WE MADE FURTHER PROGRESS WITH THE EXECUTION OF OUR STRATEGY, STRENGTHENING OUR CAPABILITIES AND IMPROVING THE SUSTAINABILITY OF OUR BUSINESS."

Pete Raby
Chief Executive Officer

2021 was the second challenging year with the COVID-19 pandemic driving various restrictions on mobility and activity around the world. Demand recovered strongly across the global economy following the sharp slowdown in 2020, and the combination of high demand and the pandemic led to supply chain disruptions, and inflation in materials and labour in various parts of our business. Nevertheless, in spite of these challenges, we have made good progress as a business, with further implementation of our strategy and progress against our long-term goals. This resulted in strong growth and saw margins at their highest point in more than 20 years.

COVID-19

We have maintained our COVID-19 controls across the business as needed, in line with the requirements of local jurisdictions and our Group COVID-19 standards. Our employees have been diligent in looking out for one another and following our protocols to keep each other safe. Sadly, we have seen further loss of life due to the pandemic, and our thoughts are with all those affected.

SUSTAINABILITY

Our purpose is 'to use advanced materials to make the world more sustainable and to improve the quality of life'. In 2021, we set out five aspirations for our business together with goals for 2030. We have made good progress against each of these, and we are starting to see that reflected in some of our KPIs:

1. **'Zero harm' to our employees, with a 2030 goal of a lost-time accident rate of 0.1.** Our lost-time accident rate in the year was 0.22 compared to 0.18 in the prior year. We launched a major refresh of our approach to safety during the year, with training being deployed to all employees focusing on our safety culture. This formal training will complete during 2022 and the changes will be sustained by our leaders in their daily engagement with our teams, and via follow-up training on specific safety topics through the year. We have also continued to invest in safety improvements across our business to improve the quality and safety of our infrastructure.
2. **A CO_2e net zero business by 2050, with a 2030 goal of a 50% reduction in scope 1 and 2 CO_2e emissions,** additionally we will start to measure scope 3 emissions from 2023 onwards, with coverage increasing over time. Our teams across the business have embraced this challenge and put in place plans to improve our energy efficiency and switch to zero-carbon energy sources. During the year, we reduced our absolute CO_2e emissions by 17%.
3. **Use water sustainably across our business, with 2030 goals of reducing water use and water use in high-stress areas by 30%.** We have launched a number of capital projects to recycle water and improve water efficiency. They started to deliver some benefits in 2021 and will drive further improvements in 2022. Our water usage in the short-term increased by 15%, driven by business growth and changes in mix. Our water usage in stressed areas increased by 9%. We expect to make progress on reducing water usage in 2022 as our projects start to deliver.
4. **A workforce reflective of the communities in which we operate, with a 2030 goal of 40% of our leadership population being female.** At the end of 2021, 29% of our leadership population were female, compared with 30% in the prior year. We are making a wide range of changes to improve our diversity, from amending policies, to training and changes in our approach to recruitment. We have also established our first employee resource group, Women@Morgan. It comprises a diverse group of women from across the business; they will review our approach and develop and drive changes to help us support women through their careers in our business.
5. **A welcoming and inclusive environment where employees can grow and thrive with a 2030 goal of a top-quartile engagement score.** We conducted an employee engagement survey in the fourth quarter of 2021 to understand how our employees are feeling and what we can do to improve. Our engagement score was 50%, a reduction from the 55% we scored when we last surveyed our people in 2019. We have much we can do to improve and will be communicating the results and developing plans in the early part of 2022.

DELIVERING OUR STRATEGY

Beyond our focus on sustainability, we have two priority areas where we want to develop our capabilities further:

1. **Delighting our customers.** Following on from our foundational work on sales effectiveness, we are working to shape our product and service offerings further based on customer needs, with the overall objective of making our business more customer centric. We will be gathering customer feedback during 2022 through a range of channels and using that to understand our customer segments in more detail. This will enable us to tailor our product, service and support offerings more closely to customer needs.
2. **Innovating to grow.** We want to accelerate our growth, by winning in our core markets and increasing our exposure to four faster-growing market segments: clean energy, clean transportation, semiconductors and healthcare. We have been focusing our product development and business development efforts in these markets over the last several years to develop new and differentiated products that solve hard problems for our customers. During 2021 the organic revenue growth in these segments was 22% (excluding one-off solar projects®), and this represented around 20% of our revenue overall.

We have concluded our restructuring programme during the year by completing the last of our planned site closures as we move volumes to more efficient plants around the Group. This has improved our robustness as a Group, concentrating work where we have more scale and, in line with our targets, has delivered £20 million of annual savings by the end of 2021. Full-year run-rate benefits of £23 million for 2022 remain unchanged.

GROUP FINANCIAL PERFORMANCE

The business grew strongly during the year reflecting good end-market demand and good execution by our teams. This led to a strong overall financial performance with the revenue growth driving expansion in profitability and cash flow.

- Group revenue in 2021 was £950.5 million, 4.4% ahead of the prior year at reported rates and 10.3% higher on an organic constant-currency® basis;
- Statutory operating profit was £113.1 million, profit before tax was £104.3 million, basic earnings per share was 25.9p;
- Adjusted operating profit® was £124.5 million representing adjusted operating profit margin® of 13.1%;
- Group adjusted earnings per share® was 27.2p (2020: 19.0p);
- Basic earnings per share from continuing operations was 23.9p (2020: loss per share 8.6p);
- Net capital expenditure® was £28.1 million (2020: £28.6 million), with investment focused on health, safety and environmental improvements, investments in efficiency, select capacity expansion and improvements to the underlying infrastructure of the Group;
- Free cash flow before acquisitions, disposals and dividends® was £66.2 million (2020: £72.4 million);
- Net debt excluding lease liabilities® was £46.7 million, with a net debt® excluding lease liabilities to EBITDA® ratio of 0.3x.

Overall, our results demonstrate the improvements we have made to the business in the last six years, with significant expansion in adjusted operating profit margins arising from both the growth in the business and the benefits of our restructuring programme.

OUTLOOK

We have seen good order momentum coming into the year and anticipate organic revenue growth of 4 to 7% in 2022, assuming no significant change in market momentum. With our investments in new products and new technologies, we plan to increase further our exposure to our faster growing segments (clean energy, clean transportation, semiconductors and healthcare), and to continue to win in our core markets.

We will see higher inflation in 2022 and expect higher pricing and continuous improvement to offset this. We expect our margins to expand further reflecting the drop-through on our organic growth and the remaining full-year benefits from our restructuring programme.

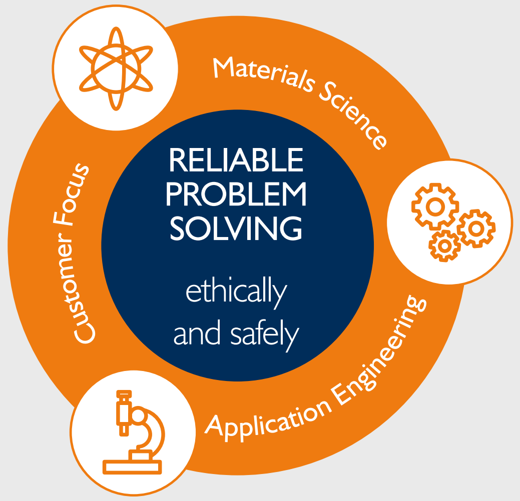
I would like to thank our employees for their outstanding commitment and support during the year as they have cared for each other while working diligently to meet the increased demand from our customers.

Pete Raby
Chief Executive Officer

OUR STRATEGY IN ACTION

STRATEGY AND PURPOSE

We have a strategy to make sure that we are the leaders in our field, with the customer and materials insight to apply our capabilities quickly and effectively.



OUR STRATEGY

Our strategy builds on our strengths and focuses the Group on scalable businesses in attractive markets, and on the development of our three core capabilities in customer focus, application engineering and materials science. To support our efforts in bringing together the parts of our strategy and to achieve our ESG goals we have three new execution priorities:

To create a 'big positive difference' making sure we govern our business the right way, looking after the environment, looking after our people and operating to high ethical standards. This priority supports our focus on living and breathing our commitments on inclusion, treating people fairly, reducing waste, managing our water consumption, and reducing emissions.

To 'delight the customer' – following on from our foundational work on sales effectiveness, we are working to shape our product and service offerings further based on customer needs, with the overall objective of making our business more customer-centric. We will be gathering customer feedback during 2022 through a range of channels and using that to understand our customer segments in more detail. This will enable us to tailor our product, service and support offerings more closely to customer needs.

To 'innovate to grow'– many of our customers have an increasing need to reduce their energy consumption and CO_2e emissions; these customers need our help. This priority supports our focus on working with the customer to innovate in traditional heavy industries whilst also contributing to greener technologies for the future.

We want to accelerate our growth, by winning in our core markets and increasing our exposure to four faster-growing market segments: clean energy, clean transportation, semiconductors and healthcare. We have been focusing our product development and business development efforts in these markets over the last several years to develop new and differentiated products that solve hard problems for our customers.

- Clean energy. Growth in energy storage, brushes and slip rings for onshore wind applications and ceramic and carbon products used in solar panel manufacture;
- Clean transportation. Growth in our rail collector business for metro and main rail applications, and in water and vacuum pump components for electric vehicle applications;
- Semiconductors. Growth from carbon and ceramic consumable supply into key semiconductor process steps including crystal growth, deposition, lithography and etch;
- Healthcare. Growth from medical imaging and supply of low temperature insulation for medicine and vaccine transport and storage.

During 2021, organic constant-currency* revenue growth in these segments was 22% (excluding one-off solar projects*), and they represented 20% of our revenue overall.

OUR PURPOSE

Our purpose is 'to use advanced materials to make the world more sustainable and to improve the quality of life'. This purpose guides our actions: it underpins our work to reduce our environmental impact, informs how we treat our people, and ensures we fulfil our responsibility for good corporate governance.

We deliver on our purpose through the products that we make and the way that we make them.

- We improve the quality of life by supporting medical diagnostics with our power tubes in medical scanners. Our Vacuum Insulation Panels are used to insulate COVID-19 vaccines as they are transported. Our feedthroughs are at the core of cochlear implants and our seals are used in blood pumps. These products transform people's lives;
- Our products help keep people safe. We are proud to design fire protection in everything from cars to tunnels, and ships to oil platforms;
- We design and manufacture our products to help customers save energy;
- Our carbon brushes are integral to wind turbines and power generators and enable electrified rail transport. Our ceramic rollers are used to make thin-film solar panels, our insulation is used in solar towers and steam turbines, and our ceramic cores are used to make more efficient industrial gas turbines. These are all products which promote a more sustainable and environmentally secure future for our planet.

MAKING A POSITIVE DIFFERENCE

At Morgan Advanced Materials we are driven to live our purpose, by creating more sustainable products and manufacturing processes, and by creating an inclusive workplace. We support a number of awareness days throughout the year as a way to celebrate, educate and engage ourselves and others, and to highlight our desire to make a big positive difference.

"BEING VISUALLY IMPAIRED IMPACTS MOST PARTS OF MY LIFE, WHICH IS WHY MY GUIDE DOG PIPPIN GOES EVERYWHERE I GO, WHETHER IT BE TRAVELLING FOR MY HOBBIES OR WORK. SHE IS MY EYES AND KEEPS ME SAFE."

Paul
Materials Procurement Co-ordinator

Awareness days include demonstrating support for positive changes to our environment and highlight the need for inclusivity, diversity and equity.

Our Materials Procurement Co-ordinator Paul, shares his experience of adapting his work environment to support his visual impairment. For Paul this involves an additional member of the team, dedicated to his needs, guide dog Pippin.

When Paul's sight was impacted, he was supported by amazing resources from Guide Dogs for the Blind on what to expect when working with a guide dog in the workplace. The team at Morgan then shared the information with everyone in Paul's office, which made his experience easier, and meant everyone knew what to expect.

Alongside Pippin's assistance, the team have worked to support Paul by providing specialist equipment, such as magnification devices and software through the UK Government's 'Access to Work' scheme. These adjustments enable Paul to carry out all the tasks that his role requires, and mean we get Paul and his expertise in our business.

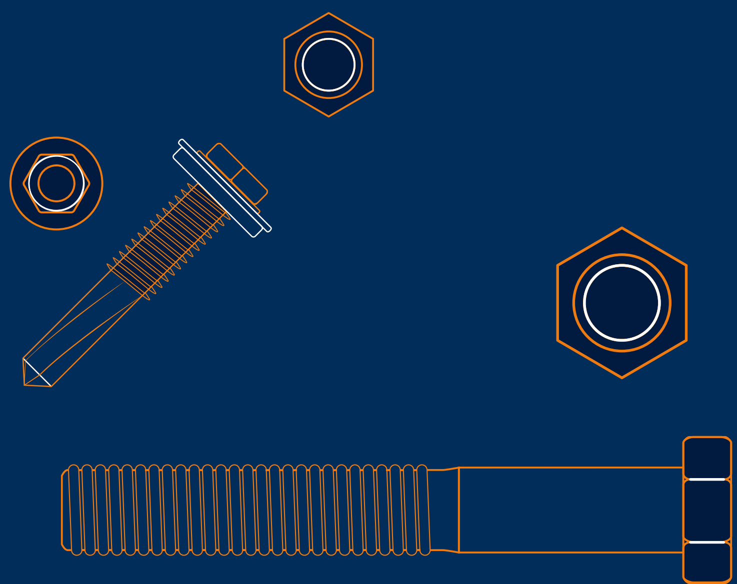
In addition, the team have introduced a flexible working arrangement, allowing Paul to adjust his hours of working to suit public transport timetables, whilst maintaining a full-time working week. Paul has even moved his desk to allow space for Pippin to settle in, and with the aid of a personal risk assessment, he is able to access the production office and break area, which are connected with a green gangway.

Paul shares his advice for creating a more inclusive workplace: "In my experience, if people know you have a disability, they are more likely to help you. So I think it is always better to be open about your disability, as this makes people aware that you may not see all the risks around you. I am lucky to work with colleagues who constantly look out for one another, which helped me to share my disability and gain their support."

OUR STRATEGY IN ACTION

DELIGHTING THE CUSTOMER

Our success comes from aligning everything we do to focus on the customer, and one of the ways we aim to delight a customer is by incremental improvements to our product offering.



Through continuous improvement efforts in 2021 we have delivered savings in time, energy and labour across the business. Examples of this include:

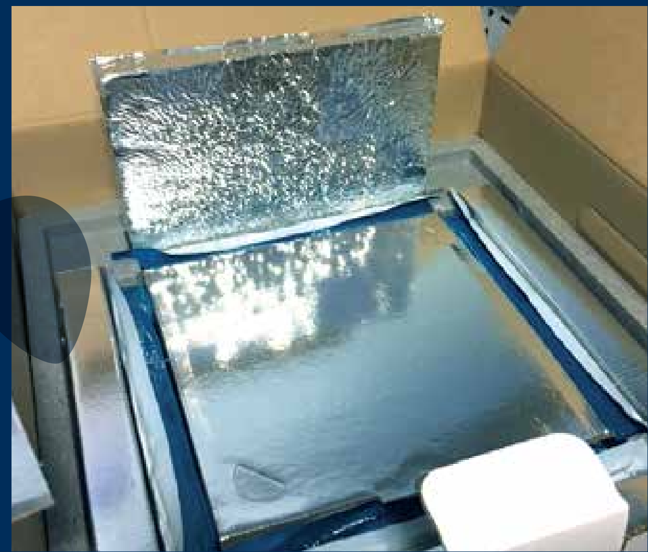
- Halving the production lead times for spot maintenance spare parts;
- Creating a 'daily group accountability' (DGA) process to ensure focus on safety, quality, delivery, inventory and productivity;
- Improving our saw blade replacement process, enabling a 40% work time reduction; and
- Implementing our new fully virtual sales effectiveness training, which allows us to deliver insights in more languages, ensuring that our people are better equipped to focus on our customers.

Our Commercial Process Manager in Augusta, Justin, commented on the impact of the training:

"VITAL TO MORGAN'S SUCCESS IS THE ABILITY OF OUR TEAMS TO SPEAK THE SAME 'SALES LANGUAGE' AND HAVE A COMMON GLOBAL APPROACH; THIS PROGRAMME ENABLES JUST THAT. OUR AIM IS TO DELIGHT OUR CUSTOMERS AND THIS TRAINING IS AN IMPORTANT FOUNDATIONAL PILLAR OF THAT JOURNEY."

INNOVATING TO GROW

We deliver on our purpose through the products we make, as well as the way in which we make them.



We are developing the next generation of materials, processes and solutions to meet our purpose and position our business for the future.

- The thermal properties of our products have long been known as a key way to manage heat, but in 2021 it was our ability to manage cold that provided our latest innovation. In light of the requirement to store COVID-19 vaccines at 2-8°C, Morgan's innovative Vacuum Insulation Panels (VIPs) provide the perfect solution to ensure that this precious cargo is correctly insulated in transit;
- In 2021 we announced a new research partnership with the Faraday Institution. This 15-month collaboration is dedicated to investigating the use of oxide ceramics as electrolytes. The initial focus has been on investigating lithium-ion conducting fibres for composite solid-state electrolytes, which might in turn support better electric vehicle (EV) batteries;
- Our partnership with the National Graphene Institute, in Manchester, UK, supports our understanding of interfacial interactions between different components of a composite. We are focused on carbon-related technology developments using new materials, such as graphene. This collaboration allows us to work with cutting-edge technology daily, whilst utilising the research in real-world applications throughout Morgan Advanced Materials.

IMPROVING QUALITY OF LIFE WITH OUR SUPPORT OF THE COVID-19 VACCINE DISTRIBUTION

BUSINESS MODEL

Our purpose is to use advanced materials to make the world more sustainable, and to improve the quality of life.

This purpose guides our actions: it underpins our work to reduce our environmental impact, informs how we treat our people, and ensures we fulfil our responsibility for good corporate governance.

We play an important role in society, using our deep materials science knowledge and process capability to solve customer problems and deliver on our purpose.

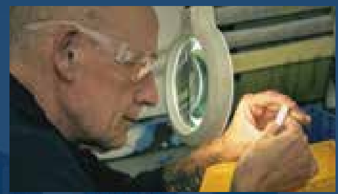
- → WE SUPPORT THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS AND HAVE SIGNED UP TO THE SCIENCE-BASED TARGET INITIATIVE (SBTi);
- → WE AIM TO BE A CO_2e NET ZERO[1] BUSINESS BY 2050.

1 Excludes indirect emissions generated by our supply chain, distribution network and employee travel.

TO FIND OUT HOW
our people work with our communities visit our website at
www.morganadvancedmaterials.com/community

TO FIND OUT MORE
about our products and services visit
www.morganadvancedmaterials.com/whatwedo

WE UTILISE OUR DISTINCT COMPETENCIES…



Our strategy builds on our strengths and focuses the Group on scalable businesses in attractive markets.

We have three core capabilities:
- → Materials science;
- → Application engineering;
- → Customer focus.

We serve markets that are growing and where we have room to grow, and where our customers value our differentiated products and services.

The Group's products are produced within two global divisions and five global business units.

Our Thermal Products division, organised in two global business units:

- **Thermal Ceramics**
- **Molten Metal Systems**

Our Carbon and Technical Ceramics division, organised into three global business units:

- **Electrical Carbon**
- **Seals and Bearings**
- **Technical Ceramics**

TO SERVICE MARKETS RANGING FROM INDUSTRIAL TO HEALTHCARE.

Our thermal products are used in high-temperature industrial processing of metals, petrochemicals, cement, ceramics and glass, and by manufacturers of equipment for automotive, marine, aerospace, and domestic applications in insulation and fire protection.

Our electrical carbon products are used in the rail industry, for power generation, in the mining of iron and steel and to enable wind power generation.

Our seals and bearings products are used in pumps for industrial and domestic use, or other sealing applications. We use advanced carbon/graphite, silicon carbide, alumina and zirconia materials to engineer lightweight, low-friction bearings and seals.

Our technical ceramics products are used in selected segments of the electronics and semiconductor, energy, healthcare, industrial, petrochemicals, security and transport markets, typically in close collaborative customer relationships.

OUR PRODUCTS DELIVER ON OUR PURPOSE…

We manufacture advanced ceramic materials, products and systems for thermal insulation in high-temperature environments.

We engineer systems for the safety of people and equipment in demanding applications. Our products help customers, especially those operating energy-intensive processes, to reduce energy consumption, emissions and operating costs.

We manufacture an extensive range of high-performance, energy-saving crucibles and foundry consumables for non-ferrous metal melting applications.

We produce a wide range of products which are used to transfer electrical current between stationary and rotating or linear moving parts in motor, generator, and current collector applications.

We create high-performance self-lubricating bearing and seal components, used predominantly in pumps.

We engineer high-performance functional and structural ceramic materials, components and sub-assemblies to address customer-specific technical challenges.

CONTRIBUTING TO THE ECONOMY AND SUPPORTING AN IMPROVED SOCIETY FOR OUR PEOPLE, CUSTOMERS, AND INVESTORS.

The economic value we generate includes wages paid to our people, purchases from local and global suppliers, taxes, and dividends – in addition to indirect benefits arising from expenditure by our suppliers, customers and employees.

Our business contributes positively to society. We support the skills development of our people, from apprentice level and operators, through to senior executives.

Our global makeup reflects the communities we serve with representatives from many backgrounds, and we strive to promote inclusivity and opportunity for all.

Our operations look to benefit our environment through the products we design and manufacture, products which make more efficient use of resources and can improve the quality of life.

SUSTAINABILITY AND RESPONSIBILITY

NON-FINANCIAL INFORMATION STATEMENT

The information which follows is intended to explain our non-financial information, the relevant Group policies, the due diligence processes we follow to embed these policies and their effectiveness.

Our business model on pages 14 and 15 provides an insight into the key resources and relationships that support the generation and preservation of value within Morgan.

	Policies	Due diligence in pursuance of policies	Outcome of policies and impacts of activities	Related principal risks
EMPLOYEES	Our Environmental, Health and Safety (EHS) Policy is designed to promote a culture of 'zero harm' for our employees, contractors and visitors and eliminate and control health risks proactively. A detailed description of our safety programme and safety performance is set out on pages 18 and 19 of the Sustainability and Responsibility section.	→ Audits under the EHS programme; → Annual self-certification process; → 'Speak Up' hotline; → All other applicable regulatory reporting.	Our KPI in relation to lost-time accident frequency is set out on page 37. Our safety performance is set out in detail on pages 18 to 19 of the Sustainability and Responsibility section.	See page 40 of the Risk Management section.
	The Group has an overarching policy designed to attract, retain and engage talented people and support an inclusive, safe and ethical workplace. The Group policy is supplemented by a wide range of detailed policies specific to the business or jurisdiction.	→ A detailed description of the methods used to support the Group's people policies is set out on pages 28 to 31 of the Sustainability and Responsibility section.	Our performance in relation to our KPI on employee retention is set out on page 37. Our workforce composition and information on gender diversity are set out on page 31.	The attraction, retention and engagement of people is not considered a principal risk.
ENVIRONMENTAL MATTERS	Our Environmental Policy sets out the Group's commitment to the protection of the environment in the communities where we operate, work and live. The Policy sets out our intention to reduce energy and water use, reduce our dependence on natural resources, and maximise the positive impact of our products. Detailed information on implementation of our Environmental Policy is set out on pages 20 to 24.	→ Data gathering on greenhouse gas (GHG) emissions; → Our submission to the Carbon Disclosure Project (CDP); → Annual self-certification; → Our 'Speak Up' hotline; → Internal audit processes; → We have engaged ERM CVS to conduct third party data assurance of the environmental metrics for 2021.	See pages 20 to 24 of the Sustainability and Responsibility section for information on our GHG emissions, and progress in 2021 in respect of CO_2e intensity, total energy use, water use and withdrawal, waste intensity and waste generation. Minimising our environmental impact helps to protect the environment and enables us to attract talented employees and to win new business from customers.	See page 40 of the Risk Management section.
SOCIAL MATTERS	We do not have formal policies on community engagement, but employees are encouraged to support their community through a range of activities, for example volunteering and fundraising for good causes.	→ Activities are reported internally, including on our social media platforms.	Our business and our employees are more deeply connected to our local communities.	Although not a principal risk, social risk, and specifically the potential difficulties of recruiting to replace an ageing direct workforce in parts of the business, is an emerging risk.
HUMAN RIGHTS	Our Human Rights Policy establishes our commitment to protect the human rights of everyone who works for the Company and all those who have dealings with us. The Policy is supplemented by the Morgan Code.	→ Monitoring of compliance with the Morgan Code; → Due diligence processes associated with new suppliers and our supply chain; → Publication of our Modern Slavery Transparency Statement on our website; → More information is contained on pages 28 and 35 of the Sustainability and Responsibility section.	No incidents of human rights abuse or modern slavery were identified during 2021.	See page 43 of the Risk Management section.
ANTI-BRIBERY AND ANTI-CORRUPTION	Bribery, Corruption and Facilitation Payments Policy, Ethical Trading Policy, Conflicts of Interest Policy and the Morgan Code. Together these policies seek to prevent bribery and ensure that our business is undertaken in an ethical manner and in compliance with all applicable anti-bribery and anti-corruption laws. More information on the policies and processes to prevent bribery and corruption are contained on pages 34 and 35 of the Sustainability and Responsibility section.	→ Detailed procedures in place designed to prevent anti-bribery and anti-corruption, supported by explanatory manuals and the ethics and compliance programme of work; → Regular training for relevant employees is undertaken; → Any reports of breaches in compliance are investigated, reported to the Audit Committee and appropriate action is taken; → A description of the control environment, the internal audit function and the processes for the review of investigations by the Audit Committee are set out in the Report of the Audit Committee on pages 74 to 78.	During the year more than 99% of relevant employees participated in the Group's ethics e-learning programme, which included specific training modules on anti-bribery and anti-corruption. 90 reports were made to the Group's whistleblowing hotline during 2021, including reports on concerns relating to potential unethical conduct. The reports varied in their nature and materiality, with certain matters requiring the support of external advisers and giving rise to disciplinary action against employees for breaches of Group policies.	See page 43 of the Risk Management section.

OUR APPROACH TO ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG)

In March 2021, we set stretching targets to improve our environmental, social and governance performance and become a more sustainable business. We take these commitments seriously and have plans in place to deliver against them in the coming years, making a step change in our performance.

We are making investments in our manufacturing processes and technology to reduce the environmental impact of our business. We are also investing in new materials and process technologies that improve the performance of our products, to deliver greater environmental and safety benefits to our customers.

We are monitoring emerging ESG risks against the changing business landscape, alongside collecting stakeholder feedback, and we continue to work to position our business for sustainable growth.

Our workplace policies and practices as defined in the Morgan Code underpin our efforts to reach our ESG goals.

Sustainability and environmental stewardship have been integrated into our daily operations and across our corporate functions. We have invested in manufacturing technology to reduce our carbon emissions and we continue to help our customers with design and material selection to enable them to reduce their own carbon emissions. We also use our engineering tools and design capabilities to provide our customers with innovative product options that bring positive benefits.

ESG PRIORITIES

	OUR ASPIRATION	OUR 2030 GOALS[2]
PROVIDE A SAFE, FAIR AND INCLUSIVE WORKPLACE 3 GOOD HEALTH AND WELL-BEING 5 GENDER EQUALITY 8 DECENT WORK AND ECONOMIC GROWTH	→ 'Zero harm' to our employees; → A workforce reflective of the communities in which we operate; → A welcoming and inclusive environment where employees can grow and thrive.	→ 0.10 lost-time accident rate, on the way to 'zero harm' by 2050; → 40% of our leadership population will be female; → Top-quartile engagement score of 75% or greater.
PROTECT THE ENVIRONMENT 6 CLEAN WATER AND SANITATION 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION	→ A CO_2e net zero business by 2050[1]; → Use water sustainably across our business as defined by our 2030 goals.	→ 50% reduction in scope 1 and scope 2 CO_2e emissions[2]; → 30% reduction in water use in high and extremely high stress areas[2]; → 30% reduction in total water usage[2].

1 Excludes indirect emissions generated by our supply chain, distribution network and employee travel.

2 Reduction targets shown are compared with a 2015 baseline.

SUSTAINABILITY AND RESPONSIBILITY

HEALTH AND SAFETY

We are working towards our aspiration of 'zero harm' to all our employees. We are committed to conducting all our activities in a manner that builds a caring safety culture and develops a world-class safety system that supports this effort.

TO FIND OUT MORE
Visit our website to find out more about how we operate and our safety policies
www.morganadvancedmaterials.com/safety

"AFTER THE TRAINING WE SEE MORE OFTEN THAT PEOPLE PAY MORE ATTENTION AND TALK TO THEIR COLLEAGUES IF THEY SEE SAFETY ISSUES, SUCH AS FORGOTTEN SAFETY GLASSES OR WALKING IN THE WAY OF THE FORK-LIFT. WE'VE ALSO SEEN THAT THE PEOPLE WHO RECEIVE THE COMMENTS ARE VERY THANKFUL AND THAT EVERYONE IS HAPPY THAT OUR PEOPLE ARE LOOKING OUT FOR EACH OTHER."

Armin

OUR 2021 PERFORMANCE

We have continued to work in a stringent manner with regard to COVID-19, and have maintained high standards across our sites in line with World Health Organization and local jurisdiction guidance.

Our key metric, the lost-time accident (LTA) frequency (namely, the number of LTAs per 100,000 hours worked) increased to 0.22. There was also a rise in the number of LTAs (+8 vs 2020). We have refreshed our approach to safety with the goal of improving our safety culture, seeking to build a more caring safety culture where all of our people look out for each other and we learn from the incidents we experience. We are delivering these changes through our 'thinkSAFE' programme.

We have performed well against leading indicator metrics. Our near miss reporting has been strong at 3.3 per employee vs target of 2.5, our site 'Don't Walk By' programmes have been very successful with a 94% action closure rate, our audit action closure rate was 98%, and all businesses achieved their visual safety leadership targets.

	2021	2020	2019	2018	2017
Lost-time accidents[1]					
Number of LTAs	**37**	29	27	42	73
Lost-time accident frequency					
LTAs/100,000 hours worked	**0.22**	0.18	0.14	0.22	0.38

1. A lost-time accident (LTA) is defined as an accident or work-related illness which results in one or more days' lost working time.

In 2021 we successfully trained over 130 'thinkSAFE' ambassadors. These ambassadors are running interactive training workshops for every Morgan Advanced Materials employee, to bring our 'thinkSAFE' commitments to life. They allow for self-reflection and realisation of the role each of us plays in supporting a safe environment.

We have received excellent feedback from the ambassador training and workshops, and we are starting to see the impact and changes to behaviour as a result. This training will continue throughout 2022.

A key part in changing our safety culture is learning from what we do well. In 2021, we launched a positive recognition feature in our 'Don't Walk By' app. This gives us the platform to capture what we are doing well and build upon our successes, not just our failures.

We have continued our quarterly topics with a focus on safety conversations, discussing with our people what a caring culture looks like and why it is important.

Our root cause analysis reviews have continued for lost-time accidents and significant near misses. We seek to learn as much as we can from incidents rather than blame individuals for their failures. We have created videos from some of our more serious incidents to help share learnings across the Group, and we continue to proactively capture our near misses to maintain a focus on the leading indicators for safety.

Progress has also been made on our safety alert programme. We completed a review of all lifting equipment across the business and implemented a standard that all sites have applied. The method and collaborative approach will form the basis of our implementation approach for the future.

Our risk programme also progressed with 'hazard profiles' carried out for all our sites and global business units. This provides guidance on where to focus efforts, based on the sites' individual profiles.

POLICY AND FRAMEWORK

Our Health and Safety Policy provides all our locations with minimum standards, advice and guidance. Our minimum standard is based on current requirements from the UK and US legislative codes and associated best practice. If a local in-country standard is higher than these, the sites are required to achieve the local standard. There are a number of key sub-policies. The compliance audit programme is conducted against the health and safety framework, systems and KPIs, with a focus on high-risk items. All our manufacturing facilities are reviewed on a four-year rolling cycle.

TO FIND OUT MORE
Visit our website to find out more about our Health and Safety Policy
www.morganadvancedmaterials.com/policy

POLICY GOVERNANCE

Governance of the Health and Safety Policy is achieved through performance monitoring and the management and mitigation of identified risks, to drive continuous improvement in our health and safety performance.

We are committed to providing effective leadership in pursuit of a safe and healthy workplace. The Chief Executive Officer, global business unit leadership teams and site management teams are responsible and accountable for health and safety performance. The Group's Health and Safety Director is responsible for Group direction and the oversight of the Group's strategic programmes. There are health and safety leaders and resources in each of the global business units and their locations.

Our Group-level processes include a monthly review of performance and progress in the implementation of our improvement plans by the Executive Committee, and regular review of performance by the Board.

2022 FOCUS

We have a two-pronged approach to creating a 'zero harm' business. The two areas are:

1. 'thinkSAFE' – developing our culture
   - The caring culture we are aiming for is underpinned by our 'thinkSAFE' commitments. We are working through the roll out of commitment workshops to bring these commitments to life for all our employees throughout 2022;
   - Leading the commitments. We have developed an additional workshop, specific to leaders, outlining the mindset, skillset and toolset we require of our leaders to maintain momentum on our cultural journey. This will be rolled out in 2022;
   - New activities including a cultural survey, refreshed quarterly topics, and monthly scenarios, will be delivered throughout 2022. These activities align and empower our people so that they live and breathe the 'thinkSAFE' commitments, every time, all of the time.
2. Systems – robust process safety
   - We aim to develop our EHS system further with a focus on robust implementation. We will work collaboratively across all business units to improve our processes and enable a longer-lasting impact at all our sites;
   - Hazard profiles documented in 2021 provide site-specific focus areas, which allow for targeted improvement at each site. The profiles will be used to devise site improvements plans in 2022.

'thinkSAFE'

At Morgan Advanced Materials, 'thinkSAFE' is a mindset. This means we approach every moment of every working day with safety in mind. We do this by being curious not complacent, by looking out for each other and by speaking up about safety issues. We consider safety in everything that we do because we care.

The five Morgan 'thinkSAFE' commitments provide guidance on how we should behave and remind us that:

- We care, and we consider the impact of our decisions;
- We must be trained and always follow the safety rules;
- We take 5 for safety and stop for danger;
- We don't walk by and we report safety problems we identify;
- We challenge positively and respect those who challenge us.

We cannot reach our long-term aspiration of 'zero harm' without the dedication and commitment of our people to creating and maintaining a safe working environment. Here are some of the things they did in 2021:

- At our Pachuca, Mexico site, the team celebrate safety actions with a 'Safer Employee of the Month' award ceremony. This helps to recognise and reward those who have gone the extra mile for safety at the site;
- Our Aurangabad, India team organised a COVID-19 vaccination camp, to help protect their team from the virus. The vaccination camp was available to all staff, including shop-floor workers, casual labourers, trainees and family members.

"FOLLOWING THE TRAINING I HAVE A GREATER UNDERSTANDING OF THE IMPACT WHICH I HAVE; IF YOU DON'T 'THINKSAFE' YOU WON'T ACT SAFE AND MAKE SAFER CHOICES."

Prasant

SAFETY METRICS

The Group's lost-time accident frequency in 2021 was

0.22

2020: 0.18

The number of reported lost-time accidents in 2021 was

37

2020: 29

SUSTAINABILITY AND RESPONSIBILITY

ENVIRONMENT

At Morgan Advanced Materials we are committed to a sustainable future. Our aim is to ensure that our products and manufacturing processes are designed, built and managed in a way that enhances their value to society and our environment.

OUR PROGRESS IN 2021

Our approach to sustainability continues to evolve as we bring into scope more and more elements related to our operations, processes and products.

The Group's sustainability performance, compared with 2020, has been impacted due to the business's growth after the COVID-19 pandemic. The environmental metrics results are as follows:

- CO_2e intensity[1] 20% decrease;
- Absolute CO_2e[1] 17% decrease;
- Total energy use 7% increase;
- Water use 15% increase;
- Water use in stressed areas 9% increase;
- Waste intensity 7% increase;
- Waste recycling 3% increase.

1. Comparative information has been restated to exclude CO_2e emissions from carbon-neutral raw materials (reported separately as biogenic emissions included on page 22).

THE IMPACT OF CLIMATE ON OUR BUSINESS

Scientists have identified that one of the most important impacts of climate change will be rising sea levels. Using climate scenario analysis modelling methodology, we have evaluated the impact of a 1.5°C to a 4°C rise in global temperatures on our businesses.

We have identified 10 of our manufacturing locations that could be negatively impacted by rising sea levels. We expect to finalise the climate scenario analysis modelling in Q1 2022. Based on these results, we will develop contingency plans with our local sites to enable manufacturing to shift to alternative sites should the need arise.

TO FIND OUT MORE

Visit our website to learn more about how we are becoming a more sustainable business **www.morganadvancedmaterials.com/sustainablebusiness**

WATER FOOTPRINT

Water scarcity is an increasing challenge in many parts of the world. As the world tackles climate change, our bio-energy demands will exacerbate water demand, meaning many will face water scarcity due to both physical shortages and scarcity in access.

We use water in a number of our manufacturing processes, and we recognise that in some instances our water demands are in areas of increasing water stress. By improving our water usage we will positively impact the local communities in which we operate, and therefore society more generally.

By 2030, we will reduce our total withdrawal of water by 30%, with the same goal in areas of high and extremely high stress.

Approximately 21% of our manufacturing operations are in these water stress areas. For stressed areas we are 9% higher in our water withdrawal than 2020 but 12% below our 2015 baseline.

For total water withdrawal, we are 15% higher than 2020 levels, but 26% below our 2015 baseline. Overall, our water withdrawal increase compared with 2020 is primarily due to an increase in production levels, with all of our manufacturing facilities back in full operation after the impact of the pandemic.

We are implementing various water sustainability projects globally. In São Paulo for example, the team has installed a system to collect rainwater for irrigation which reduces the facility's dependence on the stretched city water supply.

WASTE

Through continuous improvement efforts we are reducing all hazardous and non-hazardous waste streams.

Our facilities implemented various projects in 2021 to reduce the generation of waste. Continuous improvements aligned with the 5S methodology (sort, set in order, shine, standardise and sustain) have also been implemented globally. For example, our Martinsicuro site in Italy eliminated the use of lead in its products, therefore eliminating a hazardous waste stream.

During 2021, we also introduced several process improvements to reduce waste generation, including minimising overweight products, fine-tuning equipment to ensure proper thickness and recycling of air pollution control dust collector wastes. In addition, we have stepped up our focus on recycling for all other materials, including wood, cartons, pallets, plastic and jumbo bags.

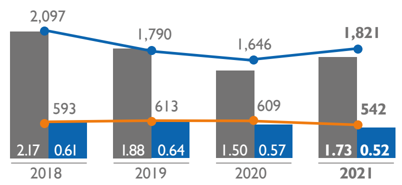
Our waste intensity has increased 7% compared with 2020, due to the business growth after the COVID-19 pandemic.

Recycling has improved by 3% compared with 2020. Our recycling efforts have been dampened by the COVID-19 pandemic, which has led to some restrictions in recycling opportunities (for example, some recycling operators ceased operations and we also saw additional recycling restrictions in China).

TO FIND OUT MORE

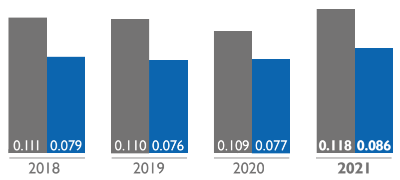
Our CDP, Water Security submission, available at **www.cdp.net**, contains extensive disclosures on our water risks, opportunities, impacts and mitigating actions.

WATER



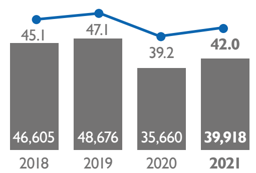
1. Water from all sources, including process, irrigation and sanitary use.
2. Constant-currency* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

WATER WITHDRAWAL IN STRESSED AREAS



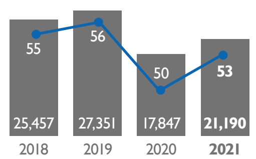
1. Water from all sources, including process, irrigation and sanitary use in countries of high and extremely high water stress as identified by the World Resource Institute.

WASTE



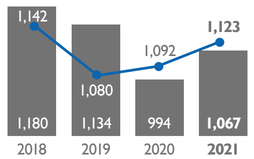
1. Constant-currency* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

RECYCLE



1. Energy from all sources.
2. Constant-currency* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

ENERGY



1. Energy from all sources.
2. Constant-currency* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

USING WATER SUSTAINABLY

Our 2030 water goals are to reduce our overall water usage by 30% and to reduce our water usage in high stress areas by 30%.

It takes a lot of energy to make water safe to drink, and to treat sewerage, so by reducing our water consumption, we are reducing our carbon footprint too. Here are some examples of the progress we have made in 2021:

- St Marys, USA – closed loop system. Installed a cooling tower, which allows the same water to be used to cool machines, with no discharge. 90% reduction in water usage;
- Augusta, USA – water recycling. Connected the nozzles used in blowing the product, to the blown water-cooling system. 5.9 million gallons of water saved annually;
- Stourport, UK – water-saving opportunity. The team identified this opportunity in our automated ball-mill cleaning system. By increasing the time interval between the flushing operations we were able to save an estimated 4 million litres of water per year;
- Gujarat, India – rainwater harvesting. Staff at this site focused on conserving and protecting water with the installation of a new rainwater harvesting system.

30%
reduction in overall water usage by 2030

SUSTAINABILITY AND RESPONSIBILITY

ENVIRONMENT *continued*

GREENHOUSE GAS EMISSIONS

Our sustainability agenda includes actions to reduce greenhouse gas (GHG) emissions and combat climate change. As public concern grows, more customers are asking about GHG emissions within the manufacturing process. The increasing demand for low-carbon products and processes, and the need to consider the effects of climate change in general, have had an impact on our long-term strategy. In March 2021, we announced a commitment to reduce absolute GHG emissions (scope 1 and 2) by 50% (against 2015 levels) by 2030.

Drawing on our expertise as a leading innovator of products that reduce our customers' GHG emissions, our focus in 2021 was on improving our own energy efficiency, procuring renewable and clean energy and evaluating the replacement of higher-emission fuels with less-carbon-intensive fuels.

As our planet continues to be impacted by the effects of climate change and population growth, it is imperative that individuals and businesses take responsibility and reduce their environmental footprint. At Morgan Advanced Materials, lowering carbon emissions, growing our renewable and carbon-free energy portfolio and conserving water are our priorities. Procuring renewable and carbon-free energy is beneficial for the environment and we have made significant progress. In the year ended 31 December 2021, 33% of our electricity is procured from renewable and carbon-free sources, compared with 6% in 2020.

By the end of 2021, we had lowered GHG emissions by 33% against 2015 levels and emission intensity by 38%. Our sites are continuing to implement best practice to reduce energy consumption globally, as part of an effort to not only use energy more wisely but also drive down CO_2e emissions.

Metric Tonnes (MT) CO_2e[1]	2015	2016	2017	2018	2019	2020	2021
Scope 1[2]	205,570	202,333	192,229	163,866	137,578	116,552	**122,817**
Scope 2	137,124	135,427	135,590	174,665	181,264	160,126	**107,070**
Total[3]	342,694	337,760	327,819	338,531	318,842	276,678	**229,887**
Biogenic[4]	1,368	1,391	1,627	1,628	913	501	**877**
Total Energy (GWh)	1,222	1,067	1,147	1,180	1,134	994	**1,067**
Intensity (MT CO_2e/£m)[5]	391	346	327	327	304	304	**242**

1. For scope 1 and 2 we report our CO_2e emissions from energy and refrigerants and other process related CO_2e emissions. Carbon emission factors are used to convert energy used in our operations to emissions of CO_2e. Carbon emission factors for fuels are provided by International Energy Agency (IEA). We report our emissions with reference to the latest Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. Scope 2 includes market-based and location-based factors. In 2021, the value of scope 2 GHG location-based only emissions is 124,868 tonnes.
2. Total scope 1 emissions were calculated from the addition of direct scope 1 emissions and process emissions. Carbon emission factors for grid electricity are calculated according to the 'location-based method' and 'market-based' where received. The location-based method reflects the average emissions intensity of the grids on which energy consumption occurs (using mostly grid-average emission factor data). Process emissions disclosed (4,070 tonnes, or circa 3% of scope 1) in 2021 rely on historical calculations that could not be evidenced for assurance purposes.
3. Total emissions include scope 1 and scope 2 only. Biogenic emissions are treated as carbon neutral and reported separately.
4. The GHG Protocol requires that CO_2e emissions from biomass combustion at stationary sources are reported as biomass CO_2e emissions (in terms of total amount of biogenic CO_2e emitted) and are tracked separately from fossil CO_2e emissions. Biogenic emissions have also been updated to reflect an error identified in an emission factor. In previous years biogenic emissions were included as part of our scope 1 emissions and calculated utilising an emission factor of 1.336 MT CO_2e/MT of wood. The factor has been revised to reflect the factors provided by DEFRA of 0.059 MT CO_2e/MT of wood and therefore scope 1 emissions have been restated to remove biogenic emissions.
5. For manufacturing, we have selected an intensity ratio based on sales (on a constant-currency* basis). This aligns with our longstanding reporting of manufacturing performance. Emissions from the combustion of biogenic fuels (such as biomass and coffee husks) within our operations are reported separately from other scope 1 and 2 emissions, as recommended by the GHG Protocol, and are excluded from our intensity ratio calculation. The data also excludes scope 3 emissions and emissions from Company-owned and leased vehicles.

SCOPE 3 EMISSIONS

Morgan Advanced Materials recognises that assessing the Group's value chain emissions is an important part of our long-term sustainability strategy. We aim to work with our key stakeholders and top tier suppliers to reduce indirect emissions and this is Morgan's preliminary step towards minimising product lifecycle impact.

For GHG reporting purposes, we outline its organisational boundary on an operational control basis, and our scope 1 and 2 emissions are reported on this basis; we account for 100% of such emissions from operations over which Morgan or one of its subsidiaries has operational control. Generally, 'scope 3' is the term used to label the indirect GHG emissions resulting from activities in our value chain. Examples are upstream emissions related to the raw materials we consume; downstream emissions from the use of the products we sell; and emissions from both upstream and downstream transportation activities. The scope 3 Standard further categorises these emissions into fifteen distinct categories. However, based on our priorities, we will be focusing on key categories in the upstream and downstream.

We are actively evaluating the following areas:

- → Supplier goods and services. We identified a system to evaluate our suppliers in 2021 and conducted a pilot on our top tier suppliers in terms of climate and other environmental, social and governance (ESG) criteria. Our next steps will be to calculate the GHG Reporting Protocol categories deemed 'relevant' and to evaluate the remaining categories' relevance;
- → Capital goods. We anticipate having a system identified in 2022 to begin our evaluation of scope 3 emissions associated with capital goods using a Life Cycle Analysis (LCA) based method. Systems to conduct LCAs were evaluated and a LCA platform was selected in 2021;
- → Fuel-and energy-related activities. We are currently evaluating systems to account accurately for scope 3 for Fuel-and energy-related activities (not included in scope 1 or 2). We anticipate having a plan defined in 2022 to capture this data. Scope 3 emissions associated with Fuel-and energy-related activities both upstream and downstream will be estimated using various tools such as the GHG Protocol Scope 3 Evaluator and IEA emission data.

Our strategy to address scope 3 emissions is developing. In 2022, we will expand our work with our customers, suppliers, and other stakeholders in our value chain to calculate a scope 3 emissions baseline.

SCIENCE-BASED TARGET INITIATIVE

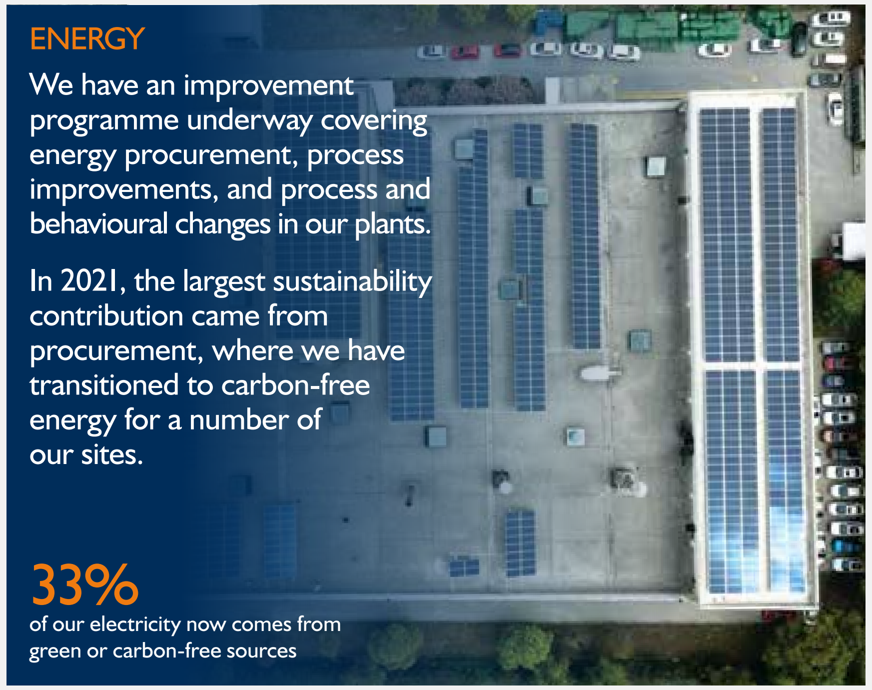
In December 2021, Morgan Advanced Materials submitted its commitment to the science-based target initiative (SBTi) and commenced the process of defining targets to align with the SBTi and reduce its climate impact. The SBTi encourages companies to demonstrate climate leadership through publicly committing to GHG reductions aligned to science-based targets. As by the nature of our business, we support our customers on their low-carbon journey, we understand it is crucial to reduce our own climate impact.

STREAMLINED ENERGY AND CARBON REPORTING

We comply with the UK Government's Streamlined Energy and Carbon Reporting (SECR) requirements. We also support the recommendations of the Financial Stability Board's Taskforce on Climate-related Financial Disclosures (TCFD) and will be taking action to implement these.

This table shows our energy use and associated GHG emissions from fuel and electricity in the UK for the 2018, 2019, 2020 and 2021 reporting years, in compliance with the mandatory reporting requirements under the UK Government's SECR policy. The scope of this data covers all of our UK entities and locations, which include five manufacturing sites and two non-manufacturing sites. The year-on-year reductions are associated with the initiatives referred to on page 27.

In 2021, the UK accounted for 3% of our global total scope 1 and 2 emissions, as outlined in our mandatory GHG reporting. Our absolute GHG emissions (scope 1 and 2) for our UK operations reduced by 34% compared with 2020 levels.



ENERGY

We have an improvement programme underway covering energy procurement, process improvements, and process and behavioural changes in our plants.

In 2021, the largest sustainability contribution came from procurement, where we have transitioned to carbon-free energy for a number of our sites.

33%
of our electricity now comes from green or carbon-free sources

UK OPERATIONS

	2018	2019	2020	2021
Biogas (MWh)	–	–	–	**–**
Natural gas (MWh)	45,661	42,210	36,253	**37,325**
LPG (MWh)[1]	23	31	24	**3**
Fuel oils (MWh)	–	–	–	**–**
Coal (MWh)	–	–	–	**–**
Standard electricity (MWh)	17,705	16,894	986	**–**
Green electricity (MWh)	215	200	14,687	**15,083**
Total (MWh)	63,604	59,335	51,950	**52,411**
Total scope 1 emissions (tonnes CO_2e)	8,380	7,750	6,670	**6,763**
Total scope 2 emissions (tonnes CO_2e)[1]	4,919	3,818	3,657	**–**
Total emissions (tonnes CO_2e)	13,299	11,568	10,327	**6,763**
CO_2e intensity (tonnes CO_2e/MWh)	0.21	0.19	0.20	**0.13**

1. Carbon emission factors for grid electricity are calculated according to the location-based method.

SUSTAINABILITY AND RESPONSIBILITY

ENVIRONMENT *continued*

PRODUCT STEWARDSHIP

We have seen growing demand for advanced materials, as customers push the boundaries of technology to make their processes and products more sustainable.

We supply products that, when used in compliance with product safety communications and common safety practices, will not present an unacceptable risk to human health and safety. We strive to maintain communications with stakeholders on environmental and health and safety matters to ensure transparency and alignment with their needs and expectations.

Our business units maintain policies, programmes and practices to comply with laws and regulations, and to conform to the Group's corporate standards regarding the products we sell.

In addition, our businesses communicate and cooperate with suppliers and customers, to conform to regulatory requirements that apply through the supply chain (such as Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) in the EU, California Proposition 65, Conflict Mineral regulations and similar laws). We register the manufacture and import of substances of heightened concern, notify others of the presence of such substances in products and, where appropriate, restrict usage of such substances.

OUR POLICIES AND PROCESSES

Morgan Advanced Materials' Environmental Policy sets out the Group's commitment to protect and enhance the environment, to minimise the environmental impacts of our activities and to maximise the positive effects of our products and services. Our Policy is regularly reviewed and is communicated across all sites within the Group and applied to all businesses worldwide.

Our manufacturing processes have environmental impacts arising from the consumption of resources, air emissions, waste generation and water discharge. We seek to minimise these impacts and to go beyond minimum legal requirements, by focusing on continuous improvement and establishing certified environmental management systems at our operating facilities. Our Policy and framework set minimum standards and provide guidance on what is expected of our sites. The Policy is regularly reviewed, and our priorities are communicated across all sites within the Group and applied to all businesses worldwide.

Environmental performance is managed at the local level, with top-level oversight by the Group. Guided by our Policy, designated EHS personnel are responsible for compliance with local laws and regulations and for facilitating continuous improvement at a site level. The Chief Executive Officer, global business unit leadership teams and site management teams are responsible and accountable for environmental performance. There are environmental leaders and resources in each of the global business units. Our Group-level environmental management processes include a monthly review of performance and progress in the implementation of our improvement plans by the Executive Committee and business leaders, and regular review of performance by the Board. An audit programme is conducted against the environmental framework, systems and KPIs with a focus on high-risk items.

WASTE AND RECYCLING

Each year we set internal targets to reduce waste intensity by 5%. We also target an increase in recycling efforts by the same percentage. We drive improvements in these areas through Kaizen and 5S (sort, set in order, shine, standardise, sustain) activities. Primarily, our operations team follow the principles of Kaizen, which eliminates waste from overproduction, improves quality, increases efficiency, decreases idle time and reduces unnecessary activities.

During 2021, waste generation improvements were made at several sites, through an increased focus on waste segregation, and by improving waste by category. This allows each site to understand its waste streams better in order to evaluate improvement opportunities. Examples of some of the waste reduction improvements include:

- Reduced waste by introducing recycling facilities for scrap metal from our production processes;
- Stepped up our recycling efforts to prevent over 160,000 pounds of cardboard and paper going to landfill at one of our largest sites;
- Our team in Ranipet, India have taken a great step forward in reducing their plastic waste; by eliminating polybags from their ceramic blanket packaging in favour of a single, woven sack.

In 2021 our businesses increased waste intensity by 7% compared with 2020, with an overall waste generation increase of 12% (on an absolute basis). The increase compared with 2020 was primarily due to production levels resuming to normal after the 2020 COVID-19 operational restrictions.

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Morgan recognises climate change as both a risk and an opportunity for our business and we fully support the implementation of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Climate change poses challenges to Morgan's supply chain and production operations, as well as to our employees and customers, and as such we aim to address this as part of our corporate strategy.

This statement provides an overview of TCFD Governance, Strategy, Risk Management and Metrics and Targets. The Group complies with the requirements of LR 9.8.6R by including climate-related financial disclosures consistent with the TCFD recommendations and recommended disclosures, except for Strategy pillar C: "Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario". We have not complied at this time because we are in the process of finalising our scenario analysis. We expect to finalise this modelling in Q1 2022. We will then develop contingency plans based on the results which will be used to inform the resilience of the Company's strategy; this will be completed in 2022 and included in our 2023 Annual Report. We intend to improve our climate-related disclosures continually across all of the pillars as we develop a deeper understanding of the potential effects on our business as the climate continues to change.

The Group has been disclosing climate risk under CDP since 2010. Our CDP climate change and water security responses provide further information on our approach to climate change. In 2021 we scored a 'B' for both disclosures, placing us at the management level. This recognises that we are taking steps to assess the environmental risks of our business and acknowledges that we have implemented actions to manage those risks. Our responses are available at **www.cdp.net/en.**

GOVERNANCE

The Board of Directors has oversight of our climate change, environmental and corporate responsibility matters and ensures that our executive team progresses as planned to meet our commitments and goals. The Board of Directors also monitors progress against climate-related actions.

Metrics monitored include:

- Absolute scope 1 and 2 CO_2e emissions;
- Water usage;
- Absolute energy use;
- Energy intensity.

Where appropriate, sustainability capital spend projects are reviewed.

The Chief Executive Officer is responsible for climate change, environmental and corporate responsibility matters. He is supported by the Chief Financial Officer, the Executive Committee and the Group Director for Environmental, Health, Safety and Sustainability (EHS&S).

The Chief Executive Officer, Chief Financial Officer and Executive Committee are involved in the Group's ESG materiality assessment and in the selection of key ESG priorities each year.

A Group Director of Environment and Sustainability was appointed in November 2020, reporting to the CEO, and was responsible for developing further and driving the Environmental Sustainability and Governance strategy, and managing and reporting progress to the executive team and the Board. This includes monitoring climate-related issues, driving strategy execution and reporting into monthly executive meetings on environment and sustainability matters.

The Group has reviewed activities around environmental governance and health and safety. From 1 February 2022, the roles of Group Director Environment and Sustainability and Group Director Health and Safety have been combined under a single Group Director for Environment, Health, Safety and Sustainability (EHS&S).

The implementation of the climate-related projects is managed at a site level across each global business unit (GBU). The GBU leads are part of the Executive Committee, reviewing progress against ESG targets, communicating and driving strategy execution within their GBUs.

The ESG strategy and communications from the Executive Team are cascaded to the wider business through monthly EHS&S leadership calls with the GBU EHS leads, and quarterly internal updates from the Chief Executive Officer to the wider GBU and site leadership teams.

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES *continued*

The Remuneration Committee reviews the structure of the annual bonus and Long-term Incentive Plan (LTIP) to ensure that the framework remains appropriately aligned with our strategic aims and culture and motivates and rewards management for delivering sustainable performance. As in prior years, the measures used for the annual bonus for 2022 include ESG measures being covered in the Executive Directors' personal objectives and therefore reflected in the personal performance element of bonus. For the LTIP, an ESG measure (carbon reduction) has been added to the structure, to align more closely with Morgan's strategy and priorities. The ESG targets are 5% to 15% carbon reduction.

Training for the Executive Team on TCFD and climate risk will be delivered later in 2022 to support Morgan's ESG targets and to improve future disclosures.

In 2021, Morgan committed to the science-based target initiative (SBTi). This commitment drives the governance agenda, including setting targets and monitoring progress against them. We are progressing in 2022 with setting our targets to align with a <2°C SBT.

STRATEGY

Climate change is considered as part of a Group-wide, multi-disciplinary risk management process, and is considered a contributory factor within several risk categories.

As part of the Group's ongoing risk management process, the Board and the GBUs have identified and assessed emerging risks, including environmental risk. Additional information about environmental risk is shown in the emerging risks section of this Report on page 38. Our aspiration is to be a CO_2e net zero business by 2050. Our 2030 target is to reduce our scope 1 and scope 2 CO_2e emissions by 50% (from a 2015 baseline). We also aspire to use water sustainably across our business. Our 2030 target is to reduce both our overall water usage and our water usage in high stress areas by 30% (from a 2015 baseline).

The materiality assessment was updated in Q4 2021 (as described in the Sustainability and Responsibility section on page 20) and identifies the ESG topics which impact our business and are of interest to our external stakeholders. This focused Morgan's existing environmental strategy around CO_2e and water usage.

During 2022, Morgan will set targets to align with a <2°C SBT and undertake climate scenario analysis to build a strategy toward transition to a low carbon economy. We are conducting climate scenario analysis to evaluate the following scenarios: technology, heat stress, water scarcity and carbon tax. We will increasingly use scenario analysis to inform the risk management process to understand the uncertainty of the risks and opportunities climate change poses to the business.

During the course of 2021, Morgan assembled a cross-GBU engineering team to identify and evaluate environmental projects across the business. This opportunity to collaborate and share best practice has yielded a project portfolio to complete during the next three years in order to reduce our emissions and meet our stated CO_2e and water reduction targets.

Work is underway to assess the technologies we will need for the longer term (i.e. beyond 2030) to address the CO_2e emissions from existing natural gas-driven production processes. A portion of our research and development resource is now dedicated to exploiting low carbon opportunities. We have partnered with the British Ceramics Confederation (BCC) and are part of the 'Towards Net Zero' commitment. This collaboration brings together businesses from the ceramic manufacturing sector in the UK and shares best practice approaches and proven decarbonising technologies, helps nurture and encourage industry decarbonisation, and communicates related challenges for the industry. Our involvement will allow us to explore alternatives to natural gas and share best practice as part of an industry group.

RISK MANAGEMENT

The Board recognises the need to understand and assess climate-related risk and the inherent uncertainty therein. Risk management and internal control are fundamental to achieving the Group aim of delivering long-term sustainable growth in shareholder value. Principal and emerging risks are identified both 'top down' by the Board and the Executive Committee and 'bottom up' through the global business units. Further details on Morgan's procedures for identifying, assessing, and managing risk can be found in the Risk Management section on page 38.

The environment, health and safety team meets monthly to oversee the management of our most significant environmental risks, including climate-related risks. This group is chaired by the Group Director for EHS&S who, in turn, reports each month to the Executive Committee. A third-party platform is used to monitor current and emerging environmental regulations across our industry and business sectors. We evaluate compliance regularly and consider how these regulations may impact the Group.

The severity of each risk is quantified by assessing its inherent impact and mitigated probability, to ensure that the residual risk exposure is understood and prioritised for control throughout the Group. Senior executives are responsible for the strategic management of the Group's principal risks, including climate-related risk. The output of ongoing scenario analyses will be integrated into the risk register using this approach.

Throughout 2021, the Board reviewed the preparedness of Morgan to all known principal risks with a significant potential impact at Group level. Additionally, the Audit Committee carried out focused risk reviews of each GBU. These reviews included an analysis of the principal and emerging risks, and the controls, monitoring and assurance processes established to mitigate those risks to acceptable levels.

Substantive impacts are assessed and monitored through the risk assessment process. Morgan evaluates all management risks including health, safety, and environment (including climate-related risks). Our five GBUs maintain business-specific risk registers and business continuity plans which are used in their annual strategic planning. These registers identify internal and external factors which could pose threats and opportunities to each business. They evaluate the inherent impact, mitigated probability, risk severity, control effectiveness and risk trends. Each risk is assessed by the global business unit's senior management team who consider the indicators of relevance and their associated impact. Financial impact, litigation outcomes, sites disruption, applicable fines and other issues are all quantifiable indicators that could affect each GBU's risk classification.

The Group recognises the importance of climate scenario analysis and has engaged a third party to support the modelling and interpretation of results. This will be incorporated into the risk management process to identify further actions towards our 2030 strategy.

Climate risk and scenario analysis awareness training was undertaken with functional leads from the different GBUs in December 2021. Training will also be delivered to the Executive Committee and Group finance team on TCFD, climate change and scenario analysis in Q2 2022. This will upskill the risk teams at Group level and across the GBUs to understand how to respond to scenario analysis, and climate change risk.

METRICS AND TARGETS

We use GHG Protocol reporting standards to monitor CO_2e intensity for scope 1 and scope 2 GHG emissions. The intensity figure is reported as tonnes of CO_2e/million GBP. In addition, we monitor total water use, and water use in water-stressed areas.

In 2021, the Group committed to the science-based target initiative (SBTi) and anticipates receiving confirmation of our scope 1 and scope 2 emissions targets within the next 24 months, confirming alignment with the Paris Agreement target to limit global warming to a 2°C or lower scenario. This commitment meant that during 2021 we focused on driving energy efficiency improvements within our operations and continued to grow our carbon free and renewable energy portfolio, in line with our commitment to the SBTi.

To achieve this, we established a cross-GBU engineering project team to execute CO_2e and water reduction projects, in line with the SBTi and our 2030 targets and 2050 aspirations. The group meets monthly and includes the Group Director for EHS&S. Outputs from this are reported on a monthly basis to the CEO, CFO, Executive Committee and the Board.

We track scope 1 and 2 absolute CO_2e on a monthly basis. The scope 1 and 2 absolute values for the year ended 31 December 2021 for the Group were as follows:

- → Scope 1 emissions (metric tonnes CO_2e) 122,817;
- → Scope 2 emissions (metric tonnes CO_2e) 107,070.

In line with Streamlined Energy and Carbon Reporting (SECR) requirements, Scope 1 and 2 emissions and energy use are disclosed in the Environment section on page 23.

We recognise that the assessment of the Group's value chain emissions is an important part of our long-term sustainability strategy. We aim to work with our key stakeholders and top tier suppliers to reduce indirect emissions; this is a preliminary step towards minimising product lifecycle impact.

For GHG reporting purposes, Morgan outlines its organisational boundary on an operational control basis, and our scope 1 and 2 emissions are reported on this basis.

The scope 3 Standard further categorises these emissions into fifteen distinct categories. However, based on the Group's priorities, we will be focusing on the key categories in the upstream and downstream.

We are evaluating the following areas:

Purchased goods and services During 2021 we conducted a pilot on our top tier suppliers in terms of climate and other ESG criteria. We will implement a system to evaluate our suppliers during 2022. The evaluation of the associated scope 3 emissions will begin in 2022 using the GHG Protocol Scope 3 Evaluator and we expect to start reporting on them from 2023 onwards, with coverage increasing over time.

Capital goods We anticipate having a system identified in 2022 to begin our evaluation of scope 3 emissions associated with capital goods.

Fuel- and energy-related activities We are currently evaluating adequate systems to account accurately for scope 3 for Fuel-and energy-related activities (not included in scope 1 or 2). We anticipate having a plan identified in 2022 to capture this data. We anticipate these Scope 3 emissions associated with Fuel-and energy-related activities both upstream and downstream will be performed using various tools such as the GHG Protocol Scope 3 Evaluator and IEA emission data.

Criteria currently being evaluated include:

- → Upstream transportation and distribution;
- → Waste generated in operations;
- → Downstream transportation and distribution;
- → Processing of sold products;
- → Use of sold products;
- → Downstream leased assets.

In 2022, we will expand our work with our customers, suppliers and other stakeholders in our value chain to calculate an initial scope 3 emissions baseline.

In addition to this we are actively exploring product Life Cycle Assessment (LCA). Systems to conduct LCAs were evaluated in 2021, and pilot studies are planned for 2022. Product LCA information will support scope 3 evaluation across a number of categories.

The Group's greenhouse gas (GHG) emissions are mostly generated by the combustion of fossil fuels at various stages of our manufacturing processes. We are pleased to report that our absolute GHG emissions for Scope 1 and 2 for 2021 have reduced by 17% compared with 2020, representing a 33% reduction compared with our 2015 baseline. Additional details of our progress towards 2030 can be found in the Environment section of this report on page 22. Scope 1 & 2 CO_2e emissions continue to fall as a result of efficiency improvements completed by the cross-GBU engineering team and increased renewable energy procurement.

We are also focusing on water reductions in areas of high or extremely high-water stress. Water withdrawal in water stressed areas accounts for 7% of our total water withdrawals. Water management plans will be integrated into regular facility assessments to proactively engage our workforce in reduction activities to address water-related issues within the watershed of these local communities. We are pleased to report that absolute water withdrawal continues to fall across the business, being 26% lower in 2021 when compared with our 2015 baseline. Water use in high and extremely high water stressed areas is down 12% compared with 2015.

Water withdrawal and use increased slightly from 2020, reflecting the manufacturing facilities returning to pre-pandemic levels of production. Investment is underway in 2022 to upgrade key facilities and install new equipment in water stressed areas to reduce water usage and increase water recycling.

Additional details of our progress towards 2030 can be found in the Environment section of this report on pages 20 to 21.

PEOPLE

Our people contribute to the culture and are the driving force behind our success. In return we aim to be a caring organisation where everyone feels valued and appreciated. Our key principle is that 'it is not just what you do, but how you do it' that is important.

We use our 'Leadership Behaviours' and the Morgan Code to guide the actions we take. This helps us to achieve our strategic aim of delivering performance and value creation for our stakeholders.

CULTURE

Our Board and governance systems, aligned to our purpose, safeguard our approach. There is commitment from both the Board and the Executive Committee to demonstrate the 'Leadership Behaviours' and the principles of the Code, and this underpins the tone from the top.

In 2020, due to COVID-19, virtual site-based focus groups were held, to ensure the Board was still able to hear direct feedback on our culture and understand the extent to which our employees were engaged. In 2021, we have continued virtual engagement sessions with employees and, as restrictions have reduced, we have held site visits in the UK.

The Board also received additional resources to help measure and monitor our culture, which included:

- Areas of culture highlighted in ethics reporting, including any terminations as a result of breach of the Morgan Code;
- Safety and environmental updates and performance metrics;
- Talent reviews with a focus on key talent retention, employee turnover, and diversity and inclusion metrics and initiatives;
- Updates on training and development programmes – including ethics, leadership development programmes and on-the-job training;
- Results of our recent engagement survey.

The feedback is giving us a better picture of our culture as a Group.

PEOPLE POLICIES

We support the UN Universal Declaration of Human Rights, and our Human Rights Policy commits us to protect the rights of everyone (who works for us) and all those who have dealings with us. The principles of the Policy cover child labour, forced labour, health and safety, freedom of association, inclusion, discrimination, discipline, working hours and compensation. The Policy is published on our website.

We do not unfairly discriminate, and we respect human rights. Our employee policies are set locally to comply with local law and are within the overall Group framework. We operate a 'Speak Up' hotline which enables individuals who are aware of, or suspect, issues contravening Morgan's Human Rights Policy, or wider concerns on policy adherence, to report these confidentially. All issues are investigated, individuals responded to where contact information is given, and progress is tracked to conclusion.

We have increased the use of our internal social media channel Yammer, to reinforce messaging with employees. This has included discussions on issues that our people want to hear about, such as mental health at work, safety, cyber security, inclusion, environmental matters and discussions on our execution priorities.

UK GENDER PAY GAP REPORTING

We are continuing our efforts to improve equality and transparency across the business.

The UK Government requires gender pay gap reporting for companies with more than 250 employees. In 2021, the average gender pay gap for our UK workforce was 26.0% (2020: 19.4%, 2019: 21.5%, 2018: 18.6%, 2017: 24.7%).

Our gender pay gap exists because a greater proportion of our senior leadership is male and compared to last year our gap has increased. The gender pay gap is fluctuating according to the number of male employees at the higher pay ranges relative to female employees. The percentages are sensitive to small changes. We have set ourselves a target that 40% of our leadership population will be female by 2030. We have launched 'Women@Morgan', our employee resource group to engage women and men in addressing female specific topics that will support the development of a more gender inclusive culture. We have invested in female-specific development with a number of our high potential women.

ATTRACTION AND RETENTION

To help solve our customers' challenges, we need to recruit and retain a diverse range of professionals, including materials scientists, application engineers, functional specialists and salespeople. We are evolving our strategies for recruiting and developing talent. We are developing our employer brand to help us compete more effectively in the talent market and to attract a more diverse pool of potential employees.

In 2021 we increased the size of our internal talent acquisition team and have leveraged our direct sourcing approach to widen our external talent pool. In addition we launched a new talent acquisition platform, which resulted in a threefold increase in traffic to the careers section of our website. This includes a similar increase in individuals who have explicitly expressed an interest in working for Morgan Advanced Materials online. We continue to ensure that our candidate lists are diverse and have a more inclusive approach using assessment to inform decision making. We have made some key internal development moves, which have positively impacted retention of our high potential talent.

INCLUSION

We promote equal opportunities for all employees and job applicants and do not unlawfully discriminate. We make reasonable adjustments to accommodate any employee who may have a disability within the meaning of all global equality legislation, and where the Company is aware of such disability.

See also our Board Inclusion and Diversity Policy on page 80.

DEVELOPING OUR PEOPLE

We want every employee to perform at their best, reach their full potential and feel rewarded for what they do. In 2021, each employee received on average 13 hours of training (2020: 8 hours), and we have continued to increase our volume of virtual training blended with face to face (as and when COVID-19 restrictions allowed).

We have launched new language training (available to all our people) and saw a 10% take up in the first month. Our professional and functional skills development continues to expand, as we increase our investment to meet the growing demand. Approximately 12% of our population had access to personal effectiveness and functional online on-demand learning in 2021. This population has completed a total of 4,000 hours of training. In our project management function, this has also led to a number of individuals achieving accreditations. In 2022, we will be expanding access to these resources to all our people.

We completed the conversion of our supervisor training to enable virtual and blended delivery, as well as more traditional classroom delivery. This included increased support for the line managers of participants to ensure the learning was embedded successfully into the workplace. During 2021, 277 managers and supervisors completed the training.

We have evolved our talent identification process with more granular assessment of potential versus performance, to enable targeted and proactive actions. These improve our succession pipeline and indicate the readiness of individuals to take on more complex roles in the future. We have also reviewed the relative size and complexity of our roles, which will inform development conversations and our ability to identify moves between businesses and functions.

NEW LANGUAGES ARE HELPING US COLLABORATE

As a global company we're helping bridge the gap between our teams.

With employees in over 25 countries, improved language skills are an important part of successfully connecting and collaborating. In 2021 we launched goFLUENT as our online language learning platform, available to every one of our employees.

Using online learning our people are able to learn English, French, German, Italian, Mandarin, Portuguese, Spanish, Dutch or Russian, using this hyper-personalised platform.

We've had more than 700 of our people activate their learning account so far. That is 700 people taking extra steps to connect with others.

We know that investing in our people and their skills is an important part of building an environment where everyone can do their best work.

INVESTING IN PEOPLE

Investing in the development of our people enables us to invest in our future.

- In 2021, we continued our online learning focus. Our online learning system Percipio was used by almost 3,000 of our people across the world for compliance training;
- Our top 100 dedicated learners clocked up nearly 3,000 learning hours across the year;
- Our leadership development programmes, 'Catalyst' and 'Ignite', saw the latest cohort focused on developing their personal and professional leadership skills, to help us achieve our purpose, keep our people safe and provide meaningful work that contributes to an improved society;
- We welcomed the first cohort on our new early careers programme, 'Spark'. The programme is focused on empowering participants to take ownership of and drive their career, and helps people prepare to progress to more senior or complex roles in the future. The programme aims to springboard those in the early stages of their career. High potential and a commitment to self-development are the criteria for our group. Our 22 candidates in this first cohort were based in eight different countries.

SUSTAINABILITY AND RESPONSIBILITY

PEOPLE *continued*

INCLUSION AND DIVERSITY

We are creating a work environment where all employees are valued and can do their best work. Marking and celebrating global awareness days which reflect our differences, as well as our similarities, gives our teams a great opportunity to learn more about each other and foster an inclusive work environment.

We support a number of these awareness days throughout the year as a way to celebrate, educate and engage ourselves, and to highlight our desire to make a big positive difference.

Our leadership programmes continue to add value. They have remained virtual in delivery but without any negative impact on the outcomes. In all, 31% of participants completing the programmes received a promotion, or changed or expanded their role. Business projects included as part of the programme have informed executive and business unit management team thinking and plans.

In addition, we have relaunched our early careers programme, with an increased focus on the diversity of the cohort to build our pipeline of talent. In 2021, 45% of the cohort were female.

PERFORMANCE MANAGEMENT AND REWARD

Since 2020, all employees in professional roles participate in our globally consistent performance management process. This process measures both what is achieved and how it is achieved, through assessment against our 'Leadership Behaviours'. We set clear expectations for our leaders and managers, aimed at driving a culture of constructive feedback, and we provide development coaching to improve performance in role. Our employees in manufacturing roles follow a job-based approach to setting expectations and providing feedback.

The principle of pay for performance underpins our compensation approach and we set compensation levels using external benchmarking and relevant commercial considerations (i.e. compensation is designed to be both competitive in the countries in which the role operates, and affordable). We also offer short-term performance incentives globally to managers and to technical and functional experts.

The Executive Committee and senior management additionally have long-term incentives tied to business performance. At manufacturing site level, most sites offer incentives to their people, with payments based on meeting locally-set performance targets. We regularly review bonus arrangements and benefits to ensure they encourage and reward commercial and personal performance. In 2022, we will be including a carbon reduction target within our long-term incentive elements to reinforce our commitment to sustainability performance.

ENGAGING OUR EMPLOYEES

Effective engagement enables our employees to contribute to improving Morgan Advanced Material's business performance. We keep employees informed about what is happening across the business, including Company financial results, major business decisions, and other matters which affect them. We seek to maintain constructive relationships with all trade and labour unions across the geographies in which we work. Additional details on the engagement of our workforce are included on pages 70 and 71 of the Corporate Governance Report.

In 2021, we communicated and engaged our people on our new execution priorities and longer-term aspirations. The initial communication to our leadership population was delivered virtually, utilising innovative technology to run an engaging inclusive event where all leaders could participate and explore the topics. Subsequently the priorities have been communicated by our leadership teams to all our people, using cut-down engagement sessions and through the use of posters and newsletters (at site level). Our aspiration is for all employees to understand and engage with our longer-term ambitions so that they can both relate to and contribute to them. We are keeping our people updated on our progress through internal channels, such as Yammer and the intranet and through external social media.

In late 2021, we conducted our employee engagement survey 'Your Voice'. 77% of our people participated. The overall engagement score is 50%, a reduction from 55% engagement score in a 2019 pulse survey. Engagement is broadly similar across our global business units with variation seen across regions and sites. Our action planning is a combination of a small number of company initiatives to address common feedback, and targeted actions at key locations. Responses reconfirmed the need for a continued focus on our investment in technology and infrastructure, career development and collaboration.

Employee feedback from 'Your Voice' showed strong employee alignment with Morgan's purpose and good focus on the customer.

We continue to leverage the virtual engagement approaches we initiated in 2020, coupled with encouraging face-to-face engagement within country. We are now evolving to a blended approach which we will continue to use in the future.

We have increased communication with our people on key Morgan topics, such as sustainability and inclusion, where we are looking to evolve our culture. In 2022, we are investing in a global engagement app to improve our ability to communicate and engage all our people, regardless of any language barriers, to ensure a better cascade of messaging.

In November 2021 a virtual meeting of the European Employee Forum was held. We will continue to use the employee forum to engage with our employees and will return to face-to-face if COVID-19 restrictions allow in 2022.

WORKFORCE BY GEOGRAPHY

Number of employees as at 31 December 2021

US
2021
27.4%
2020: 31.1%
2019: 32.8%
2018: 32.7%

CHINA
2021
13.9%
2020: 14.8%
2019: 14.2%
2018: 14.8%

UK
2021
9.5%
2020: 9.1%
2019: 9.5%
2018: 9.8%

SOUTH AMERICA
2021
2.2%
2020: 2.5%
2019: 2.6%
2018: 3.0%

EUROPE (EXCLUDING UK)
2021
19.0%
2020: 19.7%
2019: 18.0%
2018: 18.2%

REST OF WORLD
2021
13.5%
2020: 13.8%
2019: 12.8%
2018: 12.6%

OTHER NORTH AMERICA
2021
14.5%
2020: 9.0%
2019: 10.1%
2018: 8.9%

TOTAL WORKFORCE[1]
2021
7,800
2020: 7,470
2019: 8,560
2018: 8,720

1 This number has been rounded to the nearest 10.

WORKFORCE BY GENDER

Members as at 31 December 2021

MALE

BOARD
4
Male 57%
(2020: 4; 57%)

EXECUTIVE COMMITTEE
6
Male 60%
(2020: 6; 67%)

SENIOR LEADERS
52
Male 69%
(2020: 48; 73%)

ALL LEADERS
(includes Executive w/o CEO/CFO plus 2nd to 4th tier)
295
Male 71%
(2020: 315; 70%)

ALL EMPLOYEES[1]
5,400
Male 69%
(2020: 5,450; 73%)

1 This number has been rounded to the nearest 10.

FEMALE

BOARD
3
Female 43%
(2020: 3; 43%)

EXECUTIVE COMMITTEE
4
Female 40%
(2020: 3; 33%)

SENIOR LEADERS
19
Female 31%
(2020: 18; 27%)

ALL LEADERS
(includes Executive w/o CEO/CFO plus 2nd to 4th tier)
122
Female 29%
(2020: 132; 30%)

ALL EMPLOYEES[1]
2,400
Female 31%
(2020: 2,020; 27%)

1 This number has been rounded to the nearest 10.

SUSTAINABILITY AND RESPONSIBILITY

WELLBEING, COMMUNITY AND ETHICS

At Morgan Advanced Materials we recognise the importance of our people, and we strive to support their wellbeing.

We have built up a grass-roots wellbeing programme called 'Better You, Better Life', which supports our purpose of improving quality of life. In a similar way to our Morgan safety week, the programme runs activities across the Group to promote healthy choices and encourages our people to take part.

THE IMPORTANCE OF WELLBEING

In 2021, we ran our second mental health awareness month, supporting our people to make better, healthier choices. We believe that good mental health is as important as good physical health and wellbeing. We therefore provide our people with resources and links to charities and organisations across the globe that can support them. We offer managers and colleagues practical tips on communicating with employees with mental health issues, and we are backing a campaign to help break down the stigma of asking for help at work.

We have an employee assistance programme in the UK and US that our people can contact, and we are looking at similar schemes in other locations.

In 2021, we trained our first mental health first-aiders.

SUPPORTING OUR COMMUNITIES

We aim to have a positive impact on the communities we serve, from supporting job creation and skills advancement to reducing energy and water consumption at our plants. All our efforts and engagements are driven by our Morgan Code, our purpose and our Group policies.

As our sites and operations are spread across the globe, we have the opportunity to work with many communities. We get involved at a local level and look to understand each community's priorities and concerns.

We also pride ourselves on having some of the most passionate and inspiring people working at Morgan Advanced Materials. Not only do our people have a real love of science, mathematics and technology, but many also carry that passionate spirit through into other aspects of their lives – by giving back to their local communities.

We want our people to have the freedom to support what they care about most. We share their stories through our internal social media platform, Yammer, where you will often see the generous spirit and nature of our employees displayed: from bake sales to cultural celebrations, and from charity donations to sponsorship events.

CHARITY IN THE COMMUNITY

- Our Durham, USA site has held a food drive for Connecticut Foodshare every year for the last three years. In 2021 they scheduled a week-long volunteering event, at which nearly a third of the site employees volunteered;
- Our St. Marys, USA site organised a 'back-to-school supplies' drive for their local elementary school, with over 1,000 donated items provided to the children in support of their studies;
- Our Thouarcé, France team supported local charity 'TAKAMAIDER', who raise funds for schools in their region, by collecting plastic and cork stoppers. The collection supports the association in their mission to purchase equipment for children with learning difficulties;
- Our Shanghai, China site has been actively involved in the community initiative to clean up floating waste on Huangpu River;
- Our Stourport, UK site spent time at a local school, supporting the improvement of their outdoor learning space.

1,000

donated items provided to the children in support of their studies.

TAX

Morgan Advanced Materials has approximately 70 manufacturing sites across over 25 countries and about 7,800 employees. The Group's business activities incur a substantial amount and variety of taxes including corporate income taxes, excise duties and employment and other taxes. The Group also collects and pays employee taxes and other indirect taxes such as VAT.

We are committed to complying with tax laws in the jurisdictions in which we do business. We work closely with tax authorities and support initiatives to increase trust in tax systems around the world. The Group's tax strategy applies to all Group entities and the latest update was approved by the Board of Directors on 10 December 2021.

MENTAL HEALTH FIRST AIDERS

Individuals in the UK and US have completed mental health first aid training, ensuring they are better equipped to support employee mental health.

This fantastic scheme is another way that we're supporting our people to access mental health support and resources, when they need them the most.

Supporting the wellbeing of our teams is a key part of building a safe and inclusive culture and we're proud our people want to reach out, help and be there for colleagues.

'BETTER YOU, BETTER LIFE'

In 2021, our people have been embracing our 'Better You, Better Life' wellbeing programme, taking part in activities from hiking in the mountains with family, to exciting aerospace commutes and cycling in the countryside.

SUSTAINABILITY AND RESPONSIBILITY

WELLBEING, COMMUNITY AND ETHICS *continued*

ETHICS AND COMPLIANCE

We remain committed to operating ethically in everything we do across our business. Our renewed ethics and compliance strategy will guide our efforts over the coming years to strengthen and embed our ethical culture and reinforce controls in key compliance risk areas covered by the Morgan Code.

The Morgan Code is a foundational component of our ethics and compliance programme. The Morgan Code is a set of principles, supported by Group policies, which set out how we must conduct ourselves in support of our people, our communities, our business partners and our shareholders. It applies to all employees and extends, as appropriate, to Morgan's business partners including agents, joint venture partners and other third-party representatives.

Our Code has four sections: Working safely, Working ethically, Treating our people fairly, and Protecting our business. The Code is published publicly and is available in 21 languages. It requires our people to operate in accordance with applicable laws, regulations and Company policies and processes relating to areas such as ethical business behaviour, trade compliance, gifts and entertainment, donations and sponsorships. Our Code is implemented through a suite of Group policies which set out our expectations in detail.

We required all senior employees to certify that they have read, understood and agree to comply with the Morgan Code and the supporting policies which are relevant to their role. In 2021, there were 515 such certifications recorded across the business (all of the relevant population).

TRAINING

We provide training to raise awareness of ethics and compliance expectations and give guidance on handling situations where the proper course of action may be unclear. New hires are required to complete mandatory online training soon after joining the Group which covers anti-bribery, anti-trust, business ethics and cyber security. During 2021, our employees were provided training during three global initiatives through our new online platform on topics including modern slavery, anti-bribery, gifts and gratuities, anti-trust and protection of trade secrets. Our training completion rates for these global initiatives continue to reach or exceed 99% of the relevant employee population, completing more than 16,000 courses during the year. We are committed to providing ongoing training as an important component of our ethics and compliance programme.

THIRD-PARTY MANAGEMENT

We have published a new Supplier Code of Conduct which provides a set of minimum conduct standards that we expect from our suppliers globally. Our Supplier Code focuses on treating people fairly, complying with health and safety rules, protecting the environment, and adhering to important ethics and compliance obligations. In 2022, we will continue embedding the Supplier Code into our supply chain and assess conformance.

A new Conflict Minerals Policy was published which sets out Morgan's position on avoiding the sourcing of conflict minerals including tantalum, tin, tungsten and gold from areas where the revenue may aid the furtherance of human rights violations and other illegal activities. We expect our suppliers to adhere to the same principle.

We recognise the importance of making informed decisions when considering new or renewed business relationships with third parties. We began implementing a new third party management system which will go live in early 2022. The system will strengthen our ability to risk assess and conduct appropriate due diligence checks on certain third parties such as agents and distributors.

HANDLING CONCERNS

We maintain a confidential 'Speak Up' ethics helpline operated by an independent third party where anyone can raise a concern or report a suspected violation of our policies, procedures or the law as an alternative channel to reporting concerns internally. Reporters can raise concerns by telephone, web form or email and may elect to remain anonymous. During 2021, a total of 90 concerns were raised through this channel, consistent with the 87 raised during 2020. This volume of concerns aligns with benchmarking data compiled by NAVEX Global based on the Group's global headcount. All concerns are reviewed or investigated and necessary disciplinary and/or corrective action is taken as appropriate. Oversight of all cases within the internal investigation programme is performed monthly by members of the leadership team and four times annually during meetings of the Audit Committee. We will continue emphasising the importance of speaking up as it allows us to address problems in the business and supports our work to strengthen the ethical culture at Morgan.

ANTI-BRIBERY AND ANTI-CORRUPTION

- In some parts of the world where Morgan operates, bribery and corruption present a high risk. We have a responsibility to our employees, our shareholders and the countries and communities in which we do business to be ethical and lawful in all our work. The Code explicitly prohibits engaging in bribery or corruption in any form;
- A total of 2,841 employees (more than 99% of the relevant population) completed on-line anti-bribery and anti-corruption training in 2021;
- This year we completed a risk assessment to better understand areas of the business that may present an elevated risk for bribery and corruption;
- We reviewed the adequacy of controls in place to combat bribery and corruption. Enhanced mitigation measures and training are planned for higher risk areas of the business during 2022;
- A global Gifts and Entertainment Policy is in place which requires increasing seniority of approval based on the value of the item or entertainment event. Any limited gifts and entertainment involving a public official – whether given or received – require pre-approval by the relevant GBU President or Finance Director. An online repository is in place for employees to log any gifts or entertainment given or received and attach the appropriate pre-approval in accordance with the Policy.

HUMAN RIGHTS

- As an international business, the Group supports the UN's Universal Declaration of Human Rights, and the Group's Human Rights Policy applies to all our businesses worldwide. The Policy is available on our website and covers child labour, forced labour, health and safety, freedom of association, discrimination, discipline, working hours and compensation;
- The Director of Human Resources reports to the Chief Executive Officer and is responsible for the development of the Human Rights Policy and related matters, with the Presidents of each global business unit having responsibility for policy implementation within their respective businesses;
- The Group's Modern Slavery Act Transparency Statement, which is published annually on our website, details action taken to support the elimination of modern slavery and human trafficking.

PRIORITIES FOR ETHICS AND COMPLIANCE IN 2022

- Provide enhanced management information and analysis to business leaders to allow greater insight in to how the ethics and compliance programme is operating within each business unit;
- Further strengthen our controls related to bribery and corruption, anti-trust and third party management for higher risk areas of our business;
- Increase two-way engagement with employees and middle management on relevant ethics and compliance topics and challenges;
- Implement employee training and communications activities in new ways to help foster a culture of integrity;
- Clarify and emphasise the important role leaders play in our ethical culture and set clear expectations of what we expect from them.

DOING THINGS THE RIGHT WAY, SAFELY, AND ETHICALLY

From treating people fairly, to free and fair competition, our Code and policies ensure that we are able to maintain a safe, fair and ethical approach throughout all elements of our business at Morgan

- Our suppliers play an important role in helping us achieve our safety and ethics objectives, therefore it is critical that we ensure our suppliers adhere to our high standards of conduct. This is why in 2021 we launched our Supplier Code of Conduct.

The mining of and trade in tantalum, tin, tungsten and gold (so called conflict minerals) has been linked to human rights violations in the Democratic Republic of Congo and nearby countries. At Morgan, we are committed to upholding human rights, and as a consequence we have in place a Conflict Minerals Policy to ensure the materials we use are mined in an ethical and safe manner. We expect our suppliers to adopt the same practices and adhere to Morgan's ethics and compliance expectations. Our Conflict Minerals Policy describes how we work with our suppliers to ensure they responsibly source materials used in the manufacture of our products.

OUR CODE MATTERS

We encourage everyone at Morgan Advanced Materials to speak up and report any misconduct they may see. Any breaches in Group policy can be reported internally to local management or confidentially via our Group compliance team. The third party 'EQS Integrity Line' offers an external source in which reports can be made anonymously and are treated confidentially.

KEY PERFORMANCE INDICATORS

We assess our performance across a wide range of metrics. To support the Group's strategy and to monitor performance, the Board of Directors and the Executive Committee use a number of financial and non-financial key performance indicators (KPIs).

Our KPIs are a balanced set of metrics that give emphasis to both financial and non-financial measures. These help the Board and the Executive Committee assess performance and progress against our execution priorities and business plans. Divisional and global business unit management use these and additional benchmarks and other KPIs to evaluate operating performance and make financial, strategic and operating decisions.

In order to measure the organic* performance of the business, management further review the adjusted KPIs after excluding the impacts of acquisitions and foreign exchange.

Financial and non-financial performance is reviewed in more detail in the Sustainability and Responsibility, Review of Operations and Group Financial Review sections of this Report.

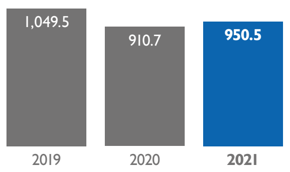
REMUNERATION

To help align the focus of the Board and the Executive Committee with the interests of our shareholders, certain measures are used for executive remuneration.

Measures for determining employee annual bonuses are focused on both Group financial and personal performance. Measures for awarding performance shares (long-term share incentive programmes), are focused on shareholder value and future growth. For more information on Executive Directors' remuneration please see the Remuneration Report on pages 82 to 105.

FINANCIAL KPIs (STATUTORY AND ADJUSTED PERFORMANCE KPIs)

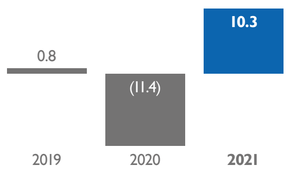
REVENUE (£M)



Why a KPI?
Creating consistent long-term value for shareholders. Focus on higher-growth markets.

Performance commentary
On a reported basis, revenue increased by £39.8 million, 4.4%. See Review of Operations on pages 44 to 49 for more detail.

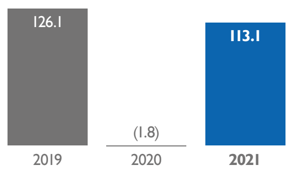
ORGANIC CONSTANT CURRENCY REVENUE GROWTH (%)



Why a KPI?
Creating consistent long-term value for shareholders. Focus on higher-growth markets.

Performance commentary
On an organic constant-currency* basis revenue grew by £88.5 million, 10.3%. See Review of Operations on pages 44 to 49 for more detail.

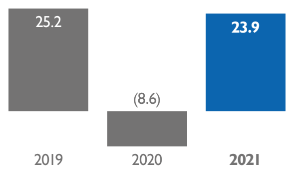
OPERATING PROFIT (£M)



Why a KPI?
Creating consistent long-term value for shareholders. To have a culture of operational excellence and cost-efficiency.

Performance commentary
Margin improvement from delivery of our restructuring programme and increased volumes.

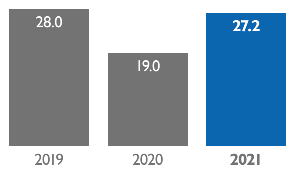
CONTINUING EPS (P)



Why a KPI?
Creating consistent long-term value for shareholders.

Performance commentary
Benefits arising from delivery of our restructuring programme and increased volumes.

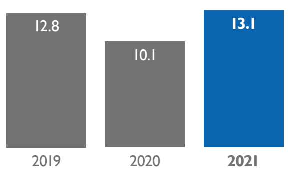
ADJUSTED EPS (P)



Why a KPI?
Creating consistent long-term value for shareholders.

Performance commentary
Benefits arising from delivery of our restructuring programme and increased volumes.

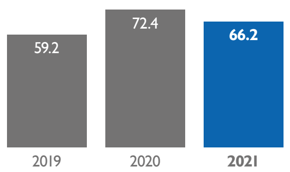
ADJUSTED OPERATING PROFIT MARGIN (%)



Why a KPI?
Creating consistent long-term value for shareholders. To have a culture of operational excellence and cost-efficiency.

Performance commentary
Margin improvement from delivery of our restructuring programme and increased volumes.

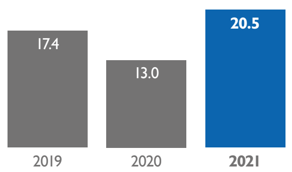
FREE CASH FLOW BEFORE ACQUISITIONS, DISPOSALS AND DIVIDENDS (£M)



Why a KPI?
Creating consistent long-term value for shareholders.

Performance commentary
Strong cashflows from lower capex, net interest and lease payments.

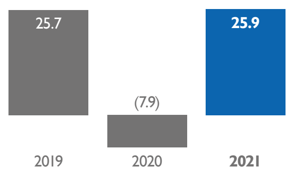
RETURN ON INVESTED CAPITAL (%)



Why a KPI?
Creating consistent long-term value for shareholders.

Performance commentary
Higher return on invested capital is driven by improved adjusted profit.

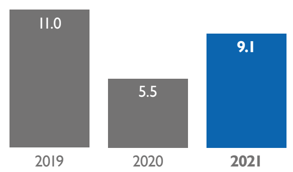
CONTINUING AND DISCONTINUED EPS (P)



Why a KPI?
Creating consistent long-term value for shareholders.

Performance commentary
Benefits arising from delivery of our restructuring programme and increased volumes.

DIVIDEND PER SHARE (P)



Why a KPI?
Creating consistent long-term value for shareholders.

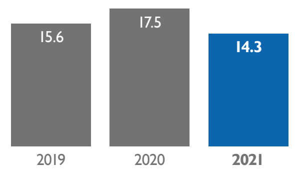
Performance commentary
The Board has committed to growing the dividend to around three times dividend cover.

* Pro forma

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 55 to 57.
2. This KPI uses revenue at constant currency[1] in its calculation.

NON-FINANCIAL KPIs

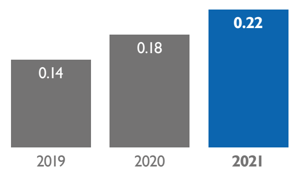
EMPLOYEE TURNOVER (%)



Why a KPI?
To attract, retain, and develop the right people in the right roles.

Performance commentary
Employee retention remains a challenge particularly in a number of our North American manufacturing sites where labour shortages have been exacerbated by the pandemic.

LOST-TIME ACCIDENT FREQUENCY (PER 100,000 HOURS WORKED)



Why a KPI?
To maintain a workplace that focuses on the health and safety of its employees and others affected by the Group's operations.

Performance commentary
We have refreshed our approach to safety and are deploying training to all employees to strengthen our safety culture.

* Pro forma

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 55 to 57.
2. This KPI uses revenue at constant currency[1] in its calculation.

RISK MANAGEMENT

We have an established risk management methodology which seeks to identify, prioritise and mitigate risks, underpinned by a 'three lines of defence' model comprising an internal control framework, internal monitoring and independent assurance processes.

The Board considers that risk management and internal control are fundamental to achieving the Group aim of delivering long-term sustainable growth in shareholder value.

Principal risks and emerging risks are identified both 'top down' by the Board and the Executive Committee and 'bottom up' through the Group's global business units (GBUs) and divisions. The severity of each risk is quantified by assessing its inherent impact and mitigated probability, to ensure that the residual risk exposure is understood and prioritised for control throughout the Group.

Senior executives are responsible for the strategic management of the Group's principal and emerging risks, including related policy, guidelines and processes, subject to Board oversight.

Throughout 2021, the Board reviewed the status of all principal and emerging risks with a significant potential impact at Group level. Additionally, the Audit Committee carried out focused risk reviews of each GBU. These reviews included an analysis of both the principal risks and emerging risks, together with the controls, monitoring and assurance processes established to mitigate those risks to acceptable levels.

As a result of these reviews, a number of actions were identified to continue to improve internal controls and the management of risk, including:

- Refresh of the Group's 'thinkSAFE' programme, focusing on developing a caring safety culture, together with work to strengthen our safety systems.
- Increased awareness of the IT function's 'thinkSECURE' approach, including a cyber security month;
- Increased focus on Trade Compliance with the appointment of a Group Trade Control Director;
- Promotion of the Group's 'Speak Up' process;
- Further emphasis on the ethics agenda, including implementing self-certification of policy compliance and change to the Ethics & Compliance training platform;
- Driving forward the Group's sustainability and environmental agenda.

The Board reviewed its appetite for the Group's principal risks and concluded its appetite for these risks was unchanged from the previous year. Risk appetite is determined through management review and discussion with the Board. The Group is willing to take considered risks to develop new technologies, applications, partnerships and markets for its products and to meet customer needs. The Group strives to eliminate risks to product quality and health and safety, an approach which is essential to the success of the Company's products and the safety of our people and contractors.

The appetite for risk in the areas of legal and regulatory compliance is extremely low and the Group expects its businesses to comply with all laws and regulations in the countries in which they operate. The Group also has a low appetite for financial risk. During the year, the Board monitored the Group's current risk exposure relative to the Board's appetite for different risks. There were no risks where the current risk exposure exceeded the Board's risk appetite.

EMERGING RISKS

As part of the ongoing risk management process, the Board and the GBUs also identified and assessed emerging risks. None of these emerging risks are currently deemed to be significant and they are therefore not listed amongst the Group's principal risks below. They are identified, assessed and monitored continuously to be able to respond effectively when they crystallise.

The key emerging risk areas identified were:

- Environmental risk: climate change – including the potential impact of rising sea levels on low-lying or coastal sites and Morgan Advanced Materials' role in protecting and enhancing the environment. Energy intensity and water scarcity – including ways of adjusting the Company's production processes to reduce usage of natural resources . Raw materials and potential issues with their continued availability;
- Regulatory risk: manufacturing regulations – regulatory requirements for certain hazardous materials;
- Social/Societal: longer-term changes to end-markets redirecting effort to new end-markets for example, electric vehicles, domestic heating, decentralised generation of energy;
- Business model: route to market – potential permanent change in traditional selling models requiring an accelerated shift to e-commerce. Change to permanent remote working models with own employees, customers and vendors.

These emerging risks have been recorded and will be monitored so that their potential impact can be understood and mitigated. They will also be considered as an integral part of the strategic planning process and they form part of the focused risk review of each GBU.

The following are the Group's principal risks and uncertainties and represent the risks that the Board feels could have the most significant impact on achieving the Group's strategy of building a sustainable business for the long term and could impact the delivery of strong returns to the Group's shareholders. An indication of the Group's assessment of the trend of each principal risk – whether the potential severity has increased, decreased or is broadly unchanged over the past year – is provided.

RISKS

OPERATIONAL RISKS → FINANCIAL RISKS → LEGAL AND COMPLIANCE RISKS

RISK KEY

Increased   Unchanged   Decreased   Improved

Risk	Risk description, assessment and trend from 2020	Mitigation
OPERATIONAL RISKS **TECHNICAL LEADERSHIP** **Severity:** Moderate **Trend:** Unchanged **Risk appetite:** Moderate	The Group's strategic success depends on maintaining and developing its technical leadership in materials science over its competitors. Unforeseen/unmitigated technology obsolescence, the emergence of competing technologies, the loss of control of proprietary technology or the loss of intellectual property/know-how would impact the Group's business and its ability to deliver on its strategic goals. The advanced technological nature of the Group requires people with highly differentiated skillsets. Any inability to recruit, retain and develop the right people would negatively impact the Group's ability to achieve its strategic goals.	The Group has a dedicated technology team within each GBU which monitors relevant technology and business developments, using technology roadmaps linked to 20 major technology families, to ensure it remains at the leading edge of development. The Group also has four Centres of Excellence. These Centres focus Morgan Advanced Materials' expertise and research resources on further developing core technologies and identifying new opportunities and applications. The GBU leadership teams proactively monitor their technology priorities and R&D investments and have implemented a stage-gate process to manage this effectively. These projects are also regularly reviewed by the CEO and CFO. Where Group products are designed for a specific customer, they are developed in partnership with the customer. The Group seeks to secure intellectual property protection, where appropriate via a Trade Secret standard, for its existing and emerging portfolio of products and has an in-house counsel dedicated to intellectual property protection, with the support of external advisors. During the year, the Group continued its global leadership programme, adding an advanced programme to develop more high-potential commercial, functional and technical leaders. Further detail on our people can be found on pages 28 to 31. Further detail on research and development can be found on page 107.
OPERATIONAL RISKS **OPERATIONAL EXECUTION/ ORGANISATIONAL CHANGE** **Severity:** Low **Trend:** Unchanged **Risk appetite:** Moderate	As part of the Group's strategy to improve the efficiency of its operations and organisation, various changes have been made to operational processes at individual sites, to the GBU set up and to the Group's structure. Further improvements and changes are planned for future years. Failure to manage these changes adequately could result in interruption to operations or customer service, or a failure to maximise the Group's opportunities.	Changes to operational processes are carefully considered by site and GBU management before implementation. Operational improvements and savings are monitored against budget by the GBUs and the Executive Committee to ensure that changes deliver the savings promised without disruption to business operations. New capital investments are approved at appropriate levels of the Group and delivery of these is overseen by GBU and Group management. Organisational changes are assessed by the Chief Executive Officer, the Executive Committee and sometimes the Board before being implemented in line with local employment regulations. A number of functionalisation initiatives commenced within the GBUs and IT in 2021 to align and standardise data and processes. The rollout of these projects will continue in 2022. Changes to the global and functional structure of our GBUs are reviewed at various levels of the organisation before being implemented. Further detail on Morgan Advanced Materials' strategy can be found on page 10.
OPERATIONAL RISKS **PORTFOLIO MANAGEMENT** **Severity:** Low **Trend:** Unchanged **Risk appetite:** Moderate	The Group operates across a range of product and technology families. These are subject to long-term market trends which may lead to either obsolescence or opportunities to further expand the Group. Failure to manage the Group's portfolio of businesses proactively and in line with this technology profile could lead to the value of the Group's businesses being eroded over time or to a failure to exploit opportunities to acquire businesses with the capability to add further value to the Group.	The Board performs regular reviews of the Group's portfolio. During 2020, the Group launched a COVID-19-related restructuring and efficiency programme. This accelerated existing plans to simplify the Group's portfolio and align capacity with the anticipated demand across the business. The site closures completed in the second half of 2021. Opportunities to acquire businesses are reviewed on a continuing basis.

RISK MANAGEMENT

Risk	Risk description, assessment and trend from 2020	Mitigation
OPERATIONAL RISKS **MACRO-ECONOMIC AND POLITICAL ENVIRONMENT** **Severity:** High **Trend:** Unchanged	The Group operates in a range of markets and geographies around the world and could be affected by political, economic, social or regulatory developments or instability, for example an economic slowdown or issues stemming from oil and natural resource price shocks. Whilst a "no-deal' Brexit was avoided and new tariffs have not as yet been introduced, the UK's exit from the EU impacts border controls, product standards, and controls around the flow of data. The current value of Group's UK exports to the EU is approximately £26 million and imports into the UK from the EU are approximately £16 million. We fully support the sanctions that have been put in place against Russia and we have ceased all trading with Russia. In 2021, we had £4.0 million of revenues from Russia, representing less than 0.5% of Group revenues. We have no significant dependency on material supply from Russia or Ukraine.	The Group's broad market and geographic spread helps to mitigate the effects of political and economic changes. Budgets and forecasts for Morgan Advanced Materials' different businesses are used to monitor delivery against expectations and anticipate potential external risks to performance. These are subject to regular review by the Executive Committee and the Board. In 2021, the Group saw strong organic growth as end-markets recovered. There has also been some impact of inflationary pressures on raw materials, energy and labour. Global issues considered by the Board this year included the continuing impact and uncertainty relating to the trade negotiations between the USA and China. The impact of the UK's exit from the EU has been minimal; however, tariffs could be introduced in the future.
OPERATIONAL RISKS **ENVIRONMENT, HEALTH AND SAFETY (EHS)** **Severity:** High **Trend:** Unchanged **Risk appetite:** Very low	The Group operates a number of manufacturing facilities around the world. A failure in the Group's EHS procedures could lead to environmental damage or to injury or death of employees or third parties, with a consequential impact on operations and increased risk of regulatory or legal action being taken against the Group. Any such action could result in both financial damages and damage to reputation. Given the long history of many of the operations of the Group, there is also a risk that historical operating and environmental standards may not have met today's environmental regulations. In addition, the Group may have obligations relating to prior asset sales or closed facilities.	Managing its operations safely is the Group's number one priority. The Group has a comprehensive EHS programme managed by the Group Health and Safety Director and the Group Environment and Sustainability Director, with clear EHS standards and a refreshed programme of audits to assess compliance. The Group Health and Safety Director and the Group Environment and Sustainability Director, working with the Global EHS Leads, set annual priorities for EHS which are approved by the Executive Committee. These form the basis for individual sites' own EHS priorities and plans and complement the Group's 'thinkSAFE' behavioural safety programme. EHS performance is monitored by the Group Executive Committee and the Board. EHS metrics are regularly assessed. Overall EHS performance deteriorated slightly during 2021. As at 31 December 2021, the Group was managing projects to remediate legacy contamination at a number of former operational sites in conjunction with external specialists and relevant authorities. The Group's commitment to protecting and enhancing the environment is set out on pages 20 to 24. TCFD disclosures are set out on pages 25 to 27. Details of the Group's provisions and contingent liabilities can be found in note 25 to the consolidated financial statements.
OPERATIONAL RISKS **CORONAVIRUS (COVID-19) PANDEMIC** **Severity:** High **Trend:** Unchanged	Communicable disease impacts ways of working, the supply chain and the ability of employees to travel to work in affected areas. The Company's priority is to take all actions and precautions necessary to ensure the safety and wellbeing of our employees.	In all manufacturing sites, ways of working were successfully adapted to respond to the pandemic and keep people safe; introducing social distancing, hygiene measures and additional PPE. Flexible working from home was also introduced for all roles that could do so. The Company has continued to be able to supply its key customers operating in essential sectors, including healthcare and power generation. The Group has provided clear and timely communication to reinforce the importance of following safety measures in every part of the organisation.

Risk	Risk description, assessment and trend from 2020	Mitigation
OPERATIONAL RISKS **PRODUCT QUALITY, SAFETY AND LIABILITY** **Severity:** High **Trend:** Unchanged **Risk appetite:** Very low	Products used in applications for which they were not intended or inadequate quality control/over-commitment on customer specifications could result in products not meeting customer requirements, which could in turn lead to significant liabilities and reputational damage. Some of our products are used in potentially high-risk applications, for example in the aerospace, automotive, electric vehicle, medical and power industries.	Many of the Group's products are designed to customer specifications. Morgan Advanced Materials' quality management systems and training help ensure that all our products meet or exceed customer requirements and national/international standards. The Group Legal Policy requires that contracts relating to products used in potential high-risk applications are subject to legal review to ensure that appropriate protections are in place for product quality risks. The Group insurance programme includes product liability insurance; this Group-level insurance is reviewed annually by the Board.
OPERATIONAL RISKS **IT AND CYBERSECURITY** **Severity:** Significant **Trend:** Increased **Risk appetite:** Very low	Across the industry the impact of cyber-attacks has been growing rapidly influenced by increased connectivity, remote working and regulatory intervention and compliance. The COVID-19 pandemic resulted in a further rise in remote working and an accelerated shift to cloud platforms, thereby increasing the cyber risk severity due to threats such as email-propagated attacks (e.g phishing, cyber-fraud, impersonation, malware, ransomware). If the Group were to lose critical information (such as IP or regulatory data) or if critical systems availability were affected through cyber-attacks, the business would be impacted or could suffer reputational damage. The effective management of the Group's IT infrastructure is important in enabling our businesses to deliver customer requirements reliably. If a key business system were to fail or core systems implementation were to be ineffective, the ability of the business to deliver on its strategic goals might be impacted.	During 2021 information security and compliance function was further matured. Morgan Advanced Materials is currently in the second year of a three-year security programme and we have strengthened the 'thinkSECURE' internal brand through an awareness programme. Multi-factor authentication has now been fully implemented. The Group has continued to monitor the regulatory and compliance landscape and is following emerging regulations, such as the US Department of Defense's Cybersecurity Maturity Model Certificate (CMMC), and the EU-GDPR and UK Data Protection Act (DPA) 2018. Residual and emerging risks will be mitigated through continuation of the Company's IT strategy and information security programme, including 'thinkSECURE' and implementation of the related cybersecurity projects.
OPERATIONAL RISKS **SUPPLY CHAIN/ BUSINESS CONTINUITY** **Severity:** Moderate **Trend:** Unchanged **Risk appetite:** Moderate	The Group has a number of potential single-point exposure risks, which include: → Single-point supplier – a significant interruption of a key internal or external supply could impact business continuity; → Single-point customer – the unmitigated loss of a major customer could have an impact on Group profit. The Group's largest customer represents circa 2% of Group revenue; → Single-point site – a key site exposed to a strike, natural catastrophe or serious incident such as fire, could impact business continuity. One Group site, Hayward, is situated in the California earthquake zone (USA). Certain of the Group's businesses are important for intercompany supply purposes.	The Group has a diversified manufacturing, customer and geographic base which provides a level of resilience against single-point exposures. Were any site to be unavailable, production in many cases could be switched to other sites. The Business Continuity Policy supports minimum standards at the Group's most important sites for intercompany supply. Management of these risks also involves monitoring and reviewing supply chains (internal and external), dual/multiple sourcing of materials or strategic stock, site security and safety mechanisms, business continuity plans, and maintenance of product quality and strong customer relationships. The Group insurance programme includes business interruption cover and specific cover in relation to the impact of an earthquake in California, USA; this Group-level insurance is reviewed annually by the Board.

RISK MANAGEMENT

Risk	Risk description, assessment and trend from 2020	Mitigation
FINANCIAL RISKS **TREASURY** **Severity:** Moderate **Trend:** Improved **Risk appetite:** Very low	The Group's global reach means that it is exposed to uncertainties in the financial markets, the fiscal jurisdictions where it operates, and the banking sector. These heighten the Group's funding, foreign exchange, tax, interest rate, credit and liquidity risks as well as the risk that a bank failure could impact the Group's cash.	The Group's treasury function operates on a risk-averse basis. Required controls over selection of banks, cash management and other treasury practices and payments globally are documented in Morgan Advanced Materials' Treasury Policy and related procedures. The Group treasury team manages the Group's funding, liquidity, cash management, interest rate, foreign exchange, counterparty credit and other treasury-related risks. Treasury matters are regularly reviewed by the Board and Audit Committee. As at 31 December 2021, the Group had an undrawn Revolving Credit Facility of £200m which matures in September 2024. Headroom on committed facilities increased during the period to £327.3m (2020: £275.8m) providing protection against future refinancing risk and ensuring sufficient funds are available to support the Group's activities. Further detail on the Company's Treasury Policy is set out in the Group Financial Review, which can be found on page 52.
FINANCIAL RISKS **PENSION FUNDING** **Severity:** High **Trend:** Unchanged **Risk appetite:** Very low	The Group sponsors several defined benefit pension arrangements (the Schemes), whose liabilities are subject to fluctuating interest rates, investment values and inflation. This coupled with the increased longevity of members and a tougher regulatory funding regime will result in increased funding burdens on the Group in the future. The deficit in Morgan Advanced Materials' global defined benefit pension schemes calculated on the basis required for IAS 19 accounting disclosures decreased from £176.3 million as at 31 December 2020 to £102.7 million as at 31 December 2021. The Group also participates in two multi-employer defined benefit schemes in the USA, both of which have significant funding deficits.	Morgan's primary means of mitigating pensions funding risk is proactive management of the pension scheme assets and liabilities through an integrated pension strategy focusing on funding, investment and benefit risk. This involves both internal management within the Group and also external management through the Schemes' trustees, corporate actuaries and professional advisors. In the UK, both Schemes are closed to the future accrual of benefits. In consultation with the Company, the trustees have adopted a proactive approach to the management of risk in the Schemes' investment portfolios, significantly reducing their unhedged interest and inflation rate exposure. Following the most recent Scheme valuations in March 2019, Company contributions increased to £16.5 million pa from 2020 (further increasing by 2.75% each year) for the length of the current recovery plans (2025 and 2027). The next valuations will be commenced in March 2022 with funding arrangements reviewed. Risk for both of the defined benefit Pension Plans in the US has been reduced. One completed a full legal termination (in June 2016). For the other Scheme, a formal offer of a present-value-equivalent, lump-sum cash payment was made to members. Following a $36 million additional contribution (in December 2017) and a move to a significantly de-risked investment portfolio, this Scheme is now almost fully funded on an accounting basis. A liability management strategy for both of the US multi-employer plans has been agreed and a proposal for withdrawal made to the Trustees of the more severely underfunded arrangement. No significant funding obligations exist in any other individual country although German legacy defined benefit schemes are unfunded, in accordance with local practice. The recent risk review identified no significant liability increases were likely in foreseeable future.

Risk	Risk description, assessment and trend from 2020	Mitigation
FINANCIAL RISKS **TAX** **Severity:** Moderate **Trend:** Unchanged **Risk appetite:** Very low	The Group operates in many jurisdictions around the world and could be affected by changes in tax laws and regulations within the complex international tax environment. The OECD's Base Erosion and Profit Shifting (BEPS) framework is generating additional obligations and filing requirements for the Group as countries continue to implement the actions in the framework. These could have an impact on the tax paid by the Group.	The Group's tax function, working in conjunction with external specialists as required, closely monitors fiscal developments and changes such as BEPS to ensure that the Group's tax arrangements and practices continue to comply with the requirements of all relevant jurisdictions, whilst also enabling efficient management of the tax liability. The Group's Head of Tax reports to the Audit Committee on key tax issues and initiatives. The Group has published its tax strategy on its website in line with UK corporate governance requirements. www.morganadvancedmaterials.com/en-gb/sustainability-responsibility/governance/
LEGAL AND COMPLIANCE RISKS **CONTRACT MANAGEMENT** **Severity:** High **Trend:** Unchanged **Risk appetite:** Very low	As a global advanced materials business, supplying components for critical applications, the Group may be exposed to liabilities arising from the use of its products. Ineffective contract risk management could result in significant liabilities for the Group and could damage customer relationships.	The Group has an in-house legal function supplemented by specialist external lawyers. The Group Legal Policy requires in-house legal review of high-value or high-risk contracts to ensure they contain appropriate protections for the Group. The Policy requires Chief Executive Officer approval before a business can enter into an unlimited liability contract or one where the liability cap exceeds £5 million. The Legal Policy has been updated, focusing on clarifying understanding and the position on high-risk purchase contracts. A training programme is in place. The Group has product liability insurance that would respond to product liability claims (up to policy limits) to the extent this is not limited contractually.
LEGAL AND COMPLIANCE RISKS **COMPLIANCE** **Severity:** High **Trend:** Unchanged **Risk appetite:** Very low	The Group's global operations must comply with a range of national and international laws and regulations including those related to bribery and corruption, human rights, trade/export compliance and competition/anti-trust activities. A failure to comply with any applicable laws/regulations could result in civil or criminal liabilities and/or individual or corporate fines and could also result in debarment from government-related contracts or rejection by financial market counterparties and reputational damage.	The Group is committed to the highest standards of corporate and individual behaviour. To support this, in 2018 the Group issued the Morgan Code, which has been continuously in force since then. The Code defines the Group's approach to doing business ethically and confirms Morgan Advanced Materials' commitment to high standards of ethical behaviour. The Code is supported by a range of documents and mechanisms: policies, standards and guidance; training materials; the provision of an ethics hotline for employees; and systems to support effective screening of and due diligence on third parties. In 2021, the Company introduced the Supplier Code of Conduct. Mandatory ethics training for staff covers topics including anti-bribery and anti-corruption, anti-trust, harassment and bullying and trade controls. The Group's 'Speak Up' methods enable staff to report concerns anonymously. The Group has a Global Ethics and Compliance Director organising and leading the Group's activities and programmes. The Group also has a Global Trade Compliance Director whose role is dedicated to ensuring compliance with trade controls. In addition to Group-level compliance specialists, the businesses are required to establish compliance officer roles, which are responsible for supporting local training and monitoring. Morgan also employs country-specific trade and export compliance specialists in higher-risk businesses and jurisdictions. Further details on ethics and compliance can be found on pages 34 to 35.

REVIEW OF OPERATIONS

GROUP PERFORMANCE

GROUP REVENUE AND OPERATING PROFIT

Group revenue was £950.5 million (2020: £910.7 million), an increase of 4.4% on a reported basis compared with 2020, as demand starts to recover following last year's slowdown.

Group adjusted operating profit* was £124.5 million (2020: £91.7 million). Adjusted operating profit margin* was 13.1%, compared with 10.1% for 2020.

Operating profit was £113.1 million (2020: loss of £1.8 million) and profit before tax was £104.3 million (2020: loss of £13.1 million). Specific adjusting items in 2021 was a net pre-tax charge of £5.4 million (2020: £87.4 million), primarily relating to the impairment of assets offset by profit on disposal of our shareholding in an associate. Further details are included under 'Specific adjusting items'.

SPECIFIC ADJUSTING ITEMS FROM CONTINUING OPERATIONS

In the consolidated income statement, the Group presents specific adjusting items separately. In the judgement of the Directors, as a result of the nature and value of these items they should be disclosed separately from the underlying results of the Group to allow the reader to obtain an understanding of the financial information and the underlying performance of the Group.

Details of specific adjusting items arising during the year and the comparative period are given in note 6 to the consolidated financial statements. Specific adjusting items in relation to discontinued operations are disclosed in note 9 to the consolidated financial statements.

In 2021 specific adjusting items were £5.4 million (2020: £87.4 million) and comprised the following:

Continuing operations	Revenue		Adjusted operating profit[1]		Margin %[1]	
	2021 £m	2020 £m	2021 £m	2020 £m	2021 %	2020 %
Thermal Ceramics	364.7	344.3	42.0	26.7	11.5%	7.8%
Molten Metal Systems	47.7	41.2	6.3	3.2	13.2%	7.8%
Thermal Products division	412.4	385.5	48.3	29.9	11.7%	7.8%
Electrical Carbon	164.9	151.4	32.8	23.6	19.9%	15.6%
Seals and Bearings	135.9	146.4	22.9	27.5	16.9%	18.8%
Technical Ceramics	237.3	227.4	26.4	14.8	11.1%	6.5%
Carbon and Technical Ceramics division	538.1	525.2	82.1	65.9	15.3%	12.5%
Divisional total	950.5	910.7	130.4	95.8	13.7%	10.5%
Corporate costs			(5.9)	(4.1)		
Group adjusted operating profit[1]			124.5	91.7	13.1%	10.1%
Amortisation of intangible assets			(6.0)	(6.1)		
Operating profit before specific adjusting items			118.5	85.6	12.5%	9.4%
Specific adjusting items included in operating profit[2]			(5.4)	(87.4)		
Operating profit/(loss)			113.1	(1.8)	11.9%	(0.2)%
Net financing costs			(9.2)	(11.9)		
Share of profit of associate (net of income tax)			0.4	0.6		
Profit/(loss) before taxation			104.3	(13.1)		

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.
2. Details of specific adjusting items from continuing operations can be found in note 6 to the consolidated financial statements.

Read more about our Thermal Products division on pages 46 to 47 and our Carbon and Technical Ceramics division on pages 48 to 49.

	2021 £m	2020 £m
Specific adjusting items from continuing operations[1]		
Impairment of non-financial assets	(12.4)	(65.6)
Restructuring credit/(costs)	0.1	(24.0)
Net profit on disposal of business	7.1	2.2
Business closure and exit costs	(0.2)	–
Total specific adjusting items before income tax	(5.4)	(87.4)
Income tax credit from specific adjusting items	1.5	13.3
Total specific adjusting items after income tax	(3.9)	(74.1)

1. Specific adjusting items relating to discontinued operations are disclosed in note 9.

2021 IMPAIRMENT OF NON-FINANCIAL ASSETS

Technical Ceramics, Asia

An impairment charge of £6.0 million has been recognised after reassessing the value in use of property, plant and equipment in a business in Asia which is taking longer than anticipated to generate revenues. This represents a partial impairment of the assets; the carrying value of the assets following this impairment is £5.4 million. The calculation of value in use was performed as at 31 December 2021. A long-term growth rate of 1% was used for years beyond the five year forecast period and in calculating the terminal value. A pre-tax discount rate of 11.5% was used to determine the value in use.

Electrical Carbon, Europe and North America

Impairment charges of £4.8 million and £1.0 million have been recognised after assessing the viability of two development assets in Europe and North America, respectively. The European asset was not deemed viable as we were unable to commission it safely and the American asset was not deemed to be commercially viable.

Thermal Ceramics, North America

An impairment charge of £0.6 million has been recognised relating to assets associated with closed manufacturing lines within Thermal Ceramics.

RESTRUCTURING CREDIT

A net credit of £0.1 million has been recognised in the current year representing £2.1 million of further redundancy and closure costs related to the Group's restructuring programme, offset by a £2.2 million release of restructuring provisions booked last year in relation to this programme. Whilst the Group's restructuring programme was completed in 2021, we retain restructuring provisions of £11.8 million for the Group's obligations at the balance sheet date (2020: £17.3 million). This provision includes remaining lease exit costs and multi-employer pension obligations for two sites which have been closed during the year. The cash outflows relating to the pension obligations may continue for up to 20 years, subject to any settlement being reached in advance of that date. Refer to note 25 for further information.

NET PROFIT ON DISPOSAL OF BUSINESS

The Group disposed of its 35% shareholding in Jemmtec Limited and the business assets associated with the Latrobe business during the year. These disposals generated a profit of £7.2 million and a loss of £0.1 million, respectively. Refer to note 2 for further information.

BUSINESS CLOSURE AND EXIT COSTS

A £0.2 million charge has been recognised relating to the liquidation of businesses in Europe and Asia.

2020 IMPAIRMENT OF NON-FINANCIAL ASSETS

Technical Ceramics, ceramic cores

A significant downturn in aerospace demand in 2020 resulted in impairment losses of £28.8 million relating to the ceramic cores business. The impaired assets comprised intangible assets recognised upon the acquisition of the Carpenter business in 2008, and property, plant and equipment.

Technical Ceramics, China

On 15 June 2020 the Group announced the closure of its Suzhou manufacturing facility in China and recognised a £1.1 million charge relating to the impairment of property, plant and equipment.

Thermal Ceramics

Reduced demand in the aerospace, automotive and industrial market segments in 2020 resulted in impairment losses of £35.7 million in Thermal Ceramics, which related to the closure of sites and under-utilised product lines, as well as the impairment of intangible assets recognised upon the acquisition of Porextherm in Germany in 2014.

RESTRUCTURING COSTS

Following the announcement of the Group's restructuring programme in 2020, a £24.0 million charge was recognised which related to staff redundancies, site closure costs, legal and professional fees and the exit of certain multi-employer defined contribution pension plans.

PROFIT ON DISPOSAL OF BUSINESS

On 31 August 2020, the Group completed the sale of its Diamonex business, based in Allentown, USA. The transaction was structured as a sale of the business and related assets. Consideration of £5.9 million was recognised, which comprised £5.6 million cash received on completion and £0.3 million of deferred consideration which was received in December 2021. A gain of £2.2 million was realised on disposal – see note 2 for more details.

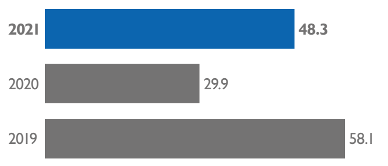
REVIEW OF OPERATIONS

DIVISIONAL AND GLOBAL BUSINESS UNIT PERFORMANCE

THERMAL PRODUCTS

REVENUE
(£M)

DIVISIONAL ADJUSTED OPERATING PROFIT*
(£M)



HIGHLIGHTS

- The Thermal Products division's 2021 reported revenue was £412.4 million (2020: £385.5 million), an increase of 7.0% compared with 2020;
- On an organic constant-currency* basis, revenue increased by 11.0% compared with 2020;
- Divisional operating profit was £43.8 million (2020: loss £12.6 million) and divisional operating profit margin was 10.6% (2020: loss 3.3%), with improvement driven by the delivery of the restructuring programme and volume growth. Details of the specific adjusting items of £1.8 million (2020: £40.3 million) are included in note 6;
- Divisional adjusted operating profit* was £48.3 million (2020: £29.9 million) and divisional adjusted operating profit margin* was 11.7% (2020: 7.8%).

BUSINESS DESCRIPTION

The Thermal Products division comprises the Thermal Ceramics and Molten Metal Systems global business units.

Thermal Ceramics manufactures advanced ceramic materials, products and systems for thermal insulation in high-temperature environments.

We engineer systems for the safety of people and equipment in demanding applications. Our products help customers, especially those operating energy-intensive processes, to reduce energy consumption, emissions and operating costs.

Our products are used in high-temperature industrial processing of metals, petrochemicals, cement, ceramics and glass, and by manufacturers of equipment for aerospace, automotive, marine and domestic applications. Our core strength is our ability to address individual customer problems, using our materials and our applications expertise to design, manufacture and install optimum thermal solutions.

Our product range includes high-temperature insulating fibre products, microporous products, firebricks, monolithic products, heat shields, fired refractory shapes and structural block insulation products.

Molten Metal Systems manufactures an extensive range of high-performance crucibles and foundry consumables for non-ferrous-metal melting applications. We provide melting solutions for foundries, die-casters and melting facilities working with zinc, precious metals, aluminium, copper, brass, bronze and other non-ferrous metals.

With its extensive applications experience and process knowledge, Molten Metal Systems helps customers put together the optimal system for their needs. The global business unit works with customers in non-ferrous castings, metal powder production, refining and recycling of precious metals, and the production of pure aluminium for electronics applications.

Our product range includes crucibles and foundry products.

FOOTPRINT

As at 31 December 2021 Thermal Products comprised 28 operating sites employing approximately 2,830 people, with manufacturing sites across the world. It also has a comprehensive network of sales offices allowing immediate access to and facilitating direct working with end-users. Some sales, particularly for the insulating fibre and crucible product ranges, are made through a well-established distributor network.

PERFORMANCE AND BUSINESS REVIEW

Revenue for Thermal Products for the year was £412.4 million, representing an increase of 7.0% compared with £385.5 million in 2020. On an organic constant-currency* basis, year-on-year revenue increased by 11.0%. Divisional adjusted operating profit* for Thermal Products was £48.3 million (2020: £29.9 million) with a divisional adjusted operating profit* margin of 11.7% (2020: 7.8%) with improvement driven by the delivery of the restructuring programme and volume growth. Divisional operating profit was £43.8 million (2020: loss £12.6 million).

Revenue for Thermal Ceramics for the year was £364.7 million, representing an increase of 5.9% compared with £344.3 million in 2020. On an organic constant-currency* basis, year-on-year revenue increased by 9.8%. Revenue was higher due to a recovery in the industrial markets and energy segments and growth in healthcare and automotive segments.

Thermal Ceramics' 2021 adjusted operating profit* was £42.0 million (2020: £26.7 million) with adjusted operating profit margin* of 11.5% (2020: 7.8%). Margin improvement was driven by higher volumes and the delivery of efficiency actions from the restructuring programme.

Revenue for Molten Metals Systems for the year was £47.7 million, an increase of 15.8% compared with £41.2 million in 2020. On an organic constant-currency* basis, year-on-year revenue increased by 20.8%. Revenue growth is driven by a strong demand in the aluminium and copper segments.

Molten Metal Systems' 2021 adjusted operating profit* was £6.3 million (2020: £3.2 million) with adjusted operating profit margin* of 13.2% (2020: 7.8%). During 2021, margins improved due to the higher volumes and cost control actions.

STRATEGY

The priorities for the division remain in line with the execution priorities of the Group. We have put increased emphasis on growth markets where we bring clear technological differentiation. We have invested in changes in our customer-facing organisation to improve our understanding of customer needs and market drivers and to develop sales effectiveness as a distinctive capability.

We recognise the key advantages we have in the markets we serve and will build on these: our global manufacturing footprint, broad product range, application experience, and technological advancements. We will continue to drive operational excellence through lean manufacturing, process efficiency, and automation.

We are investing in product and process technology to optimise our products and processes to serve the challenging performance needs of our customers. We will continue to invest in this differentiation, as we see increasing competition which is putting pressure on margins for our standard products.

REVIEW OF OPERATIONS

DIVISIONAL AND GLOBAL BUSINESS UNIT PERFORMANCE

CARBON AND TECHNICAL CERAMICS

REVENUE
(£M)

DIVISIONAL ADJUSTED OPERATING PROFIT*
(£M)

HIGHLIGHTS

- The Carbon and Technical Ceramics division's reported revenue for 2021 was £538.1 million (2020: £525.2 million), an increase of 2.5% compared with 2020;
- On an organic constant-currency* basis, revenue increased by 9.7% compared with 2020, with an increase in Technical Ceramics and Electrical Carbon offsetting a decrease in Seals and Bearings;
- Divisional operating profit was £66.5 million (2020: £15.4 million). Divisional operating profit margin was 12.4% (2020: 2.9%). Details of the specific adjusting items of £12.3 million (2020: £46.6 million) are included in note 6;
- Divisional adjusted operating profit* for the Carbon and Technical Ceramics division was £82.1 million (2020: £65.9 million) and divisional adjusted operating profit margin* was 15.3% (2020: 12.5%).

BUSINESS DESCRIPTION

The Carbon and Technical Ceramics division comprises the Electrical Carbon, Seals and Bearings and Technical Ceramics global business units.

Electrical Carbon develops and manufactures a wide range of products which are used to transfer electrical current between stationary and rotating or linear moving parts in motor, generator, and current-collector applications. Our products are engineered for specific customer applications and they are often required to operate in harsh or extreme environments. Electrical Carbon's main markets are rail, industrial drives, power generation, iron and steel, mining and wind-power. The business' core strength is its longstanding materials and applications experience and its ability to engineer appropriate, reliable solutions for individual customer requirements.

Our product range includes electrical carbon brushes and collectors, brush holders, slip rings and linear transfer systems.

Seals and Bearings makes high-performance self-lubricating bearing and seal components, used predominantly in pumps – industrial and domestic – or other sealing applications. We use advanced carbon/graphite, silicon carbide, alumina and zirconia materials to engineer lightweight, low-friction bearings and seals. These materials help solve the problems associated with use of lubricants in extreme temperatures, corrosive or hygienic environments and where access is restricted, and are engineered into products which provide customer-specific solutions.

The business's components often help to extend the operating life of customers' equipment and make it more energy-efficient. The main markets served are specialist applications in the oil and gas, automotive, industrial, water pump, aerospace and home appliance sectors.

Our product range includes seals, bearings and general pump components (shafts, vanes, rotors and washers).

Technical Ceramics engineers high-performance functional and structural ceramic materials, components and sub-assemblies to address customer-specific technical challenges. The business employs advanced materials science and applications expertise to produce parts that enhance reliability or improve the performance of its customers' products. Much of what the global business unit makes is used in demanding, harsh or critical environments. The global business unit works in selected segments of the semiconductor, energy, healthcare, industrial, petrochemicals, security and transport markets, typically in close collaborative customer relationships.

Our product range includes structural ceramic components, engineered coatings, ceramic-to-metal assemblies including brazed and metallised assemblies, ceramic cores, braze alloys and ceramic tubes and rollers.

FOOTPRINT

As at 31 December 2021 the Carbon and Technical Ceramics division comprised 44 operating sites employing approximately 4,740 people, with manufacturing sites across the world. As a result of the customer-specific nature of most of the products sold and the importance of staying very close to the market, most sales are made directly by the division's sales force and application engineers, with limited use being made of distributors. The global spread of operating sites supplemented by a comprehensive network of sales offices allows immediate access to and facilitates direct working with customers and the products' end-users.

PERFORMANCE AND BUSINESS REVIEW

Revenue for the Carbon and Technical Ceramics division for the year was £538.1 million, representing an increase of 2.5% compared with £525.2 million in 2020. On an organic constant-currency* basis, year-on-year revenue increased by 9.7%. Divisional operating profit was £66.5 million (2020: £15.4 million). Divisional adjusted operating profit* for the Carbon and Technical Ceramics division was £82.1 million (2020: £65.9 million), with divisional adjusted operating profit margin* of 15.3% (2020: 12.5%).

Revenue for the Electrical Carbon global business unit in 2021 was £164.9 million, representing an increase of 8.9% compared with £151.4 million in 2020. On an organic constant-currency* basis, year-on-year revenue improved by 13.1%. The increase in revenue has been driven by growth in the industrial, renewable energy and semiconductor market segments.

Electrical Carbon's adjusted operating profit* was £32.8 million (2020: £23.6 million) with an adjusted operating profit margin* of 19.9% (2020: 15.6%). Adjusted operating profit margins* were expanded through operational efficiency, cost reduction actions and increased volume.

Revenue for the Seals and Bearings global business unit in 2021 was £135.9 million, representing a decrease of 7.2% compared with £146.4 million in 2020. On an organic constant-currency* basis, year-on-year revenue decreased by 3.1%. The business decline was driven by an expected reduction of contract awards in ceramic armour (2021: £29 million; 2020: £49 million). This was largely offset by growth in the industrial, petrochemical and transportation market segments.

Seals and Bearings' adjusted operating profit* was £22.9 million (2020: £27.5 million), with an adjusted operating profit margin* of 16.9% (2020: 18.8%). The margin decline has resulted from lower ceramic armour volume.

Revenue for the Technical Ceramics global business unit in 2021 was £237.3 million, an increase of 4.4% compared with £227.4 million in 2020. On an organic constant-currency* basis, year-on-year revenue increased by 16.1%, primarily driven by growth in the industrial, semiconductor, healthcare, energy and aerospace market segments.

Technical Ceramics' adjusted operating profit* was £26.4 million (2020: £14.8 million), with an adjusted operating profit margin* of 11.1% (2020: 6.5%). Margins improved with the impact of higher volumes and benefits from the restructuring programme, partially offset by a £3 million headwind from business exits.

STRATEGY

The priorities of the Carbon and Technical Ceramics division, and of the three global business units which it comprises, remain in line with the execution priorities of the Group. The division remains focused on delivering operational efficiencies to support reinvestment in product development and sales to support growth in our selected markets and to drive margin expansion.

The focus on operating costs is reflected in the division's results, most notably in the improved adjusted operating profit margins*. Plant-specific initiatives include a focus on reducing scrap and improving yields, which when combined with the benefits of global footprint management, and the increased use of low-cost manufacturing operations, underpin the reductions in the operational cost base of the business. A significant part of the division's capital expenditure is on investments which will improve the operational efficiency of the division.

Carbon and Technical Ceramics has two global Centres of Excellence – Carbon Science, and Metals and Joining. Their focus will be on ensuring a strong pipeline of innovation for the businesses within the Carbon and Technical Ceramics division.

GROUP FINANCIAL REVIEW

FOREIGN CURRENCY IMPACT

The principal exchange rates used in the translation of the results of overseas subsidiaries were as follows:

	2021		2020	
GBP to:	Closing rate	Average rate	Closing rate	Average rate
US dollar	1.35	1.38	1.37	1.28
Euro	1.19	1.16	1.12	1.13

The potential impact of changes in foreign exchange rates is given in note 22 to the consolidated financial statements on page 157.

Retranslating the 2021 full-year results at the January 2022 closing exchange rates would lead to revenue of £954.6 million and adjusted operating profit* of £124.6 million.

For illustrative purposes, the table below provides details of the impact on 2021 revenue and Group adjusted operating profit* if the actual reported results, calculated using 2021 average exchange rates were restated for GBP weakening by 10 cents against the US dollar in isolation and 10 cents against the Euro in isolation:

Increase in 2021 revenue/adjusted operating profit[1] if:	Revenue £m	Adjusted operating profit[1] £m
GBP weakens by 10c against the US dollar in isolation	29.6	3.9
GBP weakens by 10c against the Euro in isolation	18.8	3.3

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

AMORTISATION OF INTANGIBLE ASSETS

The Group amortisation charge was £6.0 million (2020: £6.1 million).

FINANCE COSTS

The net finance charge was £9.2 million (2020: £11.9 million) comprising net bank interest and similar charges of £5.3 million (2020: £6.5 million), net interest on IAS 19 pension obligations of £1.6 million (2020: £2.6 million), and the interest expense on lease liabilities of £2.3 million (2020: £2.8 million) resulting from IFRS 16 Leases.

The impacts of potential changes in interest rates on profit or loss are stated in note 22 to the consolidated financial statements on page 154.

Looking forward to 2022, we anticipate that the net finance charge will be around £9 million, comprising: net bank interest and similar charges of £6 million; net interest on IAS 19 pension obligations of £1 million; and net interest expense on lease liabilities of £2 million.

TAXATION

The Group tax charge from continuing operations, excluding specific adjusting items, was £29.7 million (2020: £20.2 million). The effective tax rate, excluding specific adjusting items, was 27.1% (2020: 27.2%). Note 8 to the consolidated financial statements, on page 140, provides additional information on the Group's tax charge.

Looking forward to 2022, we anticipate that the effective tax rate will be around 27-28%, with cash tax paid slightly lower than the charge to the income statement.

On a statutory basis, the Group tax charge was £28.2 million (2020: £6.9 million), higher than the previous year due to the higher taxable profits.

EARNINGS PER SHARE

Basic earnings per share from continuing operations was 23.9 pence (2020: loss per share 8.6 pence) and adjusted earnings per share* was 27.2 pence (2020: 19.0 pence). Details of these calculations can be found in note 10 to the consolidated financial statements on page 141.

FINAL DIVIDEND

The Board is recommending a final dividend, subject to shareholder approval, of 5.9 pence per share on the Ordinary share capital of the Group, payable on 20 May 2022 to Ordinary shareholders on the register at the close of business on 29 April 2022. The ex-dividend date is 28 April 2022.

Together with the interim dividend of 3.2 pence per share paid on 19 November 2021, this final dividend, if approved by shareholders, brings the total distribution for the year to 9.1 pence per share (2020: 5.5 pence).

A total dividend of 9.1 pence per share represents a dividend cover of adjusted EPS* of 3.0 times.

The Board has committed to grow the Ordinary dividend as the economic environment and the Group's earnings improve, targeting a dividend cover of around 3 times on average over the medium term. This level of cover ensures sufficient resources are available to continue to invest to support the Group's long-term prospects, as well as meet the needs of other stakeholders of the Group, including by making deficit contributions to the Group's defined benefit pension schemes.

Note 42 to the Company financial statements, on page 180, provides additional information on the Company's distributable reserves.

CASH FLOW

Cash generated from continuing operations was £135.9 million (2020: £146.3 million).

Free cash flow before acquisitions, disposals and dividends* was £66.2 million (2020: £72.4 million).

Net debt* at the year end was £96.5 million (2020: £155.6 million), with no term debt maturities until 2023, representing a net debt* to EBITDA* ratio of 0.6 times (2020: 1.2 times).

The Group has cash and cash equivalents* of £127.3 million and undrawn headroom on its revolving credit facility of £200 million.

Net debt excluding lease liabilities* was £46.7 million (2020: £101.0 million), representing a net debt* to EBITDA* ratio excluding lease liabilities of 0.3 times (2020: 0.8 times).

Commitments for property, plant and equipment and computer software for which no provision has been made are set out in note 26 to the consolidated financial statements on page 167.

	2021 £m	2020 £m
Cash generated from continuing operations	135.9	146.3
Net capital expenditure	(28.1)	(28.6)
Net interest on cash and borrowings	(5.3)	(6.6)
Tax paid	(25.4)	(26.0)
Lease payments and interests	(10.9)	(12.7)
Free cash flow before acquisitions, disposals and dividends	66.2	72.4
Dividends paid to external plc shareholders	(19.1)	(5.7)
Net cash* flows from other investing and financing activities	(15.0)	(13.1)
Cash flows from sale of subsidiaries and associates	15.0	5.3
Net cash* flows from discontinued operations	5.3	(0.1)
Exchange movement and other non-cash movements	1.9	(2.5)
Opening net debt[1] excluding lease liabilities	(101.0)	(157.3)
Closing net debt[1] excluding lease liabilities	(46.7)	(101.0)
Closing lease liabilities	(49.8)	(54.6)
Closing net debt[1]	(96.5)	(155.6)

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

CAPITAL STRUCTURE

At the year-end total equity was £349.6 million (2020: £240.0 million) with closing net debt* of £96.5 million (2020: £155.6 million).

Non-current assets were £481.9 million (2020: £514.1 million) and total assets were £912.5 million (2020: £930.5 million).

Details of undiscounted contracted maturities of financial liabilities and capital management are set out in note 22 to the consolidated financial statements on page 159.

Capital structure is further discussed in note 22 to the consolidated financial statements on page 157 under the heading Capital management.

PENSIONS

The Group operates a number of pension schemes throughout the world, the majority of which are of a funded defined benefit type. The largest of these are located in the UK and the USA, and the majority of the others in continental Europe.

The charge incurred in relation to the Group's defined benefit arrangements is summarised in the table below.

	2021 £m	2020 £m
Operating costs:		
Current and past service cost	(3.2)	(2.9)
Administration expenses recognised outside the pension liabilities	(1.3)	(1.2)
Curtailments and settlements	0.1	0.3
Total operating costs	(4.4)	(3.8)
Net interest on net defined benefit liability	(1.6)	(2.6)
Total	(6.0)	(6.4)

DEFINED BENEFIT PENSION PLANS

The Group pension deficit has decreased by £73.6 million since last year end to £102.7 million on an IAS 19 (revised) basis, largely driven by higher corporate bond yields in the UK leading to a higher discount rate and employer contributions.

- The UK Schemes' deficit decreased by £68.6 million to £51.7 million (2020: £120.3 million), (discount rate 2021: 1.92%; discount rate 2020: 1.23%);
- The US Schemes' deficit increased by £0.4 million to £7.7 million (2020: £7.3 million), (discount rate 2021: 2.71%; discount rate 2020: 2.34%);
- The European Schemes' deficit decreased by £5.8 million to £39.0 million (2020: £44.8 million), (discount rate 2021: 0.90%; discount rate 2020: 0.40%);
- The Rest of World Schemes' deficit increased by £0.4 million to £4.3 million (2020: £3.9 million), (discount rate 2021: 2.90%; discount rate 2020: 2.40%).

The most recent full actuarial valuations of the UK Schemes were undertaken as at March 2019 and resulted in combined assessed deficits of £120.3 million. Further details can be found in note 23 to the consolidated financial statements on page 161. On the basis of these full valuations, the Trustees of the UK Schemes, having consulted with the Group, agreed past service deficit recovery payments totalling £16.5 million a year from January 2020, increasing by 2.75% pa until 2025, with further payments to the Morgan Pension Scheme for 2026 and 2027.

GROUP FINANCIAL REVIEW

TREASURY POLICIES

The following policies were in place across the Group throughout the year. The manager of each global business unit is required to confirm compliance as part of the year-end process.

Financial Risk Management and Treasury Policy

Group Treasury works within a framework of policies and procedures approved by the Audit Committee. It acts as a service to Morgan Advanced Materials' businesses, not as a profit centre and manages and controls risk in the treasury environment through the establishment of such procedures.

Group Treasury seeks to align treasury goals, objectives and philosophy to those of the Group. It is responsible for all of the Group's funding, liquidity, cash management, interest rate risk, foreign exchange risk and other treasury business. As part of the policies and procedures, there is strict control over the use of financial instruments to hedge foreign currencies and interest rates. Speculative trading in derivatives and other financial instruments is not permitted.

Foreign exchange risks

Currency transaction exposures exist as a result of the global nature of the Group. The Group has a policy in place to hedge all material firm commitments and a large proportion of highly probable forecast foreign currency exposures in respect of sales and purchases over the following 12 months and achieves this through the use of the forward foreign exchange markets. A significant proportion of the forward exchange contracts have maturities of less than one year after the balance sheet date. The Group continues its practice of not hedging income statement translation exposure.

There are exchange control restrictions which affect the ability of a small number of the Group's subsidiaries to transfer funds to the Group. The Group does not believe such restrictions have had or will have any material adverse impact on the Group as a whole or on the ability of the Group to meet its cash flow requirements.

Currency translation risks are controlled centrally. To defend against the impact of a permanent reduction in the value of its overseas net assets through currency depreciation, the Group seeks to match the currency of financial liabilities with the currency in which the net assets are denominated. This is achieved by raising funds in different currencies and through the use of hedging instruments such as swaps and is implemented only to the extent that the Group's gearing covenant under the terms of its loan documents, as well as its facility headroom, are likely to remain comfortably within limits. In this way, the currencies of the Group's financial liabilities become more aligned to the currencies of the trading cash flows which service them.

Interest rate risk

The Group seeks to reduce the volatility in its interest charge caused by rate fluctuations. The proportions of fixed and floating rate debt are determined having regard to a number of factors, including prevailing market conditions, interest rate cycle, the Group's interest cover and leverage position, and any perceived correlation between business performance and rates.

Credit risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Group is exposed to credit risk on financial instruments such as liquid assets, derivative assets and trade receivables.

Cash balances held by companies representing over 65% of the Group's revenue are managed centrally through a number of pooling arrangements. Credit risk is managed by investing in liquid assets and acquiring derivatives in a diversified way from high-credit-quality financial institutions. Counterparties are assessed through the use of rating agencies, systemic risk considerations, and regular review of the financial press. Credit risk is further discussed in note 22 to the consolidated financial statements on page 151.

Capital investment

The Group has well-established formal procedures for the approval of investment in new businesses and for capital expenditure, to ensure appropriate senior management review and sign-off.

Borrowing facilities and liquidity

All of the Group's borrowing facilities are arranged by Group Treasury with Morgan Advanced Materials plc as the principal obligor. In a few cases operating subsidiaries have external borrowings but these are supervised and controlled centrally. Group Treasury seeks to obtain certainty of access to funding in the amounts, diversity of maturities and diversity of counterparties as required to support the Group's medium-term financing requirements and to minimise the impact of poor credit market conditions.

The Group's debt and its maturity profile are detailed in notes 21 and 22 to the consolidated financial statements on page 151.

Tax risks

The Group follows a tax policy to fulfil local and international tax requirements, maintaining accurate and timely tax compliance whilst seeking to maximise long-term shareholder value. The Group adopts an open and transparent approach to relationships with tax authorities and continues to monitor and adopt new reporting requirements, for example those arising from the implementation of the OECD Base Erosion and Profit Shifting proposals within tax legislation across various jurisdictions.

The tax strategy is aligned to the Group's business strategy and ensures that tax affairs have strong commercial substance. Tax risks are set out in the Risk Management section on page 43.

DIRECTORS' STATEMENTS

GOING CONCERN STATEMENT

The Group's business activities, together with the factors likely to affect its future development, performance and position are set out in the Strategic Report on pages 2 to 57. The financial position of the Group, its cash flows, liquidity position and borrowing facilities, are described earlier in this Group Financial Review. In addition, note 22 to the consolidated financial statements, includes the Group's policies and processes for managing financial risk, details of its financial instruments and hedging activities and details of its exposures to credit risk and liquidity risk.

The Group meets its day-to-day working capital requirements through local banking arrangements underpinned by the Group's £200 million unsecured multi-currency revolving credit facility, which matures in September 2024. As at 31 December 2021 the Group had significant headroom on its covenants and available liquidity with the Group's £200 million multi-currency revolving credit facility being undrawn. Total committed borrowing facilities were £372.6 million, none of which is due to mature in the following 12 months. The amount drawn under these facilities was £172.6 million, which together with cash and cash equivalents of £127.3 million, gave a total headroom of £326.8 million.

The principal borrowing facilities are subject to covenants that are measured biannually in June and December, being net debt to EBITDA of a maximum of 3x and interest cover of a minimum of 4x, based on measures defined in the facilities agreements which are adjusted from the equivalent IFRS amounts.

The Group has carefully modelled its cash flow outlook, taking account of reasonably possible changes in trading performance, exchange rates and plausible downside scenarios. This review indicated that there was sufficient headroom and liquidity for the business to continue for the 18 month period based on the facilities available as discussed in note 22 to the financial statements. The Group was also expected to be in compliance with the required covenants discussed above.

The Board has also reviewed the Group's reverse stress testing performed to demonstrate how much headroom is available on covenant levels in respect of changes in net debt, EBITDA, and underlying revenue. Based on this assessment, a combined reduction in EBITDA of 80% and an increase in net debt of 80% would still allow the Group to operate within its financial covenants. The Directors do not consider either of these scenarios to be plausible given the diversity of the Group's end markets and its broad manufacturing base.

The Board and Executive Committee have regular reporting and review processes in place in order to closely monitor the ongoing operational and financial performance of the Group. As part of the ongoing risk management process, principal and emerging risks are identified and reviewed on a regular basis. This process includes the ongoing review of the impact of the pandemic on the Group and its stakeholders. Potential uncertainties in demand remain across the countries that the Group operates in as a result of COVID-19, despite these uncertainties the Group saw a robust recovery in most of its end markets, leading to a return to growth for the 2021 financial year. In addition, the Directors have assessed the risk of climate change and do not consider that it will impact the Group's ability to operate as a going concern for the period under consideration.

The Board fully recognises the challenges that lie ahead but, after making enquiries, and in the absence of any material uncertainties, the Directors have a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for a period of 18 months from the date of signing this Annual Report and Accounts. Accordingly, they continue to adopt the going concern basis in preparing the Annual Report and Accounts.

VIABILITY STATEMENT

In accordance with provision 31 of the UK Corporate Governance Code, the Directors have assessed the prospects of the company over a period significantly longer than 12 months. The Directors have extended the period of the viability assessment to five years to 31 December 2026 in the line with impairment review testing and the strategic planning process which was also extended as a result of reduced uncertainty in the markets operated in. The Directors consider this an appropriate period over which to provide its viability statement based on management's reasonable expectations of the position and performance of the company and the dynamics in the markets in which it operates. Taking into account the Group's current position and the potential impact of the principal risks documented on pages 38 to 43 of the Annual Report, 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 the period to 31 December 2026.

To allow the Directors to make this assessment, a business base case has been built up, initially using a detailed, bottom-up approach, and then applying what the Directors consider to be an appropriate set of assumptions in respect of growth, margins, working capital flows, capital expenditure, dividends, refinancing of borrowing facilities and all other matters that could have a significant impact on the financial performance and liquidity of the Group. The resulting base case provides the Directors with EBITDA, net debt, and finance charge headroom relative to current bank covenants.

The Directors' assessment also included a review of the financial impact on revenue, EBITDA, net debt, and the adequacy of the financial headroom, relative to a severe but plausible combination of principal risks crystalising that could threaten the viability of the company. The Directors also considered the likely effectiveness of the potential mitigations that management reasonably believes would be available to the company over this period.

DIRECTORS' STATEMENTS

While the review has considered all the principal risks identified by the Group, the following were focused on for enhanced stress testing:

Scenarios modelled	Impacts modelled	Link to principal risks and uncertainties
IT and cybersecurity The effective management of the Group's IT infrastructure is important in enabling our businesses to deliver customer requirements reliably. If a key business system were to fail or core systems implementation were to be ineffective, the ability of the business to deliver on its strategic goals might be impacted. The sensitivity analysis performed considered the impact of a loss of access to the Group's main ERP system.	Reduction in revenue and its impact on profitability along with costs required to reinstate the system to latest cyber security standards.	Operational Risk
Coronavirus (COVID-19) pandemic Due to the geographical spread of the Group, it is exposed to disruption as a result of COVID-19 in multiple markets. An increase in the rate of infection or new variant could impact ways of working, the supply chain, and the ability of employees to work in affected areas.	Reduction in revenue linked to loss of sales and its impact on profitability. Working capital deterioration due to supply chain issues.	Operational Risk
Compliance breach The Group operates in a number of different jurisdictions and must comply with a range of national and international laws and regulations including those related to bribery and corruption, human rights, trade/export compliance and competition/anti-trust activities. The impact of a regulatory fine or penalty has been considered.	Increase in costs and net debt from fines and legal fees. Reduction in revenue due to reputational impacts.	Legal and Compliance Risk

As part of the ongoing risk management process, principal and emerging risks are identified and reviewed on a regular basis. There are a number of mitigating actions the Group takes to manage and reduce risk, further details of which can be found in the Risk Management section on pages 38 to 43.

The Group has significant financial resources including committed and uncommitted banking and debt facilities, as outlined in the going concern statement. In assessing the Group's viability, the Directors have assumed availability of debt capital markets and that the existing banking and debt facilities will remain in place or mature as intended.

Whilst this review does not consider all of the possible risks that the Group could face, the Directors consider that the approach adopted, and the work performed is reasonable in the circumstances of the inherent uncertainty involved and that it allows the Board to confirm that they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period to 31 December 2026.

DEFINITIONS AND RECONCILIATIONS OF NON-GAAP MEASURES TO GAAP MEASURES

Reference is made to the following non-GAAP measures throughout this document. These measures are shown because the Directors consider they provide useful information to shareholders, including additional insight into ongoing trading and year-on-year comparisons. These non-GAAP measures should be viewed as complementary to, not replacements for, the comparable GAAP measures. As defined in the basis of preparation section on page 131, these measures are calculated on a continuing basis.

ADJUSTED OPERATING PROFIT

Adjusted operating profit is stated before specific adjusting items and amortisation of intangible assets. Specific adjusting items are excluded on the basis that they distort trading performance. Amortisation is excluded, consistent with previous years.

2021	Thermal Ceramics £m	Molten Metal Systems £m	**Thermal Products division £m**	Electrical Carbon £m	Seals and Bearings £m	Technical Ceramics £m	**Carbon and Technical Ceramics division £m**	Corporate costs[1] £m	Group £m
Operating profit	37.8	6.0	**43.8**	25.6	22.0	18.9	**66.5**	2.8	113.1
Add back specific adjusting items included in operating profit	2.1	(0.3)	**1.8**	6.3	–	6.0	**12.3**	(8.7)	5.4
Add back amortisation of intangible assets	2.1	0.6	**2.7**	0.9	0.9	1.5	**3.3**	–	6.0
Group and divisional adjusted operating profit	42.0	6.3	**48.3**	32.8	22.9	26.4	**82.1**	(5.9)	124.5

1. Corporate costs consist of central head office costs.

2020	Thermal Ceramics £m	Molten Metal Systems £m	**Thermal Products division £m**	Electrical Carbon £m	Seals and Bearings £m	Technical Ceramics £m	**Carbon and Technical Ceramics division £m**	Corporate costs[1] £m	Group £m
Operating (loss)/profit	(14.6)	2.0	**(12.6)**	19.2	26.5	(30.3)	**15.4**	(4.6)	(1.8)
Add back specific adjusting items included in operating profit	39.4	0.9	**40.3**	3.7	0.6	42.3	**46.6**	0.5	87.4
Add back amortisation of intangible assets	1.9	0.3	**2.2**	0.7	0.4	2.8	**3.9**	–	6.1
Group and divisional adjusted operating profit/(loss)	26.7	3.2	**29.9**	23.6	27.5	14.8	**65.9**	(4.1)	91.7

1. Corporate costs consist of central head office costs.

ORGANIC GROWTH

Organic growth is the growth of the business excluding the impacts of acquisitions, divestments and foreign currency impacts. This measure is used as it allows revenue and adjusted operating profit to be compared on a like-for-like basis.

Commentary on the underlying business performance is included as part of the Review of Operations on pages 44 to 49.

Year-on-year movements in segment revenue

	Thermal Ceramics £m	Molten Metal Systems £m	**Thermal Products division £m**	Electrical Carbon £m	Seals and Bearings £m	Technical Ceramics £m	**Carbon and Technical Ceramics division £m**	**Segment total £m**
2020 revenue	**344.3**	**41.2**	**385.5**	**151.4**	**146.4**	**227.4**	**525.2**	**910.7**
Impact of foreign currency movements	(12.3)	(1.7)	**(14.0)**	(5.6)	(6.8)	(12.0)	**(24.4)**	**(38.4)**
Impact of acquisitions, disposals and business exits	–	–	**–**	–	0.7	(11.0)	**(10.3)**	**(10.3)**
Organic constant-currency change	32.7	8.2	**40.9**	19.1	(4.4)	32.9	**47.6**	**88.5**
Organic constant-currency change %	9.8%	20.8%	**11.0%**	13.1%	(3.1)%	16.1%	**9.7%**	**10.3%**
2021 revenue	**364.7**	**47.7**	**412.4**	**164.9**	**135.9**	**237.3**	**538.1**	**950.5**

DEFINITIONS AND RECONCILIATIONS OF NON-GAAP MEASURES TO GAAP MEASURES

Year-on-year movements in segment and Group adjusted operating profit

	Thermal Ceramics £m	Molten Metal Systems £m	**Thermal Products division £m**	Electrical Carbon £m	Seals and Bearings £m	Technical Ceramics £m	**Carbon and Technical Ceramics division £m**	Corporate costs[1] £m	**Group £m**
2020 adjusted operating profit	26.7	3.2	**29.9**	23.6	27.5	14.8	**65.9**	(4.1)	**91.7**
Impact of foreign currency movements	(0.7)	(0.1)	**(0.8)**	(1.2)	(1.7)	(1.2)	**(4.1)**	–	**(4.9)**
Impact of acquisitions, disposals and business exits	–	–	**–**	–	0.1	(3.1)	**(3.0)**	–	**(3.0)**
Organic constant-currency change	16.0	3.2	**19.2**	10.4	(3.0)	15.9	**23.3**	(1.8)	**40.7**
Organic constant-currency change %	61.5%	103.2%	**66.0%**	46.4%	(11.6)%	151.4%	**39.6%**		**48.6%**
2021 adjusted operating profit	42.0	6.3	**48.3**	32.8	22.9	26.4	**82.1**	(5.9)	**124.5**

1. Corporate costs consist of central head office costs.

REVENUE FROM FASTER GROWING MARKETS AND CORE MARKETS

Revenue from faster growing markets and core markets at constant-currency is:

	Faster growing markets	Core markets
2020 revenue	148.9	712.3
2021 revenue	188.2	762.2
Less: one-off solar projects	(5.9)	–
2021 revenue (excluding one-off solar projects)	182.3	762.2
Year-on-year movement	33.4	49.9
Year-on-year movement (%)	22%	7%

Group revenue is split into revenues from our four faster growing market segments (clean energy, clean transportation, semiconductors and healthcare) which made up 20%, and revenues from our core markets which made up 80% of Group revenue in 2021. In 2021, we benefitted from one-off solar projects of £5.9 million. Excluding the one-off benefits from these projects, organic constant-currency revenue growth in the faster growing market segments was 22%.

GROUP EBITDA®

Group EBITDA® is defined as operating profit before specific adjusting items, depreciation and amortisation of intangible assets. The Group uses this measure as it is a key metric in covenants over debt facilities, these covenants use EBITDA® on a pre-IFRS 16 basis.

A reconciliation of operating profit to Group EBITDA® is as follows:

	2021 £m	2020 £m
Operating profit/(loss)	**113.1**	(1.8)
Add back: specific adjusting items included in operating profit	**5.4**	87.4
Add back: depreciation – property, plant and equipment	**30.1**	32.7
Add back: depreciation – right-of-use assets	**7.9**	9.2
Add back: amortisation of intangible assets	**6.0**	6.1
Group EBITDA®	**162.5**	133.6
Group EBITDA® excluding IFRS 16 Leases impact	**151.6**	120.9

FREE CASH FLOW BEFORE ACQUISITIONS, DISPOSALS AND DIVIDENDS

Free cash flow before acquisitions, disposals and dividends is defined as cash generated from continuing operations less net capital expenditure, net interest (interest paid on borrowings, overdrafts and lease liabilities, net of interest received), tax paid and lease payments.

The Group discloses this measure of free cash flow as this provides readers of the consolidated financial statements with a measure of the cash flows from the business before corporate-level cash flows (acquisitions, disposals and dividends).

A reconciliation of cash generated from continuing operations to free cash flow before acquisitions, disposals and dividends is as follows:

	2021 £m	2020 £m
Cash generated from continuing operations	**135.9**	146.3
Net capital expenditure	**(28.1)**	(28.6)
Net interest on cash and borrowings	**(5.3)**	(6.6)
Tax paid	**(25.4)**	(26.0)
Lease payments and interests	**(10.9)**	(12.7)
Free cash flow before acquisitions, disposals and dividends	**66.2**	72.4

NET CASH AND CASH EQUIVALENTS

Net cash and cash equivalents is defined as cash and cash equivalents less bank overdrafts. The Group discloses this measure as it provides an indication of the net short-term liquidity available to the Group.

	2021 £m	2020 £m
Cash and cash equivalents	**127.3**	147.8
Bank overdrafts	**(0.5)**	(72.0)
Net cash and cash equivalents	**126.8**	75.8

NET DEBT®

Net debt® is defined as borrowings, bank overdrafts and lease liabilities, less cash and cash equivalents. The Group also discloses this metric excluding lease liabilities as this is the measure used in the covenants over the Group's debt facilities.

	2021 £m	2020 £m
Cash and cash equivalents	**127.3**	147.8
Non-current borrowings	**(174.0)**	(177.5)
Non-current lease liabilities	**(40.0)**	(43.1)
Current borrowings and bank overdrafts	**–**	(71.3)
Current lease liabilities	**(9.8)**	(11.5)
Closing net debt®	**(96.5)**	(155.6)
Closing net debt® excluding lease liabilities	**(46.7)**	(101.0)

RETURN ON INVESTED CAPITAL

Return on invested capital (ROIC) is defined as the 12-month Group adjusted operating profit (operating profit excluding specific adjusting items and amortisation of intangible assets) divided by the 12-month average adjusted net assets (third-party working capital, plant and equipment, land and buildings, right-of-use assets, intangible assets and other balance sheet items). This measure excludes long-term employee benefits, deferred tax assets and liabilities, current tax payable, provisions, cash and cash equivalents, borrowings, overdrafts and lease liabilities.

	2021 £m	2020 £m
Operating profit/(loss)	**113.1**	(1.8)
Add back: specific adjusting items	**5.4**	87.4
Add back: amortisation of intangible assets	**6.0**	6.1
Group adjusted operating profit	**124.5**	91.7
12-month average adjusted net assets:		
Third-party working capital	**135.0**	166.4
Plant and equipment	**152.2**	179.8
Land and buildings	**98.9**	114.0
Right-of-use assets	**33.0**	42.2
Intangible assets	**183.8**	198.2
Other assets (net)	**3.3**	7.5
12-month average adjusted net assets	**606.2**	708.1
ROIC	**20.5%**	13.0%

ADJUSTED EARNINGS PER SHARE

Adjusted earnings per share is defined as operating profit adjusted to exclude specific adjusting items and amortisation of intangible assets, plus share of profit of associate less net financing costs, income tax expense and non-controlling interests, divided by the weighted average number of Ordinary shares during the period. This measure of earnings is shown because the Directors consider it provides an indication of adjusted performance, which is less impacted by adjusting items and therefore reflects the underlying performance trends in the business.

Whilst amortisation of intangible assets is a recurring charge it is excluded from these measures on the basis that it primarily arises on externally acquired intangible assets and therefore does not reflect consistently the benefit that all of Morgan's businesses realise from their intangible assets, which may not be recognised separately.

A reconciliation from IFRS profit to the profit used to calculate adjusted earnings per share® is included in note 10 to the consolidated financial statements on page 141.

CONSTANT-CURRENCY REVENUE AND ADJUSTED OPERATING PROFIT

Constant-currency revenue and adjusted operating profit are derived by translating the prior year results at current year average exchange rates. These measures are used as they allow revenue to be compared excluding the impact of foreign exchange rates. Page 157 provides further information on the principal foreign currency exchange rates used in the translation of the Group's results to constant-currency at average exchange rates.

This Strategic Report, as set out on pages 2 to 57, has been approved by the Board.

On behalf of the Board

Stephanie Mackie
Company Secretary

3 March 2022

GOVERNANCE

The image was taken during the COVID-19 pandemic.

“THE GUIDING PRINCIPLE OF THE BOARD IS TO ‘DO THE RIGHT THING’ WITH RESPECT TO ALL OUR STAKEHOLDERS AND THE ENVIRONMENT.”

Douglas Caster CBE FIET
Chairman

GOVERNANCE

CHAIRMAN’S LETTER TO SHAREHOLDERS

DEAR SHAREHOLDER

I reported to you last year that Morgan’s governance framework served the Company well during 2020. In some ways 2021 proved even more challenging, with a bounce back in trading and resumption of growth in the business, the reintroduction of improvement initiatives that had been put on hold during 2020, and the launch of the next phase of our strategy – all whilst continuing to deal with the challenges of the COVID-19 pandemic.

My fellow Directors and I continued to support and guide executive management and worked collaboratively to navigate through competing priorities against a challenging trading and environmental backdrop.

The report which follows explains the governance framework and the workings of the Board and Committees and demonstrates how the Board continued to perform effectively.

Apart from the priorities I discussed in my introductory statement to this Report the key governance priorities for the Board during 2021 were:

BOARD’S OVERSIGHT OF STRATEGY

The Board undertook an essential role in overseeing the development of the next phase of the Group’s strategy with the identification of three new execution priorities, explained in detail in the Strategic Report. When debating the strategic direction of the Group, the Board is mindful of the Company’s wider role in society and our desire to conduct our business responsibly and with respect to the environment.

ENGAGEMENT WITH THE WORKFORCE AND OTHER KEY STAKEHOLDERS

During 2021, we held a number of engagement sessions with small groups of employees, both virtually and in person, which provided a forum for the non-executive Directors to listen to employees and hear about the issues that are important to them. These sessions have also afforded the non-executive Directors an insight into whether employees are aligned with the Group’s purpose and how employees experience the Group’s culture.

ENHANCING BOARD DISCUSSION

The Board’s role in both supporting and challenging executive management has been even more important during 2021, as the Group navigated a return to robust growth. Every Board meeting reviewed the health and safety performance of the Group to ensure the continued safety of our people. The lost time accident trend increased during 2021 and the Board has been closely engaged with the development and deployment of our updated approach to safety training and management. The Board supported the completion of the restructuring programme started in 2020 and has continued to review the continuing operational challenges caused by the economic and geopolitical environment. Discussions during Board meetings have focused on the immediate challenges whilst also having regard to the future of the Group.

BOARD EFFECTIVENESS

During 2021, the Board undertook a thorough evaluation of its own performance with the assistance of an external facilitator. The overall conclusion of the review was that the Board is operating effectively, however, the process proved insightful and highlighted a number of recommendations which were discussed by the Board. The key areas for improvement are set out in the Corporate Governance Report.

BOARD CHANGES

In May 2021, Peter Turner announced his intention to retire, and he will step down from the Board in June 2022. Following a selection process conducted by the Nomination Committee, the Board has appointed Richard Armitage who will join the Board on 30 May 2022 and will take over from Peter as Chief Financial Officer.

SECURING OUR FUTURE

As I reflect on the role of the Board in this time of challenge and change, I believe that the governance framework that we have in place has enabled the Board to achieve the right balance between monitoring the performance of executive management, identifying the risks and opportunities that are relevant to the Group’s future success, setting the strategic direction for the Group, whilst ensuring that we take care of our employees, customers and shareholders.

Douglas Caster CBE FIET
Chairman

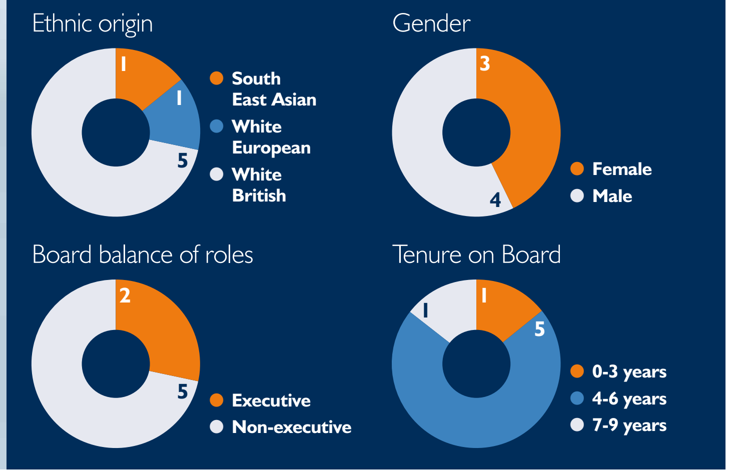
BOARD OF DIRECTORS

The image was taken pre-COVID.

COMMITTEES

Committee Chair
A Audit
N Nomination
R Remuneration

BOARD COMPOSITION



1. DOUGLAS CASTER CBE FIET
Non-executive Chairman

APPOINTED: Non-executive Director in February 2014. Non-executive Chairman and Nomination Committee Chairman on 1 January 2019.

SKILLS AND CONTRIBUTION: Douglas is an experienced Chairman with leadership and governance experience and a strong track record of managing and driving growth within electronics businesses.

CAREER AND EXPERIENCE: Douglas began his career as an electronics design engineer with the Racal Electronics Group in 1975, before moving to Schlumberger in 1986 and then to Dowty as Engineering Director of Sonar & Communication Systems in 1988. In 1992, he became Managing Director of that business and, after participating in the management buy-out that formed Ultra Electronics, joined the Board in October 1993. In April 2000, he became Managing Director of Ultra's Information & Power Systems division. In April 2004 he was appointed Chief Operating Officer and became Chief Executive in April 2005. He was appointed Deputy Chairman in April 2010 and was Chairman of Ultra from April 2011 until 28 January 2019. Douglas was non-executive Chairman of Metalysis Limited from January 2015 until June 2019.

Douglas was Morgan Advanced Materials plc's Senior Independent Director from January 2015 until December 2017. He was appointed to the role of Chairman in January 2019.

ADDITIONAL APPOINTMENTS: None.

COMMITTEES: N R

2. PETE RABY
Chief Executive Officer

APPOINTED: August 2015.

SKILLS AND CONTRIBUTION: Pete has a strong technical background and extensive experience in planning and executing business strategy across global technology and manufacturing operations.

CAREER AND EXPERIENCE: Pete joined Morgan Advanced Materials in August 2015 as Chief Executive Officer. Before joining Morgan, Pete was President of the Communications and Connectivity sector of Cobham plc. Pete demonstrated strong leadership across a range of senior strategy, technology and operational positions at Cobham over a nine-year period. Prior to Cobham, Pete was a partner at McKinsey & Company in London, specialising in strategy and operations in the aerospace, defence and power and gas sectors. He has a PhD in satellite navigation and an MEng from the Department of Electronic and Electrical Engineering at the University of Leeds.

ADDITIONAL APPOINTMENTS: Non-executive Director, Hill & Smith Holdings PLC.

3. PETER TURNER
Chief Financial Officer

APPOINTED: April 2016.

SKILLS AND CONTRIBUTION: Peter has significant financial experience combined with a strong track record of driving improved business performance in multiple large-scale and complex organisations.

CAREER AND EXPERIENCE: Peter joined Morgan Advanced Materials in April 2016 as Chief Financial Officer. Before this, Peter was Finance Director at Smiths Group plc from 2010 to 2015. During this time, he was responsible for driving restructuring programmes across the Group to enhance operating margins, with a strong focus on improving operating cash flow. Prior to Smiths, Peter was Finance Director from 2007 to 2009 at Venture Production plc, before it was acquired by Centrica plc in 2009. From 1995 to 2006, Peter held several senior positions at The BOC Group plc, including Finance Director of the Industrial and Special Products division. Peter started his career as an auditor at Price Waterhouse. He holds a degree in chemistry from Oxford University.

ADDITIONAL APPOINTMENTS: None.

Peter will step down as Morgan's Chief Financial Officer on 30 May 2022 and from the Board in June 2022.

4. JANE AIKMAN
Independent Non-executive Director

APPOINTED: Non-executive Director and Audit Committee Chair in July 2017.

SKILLS AND CONTRIBUTION: Jane brings to the Board significant financial experience and knowledge of growing manufacturing and technology businesses gained in a variety of senior executive positions. Jane brings a valuable perspective from her current executive role in the technology marketing and advertising sector.

CAREER AND EXPERIENCE: Jane has been Group Chief Financial Officer of Inside Ideas Group Limited since July 2020. Up until May 2019, Jane was Chief Financial Officer of Arqiva Group Limited, a communications infrastructure company. Prior to this, she was the Chief Financial Officer of KCOM Group plc, a listed communications services and IT solutions provider. She was Chief Financial Officer and Chief Operating Officer of Phoenix IT Group plc until its acquisition by Daisy Group in 2015. Jane has also held Chief Financial Officer positions at Infinis plc, Wilson Bowden plc and Pressac plc and a senior finance position at Asia Pulp and Paper in south-east Asia. Jane was a non-executive Director of Halma plc from 2007 and chaired its audit committee from 2009 until her departure in July 2016. Jane holds a civil engineering degree and qualified as a Chartered Accountant with Ernst & Young.

ADDITIONAL APPOINTMENTS: Group Director and Group Chief Financial Officer of Inside Ideas Group Limited.

COMMITTEES: A N R

5. HELEN BUNCH
Independent Non-executive Director

APPOINTED: Non-executive Director in February 2016. Remuneration Committee Chair on 1 January 2019.

SKILLS AND CONTRIBUTION: Helen has significant experience of driving business performance and building businesses in new markets. Helen also brings to the Board a valuable perspective from her current executive role leading a business in the construction sector.

CAREER AND EXPERIENCE: At the start of her career, Helen spent 17 years working in global businesses serving a wide variety of industries from automotive to household products, including 11 years with ICI and the remainder with a successor company, Lucite International Ltd. In 2006, Helen joined Wates Group, the privately-owned construction and property services company, as Group Strategy Director, and became Managing Director of Wates Retail Limited in January 2011. From 2015 to July 2020 Helen was Managing Director of Wates Smartspace Limited, the enlarged property services business following a merger with another Wates company and the acquisition of a facilities management business. In July 2020, Helen became Executive Managing Director of Wates Residential.

ADDITIONAL APPOINTMENTS: Executive Managing Director of Wates Residential.

COMMITTEES: A N R

6. LAURENCE MULLIEZ
Senior Independent Director

APPOINTED: Non-executive Director in May 2016. Senior Independent Director in December 2017.

SKILLS AND CONTRIBUTION: Laurence has significant experience in growing, simplifying and unifying complex international and industrial manufacturing businesses, and brings valuable knowledge of the energy (including renewables), steel and infrastructure industries, and insight into some of Morgan's key markets.

CAREER AND EXPERIENCE: Laurence joined Banque Nationale de Paris in 1988, followed by M&M Mars Inc. in 1992 and then Amoco Chemical Inc. in 1993, which was acquired by BP p.l.c. in 1998. She spent a further 11 years at BP in a variety of roles including Chief Executive of Castrol Industrial Lubricants and Services. Laurence was Chief Executive of independent power producer Eoxis UK Limited from 2010 to 2013.

ADDITIONAL APPOINTMENTS: Chair of Voltalia S.A. and of Globeleq Ltd, member of the supervisory board of SBM Offshore N.V. and member of the supervisory board of Siemens Energy AG.

COMMITTEES: A N R

7. CLEMENT WOON
Independent Non-executive Director

APPOINTED: May 2019.

SKILLS AND CONTRIBUTION: Clement has broad managerial experience in globally operating technology and consumer-related industries. He has a strong track record of renewing traditional industries and revitalising growth through strategic interventions, and in-depth experience and knowledge of markets within the Asia Pacific region.

CAREER AND EXPERIENCE: From August 2016 to March 2020, Clement was Group CEO of Saurer Intelligent Technology Co. Ltd, a €1 billion textile machinery and components business listed on the Shanghai Stock Exchange. Clement continued to serve on the board of Saurer as non-executive director until August 2021. Prior to this, from April 2014 to July 2016, Clement was Advisor and Co-CEO of Jinsheng Industry Co. Ltd, an industrial company in China with diverse interests including biotech, automotive and textiles. Previously Clement held various senior positions at companies based in Switzerland and Singapore including Division CEO of Leica Geosystems AG, President & CEO of SATS Ltd, and CEO Textile Division of OC Oerlikon AG. Clement has an MBA in Technology Management from Nanyang Technological University, Singapore, an MSc in Industrial Engineering and a BEng in Electrical Engineering from the National University of Singapore.

ADDITIONAL APPOINTMENTS: Chairman of PFI Foods Industries Pte. Ltd.

COMMITTEES: A N R

CORPORATE GOVERNANCE

THE UK CORPORATE GOVERNANCE CODE

In July 2018 the Financial Reporting Council published the most recent version of the UK Corporate Governance Code (the Code), which is available on its website **www.frc.org.uk.**

APPLICATION OF CODE PRINCIPLES

The table below lists the Code Principles and an explanation of how the Board has applied the Principles during 2021.

Code Principle	Summary
	Board leadership and company purpose
A	A successful company is led by an effective and entrepreneurial board, whose role is to promote the long-term sustainable success of the company, generating value for shareholders and contributing to wider society. *The role of the Board is set out on page 64. The Chairman explains the Board's approach to stewardship in his letter on page 59. The section 172 statement on pages 4 and 5 explains how the Directors carry out their duty to promote the long-term success of the Company whilst taking into account the output from their engagement with key stakeholders. The externally-facilitated evaluation of the Board concluded that the Board was effective (as reported on page 73 of the Corporate Governance Report).*
B	The board should establish the company's purpose, values and strategy, and satisfy itself that these and its culture are aligned. All directors must act with integrity, lead by example and promote the desired culture. *The Group's purpose and strategy are described in the dedicated section on pages 10 to 13 of the Strategic Report. The Board explains how it has monitored and assessed the Group's culture on pages 69 and 70 of the Corporate Governance Report.*
C	The board should ensure that the necessary resources are in place for the company to meet its objectives, and measure performance against them. The board should also establish a framework of prudent and effective controls, which enable risk to be assessed and managed. *The methods used by the Board to monitor performance and challenge executive management are described on pages 66 to 69 of the Corporate Governance Report. The Report of the Audit Committee contains a description of the controls framework and the Risk Management section on pages 38 to 43 sets out the key risks and how these are managed.*
D	In order for the company to meet its responsibilities to shareholders and stakeholders, the board should ensure effective engagement with, and encourage participation from, these parties. *The methods used by the Board to engage with its key stakeholders, and why the Board continues to believe these are effective, are set out in the Corporate Governance Report on pages 70 to 72.*
E	The board should ensure that workforce policies and practices are consistent with the company's values and support its long-term sustainable success. The workforce should be able to raise any matters of concern. *The Board monitors implementation of the Morgan Code and the polices that are in place to support a safe and ethical business. Pages 75 and 77 of the Audit Committee Report explains how the Board has come to this conclusion.*
	Division of responsibilities
F	The chair leads the board and is responsible for its overall effectiveness in directing the company. He or she should demonstrate objective judgement throughout their tenure and promote a culture of openness and debate. In addition, the chair facilitates constructive board relations and the effective contribution of all non-executive directors, and ensures that directors receive accurate, timely and clear information. *The performance of the Board, the Chairman and individual Directors are reviewed annually. The externally-facilitated Board performance evaluation conducted in 2021 concluded that the Board is effective and operates in an environment of openness and trust. Further information on the Board performance evaluation can be found on page 73.*
G	The board should include an appropriate combination of executive and non-executive (and in particular, independent non-executive) directors, such that no one individual or small group of individuals dominates the board's decision-making. There should be a clear division of responsibilities between the leadership of the board and the executive leadership of the company's business. *The composition of the Board is reviewed annually. Details of the composition of the Board, and the roles of Board members, are set out in the Corporate Governance Report on pages 66 and 67.*
H	Non-executive directors should have sufficient time to meet their board responsibilities. They should provide constructive challenge and strategic guidance, offer specialist advice, and hold management to account. *The Chairman ensures that the non-executive Directors understand their role and carry out their duties effectively, providing support and guidance where required. The time commitment expected of non-executive Directors is set out on page 81 of the Corporate Governance Report.*
I	The board, supported by the company secretary, should ensure that it has the policies, processes, information, time and resources it needs in order to function effectively and efficiently. *The externally-facilitated Board performance evaluation conducted in 2021 included a review of Board processes and concluded that these were effective, with recommended actions for improvement which are set out in the Corporate Governance Report on page 73.*
	Composition, succession and evaluation
J	Appointments to the board should be subject to a formal, rigorous and transparent procedure, and an effective succession plan should be maintained for board and senior management. Both appointments and succession plans should be based on merit and objective criteria and, within this context, should promote diversity of gender, social and ethnic backgrounds, and cognitive and personal strengths. *The process used for appointments to the Board, and other considerations related to succession planning and the Board's Inclusion and Diversity Policy, are set out in the Nomination Committee Report on pages 80 to 81.*
K	The board and its committees should have a combination of skills, experience and knowledge. Consideration should be given to the length of service of the board as a whole and membership regularly refreshed. *The skills and attributes required by the Board are reviewed at least annually as part of discussion on succession planning. Further information may be found in the Nomination Committee Report on pages 79 to 80.*
L	Annual evaluation of the board should consider its composition, diversity and how effectively members work together to achieve objectives. Individual evaluation should demonstrate whether each director continues to contribute effectively. *The individual performance of the Directors is assessed annually. The externally-facilitated Board performance evaluation conducted in 2021 concluded that the Board members work effectively together, with a small number of recommendations for improvement as set out on page 73.*
	Audit, risk and internal control
M	The board should establish formal and transparent policies and procedures to ensure the independence and effectiveness of internal and external audit functions and satisfy itself of the integrity of financial and narrative statements. *The Board monitors the policies and processes that are in place to ensure the independence and effectiveness of the internal audit function and external auditor. Further details are set out in the Audit Committee Report on pages 77 and 78.*
N	The board should present a fair, balanced and understandable assessment of the company's position and prospects. *The process which supports the Board's confirmation that the presentation of results is fair, balanced and understandable is set out in the Audit Committee Report on page 76.*
O	The board should establish procedures to manage risk, oversee the internal control framework, and determine the nature and extent of the principal risks the company is willing to take in order to achieve its long-term strategic objectives. *The risk management process is set out in the Risk Management section on pages 38 to 43 and the Audit Committee Report on pages 76 to 77.*
	Remuneration
P	Remuneration policies and practices should be designed to support strategy and promote long-term sustainable success. Executive remuneration should be aligned to company purpose and values and be clearly linked to the successful delivery of the company's long-term strategy. *The Remuneration Committee considers the alignment of reward policies and mechanisms with the Group's strategy.*
Q	A formal and transparent procedure for developing policy on executive remuneration and determining director and senior management remuneration should be established. No director should be involved in deciding their own remuneration outcome. *Further details of the Remuneration Committee, its composition and how it operates are set out in the Remuneration Committee Report on page 104.*
R	Directors should exercise independent judgement and discretion when authorising remuneration outcomes, taking account of company and individual performance, and wider circumstances. *The Remuneration Committee exercises discretion in relation to remuneration outcomes as it sees fit as described in the Remuneration Report. All members of the Remuneration Committee are independent non-executive Directors.*

STATEMENT OF COMPLIANCE WITH THE CODE PROVISIONS

The Board confirms that during the year ended 31 December 2021, the Company complied with the provisions of the Code with the exception of Provision 38 on the alignment of pension contribution rates, or payments in lieu, for executive directors with those available to the workforce. The value of pension benefits for the current executive Directors has reduced since 2019 when the allowance was fixed at the 2018 value (20% of 2018 base salary). The current Remuneration Policy, which was approved by shareholders at the Annual General Meeting (AGM) in 2019, included a pension policy for any newly appointed executive Director which aligned their contribution rate to that of the UK workforce. Shareholders will be asked to approve a new Remuneration Policy at the AGM in 2022 which includes an amendment to the pension policy to align pension contributions for all (whether existing or newly appointed) executive Directors with that available to the UK workforce with effect from 31 December 2022. Subject to approval from shareholders for the new Remuneration Policy, the Company will be fully compliant with Provision 38 by the end of 2022. Further details of the specific pension arrangements for each executive Director are set out in the Remuneration Report on pages 84 and 95.

CORPORATE GOVERNANCE

OUR GOVERNANCE FRAMEWORK

A strong corporate governance framework underpins the activities of the Board.

THE ROLE OF THE BOARD

The Board is collectively and ultimately responsible to the Company's shareholders for the long-term sustainable success of the Company, and oversees how the organisation generates and preserves value. It establishes the Group's purpose, sets the strategic direction and monitors Morgan Advanced Materials' culture to ensure this is aligned to the strategic vision.

The Board engages with key stakeholders, including shareholders and employees, and sets the tone from the top by operating with the utmost integrity in decision-making and business conduct.

The Board supervises and monitors progress against execution priorities, whilst ensuring that there are robust and effective controls which enable risks and emerging risks to be identified, assessed and managed.

The Board operates within a clear framework consisting of matters reserved for the Board as well as an established structure of committees, each with distinct terms of reference and delegated authorities. The key areas of responsibility for the Board and each of its Committees are detailed on pages 64 and 65.

MATTERS RESERVED FOR THE BOARD

- Overall leadership, purpose, strategic aims and long-term objectives and risk appetite of the Group;
- Alignment of the Group's culture with purpose and values and monitoring implementation of the Morgan Code;
- Any changes relating to Group capital and corporate structure;
- Oversight and approval of full-year and half-year financial results, including approval of the Annual Report and ensuring a 'fair, balanced and understandable' presentation of the Group's financial position;
- Approval of dividend policy and any significant changes to accounting, treasury and tax policies;
- Approval of contracts and expenditure as specified in the Limits of Authority schedule;
- Stakeholder communication and engagement;
- Changes to Board membership following recommendations from the Nomination Committee, and ensuring adequate succession planning for the Board and senior leadership;
- Determining remuneration policy for the Directors and other senior executives, following recommendations from the Remuneration Committee;
- Delegation of authority, approving levels of authority including for the principal Committees, and approving the Committees' terms of reference;
- Corporate governance matters, including a review of its own performance, determining non-executive Director independence, review of overall governance arrangements and authorising any conflicts of interest;
- Other specific matters.

BOARD OF DIRECTORS
Chaired by Douglas Caster

PRINCIPAL COMMITTEES OF THE BOARD (and key responsibilities)

AUDIT COMMITTEE

- Ensure the integrity of, and review processes for financial reporting and the narrative information presented to stakeholders;
- Monitor and ensure the effectiveness of the external audit;
- Ensure the effectiveness of the internal audit function;
- Review the management of the Group's principal risks;
- Ensure the effectiveness of internal controls;
- Oversee implementation of, and compliance with, the Morgan Code.

REMUNERATION COMMITTEE

- Set, review and monitor the remuneration policy and ensure it is aligned with strategy;
- Agree the remuneration for the Chairman, executive Directors and certain senior executives;
- Oversee incentive structure and target setting;
- Set and review the policy for post-employment shareholding requirements;
- Determine the policy for pension arrangements;
- Consider wider workforce remuneration and the alignment of executive remuneration with this.

NOMINATION COMMITTEE

- Lead on Board succession planning;
- Review Board and Committee composition;
- Lead the process for appointments to the Board;
- Monitor the process for the induction of new Directors;
- Monitor progress in relation to the Board's Inclusion and Diversity Policy and have oversight of the Group's overall inclusion and diversity aims.

OTHER BOARD COMMITTEES

EXECUTIVE COMMITTEE

- Drive Group and business unit strategic implementation;
- Deliver operational, financial and non-financial performance;
- Review health, safety and environmental performance, drive improvement and embed the safety culture;
- Approve Group policies and review their implementation and effectiveness;
- Lead on assessment and control of risk;
- Oversee prioritisation and allocation of resources.

DISCLOSURE COMMITTEE

- Assist and inform the Board concerning the identification of inside information;
- Recommend how and when the Company should disclose such information;
- Ensure any such information is managed and disclosed in accordance with all applicable legal and regulatory requirements.

GENERAL PURPOSES COMMITTEE

- Approve opening of/changes to bank accounts;
- Approve arrangements with financial institutions;
- Approve guarantees and indemnities;
- Approve substantive intra-Group loans;
- Approve intra-Group dividends and capital restructuring;
- Approve awards under the Company's share schemes (after Remuneration Committee approval) and any Employee Benefit Trust-related loans.

CORPORATE GOVERNANCE

HOW THE BOARD AND ITS COMMITTEES OPERATE

The Company's governance framework comprises the Articles of Association which form the Company's constitution and set out the powers of the Board and the Board's clearly defined role, which includes matters specifically reserved for the Board. The Board delegates specific responsibilities to three principal Committees of the Board, namely the Audit, Remuneration and Nomination Committees. Each Committee has terms of reference which set out its membership, duties and how it operates. The individual reports of each of the principal Committees can be found on pages 74 to 78, 79 to 81, and 104.

The Board delegates day-to-day management of the Group and operational matters to the Executive Committee. This Committee is led by the Chief Executive Officer and its membership comprises the Chief Financial Officer, the Group Human Resources Director, the Group General Counsel, the Chief Information Officer and the Presidents of each of the global or divisional business units. In 2021 the Executive Committee met at least monthly to discuss a variety of matters including: development of Morgan Advanced Materials' execution priorities, ESG performance, talent management and succession planning, diversity and inclusion, financial performance, and the review of Group policies. It also held monthly dedicated meetings on health and safety and on ethics and compliance. The Company Secretary acts as Secretary to the Committee and attends all meetings.

The Board delegates authority for certain other specific matters including routine approvals to a General Purposes Committee, at which a non-executive Director must be present. The Committee meets as required.

The Disclosure Committee meets on an ad-hoc basis during the year to assess whether information which directly concerns the Group is inside information (as defined by the Market Abuse Regulation), and to discharge other responsibilities relating to the control and disclosure of inside information. The membership of the Disclosure Committee comprises the Directors and the Company Secretary, but meetings are generally attended by the executive Directors and the Company Secretary. In 2021 the Disclosure Committee met twice.

BOARD SIZE AND COMPOSITION

Throughout 2021 the Board comprised five non-executive Directors (including the Chairman) and two executive Directors. This is considered to be the appropriate number of members for the Board, given the scale of the Group's operations at this time. Biographies of the Directors in post at the date of this Report, including details of their skills, career and experience and any other significant external commitments, are set out on pages 60 and 61.

ROLES AND RESPONSIBILITIES OF THE BOARD

There is a clear division of responsibilities between the Chairman and Chief Executive Officer and each role is clearly defined as outlined below:

CHAIRMAN

- Promotes the highest standards of corporate governance;
- Leads, chairs and manages the Board;
- Ensures an effective Board with effective decision-making processes;
- Shapes boardroom culture;
- Promotes open debate and constructive challenge by Directors;
- Encourages contributions from fellow Directors, drawing on their skills, experience and knowledge;
- Ensures ongoing awareness of stakeholders' views;
- Sets the Board's agenda;
- Chairs the Nomination Committee;
- Ensures constructive relationships between executive and non-executive Directors.

SENIOR INDEPENDENT DIRECTOR

- Acts as a trusted sounding board for the Chairman;
- Leads the annual review of the Chairman's performance with the non-executive Directors;
- Acts as an intermediary for the other non-executive Directors;
- Acts as a second point of contact for shareholders;
- As required, leads discussions on Chair succession and selection processes.

NON-EXECUTIVE DIRECTORS

- Monitor and review the performance of executive management;
- Provide alternative views and expertise on key matters;
- Assist with the development and review of strategy;
- Provide support and challenge to executive Directors;
- Engage with stakeholders and employees in relation to Morgan's culture;
- Chair/attend meetings of and contribute to the work of the principal committees of the Board, reviewing remuneration, financial performance, external and internal audit and succession planning of senior management.

"THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER MAINTAIN A STRONG WORKING RELATIONSHIP AND OPEN DIALOGUE, WHICH ENSURES COGENT LEADERSHIP OF THE GROUP."

CHIEF EXECUTIVE OFFICER

- Manages the Group;
- Formulates and implements Group strategy;
- Delivers the Group's business plan;
- Leads the Executive Committee effectively;
- Ensures implementation of the Group's policies;
- Promotes and embeds Morgan's culture.

CHIEF FINANCIAL OFFICER

- Supports the Chief Executive Officer in the development and delivery of Group strategy;
- Leads the Group's finance function;
- Oversees effective financial reporting and ensures suitable processes and controls are in place;
- Oversees the processes and controls regarding principal risks;
- With the Chief Executive Officer, recommends the annual budget and long-term financial plans of the Group.

COMPANY SECRETARY

- Supports the Board by ensuring information is made available in a timely manner;
- Supports the Board by facilitating induction, training and performance evaluations;
- Supports the Chairman in designing the annual Board programme and ensuring the Board functions efficiently and effectively;
- Provides advice on corporate governance matters;
- Oversees the processes required for corporate governance and regulatory compliance.

CORPORATE GOVERNANCE

Board meetings/activities

In 2021, the Board met formally on nine occasions. Due to the COVID-19 pandemic, Board meetings were held by a mixture of attendance in person and video conference attendance.

Attendance at meetings

The attendance of each Director at Board, Audit, Remuneration and Nomination Committee meetings is set out below:

Director	Board (maximum 9)	Audit Committee (maximum 4)	Nomination Committee (maximum 3)	Remuneration Committee (maximum 6)
Douglas Caster	9/9	4/4[1]	3/3	6/6
Pete Raby	9/9	4/4[1]	3/3[1]	6/6[1]
Peter Turner	9/9	4/4[1]	1/1[2]	–
Jane Aikman	9/9	4/4	3/3	6/6
Helen Bunch	9/9	4/4	3/3	6/6
Laurence Mulliez	9/9	4/4	3/3	6/6
Clement Woon	9/9	4/4	3/3	6/6

1. Attended by invitation.
2. Peter Turner attended the December meeting of the Nomination Committee by invitation in order to participate in a discussion on succession planning.

During the year, the Board received regular updates on implementation of strategy, trading and financial performance, environmental and sustainability performance, health and safety performance, markets and customers, investors' and analysts' views, and restructuring. Throughout 2021 the Board continued to monitor the impact of the COVID-19 pandemic and its impact on the workforce and business operations.

TIMELINE OF KEY REVIEWS AND DECISIONS TAKEN BY THE BOARD DURING THE YEAR

FEBRUARY
- Health and safety;
- Approval of FY2020 results and dividend policy;
- Approval of ESG strategy;
- Review of restructuring programme;
- Annual review of pensions.

APRIL
- Updates from CEO and CFO;
- Review comments from investors on FY2020 results.

MAY
- Health and safety Approval of Q1 trading statement;
- Review comments from shareholders pre-AGM and review proxy voting results.

JUNE
- Health and safety;
- Global business unit (GBU) strategic reviews;
- Final detailed report on the restructuring programme;
- Principal and emerging risks.

JULY
- Health and safety;
- GBU and Group strategic reviews;
- Approval of H1 2021 results;
- Annual review of the Group's funding and treasury matters;
- Environment and sustainability.

SEPTEMBER
- Health and safety;
- Deep dive into certain key risks and their assessment;
- Environment and sustainability;
- Engagement session with employees in Kempten, Germany.

NOVEMBER
- Health and safety;
- Talent management and succession planning;
- IT update;
- Assessment of Morgan's culture;
- Progress review of a major investment in new technology;
- Site tour of Rugby, UK, engagement session with employees and meeting with site leadership team.

DECEMBER
- Health and safety;
- Approval of 2022 budget;
- Environment and sustainability;
- Principal and emerging risks;
- Digital presence;
- Discussion of Board performance evaluation outcomes.

The following table summarises the Board's work and key decisions taken during the year:

Strategy
- Group and business strategies reviewed and targets agreed;
- ESG strategy strengthened and expanded with new targets and plans set;
- Health and safety strategy redeveloped with new focus, training and system implementation agreed;
- Group leadership succession planning and future talent capability programme discussed and agreed;
- Restructuring and efficiency improvement programme discussed and individual projects agreed;
- Update on IT strategy progress received;
- Digital presence and plans for development discussed;
- Certain capital expenditure proposals to assist business growth approved.

Performance
- Impact of COVID-19 pandemic on productivity and customers monitored;
- Employee health and safety reports considered;
- Group financial performance reviewed;
- Group restructuring programme monitored and individual projects agreed;
- Post-implementation reviews of capital expenditure projects previously approved by the Board;
- Dividend policy discussed and 2021 dividend payments approved;
- 2022 budget approved;
- Chief Executive Officer and Chief Financial Officer reports discussed at each Board meeting;
- Updates from all Presidents of the divisions and global business units reviewed and discussed.

Culture and stakeholder engagement
- Group's culture monitored;
- Mechanisms to capture and report safety, ethics and inclusion matters reviewed;
- Progress of the action plan to promote diversity and inclusion across the Group discussed;
- Further development of a safe, ethical and diverse culture discussed in depth;
- Safety performance achieved compared to safety targets reported and analysed;
- Work on identifying the core values to be embedded in the Group's culture commenced;
- Talent and leadership development considered;
- Through reports from the Audit Committee, progress against implementation of the Morgan Code monitored and reports made to the ethics hotline reviewed;
- Employment engagement sessions held with employees from a wide range of roles across the Group;
- Shareholder engagement sought, through roadshows, meetings with brokers and invitation to submit questions in advance of the AGM;
- Discussion held with the independent director of the defined benefit pension trustee board.

Governance and risk
- Group's principal and emerging risks reviewed;
- In-depth assessment of certain key risks performed;
- Group's appetite for risk reviewed;
- Tax strategy reviewed;
- Pension strategy and funding strategy for pensions approved;
- Litigation matters discussed;
- Group's compliance with corporate governance codes and regulations considered;
- Externally-facilitated Board performance evaluation undertaken and actions arising considered;
- Following recommendation from the Nomination Committee, new CFO's appointment approved;
- Reports from the chairs of the Remuneration, Audit and Nomination Committees considered;
- Half-year and full-year financial results approved;
- Consideration given to whether the Annual Report and Accounts are fair, balanced and understandable given.

Board's monitoring and assessment of culture and workforce engagement

As set out in greater detail on pages 28 to 35 in the Sustainability and Responsibility section, Morgan Advanced Materials' objective is to build an organisation where collaboration and empowered decision-making at all levels of management (rather than in isolation locally) is more prevalent, and where the right outcomes are reached, in the right way (ethically, safely and inclusively). The Morgan Leadership Behaviours support the ethos that 'it is not just what you do, but how you do it that counts'. The Board continues to monitor and assess the development of the Group's culture to ensure this is aligned with Morgan's purpose and strategy.

The Board has developed its approach to the monitoring and assessment of culture by building on the work already undertaken to embed a foundation of ethics, safety and inclusion whilst enabling the Board to set the tone from the top. The Board uses a range of qualitative and quantitative measures, supplemented by opportunities for Board members to experience the culture for themselves, which include:
- Ethics reporting including the monitoring of compliance with the Morgan Code, reports on certain areas investigated and the effectiveness of the 'Speak Up' hotline;
- Regular safety performance reviews which include the "thinkSAFE' programme, and updates on safety metrics and performance against them;
- Regular discussion and monitoring of ways to achieve the objective of a zero-harm culture;
- Annual talent review of leadership development, with added focus on promoting diversity and inclusion;
- Presentations to the Board by each global business unit on strategy;
- Presentations to the Board by members of the Executive Committee, representatives from the businesses and functional leaders. Virtual meetings have enabled a wider range of presenters to take part to discuss a greater breadth of topic; and
- Insight from the results of the all-employee engagement survey, 'Your Voice', which was conducted in November 2021.

CORPORATE GOVERNANCE

EMBEDDING A SAFETY CULTURE

The Board considers the safety of employees to be a top priority. During 2021, the Board had oversight of a fresh approach to safety which is set out in detail on pages 18 to 19 in the Health and Safety section of the Sustainability and Responsibility report.

HOW GOVERNANCE SUPPORTS STRATEGY

The Board approves the Group's environmental, Health & Safety Policy and in 2021, a new ESG Strategy:

THE GROUP'S ENVIRONMENTAL, HEALTH & SAFETY POLICY

ESG STRATEGY (new ESG Strategy approved in 2021)

HOW THE BOARD MONITORS AND ASSESSES CULTURE

The Board receives an update in person from the EHS Director at most Board meetings which contains safety statistics, both leading and lagging indicators, progress on safety initiatives and against the plan of work for the year, as well as details of serious incidents and root cause analysis. Safety performance is also part of presentations to the Board by the Presidents of the Divisions and global business units, proposals for capital expenditure, key risks and other ad hoc presentations to the Board. The Board is able to gauge 'tone at the top'.

HOW THE BOARD ENGAGED WITH STAKEHOLDERS

There were a number of ways in which the Board engaged with stakeholders. The reports to the Board from the EHS Director contained insights gained from workshops with a cross section of employees to gauge the current status of safety culture. The summary of reports to the Ethics Hotline presented to the Audit Committee provided an insight into the frequency and type of issue being raised by employees and whether safety was a particular concern. Finally, the non-executive Directors heard first-hand from employees during the employee engagement sessions held during 2021. The non-executive Directors asked open questions and listened to the feedback. This included comments on specific issues such as the progress of replacing old machinery, availability and adoption of personal protection equipment, housekeeping on site and adoption of COVID-19 protocols, implementation of wellbeing initiatives, as well as local leadership's approach to safety and communication of safety issues.

WHAT WAS THE OUTCOME OF THE ENGAGEMENT?

The Board learned that senior leadership's message that safety was the top priority was communicated clearly and that this was supported through the thinkSAFE programme. At local level, site leadership took a pro-active approach to health, safety and wellbeing. However, improvement could be made to embedding a caring culture and further focus on consistent systems. This culminated in the approval of the fresh approach to health and safety which is described in the section on Health and Safety on pages 18 to 19.

A number of additional mechanisms will be employed in 2022 to promote and embed the Group's desired culture as follows:

- Voluntary employee resource groups to be established to further develop employee participation in areas they are passionate about;
- Development of a set of Group-wide core values and their communication to employees;
- Definition and reinforcement of the behaviours required in the role of the Group's leaders;
- Training for all employees on behavioural safety and the Group's safety commitments;
- Implementation of actions arising from insights gained from the all-employee engagement survey; and
- Further employee engagement sessions by the non-executive Directors within various areas of the business/groups of employees.

Workforce engagement

For the purposes of workforce engagement, the Board defines the workforce as all employees directly employed by the Group.

The Board has reviewed the three methods suggested for employee engagement in the UK Corporate Governance Code and has concluded the most effective approach for its workforce is a combination of methods (which is also permitted under the Code). This approach has been chosen by the Board as it recognises the global reach of the Group with operations in over 25 countries, with varied working conditions and with many employees in operational and manufacturing roles without internet access in the workplace. A hybrid approach to workforce engagement enables flexibility to ensure all employees in all locations are considered.

The mechanisms selected by the Board to engage with the workforce primarily comprise a number of dedicated meetings between the non-executive Directors and small groups of employees (without senior management present), to hear the views of the workforce directly; as well as taking other opportunities for informal engagement.

Due to the COVID-19 pandemic, which restricted international travel, all the employee engagement sessions that took place in 2021 were virtual, apart from one in-person meeting at the Group's manufacturing site in Rugby, UK where Directors also had a tour of the site and met employees who demonstrated operations and explained their roles, and received a presentation from site leadership. The virtual meetings were held by video conference with all participants able to see each other, and where required a professional interpreter was employed to ensure effective communication between all participants.

The details of the employee engagement sessions with the non-executive Directors are outlined below:

Board attendee(s)	Date	Type of engagement	Team location(s)	Who the Directors met
Douglas Caster, Laurence Mulliez, Jane Aikman and Clement Woon	Jun 2021	Virtual employee engagement session and feedback session with the CIO and other senior IT leadership	Global	Members of the global IT team
All non-executive Directors	Jun 2021	Virtual employee engagement session and feedback with employees, leaders and management team from the site and Centre of Excellence	Hayward, California, USA facility and Metals & Joining Centre of Excellence, USA (Technical Ceramics facility)	Site employees and management
All non-executive Directors	Sep 2021	Virtual employee engagement session and feedback session with site management team	Kempten, Germany (Thermal Ceramics facility)	Site employees and management
All non-executive Directors	Nov 2021	Site visit	Rugby, Warwickshire, UK (Technical Ceramics facility)	Site employees and management
Douglas Caster, Laurence Mulliez, Jane Aikman and Clement Woon	Nov 2021	Virtual employee engagement session and feedback session with site management team	Aurangabad, India (Molten Metal Systems facility)	Site employees and management

The engagement sessions generally involved groups of 10-14 employees from a wide selection of roles to ensure the views expressed were from a diverse mix of the employee population. Employees were welcomed to the meeting and encouraged to express their views on a variety of matters including site practices during the COVID-19 pandemic, wider safety issues, culture, leadership, understanding of the Group strategy and execution priorities and the strategic goals of their business, investment in the future of the site and any other matters they wished to raise. The output from the discussion was fed back to the leadership team for further discussion with the Chief Executive Officer and reported back to the next Board meeting, to create a greater awareness of the views of employees amongst the whole Board. Follow-up discussions were held with site managers to convey key themes and to foster a positive culture.

The meetings between the non-executive Directors and small groups of employees give the non-executive Directors the opportunity to gain a direct insight into the issues of concern to employees, as well as areas where employees feel things are going well. The sessions have helped to foster an atmosphere of trust and a feeling of care, which encourages employees to speak openly and honestly about their working environment and the matters which mean the most to them.

The Board is satisfied that the combination of:

(i) dedicated engagement sessions with diverse groups of employees, encouraging meaningful discussion and frank feedback;

(ii) meetings with employees in their place of work during Board visits to Morgan facilities; and

(iii) the varied encounters with employees during other Morgan events gives a real insight into the working conditions of employees and provides a range of effective mechanisms with which to engage with them.

Feedback from employees indicated they appreciate these interactions, which promote a feeling of being valued and listened to by the Board.

Engagement with shareholders

The Board is responsible for and oversees Morgan Advanced Materials' dialogue and communication mechanisms with shareholders. It recognises that it is important that communication is two-way, to ensure the shareholding community is kept informed of the Company's key corporate messages and the Board is aware of shareholder views and any concerns.

Ways in which the Board engages with shareholders and listens to their views include:

Results presentations and trading updates	The CEO and CFO present the full-year and half-year results to the market. In addition, the Group normally publishes two trading updates during the year. The Board reviews the feedback from investors and potential investors to gauge investor sentiment and establish whether their expectations have been met.
Roadshows	The CEO and CFO meet institutional investors and potential institutional investors primarily via designated roadshows which are generally held twice a year, after the half-year and full-year results are published; but also via other meetings and conference calls outside the designated roadshows.
Broker presentations	The Company's brokers present to the Board annually, which includes the reporting of insights from investors and the market and a discussion of the key points.
Annual General Meeting (AGM)	Ordinarily the AGM provides shareholders with the opportunity to ask questions to the Board in person and to meet them informally after the meeting. This was not possible during 2021 due to COVID-19. In order to provide an opportunity for engagement with the Board, shareholders were asked to submit their questions ahead of the Company's AGM to the Company Secretary for the Board to consider and respond to. The questions and answers were published on the Company's website.
Specific matters: 2022 Remuneration Policy	On occasion, a matter is of sufficient interest to shareholders that feedback from key investors to a proposal is necessary before the proposal is put to shareholders to vote on at the AGM. During 2021 the views of key investors were sought on the proposed new Remuneration Policy. Further details of the engagement with shareholders on the proposed new Remuneration Policy are contained in the Remuneration Report on pages 82 to 83. The feedback from investors was taken into account in the final formulation of the Policy, which will be put to a shareholder vote at the 2022 AGM.
Other engagement methods	Other methods used to provide shareholders with up-to-date information include regulatory announcements, press releases, the Annual Report and Accounts, presentations and webcasts.
Chairman and Senior Independent Director	Any shareholder who has concerns which cannot be addressed in another way may contact the Chairman or the Senior Independent Director. To do so please write in the first instance to the Company Secretary. To date, no shareholder has found this method of engagement necessary.

CORPORATE GOVERNANCE

Relations with customers
The Board keeps abreast of relations with customers through regular reports from the Chief Executive Officer as well as insights provided by the Presidents of the divisions and global business units as part of their business presentations to the Board. The Group seeks to foster long-term relationships with customers, built on trust and openness. On occasion, the Board reviews and approves the entering into, or renewal, of long-term agreements with customers.

Relations with suppliers
Morgan Advanced Materials ensures its interactions with suppliers are always ethical, by applying the Morgan Code and specific Group policies, supported by risk assessment and due diligence. The Company seeks to ensure that suppliers operate in a similarly responsible manner, by fostering long-term relationships built on trust, being truthful in communications, and meeting agreed payment terms. During 2021, the Board was kept informed of the publication of a new Supplier Code of Conduct, which seeks to ensure that new suppliers operate in a responsible way, and that their workers are safe and treated fairly. We ensure that environmental and social impacts are taken into consideration during our process for sourcing new suppliers.

Also in 2021, a new Conflict Minerals Policy was published which sets out Morgan's position on avoiding the sourcing of conflict minerals including tantalum, tin, tungsten and gold from areas where the revenue may aid the furtherance of human rights violations and other illegal activities. Further details of the Supplier Code of Conduct and Conflict Minerals Policy may be found on page 34 of the Responsibility and Sustainability section.

Morgan publishes its Modern Slavery Act Transparency Statement annually, explaining steps taken by the Group to seek to ensure that there are no incidents of modern slavery within the business and its supply chain, in accordance with the UK Modern Slavery Act 2015. The Board reviews the Group's operational, legal and compliance framework to prevent modern slavery in its supply chain, which includes employee training, contractual terms and conditions, and due diligence processes. The Statement can be found on the website: **www.morganadvancedmaterials.com/media/8499/modern-slavery-statement-fy-ended-31-dec-2020-approved-21062021.pdf**

Engagement with pension trustee
The Board met the Independent Trustee of the UK defined benefit pension scheme in February 2022 and had the opportunity to ask questions. The Director of Pensions and the Chief Financial Officer also provide regular updates to the Board on pension issues and funding and regulatory developments affecting the Company's main defined benefit schemes around the world, including those in the USA where, as in the UK, there are a significant number of pensioner members.

Informed decision-making and Board support
The Company Secretary, with the Chairman, ensures the Board has full and timely access to all necessary information, with Board papers being made electronically available at least five working days prior to each Board and Committee meeting to enable informed decision-making. Non-executive Directors also receive information and updates between formal Board meetings. The Company Secretary attends all Board meetings and all Directors have access to her advice and if necessary professional advice at the Company's expense to assist them in fulfilling their duties as Directors. Should a Director have concerns about the running of the Company or about a proposed action, such concern would be recorded in the Board minutes. In 2021 no such concerns were raised or recorded. The Company ensures that appropriate directors' and officers' liability insurance cover is in place for the Board.

Time commitment of the Board
Before an individual joins the Board, discussions are held with them to ensure they will have sufficient availability and time to meet the needs of the Company. The number of external directorships already held is taken into account to ensure overboarding issues do not arise.

In addition, prior to undertaking any additional external roles, the Chairman and non-executive Directors are asked to confirm that they will continue to have sufficient time to fulfil their commitments to the Company. In accordance with the Code, Directors are asked to seek Board approval prior to accepting any additional external appointments and, in 2021, Clement Woon sought approval from fellow Directors before accepting the position as non-executive Director at PFI Foods Industries Pte. Ltd. The Directors are also asked to confirm, on an annual basis, whether there has been any change to the directorships they hold.

Despite the extra burdens caused by the COVID-19 pandemic, it is pleasing to note that during 2021 no availability or time commitment issues were experienced.

Conflicts of interest
Under the 2006 Companies Act directors are required to avoid conflicts of interest and are required to:

- Disclose any outside commitments and seek Board approval before accepting any additional external appointments, to enable any actual or potential conflict to be fully and properly assessed; and
- Disclose any situation which gives rise to an actual or potential conflict without delay.

The Company has procedures in place to ensure any conflicts of interest which arise are captured, assessed and declared. If a Director declares a conflict of interest the Board will consider the matter and, if necessary, the conflict of interest will be recorded and the Director excluded from being provided with any further information or being involved in any further discussion or decision-making associated with affected topics. The Directors are also asked to review and declare any conflicts of interests and outside interests on an annual basis. The review for 2021 confirmed that no actual or potential conflicts of interest had occurred during the year.

Board balance, experience, diversity and independence
The size, structure and composition of the Board is reviewed annually, taking into account the skills and experience of existing Board members and the requirements of the business, to ensure there is a good balance of professional, sector and global experience drawn from a variety of backgrounds. The Nomination Committee agrees that the number of Directors on the Board is appropriate for the scale of the Group's operations. The importance of having Board members from a diverse background is also recognised and succession plans are in place for key top and mid-level leadership positions to ensure the Group continues to retain and develop the necessary skills and business knowledge required.

In May 2021, Morgan announced the retirement of Peter Turner from the Company as Chief Financial Officer and a successor, Richard Armitage, has been identified. In selecting the new appointee the Nomination Committee considered the balance of skills, experience and background of current Board members as well as the business needs and strategic direction of the Company. Details of the search process implemented by the Nomination Committee for the recruitment of Richard Armitage can be found on page 80.

The Board undertakes an annual review of the independence of each non-executive Director and in 2021 continued to consider each non-executive Director to be independent. The Company therefore complied with the Corporate Governance Code requirement that at least half the Board, excluding the Chairman, should comprise non-executive Directors determined by the Board to be independent.

Director inductions and development
On joining the Board, new Directors receive a formal and comprehensive induction programme tailored to take into account their skills, experience and background. The programme usually includes an information pack containing recent Board and Committee packs, recent investor feedback, details of all key policies and other central information. Meetings with senior executives and functional heads are set up, as are a number of site visits. A thorough, tailored induction and handover will be carried out for Richard Armitage, the new Chief Financial Officer, on his arrival.

The individual training and development needs of each Director are considered by the Chairman on an annual basis. The Board receives detailed technical updates on corporate governance and other regulatory changes, presentations from external specialists or internal managers, training via online platforms, and site visits to ensure their skills, knowledge and experience are kept up to date. During 2021, for example, the Board received briefings on the global pension landscape and the new disclosure requirements on climate change. Training on cyber security was available via an online platform.

Board performance evaluation
An externally-facilitated review of the Board's performance was undertaken in 2021. (The previous externally-facilitated review took place in 2018.) The review was undertaken by Clare Chalmers Limited, which has no other relationship with the Company or the individual Directors and is independent.

The process for the evaluation of the Board and its Committees was as follows:

1. **Appointment of selected facilitator** – The Company Secretary reviewed the suitability and approach of a range of third-party providers and interviewed short-listed providers. A final shortlist was presented to the Chairman for review prior to approval by the Board.
2. **Scoping** – Clare Chalmers met the Chairman to discuss the objectives of the review, which included how well the members of the Board work together, and any specific areas of focus. The process and scope were discussed with the Company Secretary.
3. **Review of documentation** – Clare Chalmers reviewed a comprehensive selection of papers from recent meetings of the Board and its principal Committees, as well as terms of reference and other governance documentation. In addition to facilitating an understanding of the issues that the Board had been dealing with and its decision-making process, this desk research allowed for a review of the balance of items on the agendas and feedback on how to improve the papers.
4. **Observation of Board and Committee meetings** – Clare Chalmers attended a full day of Board and Committee meetings in person and observed an engagement session between employees and non-executive Directors.
5. **Interviews** – Clare Chalmers held one-to-one interviews with all the Directors, the Company Secretary, and other regular attendees at Board and Committee meetings, namely the Group General Counsel, the Group HR Director, the Head of Internal Audit and the external audit partner. The interviews covered a broad range of topics around how the Board works and how it helps the business.
6. **Presentation of findings** – The comprehensive and descriptive report prepared by Clare Chalmers was circulated to the Board in advance and presented to the Board by Clare Chalmers at the Board meeting in December. The observations and recommendations were discussed by Board members.
7. **Approval of actions to be taken** – Following the discussion, a number of actions were agreed and will be implemented during 2022. These are discussed in outline below.

Recommendations from the 2021 Board performance review
The overall conclusion of the 2021 Board performance evaluation was that the Board was effective. However, a number of recommendations for improvement were agreed as follows:

- Incorporation of discussions on different aspects of Group strategy during the year, which has resulted in a number of dedicated strategy discussions being included in the forthcoming Board programme for 2022;
- A review of the way risks are presented to the Board to encourage focus on the key risks and risk appetite, scheduled to take place during 2022;
- Adjustments to the scheduling of certain Committee meetings so that more time is allowed for discussion;
- Format of presentations to the Board to encourage discussion on the key points;
- Inclusion of more regular reporting on people matters by the Group HR Director, with dedicated items on three specific aspects of the Group's people strategy being included in the Board programme for 2022.

ACCOUNTABILITY
Financial reporting
A summary of the statement of Directors' responsibilities in respect of the Annual Report and the consolidated financial statements is set out on page 108, and the going concern and viability statements are set out in the Strategic Report on pages 53 to 54.

Business model and strategy
Details of the Group's business model, how it is working to generate and sustain long-term value, and details of the Board's strategy for ensuring the Group meets its objectives, are set out in the Strategic Report on pages 10 to 15.

Environmental, social and governance issues
The Board has overall responsibility for the Group's environmental, social and governance strategy and priorities and for monitoring the implementation of the strategy.

Internal control
The Board has overall responsibility for establishing and maintaining a sound system of internal control to safeguard shareholders' investments and the Group's assets, and for reviewing the effectiveness of this system.

The system of internal control, and the role of the Audit Committee in ensuring its effectiveness, are set out in the Report of the Audit Committee on pages 74 to 78.

Information on share capital and other matters
The information about share capital required to be included in this Report can be found on pages 106 to 109 in the Other Disclosures section.

REPORT OF THE AUDIT COMMITTEE

COMMITTEE MEMBERS

JANE AIKMAN (CHAIR)
HELEN BUNCH
LAURENCE MULLIEZ
CLEMENT WOON

Jane Aikman has chaired the Committee since July 2017 and has recent and relevant financial experience and competence in accounting and auditing gained from her current executive role and various prior Chief Financial Officer roles.

The Committee as a whole has competence in the sectors in which the Group operates. All Committee members are independent non-executive Directors. Biographies of the Committee members including details of relevant sector experience are set out on pages 60 to 61.

This Report gives an insight into the responsibilities, activities and workings of the Audit Committee and how it discharged its duties during 2021.

DEAR SHAREHOLDER

I am pleased to present the Audit Committee's report for 2021. Following 2020, which was an exceptional year for the Group, the Committee's work in 2021 was more routine, however, the Committee continued to challenge management and the external auditor across a number of key areas of focus, including key accounting judgements and control issues.

The Committee's primary function is to ensure the integrity of the Group's financial reporting and external audit processes and the maintenance of sound internal control and risk management procedures.

The Audit Committee reports to the Board of Directors on whether the Annual Report and Accounts, taken as a whole, is fair, balanced and understandable and provides the information necessary for shareholders to assess the Company's position and performance, business model and strategy. The Committee's role is to ensure that management's disclosures reflect the supporting detail or to challenge them to explain and justify their interpretation and, if necessary, re-present the information.

The Committee has provided assurance to the Board that the Group's financial statements faithfully represent the Group's financial performance. Where adjusted, non-statutory measures have been disclosed, the Committee is satisfied that they provide useful, additional insight into the Company's ongoing trading. They are considered to be complementary to the comparable statutory measures, without undue prominence, and their definitions and the reconciliations to statutory measures are clearly disclosed.

In addition, the Committee monitored the systems of internal control to ensure that these continued to operate effectively. In particular, the Committee reviewed the progress of the internal audit plan and the effectiveness of the internal audit function and was pleased that the function has adapted its processes to be able to operate effectively despite the continuation of some restrictions on travelling to Morgan sites.

This is the second Annual Report to be audited by Deloitte LLP, following their appointment after the audit tender process which concluded in 2019. Last year, the Committee monitored the successful transition to a new audit approach and has scrutinised the performance and effectiveness of the external audit and found it to be effective. Feedback was provided to the audit partner and the Committee reviewed the scope and content of the FY2021 audit plan.

The Committee has monitored the reports raised through the ethics hotline and ensured that executive management has responded to these quickly and appropriately. The Committee has overseen improvements in the case management of reports and has reviewed the key themes and trends in the number, type and source of these reports to gain an understanding of how effectively the Morgan Code of Conduct is embedded. This information has been used by the Board of Directors as part of its assessment of Morgan's culture.

The Committee continues to monitor and address any changes in governance and reporting requirements. The landscape in which audit services are provided is likely to change in the near future and we await the recommendations following the Government's consultation on Restoring Trust in Audit and Corporate Governance.

The role of the Audit Committee will remain in sharp focus in the year ahead and we continue to be committed to meaningful disclosure of the Committee's activities.

COMMITTEE EVALUATION

The Committee's performance was reviewed as part of the externally-facilitated Board performance evaluation aimed at identifying areas for improvement. I am pleased to report that the Committee is continuing to work well and is fully discharging its responsibilities, whilst contributing effectively to the Group's overall governance framework.

Jane Aikman
Committee Chair

MEETINGS

The Committee met four times during the year, with the timing and the agendas of the meetings closely linked to key points in the annual reporting cycle.

The Chairman of the Board, the executive Directors and key members of senior management attend the meetings by invitation, as do senior representatives of the external auditor.

At the end of each meeting, Committee members meet the external auditor, the Head of Internal Audit and the Director of Ethics and Compliance without the executive Directors or other members of management present.

Between meetings, the Chair of the Audit Committee keeps in contact with the Chairman of the Board, the Chief Executive Officer, the Chief Financial Officer, the Group Financial Controller, the external auditor, the Head of Internal Audit and the Director of Ethics and Compliance as necessary.

INFORMATION AND SUPPORT

The Committee may request the attendance at meetings of any Director or employee as may be considered appropriate by the Committee. Committee members receive appropriate and timely information on all matters needed to enable the Committee to fulfil its responsibilities. Training and development information is made available to Committee members as appropriate.

AUDIT COMMITTEE TERMS OF REFERENCE

The Committee supports the Board in its responsibilities in relation to corporate reporting, risk management and internal controls, and manages the relationship with the Group's external auditor. The Committee provides regular reports to the Board. The Committee's terms of reference, reviewed during the year, are available on the Company's website.

KEY ACTIVITIES DURING 2021

During 2021 the key areas of focus for the Committee were:

- Receiving reports on progress in relation to the internal audit plan, providing guidance and ensuring continuous improvement of the function;
- Conducting a robust review of the scope, remit and effectiveness of the internal control environment and ensuring risk management procedures are appropriate and effective;
- Overseeing the Group's ethics and compliance programme and monitoring progress in compliance with the Morgan Code across the Group;
- Reviewing the management of all reports made to the 'Speak Up' hotline, or to management on ethics and compliance matters, considering the findings and recommended actions, including whether the Board should be notified of any investigations;
- Reviewing the trends arising from the ethics and compliance investigations to draw conclusions on control areas for improvement;
- Assessing the key areas of significant judgement in relation to the 2021 consolidated financial statements, which were: pensions, environmental provisions and contingent liabilities, the impairment of non-financial assets (excluding goodwill), recognition of deferred tax assets and the presentation of specific adjusting items;
- Considering the appropriateness of management's assessment of going concern and the viability statement;
- Reviewing the Company's draft 2021 Annual Report and Accounts and recommending to the Board that the document be approved. The review included specific consideration of whether the document was fair, balanced and understandable and whether alternative performance measures were appropriately defined and reconciled to statutory reporting measures, and were not given undue prominence;
- Reviewing the effectiveness of the external audit process;
- Receiving annual risk presentations from the Thermal Ceramics global business unit, the Technical Ceramics global business unit, the Electrical Carbon global business unit, the Seals and Bearings global business unit and the Molten Metals Systems global business unit;
- Receiving an update from the Director of Group Tax on taxation issues;
- Recommending the tax strategy for Board approval; and
- Approving the appointments of both the Director of Ethics and Compliance and the Head of Internal Audit.

The Committee has an annual cycle of business which is designed to ensure it discharges in full its responsibilities over the course of each reporting year. This plan includes a number of standing agenda items, such as:

- Scheduled financial reporting updates which enable the Committee to monitor the integrity of the consolidated financial statements, agree the content of the full-year and half-year announcements relating to the Company's financial performance, and review all significant financial reporting judgements;
- Review of the FRC's most recent Annual Review and Year-end Letter and consideration of the proposed focus areas;
- Reports from the external auditor covering their views on key judgements and accounting estimates, and progress against the agreed audit plan;
- Review and discussion of the external audit plan and strategy for the 2022 year end;
- Approval of the audit engagement letter and audit fee, and confirmation of auditor independence;
- Updates presented by the Head of Internal Audit covering progress against the internal audit annual plan, management reports on internal financial control and risk management systems, and the implementation of management actions to address any control weaknesses that have been identified;
- Review the internal audit plan for the coming year;
- Annual review of the effectiveness of the internal audit function;
- Ethics and compliance updates, including reports on whistleblowing and investigations;
- On behalf of the Board, annual review of the effectiveness of the whistleblowing reporting line; and
- Review of the Committee's terms of reference.

REPORT OF THE AUDIT COMMITTEE

PUBLIC REPORTING

The Committee, as requested by the Board, considered the Code requirement for the Board to make a statement on whether the Annual Report and Accounts taken as a whole is fair, balanced and understandable. The Committee approached this by following the process below:

- Considered the questions which need to be answered in order to evaluate whether the Annual Report and Accounts meets the fair, balanced and understandable test;
- Reviewed the methodology used to construct the narrative sections of the Annual Report;
- Reviewed the disclosure judgements made by the authors of each section and considered the overall balance and consistency of the Annual Report;
- Received confirmation from external advisors that all regulatory requirements are satisfied;
- Received confirmation of verification of content from the authors of each section;
- Received confirmation from the Chief Financial Officer that the narrative reports and consolidated financial statements are consistent; and
- Made a recommendation to the Board to assist it in determining whether it is able to make the statement that the Annual Report and Accounts taken as a whole is fair, balanced and understandable.

The FRC included Morgan Advanced Materials plc's Annual Report and Accounts to 31 December 2020 in its Viability and Going Concern Thematic review: The FRC carried out a limited scope review of our viability and going concern disclosures and confirmed that it had no queries or concerns arising from their review. The FRC asks that companies make clear the inherent limitations of their review, and that their review is based on Morgan's Annual Report and Accounts and does not benefit from detailed knowledge of our business or an understanding of the underlying transactions entered into during the period.

The significant areas of judgement considered by the Committee in relation to the 2021 consolidated financial statements, and how these were addressed, were as follows:

Specific adjusting items

In the consolidated income statement, the Group presents specific adjusting items separately. In the judgement of the Directors, as a result of the nature and value of these items they should be disclosed separately from the underlying results of the Group. The Group believes that these APMs, which are not considered to be a substitute for, or superior to, IFRS measures, provide stakeholders with additional helpful information on the performance of the business.

Details of specific adjusting items arising during the year and the comparative period are given in note 6 to the consolidated financial statements. Specific adjusting items in relation to discontinued operations are disclosed in note 9 to the consolidated financial statements.

The Committee reviewed the key assumptions underpinning the accounting for specific adjusting items for the half-year and full year results, including receiving presentations from Deloitte LLP on this matter.

Recognition of deferred tax assets

Deferred tax assets are recognised when management judges it probable that future taxable profits will be available against which the temporary differences can be utilised. This relies on the use of estimates of future taxable profits which may differ from the actual results delivered. In the event future taxable profits do not materialise this would lead to a write-off of recognised deferred tax assets. The Committee and the Board address these issues through reporting from the Chief Financial Officer and the Director of Group Tax, supported as necessary by external professional advice.

Environmental provisions and contingent liabilities

Due to the nature of its operations, the Group holds environmental provisions for its environmental obligations. Judgement is required to determine whether a contingent liability has crystallised into a provision. These are addressed by the Committee and the Board discussing with various members of senior management the key judgements made, supported, where appropriate, by relevant external advice.

Deloitte LLP also regularly present their view on all material provisions and contingent liabilities. Environmental provisions are disclosed in note 25 to the consolidated financial statements.

Pensions and other post retirement employee benefits

The Group operates a number of defined benefit arrangements as well as defined contribution plans. The defined benefit plans primarily relate to the UK, US and Europe and predominantly provide pensions based on service and career-average pay.

Accounting assumptions, given in note 23 to the consolidated financial statements, are used to calculate the year-end net pension liability in accordance with the relevant accounting standard, IAS 19 (revised) Employee Benefits. Relatively small changes in the assumptions underlying the actuarial valuations of pension schemes can have a significant impact on the net pension liability included in the balance sheet.

The Committee reviewed the key assumptions underpinning the accounting for these defined benefit arrangements for the half-year and full year results, including receiving presentations from Deloitte LLP on this matter.

Impairment of non-financial assets

The Group monitors the performance of individual assets and cash-generating units at each balance sheet date to determine whether there is any indication of impairment. An impairment loss is recognised in the income statement where the carrying amount of an asset exceeds its recoverable amount.

The impairment charge for the year relates to the impairment of assets in Technical Ceramics, Asia, which are taking longer than anticipated to generate revenues and to assets in Electrical Carbon, Europe and North America, and Thermal Ceramics, North America which are not being utilised by the business. Additional disclosure is included in note 6 to the consolidated financial statements.

The Committee reviewed the key assumptions that underpin the value in use calculations, including receiving the views from Deloitte LLP on these matters.

Public reporting statement

The Committee reviewed the content of the Annual Report and Accounts and advised the Board that, taken as a whole, it is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy.

INTERNAL FINANCIAL CONTROL AND RISK MANAGEMENT SYSTEMS

The Committee assists the Board in fulfilling its responsibilities relating to the adequacy and effectiveness of the control environment and risk management systems. The Group's system of internal control has been in place for the year under review and up to the date of approval of the Annual Report.

The Committee, on behalf of the Board, undertakes an annual review of the effectiveness of the Group's system of internal control and did so again for the year under review. This system is consistent with the FRC's guidance on internal control requirements contained within the Code. The review conducted in February 2022 comprised:

- A review of the relevant Principles and Provisions in the UK Corporate Governance Code;
- A review of the Company's governance structures;
- A review of the sources of assurance and the Company's three lines of defence model, including policies, annual self-certification process, reports from specialist functions such as Ethics & Compliance, Tax, Treasury and Legal functions, and internal audit reports;
- A review of all material controls, including financial, operational and compliance controls, and risk management systems, including the improvements achieved in 2021 and identification of further areas for improvement;
- The Committee and Board receive regular risk management reports and together they ensure that there are adequate internal controls in place and that these are functioning effectively.

The Directors consider that the Group's system of internal financial control provides reasonable, but not absolute, assurance in the following areas: that the assets of the Group are safeguarded; that transactions are authorised and recorded in a correct and timely manner; and that such controls would prevent or detect, within a timely period, material errors or irregularities. The system is designed to mitigate and manage risk, rather than eliminate it, and to address key business and financial risks. The majority of internal financial controls are manual; this is driven by a diverse IT landscape and the Group's geographical breadth; as such, there is a heavy reliance on central review controls. The Directors are satisfied that an appropriate amount of time and consideration is dedicated to the review and challenge of results, judgements and estimates – both by the global business units and the Group leadership team.

The main features of the Group's system of internal control and for assessing the potential risks to which the Group is exposed are summarised as follows:

Control environment

The Group's control environment is underpinned by the Morgan Code and its associated policies and guidelines. The Group policies cover: financial procedures; environmental, health and safety practice; ethics and compliance, for example anti-bribery and anti-corruption, anti-trust and anti-competitive behaviour and trade compliance); and other areas such as IT and HR. There is a Limits of Authority Policy, which describes the matters reserved for the Board and the delegations granted to the Chief Executive Officer and other executives. The Group operates various programmes to improve the control environment and management of risk. These include the Group's ethics and compliance programme and the Group internal audit function, which present updates to the Committee at each meeting. In addition, the Committee receives reports from the Presidents and Finance Directors of each of the divisions and global business units on their specific key risks, how these risks are managed and an assessment of the control environment, on an annual basis.

Part of the ethics and compliance programme is the provision of an externally managed, independent whistleblower (Speak Up) hotline which is made available to workers to raise concerns. Any reports made to the hotline are investigated by senior management, with reports made to the Committee at each meeting.

The Committee oversees the progress and outcome of any investigations arising from reports made to the hotline or directly to management, where there is a concern regarding ethical conduct. The reports investigated have varied in their nature and materiality, with certain matters requiring the support of external advisors and giving rise to disciplinary action against employees for breaches of Group policies.

The divisional and global business unit Presidents and other senior operational and functional management make an annual statement of compliance to the Board confirming that, for each of the businesses for which they are responsible, the consolidated financial statements are fairly presented in all material respects, appropriate systems of internal controls have been developed and maintained, and the businesses comply with Group policies and procedures or have escalated known exceptions to an appropriate level of management.

Financial reporting

Risk management systems and internal controls are in place in relation to the Group's financial reporting processes and the process for preparing consolidated accounts. These include policies and procedures which require the maintenance of records which accurately and fairly reflect transactions and disposals of assets, provide reasonable assurance that transactions are recorded as necessary to allow the preparation of consolidated financial statements in accordance with International Financial Reporting Standards (IFRS), and the review and reconciliation of reported data. Representatives of the businesses are required to certify that their reported information gives a true and fair view of the state of affairs of the business and its results for the period. The Audit Committee is responsible for monitoring these risk management systems and internal controls.

Performance monitoring

The Board and the Executive Committee hold regular, scheduled meetings, at which they monitor performance and consider a comparison of forecast and actual results, including cash flows and comparisons against budget and the prior year. Divisional and global business unit management teams also meet regularly to review performance. Executive Committee members also visit sites on a regular basis.

Risk management

The Board undertakes a formal assessment of the Group's principal and emerging risks at least twice a year. The identification, assessment and reporting of risks is a continuous process carried out in conjunction with operational management. Appropriate steps are taken to mitigate and manage all material risks including those relating to the Group's business model, solvency and liquidity. The Board, either directly or through the Committee, receives updates on risks, internal controls and future actions from both divisional and Group perspectives. The Executive Committee collectively reviews risk management and internal controls for all principal Group risks. The Group's risk management system, which is described in more detail in the Risk Management section of the Strategic Report on pages 38 to 43, supports the Directors' statements on going concern and viability on pages 53 to 54.

Risk factors

The Group's businesses are affected by a number of factors, many of which are influenced by macro-economic trends beyond Morgan Advanced Materials' control; nevertheless, as described above and in the Strategic Report, the identification and mitigation of such risks are regularly reviewed by the Executive Committee and the Board. These risk factors are further discussed in the Risk Management section on pages 38 to 43.

Internal audit

The Group's internal audit function reviews internal control and risk management processes. The Audit Committee approves the annual internal audit plan and ensures that there are adequate resources in place for the function to carry out the plan. The Committee receives reports showing the ratings and key findings from each audit. The Committee challenges management over the key findings, discusses key themes identified by the internal audits and guides management in identifying areas of focus to continuously improve controls. Actions arising from internal audit reviews are agreed with management and the Committee monitors progress on any outstanding actions. The Head of Internal Audit has direct access to the Committee's Chair and meets separately with Committee members without executive management at least twice a year.

During 2021, travel to sites was limited, but the members of the internal audit team continued to perform audits according to the planned programme, using remote procedures.

In 2021, the Committee reviewed the effectiveness of the Group's internal audit function by way of surveys completed by Committee members and key management personnel. This is the approach taken in those years that the review is not externally-facilitated. The last externally-facilitated review was in 2018.

REPORT OF THE AUDIT COMMITTEE

The Committee considers the internal audit function to be effective, with the quality, experience and expertise appropriate to the business.

External auditor, including independence and Non-Audit Services Policy

The external auditor, Deloitte LLP, has processes in place to safeguard its independence and objectivity, including specific safeguards where it is providing permissible non-audit services, and has confirmed in writing to the Committee that, in its opinion, it is independent.

In addition, the Company has a policy on the provision of non-audit services by the external auditor which was revised in 2019 and is in line with the FRC's revised Ethical Standard 2019 which took effect on 15 March 2020:

- Certain non-audit services may not be provided. The external auditor may not review their own work, make any management decisions, create a mutuality of interest, and/or put themselves in the position of advocate;
- Any permissible non-audit work proposed to be placed with the external auditor with a total fee between £50,000 and £200,000 must be approved in advance by the Chair of the Audit Committee. Projects in excess of £200,000 must be approved in advance by the Audit Committee, with any such proposal being submitted in writing to the Chief Financial Officer, who would in turn seek approval from the Audit Committee. All permissible non-audit work, regardless of value, must be approved by the Group Financial Controller. Work which includes multiple phases is treated as a single project for approval purposes;
- The prior approval of the Audit Committee is required for any non-audit work which, when added to the fees paid for other non-audit work, would total more than 60% (previously 80%) of the audit fee;
- The value of non-audit fees must not under any circumstances exceed 70% of the average Group statutory audit fee incurred in the last three consecutive financial years.

To safeguard the objectivity and independence of the external auditor, the Company ensures that any non-audit services to be provided by the auditor are given prior approval by the Audit Committee where required under the Policy.

In the opinion of the Committee the auditor's objectivity and independence were safeguarded despite the provision of a limited number of non-audit services by Deloitte LLP during 2021.

In 2021, the proportion of the auditor's fees for non-audit work relative to the audit fee was 0.0% (or £28,000), (2020: 8.0%).

Auditor effectiveness

The Committee discussed the quality of the audit during the year and considered the performance of the external auditor as a separate agenda item at the meeting in February 2022. The Committee conducted a full review following the 2021 year end to gather feedback and look for continuous improvement opportunities. The Committee considered all aspects of the auditor's performance, based on a review of the effectiveness of the external audit process, which was conducted through a questionnaire taking into consideration relevant professional and regulatory requirements. The questionnaire was completed by each GBU finance director and nine Group functional teams. In addition to the questionnaire, the following external auditor areas were reviewed:

- Independence confirmation;
- Audit methodology, use of component auditors and audit scope and coverage;
- Assessment of materiality and areas of audit focus, consideration of appropriate audit procedures, professional scepticism, appropriate management challenge, clarity and candour in reporting; and
- The FRC's Audit Quality Review findings for Deloitte for the 2020/21 cycle of reviews and Deloitte's proposed actions to address these findings as a firm.

The Committee confirmed Deloitte's independence before recommending its reappointment for approval by shareholders at the Annual General Meeting (AGM) scheduled for May 2022.

External audit rotation

Deloitte LLP was appointed by shareholders as the Group's statutory auditor in 2020 following a formal tender process. The external audit contract will be put out to tender at least every 10 years. The Committee considers that it would be appropriate to conduct an external audit tender by no later than 2030.

The Company has complied with the provisions of the Competition and Markets Authority's Order on statutory audit services.

REPORT OF THE NOMINATION COMMITTEE

COMMITTEE MEMBERS

DOUGLAS CASTER (CHAIR)
JANE AIKMAN
HELEN BUNCH
LAURENCE MULLIEZ
CLEMENT WOON

The Committee is composed solely of non-executive Directors and is chaired by the Chairman of the Board. Biographies of the Committee members can be found on pages 60 to 61.

The Company Secretary is secretary to the Committee and attends all meetings.

The Chief Executive Officer and Group HR Director attend all scheduled meetings by invitation.

The Nomination Committee monitors the Board's succession plans and considers appointments to the Board in support of the strategy and long-term success of the Group.

NOMINATION COMMITTEE ROLE

The Nomination Committee is responsible for keeping under review the composition of the Board and its succession, and monitors and regularly reviews the balance of skills, knowledge, experience, independence and diversity of the Board and its Committees. It reviews succession planning for the Executive Committee and overall talent strategy for senior leadership positions, by reference to Morgan's Board Inclusion and Diversity Policy, which sets the overall tone for the Group's approach to diversity. The Committee leads the process for appointments to the Board and ensure plans are in place for orderly succession to both the Board and senior management positions and to oversee a diverse pipeline for succession.

The Committee's formal role is set out in its terms of reference, which are available to view on the Company's website.

NOMINATION COMMITTEE ACTIVITY IN 2021

On behalf of the Nomination Committee, I present our report for 2021. The Committee met three times during 2021 and members' attendance is set out in the table on page 68.

The Committee performs a vital role in reviewing the composition and balance of skills and experience on the Board, enabling it to lead the process for appointments to the Board, keep under review the leadership needs of the Group, and ensure plans are in place for orderly succession to Board and senior management positions. During 2021, the Committee reviewed Board succession and assessed whether the objectives of the Board's Inclusion and Diversity Policy, including how it supports Morgan's strategy, had been implemented and what progress has been achieved. During the year, the Board reviewed succession planning and talent strategy for the Executive Committee and its direct reports, with a particular lens on our aim to foster diversity within the leadership population and increase the female leadership population to 40% by 2030.

In May 2021, the Company announced Peter Turner's retirement as Chief Financial Officer. The Committee identified his successor, Richard Armitage, who will join the Board on 30 May 2022 after a thorough search process which is set out in this Report.

The Committee remains conscious that to execute on Morgan's execution priorities of Big Positive Difference, Innovate to Grow and Delight the Customer, building our talent pool with individuals whose skill sets and thinking can drive Morgan's strategy and shape our culture is critical to the Group's long-term success.

Douglas Caster CBE FIET
Committee Chair

MAIN AREAS OF WORK DURING 2021

During 2021, the Committee's key activities included:

- Considering the skills mix on the Board, including diversity of gender, ethnicity and geographical representation;
- Recommending the appointment of a new Chief Financial Officer;
- Reviewing how the objectives of the Board's Inclusion and Diversity Policy, and its support of the Group's strategy, have been implemented, and assessing progress against the objectives;
- Reviewing the structure, size and composition of the Board and its Committees, ensuring that they remain appropriate;
- Reviewing the results of the annual performance evaluation of the Committee;
- Considering whether each Director continued to be able to allocate sufficient time to discharge their responsibilities effectively;
- Considering the Directors' annual re-election at the 2021 Annual General Meeting (AGM);
- Overseeing the development of a diverse succession pipeline for Executive Directors and other senior leaders;
- Considering Board succession planning, taking each non-executive Director's tenure into account; and
- Reviewing the Committee's terms of reference.

SKILLS, SIZE AND COMPOSITION OF THE BOARD

The Committee reviews the Board's composition, including the length of tenure of non-executive Directors, to ensure that it has the correct balance of skills, experience, knowledge and diversity required for the leadership of the Group, to support the delivery of the Group's strategy, and to comply with the UK Corporate Governance Code. The Committee considers that the Board members have a range of experience in safety, customer focus, environmental sustainability, global business management and operations, strategy execution, finance, and risk management, from a variety of sectors, including engineering, global technology, manufacturing, construction, energy, and marketing which will be relevant in overseeing the delivery of Morgan's strategy and execution priorities.

REPORT OF THE NOMINATION COMMITTEE

During the year, the Committee reviewed and agreed that the overall size of the Board and its Committees, including the non-executive Director/executive Director split, was appropriate for Morgan. It agreed that the current Board and Committee structure remained appropriate, and all non-executive Directors should continue to be members of the main Committees (with the exception that the Chairman of the Board should not be a member of the Audit Committee). The Committee considers that the members of the Board and Committees have the appropriate mix of skills, experience, diversity and knowledge of the Company, and that undue reliance was not placed on any particular individual(s).

The Committee will review the balance of skills and experience on the Board when considering future changes to the Board.

DIVERSITY AND INCLUSION

The Board recognises the benefits that diversity and inclusion bring at all levels of the Company, and firmly believes diversity is an important factor in enabling good decision-making at Board level.

Morgan continues to foster greater diversity and inclusion and remains committed to, and ambitious about, making Morgan a more diverse place to work. During 2021, the Board reviewed succession planning and talent strategy for the Executive Committee and its direct reports, with a particular lens on our aim to foster diversity within the leadership population and increase the female leadership population to 40% by 2030. The Board reviewed the Group's work to strengthen leadership capability and succession.

Morgan's Board Inclusion and Diversity Policy reflects the Group's inclusion and diversity aspirations and includes objectives, and the Committee monitors progress against these objectives. The Nomination Committee annually reviews the composition of the Board and considers the balance of competencies to ensure alignment with the Company's purpose, strategy and execution priorities and the environment in which it operates. The Nomination Committee reviews the characteristics, perspectives, independence and diversity of Board members; how the Board works together; and other factors relevant to its effectiveness.

Currently, three of the seven Board Directors are female, one of whom is the Senior Independent Director, equating to 43% female representation on the Board, and the Board currently has one Director of South East Asian origin. Morgan's intention is to at least maintain that level of diversity, in order that the Board's composition can more closely reflect the Group's workforce and society more generally. The appointment of a male CFO to succeed Peter Turner leaves the gender representation on the Board unchanged.

The percentage of women on the Group's Executive Committee is 40%. At 31 December 2021, 27% (2020: 25% and 2019: 29%) of senior management (defined in accordance with the Code as the members of the Executive Committee including the Company Secretary) and their direct reports were female. The Committee takes diversity into account in broader discussions on succession planning and talent development and supports management in its wider commitment to promoting diversity. The Company submitted data to both the FTSE Women Leaders Review and the Parker Review during 2021.

The Board has agreed objectives for achieving gender, ethnic and cultural diversity on the Board, and places high emphasis on ensuring the development of diversity both in senior management roles and the workforce in general within the Company.

To promote diversity and inclusion the Board will:

- Consider all aspects of diversity when reviewing the composition and effectiveness of the Board;
- Only engage with executive search firms which are accredited under the Enhanced Code of Conduct for Executive Search Firms, or which have a proven track record in sourcing diverse candidates, when seeking to make new appointments;
- Ensure that candidate lists include individuals from a broad and diverse range of backgrounds and that all candidates with the requisite skills and capability are considered, including those with less traditional track records than the corporate mainstream;
- Agree new Board appointments based on merit against the objective criteria set, taking account of the unique benefits each candidate can bring;
- Review senior executive succession planning annually and monitor the development of a diverse pipeline of future senior leaders, reflecting the composition of Morgan's workforce;
- Set the tone and provide visible support for the Group's diversity and inclusion objectives, including the fostering of an inclusive culture which allows individuals to bring their whole selves to work, role modelling and promoting inclusive leadership; and
- Reviewing and challenging the goals and progress of executive management in improving inclusion and diversity.

Looking at progress achieved against the objectives set out in the Board's Inclusion and Diversity Policy during the year, the diversity of the Board's members remained unchanged with 43% women and one male Board member of South East Asian origin. Going forward, with the refreshment of the Board into future years, the Policy will inform and steer the Committee in identifying candidates and set the tone for the wider Group's diversity aspirations, in particular in the context of developing its leadership population.

TO FIND OUT MORE

The Board's Inclusion and Diversity Policy can be viewed on the Company's website www.morganadvancedmaterials.com/media/8349/199221-morgan-board-inclusion-diversity-policy_.pdf.

EXECUTIVE DIRECTOR SUCCESSION

Richard Armitage is expected to join the Board on 30 May 2022 as Chief Financial Officer when Peter Turner retires.

When Peter informed the Board of his intention to retire, the Committee engaged Spencer Stuart to carry out a targeted external search for his successor, using a role profile which set out the desired skills of financial leadership and commercial and strategic experience. It was also crucial that a successor should be an effective business partner to the CEO, a proven communicator with investors, and align strongly with Morgan's culture and values. The search process was carried out against the criteria and the objectives of the Board's Inclusion and Diversity Policy. Spencer Stuart was given a wide brief to ensure a wide and diverse talent pool was considered and were advised that the Company would be open to consider both established listed company CFOs and 'step up' candidates.

Spencer Stuart is accredited under the Enhanced Code of Conduct for Executive Search Firms. Spencer Stuart has been used for other recent senior leader appointments within the Morgan Group but has no other connection with the Group nor its Directors.

Candidates met with the CEO, the Group HR Director, the Audit Committee Chair and the Chairman of the Board. The Committee reviewed the final short-listed candidates and, after consideration, recommended to the Board that Richard Armitage be appointed the next CFO. The recommendation was unanimously approved by the Board and announced on 15 October 2021. Richard Armitage will join the Board as an executive Director and CFO on 30 May 2022. Peter Turner will cease in his role as CFO on 30 May 2022 and will step down from the Board in June 2022 following a handover period.

SUCCESSION PLANNING

The Committee regularly reviews the Board's composition, including the length of tenure of non-executive Directors, to ensure that it has the correct balance of skills, experience, knowledge and diversity required for the leadership of the Group, to support the delivery of the Group's strategy, and to comply with the UK Corporate Governance Code.

The Board receives reports on the development of internal talent and reviews the talent pool for senior leadership opportunities.

The usual process for selection of a non-executive Director is described below. For 2022 and future years, the Committee will re-evaluate and update Morgan's processes for Board and senior management appointments by reference to the aims and objectives of the Board Inclusion and Diversity Policy, and will report on progress in future annual reports.

- The Committee formulates a candidate specification for the role, taking into account the balance of skills, knowledge, experience, diversity and geographical representation on the Board, and considering the desired skills and experience required to complement the existing membership and to support the implementation of the Group's strategy;
- The external search agent produces a long-list of candidates for the role, taking the identified requirements into consideration;
- Interviews with members of the Nomination Committee take place with short-listed candidates;
- Interviews with other Board members take place with the final candidate(s);
- The Committee makes a recommendation for the appointment to the Board, taking into account the views of the Board members;
- Any new Director appointed by the Board must be elected by shareholders at the next AGM, and all existing Directors must retire and be re-elected at the AGM to continue in office.

Non-executive Directors, including the Chairman, are asked to confirm that they will allocate sufficient time to meet their commitments to the Company and that their other appointments and significant time obligations are disclosed to the Board prior to appointment, with an indication of the level of time commitment involved. The Board is informed of any subsequent changes, and additional commitments must be disclosed before they are accepted.

COMMITTEE PERFORMANCE EVALUATION

The Committee's performance was reviewed as part of the Board evaluation (see page 73 for details), which was externally-facilitated in 2021 by Clare Chalmers. It was concluded that the Committee had operated effectively during the period under review.

TIME COMMITMENT

The time commitment of each of the Chairman, Chairs of Board Committees and non-executive Directors are set out in their respective letters of appointment. Non-executive Directors are expected to spend at least two days per month, more if they act as Chair of a Board Committee, on Company business; and the Chairman is expected to spend at least 50 days per annum on Company business. During the year, the Committee considered that each Board member fulfilled his or her respective commitment, both in respect of Board and Committee meetings and for employee engagement sessions. Details of meeting attendance by Board members are set out on page 68.

ANNUAL RE-ELECTION OF DIRECTORS

All Directors are subject to annual re-election under the Code. Peter Turner is retiring from the Board in June 2022 and will therefore stand for re-election at Morgan's 2022 AGM despite his impending retirement. His successor Richard Armitage will stand for election at the 2023 AGM following his forthcoming appointment in May 2022.

Clement Woon is serving his first three-year term as Director, and Jane Aikman, Helen Bunch and Laurence Mulliez are all in their second three-year term. Douglas Caster is serving his third three-year term on the Board. In line with Provision 18 of the Code, the specific reasons why each Director's contribution is, and continues to be, important to the Company's long-term sustainable success have been set out in this year's Notice of AGM, to accompany the formal re-election resolutions.

During the year, the Chairman reviewed the performance of each Director and has confirmed their continued effectiveness. A formal review of each individual Director's performance was conducted as part of Morgan's Board evaluation process in 2019, concluding with individual meetings between the Chairman and each non-executive Director. The Senior Independent Director also hosted a meeting of the non-executive Directors without the Chairman present in December 2021 to discuss the Chairman's performance.

REMUNERATION REPORT

COMMITTEE MEMBERS

HELEN BUNCH (CHAIR)
JANE AIKMAN
DOUGLAS CASTER
LAURENCE MULLIEZ
CLEMENT WOON

I am pleased to present the Remuneration Report for the year ended 31 December 2021 and proposed changes to the Remuneration Policy for 2022.

The health, safety and wellbeing of our employees remains our top priority, and in view of the continuation of the COVID-19 pandemic we have maintained heightened safety measures to protect our employees. There has been further focus on the 'thinkSAFE' programme, the Morgan Code of Conduct, as well as the continuation of the global Sales Effectiveness Programme.

Statement to shareholders from the Chair of the Remuneration Committee.

COVID-19 remains a significant issue in many of the countries Morgan Advanced Materials operates in, with impacts still being observed across the global economy. Despite this Morgan has seen a robust recovery in most of its end-markets, leading to a return to growth, delivering 10.3% organic revenue* growth for the 2021 financial year. We have continued to take appropriate actions to control costs, improve cash flow and increase liquidity, which along with continued further investment in the wider business to support sustainable long-term growth, has helped Morgan to emerge stronger from the crisis.

Within the context of the UK Corporate Governance Code, and the requirement to put the Remuneration Policy to a binding vote at the 2022 AGM, the Committee conducted a thorough review in 2021 of the current Remuneration Policy (approved by 97% of shareholders at the 2019 AGM). This review concluded that the current framework continues to support Group strategy and culture, as well as providing strong alignment of executive Director and shareholder interests. It also highlighted the appropriateness of making several amendments to reflect changes in the external landscape and as such, I wrote to our largest shareholders in October 2021 to consult on the changes that are being proposed to the Remuneration Policy for 2022 onwards.

2021 COMMITTEE ACTIVITY

During the year, the Committee met six times. Its activities included determination of current incentive outcomes and 2022 incentive structure and targets, remuneration packages for the executive Directors, and a review of the Group's Remuneration Policy. Further details regarding the activities of the Committee can be found in the 'Remuneration governance' section at the end of this Report on page 104.

2021 REMUNERATION OUTCOMES

In reviewing performance in 2021, the Committee determined that payouts of 97% of the 2021 annual bonus opportunity for the Chief Executive Officer (CEO) and Chief Financial Officer (CFO) were appropriate. The 2019 LTIP award will partially vest, resulting in a 52.2% achievement of the maximum. These outcomes are consistent with the Group's performance, details of which are summarised later in this Report. The Committee has not felt it appropriate to adjust performance targets during the year and felt that no discretion needed to be applied for 2021 remuneration outcomes as they were considered to appropriately reflect the underlying performance of the Group.

IMPLEMENTATION OF POLICY IN 2022

The Remuneration Committee decided that, taking into account the improved performance of the Group in 2021, labour market conditions, and average range of salary increases in the wider workforce, the appropriate level of salary increase for the CEO would be 2.5%. The current CFO will be retiring from the Company in June 2022 and as such no salary increase has been awarded for 2022. The process for reviewing executive Director salaries takes into account individual and Group performance, demonstration of the defined Leadership Behaviours and salary position relative to the relevant market, which is consistent with the approach taken for the entire professional population. There will also be an increase to the fees for the Chairman and non-executive Directors of 2.5% for 2022 as determined by the Committee (for the Chairman) and the Chairman and executive Directors (for the non-executive Directors).

The Committee also reviewed the structure of the annual bonus and LTIP plans to ensure that the framework remains appropriately aligned with our strategic aims and culture, motivates and rewards management for delivering sustainable performance, and supports retention. No changes are proposed to the performance linkage of the annual bonus for 2022 as measures remain aligned to Morgan's key objectives, including ESG (environmental, social and governance) measures being covered in the executive Directors' personal objectives and therefore reflected in the personal performance element of bonus. For the LTIP, it is proposed to add an ESG measure (carbon reduction) to the structure, to align more closely with Morgan's strategy and priorities. The proposed ESG targets are 5% to 15% carbon reduction over the three-year performance period, reflecting our stated longer-term ambition to reduce carbon emissions by 50% by 2030 (from a 2015 baseline). The proposal is to decrease the EPS targets from 15% - 22% to 6% - 13% over the three-year performance period, the targets having been temporarily increased last year to take into account the reduced base level resulting from the impact of the pandemic on financials. The Committee considers this to be appropriately challenging in the context of the Group's strategic plan, external market factors and broker forecasts. No changes are proposed to the TSR benchmarks and relative TSR performance range (median-upper quartile). It is proposed to maintain the ROIC* range for that element of the executive Directors' 2022 LTIP at 17%-20%, to reflect our latest expectations for performance over the three-year performance period. For the annual bonus, the width of the performance ranges have been reduced to ±7.5% of target, however they remain slightly wider than in pre-pandemic years to reflect the ongoing uncertainty of the pandemic and its potential impact on performance outcomes. Annual bonus targets are considered to be commercially sensitive at this time but will ordinarily be disclosed in next year's Remuneration Report.

PROPOSED CHANGES TO REMUNERATION POLICY IN 2022

In line with the remuneration reporting regulations, the Directors' Remuneration Policy must be submitted for shareholder approval at least every three years. The Policy was last approved by shareholders at the 2019 AGM, and therefore is required to be put to a new binding vote at the 2022 AGM.

During 2021, the Committee reviewed the Remuneration Policy for executive Directors in the context of our remuneration philosophy, the UK Corporate Governance Code, and recent developments in remuneration governance. The Committee concluded from its review that the 2019 Policy framework continues to reinforce our strategy and culture and provides strong alignment of executive Director and shareholder interests. However, the Committee recognises that the remuneration governance landscape, and the views of some shareholders on the subject of executive remuneration, continue to evolve at pace. Accordingly, I wrote to our largest shareholders in October 2021 to consult on the changes that are being proposed to the Remuneration Policy for 2022 onwards, which are:

- Aligning pension contributions for current executive Directors with those for the UK workforce from 31 December 2022 onwards;
- Reducing the upper LTIP grant limit to 200% of salary, and increasing the CEO's annual award value to this level (to deliver a total package that is in line with relevant benchmarks); and
- Adding an ESG measure to the LTIP structure in alignment with Morgan's strategic priorities.

Further details on the proposed 2022 Policy are set out in the 'Policy report' section beginning on page 86 of this Remuneration Report.

This Report is consistent with the current reporting regulations for executive remuneration and, as in prior years, includes a 'Remuneration at a glance' section summarising the key elements of executive Director remuneration. I hope we have been successful in continuing to achieve the clarity and transparency that will be of help to our shareholders.

Helen Bunch
Committee Chair

REMUNERATION REPORT

REMUNERATION AT A GLANCE

COMPONENTS OF REMUNERATION

Salary + Pension and Benefits = Fixed total
\+ = Total remuneration
Annual Bonus + LTIP = Variable total

Key features of how our executive remuneration policy will be implemented in 2022

Fixed components

Base salary

Pete Raby (CEO)	£596,000
Peter Turner (CFO)	£426,160[1]
Richard Armitage (CFO)	£425,000[1]

Policy
Executive Directors' salaries are generally reviewed each January, with reference to individual and Group performance, experience and salary levels at companies of similar sector, size and complexity.

Pension and other benefits

Pension

Pete Raby (CEO)	fixed at £104,000
Peter Turner (CFO)	fixed at £80,120[1]
Richard Armitage (CFO)	£34,000 (8% of base salary)[1]

Benefits

Pete Raby (CEO)	£13,567
Peter Turner (CFO)	£12,532[1]
Richard Armitage (CFO)	£11,100[1,3]

Policy
Current executive Directors may receive defined contributions (and/or cash in lieu thereof) up to 20% of salary. Policy change approved at the 2019 AGM aligned pension contribution for new executive Directors with that available to the UK workforce. Proposed Policy change to be approved at the 2022 AGM aligns pension contribution for current executive Directors with that available to the UK workforce from 31 December 2022 onwards. Other benefits can include company car/car allowance, health insurance and, where appropriate, relocation allowances and other expenses.

Implementation
The monetary value of the pension allowance for the current executive Directors was fixed at the 2018 value from 2019 onwards, to help align executive Director pensions with those of the wider workforce over time. From 31 December 2022 executive Director pension allowances will be fully aligned to pension contribution levels available to the UK workforce (8% based on UK population). Richard Armitage's pension allowance will be aligned to that available to the workforce on appointment.

Variable components, annual bonuses

Maximum opportunities for 2022 (no change)

Pete Raby (CEO)	150% of salary
Peter Turner (CFO)	150% of salary[1]
Richard Armitage (CFO)	150% of salary[1]

Performance measures weighting

Operating profit*	40%
Cash generation*	40%
Strategic personal objectives	20%

Policy
Maximum award opportunity: 150% of base salary
Performance measures are set by the Committee at the start of the year and are weighted to reflect a balance of financial and strategic objectives. 67% of any annual bonus paid is delivered in cash with the remainder deferred into shares and released after a further period of three years. 50% of the bonus opportunity is paid for on-target performance.

LTIP

Maximum opportunities for 2022

Pete Raby (CEO)	200% of salary
Peter Turner (CFO)	No LTIP award
Richard Armitage (CFO)	150% of salary

Performance measures weighting

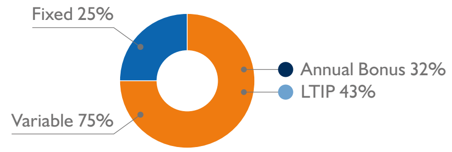
TSR vs. FTSE All-Share Industrials Index	15%
TSR vs. peer group	15%
EPS growth	27.5%
Group ROIC*	27.5%
ESG (carbon reduction)	15%

Policy
Maximum award opportunity: proposed Policy change to reduce this from 250% to 200% of base salary, to be approved at the 2022 AGM
The award levels and performance conditions on which vesting depend are reviewed prior to the start of each award cycle to ensure they remain appropriate. Proposed Policy change to be approved at the 2022 AGM introduces an ESG measure in addition to the current measures of TSR, EPS and ROIC. Vested shares are subject to a post-vesting holding period of two years. The vesting of awards is usually subject to continued employment and to the Group's performance over a three-year performance period. 25% of an award vests for achievement of the threshold level of performance.

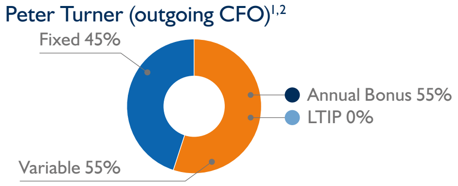
Implementation
The CFO's maximum opportunity remains 150% of salary (Peter Turner will not receive an LTIP award in 2022). The CEO's maximum opportunity will be increased to 200% of salary.

PAY AT RISK

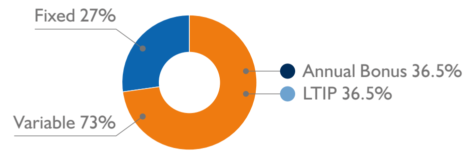
Pete Raby (CEO)



Peter Turner (outgoing CFO)[1,2]

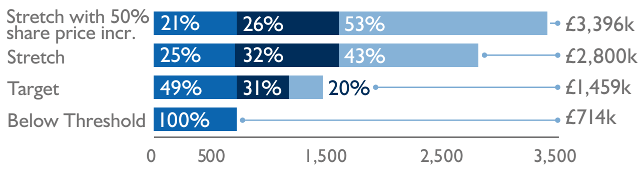


Richard Armitage (incoming CFO)

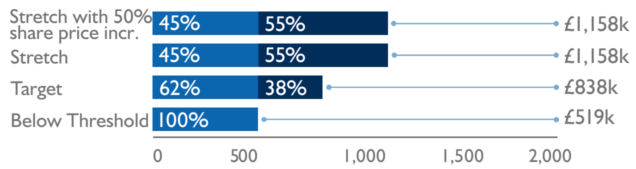


PAY SCENARIOS

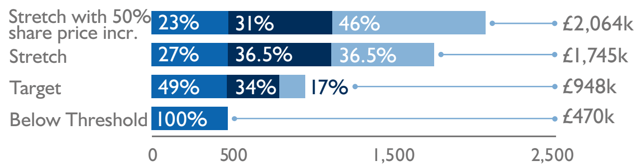
Pete Raby (CEO)



Peter Turner (outgoing CFO)[1,2]



Richard Armitage (incoming CFO)[1,3]



Variable Fixed total (base salary, pension and benefits) Annual Bonus LTIP

Shareholding requirements

Pete Raby (CEO) 200% of salary (current shareholding 261.7%)	Peter Turner (outgoing CFO) 200% of salary (current shareholding 328.0%)	Richard Armitage (incoming CFO) 200% of salary (current shareholding n/a)

1. Peter Turner will be leaving in June 2022 and Richard Armitage will join as CFO on 30 May 2022. All figures above are annualised and will be pro-rated according to service in the year.
2. Peter Turner will not receive a 2022 LTIP Award as he will be retiring from the Company in June 2022.
3. Excludes health insurance – value of premium to be calculated on joining and will be disclosed in 2022 Annual Report.

REMUNERATION REPORT

This Report covers the period 1 January 2021 to 31 December 2021 and provides details of the Remuneration Committee and how the Remuneration Policy, approved by shareholders at the 2019 AGM, has been implemented for the year under review. The Policy Report sets out the Policy that is proposed to apply for up to the next three years from 5 May 2022, subject to shareholder approval. The proposed implementation of this Policy for the 2022 financial year is summarised in the section of the Annual Report on Remuneration titled 'Implementation of Remuneration Policy for 2022'.

1. POLICY REPORT

KEY PRINCIPLES OF THE REMUNERATION POLICY

The Remuneration Committee aims to ensure that all executive remuneration packages offered by Morgan Advanced Materials are competitive and designed to promote the long-term success of the Company by ensuring that Morgan is able to attract, retain and motivate executive Directors and senior executives of the right calibre to create value for shareholders.

The Committee ensures that a significant proportion of the total remuneration opportunity is performance-related, with an appropriate balance between short-term and long-term performance, and is based on the achievement of measurable targets that are relevant to, and support, the business strategy through the execution of the Policy.

The Remuneration Committee will keep the Remuneration Policy under periodic review to ensure it remains aligned with the Group's strategy, reinforces the Group's culture, and is in line with the principles set out in the UK Corporate Governance Code in relation to directors' remuneration. This includes ensuring that performance-related elements are transparent, stretching and rigorously applied, as well as reflecting the views and guidance of institutional investors and their representative bodies.

SUMMARY OF MORGAN ADVANCED MATERIALS PLC'S PROPOSED 2022 REMUNERATION POLICY

This section of the Report sets out the proposed Remuneration Policy for executive Directors and non-executive Directors. This Policy will be submitted for approval by shareholders at the Company's AGM on 5 May 2022. If approved, it is intended that this Policy be effective for a period of up to three years from that date.

The Committee has developed the 2022 Policy to be consistent with the six factors outlined in Provision 40 of the Code, as set out below:

Clarity: Our Policy is clear, and disclosures on our decision-making (in relation to policy and its implementation) are transparent. The Committee also engages regularly with shareholders and employees to facilitate a greater understanding on a range of subjects, including remuneration.

Simplicity: The Policy and the Committee's approach to implementation is simple and well understood. The performance measures used in the incentive plans are well aligned to the Group's strategy.

Risk: The Committee has ensured that remuneration arrangements do not encourage and reward excessive risk taking by setting targets to be stretching and achievable, with discretion to adjust formulaic bonus and LTIP outcomes.

Predictability: The range of outcomes under our Policy are quantifiable, clearly linked to defined performance outcomes, and capped.

Proportionality: The link of the performance measures to strategy and the setting of targets ensures outcomes are proportionate to performance, and importantly do not reward poor performance.

Culture: The Policy is consistent with the Group's culture, driving behaviours that promote the long-term and sustainable success of the Group for the benefit of all stakeholders.

Proposed Remuneration Policy for executive Directors

The key changes to the proposed Remuneration Policy for executive Directors that will be submitted for approval at the 2022 AGM are:

- Align pension contributions for current executive Directors with those for the wider workforce from 31 December 2022 onwards;
- Reduce the upper LTIP grant limit to 200% of salary and increase the CEO's annual grant value to this level (to deliver a total package that is in line with relevant benchmarks); and
- Add an ESG measure to the LTIP structure in alignment with Morgan's strategic priorities.

Purpose and link to strategy	Operation	Opportunity	Performance metrics
FIXED PAY			
Base salary Provides the fixed element of the remuneration package. Set at competitive levels against the market.	Base salaries are generally reviewed each January, with reference to an individual's performance (and that of the Group as a whole), their experience, and the range of salary increases applying across the Group. The Committee also considers salary levels at companies of similar sector, size and complexity when determining increases.	Our policy is to pay salaries that are broadly market-aligned, with increases applied in line with the outcome of the annual review. Salaries in respect of the year under review (and for the following year) are disclosed in the Annual Report on Remuneration. Salary increases for executive Directors will normally be within the range of increases for the general employee population over the period of this Policy. Where increases are awarded in excess of those for the wider employee population, for example in instances of sustained strong individual performance, if there is a material change in the responsibility, size or complexity of the role, or if an individual was intentionally appointed on a below-market salary, the Committee will provide the rationale in the relevant year's Annual Report on Remuneration.	An executive Director's performance (and that of the Group as a whole) and also their demonstration of the defined Leadership Behaviours, are taken into account when making decisions in relation to base salary.
Pension Provides post-retirement benefits for participants in a cost-efficient manner.	Defined contribution scheme (and/or a cash allowance in lieu thereof).	For current executive Directors from 31 December 2022 onwards, and for new executive Directors on appointment, contributions (or cash in lieu thereof) will be aligned with the level of contribution available to the UK workforce at that time.	Not applicable.
Benefits Designed to be competitive in the market in which the individual is employed.	Can include company car/car allowance, health insurance and, where appropriate, relocation allowances and other expenses.	Benefits values vary by role and are reviewed periodically relative to the market. It is not anticipated that the cost of benefits provided will change materially year on year over the period for which this Policy will apply. The Committee retains the discretion to approve a higher cost in exceptional circumstances (e.g. relocation expenses, expatriate allowances etc.) or in circumstances where factors outside the Group's control have changed materially (e.g. market increases in insurance costs). Benefits in respect of the year under review are disclosed in the Annual Report on Remuneration.	Not applicable.

REMUNERATION REPORT

Purpose and link to strategy	Operation	Opportunity	Performance metrics
VARIABLE PAY			
Annual bonus Provides a direct link between annual performance and reward. Incentivises the achievement of key specific goals over the short term that are also aligned to the long-term business strategy. Deferred bonus supports retention and provides additional alignment with the interests of shareholders.	Performance measures are set by the Committee at the start of the year and are weighted to reflect a balance of financial and strategic objectives. At the end of the year, the Remuneration Committee determines the extent to which these have been achieved. To the extent that the performance criteria have been met, up to 67% of the resulting annual bonus is paid in cash. The remaining balance is deferred into shares and released after a further period of three years, subject to continued employment only. Cash and deferred share bonuses awarded for performance will be subject to malus and clawback until the end of the deferral period. Further details of our Malus and Clawback Policy are set out at the end of this table. Dividends may accrue over the deferral period on deferred shares that vest. Any dividends that accrue will be paid in shares at the end of the vesting period.	Up to 150% of salary. The payout for threshold performance may vary year on year but will not exceed 25% of the maximum opportunity.	Bonuses for the executive Directors may be based on a combination of financial and non-financial measures. The weighting of non-financial performance will be capped at 30% of the maximum opportunity. The Committee retains discretion to adjust the bonus outcome if it considers that the payout is inconsistent with the Company's underlying performance when taking into account any factors it considers relevant. Further details are set out in the Annual Report on Remuneration on pages 93 to 105.
Long-Term Incentive Plan (LTIP) Aligns the interests of executives and shareholders with sustained long-term value creation. Incentivises participants to manage the business for the long term and deliver the Company's strategy.	The Remuneration Committee has the authority each year to grant an award under the LTIP. The award levels and performance conditions on which vesting depends are reviewed prior to the start of each award cycle to ensure they remain appropriate. Vested shares are subject to a post-vesting holding period of two years. Awards are subject to malus and/or clawback for a period of five years from the date of grant. Further details of our Malus and Clawback Policy are set out at the end of this table. Dividends may accrue on vested shares during the holding period.	Under the policy, the LTIP provides for a conditional award of shares up to an annual limit of 200% of salary. 25% of an award vests for achievement of the threshold level of performance.	The vesting of awards is usually subject to continued employment and the Group's performance over a three-year performance period. Subject to shareholder approval, this will be based on a combination of TSR, EPS, ROIC* and ESG measures. The Committee has discretion to extend the performance period and adjust the measures, their weighting, and performance targets prior to the start of each cycle, to ensure they continue to align with the Group's strategy. The Committee also retains discretion to adjust the vesting outcome if it considers that the level of vesting is inconsistent with the Company's underlying performance when taking into account any factors it considers relevant. Further details of the measures attached to the LTIP awarded in the year under review (and the coming year) are set out in the Annual Report on Remuneration on pages 93 to 105.
Sharesave A voluntary scheme, open to all UK employees which aligns the interests of participants with those of shareholders through any growth in the value of shares.	An HMRC-approved scheme where employees may save up to a monthly savings limit out of their own pay towards options granted at up to a 20% discount. Options may not be exercised for three years.	Up to the savings limit as determined by HMRC from time to time, across all Sharesave schemes in which an individual has enrolled.	None.

Malus and Clawback Policy
Malus and clawback will apply to the annual bonus and LTIP (as set out on page 88) in cases of error in determining performance, corporate failure, misconduct or material misstatement in the published results of the Group or where, as a result of an appropriate review of accountability, a participant has been deemed to have caused in full or in part a material loss for the Group as a result of reckless, negligent or wilful actions or inappropriate values or behaviour, including (but not limited to) significant breaches of EHS codes, fraud, or other events which may cause serious reputational damage. Cash bonuses will be subject to clawback, with deferred shares subject to malus over the deferral period. LTIP awards are subject to malus and clawback over the vesting period to the fifth anniversary of grant.

Payments under existing awards
The Company will honour any commitment entered into, and Directors will be eligible to receive payment from any award granted, prior to the approval and implementation of the Remuneration Policy detailed in this Report (i.e. before 5 May 2022), even if these commitments and/or awards fall outside the above Policy. The Company will also honour any commitment entered into at a time prior to an individual becoming a Director if, in the opinion of the Committee, the payment was not in consideration of the individual becoming a Director of the Company. Details of these awards will be disclosed in the Annual Report on Remuneration.

Difference in policy between executive Directors and other employees
The Remuneration Policy for other employees is based on principles broadly consistent with those described in this Report for the executive Directors' remuneration. Annual salary reviews across the Group take into account individual and business performance, demonstration of the defined Leadership Behaviours, experience, local pay and market conditions, and salary levels for similar roles in comparable companies. All executives are eligible to participate in an annual bonus scheme. Opportunities and performance measures vary by organisational level, geographical region and an individual's role. Other senior executives participate in the LTIP on similar terms to the executive Directors, although award sizes and performance measures may vary according to each individual, and by organisational level. Below this level, executives are eligible to participate in the LTIP and other share-based incentives by annual invitation.

Use of discretion
To ensure fairness and align executive Director remuneration with underlying individual and Group performance, the Committee may exercise its discretion to adjust, upwards or downwards, the outcome of any short- or long-term incentive plan payment (within the limits of the relevant Plan Rules) for corporate or exceptional events including, but not limited to: corporate transactions, changes in the Group's accounting policies, minor or administrative matters, internal promotions, external recruitment, and terminations. Any adjustments in light of corporate events will be made on a neutral basis, meaning that they will not be to the benefit or detriment of participants.

Any use of discretion by the Committee during the financial year under review will be detailed in the relevant Annual Report on Remuneration.

Performance measure selection
The Committee considers carefully the selection of performance measures at the start of each performance cycle, taking into consideration the macro-economic environment as well as specific Group strategic objectives.

Annual bonus measures are selected to closely reinforce the Group's short-term KPIs. Because these can change from year to year (in line with the Remuneration Policy), information on the rationale for the selection of bonus measures for each year will be detailed in the relevant year's Annual Report on Remuneration.

LTIP performance measures are reviewed periodically to ensure they continue to align with the Company's strategy, as well as provide an appropriate balance between growth and returns, internal and external performance, and absolute and relative performance.

For 2022 awards, the TSR element of the LTIP award will continue to comprise two parts. One half of the TSR element will vest subject to the Group's performance relative to a TSR benchmark comprising the 87 constituents of the FTSE All-Share Industrials Index. This benchmark is robust to merger and acquisition activity and comprises companies that are subject to the same market influences as Morgan Advanced Materials plc. The remaining half of the TSR element will vest subject to Morgan's performance relative to a TSR benchmark comprising 15 listed international carbon, ceramics and other materials companies. This benchmark was selected to complement the FTSE All-Share Industrials Index with a group of companies that better reflect Morgan's business, the markets in which Morgan operates and the geographical footprint of the Group. For each part of the TSR award, the vesting performance range is calibrated to be stretching and in line with common market practice for FTSE TSR-based long-term incentives.

EPS targets are set taking account of multiple relevant reference points, including internal forecasts, external expectations for future EPS performance at both Morgan Advanced Materials plc and its closest sector peers, and typical EPS performance ranges at other FTSE 350 companies. LTIP EPS performance ranges are set to represent demanding and challenging performance targets over the three-year performance period.

ROIC* targets are set using a similar approach to the EPS targets, after consideration of external reference points and reflecting the returns required to meet and exceed the Group's internal strategic plan. For the 2022 LTIP cycle, ROIC* will continue to be calculated as follows:

$$\frac{\text{Group headline operating profit* (pre-specific adjusting items)}}{\text{12-month average (third-party working capital + total fixed assets + total intangible fixed assets)}}$$

The ESG measure is based on the percentage reduction in CO_2 emissions, with targets aligned to Morgan's overall strategic goals.

Share ownership guidelines
In order to encourage alignment with shareholders, executive Directors are encouraged to build and maintain an individual shareholding in the Company equivalent to at least 200% of base salary. The required level of shareholding is expected to be achieved within five years of an executive Director's appointment. Executive Directors' shareholdings are reviewed annually by the Committee to ensure progress is being made towards achievement of the guideline level of shareholding. If it becomes apparent to the Committee that the guideline is unlikely to be met within the timeframe, the Committee will discuss with the Director a plan to ensure that the guideline is met over an acceptable timeframe.

From 2019, executive Directors have also been subject to a post-employment shareholding requirement. Executive Directors are required to hold shares at a level equal to the lower of the share ownership requirement or the actual shareholding on departure for a period of one year from departure date. Morgan's relatively short business cycle ensures the Board has good visibility within a 12-month period of the quality of decision-making and, in addition, unvested awards for good leavers subsist to the normal vesting date (albeit pro-rated for time), ensuring incentive outcomes remain linked to Morgan's performance beyond the date of cessation. The Committee retains the discretion to modify the post-employment shareholding requirement in certain, extraordinary circumstances; for example, on a change of control during the period or if a conflict of interest arises with an executive Director's next appointment.

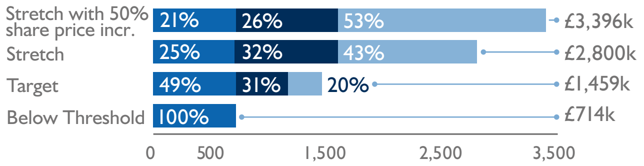
Current executive Director shareholdings are set out in the Annual Report on Remuneration on page 101.

External appointments
With the approval of the Board in each case, and subject to the overriding requirements of the Group, executive Directors may accept external appointments as non-executive Directors of other companies and retain any fees received. Details of external directorships held by executive Directors along with fees retained are provided in the Annual Report on Remuneration on page 96.

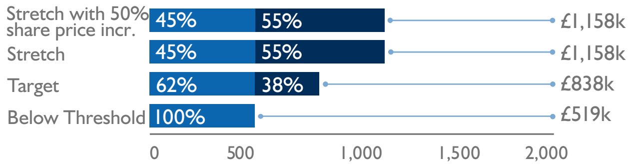
Pay-for-performance: scenario analysis

The graphs below provide detailed illustrations of the potential future reward opportunity for executive Directors, and the potential mix between the different elements of remuneration under four different performance scenarios; 'Below threshold', 'Target', 'Stretch' and 'Stretch with 50% share price appreciation'. These have been updated to illustrate the potential opportunity under the 2022 packages proposed for executive Directors.

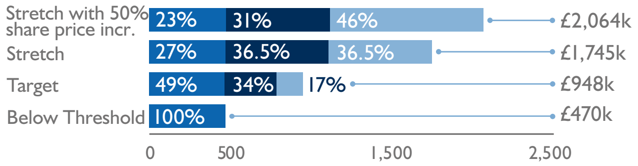
Pete Raby (CEO)



Peter Turner (outgoing CFO)



Richard Armitage (incoming CFO)



● Fixed total (base salary, pension and benefits) ● Annual Bonus ● LTIP

The potential reward opportunities illustrated above are based on the Policy, which will be submitted for approval at the 2022 AGM, applied to the annual base salary in effect at 1 January 2022. Annualised figures are shown for the incoming and outgoing CFOs; these will be pro-rated based on time served. For the annual bonus, the amounts illustrated are those potentially receivable in respect of performance for 2022 (before mandatory deferral into shares). The LTIP is based on the face value of awards to be granted in 2022 (200% of salary for the CEO and 150% for the incoming CFO; Peter Turner will not receive a 2022 LTIP award as he will be retiring from the Company in June 2022). It should be noted that any awards granted under the LTIP in a year do not normally vest until the third anniversary of the date of grant. This illustration is intended to provide further information to shareholders on the relationship between executive pay and performance. The value of the LTIP assumes no change in the underlying value of the shares once an award is made, apart from in the 'Stretch with 50% share price appreciation' scenario. The following assumptions have been made in compiling the above charts:

Scenario	Annual bonus	LTIP	Fixed pay
Stretch with 50% share price appreciation	Maximum annual bonus.	Performance warrants full vesting (100% of the award). LTIP award value has additionally been uplifted by 50%.	Latest disclosed base salary, pension and benefits.
Stretch	Maximum annual bonus.	Performance warrants full vesting (100% of the award).	
Target	On-target annual bonus.	Performance warrants threshold vesting (25% of the award).	
Below threshold	No annual bonus payable.	Nil vesting.	

Details of executive Directors' service contracts

The executive Directors are employed under contracts of employment with Morgan Advanced Materials plc. Contracts may be terminated on 12 months' notice given by the Company or on six months' notice given by the executive Director concerned. The following table shows the date of the contract for each executive Director who served during the year:

				Notice period[1]	
Executive Director	Position	Date of appointment	Date of service agreement	From employer	From employee
Pete Raby	CEO	1 August 2015	30 January 2015	12 months	6 months
Peter Turner	CFO	11 April 2016	30 March 2016	12 months	6 months

1. The incoming CFO, Richard Armitage, will also have a notice period of 12 months from employer and 6 months from employee.

Exit Payments Policy

The Group's policy on exit payments is to limit severance payments on termination to pre-established contractual arrangements comprising base salary and any other statutory payments only. In the event that the employment of an executive Director is terminated, any compensation payable will be determined in accordance with the terms of the service contract between the Company and the employee, as well as the rules of any incentive plans.

The Group may terminate the employment of an executive Director by making a payment in lieu of notice equal to base salary, together with the fair value of any other benefits to which the executive is contractually entitled under his or her service agreement, for the duration of the notice period.

The Remuneration Committee will exercise discretion in making appropriate payments in the context of outplacement or the settling of legal claims or potential legal claims by the departing executive Director, including any other amounts reasonably owing to the executive Director, for example, to meet legal fees incurred by the executive Director in connection with the termination of employment, where the Company wishes to enter into a settlement agreement and the individual must seek independent legal advice.

On termination of an executive Director's service contract, the Remuneration Committee will consider the departing Director's duty to mitigate his or her loss when determining the timing of any payment in lieu of notice. There is no automatic entitlement to bonus or the vesting of long-term incentives on termination. However, the table that follows summarises the Policy on how awards under the annual bonus, LTIP and deferred bonus plan will normally be treated in specific circumstances, with the final treatment remaining subject to Committee discretion:

Treatment of awards on cessation of employment and a change of control

Reason for cessation	Calculation of vesting/payment	Time of vesting
	Annual bonus	
All reasons	The Committee may determine that a bonus is payable on cessation of employment, and the Committee retains discretion to determine that the bonus should be paid wholly in cash. The amount of bonus payable will be determined in the context of the time served during the performance year, the performance of the Group and of the individual over the relevant period, and the circumstances of the Director's loss of office. If Group or individual performance has been poor, or if the individual's employment has been terminated in circumstances amounting to misconduct, no bonus will be payable.	
	Mandatory deferred bonus share awards	
Injury, disability, death, redundancy, retirement, or other such event as the Committee determines	Awards will normally vest in full (i.e. not pro-rated for time).	At the normal vesting date, unless the Committee decides that awards should vest earlier (e.g. in the event of death).
Change of control	Awards will normally vest in full (i.e. not pro-rated for time). Awards may alternatively be exchanged for equivalent replacement awards, where appropriate.	On change of control.
All other reasons	Awards normally lapse.	Not applicable.
	LTIP awards	
Injury, disability, death, redundancy, retirement, or other such event as the Committee determines	Awards will normally be pro-rated for time and will vest based on performance over the original performance period (unless the Committee decides to measure performance to the date of cessation).	At the normal vesting date, unless the Committee decides that awards should vest earlier (e.g. in the event of death).
Change of control	LTIP awards will be pro-rated for time and will vest subject to performance over the performance period to the change of control. LTIP awards may alternatively be exchanged for equivalent replacement awards, where appropriate.	On change of control.
All other reasons	Awards normally lapse.	Not applicable.

The Remuneration Committee retains discretion, where permitted by the plan rules, to alter these default provisions on a case-by-case basis, following a review of circumstances and to ensure fairness for both shareholders and participants.

REMUNERATION REPORT

Approach to recruitment remuneration

External appointment

In cases of hiring or appointing a new executive Director from outside the Group, the Committee may make use of all existing components of remuneration, as follows:

Pay element	Policy on recruitment	Maximum
Salary	Based on: the size and nature of the responsibilities of the proposed role; current market pay levels for comparable roles; the candidate's experience; implications for total remuneration; internal relativities; and the candidate's current salary.	–
Pension	Option to join the defined contribution scheme available to the wider workforce. If the executive Director is ineligible to join the standard defined contribution scheme, the Company may grant a cash allowance of equivalent value.	In line with Policy limits.
Benefits	As described in the Policy table and may include, but are not limited to, car, medical insurance, and relocation expenses and/or allowances.	–
Sharesave	New appointees will be eligible to participate on identical terms to all other UK employees.	Up to HMRC limits.
Annual bonus	As described in the Policy table and typically pro-rated for the proportion of the year served; performance measures may include strategic and operational objectives tailored to the individual in the financial year of joining.	Up to 150% of salary.
LTIP	New appointees may be granted awards under the LTIP on similar terms to other executives.	Up to 200% of salary.
Other	The Remuneration Committee may make an award under a different structure under the relevant Listing Rule to replace incentive arrangements forfeited on leaving a previous employer. Any such award would have a fair value no higher than that of the awards forfeited, taking into account relevant factors including performance conditions, the likelihood of those conditions being met and the proportion of the vesting period remaining. Details of any such award will be disclosed in the first Annual Report on Remuneration following its grant.	–

Internal promotion to the Board

In cases of appointing a new executive Director via internal promotion, the Policy will be consistent with that for external appointees detailed above. Where an individual has contractual commitments made prior to their promotion to executive Director, the Company will continue to honour these arrangements even if there are instances where they would not otherwise be consistent with the prevailing executive Director Remuneration Policy at the time of promotion.

Chairman and non-executive Directors' Remuneration Policy

Purpose and link to strategy	Operation	Opportunity	Performance metrics
Annual fee[1] To attract and retain high-calibre non-executive Directors.	Annual fees paid to the Chairman and non-executive Directors are reviewed periodically. An additional fee is payable to the Senior Independent Director, and also in respect of chairing a Board Committee. Currently paid 100% in cash.	Annual fees are applied in line with the outcome of each periodic review.	None.

1. The maximum aggregate annual fee for all non-executive Directors (including the Chairman) as provided in the Company's Articles of Association is £750,000.

None of the non-executive Directors has a service contract with the Company. They do have letters of appointment. The non-executive Directors do not participate in any of the incentive, share or share option plans. The dates relating to the appointments of the Chairman and non-executive Directors who served during the reporting period are as follows:

Non-executive Director	Position	Date of appointment	Date of letter of appointment	Date of re-election
Douglas Caster	Chairman	14 February 2014	15 January 2014[1]	6 May 2021
Helen Bunch	Non-executive Director	24 February 2016	19 January 2016	6 May 2021
Laurence Mulliez	Senior Independent Director	6 May 2016	4 April 2016	6 May 2021
Jane Aikman	Non-executive Director	31 July 2017	27 April 2017	6 May 2021
Clement Woon	Non-executive Director	10 May 2019	7 May 2019	6 May 2021

1. Douglas Caster received a subsequent letter of appointment on 18 December 2018.

CONSIDERATION OF STAKEHOLDER VIEWS

The Executive Management team seeks to promote and maintain good relations with employee representative bodies – including trade unions and works councils – as part of its broader employee engagement strategy and consults on matters affecting employees and business performance as required in each case by law and regulation in the jurisdictions in which the Group operates. When making decisions on executive remuneration, the Committee considers the pay and employment conditions across the Group and is considering additional methods of engaging with the workforce on remuneration matters. Engagement with employees on remuneration is currently achieved through non-executive Director employee engagement sessions where employees have the opportunity to raise issues, with pay and benefits having been discussed during the 2021 sessions. Specific remuneration-related questions are also included in the all employee engagement survey, 'Your Voice', with the intent of engaging with employees on pay and benefits and providing them with the opportunity to share feedback. In the UK, engagement is facilitated by the Sharesave programme, which enables UK employees to become shareholders and provides them with voting rights in relation to resolutions for approval at the AGM which include executive remuneration matters. Prior to the annual salary review, the Committee is provided with pay increase data that individual business units consider when deciding local pay awards for their specific businesses and countries. The Committee is also kept fully informed of remuneration policy and implementation decisions affecting the wider workforce. This important context forms part of the Committee's considerations for determining executive Director remuneration. See also the People section on pages 28 to 31.

The Committee considers shareholder views received during the year and at the AGM each year, as well as guidance from investor representative bodies more broadly, in shaping its Remuneration Policy. The Committee keeps the Remuneration Policy under regular review, to ensure it continues to reinforce the Group's long-term strategy and aligns executive Directors' interests with those of shareholders. It is the Committee's policy to consult with major shareholders prior to any major changes to its executive Remuneration Policy.

2. ANNUAL REPORT ON REMUNERATION

The following section provides details of how the Remuneration Policy was implemented during the year.

SINGLE TOTAL FIGURE OF REMUNERATION FOR EXECUTIVE DIRECTORS

The auditor is required to report on the information in this table.

The table below sets out a single figure for the total remuneration received by each executive Director for the year ended 31 December 2021 and the prior year. For 2020, the table reflects the position with and without the 30% salary reduction volunteered by the executive Directors from 1 April to 31 December 2020, in response to the pandemic.

	Pete Raby			Peter Turner		
	2021	2020 (actual with reduction)	2020	**2021**	2020 (actual with reduction)	2020
1. Salary	**£581,175**	£439,425	£567,000	**£426,160**	£323,797	£417,800
2. Pension	**£104,000**	£104,000	£104,000	**£80,120**	£80,120	£80,120
3. Benefits	**£13,644**	£13,711	£13,711	**£12,242**	£12,168	£12,168
Fixed Pay Subtotal	**£698,819**	£557,136	£684,711	**£518,522**	£416,085	£510,088
4. Bonus	**£845,610**	£74,878	£74,878	**£620,063**	£55,175	£55,175
5. LTIP	**£559,816**	£159,224	£159,224	**£419,705**	£122,664	£122,664
6. Other	**–**	–	–	**–**	–	–
Variable Pay Subtotal	**£1,405,426**	£234,102	£234,102	**£1,039,768**	£177,839	£177,839
Total	**£2,104,245**	£791,238	£918,813	**£1,558,290**	£593,924	£687,927

The figures have been calculated as follows:

1. Base salary: amount earned for the year. For 2020, figures in the '2020 (actual with reduction)' columns reflect actual salary earned.
2. Pension: the figure is a cash allowance in lieu of pension.
3. Benefits: the taxable value of benefits received in the year. Includes private medical insurance and a company car (or car allowance). 2021 private medical insurance has been trued up from the number included in last year's annual report, based on October policy renewal.
4. Bonus: the total bonus earned on performance during the year (before any mandatory deferral into shares).
5. LTIP: the estimated value on 31 December 2021 of 2019 LTIP shares vesting in 2022, subject to performance over the three-year period ended 31 December 2021. Figure based on the average share price for the three months to 31 December 2021 of 351.94p. The figure for 2020 has been trued up from that disclosed in last year's Remuneration Report to reflect the share price on the vesting date (22 March 2021) of 312.16p. The impact of share price movement on the vesting value of the CEO's and CFO's 2019 LTIP award is as follows:

	CEO	CFO
Value of awards vesting using share price at award (268.12p)	£426,487 (304,900 shares x 52.17% x 268.12p)	£319,746 (228,591 shares x 52.17% x 268.12p)
Value of awards vesting using 3 month average share price at 31 December 2021 (351.94p)	£559,816 (304,900 shares x 52.17% x 351.94p)	£419,705 (228,591 shares x 52.17% x 351.94p)
Impact of share price movements on vesting values	£133,329	£99,959

6. Other: comprises the value of Sharesave options granted in the year, based on the embedded value at grant (20% of the grant-date share price multiplied by the number of options granted).

INCENTIVE OUTCOMES FOR THE YEAR ENDED 31 DECEMBER 2021

Annual bonus in respect of 2021 performance

Targets for the annual bonus are set by the Remuneration Committee, taking into account the short- and long-term requirements of the Group. Challenging goals are set, which must be met before any bonus is paid. This approach is intended to align executive reward with shareholder returns by rewarding the achievement of 'stretch' targets.

For 2021, the bonus targets for the executive Directors were split between Group headline operating profit* before restructuring (weighted 40%), cash generation* (weighted 40%) and individual strategic personal objectives (weighted 20%). The targets were set to incentivise the executive Directors to deliver stretching profit and cash performance for the Group. Performance in line with target results in a payout of 50% of maximum.

In addition to the achievement of the targets set, in considering any awards to be made, the Committee also takes into account the quality of the overall performance of the Group.

The table that follows sets out retrospectively the assessment of performance relative to the 2021 bonus targets for the executive Directors. Actual bonus payments are shown in the single total figure of remuneration table on page 93.

		Performance range				
Performance measure	% of maximum bonus element	Threshold (0% payout)	Maximum (100% payout)	Actual performance outcome	% payout of element	% salary earned
Group headline operating profit*[1]	40%	£96.6m	£118.0m	£132.4m	100%	60%
Cash generation*[1]	40%	£121.4m	£148.4m	£164.4m	100%	60%
Personal objectives						
Pete Raby	20%	Please see narrative below for further details			85%	25.5%
Peter Turner	20%	on objectives and performance against these			85%	25.5%

		% of salary earned				
Overall outcome	Maximum bonus (% salary)	Group headline operating profit[1]	Cash generation*[1]	Personal objectives	Total outcome	Total payable
Pete Raby	150%	60%	60%	25.5%	145.5%	£845,610
Peter Turner	150%	60%	60%	25.5%	145.5%	£620,063

1. For the cash generation and profit metrics there was a straight-line payout between the threshold and maximum figures. All figures were calculated using 2021 budgeted exchange rates.

Pete Raby's personal objectives for 2021 were: (1) Continue to develop and embed the safety culture of the business (actively engaging our employees) and reinforce the importance of the environmental responsibility of the business, (2) Develop an ESG strategy and programme, with accompanying goals, that drives improvements across the key ESG dimensions: Environment, Social (health and safety, diversity and inclusion, values and culture), and Governance, and deliver improvements on key goals by the end of the year, (3) Understand our baseline and develop and start the execution of plans to create a diverse and inclusive workforce where people are excited, engaged, and can do their best work to high ethical standards, (4) Develop the 2030 ambition for the Group and develop the Group-wide execution priorities to deliver on it, (5) Develop plans to enhance the customer focus of the Group, improving the customer experience and increasing innovation to meet customers' needs, (6) Refresh our investor proposition and communications (including the ESG strategy) and deliver to investors through the year and through a specific capital markets event.

Performance of our leaders is assessed against all expectations of the role, specific personal objectives that are set and how outcomes are delivered with reference to our defined Leadership Behaviours. Taking into account all of these considerations, the personal performance element has been assessed at 85% of the maximum to reflect Pete's delivery against the agreed strategic objectives, whilst role-modelling the Leadership Behaviours. Despite ongoing challenges with trading conditions, under Pete's leadership Morgan delivered organic revenue growth, driving expansion in profitability and cash flow. COVID-19 controls were effectively maintained across the business, and a major refresh of Morgan's approach to safety was undertaken with training in the process of being deployed to all employees. Good progress was also made towards sustainability goals, with absolute CO_2 emissions reducing throughout the year, as well as the launch of a number of capital projects to recycle water and improve water efficiency. The Company is making enhancements to improve diversity, through changes to policies and training, and by reviewing approaches to recruitment. The first employee resource group, Women@Morgan, has also been established. Finally, work was completed to define Morgan's 2030 ambition and medium-term execution priorities and actions have been kicked off against each of those, including work to shape Morgan's product and service offerings further based on customer needs, with the overall objective of making the business more customer centric.

Peter Turner's personal objectives for 2021 were: (1) Continue to develop and embed the safety culture of the business (actively engaging our employees) and reinforce the importance of the environmental responsibility of the business, (2) Understand our baseline and develop and start the execution of plans to create a diverse and inclusive workforce where people are excited, engaged, and can do their best work to high ethical standards, (3) Develop and execute plans to further strengthen the control environment and prepare for UK 'Sox' legislation, (4) Develop the 2030 ambition for the Group and develop the Group-wide execution commitments for the first three years (2021-23) to deliver on it, (5) Improve the operational efficiency of the Group through further structural cost reductions and enhancement of CI activity. Considering Peter's performance against these objectives, for example he has driven operational efficiency programmes, delivering savings and improving robustness as a Group, as well as the Leadership Behaviours he has exhibited, the personal performance element of his bonus has been assessed at 85% of the maximum.

Performance against the objectives above is referred to in the Chairman's statement and elsewhere within the Annual Report.

2018 Deferred Bonus Plan vesting

In 2018, 33% of the annual bonus results for Pete Raby and Peter Turner (for performance in the 2017 financial year) were deferred into shares under the Deferred Bonus Plan (DBP), in line with Morgan's Remuneration Policy. Dividends accrued over the deferral period on the deferred shares that vested, and the dividends were paid in shares at the end of the vesting period. Details of the DBP vesting for the executive Directors are set out in the table below:

Director	Date of grant	Number of DBP shares granted	Number of dividend re-investment shares	Total number of DBP shares vested	Market value at grant £	Market value at vesting £	Date of vesting
Pete Raby	21 March 2018	52,955	4,640	57,595	3.3336	3.122	22 March 2021
Peter Turner	21 March 2018	42,011	3,680	45,691	3.3336	3.122	22 March 2021

2019 LTIP award vesting

Awards granted to executive Directors in 2019 were subject to relative TSR performance, EPS growth and Group ROIC* over a three-year period ended 31 December 2021. The EPS target (applying to one-third of each award) required three-year EPS growth of 4% for 25% of that element to vest, rising to full vesting for EPS growth of 11% or higher. Over the period Morgan Advanced Materials plc's actual EPS growth was 0.81% and accordingly the EPS element of the award will not vest.

The TSR element (applying to one-third of each award) required Morgan Advanced Materials plc's three-year TSR performance to rank at median against two comparator groups (equally split) – the FTSE All-Share Industrials Index and a tailored comparator group comprising 15 listed international carbon, ceramics and other materials companies – for 25% of that element to vest, rising to full vesting if Morgan Advanced Materials plc's TSR ranked at or above the upper quartile against these two comparators.

Morgan Advanced Materials plc's TSR was 37.1%, which was at the 55th percentile versus the FTSE All-Share Industrials Index and the 87th percentile versus the tailored comparator group. Accordingly, this results in a 22.98% vesting for the TSR element of the award.

The Group ROIC* target (applying to the remaining one-third of each award) required three-year Group ROIC* of 17% for 25% of that element to vest, rising to full vesting for Group ROIC* of 20% or higher. Morgan Advanced Materials plc's Group ROIC* was 19.5%, and accordingly this results in a 29.19% vesting for the ROIC* element of the award.

This combined performance resulted in a partial vesting of the 2019 awards based on 52.17% achievement of maximum. The vesting outcome is considered by the Committee to appropriately reflect the impact of the COVID-19 pandemic on business results.

Details of the awards to executive Directors are set out in the table below:

Director	Maximum potential LTIP award	Maximum potential LTIP-CSOP[1] award	LTIP award vested	LTIP-CSOP[1] award vested	LTIP-CSOP[1] award exercised	Date of vesting
Pete Raby	293,711	11,189	153,229	5,837	–	18 March 2022
Peter Turner	228,591	–	119,255	–	–	18 March 2022

1. CSOP refers to the Company Share Option Plan – further information is included in the 'Details of plans' section later on in this report.

For the purposes of the 2019 LTIP award (and consistent with the approach taken in previous years), the financial results were adjusted to neutralise the effects of closed businesses in 2020 and acquisitions in 2021.

PENSION

The auditor is required to report on this information.

Pete Raby and Peter Turner each received a cash allowance in lieu of pension, fixed at the 2018 values of £104,000 and £80,120 respectively.

NON-EXECUTIVE DIRECTOR FEES

The auditor is required to report on the information in this table.

The table below sets out the fees received by each non-executive Director in respect of the year ended 31 December 2021 and the prior year. The 2020 figures reflect the 30% fee reduction volunteered (in response to the pandemic) from 1 April to 31 December, mentioned earlier in this document, with the pre-reduction fee levels shown in brackets.

Douglas Caster		Helen Bunch		Laurence Mulliez		Jane Aikman		Clement Woon	
2021	2020	**2021**	2020	**2021**	2020	**2021**	2020	**2021**	2020
£197,166	£149,808 (£193,300)	**£59,918**	£47,448 (£58,900)	**£59,918**	£47,448 (£58,900)	**£59,918**	£47,448 (£58,900)	**£51,918**	£39,448 (£50,900)

Non-executive Directors do not receive any other fixed or variable pay, or benefits, in addition to their fee. Figures shown are inclusive of £8,000 Senior Independent Director fee for Laurence Mulliez and Committee Chair fees for Helen Bunch and Jane Aikman.

REMUNERATION REPORT

SCHEME INTERESTS AWARDED IN 2021

2021 LTIP awards

In 2021, Pete Raby and Peter Turner were granted awards under the LTIP as shown in the table below. Vesting outcomes will continue to be assessed to ensure they reflect business performance and will be adjusted as appropriate.

		Value of awards at grant		
Executive Director	Number of LTIP shares granted[1]	£	As % of 2021 annualised salary	Date of vesting
Pete Raby	276,486	871,762	150%	22 March 2024
Peter Turner	202,740	639,240	150%	22 March 2024

1. Calculated using the award price of £3.153, being the average share price for the five dealing days prior to the award date (22 March 2021).

The Committee discusses and reviews the performance criteria for new three-year LTIP awards before they are granted. For the awards granted in 2021, the Committee considered the balance of measures in light of the Group's business plan and shareholder feedback and decided to maintain the equal (one-third) weighting of the three performance criteria with the TSR element continuing to be split into two parts. One-half of this element will vest based on Morgan's TSR performance relative to the constituents of the FTSE All-Share Industrials Index and one-half will vest based on Morgan's TSR performance relative to a tailored comparator group of 15 industry comparators.

The table below sets out the targets attaching to the 2021 LTIP awards:

TSR vs FTSE All-Share Industrials Index	% of award that vests	TSR performance vs peer group	% of award that vests	EPS growth	% of award that vests	Group ROIC*	% of award that vests
Upper quartile	16.67%	Upper quartile	16.67%	22% pa	33.33%	20%	33.33%
Median	4.17%	Median	4.17%	15% pa	8.33%	17%	8.33%
Below median	Nil	Below median	Nil	< 15% pa	Nil	<17%	Nil

For executive Directors, there is a two-year holding period in relation to the 2021 LTIP. Dividends accrue over this holding period on any shares that vest.

2021 Deferred Bonus Plan awards

In 2021, 33% of the annual bonus results for Pete Raby and Peter Turner (for performance in the 2020 financial year) were deferred into shares under the Deferred Bonus Plan (DBP), in line with Morgan's Remuneration Policy. The following DBP awards were granted:

	Value of awards at grant		
Executive Director	Number of DBP shares granted[1]	Value of award £	Date of vesting
Pete Raby	7,916	24,959	22 March 2024
Peter Turner	5,833	18,391	22 March 2024

1. Calculated using the award price of £3.153, being the average share price for the five dealing days prior to the award date (22 March 2021).

Exit payments made in year

The auditor is required to report on this information.

No exit payments were made to executive Directors during the 2021 financial year.

Payments to past Directors

The auditor is required to report on this information.

No payments were made to past Directors during the 2021 financial year.

External appointments

Pete Raby was appointed non-executive Director of Hill & Smith Holdings PLC in December 2019. His fee for this position in 2021 was £52,275, which he retains. No other external appointments were held by either executive Director in the 2021 financial year.

Implementation of Remuneration Policy for 2022

Base salary

In line with the Remuneration Policy, executive Directors' salaries were reviewed by the Committee and the CEO's salary was increased for 2022 consistent with the average range of increases awarded to the wider workforce. The table below shows the base salaries in 2021, and those that took effect from 1 January 2022, or on appointment for the incoming CFO Richard Armitage:

	Base salary at:		
Executive Director	1 January or on appointment in 2022	1 January 2021	Increase
Pete Raby	£596,000	£581,175	2.5%
Peter Turner	£426,160	£426,160	0%
Richard Armitage	£425,000	n/a	n/a

For the 2021 performance year, the Group maintained the formal link between performance and pay within the senior leadership population. Specifically, the process considers individual and Group performance, as well as salary relative to the relevant market.

The increase awarded to Pete Raby was calibrated in line with this. The Committee considered Pete Raby's continued strong performance in his role as well as the market positioning of his salary, in determining to increase his salary in line with the average range of increases for UK based employees. Peter Turner's salary has not been increased for 2022 as he will retire in June 2022. The rationale for any future increases will be disclosed in the relevant Annual Report on Remuneration.

Pension

While Pete Raby and Peter Turner will continue to receive a cash allowance in lieu of pension in 2022, the monetary value remains fixed at the 2018 level disclosed in the table on page 93. From 31 December 2022 all executive Director pension allowances will be fully aligned to pension contribution levels available to the wider workforce (8% based on UK population). The incoming CFO, Richard Armitage, will receive an 8% pension contribution on appointment.

Annual bonus in respect of 2022 performance

The maximum bonus opportunity remains at 150% of salary (with the payout for on-target performance continuing to be 50% of the maximum).

33% of any bonus result will ordinarily be deferred into shares for a further three-year period. The performance measures attached to the annual bonus remain unchanged from 2021, as follows:

Headline operating profit* – 40%

Cash generation* – 40% (measured against quarterly cumulative targets as well as over the complete financial year. For every quarterly target that is missed, the payout warranted for full-year performance under this element will be reduced by 10%)

Strategic personal objectives – 20%

The actual performance targets set at the beginning of the performance period are not disclosed as they are considered commercially sensitive at this time, given the close link between performance measures and the Group's longer-term strategy. This is particularly relevant in the context of some of the Group's close and unlisted competitors who are not required to disclose such information, and for whom the assumptions in our targets would provide valuable information in the current trading year. These targets will be disclosed retrospectively, at such time as they have become less commercially sensitive, and within three years of the end of the performance year.

2022 LTIP awards

In May 2022, Pete Raby will be granted an award under the 2022 LTIP with a face value of 200% of his base salary for 2022. The incoming CFO, Richard Armitage, will also be granted a 2022 LTIP award of 150% of base salary once appointed. Vesting outcomes will continue to be assessed to ensure they reflect business performance and will be adjusted as appropriate. The three-year performance period over which performance will be measured began on 1 January 2022 and will end on 31 December 2024. Further details of the awards will be disclosed in next year's Remuneration Report.

The performance measures are detailed below:

- Each TSR element will operate independently, with vesting determined based on Morgan's TSR rank relative to constituents of each TSR benchmark. The performance range for each element will remain median to upper quartile.

  The EPS performance range will be decreased to 6% – 13%, last year's range having been temporarily increased to take into account the previously reduced base level resulting from the impact of the pandemic on financials. The ROIC* range will remain unchanged at 17%-20%. The Committee believes these ranges appropriately support the Group's strategy for sustainable long-term growth over the next three years whilst continuing to represent suitably demanding targets;
- The new ESG measure (carbon reduction) will have a performance range of 5% to 15% carbon reduction (scope 1 and 2 emissions) over the three-year performance period, to support the Group's overall sustainability goals and its stated 2030 target to reduce scope 1 and 2 CO_2 emissions by 50%;
- For all four measures, awards will continue to vest on a straight-line basis between threshold and maximum, with 25% of each element vesting at threshold;
- For the 2022 LTIP cycle, executive Directors will be required to hold any vested 2022 LTIP awards for an additional two-year period. Vested awards that are subject to the holding period will remain subject to clawback in line with our Policy but will not be forfeitable on cessation of employment.

REMUNERATION REPORT

Chairman and non-executive Director fees

The Chairman's and non-executive Directors' fees were reviewed in December 2021. The table below shows the fees in 2021, and those that will apply in 2022:

Role	2022 fee pa	2021 fee pa	Increase
Chairman	£202,100	£197,166	2.5%
Non-executive Director	£53,220	£51,918	2.5%
Committee Chair (additional fee)	£8,000	£8,000	n/a
Senior Independent Director (additional fee)	£8,000	£8,000	n/a

Percentage change in Directors' remuneration

The table below shows the percentage change in the executive and non-executive Directors' remuneration in 2021 compared to the average percentage change in remuneration for other employees of Morgan Advanced Materials plc over the same period, in accordance with the guidelines.

	2021 % change in salary or fees[1]	2020 % change in salary or fees[2]	2021 % change in benefits[3] (excluding pension)	2020 % change in benefits[3] (excluding pension)	2021 % change in annual bonus[6]	2020 % change in annual bonus
Executive Directors						
Pete Raby	32.3% (2.5%)	-19.4%	-0.5%	1.9%	1029.3%	-89.1%
Peter Turner	31.6% (2.0%)	-20.8%	0.6%	1.1%	1023.8%	-89.3%
Non-executive Directors[4]						
Douglas Caster	31.6% (2.0%)	-20.9%	n/a	n/a	n/a	n/a
Helen Bunch	26.3% (1.7%)	-18.1%	n/a	n/a	n/a	n/a
Laurence Mulliez	26.3% (1.7%)	-18.1%	n/a	n/a	n/a	n/a
Jane Aikman	26.3% (1.7%)	-18.1%	n/a	n/a	n/a	n/a
Clement Woon	31.6% (2.0%)	-20.9%	n/a	n/a	n/a	n/a
Average per employee	3.6% (2.6%)	3.0%	0.9%	-5.81%[5]	53.6%	-2.11%

1. Figures in brackets reflect percentage increase from original 2020 salary/fee prior to reductions implemented in response to the pandemic.
2. Percentages reflect the temporary Board salary/fee reductions implemented in response to the pandemic. All figures are based on full-time equivalent comparisons.
3. Benefits figures include private medical insurance and car allowance. Decrease in Pete Raby's benefits reflects reduction in private medical premium resulting from the Company's transition to a new provider.
4. Non-executive Directors do not receive any additional benefits or bonus payments.
5. Decrease reflects change in type of medical cover required by individual employees.
6. Executive Director bonus reflects 2021 bonus paid in 2022. Employee average bonus based on an estimate of 2021 bonus paid in 2022 (final bonus award data was not available at the time of publication). The personal performance element of 2020 bonus was cancelled for executive Directors (as a result of the pandemic), contributing to the higher percentage increase in 2021 bonus for executive Directors compared to other employees.

CEO pay ratio

Year	Method	25th percentile pay ratio	Median (50th percentile) pay ratio	75th percentile pay ratio
2021	**Option B**	**93:1[1]**	**61:1[2]**	**50:1[3]**
2021 (excluding variable)	Option B	32:1	24:1	17:1
2020	**Option B**	**35:1[4]**	**25:1[5]**	**20:1[6]**
2020 (excluding variable)	Option B	25:1	20:1	14:1
2019	**Option B**	**74:1[7]**	**62:1[8]**	**41:1[9]**
2019 (excluding variable)	Option B	34:1	27:1	19:1

1. Total 25th percentile employee pay and benefits as at 31/12/21 = £22,533 (salary component = £17,379).
2. Total 50th percentile employee pay and benefits as at 31/12/21 = £34,725 (salary component = £29,129).
3. Total 75th percentile employee pay and benefits as at 31/12/21= £42,442 (salary component = £37,989).
4. Ratio trued up from that disclosed in last year's Remuneration Report to reflect final value of LTIP vesting for CEO. Total 25th percentile employee pay and benefits as at 31/12/20 = £22,464 (salary component = £21,000).
5. Ratio trued up from that disclosed in last year's Remuneration Report to reflect final value of LTIP vesting for CEO. Total 50th percentile employee pay and benefits as at 31/12/20 = £31,550 (salary component = £23,960).
6. Ratio trued up from that disclosed in last year's Remuneration Report to reflect final value of LTIP vesting for CEO. Total 75th percentile employee pay and benefits as at 31/12/20 = £38,723 (salary component = £36,900).
7. Total 25th percentile employee pay and benefits as at 31/12/19 = £21,958 (salary component = £17,599).
8. Total 50th percentile employee pay and benefits as at 31/12/19 = £25,927 (salary component = £24,300).
9. Total 75th percentile employee pay and benefits as at 31/12/19 = £39,926 (salary component = £30,610).

In line with the CEO pay ratio regulations, the table above shows for 2021 the ratio of the CEO's single total figure of remuneration (STFR) to that of UK employees at the 25th, 50th (median) and 75th percentiles. In addition to the mandatory calculation using total remuneration, ratios have also been calculated excluding variable pay elements such as bonus and share awards.

Of the three reporting options available to companies, Morgan has applied Option B, where the most recent gender pay gap reporting data has been used to identify the 25th, 50th and 75th percentile employees. The 25th, 50th and 75th percentile pay ratios are based on the remuneration of a representative employee who falls on each of these pay percentiles. Option B has been used to calculate the CEO pay ratios, as Option A requires the ability to calculate a single total remuneration figure for each UK employee, and Morgan does not currently have the systems in place to support this methodology. The 'best equivalent' employees identified using the gender pay gap information are representative of the 25th, 50th and 75th percentiles of Company remuneration, since base pay constitutes a large proportion of the remuneration package for the majority of employees, so it is likely that a similar set of employees would have been identified using Option A. The calculation covers base pay, annual bonus, pension and where applicable share awards and benefits including car allowance and private medical insurance. Total remuneration figures used in the calculation for 25th, 50th and 75th percentile employees include annual bonus relating to 2021 performance, in order to be consistent with the methodology used for the CEO's total remuneration figure.

As disclosed in the 2020 remuneration report, 2020 CEO pay ratios were significantly lower than those in 2019 as a consequence of the CEO's temporary salary reduction, cancellation of the CEO's personal performance bonus element in response to the COVID-19 pandemic, and also due to the pandemic's impact on business results (and therefore on levels of variable pay). As a result of the CEO's salary and personal performance element of bonus being reinstated for 2021, and based on significantly improved business (and therefore variable pay) results, (with the CEO having a higher proportion of variable pay compared to the wider workforce) the 2021 CEO pay ratios are higher than in 2020.

Notwithstanding the year-on-year change in pay ratio, pay and benefits for the CEO and wider employee population are based on the same philosophies, for example driving pay for performance and alignment to external benchmarks, in order to promote consistency, fairness and equity across all levels in the organisation. As the same methodology underpins the remuneration used in the above calculations, the resulting median pay ratio is consistent with the Company's wider policies on employee pay, reward and progression. Pay ratios are significantly reduced when variable pay elements are excluded, so the gap between CEO and employee pay is largely attributable to non-fixed pay elements, some of which (e.g. share awards) the majority of the wider workforce would not typically be eligible for in the external market. The diversity of different levels and types of roles found in a manufacturing environment such as at Morgan may result in a higher CEO pay ratio than companies which have predominantly professional and/or more senior staff. It is therefore important to compare Morgan's data to companies in similar industries.

Termination arrangements for outgoing CFO

As announced in 2021, Peter Turner will leave the Board in June 2022. As Peter Turner is retiring, he will not receive any severance payment when he leaves the Company, however he will be treated as a 'good leaver' for variable pay purposes. Salary, bonus and outstanding incentive awards will be treated in accordance with the shareholder-approved Remuneration Policy.

Full disclosure of all payments made upon cessation will be included in the 2022 Annual Report on Remuneration.

Remuneration element	Summary of treatment
Annual bonus	2021 bonus – 67% paid in cash and the balance deferred into shares and released after a further period of three years, subject to Group and personal performance. 2022 bonus – paid wholly in cash at normal payment date, pro-rated for time, and subject to Group and personal performance.
LTIP	Awards will be pro-rated for time and will vest based on performance over the original performance period, vesting on the normal vesting date. No LTIP award will be granted in 2022.
DBP	Awards will vest in full at the normal vesting date.

Executive Directors are required to maintain a shareholding equal to the lower of the share ownership requirement (200%) or the actual shareholding on departure for a period of one year from departure. Peter Turner will be required to maintain a 200% shareholding for the defined period.

Remuneration arrangements for incoming CFO

Richard Armitage will join Morgan Advanced Materials as Chief Financial Officer on 30 May 2022 and will be an executive Director. A summary of his remuneration is set out below:

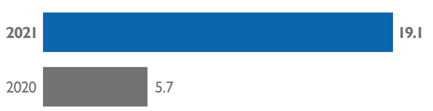
Remuneration element	Details	Notes
Base salary	£425,000	
Pension	Contribution of 8% of base salary	Aligned to pension contribution levels of the wider UK workforce
Benefits	Car allowance £11,100 Private medical healthcare plan– value of premium to be calculated on joining and will be disclosed in 2022 Annual Report	
Annual bonus	150% of base salary	
LTIP	150% of base salary	
RSU (buyout award)	£410,000 (1 year vesting period)	One-time award to be granted in 2022 to offset forfeited bonus from prior employer

REMUNERATION REPORT

Relative importance of spend on pay

The graphs below show shareholder distributions (i.e. dividends and share buybacks) and total employee pay expenditure for the financial years ended 31 December 2020 and 31 December 2021.

SHAREHOLDER DISTRIBUTIONS
(£M)

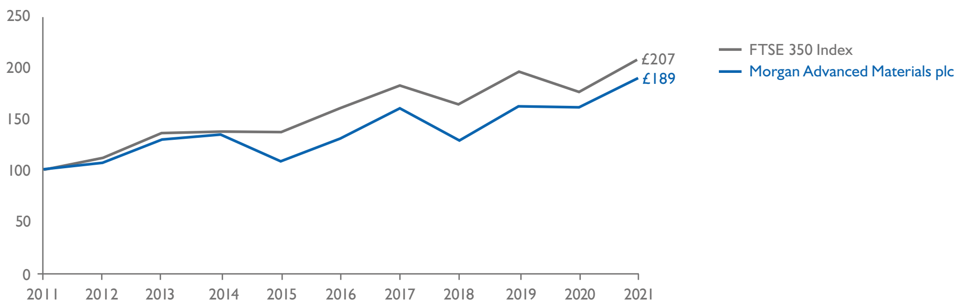


TOTAL EMPLOYEE PAY EXPENDITURE
(£M)

Following the reduction in shareholder distributions in 2020 in response to the COVID-19 pandemic, the Company resumed dividend payments during 2021, at lower levels than those paid historically, pre-pandemic. Total employee pay across the Group has decreased by 0.3% to £333.6 million (2020: £334.6 million), continuing to be impacted by measures taken as a result of the pandemic.

Comparison of Company performance

The graph below shows the value, at 31 December 2021, of £100 invested in Morgan Advanced Materials plc's shares on 31 December 2011 compared with the current value of the same amount invested in the FTSE 350 Index. The FTSE 350 Index – of which the Company is a constituent – has been chosen because it is widely followed by the UK's investment community and easily tracked over time.



The table below details the CEO's 'single figure' of remuneration over the 10-year period to 31 December 2021.

CEO	2012 M Robertshaw	2013 M Robertshaw	2014 M Robertshaw	2015 P Raby	2016 P Raby	2017 P Raby	2018 P Raby	2019 P Raby	2020 P Raby	2021 P Raby
CEO single figure	£1,285,556	£648,932	£1,001,448	£788,252	£787,492	£1,210,856	£1,479,738	£1,618,605	£791,238	£2,104,245
Annual bonus (% of maximum)	0%	0%	65%	50%	29.5%[1]	71.3%	67.4%	84.3%	9%	97%
BDSMP vesting (% of maximum)	100%	0%	0%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LTIP vesting (% of maximum)	50%	0%	0%	n/a	n/a	15.4%	42.9%	61.3%	21.8%	52.17%

1. Figure represents percentage achievement of maximum opportunity. Bonus maximum as a percentage of salary increased to 150% of base salary in 2016 compared to 100% in previous years.

DIRECTORS' INTERESTS IN SHARES

Shares owned outright

The auditor is required to report on the information in this table.

The following table shows the number of shares held by each person who was a Director of Morgan Advanced Materials plc as at 31 December 2021 (together with shares held by their connected persons) in the Ordinary share capital of the Company:

	As at 1 January 2021 or date of joining	As at 31 December 2021	As at 3 March 2022
Executive Directors			
Pete Raby	258,945	318,637	318,637
Peter Turner	263,914	308,815	308,815
Non-executive Directors			
Douglas Caster	110,454	110,454	110,454
Laurence Mulliez	6,765	6,919	6,919
Helen Bunch	2,028	2,028	2,028
Jane Aikman	1,000	1,000	1,000
Clement Woon	45,281	55,000	55,000

As at 3 March 2022, the Directors' interests in shares had not changed since the end of the period under review.

EXECUTIVE DIRECTORS' SHAREHOLDING GUIDELINES

The table below shows the shareholding of each executive Director against their respective shareholding guideline as at 31 December 2021.

	Shareholding guideline (% 2021 salary)	Shares owned outright	Shares subject to performance[1]	Performance-tested but unvested shares[2]	Shares subject to DBP deferral[3]	Options vested but unexercised[4]	Options granted but subject to continued employment[4]	Current shareholding (% of 2021 salary)[5]	Guideline met
Pete Raby	200%	318,637	638,863	159,066	100,546	–	4,477	262%	Yes
Peter Turner	200%	308,815	469,761	119,255	76,043	–	4,477	328%	Yes

1. 2020 and 2021 LTIP and LTIP-CSOP awards. The total shares for Peter Turner include a funding award of 12,782 shares to be used to the extent required to pay the exercise price arising on exercise of the CSOP, and which are therefore not transferrable to Peter Turner.
2. The expected number of shares due to vest under the 2019 LTIP.
3. Estimated number of shares, net of tax (47%), deferred under the DBP.
4. Options granted under the Sharesave scheme.
5. Based on an executive Director's 2021 salary (prior to temporary reduction) and the share price at 31 December 2021 of 359 pence, comprising shares owned outright and shares subject to deferral.

Unless otherwise stated, figures given in the tables on pages 101 to 102 are for shares or interests in shares.

PETE RABY

The auditor is required to report on the information in this table.

LTIP

Status at 31 December 2021	Plan	As at 1 January 2021	Allocations during the year	Vested during the year	Lapsed during the year	As at 31 December 2021	Market price at date of allocation	Market price at date of vesting	Performance period
No further performance conditions, vested (subject to 2-year post-vesting holding)	2018	233,981	–	51,007	182,974	–	333.36p	312.16p	01.01.18 – 31.12.20
No further performance conditions, not yet vested	2019	293,711	–	–	–	293,711	268.12p	–	01.01.19 – 31.12.21
	2019 funding	11,189	–	–	–	11,189	268.12p	–	01.01.19 – 31.12.21
Subject to performance conditions	2020	362,377	–	–	–	362,377	234.70p	–	01.01.20 – 31.12.22
	2021	–	276,486	–	–	276,486	315.3p	–	01.01.21 – 31.12.23

Share options

Status at 31 December 2021	Plan	As at 1 January 2021	Allocations during the year	Vested during the year	Lapsed during the year	As at 31 December 2021	Market price at date of allocation	Market price at date of vesting	Performance period
No further performance conditions, not yet vested	2019 LTIP-CSOP	11,189	–	–	–	11,189	268.12p	–	01.01.19 – 31.12.21

Total interests in share plans

As at 1 January 2021	As at 31 December 2021
1,151,675[1,2,3,5]	1,137,952[1,3,4,5]

1. Includes a funding award of 11,189 shares to be used to the extent required to pay the exercise price arising on exercise of the CSOP, and therefore not transferable to Pete Raby.
2. Includes 2018 deferred bonus award.
3. Includes 2019 and 2020 deferred bonus awards.
4. Includes 2021 deferred bonus award.
5. Includes 2019 Sharesave grant.

PETER TURNER

The auditor is required to report on the information in this table.

LTIP

Status at 31 December 2021	Plan	As at 1 January 2021	Allocations during the year	Vested during the year	Lapsed during the year	As at 31 December 2021	Market price at date of allocation	Market price at date of vesting	Performance period
No further performance conditions, vested (subject to 2-year post-vesting holding)	2018	180,255	–	39,295	140,960	–	333.36p	312.16p	01.01.18 – 31.12.20
No further performance conditions, not yet vested	2019	228,591	–	–	–	228,591	268.12p	–	01.01.19 – 31.12.21
Subject to performance conditions	2020	254,239	–	–	–	254,239	234.70p	–	01.01.20 – 31.12.22
	2020 funding	12,782	–	–	–	12,782	234.70p	–	01.01.20 – 31.12.22
	2021	–	202,740	–	–	202,740	315.3p	–	01.01.21 – 31.12.23

Share options

Status at 31 December 2021	Plan	As at 1 January 2021	Allocations during the year	Released during the year	Lapsed during the year	As at 31 December 2021	Market price at date of allocation	Market price at date of release	Performance period
Subject to performance conditions	2020 LTIP-CSOP	12,782	–	–	–	12,782	234.70p	–	01.01.20 – 31.12.22

Total interests in share plans

As at 1 January 2021	As at 31 December 2021
872,784[1,2,4,5]	846,309[2,3,4,5]

1. Includes 2018 deferred bonus award.
2. Includes 2019 and 2020 deferred bonus awards.
3. Includes 2021 deferred bonus award.
4. Includes a funding award of 12,782 shares to be used to the extent required to pay the exercise price arising on exercise of the CSOP, and therefore not transferable to Peter Turner.
5. Includes 2019 Sharesave grant.

Details of plans

LTIP

Plan	Details
2019, 2020, 2021	The performance conditions attached to the 2019 awards are set out on page 95. The performance conditions attached to the 2020 awards are on the same basis as the 2019 awards. The performance conditions attached to the 2021 awards are on the same basis as the 2019 and 2020 awards except that the EPS range was amended to 15%-22%.

Share options

Plan	Details
LTIP – CSOP	LTIP 2019: The award to the CFO was structured as LTIP awards in the form of a conditional award of free shares. The CEO's award was structured as an Approved Performance Share Plan (APSP) and comprised three elements: (i) HMRC-approved options (CSOP) over shares to the value of up to £30,000 with an exercise price of 268.12 pence per share; (ii) an LTIP award in the form of a conditional award of free shares to the value of the remainder of the award above this limit; and (iii) a funding award, also in the form of a conditional award of free shares, over such numbers of shares whose value at exercise at the approved option equals up to £30,000. The award is also subject to malus and clawback provisions. The provisions of these CSOP options, funding awards and LTIP awards were linked, so that the maximum aggregate number of shares that could be acquired on exercise of LTIP and CSOP awards (the funding award being used to pay the exercise price arising on exercise of the CSOP) was limited to that number of shares that had a market value on the date of the awards equal to 150% of Pete Raby's 2019 annual salary. Vested funding awards were not transferable to the participant. LTIP 2020: The award to the CEO was structured as LTIP awards in the form of a conditional award of free shares. The CFO's award was structured as an Approved Performance Share Plan (APSP) and comprised three elements: (i) HMRC-approved options (CSOP) over shares to the value of up to £30,000 with an exercise price of 234.70 pence per share; (ii) an LTIP award in the form of a conditional award of free shares to the value of the remainder of the award above this limit; and (iii) a funding award, also in the form of a conditional award of free shares, over such numbers of shares whose value at exercise at the approved option equals up to £30,000. The award is also subject to malus and clawback provisions. The provisions of these CSOP options, funding awards and LTIP awards were linked, so that the maximum aggregate number of shares that could be acquired on exercise of LTIP and CSOP awards (the funding award being used to pay the exercise price arising on exercise of the CSOP) was limited to that number of shares that had a market value on the date of the awards equal to 150% of Peter Turner's 2020 annual salary. Vested funding awards were not transferable to the participant. LTIP 2021: The awards to the CEO and CFO were structured as LTIP awards in the form of a conditional award of free shares.
Sharesave	HMRC-approved all-employee Sharesave scheme. Exercise price set at 20% discount to share price on date of grant. Options mature after the three-year savings period and must be exercised within six months of vesting. Details of options held by Directors under Sharesave are outlined in the individual Director shareholding tables above.

Deferred Bonus Plan

Plan	Details
2019, 2020 and 2021	Mandatory deferral of one–third of gross bonus result relating to the previous year, which is provided as a conditional award of shares of equivalent value. The award vests on the third anniversary of the award date and is subject to forfeiture if the executive Director leaves before the vesting date. The award is also subject to malus and clawback provisions.

Other transactions involving Directors are set out in note 27 (Related parties) to the consolidated financial statements. This Report was approved by the Board on 3 March 2022.

REMUNERATION REPORT

REMUNERATION GOVERNANCE

Remuneration Committee role

The Remuneration Committee determines and agrees with the Board the framework and Policy for the remuneration, including pension rights and any compensation payments, of the Group's executive Directors and the Chairman. The Committee also reviews the remuneration in relation to other senior executives and is kept fully informed of remuneration policy decisions impacting the wider workforce. The Committee's terms of reference are available on the Group's website.

The Remuneration Committee consults the Chief Executive Officer and invites him to attend meetings when appropriate. The Group Human Resources Director, the Group Head of Reward and Ellason LLP, the Committee's independent advisor, attend meetings of the Committee by invitation.

The Committee also has access to advice from the Chief Financial Officer. The Company Secretary acts as secretary to the Committee. No executive Director or other attendee is present when his or her own remuneration is being discussed.

Remuneration Committee membership

The Remuneration Committee is currently composed of five non-executive Directors. Each of the non-executive Directors is regarded by the Board as independent, except the Chairman of the Company who was considered independent upon appointment. The Remuneration Committee met six times during the year. Attendance at meetings by individual members is detailed in the Corporate Governance Report on page 68.

Key activities during 2021

During 2021, the key areas of focus for the Committee were:

- Reviewing the Remuneration Policy ahead of presenting it to shareholders for approval at the 2022 Annual General Meeting, including reviewing whether the Policy remains appropriate and relevant in supporting the Company's strategy and promoting long-term sustainable success;
- Consulting with shareholders on the proposed changes to the Remuneration Policy;
- Determining whether targets for the 2020 bonus and 2018 LTIP were achieved, and, if so, to what extent;
- Having reviewed the remuneration of the wider workforce, determining remuneration for executive Directors and other senior executives, applying consistent guiding principles;
- Reviewing whether the measures and structure for the bonus and share incentive schemes remain appropriate, as well as reviewing the overall effectiveness of such schemes;
- Reviewing and agreeing executive Director personal objectives for 2022;
- Receiving reports on share awards to employees, and employee participation in the Save As You Earn scheme;
- Reviewing feedback from institutional investors ahead of the Company's 2021 Annual General Meeting;
- Reviewing executive Director share ownership guidelines, and Directors' holdings against the guidelines;
- Receiving regulatory and governance updates, and receiving reports on external market remuneration practices;
- Reviewing and discussing the Company's annual Gender Pay Gap Report;
- Appraising the independent remuneration advisor's performance and reviewing the terms of engagement;
- Approving the Chairman's 2022 fees;
- Determining performance targets for the 2022 bonus and share incentive schemes;
- Approving the remuneration of the Company's incoming CFO, and reviewing the terms of the outgoing CFO's retirement; and
- Reviewing the Committee's terms of reference.

Committee performance evaluation

The Committee's performance was reviewed as part of the Board evaluation (see page 73 for details), which was externally-facilitated in 2021 by Clare Chalmers Ltd. It was concluded that the Committee had operated effectively during the period under review.

Committee advisor

Ellason LLP has been the Committee's executive remuneration advisor since 1 January 2021. Ellason specialises in executive remuneration advice and during 2021 provided independent advice on remuneration policy, performance measurement, the setting of incentive targets, TSR analysis and the structure of long-term incentives, and provided market data in respect of senior executive remuneration and non-executive Director fees. Ellason reports directly to the Chair of the Remuneration Committee and does not provide any non-remuneration-related services to the Group, and is considered to be independent.

Ellason is a signatory to the Remuneration Consultants Group's voluntary Code of Conduct.

Fees paid during the year to advisors for advice to the Remuneration Committee, charged on a time and materials basis, were as follows:

Advisor	Fees (including expenses, excluding VAT)
Ellason	£30,938

Summary of shareholder voting

The following table shows the results of the latest binding vote on the Remuneration Policy (at the 2019 AGM) and advisory vote on the 2020 Annual Report on Remuneration (at the 2021 AGM).

Resolution	For	Against	Withheld[1]
Remuneration Policy (at the 2019 AGM)	97.17%	2.83%	100,712
Annual Report on Remuneration (at the 2021 AGM)	99.85%	0.15%	42,855

1. Votes 'withheld' are not votes in law and, therefore, have not been included in the calculation of the proportion of votes 'for' or 'against' the resolution.

COMPLIANCE STATEMENT

During the year under review, the Company has complied with all of the provisions relating to Directors' remuneration in the UK Corporate Governance Code, except for provision 38 on the alignment of executive Directors' pension contributions with those available to the workforce, as set out in more detail on page 63. This Remuneration Report has been prepared in accordance with the Companies Act 2006 (as amended) and Schedule 8 of the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended). In accordance with section 439 of the Companies Act 2006 an advisory resolution to approve the Annual Report on Remuneration will be proposed at the Annual General Meeting (AGM) on 5 May 2022, together with a mandatory resolution to approve the Directors' Remuneration Policy.

Signed on behalf of the Board

Helen Bunch
Committee Chair

OTHER DISCLOSURES

The Directors' Report is required to be produced by law. The Financial Conduct Authority (FCA)'s Disclosure Guidance and Transparency Rules (DTRs) and Listing Rules (LRs) also require the Company to make certain disclosures.

Pages 58 to 109 inclusive (together with the sections of the Annual Report incorporated by reference) constitute a Directors' Report that has been drawn up and presented in accordance with applicable law, and the liabilities of the Directors in connection with that Report are subject to the limitations and restrictions provided by that law.

THE COMPANY

Legal form of the Company

Morgan Advanced Materials plc is a company incorporated in England and Wales with company number 286773.

Name change

The Company changed its name to Morgan Advanced Materials plc (from The Morgan Crucible Company plc) on 27 March 2013.

Annual General Meeting (AGM)

The Company's 2022 AGM will be held on Thursday 5 May 2022, commencing at 10:30am at York House, Sheet Street, Windsor SL4 1DD. A circular incorporating the 2022 Notice of AGM is available in the investor section of **www.morganadvancedmaterials.com**

STATUTORY DISCLOSURES

Amendment of the Articles of Association

The Company's constitution, known as the Articles of Association (the Articles), is essentially a contract between the Company and its shareholders, governing many aspects of the management of the Company. It deals with matters such as the rights of shareholders, the appointment and removal of Directors, the conduct of the Board and general meetings and communications by the Company.

The Articles may be amended by special resolution of the Company's shareholders.

Appointment and replacement of Directors

The Articles provide that the Company may by ordinary resolution at a general meeting appoint any person to act as a Director, provided that notice is given of the resolution identifying the proposed person by name and that the Company receives written confirmation of that person's willingness to act as Director if he or she has not been recommended by the Board. The Articles also empower the Board to appoint as a Director any person who is willing to act as such.

The maximum possible number of Directors under the Articles is 15. The Articles provide that the Company may by special resolution, or by ordinary resolution of which special notice is given, remove any Director before the expiration of his or her period of office. The Articles also set out the circumstances in which a Director shall vacate office. The Articles require that at each AGM any Director who was appointed after the previous AGM must be proposed for election by the shareholders. Additionally, any other Director who has not been elected or re-elected at one of the previous two AGMs must be proposed for re-election by the shareholders. The Articles also allow the Board to select any other Director to be proposed for re-election. In each case, the rules apply to Directors who were acting as Directors on a specific date selected by the Board. This is a date not more than 14 days before, and no later than, the date of the Notice of AGM.

Notwithstanding the provisions of the Articles, all the Directors will stand for election or re-election on an annual basis in compliance with the provisions of the UK Corporate Governance Code (the Code). Details of the skills, experience and career history of Directors in post as at the date of this Report, and the Board Committees on which they serve, can be found on pages 60 to 61.

RESULTS AND DIVIDENDS

The total profit (attributable to owners of the parent and non-controlling interests) for the year ended 31 December 2021 was £81.8 million (2020: loss £18.0 million). The profit for the period arises principally as a result of improved volumes and delivery of the benefits from the Group's restructuring programme. Profit before taxation for the same period was £104.3 million (2020: loss £13.1 million). Revenue was £950.5 million (2020: £910.7 million) and operating profit was £113.1 million (2020: loss £1.8 million). Basic earnings per share* from continuing operations was 23.9 pence (2020: loss per share 8.6 pence). Capital and reserves at the end of the year were £349.6 million (2020: £240.0 million). The total profit of £81.8 million (2020: loss of £18.0 million will be transferred to equity.

The Directors recommend the payment of a final dividend of 5.9 pence per share on the Ordinary share capital of the Company, payable on 20 May 2022 to shareholders on the register at the close of business on 29 April 2022. Together with the interim dividend of 3.2 pence per share paid on 10 December 2021, this final dividend, if approved by shareholders, brings the total distribution for the year to 9.1 pence per share (2020: 5.5 pence).

DIRECTORS

All those who served as Directors at any time during the year under review are set out on pages 60 to 61.

Powers of the Directors

Subject to the Company's Articles, UK legislation and any directions given by special resolution, the business of the Company is managed by the Board, which may exercise all the powers of the Company.

Directors' interests

Details of Directors' interests (and their connected persons' beneficial interests) in the share capital of the Company are listed on page 101.

Directors' indemnities

The Company has entered into separate indemnity deeds with each Director containing qualifying indemnity provisions, as defined in section 236 of the Companies Act 2006, under which the Company has agreed to indemnify each Director in respect of certain liabilities which may attach to each of them as a Director or as a former Director of the Company or any of its subsidiaries. The indemnity deeds were in force during the financial year to which this Directors' Report relates and are in force as at the date of approval of the Directors' Report.

Engagement with customers and suppliers

Details of the Group's engagement with customers and suppliers are set out on pages 6 to 7 of the Strategic Report and on page 72 of the Corporate Governance Report.

Information required by LR 9.8.4R

Apart from the dividend waiver which has been issued in respect of shares held by the Morgan General Employee Benefit Trust referred to in note 20 on page 149, there is no information required to be disclosed under LR 9.8.4R.

OVERSEAS BRANCHES

As at 31 December 2021, the Company had branches as follows:

- Morgan AM&T BV (Sweden and Belgium);
- Carbo San Luis SA (Peru);
- Morgan Advanced Materials Industries Ltd (UAE).

PEOPLE

There are no agreements between the Company and its Directors or employees providing for compensation for loss of office or employment (whether through resignation, purported redundancy or otherwise) that occurs because of a takeover bid.

EMPLOYMENT OF DISABLED PEOPLE

Morgan has a range of employment policies which set out the standards, processes, expectations and responsibilities of its people and the organisation. These policies are designed to ensure that everyone, including those with existing or new disabilities, are dealt with fairly and have equal opportunity. Further details of the People policies are set out on pages 28 to 31.

RESEARCH AND DEVELOPMENT

The Group recognised £28.5 million in expense in respect of research and development (2020: £28.0 million). The Group did not capitalise any development costs in 2021 (2020: £nil). Morgan has established four Centres of Excellence (CoEs), which are dedicated to driving materials development, to exacting customer specifications, and delivering performance through materials and production process innovation. The CoEs consolidate the Group's R&D efforts around its core technologies, to increase the effectiveness of Morgan's R&D spend, accelerate key projects and increase technical differentiation. The CoEs focus on the execution priorities of the global business units and the Group.

GREENHOUSE GAS EMISSIONS, ENERGY CONSUMPTION AND ENERGY EFFICIENCY

Details of the Group's annual greenhouse gas emissions, energy consumption and energy efficiency are shown in the Environment section on pages 20 to 24.

POLITICAL DONATIONS

No political donations have been made. Morgan Advanced Materials plc has a policy of not making donations to any political party, representative or candidate in any part of the world.

FINANCIAL INSTRUMENTS

Details of the Group's use of financial instruments, together with information on policies and exposure to price, liquidity, cash flow, credit, interest rate and currency risks, can be found in note 22 on pages 151 to 159. All information detailed in this note is incorporated into the Directors' Report by reference and is deemed to form part of the Directors' Report.

SHARE CAPITAL AND RELATED MATTERS

Share capital

The Company's share capital as at 31 December 2021 is set out in note 41 on page 180. The rights and obligations attaching to the Company's Ordinary shares, and restrictions on the transfer of shares in the Company (which include specific circumstances in which the Board is entitled to refuse to register the transfer of shares), are set out in the Articles.

Shareholders' rights

The holders of Ordinary shares are entitled to receive dividends, when declared, to receive the Company's reports and accounts, to attend and speak at general meetings of the Company, to appoint proxies and to exercise voting rights.

No person holds securities in the Company carrying special rights with regard to control of the Company. The Company is not aware of any agreements between holders of securities that may result in restrictions on the transfer of securities or on voting rights.

Additionally the Company has authorised, issued and fully paid 437,281 (2020: 437,281) cumulative preference shares classified as borrowings totalling £0.4 million (2020: £0.4 million). The preference shares comprise 125,327 of 5.5% Cumulative First Preference shares of £1 each and 311,954 issued 5.0% Cumulative Second Preference shares of £1 each. The Group's 2020 financial statements were restated to reclassify the Group's cumulative preference shares (which were previously classified as equity) to borrowings. Following a review of the substance of the shares it was determined that the cumulative preference shares do not contain an equity element.

Details of the structure of the Company's Preference share capital and the rights attaching to the Company's Preference shares are set out in note 20 on page 150.

Share allotment and repurchase authorities

The Directors were granted authority at the 2021 AGM to allot shares in the Company and to grant rights to subscribe for or convert any securities into shares in the Company up to an aggregate nominal amount of £23,780,832 in any circumstances. This amount represented approximately one-third of the Company's issued share capital prior to that meeting. The Directors were also authorised to allot shares and to grant rights up to an aggregate nominal amount of £47,561,664 in connection with a rights issue only (but such amount to be reduced by any allotments under made under the first limb of the authority). This amount represented approximately two-thirds of the Company's issued share capital prior to the meeting.

The Directors were also empowered at the 2021 AGM to allot shares for cash on a non-pre-emptive basis, both in connection with a rights issue or similar pre-emptive issue and, otherwise than in connection with any such issue, up to a maximum aggregate nominal amount of £3,567,124. Such amount represented approximately 5% of the Company's issued share capital as it stood prior to the meeting in line with the Pre-Emption Group's Statement of Principles on disapplying pre-emption rights. As permitted by those Principles, the Directors were also empowered to allot shares for cash on a non-pre-emptive basis up to the same amount for use only in connection with an acquisition or a specified capital investment.

The Directors were also authorised at the 2021 AGM to repurchase shares in the capital of the Company up to a maximum aggregate number of 28,536,998 shares. This represented approximately 10% of the Company's issued share capital prior to the meeting.

These share capital authorities and powers are due to lapse at the 2022 AGM, and the Board will seek their renewal on similar terms.

EMPLOYEE SHARE AND SHARE OPTION SCHEMES

The Company operates a number of employee share and share option schemes. Details of outstanding share awards and share options are given in note 24 on page 166.

All the Company's share schemes contain provisions relating to a change of control. Outstanding options and awards would normally vest and become exercisable on a change of control, subject to being pro-rated for time and to the satisfaction of any performance conditions at that time.

The trustees of the Morgan General Employee Benefit Trust have absolute and unfettered discretion in relation to voting any shares held in the Trust at any general meeting. Their policy is not to vote the shares. If any offer is made to shareholders to acquire their shares, the Trustees will have absolute and unfettered discretion as to whether to accept or reject the offer in respect of any shares held by them.

OTHER DISCLOSURES

Major shareholdings

As at the date of this report, the Company had been notified of the following, in accordance with DTR 5, from holders of notifiable interests representing 3% or more of the issued Ordinary share capital of the Company:

	Number of Ordinary shares	Percentage of issued share capital	Date of notification of interest
Ameriprise Financial Inc., and its group	24,186,489	8.48	3 February 2017
FIL Limited	15,414,047	5.40	5 August 2020
Aberforth Partners LLP	14,338,459	5.03	3 September 2019
M&G Plc	14,251,115	4.98	7 January 2022
Black Creek Investment Management Inc.	14,269,458	5.00	13 October 2021
AXA Investment Managers SA	14,039,985	4.92	6 June 2019

TRANSACTIONS, CONTRACTUAL ARRANGEMENTS AND POST BALANCE SHEET EVENTS

Significant agreements – change of control

The Group has a number of borrowing facilities provided by various financial institutions. The facility agreements generally include change of control provisions which, in the event of a change in ownership of the Company, could result in their renegotiation or withdrawal.

The most significant of such agreements are the UK £200 million multi-currency revolving credit facility agreement, which was signed on 26 September 2018, and the privately placed Note Purchase and Guarantee Agreements signed on 27 October 2016 and 20 March 2017, for which the aggregate outstanding loan amounts are US$137 million and €85 million.

There are a number of other agreements that would take effect, alter or terminate upon a change of control of the Company following a takeover bid, such as commercial contracts and joint venture agreements. No such individual contract is considered to be significant in terms of its potential impact on the business of the Group as a whole.

Post balance sheet events

There were no reportable subsequent events following the balance sheet date.

REPORTING, ACCOUNTABILITY AND AUDIT

Statement of Directors' responsibilities

The Directors are responsible for preparing the Annual Report and the Group and Parent company financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Parent company financial statements for each financial year. Under that law they are required to prepare the Group consolidated financial statements in accordance with United Kingdom adopted international accounting standards and applicable law and have elected to prepare the Parent company financial statements in accordance with UK Accounting Standards, including FRS 101 Reduced Disclosure Framework.

Under company law the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and Parent company and of their profit or loss for that period.

In preparing each of the Group and Parent company financial statements, the Directors are required to:

- Select suitable accounting policies and then apply them consistently;
- Make judgements and estimates that are reasonable and prudent;
- For the Group consolidated financial statements, state whether they have been prepared in accordance with United Kingdom adopted international accounting standards;
- Assess the Group and Parent company's ability to continue as a going concern, disclosing, as applicable, matters related to Going concern;
- For the Parent company financial statements, state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the Parent company financial statements. They are responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error, and have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities;
- Prepare the financial statements on the going concern basis of accounting unless they intend to liquidate the Group or the Parent company or to cease operations or have no realistic alternative but to do so.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Parent company's transactions and disclose with reasonable accuracy at any time the financial position of the Parent company and enable them to ensure that its financial statements comply with the Companies Act 2006. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities. They are responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error, and have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the Directors are also responsible for preparing a Strategic Report, Directors' Report, Remuneration Report and Corporate Governance Statement that comply with that law and those regulations.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the Company's website. Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

In its reporting to shareholders, the Board is satisfied that the Annual Report and Accounts, taken as a whole, is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy as required by the Code.

The Directors as at the date of this Report, whose names and functions are set out on pages 60 to 61, confirm that, to the best of their knowledge:

- The Group's consolidated financial statements, which have been prepared in accordance with United Kingdom adopted international accounting standards, give a true and fair view of the assets, liabilities, financial position and profit of the Group;
- The management report (comprising the Directors' Report and the Strategic Report) includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties that it faces.

Scope of the reporting in this Annual Report

The Board has prepared a Strategic Report which provides an overview of the development and performance of the Group's business in the year ended 31 December 2021.

For the purposes of DTR 4.1.5R(2) and DTR 4.1.8, the Directors' Report on pages 58 to 109 and the Strategic Report on pages 2 to 57 comprise the management report, including the sections of the Annual Report and consolidated financial statements incorporated by reference.

Each Director holding office at the date of approval of this Directors' Report confirms that, so far as he or she is aware, there is no relevant audit information of which the Company's auditor is unaware, and that he or she has taken all steps that he or she ought to have taken as a Director to make himself or herself aware of any relevant audit information and to establish that the Company's auditor is aware of that information.

The Strategic Report, the Directors' Report and the Remuneration Report were approved by the Board on 3 March 2022.

For and on behalf of the Board

Stephanie Mackie
Company Secretary

3 March 2022

Morgan Advanced Materials plc
York House
Sheet Street
Windsor
Berkshire SL4 1DD

Registered in England and Wales, No. 286773

INDEPENDENT AUDITOR'S REPORT

TO THE MEMBERS OF MORGAN ADVANCED MATERIALS PLC

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

1. OPINION

In our opinion:

- The financial statements of Morgan Advanced Materials plc (the 'Parent company') and its subsidiaries (the 'Group') give a true and fair view of the state of the Group's and of the Parent company's affairs as at 31 December 2021 and of the Group's profit for the year then ended;
- The Group financial statements have been properly prepared in accordance with United Kingdom adopted international accounting standards and International Financial Reporting Standards (IFRSs) as issued by the International Accounting Standards Board (IASB);
- The Parent company financial statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice, including Financial Reporting Standard 101 "Reduced Disclosure Framework"; and
- The financial statements have been prepared in accordance with the requirements of the Companies Act 2006.

We have audited the financial statements which comprise:

- The Consolidated income statement;
- The Consolidated statement of comprehensive income;
- The Consolidated and Parent company balance sheets;
- The Consolidated and Parent company statements of changes in equity;
- The Consolidated statement of cash flows; and
- The related notes 1 to 45.

The financial reporting framework that has been applied in the preparation of the Group financial statements is applicable law, and United Kingdom adopted international accounting standards and IFRSs as issued by the IASB. The financial reporting framework that has been applied in the preparation of the parent company financial statements is applicable law and United Kingdom Accounting Standards, including FRS 101 "Reduced Disclosure Framework" (United Kingdom Generally Accepted Accounting Practice).

2. BASIS FOR OPINION

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report.

We are independent of the Group and the Parent company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the Financial Reporting Council's (the 'FRC's') Ethical Standard as applied to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements. The non-audit services provided to the Group and Parent company for the year are disclosed in note 3 to the financial statements. We confirm that we have not provided any non-audit services prohibited by the FRC's Ethical Standard to the Group or the parent company.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

3. SUMMARY OF OUR AUDIT APPROACH

Key audit matters	The key audit matters that we identified in the current year were: → Inventory valuation; and → Impairment of non-financial assets.
Materiality	The materiality that we used for the Group financial statements was £5.0m (FY20: £4.0m) which was determined based on 4.6% profit before tax and before specific adjusting items.
Scoping	Full scope audit work was performed on 17 (FY20: 18) reporting components, and specified audit procedures were undertaken on a further 13 (FY20: 14) reporting components. Our full scope and specified audit procedures covered 72% of Group revenue (FY20: 74%) and 74% of absolute Group statutory profit (FY20: 89%).
Significant changes in our approach	Our audit approach is consistent with the previous year except for: → The presentation of restructuring costs as a specific adjusting item is no longer considered to be a key audit matter. In the prior year, the Group launched a significant restructuring programme following the outbreak of COVID-19 and recognised £24.0m in restructuring costs in the FY20 financial statements. In the current year, a net gain of £0.1 million has been recognised representing £2.1 million of further redundancy and closure costs related to the Group's restructuring programme, offset by a £2.2 million release of restructuring provisions booked last year in relation to this programme. As such, there is a reduced risk that business as usual restructuring activities are incorrectly presented as exceptionals within adjusting items. → In the prior year due to the forecasting uncertainty from the COVID-19 pandemic our materiality was determined considering a number of different metrics which included: → Profit before tax and before specific adjusting items; → Revenue; → Earnings before interest, tax, depreciation and amortisation; and → Net assets. We now consider this uncertainty has reduced and therefore are using profit before tax and before specific adjusting items as our materiality benchmark.

4. CONCLUSIONS RELATING TO GOING CONCERN

In auditing the financial statements, we have concluded that the directors' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Our evaluation of the directors' assessment of the Group's and Parent company's ability to continue to adopt the going concern basis of accounting included:

- Obtaining an understanding of the financing facilities including nature of facilities, repayment terms and covenants;
- Obtained an understanding of the controls around the budgeting and forecasting process used in the going concern preparation process;
- Evaluating the linkage to business model and principal risks as identified on pages 14 and 15;
- Challenging the assumptions used in the Board approved forecasts by reference to historical performance and other supporting evidence such as market data;
- Recalculation of the amount of headroom in the forecasts (in liquidity terms and against the relevant covenant limits);
- Assessing the appropriateness of the sensitivity analysis and reverse stress tests performed by management; and
- Assessing the adequacy of the disclosures made by management.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Group's and Parent company's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

In relation to the reporting on how the Group has applied the UK Corporate Governance Code, we have nothing material to add or draw attention to in relation to the directors' statement in the financial statements about whether the directors considered it appropriate to adopt the going concern basis of accounting.

Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report.

5. KEY AUDIT MATTERS

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) that we identified. These matters included those which had the greatest effect on: the overall audit strategy, the allocation of resources in the audit and directing the efforts of the engagement team.

These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

5.1. Inventory Valuation

Key audit matter description	The Group manufactures thermal, carbon and technical ceramic products for a diverse range of end markets. The Group had material inventory balances of £140.7m as at 31 December 2021 (2020: £122.4m). There is a risk that inventory is not valued appropriately because of local manufacturing sites not correctly applying the Group provisioning accounting policy, to appropriately write-down the net realisable value of excess and obsolescent stock due to: → System limitations, whereby significant manual intervention is required to record and value inventory, which requires regular manual adjustments to inventory; and → The level of management judgement involved in determining whether a provision should be recognised and how it should be measured. The provision is typically determined based on ageing and expected future usage. In the Consolidated Financial Statements, note 1 sets out the Group's accounting policy for inventory valuation and note 16 provides further analysis of the account balance.
How the scope of our audit responded to the key audit matter	We have performed the following audit procedures in respect of this key audit matter: → Obtained an understanding of the relevant controls over the inventory provisioning process; → Assessed the inventory ageing and ensured that the group accounting policy of fully providing for inventory more than 12 months has been applied. For items less than 12 months understood the breakdown of the inventory by age; → Challenged management's key assumptions in determining inventory provisions by assessing the accuracy and completeness of items included in the provision by taking into account the impact on future usage; and → Assessed the mathematical accuracy of the inventory provision by obtaining management's analysis and performing a recalculation based on the key inputs.
Key observations	Based on our procedures performed, we are satisfied that the valuation of inventory at 31 December 2021 is appropriate.

5.2. Impairment of non-financial assets

Key audit matter description	In FY20, following the outbreak of COVID-19 and the resulting economic downturn, the Group recorded impairments of non-financial assets of £65.6m. These primarily sat within the Technical Ceramics and Thermal Ceramic global business units. In FY21, the Group has had a strong recovery despite the challenging economic environment. IAS 36 requires that at the end of each reporting period, an entity should assess whether there are any indicators of impairment or indicators that an impairment loss recognised in prior periods should be reversed. If such indication exists, the entity shall estimate the recoverable amount of that asset. Management's review for indicators of impairment or reversal identified sites and assets that required further consideration. Impairment indicators were identified for certain assets in Technical Ceramics Asia, Electrical Carbon UK and North America and Thermal Ceramics North America. Total impairment charges for the year were £12.4 million. This includes a partial impairment of £6.0 million for Technical Ceramics Asia where a value in use calculation was performed. We focused the majority of our work on the carrying value of this CGU and have provided further detail on the key assumptions used in management's valuation below. Management has determined the recoverable amount based on a value-in-use model calculated from cash flow projections, which are based on management's assumptions and estimates of future trading performance. Estimating a value-in-use is inherently judgemental, and a range of assumptions can reasonably be applied in determining the estimates used therein. The key judgements in assessing non-financial assets for impairment are the discount rate, long-term growth rate, and the short-term projected cash flows. The value-in-use models are sensitive to changes in these estimates, all of which must reflect a long-term view of underlying growth in the respective economy within which these businesses operate and the reasonableness of projected cash flows. We have focused this key audit matter to the discount rate and short-term future cash flows and material judgements contained therein. This is where the highest degree of sensitivity exists in determining the value-in-use. As a result, management has provided sensitivity disclosures of the reasonable possible changes that could result in an impairment. The Audit Committee Report on page 74 refers to impairment of non-financial assets as an area considered by the Audit Committee. Note 1 to the Consolidated Financial Statements sets out the Group's accounting policy for testing of non-financial assets for impairment and contains further details on the key source of estimation uncertainty.
How the scope of our audit responded to the key audit matter	We have performed the following procedures in respect of this key audit matter: → Obtained an understanding of the relevant key controls relating to the impairment process; → Challenged management's indicator assessment for impairment or reversal by performing our own independent consideration of possible indicators; → Assessed the integrity of management's impairment model through testing of the mechanical accuracy and reviewing the application of the input assumptions; → Evaluated the process management undertook to prepare the cash flow forecasts in their impairment models including agreement with the latest Board-approved plans and management approved forecasts; → Challenged the cash flow projections through assessing the accuracy of historical budgeting by comparing them with actual performance and independent evidence to support any significant expected future changes to the business; → Assessed a range of available market data and performing a peer benchmarking exercise to assess and challenge the growth rates forecasted by management in revenue and margins; → Assessed reasonable possible changes in assumptions to challenge the appropriateness of management's assessment of reasonable possible change scenarios; and → Involved internal valuation specialists to assess the appropriateness of the discount rates used.
Key observations	Based on our procedures performed, we consider the key assumptions taken by management to be within an acceptable range and reasonable and supportable. We identified control deficiencies relating to the review controls over the process to identify impairment indicators and the value in use models, which were reported to management and those charged with governance.

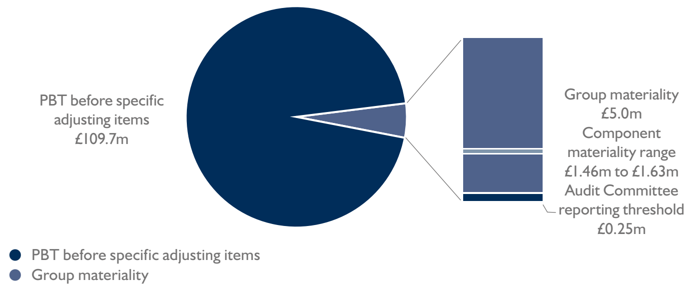
6. OUR APPLICATION OF MATERIALITY

6.1. Materiality

We define materiality as the magnitude of misstatement in the financial statements that makes it probable that the economic decisions of a reasonably knowledgeable person would be changed or influenced. We use materiality both in planning the scope of our audit work and in evaluating the results of our work.

Based on our professional judgement, we determined materiality for the financial statements as a whole as follows:

	Group financial statements	Parent company financial statements
Materiality	£5.0m (2020: £4.0m)	£3.0m (2020: £2.0m)
Basis for determining materiality	The materiality was determined based on 4.6% profit before tax and before specific adjusting items. In the prior year, due to the forecasting uncertainty and expected volatility in underlying earnings resulting from the COVID-19 pandemic our materiality was determined considering several different metrics which included: → Profit before tax and before specific adjusting items (5.4%); → Revenue (0.4%); → Earnings before interest, tax, depreciation and amortisation (3%); and → Net assets (1.7%).	Materiality was determined based on the Parent company's net assets (3%). This was then capped at 60% of Group materiality (2020: 50%).
Rationale for the benchmark applied	Profit before tax and before specific adjusting items is a key metric for users of the financial statements and reflects the way business performance is reported and assessed by external users of the financial statements.	The Parent company is non-trading and contains investments in all the Group's trading components and as a result, we have determined net assets for the current year to be the appropriate basis.



6.2. Performance materiality

We set performance materiality at a level lower than materiality to reduce the probability that, in aggregate, uncorrected and undetected misstatements exceed the materiality for the financial statements as a whole.

	Group financial statements	Parent company financial statements
Performance materiality	65% (2020: 60%) of Group materiality	65% (2020: 60%) of Parent company materiality
Basis and rationale for determining performance materiality	In determining performance materiality, we considered the following factors: → Our risk assessment, including our assessment of the Group's overall control environment and our past experience of the audit; → The disaggregated nature of the Group and the degree of centralisation in the Group's financial reporting processes which reduces the likelihood of an individually material error; and → The level of corrected and uncorrected misstatements identified in the prior year audit.	

6.3 Error reporting threshold

We agreed with the Audit Committee that we would report to the Committee all audit differences in excess of £0.25m (2020: £0.20m), as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds. We also report to the Audit Committee on disclosure matters that we identified when assessing the overall presentation of the financial statements.

INDEPENDENT AUDITOR'S REPORT

TO THE MEMBERS OF MORGAN ADVANCED MATERIALS PLC

7. AN OVERVIEW OF THE SCOPE OF OUR AUDIT

7.1. Identification and scoping of components

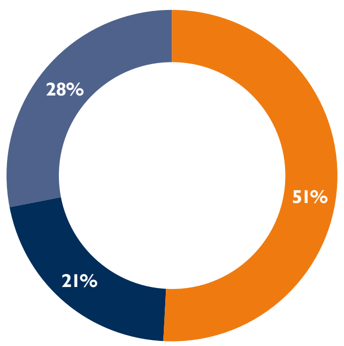
The Group operates and manufactures in 30 countries spread across five continents with the largest footprint being in North America, Asia and Europe. Our Group audit was scoped by obtaining an understanding of the Group and its environment, including Group-wide controls, and assessing the risks of material misstatement at the Group and component level.

Based on that assessment, we focused our Group audit scope across all five of the established business units: Thermal Ceramics, Molten Metal systems, Seals and Bearings, Technical Ceramics and Electrical Carbon.

These five business units are composed of many individual reporting components, which are the lowest level at which management prepares financial information that is included in the Financial Statements. The Parent company is located in the UK and is audited directly by the Group audit team.

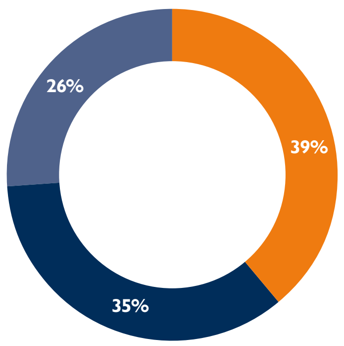
We have considered reporting components based on their contribution to Group revenue, and profit, as well as those that require local statutory audits in their jurisdiction. Full scope audit work was completed on 17 (FY20: 18) components and specified audit procedures were undertaken on a further 13 (FY20:14) components. Each reporting component in scope was subject to an audit materiality level between £1.46m and £1.63m (FY20: 1.00m and £1.20m). Our full scope and specified audit procedures covered 72% of Group revenue (FY20: 74%) and 74% of absolute Group statutory profit (FY20: 89%).

Revenue



- Full audit scope
- Specified audit procedures
- Review at group level

Absolute Profit before tax



- Full audit scope
- Specified audit procedures
- Review at group level

7.2. Our consideration of the control environment

The Group uses a number of different IT systems across the reporting components and we worked with our IT specialists to obtain an understanding of the General IT controls for relevant systems. The control environment is decentralised and reliant on manual processes with improvements required to the IT environment in order for us to adopt a controls reliance approach to our audit. As management develops and completes its controls improvement programme of work in future years, we expect our audit approach to evolve alongside these developments in the internal control environment.

7.3. Our considerations of climate-related risks

In planning our audit, we have considered the potential impact of climate change on the Group's business and its financial statements.

The Group consider the risk and opportunities relevant to be an emerging issue for the Group. As a part of our audit procedures, we have obtained management's climate-related risk assessment and held discussions with those charged with governance to understand the process of identifying climate-related risks, the determination of mitigating actions and the impact on the Group's financial statements. While management has acknowledged that the transition and physical risks posed by Climate change have the potential to impact the medium to long term success of the business, they have assessed that there is no material impact arising from climate change on the judgements and estimates made in the financial statements as at 31 December 2021 as explained in note 1 on page 130.

We performed our own qualitative risk assessment of the potential impact of climate change on the Group's account balances and classes of transaction, and did not identify any additional risks of material misstatement. Our procedures include reading disclosures included in the Strategic Report to consider whether they are materially consistent with the financial statements and our knowledge obtained in the audit.

7.4. Working with other auditors

The audit work on all components was performed by Deloitte Touche Tohmatsu Limited member firms with the exception of one component business in France which continued to be audited by KPMG. The component work was performed under the direction and supervision of the Group audit team. At a Group level, further substantive audit work was performed over the consolidation and analytical review procedures were performed over components not in scope.

The planned programme which we designed as part of our involvement in the component auditors' work was delivered over the course of the Group audit. The extent of our involvement which commenced from the planning phase included:

- Setting the scope of the component auditor and assessment of their independence;
- Designing the audit procedures for all significant risks to be addressed by the component auditors and issuing Group audit instructions detailing the nature and form of the reporting required by the Group engagement team;
- Providing direction on enquiries made by the component auditors through online and telephone conversations; and
- A review of the component auditors' engagement file by a senior member of the Group engagement team.

In response to the Covid-19 pandemic, which limited our ability to make component visits, more frequent calls were held between the Group and component teams and remote access to relevant documents was provided. Given the pandemic, most of our year-end audit was performed in a remote working environment.

8. OTHER INFORMATION

The other information comprises the information included in the annual report other than the financial statements and our auditor's report thereon. The directors are responsible for the other information contained within the annual report.

Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the course of the audit, or otherwise appears to be materially misstated.

If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

9. RESPONSIBILITIES OF DIRECTORS

As explained more fully in the directors' responsibilities statement, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the group's and the parent company's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the group or the parent company or to cease operations, or have no realistic alternative but to do so.

10. AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the FRC's website at: **www.frc.org.uk/auditorsresponsibilities**. This description forms part of our auditor's report.

11. EXTENT TO WHICH THE AUDIT WAS CONSIDERED CAPABLE OF DETECTING IRREGULARITIES, INCLUDING FRAUD

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below.

11.1. Identifying and assessing potential risks related to irregularities

In identifying and assessing risks of material misstatement in respect of irregularities, including fraud and non-compliance with laws and regulations, we considered the following:

- The nature of the industry and sector, control environment and business performance including the design of the group's remuneration policies, key drivers for directors' remuneration, bonus levels and performance targets;
- Results of our enquiries of management, internal audit and the audit committee about their own identification and assessment of the risks of irregularities;
- Any matters we identified having obtained and reviewed the group's documentation of their policies and procedures relating to:

  – identifying, evaluating and complying with laws and regulations and whether they were aware of any instances of non-compliance;

  – detecting and responding to the risks of fraud and whether they have knowledge of any actual, suspected or alleged fraud;

  – the internal controls established to mitigate risks of fraud or non-compliance with laws and regulations; and
- The matters discussed among the audit engagement team including significant component audit teams and relevant internal specialists, including tax, valuations, pensions, and IT specialists regarding how and where fraud might occur in the financial statements and any potential indicators of fraud.

As a result of these procedures, we considered the opportunities and incentives that may exist within the organisation for fraud and identified the greatest potential for fraud in the following area: revenue recognition. In common with all audits under ISAs (UK), we are also required to perform specific procedures to respond to the risk of management override.

We also obtained an understanding of the legal and regulatory frameworks that the group operates in, focusing on provisions of those laws and regulations that had a direct effect on the determination of material amounts and disclosures in the financial statements.

The key laws and regulations we considered in this context included the UK Companies Act, Listing Rules, pensions legislation, tax legislation in all relevant jurisdictions where the Group operates.

In addition, we considered provisions of other laws and regulations that do not have a direct effect on the financial statements but compliance with which may be fundamental to the group's ability to operate or to avoid a material penalty. These included the group's environmental regulations.

11.2. Audit response to risks identified

As a result of performing the above, we did not identify any key audit matters related to the potential risk of fraud or non-compliance with laws and regulations.

Our procedures to respond to risks identified included the following:

- Reviewing the financial statement disclosures and testing to supporting documentation to assess compliance with provisions of relevant laws and regulations described as having a direct effect on the financial statements;
- Enquiring of management, the audit committee and in-house legal counsel concerning actual and potential litigation and claims;
- Performing analytical procedures to identify any unusual or unexpected relationships that may indicate risks of material misstatement due to fraud;
- Reading minutes of meetings of those charged with governance, reviewing internal audit reports and reviewing correspondence with HMRC;
- In addressing the risk of fraud in relation to revenue recognition, we have obtained an understanding of relevant controls in the revenue cycle and tested a sample of sales recognised during the period by agreeing to invoice, dispatch note and cash collection (where appropriate) to assess the performance obligations have been met; and
- In addressing the risk of fraud through management override of controls, testing the appropriateness of journal entries and other adjustments; assessing whether the judgements made in making accounting estimates are indicative of a potential bias; and evaluating the business rationale of any significant transactions that are unusual or outside the normal course of business.

We also communicated relevant identified laws and regulations and potential fraud risks to all engagement team members including significant component audit teams and internal specialists and remained alert to any indications of fraud or non-compliance with laws and regulations throughout the audit.

INDEPENDENT AUDITOR'S REPORT

TO THE MEMBERS OF MORGAN ADVANCED MATERIALS PLC

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

12. OPINIONS ON OTHER MATTERS PRESCRIBED BY THE COMPANIES ACT 2006

In our opinion the part of the directors' remuneration report to be audited has been properly prepared in accordance with the Companies Act 2006.

In our opinion, based on the work undertaken in the course of the audit:

- The information given in the strategic report and the directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- The strategic report and the directors' report have been prepared in accordance with applicable legal requirements.

In the light of the knowledge and understanding of the group and the parent company and their environment obtained in the course of the audit, we have not identified any material misstatements in the strategic report or the directors' report.

13. CORPORATE GOVERNANCE STATEMENT

The Listing Rules require us to review the directors' statement in relation to going concern, longer-term viability and that part of the Corporate Governance Statement relating to the group's compliance with the provisions of the UK Corporate Governance Code specified for our review.

Based on the work undertaken as part of our audit, we have concluded that each of the following elements of the Corporate Governance Statement is materially consistent with the financial statements and our knowledge obtained during the audit:

- The directors' statement with regards to the appropriateness of adopting the going concern basis of accounting and any material uncertainties identified set out on page 53;
- The directors' explanation as to its assessment of the group's prospects, the period this assessment covers and why the period is appropriate set out on page 53;
- The directors' statement on fair, balanced and understandable set out on page 108;
- The board's confirmation that it has carried out a robust assessment of the emerging and principal risks set out on page 108;
- The section of the annual report that describes the review of effectiveness of risk management and internal control systems set out on page 76; and
- The section describing the work of the audit committee set out on page 75.

14. MATTERS ON WHICH WE ARE REQUIRED TO REPORT BY EXCEPTION

14.1. Adequacy of explanations received and accounting records

Under the Companies Act 2006 we are required to report to you if, in our opinion:

- We have not received all the information and explanations we require for our audit; or
- Adequate accounting records have not been kept by the parent company, or returns adequate for our audit have not been received from branches not visited by us; or
- The parent company financial statements are not in agreement with the accounting records and returns.

We have nothing to report in respect of these matters.

14.2. Directors' remuneration

Under the Companies Act 2006 we are also required to report if in our opinion certain disclosures of directors' remuneration have not been made or the part of the directors' remuneration report to be audited is not in agreement with the accounting records and returns.

We have nothing to report in respect of these matters.

15. OTHER MATTERS WHICH WE ARE REQUIRED TO ADDRESS

15.1. Auditor tenure

Following the recommendation of the audit committee, we were appointed in June 2019 to audit the financial statements for the year ending 31 December 2020 and subsequent financial periods. The Board's decision was approved by the shareholders at the AGM in May 2020. The period of total uninterrupted engagement of the firm is 2 years, covering the years ending 31 December 2020 and 31 December 2021.

15.2. Consistency of the audit report with the additional report to the audit committee

Our audit opinion is consistent with the additional report to the audit committee we are required to provide in accordance with ISAs (UK).

16. USE OF OUR REPORT

This report is made solely to the company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the company and the company's members as a body, for our audit work, for this report, or for the opinions we have formed.

As required by the Financial Conduct Authority (FCA) Disclosure Guidance and Transparency Rule (DTR) 4.1.14R, these financial statements form part of the European Single Electronic Format (ESEF) prepared Annual Financial Report filed on the National Storage Mechanism of the UK FCA in accordance with the ESEF Regulatory Technical Standard (('ESEF RTS'). This auditor's report provides no assurance over whether the annual financial report has been prepared using the single electronic format specified in the ESEF RTS.

Jane Makrakis, ACA
(Senior statutory auditor)
For and on behalf of Deloitte LLP
Statutory Auditor
Reading, United Kingdom

3 March 2022

FINANCIAL STATEMENTS

FINANCIAL STATEMENTS

CONSOLIDATED INCOME STATEMENT

FOR THE YEAR ENDED 31 DECEMBER 2021

	Note	31 December 2021 Results before specific adjusting items £m	31 December 2021 Specific adjusting items[1] £m	31 December 2021 Total £m	31 December 2020 Results before specific adjusting items £m	31 December 2020 Specific adjusting items[1] £m	31 December 2020 Total £m
Revenue	3	950.5	–	950.5	910.7	–	910.7
Operating costs before amortisation of intangible assets	4	(826.0)	(5.4)	(831.4)	(819.0)	(87.4)	(906.4)
Profit from operations before amortisation of intangible assets	3	124.5	(5.4)	119.1	91.7	(87.4)	4.3
Amortisation of intangible assets	4	(6.0)	–	(6.0)	(6.1)	–	(6.1)
Operating profit/(loss)	3	118.5	(5.4)	113.1	85.6	(87.4)	(1.8)
Finance income		0.8	–	0.8	0.9	–	0.9
Finance expense		(10.0)	–	(10.0)	(12.8)	–	(12.8)
Net financing costs	7	(9.2)	–	(9.2)	(11.9)	–	(11.9)
Share of profit of associate (net of income tax)	14	0.4	–	0.4	0.6	–	0.6
Profit/(loss) before taxation		109.7	(5.4)	104.3	74.3	(87.4)	(13.1)
Income tax (expense)/credit	8	(29.7)	1.5	(28.2)	(20.2)	13.3	(6.9)
Profit/(loss) from continuing operations		80.0	(3.9)	76.1	54.1	(74.1)	(20.0)
Profit from discontinued operations[2]	9	–	5.7	5.7	–	2.0	2.0
Profit/(loss) for the year		80.0	1.8	81.8	54.1	(72.1)	(18.0)
Profit/(loss) for the year attributable to:							
Shareholders of the Company		71.5	2.3	73.8	48.1	(70.6)	(22.5)
Non-controlling interests		8.5	(0.5)	8.0	6.0	(1.5)	4.5
		80.0	1.8	81.8	54.1	(72.1)	(18.0)
Earnings per share	10						
Continuing and discontinued operations							
Basic earnings per share				25.9p			(7.9)p
Diluted earnings per share				25.7p			(7.9)p
Continuing operations							
Basic earnings per share				23.9p			(8.6)p
Diluted earnings per share				23.7p			(8.6)p
Dividends[3]							
Interim dividend – pence				3.20p			2.00p
– £m				9.1			5.7
Proposed final dividend – pence				5.90p			3.50p
– £m				16.8			10.0

1. Details of specific adjusting items from continuing operations are given in note 6 to the consolidated financial statements.
2. Profits from discontinued operations are entirely attributable to the Shareholders of the Company.
3. The proposed final dividend is based upon the number of Ordinary shares outstanding at the balance sheet date.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

FOR THE YEAR ENDED 31 DECEMBER 2021

	Note	31 December 2021 £m	31 December 2020 £m
Profit/(loss) for the year		81.8	(18.0)
Other comprehensive income/(expense):			
Items that will not be reclassified subsequently to profit or loss:			
Remeasurement gain/(loss) on defined benefit plans	23	55.5	(33.9)
Tax effect of components of other comprehensive income not reclassified	8	(0.6)	0.4
		54.9	(33.5)
Items that may be reclassified subsequently to profit or loss:			
Foreign exchange translation differences		1.0	(3.2)
Tax effect of components of other comprehensive income that may be reclassified	8	(0.8)	–
Cash flow hedges:			
Change in fair value		(0.1)	0.4
Transferred to profit or loss		(0.4)	(0.8)
		(0.3)	(3.6)
Total other comprehensive income/(expense)		54.6	(37.1)
Total comprehensive income/(expense)		136.4	(55.1)
Attributable to:			
Shareholders of the Company		128.5	(59.8)
Non-controlling interests		7.9	4.7
		136.4	(55.1)
Total comprehensive income/(expense) attributable to shareholders of the Company arising from:			
Continuing operations		122.8	(61.8)
Discontinued operations		5.7	2.0
		128.5	(59.8)

CONSOLIDATED BALANCE SHEET

AS AT 31 DECEMBER 2021

	Note	2021 £m	2020 £m
Assets			
Property, plant and equipment	11	**248.1**	267.6
Right-of-use assets	12	**31.9**	35.5
Intangible assets: goodwill	13	**172.9**	173.2
Intangible assets: other	13	**10.2**	12.2
Investments	14	**–**	7.2
Other receivables	17	**2.9**	4.0
Deferred tax assets	15	**15.9**	14.4
Total non-current assets		**481.9**	514.1
Inventories	16	**140.7**	122.4
Derivative financial assets		**0.6**	1.0
Trade and other receivables	17	**161.4**	143.6
Current tax receivable		**0.6**	1.6
Cash and cash equivalents	18	**127.3**	147.8
Total current assets		**430.6**	416.4
Total assets		**912.5**	930.5
Liabilities			
Borrowings	21	**174.0**	177.5
Lease liabilities	21	**40.0**	43.1
Employee benefits: pensions	23	**102.7**	176.3
Provisions	25	**14.8**	8.5
Non-trade payables	19	**2.4**	4.9
Deferred tax liabilities	15	**1.2**	0.5
Total non-current liabilities		**335.1**	410.8
Borrowings and bank overdrafts	21	**–**	71.3
Lease liabilities	21	**9.8**	11.5
Trade and other payables	19	**177.2**	148.4
Current tax payable		**25.4**	20.4
Provisions	25	**14.8**	27.3
Derivative financial liabilities		**0.6**	0.8
Total current liabilities		**227.8**	279.7
Total liabilities		**562.9**	690.5
Total net assets		**349.6**	240.0
Equity			
Share capital	20	**71.3**	71.3
Share premium		**111.7**	111.7
Reserves		**18.5**	18.7
Retained earnings		**109.1**	0.6
Total equity attributable to shareholders of the Company		**310.6**	202.3
Non-controlling interests		**39.0**	37.7
Total equity		**349.6**	240.0

The financial statements were approved by the Board of Directors on 3 March 2022 and were signed on its behalf by:

Pete Raby
Chief Executive Officer

Peter Turner
Chief Financial Officer

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

FOR THE YEAR ENDED 31 DECEMBER 2021

	Share capital £m	Share premium £m	Translation reserve £m	Hedging reserve £m	Fair value reserve £m	Capital redemption reserve £m	Other reserves £m	Retained earnings £m	Total parent equity £m	Non-controlling interests £m	Total equity £m
At 1 January 2020	71.3	111.7	(13.6)	0.8	(1.0)	35.7	0.6	64.7	270.2	41.5	311.7
(Loss)/profit for the year	–	–	–	–	–	–	–	(22.5)	(22.5)	4.5	(18.0)
Other comprehensive income/(expense):											
Remeasurement loss on defined benefit plans and related taxes	–	–	–	–	–	–	–	(33.5)	(33.5)	–	(33.5)
Foreign exchange differences	–	–	(3.4)	–	–	–	–	–	(3.4)	0.2	(3.2)
Cash flow hedging fair value changes and transfers	–	–	–	(0.4)	–	–	–	–	(0.4)	–	(0.4)
Total comprehensive income/(expense)	–	–	(3.4)	(0.4)	–	–	–	(56.0)	(59.8)	4.7	(55.1)
Transactions with owners:											
Dividends	–	–	–	–	–	–	–	(5.7)	(5.7)	(7.9)	(13.6)
Purchase of non-controlling interest	–	–	–	–	–	–	–	(2.2)	(2.2)	(0.6)	(2.8)
Equity settled share-based payments	–	–	–	–	–	–	–	1.2	1.2	–	1.2
Own shares acquired for share incentive schemes (net)	–	–	–	–	–	–	–	(1.4)	(1.4)	–	(1.4)
At 31 December 2020	71.3	111.7	(17.0)	0.4	(1.0)	35.7	0.6	0.6	202.3	37.7	240.0
At 1 January 2021	71.3	111.7	(17.0)	0.4	(1.0)	35.7	0.6	0.6	202.3	37.7	240.0
Profit for the year	–	–	–	–	–	–	–	73.8	73.8	8.0	81.8
Other comprehensive income/(expense):											
Remeasurement gain on defined benefit plans and related taxes	–	–	–	–	–	–	–	54.9	54.9	–	54.9
Foreign exchange differences and related taxes	–	–	0.3	–	–	–	–	–	0.3	(0.1)	0.2
Cash flow hedging fair value changes and transfers	–	–	–	(0.5)	–	–	–	–	(0.5)	–	(0.5)
Total comprehensive income/(expense)	–	–	0.3	(0.5)	–	–	–	128.7	128.5	7.9	136.4
Transactions with owners:											
Dividends	–	–	–	–	–	–	–	(19.1)	(19.1)	(6.6)	(25.7)
Equity settled share-based payments	–	–	–	–	–	–	–	4.5	4.5	–	4.5
Own shares acquired for share incentive schemes (net)	–	–	–	–	–	–	–	(5.6)	(5.6)	–	(5.6)
At 31 December 2021	71.3	111.7	(16.7)	(0.1)	(1.0)	35.7	0.6	109.1	310.6	39.0	349.6

Details of the reserves are provided in note 20.

CONSOLIDATED STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED 31 DECEMBER 2021

	Note	31 December 2021 £m	31 December 2020 £m
Operating activities			
Profit/(loss) for the year from continuing operations		**76.1**	(20.0)
Profit for the year from discontinued operations	9	**5.7**	2.0
Adjustments for:			
Depreciation – property, plant and equipment		**30.1**	32.7
Depreciation – right-of-use assets		**7.9**	9.2
Amortisation		**6.0**	6.1
Net financing costs	7	**9.2**	11.9
Profit on disposal of business	2,6	**(7.1)**	(2.2)
Non-cash specific adjusting items included in operating profit		**10.4**	65.7
Share of profit from associate (net of income tax)	14	**(0.4)**	(0.6)
Loss/(profit) on sale of property, plant and equipment		**0.3**	(1.0)
Income tax expense	8	**28.2**	6.9
Equity settled share-based payment expense	4	**4.5**	0.7
Cash generated from operations before changes in working capital and provisions		**170.9**	111.4
(Increase)/decrease in trade and other receivables		**(17.2)**	36.1
(Increase)/decrease in inventories		**(20.1)**	18.4
Increase/(decrease) in trade and other payables		**28.3**	(19.7)
(Decrease)/increase in provisions		**(5.8)**	17.8
Payments to defined benefit pension plans (net of IAS 19 pension charges)	23	**(16.9)**	(17.9)
Cash generated from operations		**139.2**	146.1
Interest paid – borrowings and overdrafts		**(6.1)**	(7.5)
Interest paid – lease liabilities		**(2.3)**	(2.8)
Income tax paid		**(25.4)**	(26.0)
Net cash from operating activities		**105.4**	109.8
Investing activities			
Purchase of property, plant and equipment and software		**(31.6)**	(30.0)
Purchase of investments		**(0.9)**	(1.0)
Acquisition of business assets	2	**(1.9)**	–
Proceeds from sale of property, plant and equipment		**5.5**	1.4
Interest received		**0.8**	0.9
Disposal of investments	2	**14.2**	–
Disposal of subsidiaries, net of cash disposed	2	**0.8**	5.3
Net cash from investing activities		**(13.1)**	(23.4)
Financing activities			
Purchase of own shares for share incentive schemes	20	**(5.9)**	(1.8)
Proceeds from exercise of share options	20	**0.3**	0.4
Increase in borrowings	18	**–**	7.9
Reduction and repayment of borrowings	18	**(72.3)**	(49.8)
Payment of lease liabilities	18	**(8.6)**	(9.9)
Dividends paid to shareholders of the Company		**(19.1)**	(5.7)
Dividends paid to non-controlling interests		**(6.6)**	(7.9)
Purchase of shares from non-controlling interest		**–**	(2.8)
Net cash from financing activities		**(112.2)**	(69.6)
Net (decrease)/increase in cash and cash equivalents		**(19.9)**	16.8
Cash and cash equivalents at start of the year		**147.8**	132.8
Effect of exchange rate fluctuations on cash held		**(0.6)**	(1.8)
Cash and cash equivalents at year end	18	**127.3**	147.8

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS

Morgan Advanced Materials plc (the 'Company') is a public company limited by shares incorporated in the UK under The Companies Act and is headquartered in the UK. The address of the registered office is given in 'Shareholder information' on page 188. The principal activities of the Company and its subsidiaries and the nature of the Group's operations are set out in the Strategic Report on pages 2 to 57.

The Group's financial statements consolidate those of the Company and its subsidiaries (together referred to as the 'Group'), and include the Group's interest in associates. The Parent Company financial statements present information about the Company as a separate entity and not about its Group. These consolidated financial statements have been drawn up to 31 December 2021. The Group maintains a 12-month calendar financial year ending on 31 December.

The Group financial statements have been prepared and approved by the Directors in accordance with the requirements of the Companies Act 2006 and International Financial Reporting Standards (IFRSs) as adopted by the UK. There has been no change to the recognition, measurement or disclosure from preparation in previous periods under IFRSs as adopted by the European Union. The Company has elected to prepare its Parent Company financial statements in accordance with Financial Reporting Standard 101 Reduced Disclosure Framework; these are presented on pages 169 to 184.

Except for the changes set out in the adoption of new and revised standards section, the accounting policies set out below have been applied consistently to all periods presented in these Group financial statements.

SIGNIFICANT ACCOUNTING POLICIES

Measurement convention

The financial statements are prepared on the historical cost basis except that the following assets and liabilities are stated at their fair value: derivative financial instruments and financial instruments designated as fair value through other comprehensive income (FVOCI).

Functional and presentation currency

The Group's financial statements are presented in pounds sterling, which is the Company's functional currency.

Basis of consolidation

(i) Subsidiaries

Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

(ii) Acquisitions

Business combinations are accounted for using the acquisition method as at the acquisition date, which is the date on which control is transferred to the Group. The Group measures goodwill as the acquisition-date fair value of the consideration transferred, including the amount of any non-controlling interest in the acquiree, less the net of the acquisition-date fair values of the identifiable assets acquired and liabilities assumed, including contingent liabilities as required by IFRS 3.

Consideration transferred includes the fair values of assets transferred, liabilities incurred by the Group to the previous owners of the acquiree, equity interests issued by the Group, contingent consideration, and share-based payment awards of the acquiree that are replaced in the business combination. Any contingent consideration payable is recognised at fair value at the acquisition date. Subsequent changes to the fair value of contingent consideration that is not classified as equity is recognised in the income statement.

Transaction costs that the Group incurs in connection with a business combination, such as finder's fees, legal fees, due diligence fees and other professional and consulting fees, are expensed as incurred.

(iii) Associates

Associates are those entities in which the Company has significant influence, but not control, over the financial and operating policies. Significant influence is presumed to exist when the Group holds between 20% and 50% of the voting power of another entity. Associates are accounted for using the equity method and are initially recognised at cost.

(iv) Transactions eliminated on consolidation

Intra-group balances and any unrealised gains and losses or income and expenses arising from intra-group transactions are eliminated in preparing the consolidated financial statements. Unrealised gains arising from transactions with associates are eliminated against the investment to the extent of the Group's interest in the associate. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Foreign currency

(i) Foreign currency transactions

Transactions in foreign currencies are translated at the foreign exchange rate ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are translated to pounds sterling at the foreign exchange rate ruling at that date. Non-monetary assets and liabilities that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction. Non-monetary assets and liabilities denominated in foreign currencies that are stated at fair value are translated to pounds sterling at foreign exchange rates ruling at the dates the fair values are determined.

(ii) Financial statements of foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on consolidation, are translated to pounds sterling at foreign exchange rates ruling at the balance sheet date. The revenues, expenses and cash flows of foreign operations are translated to pounds sterling at an average rate for the period where this approximates to the foreign exchange rates ruling at the dates of the transactions. Foreign exchange differences arising on retranslation since the adoption of IFRS are recognised directly in other comprehensive income and accumulated in the translation reserve.

Specific adjusting items

The Group uses specific adjusting items, which are not defined or specified under IFRS. These specific adjusting items, which are not considered to be a substitute for IFRS measures, provide additional helpful information. In the consolidated income statement the Group presents specific adjusting items separately. In the judgement of the Directors, due to the nature and value of these items they should be disclosed separately from the underlying results of the Group to provide the reader with an alternative understanding of the financial information and an indication of the underlying performance of the Group.

Revenue

Revenue is recognised when or as the Group satisfies a performance obligation by transferring a promised good or service to a customer. The Group's principal performance obligation is the provision of products and components, and is satisfied at a point in time and subject to payment terms typical to the geography in which the business operates. Products and components are transferred when the customer obtains control of the goods. For goods that are collected by the customer, revenue is recognised at the point the customer has taken physical possession of the goods. For contracts that include delivery of goods, the delivery element of the contract constitutes a separate performance obligation because it is distinct. For these contracts, control of the goods does not transfer to the customer until the goods have been delivered and therefore both performance obligations are satisfied simultaneously. Revenue for these contracts is therefore recognised on delivery.

Substantially all of the Group's revenue is derived from short-term contracts for the provision of products and components. A smaller portion of the Group's revenue relates to project-based business, principally within the Thermal Ceramics global business unit. Revenue for these contracts is recognised in line with fulfilment of contractual performance obligations stated in the contract and is not significant; consequently (except for trade receivables) the Group does not have significant assets or liabilities relating to its contracts with customers.

Revenue is only recognised to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognised will not occur. The transaction price is determined as the amount receivable for the provision of products and components excluding rebates, discounts and similar items. Determining the transaction price does not require significant judgement. The costs incurred in obtaining contracts are not material. The Group acts as a principal in its transactions with customers. In 2021, there were no material adjustments to revenue which related to performance obligations satisfied in the previous year.

IFRS 15 Revenue from Contracts with Customers requires revenue to be disaggregated into categories that depict how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. The Group discloses revenue disaggregated by geography, end market and by global business unit, which are aligned by product type, in note 3 to the consolidated financial statements.

Research and development

The Group's research and development expenditure is widely dispersed with no individually material projects. It is often some time into a project before the Group is able to test technical or commercial feasibility and therefore whether the Group will continue to fund any individual project, as such materially all of the Group's expenditure is recognised in the income statement as an expense as incurred.

Development activities are capitalised when research findings are applied to a plan or design for the production of new or substantially improved products and processes and that relate to a product or process that is technically and commercially feasible and the Group has sufficient resources to complete development, use and sale of products or processes. Capitalised development expenditure is stated at cost less accumulated amortisation and impairment losses.

Finance income and expense

Net financing costs comprise interest payable on borrowings calculated using the effective interest rate method, interest receivable on funds invested, gains and losses on hedging instruments that are recognised in the income statement, interest on IFRS 16 lease liabilities and net interest on IAS 19 pension assets and IAS 19 obligations. Interest income is recognised in the income statement as it accrues, using the effective interest method.

Borrowing costs (interest and other costs) are capitalised when they are incurred on raising specific funds to finance a major capital project which will be a significant productive asset, or to the extent that funds borrowed generally are used for the purposes of obtaining a qualifying asset.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Taxation

Income tax on the profit or loss for the year comprises current and deferred tax. Income tax is recognised in the income statement except to the extent that it relates to items recognised directly in equity or other comprehensive income, in which case it is recognised in equity or other comprehensive income.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustment to tax payable in respect of previous years.

Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The following temporary differences are not provided for: the initial recognition of goodwill, the initial recognition of assets or liabilities that affect neither accounting nor taxable profit and differences relating to investments in subsidiaries to the extent that they will probably not reverse in the foreseeable future. The amount of deferred tax provided is based on the expected manner of realisation or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the balance sheet date.

A deferred tax asset is recognised only to the extent that it is probable that future taxable profits will be available against which the asset can be utilised. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefit will be realised.

Discontinued operations

Where the Group has disposed of or has classified as held-for-sale a business component which represents a separate major line of business or geographical area of operations, it classifies such operations as discontinued. The post-tax profit or loss of the discontinued operations is shown as a single line on the face of the consolidated income statement, separate from the results of the rest of the Group.

Hedge accounting

The Group designates certain derivatives as hedging instruments in respect of foreign currency risk and interest rate risk in cash flow hedges. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges. At the inception of the hedge relationship, the Group documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the Group documents whether the hedging instrument is effective in offsetting changes in fair values or cash flows of the hedged item attributable to the hedged risk, which is when the hedging relationships meet all of the following hedge effectiveness requirements:

- there is an economic relationship between the hedged item and the hedging instrument
- the effect of credit risk does not dominate the value changes that result from that economic relationship and
- the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

If a hedging relationship ceases to meet the hedge effectiveness requirement relating to the hedge ratio but the risk management objective for that designated hedging relationship remains the same, the Group adjusts the hedge ratio of the hedging relationship (i.e. rebalances the hedge) so that it meets the qualifying criteria again. The Group designates the full change in the fair value of a forward contract (i.e. including the forward elements) as the hedging instrument for all of its hedging relationships involving forward contracts.

Note 22 sets out details of the fair values of the derivative instruments used for hedging purposes.

Movements in the hedging reserve in equity are detailed in note 20.

Fair value hedges

The fair value change on qualifying hedging instruments is recognised in profit or loss.

Where hedging gains or losses are recognised in profit or loss, they are recognised in the same line as the hedged item.

Cash flow hedges

The effective portion of changes in the fair value of derivatives and other qualifying hedging instruments that are designated and qualify as cash flow hedges is recognised in other comprehensive income and accumulated under the heading of hedging reserve, limited to the cumulative change in fair value of the hedged item from inception of the hedge. The gain or loss relating to the ineffective portion is recognised immediately in profit or loss.

Amounts previously recognised in other comprehensive income and accumulated in equity are reclassified to profit or loss in the periods when the hedged item affects profit or loss, in the same line as the recognised hedged item. However, when the hedged forecast transaction results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously recognised in other comprehensive income and accumulated in equity are removed from equity and included in the initial measurement of the cost of the non-financial asset or non-financial liability. This transfer does not affect other comprehensive income. Furthermore, if the Group expects that some or all of the loss accumulated in the hedging reserve will not be recovered in the future, that amount is immediately reclassified to profit or loss.

The Group discontinues hedge accounting only when the hedging relationship (or a part thereof) ceases to meet the qualifying criteria (after rebalancing, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised. The discontinuation is accounted for prospectively. Any gain or loss recognised in other comprehensive income and accumulated in cash flow hedge reserve at that time remains in equity and is reclassified to profit or loss when the forecast transaction occurs. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in the cash flow hedge reserve is reclassified immediately to profit or loss.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Property, plant and equipment

(i) Owned assets

Items of property, plant and equipment are stated at cost less accumulated depreciation (see below) and impairment losses. The cost of self-constructed assets includes the cost of materials, direct labour, and an appropriate proportion of production overheads.

Where parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items of property, plant and equipment.

Gains and losses on the disposal of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of the asset. Gains and losses on the disposal of property, plant and equipment are recognised in 'Operating costs before amortisation of intangible assets' in the income statement.

(ii) Depreciation of owned assets

Depreciation is charged to the income statement on a straight-line basis over the estimated useful lives of each part of an item of property, plant and equipment. Land is not depreciated. Depreciation methods, useful lives and residual values are reviewed at each balance sheet date. The estimated useful lives are as follows:

Buildings	50 years
Plant, equipment and fixtures	3-20 years

Leasing

The Group assesses whether a contract is or contains a lease, at inception of the contract. The Group recognises a right-of-use asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee, except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low value assets (defined as leases of a value of less than USD 5,000 at lease commencement). For these leases, the Group recognises the lease payments as an operating expense on a straight-line basis over the term of the lease.

(i) Lease liabilities

The lease liability is initially measured at the present value of future lease payments, discounted by using the rate implicit in the lease or, where the rate cannot be readily determined, an incremental borrowing rate. The lease payments included in the lease liability comprise fixed lease payments, variable payments that depend on an index or rate and any payments due under lease extension, termination or purchase options to the extent they are assessed as reasonably certain.

The lease liability is subsequently measured by using the effective interest method and by reducing the carrying amount to reflect the lease payments made.

The Group remeasures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) whenever there is a lease modification, a change in lease term or there is a significant event or change in circumstances resulting in a change in the assessment of exercise of other lease variables, such as purchase options. A remeasurement will also occur when the lease payments change due to changes in index rates.

(ii) Right-of-use assets

The right-of-use assets comprise the initial measurement of the corresponding lease liability, lease payments made at or before the commencement date, less any lease incentives received and initial direct costs. They are subsequently measured at cost less accumulated depreciation and impairment losses.

Whenever the Group incurs an obligation for costs to dismantle and remove a leased asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease, a provision is recognised and measured under IAS 37. To the extent that the costs relate to a right-of-use asset, the costs are included in the related right-of-use asset, unless those costs are incurred to produce inventories.

(iii) Depreciation of right-of-use assets

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. The depreciation starts at the commencement date of the lease.

Goodwill

All business combinations are accounted for by applying the purchase method. Goodwill represents the difference between the cost of the acquisition and the fair value of assets, liabilities and contingent liabilities acquired.

Goodwill is not amortised. Goodwill is allocated to cash-generating units or groups of cash-generating units and is tested at least annually for impairment. If the recoverable amount of the cash-generating unit or group of cash-generating units is less than the carrying amount of the unit or group, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit or group and then to reduce the carrying amount of the other intangibles and other assets of the unit or group pro-rata on the basis. An impairment loss recognised for goodwill is not reversed in a subsequent period.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Other intangible assets

Other intangible assets that are acquired by the Group are stated at cost less accumulated amortisation (see below) and impairment losses. Amortisation is charged to the income statement on a straight-line basis over the estimated useful lives of intangible assets unless such lives are indefinite. Intangible assets with an indefinite useful life are systematically tested for impairment at each balance sheet date. Other intangible assets are amortised from the date they are available for use. The estimated useful lives are as follows:

Capitalised development costs	3 years
Computer software	3-10 years
Customer relationships	15-20 years
Technology and trademarks	15-20 years

When the Group incurs configuration and customisation costs as part of a cloud-based software-as-a-service agreement, and where this does not result in the creation of an asset which the Group has control over, then these costs are expensed.

Impairment of non-financial assets, excluding goodwill

The carrying amounts of the Group's assets and cash-generating units are reviewed at each balance sheet date to determine whether there is any indication of impairment. If any such indication exists, the asset or cash-generating unit's recoverable amount is estimated.

The recoverable amount of other assets and cash-generating units is the greater of their value in use and fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or cash-generating unit. An impairment loss is recognised immediately in profit or loss.

An impairment loss is reversed if the subsequent increase in recoverable amount can be related objectively to an event occurring after the impairment loss was recognised. A reversal of an impairment loss is recognised immediately in profit or loss to the extent that the asset's or cash-generating unit's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

Investments in equity securities

Investments in equity securities held by the Group are classified as FVOCI and are stated at fair value, with any resultant gain or loss being recognised directly in other comprehensive income (in the fair value reserve), except for impairment losses. The gains or losses arising from changes in fair value are recognised in other comprehensive income until the security is disposed of, at which time the cumulative gain or loss previously recognised in other comprehensive income and accumulated in the FVOCI reserve is transferred to retained earnings.

Inventories

Inventories are stated at the lower of cost and net realisable value. Net realisable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and selling expenses.

The cost of inventories is based on the first-in-first-out principle and includes expenditure incurred in acquiring the inventories and bringing them to their existing location and condition. In the case of manufactured inventories and work in progress, cost includes an appropriate share of overheads based on normal operating capacity.

Trade and other receivables

Trade receivables are recorded initially at transaction price and subsequently measured at amortised cost less the loss allowance. The loss allowance is recognised based on management's expectation of losses without regard to whether an impairment trigger happened or not (an 'expected credit loss (ECL)' model). The Group measures the loss allowance for trade receivables at an amount equal to lifetime ECL, estimated based on historical write-offs and adjusted for forward-looking information where appropriate. Trade receivables more than 180 days past due are generally considered not recoverable and a 100% loss allowance is recognised, except where historical experience with certain customers or geographies indicates otherwise. The loss is recognised in the income statement. Trade receivables are written off when recoverability is assessed as being remote. Subsequent recoveries of amounts previously written off are credited to the income statement.

Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits. Short-term deposits include demand deposits and short–term highly liquid investments with maturities of three months or less that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value. Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are included as a component of borrowings for the purpose of the Group statement of cash flows.

Trade and other payables

Trade and other payables are recognised initially at transaction price. Subsequent to initial recognition they are measured at amortised cost using the effective interest method.

Borrowings

Borrowings are recognised initially at fair value less attributable transaction costs. Subsequent to initial recognition, borrowings are stated at amortised cost with any difference between cost and redemption value being recognised in the income statement over the period of the borrowings on an effective interest basis.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Financial instruments issued by the Group

Financial instruments issued by the Group are treated as equity (i.e. forming part of shareholders' funds) only to the extent that they meet the following two conditions:

(i) they include no contractual obligations upon the Group to deliver cash or other financial assets or to exchange financial assets or financial liabilities with another party under conditions that are potentially unfavourable to the Group; and

(ii) where the instrument will or may be settled in the Company's own equity instruments, it is either a non-derivative that includes no obligation to deliver a variable number of the Company's own equity instruments or is a derivative that will be settled by the Company exchanging a fixed amount of cash or other financial assets for a fixed number of its own equity instruments.

To the extent that this definition is not met, the proceeds of issue are classified as a financial liability. Where the instrument so classified takes the legal form of the Company's own shares, the amounts presented in these financial statements for called-up share capital and share premium account exclude amounts in relation to those shares.

Finance payments associated with financial liabilities are dealt with as part of finance expenses. Finance payments associated with financial instruments that are classified in equity are dividends and are recorded directly in equity.

Pensions and other long-term service benefits

(i) Defined contribution plans

For defined contribution plans, the Group pays contributions to either publicly or privately administered pension plans, and the Group has no further payment obligations once the contributions have been paid. Obligations for contributions to defined contribution pension plans are recognised as an expense in the income statement as incurred.

(ii) Defined benefit plans

A defined benefit plan is any retirement plan which is not a defined contribution plan. Typically, defined benefit plans define an amount of retirement benefit that an employee will receive, usually depending on one or more factors such as age, years of service and earnings.

The Group's net obligation in respect of defined benefit pension plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods; that benefit is discounted to determine its present value, and the fair value of any plan assets is deducted. The discount rate is the yield at the balance sheet date on AA-credit-rated bonds that have maturity dates approximating the terms of the Group's obligations. The calculation is performed by a qualified actuary using the projected unit credit method.

When the calculation results in a benefit to the Group, the recognised asset is limited to the total of the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. An economic benefit is available to the Group if it is realisable during the life of the plan, or on settlement of the plan liabilities. Remeasurement gains and losses, differences between the interest income and actual returns on assets, and the effect of changes in actuarial assumptions, are recognised in full in other comprehensive income in the year in which they arise.

(iii) Long-term service benefits

The Group's net obligation in respect of long-term service benefits, other than pension plans, is the amount of future benefit that employees have earned in return for their service in the current and prior periods. The obligation is calculated using the projected unit credit method, or similar approximation, and is discounted to its present value and the fair value of any related assets is deducted. The discount rate is the yield at the balance sheet date on AA-credit-rated bonds that have maturity dates approximating the terms of the Group's obligations.

Share-based payment transactions

The grant date fair value of share-based payment awards granted to employees is recognised as an expense, with a corresponding increase in equity, over the period that the employees become unconditionally entitled to the awards. The amount recognised as an expense is adjusted to reflect the actual number of awards for which the related service and non-market performance conditions are met, such that the amount ultimately recognised as an expense is based on the number of awards that meet the related service and non-market performance conditions at the vesting date.

Provisions, contingent liabilities and contingent assets

A provision is recognised in the consolidated balance sheet when the Group has a present legal or constructive obligation as a result of a past event and there is probable outflow of resources which can be reliably measured and will be required to settle the obligation. Provisions are recognised at an amount equal to the best estimate of the expenditure required to settle the Group's liability. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate reflective of the current market assessments of the time value of money and, where appropriate, the risks specific to the liability.

A contingent liability is disclosed, where significant, if the existence of the obligation will only be confirmed by future events or where the amount of the obligation cannot be measured with reasonable reliability. A contingent liability is not disclosed if the likelihood of a material outflow in excess of any amounts provided is considered remote. Obligations arising from restructuring plans are recognised when detailed formal plans have been established and when there is a valid expectation that such a plan will be carried out. The Group's contingent liabilities are reviewed on a regular basis.

A contingent asset is not recognised but is disclosed, where significant, if an inflow of economic benefit is probable.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Preference share capital

Preference share capital is classified as a financial liability within borrowings if the substance of the shares does not contain an equity element. Dividends on preference share capital are classified as finance charges within the consolidated income statement.

Share capital

Ordinary shares are classified as equity.

When share capital recognised as equity is repurchased, the amount of the consideration paid, which includes directly attributable costs, is net of any tax effects, and is recognised as a deduction from equity. Repurchased shares and the purchase of own shares by The Morgan General Employee Benefit Trust (the Trust) are presented as a deduction from total equity.

Dividends

Dividends payable are recognised as a liability in the Company's financial statements in the period in which the dividends are declared and approved. Dividends declared after the balance sheet date are not recognised as there is no present obligation at that the balance sheet date.

CRITICAL ACCOUNTING JUDGEMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

In preparing these consolidated financial statements, management has made judgements, estimates and assumptions that affect the application of the Group's accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates. Estimates and underlying assumptions are reviewed on an ongoing basis.

Critical accounting judgements

Information about judgements made in applying accounting policies that have the most significant effects on the amounts recognised in the consolidated financial statements is included in the following notes:

Note 6: Specific adjusting items

The Group separately presents specific adjusting items in the consolidated income statement which, in the Directors' judgement, need to be disclosed separately by virtue of their size and incidence in order for users of the consolidated financial statements to obtain an alternative understanding of the financial information and the underlying performance of the business. These are items which occur infrequently and include (but are not limited to):

→ Individual restructuring projects which are material or relate to the closure of a part of the business and are not expected to recur;
→ Impairment of non-financial assets which are material;
→ Gains or losses on disposal or exit of businesses;
→ Significant costs incurred as part of the integration of an acquired business;
→ Gains or losses arising on significant changes to or closures of defined benefit pension plans.

Determining whether an item is part of specific adjusting items requires judgement to determine the nature and the intention of the transaction.

Note 15: Recognition of deferred tax assets

Deferred tax assets are recognised when management judges it probable that future taxable profits will be available against which the temporary differences can be utilised. This relies on the use of estimates of future taxable profits which may differ from the actual results delivered. In the event future taxable profits do not materialise this would lead to a write-off of recognised deferred tax assets.

Note 25: Provisions and contingent liabilities

Due to the nature of its operations, the Group holds provisions for its environmental obligations. Judgement is needed in determining whether a contingent liability has crystallised into a provision. Management assesses whether there is sufficient information to determine that an environmental liability exists and whether it is possible to estimate with sufficient reliability what the cost of remediation is likely to be. For environmental remediation matters, this tends to be at the point in time when a remediation feasibility study has been completed, or sufficient information becomes available through the study to estimate the costs of remediation.

The Group will recognise a legal provision at the point when the outcome of a legal matter can be reliably estimated. Estimates are based on past experience of similar issues, professional advice received and the Group's assessment of the most likely outcome. The timing of the utilisation of these provisions is frequently uncertain, reflecting the complexity of issues and the outcome of various court proceedings and associated negotiations.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

Key sources of estimation uncertainty

The key assumptions concerning the future, and other key sources of estimation uncertainty at the reporting period that may have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are included in the below notes.

Climate change is a global challenge and an emerging risk to businesses, people and the environment across the world. We have a role to play in improving our energy management, reducing our carbon emissions and by helping our customers do the same. Growing awareness of climate change and customer sustainability targets will provide impetus for business growth as we provide products, services and solutions that increase efficiency and reduce customers' energy use and carbon emissions. As a result, in our view climate change does not create any further key sources of estimation uncertainty. For further detail see the Risk Management and Sustainability sections of the Strategic Report on pages 38 and 16.

Note 23: Pensions and other post-retirement employee benefits: key actuarial assumptions

The principal actuarial assumptions applied to pensions are shown in note 23, including a sensitivity analysis. The actuarial evaluation of pension assets and liabilities is based on assumptions in respect of inflation, future salary increases, discount rates, returns on investments and mortality rates. Relatively small changes in the assumptions underlying the actuarial valuations of pension schemes can have a significant impact on the net pension liability included in the balance sheet.

In 2018, based on the results of a High Court hearing, the Group recognised a liability in relation to Guaranteed Minimum Pensions (GMPs), an initiative to remove inequalities in scheme benefits that arise from Guaranteed Minimum Pensions being unequal between men and women. As a result of a further judgement in November 2020 relating to the need to equalise historical transfer payments, a further charge of £0.1 million has been included in these accounts, refer also to note 23. Legal uncertainty remains in this area in relation to how equalisation will be practically implemented.

Note 25: Environmental provisions and contingent liabilities

Provisions for environmental costs are estimated based on current legal and constructive requirements. Actual costs and cash outflows can differ from current estimates because of changes in underlying factors including laws and regulations, public expectations, prices, more detailed analysis of site conditions and innovations in clean-up technology. The ultimate requirement for remediation and its costs are inherently difficult to estimate. Amounts provided are the Group's best estimate of exposure based on currently available information. Although at present no additional costs of environmental issues have been identified beyond our best estimate, future possible costs that are not provided for could be material to the Group's results in the period in which they are recognised. However, we do not expect these costs to have a material impact on the Group's financial position or liquidity.

Note 6: Impairment of non-financial assets (excluding goodwill)

In addition to the impairment assessment of goodwill, described below, management also monitors the performance of individual assets and cash-generating units. Where indicators of impairment exist, they perform an impairment review on those assets or cash-generating units.

For assets or cash-generating units which the business continues to use, the review process relies on the use of estimates of the future profitability and cash flows which may differ from the actual results delivered. There is a higher level estimation uncertainty inherent in these assumptions and it is reasonably possible that a change in these assumptions could lead to a reversal of the impairment charge.

Where non-financial assets or cash-generating units are not utilised by the business and will not be utilised in the future they are written down to their recoverable amount. There is a lower level of judgement associated with these impairments.

Other assumptions and estimates which have a lower risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the next 12 months include:

Notes 8 and 15: Taxation

The level of current tax and deferred tax recognised is dependent on the tax rates in effect at the balance sheet date, and on subjective judgements as to the outcome of decisions to be made by the tax authorities in the various tax jurisdictions around the world in which the Group operates.

The Group periodically assesses its liabilities and contingencies for all tax years open to audit based on the latest information available. The Group records its best estimate of these tax liabilities, including related interest charges. Whilst management believes it has adequately provided for the probable outcome of these matters, future results may include adjustments to these estimated tax liabilities and the final outcome of tax examinations may result in a materially different outcome than that assumed in the tax liabilities. Provisions are made against individual exposures taking into account the specific circumstances of each case, including the strengths of technical arguments, past experience with tax authorities, recent case law or rulings on similar issues and external advice received.

Note 22: Credit risk

Note 22 contains information about the Group's exposure to credit risk, including a sensitivity analysis. The Group establishes a loss allowance for its estimate of expected credit losses against receivables.

1. SIGNIFICANT ACCOUNTING POLICIES, ESTIMATES AND JUDGEMENTS *continued*

GOING CONCERN

The Group's business activities, together with the factors likely to affect its future development, performance and position are set out in the Strategic Report on pages 2 to 57. The financial position of the Group, its cash flows, liquidity position and borrowing facilities, are described earlier in this Financial Review. In addition, note 22 to the consolidated financial statements, includes the Group's policies and processes for managing financial risk, details of its financial instruments and hedging activities and details of its exposures to credit risk and liquidity risk.

The Group meets its day-to-day working capital requirements through local banking arrangements underpinned by the Group's £200 million unsecured multi-currency revolving credit facility, which matures in September 2024. As at 31 December 2021 the Group had significant headroom on its covenants and available liquidity with the Group's £200 million multi-currency revolving credit facility being undrawn. Total committed borrowing facilities were £372.6 million, none of which is due to mature in the following 12 months. The amount drawn under these facilities was £172.6 million, which together with cash and cash equivalents of £127.3 million, gave a total headroom of £327.3 million.

The principal borrowing facilities are subject to covenants that are measured biannually in June and December, being net debt to EBITDA of a maximum of 3x and interest cover of a minimum of 4x, based on measures defined in the facilities agreements which are adjusted from the equivalent IFRS amounts.

The Group has carefully modelled its cash flow outlook, taking account of reasonably possible changes in trading performance, exchange rates and plausible downside scenarios. This review indicated that there was sufficient headroom and liquidity for the business to continue for the 18-month period based on the facilities available as discussed in note 22 to the financial statements. The Group was also expected to be in compliance with the required covenants discussed above.

The Board has also reviewed the Group's reverse stress testing performed to demonstrate how much headroom is available on covenant levels in respect of changes in net debt, EBITDA, and underlying revenue. Based on this assessment, a combined reduction in EBITDA of 80% and an increase in net debt of 80% would still allow the Group to operate within its financial covenants. The Directors do not consider either of these scenarios to be plausible given the diversity of the Group's end-markets and its broad manufacturing base.

The Board and Executive Committee have regular reporting and review processes in place in order to closely monitor the ongoing operational and financial performance of the Group. As part of the ongoing risk management process, principal and emerging risks are identified and reviewed on a regular basis. This process includes the ongoing review of the impact of the pandemic on the Group and its stakeholders. Potential uncertainties in demand remain across the countries that the Group operates in as a result of COVID-19, despite these uncertainties the Group saw a robust recovery in most of its end-markets, leading to a return to growth for the 2021 financial year. In addition, the Directors have assessed the risk of climate change and do not consider that it will impact the Group's ability to operate as a going concern for the period under consideration.

The Board fully recognises the challenges that lie ahead but, after making enquiries, and in the absence of any material uncertainties, the Directors have a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for a period of 18 months from the date of signing this Annual Report and Accounts. Accordingly, they continue to adopt the going concern basis in preparing the Annual Report and Accounts.

NON-GAAP MEASURES

Where non-GAAP measures have been referenced these have been identified by an asterisk (*) where they appear in text, and by a footnote where they appear in tables in this Report. Further details can be found on pages 55 to 57, 'Alternative Performance Measures'.

NEWLY ADOPTED STANDARDS

There were no new standards applicable to the Group in the year.

ACCOUNTING DEVELOPMENTS AND CHANGES

New accounting standards in issue but not yet effective

New standards and interpretations that are in issue but not yet effective are listed below:

- IFRS 17 (including the June 2020 Amendments to IFRS 17) – Insurance Contracts;
- Amendments to IFRS 10 and IAS 28 – Sale or Contribution of Assets between an Investor and its Associate of Joint Venture;
- Amendments to IAS 1 – Classification of Liabilities as Current or Non-current;
- Amendments to IFRS 3 – Reference to the Conceptual Framework;
- Amendments to IAS 16 – Property, Plant and Equipment – Proceeds before Intended Use;
- Amendments to IAS 37 – Onerous Contracts – Cost of Fulfilling a Contract;
- Annual Improvements to IFRS Standards 2018-2020 Cycle – Amendments to IFRS First Time Adoption of International Financial Reporting Standards, IFRS 9 Financial Instruments, IFRS 16 Leases, and IAS 41 Agriculture;
- Amendments to IAS 1 and IFRS Practice Statement 2 – Disclosure of Accounting Policies;
- Amendments to IAS 8 – Definition of Accounting Estimates;
- Amendments to IAS 12 – Deferred Tax related to Assets and Liabilities arising from a Single Transaction.

The adoption of the above standards and interpretations is not expected to lead to any material changes to the Group's accounting policies or have any other material impact on the financial position or performance of the Group.

There are no other upcoming accounting standards or amendments that are applicable to the Group.

2. ACQUISITIONS AND DISPOSALS

2021

Disposal of Latrobe

On 15 January 2021, the Group completed the sale of assets associated with the Technical Ceramics business, based in Latrobe, US. The transaction was structured as a sale of the business and related assets for total consideration of £0.6 million. The disposal resulted in a loss of £0.1 million which was recognised in specific adjusting items within the consolidated income statement, see also note 6.

The loss on disposal is as follows:

	31 December 2021 £m
Trading net assets of disposal group	0.6
Goodwill of disposal group	0.1
Cumulative foreign exchange gains and losses recycled on disposal	(0.1)
Total net assets	**0.6**
Consideration	0.6
Transaction costs associated with the disposal	(0.1)
Loss on disposal	**(0.1)**

In 2021, Latrobe generated an operating profit of £nil on revenues of £0.1 million in the period prior to the disposal (year ended 31 December 2020, £0.2 million on revenues of £3.0 million).

The disposal group was included in the Technical Ceramics operating segment.

Disposal of Jemmtec

On 28 April 2021, the Group completed the sale of its investment in associate, Jemmtec Limited (Jemmtec). The Group's share of the total consideration was £14.2 million, comprising £12.2 million of initial consideration, on a cash-free, debt-free basis, a further consideration of £0.2 million for working capital adjustments and £1.8 million of contingent consideration that has been received in full in 2021. The disposal resulted in a gain of £7.2 million which was recognised in specific adjusting items within the consolidated income statement, see also note 6.

The gain on disposal is as follows:

	31 December 2021 £m
Investment carrying value	7.0
Total consideration	14.2
Gain on disposal	**7.2**

In 2021, the Group's share of profit in associate (net of income tax) was £0.4 million in the period prior to the disposal (year ended 31 December 2020: £0.6 million), see also note 14.

2. ACQUISITIONS AND DISPOSALS *continued*

Acquisition of Delamag

On 1 March 2021, Morgan Technical Ceramics Limited wholly purchased the business and assets of the 'Delamag' business of sourcing raw materials for the processing and manufacture of magnesium oxide from Delamin Limited. The acquisition comprised primarily all rights to the 'Delamag' business name, technical knowledge, intellectual property and business contracts.

The assets acquired and the consideration is as follows:

	31 December 2021 £m
Identifiable intangible assets acquired	1.8
Goodwill	0.1
Total consideration	**1.9**

The intangible assets recognised represent the initial measurement of assets acquired based on information available at acquisition. Assets acquired may be remeasured as further information is obtained during the measurement period, which is up to 12 months from the date of acquisition.

The acquisition was a vertical integration and preserves existing income, as such the incremental profit from acquisition is immaterial in the year. The Delamag acquisition forms part of the Seals and Bearings operating segment.

2020

Disposal of Diamonex

On 31 August 2020, the Group completed the sale of its Diamonex business, based in Allentown, US. The transaction was structured as a sale of the business and related assets for total consideration of £5.9 million. The consideration comprised £5.6 million paid in cash on completion and £0.3 million of deferred consideration received in December 2021.

The disposal resulted in a gain of £2.2 million which was recognised in specific adjusting items within the consolidated income statement, see also note 6. The gain on disposal was as follows:

	31 December 2020 £m
Trading net assets of disposal group	2.2
Goodwill of disposal group	0.9
Cumulative foreign exchange gains and losses recycled on disposal	0.3
Total net assets	**3.4**
Consideration	5.9
Transaction costs associated with the disposal	(0.3)
Gain on disposal	**2.2**

In 2020, Diamonex generated an operating profit of £0.5 million on revenues of £4.3 million in the period prior to the disposal.

The disposal group was included in the Technical Ceramics operating segment.

3. SEGMENT REPORTING

For 2020 and 2021, the Group reported as two divisions and five global business units, which have been identified as the Group's reportable operating segments, as detailed on pages 14, 44 to 49. These have been identified on the basis of internal management reporting information that is regularly reviewed by the Group's Board of Directors (the Chief Operating Decision Maker) in order to allocate resources and assess performance. From 2022 onwards, we will no longer present divisional totals in our segmental reporting. We will continue to report five separate global business units.

Segment results, assets and liabilities include items directly attributable to a segment as well as those that can be allocated on a reasonable basis. Unallocated items comprise mainly investments and related income, borrowings and related expenses, corporate assets and head office expenses, and income tax assets and liabilities.

The information presented below represents the operating segments of the Group.

	Thermal Ceramics		Molten Metal Systems		Thermal Products division		Electrical Carbon		Seals and Bearings	
Continuing operations	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m
Revenue from external customers	364.7	344.3	47.7	41.2	412.4	385.5	164.9	151.4	135.9	146.4
Segment adjusted operating profit[1]	42.0	26.7	6.3	3.2	48.3	29.9	32.8	23.6	22.9	27.5
Corporate costs										
Group adjusted operating profit[1]										
Amortisation of intangible assets	(2.1)	(1.9)	(0.6)	(0.3)	(2.7)	(2.2)	(0.9)	(0.7)	(0.9)	(0.4)
Operating profit/(loss) before specific adjusting items	39.9	24.8	5.7	2.9	45.6	27.7	31.9	22.9	22.0	27.1
Specific adjusting items included in operating profit/(loss)[2]	(2.1)	(39.4)	0.3	(0.9)	(1.8)	(40.3)	(6.3)	(3.7)	–	(0.6)
Operating profit/(loss)	37.8	(14.6)	6.0	2.0	43.8	(12.6)	25.6	19.2	22.0	26.5
Finance income										
Finance expense										
Share of profit of associate (net of income tax)										
Profit/(loss) before taxation										
Segment assets	319.9	315.7	41.8	39.5	361.7	355.2	137.6	141.5	107.5	98.7
Segment liabilities	88.9	84.8	8.4	7.4	97.3	92.2	30.6	31.1	23.6	19.9
Segment capital expenditure	8.0	7.2	2.2	2.9	10.2	10.1	5.9	4.8	7.6	7.7
Segment depreciation – property, plant and equipment	10.2	12.5	2.0	2.3	12.2	14.8	5.5	5.4	6.4	5.7
Segment depreciation – right-of-use assets	3.5	4.1	0.3	0.4	3.8	4.5	1.1	1.2	0.6	0.7
Segment impairment of non-financial assets	0.7	35.7	–	–	0.7	35.7	5.7	0.1	–	–

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.
2. Details of specific adjusting items from continuing operations are given in note 6 to the consolidated financial statements.

3. SEGMENT REPORTING *continued*

	Technical Ceramics		Carbon and Technical Ceramics division		Segment totals		Corporate costs		Group	
Continuing operations	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m
Revenue from external customers	237.3	227.4	538.1	525.2	950.5	910.7	–	–	950.5	910.7
Segment adjusted operating profit[1]	26.4	14.8	82.1	65.9	130.4	95.8	–	–	130.4	95.8
Corporate costs							(5.9)	(4.1)	(5.9)	(4.1)
Group adjusted operating profit[1]									124.5	91.7
Amortisation of intangible assets	(1.5)	(2.8)	(3.3)	(3.9)	(6.0)	(6.1)	–	–	(6.0)	(6.1)
Operating profit/(loss) before specific adjusting items	24.9	12.0	78.8	62.0	124.4	89.7	(5.9)	(4.1)	118.5	85.6
Specific adjusting items included in operating profit[2]	(6.0)	(42.3)	(12.3)	(46.6)	(14.1)	(86.9)	8.7	(0.5)	(5.4)	(87.4)
Operating profit/(loss)	18.9	(30.3)	66.5	15.4	110.3	2.8	2.8	(4.6)	113.1	(1.8)
Finance income									0.8	0.9
Finance expense									(10.0)	(12.8)
Share of profit of associate (net of income tax)									0.4	0.6
Profit/(loss) before taxation									104.3	(13.1)
Segment assets	156.5	158.3	401.6	398.5	763.3	753.7	149.2	176.8	912.5	930.5
Segment liabilities	73.9	72.6	128.1	123.6	225.4	215.8	337.5	474.7	562.9	690.5
Segment capital expenditure	7.9	7.4	21.4	19.9	31.6	30.0	–	–	31.6	30.0
Segment depreciation – property, plant and equipment	6.0	6.8	17.9	17.9	30.1	32.7	–	–	30.1	32.7
Segment depreciation – right-of-use assets	2.4	2.8	4.1	4.7	7.9	9.2	–	–	7.9	9.2
Segment impairment of non-financial assets	6.0	29.8	11.7	29.9	12.4	65.6	–	–	12.4	65.6

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.
2. Details of specific adjusting items from continuing operations are given in note 6 to the consolidated financial statements.

3. SEGMENT REPORTING *continued*

REVENUE FROM EXTERNAL CUSTOMERS AND NON-CURRENT ASSETS BY GEOGRAPHY

	Revenue from external customers		Non-current assets (excluding tax and financial instruments)	
Continuing operations	**2021 £m**	2020 £m	**2021 £m**	2020 £m
US	**336.4**	359.8	**181.3**	182.3
China	**114.4**	97.1	**29.1**	40.9
Germany	**68.7**	59.3	**34.4**	36.1
UK (the Group's country of domicile)	**38.5**	37.5	**101.6**	120.0
Other Asia, Australasia, Middle East and Africa	**174.6**	164.6	**61.4**	71.2
Other Europe	**157.4**	142.3	**36.3**	40.3
Other North America	**33.4**	32.9	**6.1**	6.2
South America	**27.1**	17.2	**15.8**	2.7
	950.5	910.7	**466.0**	499.7

Revenue from external customers is based on geographic location of the end-customer. Segment assets are based on geographical location of the assets. No customer represents more than 5% of revenue.

REVENUE FROM EXTERNAL CUSTOMERS BY END MARKET

Continuing operations	**2021 £m**	2020[1] £m
Industrial	**431.0**	384.7
Transportation[2]	**160.4**	157.0
Chemical and petrochemical	**98.7**	103.7
Semiconductor and electronics	**63.8**	57.8
Energy[3]	**66.0**	52.8
Security and defence	**60.5**	90.1
Healthcare	**70.1**	64.6
	950.5	910.7

1. Revenue from external customers by end market for the year ended December 2020 has been re-presented to better reflect the end-markets of our customers.
2. Included within Transportation is £18.7 million relating to clean transportation.
3. Included within Energy is £35.6 million relating to clean energy.

INTERCOMPANY SALES TO OTHER SEGMENTS

	Thermal Ceramics		Molten Metal Systems		**Thermal Products division**		Electrical Carbon		Seals and Bearings		Technical Ceramics		**Carbon and Technical Ceramics division**	
	2021 £m	2020 £m	**2021 £m**	2020 £m	**2021 £m**	2020 £m	**2021 £m**	2020 £m	**2021 £m**	2020 £m	**2021 £m**	2020 £m	**2021 £m**	2020 £m
Intercompany sales to other segments	**0.8**	0.9	**0.1**	0.1	**0.9**	1.0	**0.2**	0.3	**1.0**	0.8	**0.5**	1.0	**1.7**	2.1

4. OPERATING COSTS BEFORE SPECIFIC ADJUSTING ITEMS

Continuing operations	Note	**2021 £m**	2020 £m
Change in stocks of finished goods and work in progress		**(3.1)**	9.0
Raw materials and consumables		**255.9**	236.2
Other operating costs		**141.5**	127.0
		394.3	372.2
Employee costs:			
Wages and salaries		**259.6**	264.2
Equity-settled share-based payment expense	24	**4.5**	0.7
Social security costs and other benefits		**54.4**	54.2
Pension costs	23	**15.1**	15.4
		333.6	334.5
Depreciation – property, plant and equipment	11	**30.1**	32.7
Depreciation – right-of-use assets	12	**7.9**	9.2
		38.0	41.9
Short-term leases and leasing of low value assets:			
Plant and equipment		**–**	0.1
Other leases		**0.3**	0.4
		0.3	0.5
Other operating charges and income:			
Net foreign exchange gains		**(0.1)**	(0.1)
Net other operating charges		**59.9**	70.0
		59.8	69.9
Total operating costs before specific adjusting items and amortisation of intangible assets		**826.0**	819.0
Amortisation of intangible assets	13	**6.0**	6.1
Total operating costs before specific adjusting items		**832.0**	825.1

The following costs are included in total operating costs before specific adjusting items in the table above:

1. Research and development
The Group recognised £28.5 million in expense in respect of research and development (2020: £28.0 million). These costs are included in employee costs and other operating costs in the above table. There are no individually material project costs.

2. Audit and non-audit fees
A summary of the audit and non-audit fees in respect of services provided by the auditor charged to operating profit in the year ended 31 December 2021 is set out below.

	2021 £m	2020 £m
Fees payable to the Company's auditor for the audit of the Company's annual accounts:		
in respect of the current year	**0.7**	0.7
in respect of the prior year	**0.1**	–
Fees payable to the Company's auditor and its associates for other services:		
the auditing of accounts of any subsidiaries of the Company	**1.9**	1.9
audit-related services	**0.1**	0.1
	2.8	2.7

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

5. STAFF NUMBERS

The average number of persons employed by the Group (including Directors) during the year, analysed by reporting segment, was as follows:

	Number of employees 2021	2020
Reportable operating segments		
Thermal Ceramics	2,410	2,540
Molten Metal Systems	420	430
Thermal Products division	2,830	2,970
Electrical Carbon	1,340	1,450
Seals and Bearings	1,270	1,270
Technical Ceramics	2,130	2,270
Carbon and Technical Ceramics division	4,740	4,990
Segment total	7,570	7,960
Corporate (UK and North America)	50	50
Group	7,620	8,010

Average employee numbers have been rounded to the nearest 10.

6. SPECIFIC ADJUSTING ITEMS

Continuing operations	Note	31 December 2021 £m	31 December 2020 £m
Specific adjusting items:			
Impairment of non-financial assets		(12.4)	(65.6)
Restructuring credit/(cost)		0.1	(24.0)
Net profit on disposal of business	2	7.1	2.2
Business closure and exit costs		(0.2)	–
Total specific adjusting items before income tax		(5.4)	(87.4)
Income tax credit from specific adjusting items		1.5	13.3
Total specific adjusting items after income tax		(3.9)	(74.1)

Specific adjusting items in relation to discontinued operations are disclosed in note 9.

2021

Impairment of non-financial assets

Technical Ceramics, Asia

An impairment charge of £6.0 million has been recognised after reassessing the value in use of property, plant and equipment in a business in Asia which is taking longer than anticipated to generate revenues. This represents a partial impairment of the assets; the carrying value of the assets following this impairment is £5.4 million. The calculation of value in use was performed in December 2021. A long-term growth rate of 1% was used for years beyond the forecast period and in calculating the terminal value. A pre-tax discount rate of 11.5% was used to determine the value in use.

Electrical Carbon, Europe and North America

Impairment charges of £4.8 million and £1.0 million have been recognised after assessing the viability of two development assets in the Europe and North America, respectively. The European asset was not deemed viable as we were unable to commission it safely and the American asset was not deemed to be commercially viable.

Thermal Ceramics, North America

An impairment charge of £0.6 million has been recognised relating to assets associated with closed manufacturing lines within Thermal Ceramics.

Impairment charges of £70.5 million for non-financial assets which the business continues to use have been recorded during the current and previous year (Technical Ceramics, Asia £6.0 million, Technical Ceramics, ceramic cores £28.8 million and Thermal Ceramics £35.7 million). The impaired amounts could be reversed if the related businesses were to outperform significantly against their budget.

6. SPECIFIC ADJUSTING ITEMS *continued*

Restructuring costs

A net credit of £0.1 million has been recognised in the current year representing £2.1 million of further redundancy and closure costs related to the Group's restructuring programme, offset by a £2.2 million release of restructuring provisions booked last year in relation to this programme. Whilst the Group's restructuring programme was completed in 2021, we retain restructuring provision of £11.8 million for the Group's obligations at the balance sheet date (2020: £17.3 million). This provision includes remaining lease exit costs and multi-employer pension obligations for two sites which have been closed during the year. The cash outflows relating to the pension obligations may continue for up to 20 years, subject to any settlement being reached in advance of that date. Refer to note 25 for further information.

Net profit on disposal of business

The Group disposed of its 35% shareholding in Jemmtec Limited and the business assets associated with the Latrobe business during the year. These disposals generated a profit of £7.2 million and a loss of £0.1 million, respectively. Refer to note 2 for further information.

Business closure and exit costs

A £0.2 million charge relating to the liquidation of businesses in Europe and Asia.

2020

Impairment of non-financial assets

Technical Ceramics, ceramic cores

The significant downturn in aerospace demand in 2020 resulted in impairment losses of £28.8 million relating to the ceramic cores business. The impaired assets comprised intangible assets which had been recognised upon the acquisition of the Carpenter business in 2008, and property, plant and equipment.

Technical Ceramics, China

On 15 June 2020 the Group announced the closure of its Suzhou manufacturing facility in China and recognised £1.1 million relating to the impairment of property, plant and equipment.

Thermal Ceramics

Reduced demand in the aerospace, automotive and industrial market segments resulted in impairment losses of £35.7 million in Thermal Ceramics, which related to the closure of sites and under-utilised product lines, as well as the impairment of intangible assets recognised upon the acquisition of Porextherm in Germany in 2014.

Restructuring costs

Following the announcement of the Group's restructuring programme in 2020 the Group recognised a £24.0 million charge which related to staff redundancies, site closure costs, legal and professional fees and the exit of certain multi-employer defined contribution pension plans.

Profit on disposal of business

On 31 August 2020, the Group completed the sale of its Diamonex business, based in Allentown, US. The transaction was structured as a sale of the business and related assets. Consideration of £5.9 million was recognised, which comprised £5.6 million cash paid on completion and £0.3 million of deferred consideration which was paid in 2021. A gain of £2.2 million was realised on disposal – see note 2 for more details.

7. FINANCE INCOME AND EXPENSE

Continuing operations	2021 £m	2020 £m
Recognised in profit or loss		
Interest on bank balances and cash deposits	0.8	0.9
Finance income	0.8	0.9
Interest expense on borrowings and overdrafts	(6.1)	(7.4)
Interest expense on lease liabilities	(2.3)	(2.8)
Net interest on IAS 19 defined benefit pension obligations	(1.6)	(2.6)
Finance expense	(10.0)	(12.8)
Net financing costs recognised in profit or loss	(9.2)	(11.9)

No finance income or expense related to discontinued operations in either the current or preceding year.

8. TAXATION – INCOME TAX EXPENSE

Continuing operations	2021 £m	2020 £m
Recognised in profit or loss		
Current tax		
Current year	30.7	21.0
Adjustments for prior years	0.4	(1.3)
	31.1	19.7
Deferred tax		
Current year	(2.3)	(12.5)
Adjustments for prior years	(0.6)	(0.3)
	(2.9)	(12.8)
Total income tax expense recognised in profit or loss	28.2	6.9
Recognised in other comprehensive income		
Tax effect on components of other comprehensive income:		
Deferred tax associated with defined benefit schemes and share schemes	0.6	(0.4)
Deferred tax associated with foreign exchange differences	0.8	–
Total tax recognised in other comprehensive income	1.4	(0.4)

RECONCILIATION OF EFFECTIVE TAX RATE

	2021 £m	2021 %	2020 £m	2020 %
Profit/(loss) before tax	104.3		(13.1)	
Income tax charge/(credit) using the domestic corporation tax rate	19.8	19.0	(2.5)	19.0
Effect of different tax rates in other jurisdictions	5.8	5.5	(0.8)	6.1
Local taxes including withholding tax suffered	2.6	2.5	2.0	(15.2)
Permanent differences	0.4	0.4	10.2	(77.9)
Movements related to unrecognised temporary differences	(0.2)	(0.2)	(0.4)	3.1
Adjustments in respect of prior years	(0.2)	(0.2)	(1.6)	12.2
Statutory effective rate of tax	28.2	27.0	6.9	(52.7)

The effective rate of tax before specific adjusting items is 27.1% (2020: 27.2%).

The Group operates in many jurisdictions around the world and is subject to factors that may impact future tax charges including the recently enacted US tax reform, implementation of the OECD's BEPS actions, tax rate and legislation changes, expiry of the statute of limitations and resolution of tax audits and disputes.

9. DISCONTINUED OPERATIONS

The Group disposed of its Composites and Defence Systems business on 20 November 2018. The business represented a separate reportable segment and therefore, in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations, the disposal group was classified as discontinued.

The results from discontinued operations, which have been disclosed in the consolidated income statement, are set out below:

		31 December 2021			31 December 2020		
	Note	Results before specific adjusting items £m	Specific adjusting items £m	Total £m	Results before specific adjusting items £m	Specific adjusting items £m	Total £m
Revenue		–	3.3	3.3	–	–	–
Operating income		–	2.4	2.4	–	2.0	2.0
Profit before taxation		–	5.7	5.7	–	2.0	2.0
Income tax expense		–	–	–	–	–	–
Profit from discontinued operations		–	5.7	5.7	–	2.0	2.0
Basic earnings per share from discontinued operations	10			2.0p			0.7p
Diluted earnings per share from discontinued operations	10			2.0p			0.7p

In 2021, £3.3 million of the specific adjusting items balance relate to the full and final settlement of certain long-term contracts. A further £2.4 million relates to the reassessment of certain provisions associated with the disposal of the Composites and Defence Systems business.

In 2020, specific adjusting items related to the reassessment of certain provisions associated with the disposal.

There is no income tax expense in relation to the discontinued operations in either the current or preceding year.

Cash flows from discontinued operations are set out below:

	31 December 2021 £m	31 December 2020 £m
Net cash generated/(used) in operating activities	3.3	(0.1)
Net cash generated from investing activities	2.0	–
Net cash used in financing activities	–	–
	5.3	(0.1)

10. EARNINGS PER SHARE

	31 December 2021			31 December 2020		
	Earnings £m	Basic earnings per share pence	Diluted earnings per share pence	Earnings £m	Basic earnings per share pence	Diluted earnings per share pence
Profit/(loss) for the year attributable to shareholders of the Company	73.8	25.9p	25.7p	(22.5)	(7.9)p	(7.9)p
Profit from discontinued operations	(5.7)	(2.0)p	(2.0)p	(2.0)	(0.7)p	(0.7)p
Profit/loss from continuing operations	68.1	23.9p	23.7p	(24.5)	(8.6)p	(8.6)p
Specific adjusting items	5.4	1.9p	1.9p	87.4	30.7p	30.5p
Amortisation of intangible assets	6.0	2.1p	2.1p	6.1	2.1p	2.1p
Tax effect of the above	(1.5)	(0.5)p	(0.5)p	(13.3)	(4.7)p	(4.6)p
Non-controlling interests' share of the above adjustments	(0.5)	(0.2)p	(0.2)p	(1.5)	(0.5)p	(0.5)p
Adjusted profit for the year from continuing operations as used in adjusted earnings per share[1]	77.5	27.2p	27.0p	54.2	19.0p	18.9p

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

Number of shares (millions)	2021	2020
Weighted average number of Ordinary shares for the purposes of basic earnings per share[1]	284.6	284.7
Effect of dilutive potential Ordinary shares:		
Share options	2.4	1.4
Weighted average number of Ordinary shares for the purposes of diluted earnings per share	287.0	286.1

1. The calculation of the weighted average number of shares excludes the shares held by The Morgan General Employee Benefit Trust, on which the dividends are waived.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

11. PROPERTY, PLANT AND EQUIPMENT

	Note	Land and buildings £m	Plant, equipment and fixtures £m	Total £m
Cost				
Balance at 1 January 2020		215.4	686.0	901.4
Additions		0.9	22.1	23.0
Disposals		(1.5)	(18.6)	(20.1)
Sale of business	2	–	(6.5)	(6.5)
Transfers between categories		0.3	(0.3)	–
Transfer to intangible assets		–	(1.5)	(1.5)
Effect of movement in foreign exchange		0.1	(3.0)	(2.9)
Balance at 31 December 2020		215.2	678.2	893.4
Balance at 1 January 2021		**215.2**	**678.2**	**893.4**
Additions		**2.6**	**27.9**	**30.5**
Disposals		**(16.7)**	**(21.1)**	**(37.8)**
Sale of business	2	**(0.8)**	**(3.5)**	**(4.3)**
Transfers between categories		**1.2**	**(1.2)**	**–**
Effect of movement in foreign exchange		**(1.7)**	**(3.1)**	**(4.8)**
Balance at 31 December 2021		**199.8**	**677.2**	**877.0**
Depreciation and impairment losses				
Balance at 1 January 2020		95.7	488.5	584.2
Depreciation charge for the year		5.3	27.4	32.7
Impairment losses	6	10.1	26.9	37.0
Disposals		(0.8)	(18.3)	(19.1)
Sale of business	2	–	(5.1)	(5.1)
Transfers between categories		(0.3)	0.3	–
Effect of movement in foreign exchange		(0.3)	(3.6)	(3.9)
Balance at 31 December 2020		109.7	516.1	625.8
Balance at 1 January 2021		**109.7**	**516.1**	**625.8**
Depreciation charge for the year		**5.3**	**24.8**	**30.1**
Impairment losses	6	**–**	**12.3**	**12.3**
Disposals		**(11.6)**	**(20.1)**	**(31.7)**
Sale of business	2	**(0.6)**	**(3.5)**	**(4.1)**
Transfers between categories		**0.3**	**(0.3)**	**–**
Effect of movement in foreign exchange		**(0.1)**	**(3.4)**	**(3.5)**
Balance at 31 December 2021		**103.0**	**525.9**	**628.9**
Carrying amounts				
At 1 January 2020		119.7	197.5	317.2
At 31 December 2020		105.5	162.1	267.6
At 31 December 2021		**96.8**	**151.3**	**248.1**

In 2021, no assets were pledged as security for liabilities (2020: none). Profit on sale of property, plant and equipment presented in the cash flow includes £nil (2020: £1.2 million) of insurance proceeds for replacement of assets.

12. LEASES

The reconciliation in the movement of the Group's right-of-use assets is set out in the table below:

	Note	Land and buildings £m	Plant and equipment £m	Total £m
Balance at 1 January 2020		40.0	9.1	49.1
Additions		1.8	2.0	3.8
Remeasurements		(2.0)	(0.8)	(2.8)
Depreciation charge for the year		(5.5)	(3.7)	(9.2)
Impairment losses		(5.0)	(0.3)	(5.3)
Effect of movement in foreign exchange		(0.1)	–	(0.1)
Balance at 31 December 2020		29.2	6.3	35.5
Balance at 1 January 2021		**29.2**	**6.3**	**35.5**
Additions		**2.7**	**1.5**	**4.2**
Remeasurements		**0.6**	**0.1**	**0.7**
Depreciation charge for the year		**(4.7)**	**(3.2)**	**(7.9)**
Effect of movement in foreign exchange		**(0.3)**	**(0.3)**	**(0.6)**
Balance at 31 December 2021		**27.5**	**4.4**	**31.9**

The weighted average lease term is 12.2 years for land and buildings and 3.5 years for plant and equipment (2020: 13.2 years and 3.7 years respectively). The maturity analysis of lease liabilities is presented in note 22.

Amounts recognised in the consolidated income statement in respect of leasing arrangements are set out in the table below:

	2021 £m	2020 £m
Depreciation expense on right-of-use assets	**(7.9)**	(9.2)
Interest expense on lease liabilities	**(2.3)**	(2.8)
Expense relating to short-term leases and leasing of low value assets	**(0.3)**	(0.5)
Income from leasing owned assets	**0.2**	0.3
	(10.3)	(12.2)

The total cash flows from leasing activities in the year ended 31 December 2021 was £11.0 million (2020: £12.9 million) as set out in the table below:

	2021 £m	2020 £m
Payment of lease liabilities	**(8.6)**	(9.9)
Interest expense on lease liabilities	**(2.3)**	(2.8)
Expense relating to short-term leases and leasing of low value assets	**(0.3)**	(0.5)
Income from leasing owned assets	**0.2**	0.3
	(11.0)	(12.9)

At 31 December 2021, the Group is committed to future payments of £0.6 million (2020: £0.3 million) for short-term leases and leasing of low value assets.

At 31 December 2021, the Group had entered into leases which had not yet commenced with future cash flows totalling £0.2 million (2020: £0.3 million).

The total of future minimum lease income under non-cancellable leases, where the Group is a lessor is £nil (2020: £0.3 million).

13. INTANGIBLE ASSETS

	Note	Goodwill £m	Customer relationships £m	Technology and trademarks £m	Capitalised development costs £m	Computer software £m	Total £m
Cost							
Balance at 1 January 2020		175.1	57.7	3.4	0.8	31.7	268.7
Additions (externally purchased)		–	–	–	–	7.0	7.0
Disposals		(0.9)	–	–	–	(5.2)	(6.1)
Transfers from property, plant & equipment		–	–	–	–	1.5	1.5
Effect of movement in foreign exchange		(1.0)	(1.5)	0.2	(0.1)	(0.5)	(2.9)
Balance at 31 December 2020		173.2	56.2	3.6	0.7	34.5	268.2
Balance at 1 January 2021		**173.2**	**56.2**	**3.6**	**0.7**	**34.5**	**268.2**
Acquisition of businesses		**0.1**	**1.1**	**0.7**	**–**	**–**	**1.9**
Additions (externally purchased)		**–**	**–**	**–**	**–**	**2.0**	**2.0**
Disposal of businesses		**(0.1)**	**–**	**–**	**–**	**–**	**(0.1)**
Disposals		**–**	**–**	**–**	**–**	**(1.9)**	**(1.9)**
Effect of movement in foreign exchange		**(0.3)**	**0.3**	**(0.2)**	**–**	**0.2**	**–**
Balance at 31 December 2021		**172.9**	**57.6**	**4.1**	**0.7**	**34.8**	**270.1**
Amortisation and impairment losses							
Balance at 1 January 2020		–	40.4	0.7	0.8	22.0	63.9
Amortisation charge for the year		–	2.5	0.1	–	3.5	6.1
Impairment losses	6	–	13.9	2.7	–	3.1	19.7
Disposals		–	–	–	–	(4.5)	(4.5)
Effects of movement in foreign exchange		–	(2.0)	0.1	(0.1)	(0.4)	(2.4)
Balance at 31 December 2020		–	54.8	3.6	0.7	23.7	82.8
Balance at 1 January 2021		**–**	**54.8**	**3.6**	**0.7**	**23.7**	**82.8**
Amortisation charge for the year		**–**	**1.0**	**0.1**	**–**	**4.9**	**6.0**
Disposals		**–**	**–**	**–**	**–**	**(1.9)**	**(1.9)**
Effects of movement in foreign exchange		**–**	**0.3**	**(0.2)**	**–**	**–**	**0.1**
Balance at 31 December 2021		**–**	**56.1**	**3.5**	**0.7**	**26.7**	**87.0**
Carrying amounts							
At 1 January 2020		175.1	17.3	2.7	–	9.7	204.8
At 31 December 2020		173.2	1.4	–	–	10.8	185.4
At 31 December 2021		**172.9**	**1.5**	**0.6**	**–**	**8.1**	**183.1**

IMPAIRMENT TEST FOR CASH-GENERATING UNITS OR GROUPS OF CASH-GENERATING UNITS CONTAINING GOODWILL

In accordance with the requirements of IAS 36 Impairment of Assets, goodwill is allocated to the Group's cash-generating units or groups of cash-generating units that are expected to benefit from the synergies of the business combination that gave rise to the goodwill. Goodwill impairment testing is performed at the operating segment level as defined by IFRS 8, as this is the lowest level at which goodwill is monitored.

13. INTANGIBLE ASSETS *continued*

Goodwill is attributed to each operating segment as follows:

	2021 £m	2020 £m
Thermal Ceramics	**84.5**	84.6
Molten Metal Systems	**9.0**	9.0
Electrical Carbon	**29.3**	29.3
Seals and Bearings	**14.9**	14.9
Technical Ceramics	**35.2**	35.4
	172.9	173.2

Each operating segment is assessed for impairment annually and whenever there is an indication of impairment.

The carrying value of goodwill has been assessed with reference to its value in use, reflecting the projected discounted cash flows of each operating segment to which goodwill has been allocated. The key assumptions used in determining value in use relate to growth rates and discount rates.

The cash flow projections in year one are based on the most recent Board approved budget. Cash flow projections for years two to five are based on the most recent Board approved strategic plan. The key assumptions that underpin these cash flow projections relate to sales and operating margins, which are based on past experience, taking into account the effect of known or likely changes in market or operating conditions. External data sources have been considered as to the strength and recovery of the Group's end-markets in building an expectation of the future cash flows of each operating segment.

A 1.0% growth rate has been used for years beyond 2026 and to calculate a terminal value. Management has assessed these growth rates, including the terminal growth rate as reasonable for each operating segment.

In 2021, the Group has used the following pre-tax discount rates for calculating the value in use of each of the operating segments: Thermal Ceramics: 13.2%, Molten Metal Systems: 12.9%, Electrical Carbon: 12.3%, Seals and Bearings: 11.2%, Technical Ceramics 11.1%.

The Directors have considered the following individual sensitivities and are confident that no impairment would arise for each of the Thermal Ceramics, Molten Metal Systems, Electrical Carbon, Seals and Bearings and Technical Ceramics cash-generating units in any one of the following three circumstances, which are considered reasonably possible changes:

→ If the pre-tax discount rate was increased to 15%;
→ If no growth was assumed for years two to five and in the calculation of terminal value;
→ If the cash flow projections of all businesses were reduced by 25%.

14. INVESTMENTS

	2021 £m	2020 £m
Non-current investments		
FVOCI – equity instrument	**–**	0.7
Investment in associates	**–**	6.5
	–	7.2

INVESTMENT IN ASSOCIATES

On 28 April 2021, the Group completed the sale of its investment in associate, as detailed in note 2. The Group's share of profit from its associate for the year was £0.4 million (2020: £0.6 million). The Group did not receive a dividend from its associate during the current or preceding year.

Details of the Group's material associate at the end of the reporting period are as follows:

Name of associate	Principal activity	Place of incorporation and principal place of business	Proportion of ownership interest/ voting rights held by the Group 2021	2020
Jemmtec Limited	Manufacture of fired refractory shapes	United Kingdom	–	35%

The above associate has been accounted for using the equity method in these consolidated financial statements.

14. INVESTMENTS *continued*

Summarised financial information in respect of the Group's material associate is set out below. The summarised financial information below has been prepared in accordance with IFRSs (adjusted by the Group for equity accounting purposes).

	Jemmtec Limited 2020 £m
Current assets	12.0
Non-current assets	15.5
Current liabilities	4.5
Non-current liabilities	4.9
Revenue	20.2
Profit from continuing operations	1.6

Reconciliation of the above summarised financial information to the carrying amount of the interest recognised in the Group's consolidated financial statements:

	Jemmtec Limited 2020 £m
Net assets of associate	18.1
Proportion of the Group's ownership interest in the associate	6.3
Goodwill	0.2
Carrying amount of the Group's interest in the associate	6.5

15. RECOGNISED DEFERRED TAX ASSETS AND LIABILITIES

Deferred tax assets and liabilities are attributable to the following:

	Assets 2021 £m	Assets 2020 £m	Liabilities 2021 £m	Liabilities 2020 £m	Net 2021 £m	Net 2020 £m
Property, plant and equipment	–	–	(12.3)	(13.1)	(12.3)	(13.1)
Right-of-use assets and lease liabilities	3.9	3.9	–	–	3.9	3.9
Intangible assets	–	–	(0.6)	(1.2)	(0.6)	(1.2)
Employee benefits	13.1	13.2	–	–	13.1	13.2
Provisions	10.8	11.4	–	–	10.8	11.4
Tax value of loss carried forward recognised	1.0	0.4	–	–	1.0	0.4
Other items	–	–	(1.2)	(0.7)	(1.2)	(0.7)
Offset	(12.9)	(14.5)	12.9	14.5	–	–
	15.9	14.4	(1.2)	(0.5)	14.7	13.9

UNRECOGNISED DEFERRED TAX ASSETS

Deferred tax assets have not been recognised in respect of the following items:

	2021 £m	2020 £m
UK pension deficit	51.8	119.9
Tax losses	110.9	98.7
Capital losses	39.9	40.3
Other deductible temporary differences	75.1	61.4
	277.7	320.3

Deferred tax assets have not been recognised in relation to these temporary differences due to uncertainty surrounding future utilisation. Based on current tax legislation the tax losses will not expire. Although the Group as a whole is profitable, the unrecognised losses relate to entities where it is not probable that there will be future taxable profits against which these losses can be utilised.

15. RECOGNISED DEFERRED TAX ASSETS AND LIABILITIES *continued*

MOVEMENTS IN TEMPORARY DIFFERENCES DURING THE YEAR

	31 December 2019 £m	Recognised in profit or loss £m	Recognised directly in equity £m	31 December 2020 £m	Recognised in profit or loss £m	Recognised directly in equity £m	31 December 2021 £m
Property, plant and equipment	(18.9)	5.8	–	(13.1)	0.8	–	(12.3)
Right-of-use assets and lease liabilities	3.2	0.7	–	3.9	–	–	3.9
Intangible assets	(4.5)	3.3	–	(1.2)	0.6	–	(0.6)
Employee benefits	13.4	(0.6)	0.4	13.2	0.5	(0.6)	13.1
Provisions	8.1	3.3	–	11.4	(0.6)	–	10.8
Tax value of loss carried forward recognised	1.3	(0.9)	–	0.4	0.6	–	1.0
Others	(1.5)	1.2	(0.4)	(0.7)	1.0	(1.5)	(1.2)
	1.1	12.8	–	13.9	2.9	(2.1)	14.7

Deferred income tax of £3.8 million (2020: £3.8 million) is provided on the potential unremitted earnings of overseas subsidiary undertakings.

16. INVENTORIES

	2021 £m	2020 £m
Raw materials and consumables	39.9	28.8
Work in progress	40.1	38.1
Finished goods	60.7	55.5
	140.7	122.4

The Group holds consignment inventory amounting to £25.2 million (2020: £24.0 million) which is not reflected in the balance sheet. The majority of this balance is for precious metals, which are held on consignment by a subsidiary and are invoiced only when the material is required.

In 2021 provisions of £3.7 million were made against inventories and recognised in operating costs (2020: £7.0 million).

17. TRADE AND OTHER RECEIVABLES

	2021 £m	2020 £m
Non-current		
Trade and non-trade receivables	2.9	4.0
Current		
Gross trade receivables	150.1	132.2
Expected credit losses	(10.9)	(7.8)
Net trade receivables	139.2	124.4
Contract assets	0.6	0.5
Other non-trade receivables and prepayments	21.6	18.7
	161.4	143.6

The Group's exposure to credit and currency risks related to trade and other receivables is disclosed in note 22.

Contract assets relate to the Group's right to consideration for project-based business which was completed but not billed at the end of the year.

18. CASH AND CASH EQUIVALENTS

	2021 £m	2020 £m
Bank balances	101.2	139.7
Cash deposits	26.1	8.1
Cash and cash equivalents	127.3	147.8

In 2021, the Group had restricted cash of £1.5 million (2020: £0.9 million) as a result of exchange controls in Argentina.

RECONCILIATION OF CASH AND CASH EQUIVALENTS TO NET DEBT*

	2021 £m	2020 £m
Opening borrowings and lease liabilities	(303.4)	(354.4)
Increase in borrowings	–	(7.9)
Reduction and repayment of borrowings	72.3	49.8
Payment of lease liabilities	8.6	9.9
Total changes from cash flows	80.9	51.8
New leases and lease remeasurement	(4.4)	(0.9)
Effect of movements in foreign exchange	3.1	0.1
Closing borrowings and lease liabilities	(223.8)	(303.4)
Cash and cash equivalents	127.3	147.8
Closing net debt[1]	(96.5)	(155.6)

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

The table below details changes in the Group's liabilities arising from financing activities, including both cash and non-cash changes.

	Borrowings £m	Lease liabilities £m	Total financing liabilities £m	Cash and cash equivalents £m	Movement in net debt[1] £m
At 1 January 2020	(290.1)	(64.3)	(354.4)	132.8	(221.6)
Cash inflow	–	–	–	28.9	28.9
Borrowings and lease liability cash flow	41.9	9.9	51.8	–	51.8
Net interest paid	–	–	–	(10.3)	(10.3)
Net cash inflow	41.9	9.9	51.8	18.6	70.4
Share purchases	–	–	–	(1.8)	(1.8)
New leases and lease remeasurement	–	(0.9)	(0.9)	–	(0.9)
Exchange and other movements	(0.6)	0.7	0.1	(1.8)	(1.7)
At 31 December 2020	(248.8)	(54.6)	(303.4)	147.8	(155.6)
At 1 January 2021	(248.8)	(54.6)	(303.4)	147.8	(155.6)
Cash outflow	–	–	–	(5.6)	(5.6)
Borrowings and lease liability cash flow	72.3	8.6	80.9	–	80.9
Net interest paid	–	–	–	(8.4)	(8.4)
Net cash inflow	72.3	8.6	80.9	(14.0)	66.9
Share purchases	–	–	–	(5.9)	(5.9)
New leases and lease remeasurement	–	(4.4)	(4.4)	–	(4.4)
Exchange and other movements	2.5	0.6	3.1	(0.6)	2.5
At 31 December 2021	(174.0)	(49.8)	(223.8)	127.3	(96.5)

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

19. TRADE AND OTHER PAYABLES

	2021 £m	2020 £m
Non-current		
Trade and non-trade payables	2.4	4.9
Current		
Trade payables due to associate	–	0.3
Other trade payables	61.8	62.0
Contract liabilities	12.2	10.0
Non-trade payables and accrued expenses	103.2	76.1
	177.2	148.4

The Directors consider that the carrying amount of trade payables approximates to their fair value.

Contract liabilities relate to payments received from customers for project-based business in advance of the performance obligation being satisfied. All of the £12.2 million of contract liabilities as at 31 December 2021, are expected to be recognised as revenue in 2022. Contract liabilities outstanding as at 31 December 2020 of £10.0 million were recognised as revenue in 2021.

Included in trade payables are amounts due where extended payment terms have been agreed with the supplier using a supplier financing facility. The total amount outstanding on such extended payment terms at 31 December 2021 was £0.2 million (2020: £nil).

20. CAPITAL AND RESERVES

TRANSLATION RESERVE
The translation reserve comprises all foreign exchange differences arising from the translation of the financial statements of foreign operations.

HEDGING RESERVE
The cash flow hedge reserve represents the cumulative amount of gains and losses on hedging instruments deemed effective in cash flow hedges. The cumulative deferred gain or loss on the hedging instrument is recognised in profit or loss only when the hedged transaction impacts the profit or loss, or is included directly in the initial cost or other carrying amount of the hedged non-financial items (basis adjustment).

	2021 £m	2020 £m
Balance at 1 January	0.4	0.8
(Loss)/gain arising on changes in fair value of hedging instruments during the period	(0.1)	0.4
Loss reclassified to profit or loss	(0.4)	(0.8)
Balance at 31 December	(0.1)	0.4

FAIR VALUE RESERVE
The fair value reserve includes the cumulative net change in the fair value of FVOCI investments until the investment is derecognised.

CAPITAL REDEMPTION RESERVE
The capital redemption reserve arose when the Company redeemed Preference shares wholly out of distributable profits.

RETAINED EARNINGS
The Company has acquired own shares to satisfy the requirements of the various share option incentive schemes. At 31 December 2021, 1,360,098 shares (2020: 841,880) were held by The Morgan General Employee Benefit Trust (the Trust) and are treated as a deduction from equity. No treasury shares were held by the Company (2020: none). All rights conferred by those shares are suspended until they are reissued.

A summary of the movements in own shares held by the Trust is set out in the table below:

	2021		2020	
	Shares	Cost £m	Shares	Cost £m
As at 1 January	841,880	2.1	1,245,133	3.3
New shares purchased	1,600,000	5.9	750,000	1.8
Exercise of share options	(1,081,782)	(3.0)	(1,153,253)	(3.0)
As at 31 December	1,360,098	5.0	841,880	2.1

Consideration received in respect of shares transferred to participants of employee share schemes was £0.3 million (2020: £0.4 million). The market value of shares held by the Trust at 31 December 2021 was £4.8 million (2020: £2.6 million).

20. CAPITAL AND RESERVES *continued*

DIVIDENDS

The following Ordinary dividends were declared and paid by the Company:

	Per share		Total	
	2021 pence	2020 pence	**2021 £m**	2020 £m
2020 interim	**–**	2.0	**–**	5.7
2020 final	**3.5**	–	**10.0**	–
2021 interim	**3.2**	–	**9.1**	–
	6.7	2.0	**19.1**	5.7

After 31 December 2021 the following dividends were proposed by the Directors for 2021. These dividends have not been provided for and there are no income tax consequences. The proposed 2021 final dividend is based upon the number of shares outstanding at the balance sheet date.

	£m
5.9 pence per qualifying Ordinary share	16.8
	16.8

CALLED-UP SHARE CAPITAL

	2021 £m	2020 £m
Equity share capital		
Fully paid: 285,369,988 (2020: 285,369,988) issued Ordinary shares of 25 pence each	**71.3**	71.3
	71.3	71.3

NUMBER OF ORDINARY SHARES IN ISSUE

	2021	2020
In issue at beginning and end of period	**285,369,988**	285,369,988

As at the date of this Report 285,369,988 Ordinary shares have been issued (2020: 285,369,988).

Details of options outstanding in respect of Ordinary shares are given in note 24.

Additionally the Company has authorised, issued and fully paid 437,281 (2020: 437,281) cumulative preference shares classified as borrowings totalling £0.4 million (2020: £0.4 million). The preference shares comprise 125,327 of 5.5% Cumulative First Preference shares of £1 each and 311,954 issued 5.0% Cumulative Second Preference shares of £1 each. The voting rights of these shares are set out below.

Dividends on the cumulative preference shares are presented within finance costs in the Group's consolidated income statement.

VOTING RIGHTS OF SHAREHOLDERS

Ordinary shares

The holders of Ordinary shares are entitled to receive dividends as declared from time to time and are entitled to one vote per share at meetings of the Company.

Preference shares

The 5.5% Cumulative First Preference shares of £1 each and the 5.0% Cumulative Second Preference shares of £1 each confer on the holders thereof the right to receive a cumulative preferential dividend at the rate of 5.5% and 5.0% respectively, calculated up to 30 June and 31 December in every year. The First and Second Cumulative Preference shares shall not entitle the holders thereof to attend or vote at any general meeting unless either:

(i) the meeting is convened to consider any resolutions for reducing the capital, or authorising any issue of debentures or debenture stock, or increasing the borrowing powers of the Board under the Articles of Association of the Company, or winding up, or sanctioning a sale of the undertaking, or altering the Articles in any manner affecting their respective interests, or any other resolutions directly altering their respective rights and privileges; or

(ii) at the date of the notice convening the general meeting the Preference dividend is upwards of one month in arrears from the payment date of any half-yearly instalment.

On a return of capital on a winding-up the assets of the Company available for distribution shall be applied:

First, in payment to the holders of the First Preference shares of the amounts paid up on such shares, together with interest at the rate of 5.5% pa.

Second, in payment to the holders of the Second Preference shares of the amounts paid up on such shares, together with interest at the rate of 5.0% pa.

Third, in repaying the capital paid up or credited as paid up on the Ordinary shares.

Fourth, any surplus shall be distributed rateably amongst the holders of the Ordinary shares in proportion to the nominal amount paid up on their respective holdings of shares in the Company.

21. BORROWINGS AND LEASE LIABILITIES

This note provides information about the contractual terms of the Group's borrowings and lease liabilities which are measured at amortised cost.

For more information about the Group's exposure to interest rate and foreign currency risk, see note 22.

BORROWING FACILITIES AND LIQUIDITY

All of the Group's borrowing facilities are arranged by Group Treasury with Morgan Advanced Materials plc as the principal obligor. In a few cases operating subsidiaries have external borrowings but these are supervised and controlled centrally. Group Treasury seeks to obtain certainty of access to funding in the amounts, diversity of maturities and diversity of counterparties as required to support the Group's medium-term financing requirements and to minimise the impact of poor credit market conditions.

	2021 £m	2020 £m
Non-current liabilities		
Senior Notes	**173.6**	177.1
Cumulative preference shares	**0.4**	0.4
Lease liabilities	**40.0**	43.1
	214.0	220.6
Current liabilities		
Bank and other borrowings	**–**	71.3
Lease liabilities	**9.8**	11.5
	9.8	82.8

In 2021, bank and other borrowings did not include any borrowings secured on the assets of the Group (2020: £nil).

As at 31 December 2021 the Group had available headroom under the bank syndication of £200.0 million (2020: £200.0 million).

22. FINANCIAL RISK MANAGEMENT

This note presents information about the Group's exposure to a variety of financial risks: credit risk, liquidity risk, market risk and foreign currency risk, and the Group's management of capital. Further quantitative disclosures are included throughout these consolidated financial statements.

FINANCIAL RISK MANAGEMENT AND TREASURY POLICY

Group Treasury works within a framework of policies and procedures approved by the Audit Committee. It acts as a service centre for Morgan Advanced Materials plc's businesses, not as a profit centre, and manages and controls risk in the treasury environment through the establishment of such procedures. Group Treasury seeks to align treasury goals, objectives and philosophy to those of the Group. It is responsible for all of the Group's funding, liquidity, cash management, interest rate risk, foreign exchange risk and other treasury business. As part of the policies and procedures, there is strict control over the use of financial instruments to hedge foreign currencies and interest rates. Speculative trading in derivatives and other financial instruments is not permitted.

CREDIT RISK

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations.

The Group is exposed to credit risk on financial instruments such as liquid assets, derivative assets and trade receivables.

The carrying amount of financial assets represents the maximum credit exposure. The maximum exposure to credit risk at the reporting date was:

	Carrying amount	
	2021 £m	2020 £m
FVOCI – equity instruments	**–**	0.7
Trade and other receivables	**139.2**	124.4
Cash and cash equivalents	**127.3**	147.8
Derivatives	**0.6**	1.0
	267.1	273.9

22. FINANCIAL RISK MANAGEMENT *continued*

FVOCI – EQUITY INSTRUMENTS

The Group limits its exposure to credit risk by only investing in liquid securities and only with counterparties that have a sound credit rating. Given these high credit ratings, management does not expect any counterparty to fail to meet its obligations.

TRADE AND OTHER RECEIVABLES

The Group's exposure to credit risk is influenced mainly by the individual characteristics of each customer. The demographics of the Group's customer base, including the default risk of the industries and countries in which customers operate, have less influence on credit risk.

Management has a credit policy in place and the exposure to credit risk is monitored on an ongoing basis. Credit evaluations are performed on all customers requiring credit over a certain amount. The Group does not require collateral in respect of financial assets.

The Group serves thousands of customers. Many of these have purchased the same product for several years and in some cases decades. Others have modified and enhanced designs or adopted the same components into new products, extending the lifecycle of the components that the Group supplies. The Group's level of customer retention is very high, particularly with its major accounts and, although the top 20 ranking will alter from year to year, many of the names remain consistent over time.

The Group establishes a provision that represents its estimate of expected credit losses in respect of trade and other receivables and investments. At the point the amount is considered irrecoverable it is written off against the financial asset directly.

The loss allowance for trade receivables by aging category is as follows:

	2021				2020			
	Expected credit loss rate £m	Gross trade receivables £m	Expected credit losses £m	Net trade receivables £m	Expected credit loss rate £m	Gross trade receivables £m	Expected credit losses £m	Net trade receivables £m
Not past due	0.3%	119.1	(0.4)	118.7	0.4%	109.1	(0.4)	108.7
Past due 0-30 days	–	14.8	–	14.8	1.8%	11.3	(0.2)	11.1
Past due 31-60 days	–	3.8	–	3.8	4.0%	2.5	(0.1)	2.4
Past due 61-90 days	7.1%	1.4	(0.1)	1.3	12.0%	2.5	(0.3)	2.2
Past due more than 90 days	94.5%	11.0	(10.4)	0.6	100.0%	6.8	(6.8)	–
		150.1	(10.9)	139.2		132.2	(7.8)	124.4

CASH, CASH EQUIVALENTS AND DERIVATIVES

Cash balances held by companies representing over 65% of the Group's revenue are managed centrally through a number of pooling arrangements. Credit risk is managed by investing in liquid assets and acquiring derivatives in a diversified way from high-credit-quality financial institutions. Counterparties are reviewed through the use of rating agencies, systemic risk considerations and through regular review of the financial press.

OFFSETTING FINANCIAL ASSETS AND LIABILITIES

The following table shows the amounts recognised for forward exchange contracts, which are subject to offsetting arrangements on a gross basis, and the amounts offset in the balance sheet.

The Group also has cash pooling agreements which cannot be offset under IFRS, but which could be settled net under the terms of master netting agreements, are also presented in the table to show the total net exposure of the Group.

	Gross amounts of recognised financial assets/(liabilities) £m	Amounts offset £m	Net amounts presented on the balance sheet £m	Financial instruments not offset in the balance sheet £m	Net amount £m
2021					
Derivative financial assets	84.0	(83.4)	0.6	–	0.6
Derivative financial liabilities	(84.0)	83.4	(0.6)	–	(0.6)
Cash and cash equivalents	127.3	–	127.3	–	127.3
Bank and other borrowings	–	–	–	–	–
2020					
Derivative financial assets	85.4	(84.4)	1.0	–	1.0
Derivative financial liabilities	(85.3)	84.4	(0.8)	–	(0.8)
Cash and cash equivalents	147.8	–	147.8	(69.8)	78.0
Bank and other borrowings	(71.3)	–	(71.3)	69.8	(1.5)

22. FINANCIAL RISK MANAGEMENT *continued*

LIQUIDITY AND FUNDING RISK

Liquidity risk is the risk that the Group will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by cash.

The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions.

The Group seeks a balance between certainty of funding and a flexible, cost-effective borrowing structure. The policy is to ensure that the Group has sufficient borrowings and committed facilities to meet its medium-term financing requirements.

The following are the undiscounted contracted maturities of financial liabilities, including interest payments:

CASH FLOWS ASSOCIATED WITH NON-DERIVATIVE FINANCIAL LIABILITIES

	31 December 2021							
	Effective interest rate	Year of maturity	Carrying amount £m	Contractual cash flows £m	Less than 1 year £m	1-2 years £m	2-5 years £m	More than 5 years £m
Non-derivative financial liabilities								
1.18% Euro Senior Notes 2023	1.18%	2023	21.0	21.6	0.2	21.4	–	–
3.17% US Dollar Senior Notes 2023	3.17%	2023	11.1	11.8	0.4	11.4	–	–
1.55% Euro Senior Notes 2026	1.55%	2026	21.1	25.1	0.3	0.3	24.5	–
3.37% US Dollar Senior Notes 2026	3.37%	2026	72.2	81.5	2.4	2.4	76.7	–
4.87% US Dollar Senior Notes 2026	4.87%	2026	18.8	22.5	0.9	0.9	20.7	–
1.74% Euro Senior Notes 2028	1.74%	2028	8.4	9.8	0.1	0.1	0.9	8.7
2.89% Euro Senior Notes 2030	2.89%	2030	21.0	26.9	0.6	0.6	2.2	23.5
Bank and other borrowings		Up to 2024	–	–	–	–	–	–
5.50% Cumulative First Preference shares	5.50%		0.1	–	–	–	–	–
5.00% Cumulative Second Preference shares	5.00%		0.3	–	–	–	–	–
Lease liabilities	4.77%	Up to 2051	49.8	63.5	9.8	7.9	18.2	27.6
Trade and other payables			61.8	61.8	61.8	–	–	–
			285.6	324.5	76.5	45.0	143.2	59.8

Bank and other borrowings include an unsecured multi-currency revolving credit facility set to mature in September 2024.

	31 December 2020							
	Effective interest rate	Year of maturity	Carrying amount £m	Contractual cash flows £m	Less than 1 year £m	1-2 years £m	2-5 years £m	More than 5 years £m
Non-derivative financial liabilities								
1.18% Euro Senior Notes 2023	1.18%	2023	22.4	23.1	0.3	0.3	22.5	–
3.17% US Dollar Senior Notes 2023	3.17%	2023	11.0	12.0	0.3	0.3	11.4	–
1.55% Euro Senior Notes 2026	1.55%	2026	22.4	24.4	0.3	0.3	1.1	22.7
3.37% US Dollar Senior Notes 2026	3.37%	2026	71.4	85.3	2.4	2.4	7.3	73.2
1.74% Euro Senior Notes 2028	1.74%	2028	9.0	10.2	0.2	0.2	0.6	9.2
2.89% Euro Senior Notes 2030	2.89%	2030	22.3	28.8	0.6	0.6	2.0	25.6
4.87% US Dollar Senior Notes 2026	4.87%	2026	18.6	23.2	0.9	0.9	2.8	18.6
Bank and other borrowings		Up to 2024	71.3	71.3	71.3	–	–	–
5.50% Cumulative First Preference shares	5.50%		0.1	–	–	–	–	–
5.00% Cumulative Second Preference shares	5.00%		0.3	–	–	–	–	–
Lease liabilities	4.68%	Up to 2051	54.6	75.5	11.5	9.1	19.9	35.0
Trade and other payables			62.3	62.3	62.3	–	–	–
			365.7	416.1	150.1	14.1	67.6	184.3

22. FINANCIAL RISK MANAGEMENT *continued*

CASH FLOWS ASSOCIATED WITH DERIVATIVES

The following table indicates the periods in which cash flows associated with cash flow hedges are expected to occur. This is matched with the periods in which cash flows associated with cash flow hedges are expected to impact profit or loss. All derivatives are net settled.

	Carrying amount £m	Contractual cash flows £m	Less than 1 year £m	1-2 years £m	2-5 years £m	More than 5 years £m
2021						
Cash flow hedges						
Forward exchange contracts – assets	**0.5**	**64.0**	**64.0**	**–**	**–**	**–**
Forward exchange contracts – liabilities	**(0.5)**	**(64.0)**	**(64.0)**	**–**	**–**	**–**
	–	**–**	**–**	**–**	**–**	**–**
Fair value flow hedges						
Forward exchange contracts – assets	**0.1**	**20.1**	**20.1**	**–**	**–**	**–**
Forward exchange contracts – liabilities	**(0.1)**	**(20.1)**	**(20.1)**	**–**	**–**	**–**
	–	**–**	**–**	**–**	**–**	**–**
	–	**–**	**–**	**–**	**–**	**–**
2020						
Cash flow hedges						
Forward exchange contracts – assets	0.8	64.9	64.9	–	–	–
Forward exchange contracts – liabilities	(0.7)	(64.7)	(64.7)	–	–	–
	0.1	0.2	0.2	–	–	–
Fair value flow hedges						
Forward exchange contracts – assets	0.2	20.6	20.6	–	–	–
Forward exchange contracts – liabilities	(0.1)	(20.6)	(20.6)	–	–	–
	0.1	–	–	–	–	–
	0.2	0.2	0.2	–	–	–

MARKET RISK

Market risk is the risk that changes in market prices, such as interest rates, foreign exchange rates and equity prices, will affect the Group's income or the value of its holdings of financial instruments. The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimising the return on risk.

The Group enters into derivatives for hedging purposes, and also incurs financial liabilities, in order to manage market risks. All such transactions are carried out in accordance with the Treasury Policy, which has been approved by the Audit Committee. Generally the Group seeks to apply hedge accounting in order to manage volatility in profit or loss.

INTEREST RATE RISK

The Group seeks to reduce the volatility in its interest charge caused by rate fluctuations. The proportions of fixed and floating rate debt are determined having regard to a number of factors, including prevailing market conditions, interest rate cycle, the Group's interest cover and leverage position and any perceived correlation between business performance and rates.

At the reporting date the interest rate profile of the Group's interest-bearing financial instruments was:

	Fixed rate instruments carrying amount		Variable rate instruments carrying amount	
	2021 £m	2020 £m	**2021 £m**	2020 £m
Financial assets	**–**	–	**127.3**	147.8
Financial liabilities	**(223.8)**	(232.1)	**–**	(71.3)
	(223.8)	(232.1)	**127.3**	76.5

The fixed rate financial liabilities comprise the currency equivalent of £173.6 million (2020: £177.1 million) of Senior Notes, £0.4 million (2020: £0.4 million) of cumulative preference shares and lease liabilities of £49.8 million (2020: £54.6 million). The average cost of the Group's fixed rate instruments is 3.29% (2020: 3.29%) including lease liabilities and 2.90% (2020: 2.87%) excluding lease liabilities.

The variable rate financial assets include the bank balances and cash deposits detailed in note 18 and the variable rate financial liabilities include bank borrowings detailed in note 22. Where cash and overdrafts are included in Group cash pool arrangements interest is charged on net bank balances and borrowings. The average cost of the Group's variable rate instruments is 2.5% (2020: 1.5%).

An increase of 100 basis points in interest rates on the variable element of the Group's net floating rate liabilities and cash at the reporting date would have increased profit by £1.3 million (2020: £0.8 million). A decrease of 100 basis points would have decreased profit by £0.6 million (2020: £0.4 million). This analysis assumes that all other variables, in particular foreign currency rates, remain constant.

22. FINANCIAL RISK MANAGEMENT *continued*

FOREIGN CURRENCY RISK

Due to the international reach of the Group, currency transaction exposures exist. The Group has a policy in place to hedge all material firm commitments and a large proportion of highly probable forecast foreign currency exposures in respect of sales and purchases over the following 12 months, and achieves this through the use of the forward foreign exchange markets. A significant proportion of the forward exchange contracts have maturities of less than one year after the balance sheet date. The Group continues its practice of not hedging income statement translation exposure.

There are exchange control restrictions which affect the ability of a small number of the Group's subsidiaries to transfer funds to the Group. The Group does not believe such restrictions have had or will have any material adverse impact on the Group as a whole or the ability of the Group to meet its cash flow requirements.

The table below shows the Group's currency exposures, being exposures on currency transactions that give rise to net currency gains and losses recognised in the income statement. Such exposures comprise the monetary assets and liabilities of the Group that are not denominated in the functional currency of the operating company involved.

	2021			2020		
Functional currency of Group operations	**GBP £m**	**USD £m**	**Euro £m**	GBP £m	USD £m	Euro £m
Trade receivables	**11.4**	**(0.1)**	**(3.2)**	15.8	0.3	0.9
Trade payables	**(1.3)**	**(0.3)**	**3.6**	(7.1)	(0.5)	(0.1)
Net debt[1]	**(10.2)**	**1.3**	**0.4**	(8.2)	0.9	0.7
Net balance sheet exposure	**(0.1)**	**0.9**	**0.8**	0.5	0.7	1.5

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

The amounts shown in the table take into account the effect of the forward contracts entered into to manage these currency exposures.

In respect of other monetary assets and liabilities held in currencies other than the currency of the reporting unit, the Group ensures that the net exposure is kept to an acceptable level, by buying or selling foreign currencies at spot rates where necessary to address short-term imbalances.

The Group classifies its forward exchange contracts which hedge forecasted transactions as cash flow hedges and states them at fair value. The fair value of forward exchange contracts used as hedges of forecasted transactions at 31 December 2021 was an asset of £nil (2020: £0.1 million).

The contractual cash flows associated with the forward exchange contracts that are designated as cash flow hedges are shown in the section on liquidity risk. The impact on profit or loss is expected to occur at the same time as the associated cash flows.

Currency translation risks are controlled centrally. To defend against the impact of a permanent reduction in the value of its overseas net assets through currency depreciation, the Group seeks to match the currency of financial liabilities with the currency in which the net assets are denominated. This is achieved by raising funds in different currencies and through the use of hedging instruments such as swaps, and is implemented only to the extent that the Group's gearing covenant under the terms of its borrowing documents, as well as its facility headroom, are likely to remain comfortably within limits. In this way, the currency of the Group's financial liabilities becomes more aligned to the currency of the trading cash flows that service them.

The Group's currency split of total borrowings was as follows:

	2021 £m	2020 £m
GBP	**0.5**	71.7
USD	**102.1**	101.0
Euro	**71.4**	76.1
Other	**–**	–
	174.0	248.8

The Group's sensitivity to changes in foreign exchange rates on financial assets and liabilities as at 31 December 2021 is as follows:

Based upon the currency profile of the Group's net financial assets and liabilities, if GBP had strengthened by 10%, reported net financial liabilities would have decreased by £9.9 million (2020: £14.1 million). Conversely, if GBP had weakened by 10%, reported net financial liabilities would have increased by £12.2 million (2020: £17.3 million). Assuming the change occurred on the balance sheet date, there would be no impact on reported profit, as either the net financial liabilities are in the same currency as that of the respective Group entity, or the change would be offset by an equal and opposite change in the foreign currency monetary items in the Group's holding company.

The amounts generated from the sensitivity analysis are forward-looking estimates of market risk assuming certain adverse market conditions occur. Actual results in the future may differ materially from those projected results. The impact of a weakening in GBP on the Group's financial assets and liabilities would be more than offset in equity and income by its impact on the Group's overseas net assets and earnings respectively.

22. FINANCIAL RISK MANAGEMENT *continued*

HEDGING INSTRUMENTS

	Maturity date		Notional value: Local currency		Change in fair value for recognising hedge ineffectiveness		Carrying amount of the hedging instruments assets/(liabilities)	
	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m	2021 £m	2020 £m
Cash flow hedges								
Highly probable forecast sales	to Dec 2022	to Dec 2021	40.4	26.5	0.6	0.8	0.2	(0.4)
Highly probable forecast purchases	to Dec 2022	to Dec 2021	7.1	8.1	(0.1)	–	–	0.1

Weighted average hedge rates for the year were as follows:

	Weighted average exchange rates	
	2021 £m	2020 £m
EUR/GBP	1.16	1.10
AUD/GBP	1.84	1.91
SGD/GBP	1.85	1.75
USD/GBP	1.37	1.32

Hedged items

	Change in value used for calculating hedge ineffectiveness		Balance in cash flow hedge reserve/foreign currency translation reserve for continuing hedges	
	2021 £m	2020 £m	2021 £m	2020 £m
Cash flow hedges				
Forecast sales	(0.6)	(0.8)	0.1	(0.4)
Forecast purchases	0.1	–	–	–

As at 31 December 2021 there was no balance in cash flow hedge reserve/foreign currency translation reserve arising from hedging relationships for which hedge accounting is no longer applied (2020: nil).

The Group expects highly probable sales and purchases in UK, Europe, North America, Australia and Asia. The Group has entered into foreign exchange forward contracts (for terms not exceeding 12 months) to hedge the exchange rate risk arising from these anticipated future transactions. It is anticipated that the transactions will take place during the next financial year, at which time the amount deferred in equity will be reclassified to profit or loss.

All hedging instruments are presented within derivative financial instruments on the group balance sheet.

22. FINANCIAL RISK MANAGEMENT *continued*

EXCHANGE RATES

The principal exchange rates used in the translation of the results of overseas subsidiaries were as follows:

	2021		2020	
	Closing rate	Average rate	Closing rate	Average rate
GBP to:				
USD	1.35	1.38	1.37	1.28
Euro	1.19	1.16	1.12	1.13

For illustrative purposes, the table below provides details of the impact on 2021 revenue, Group adjusted operating profit* and profit before tax if the actual reported results, calculated using 2021 average exchange rates, were restated for GBP weakening by 10 cents against USD in isolation and 10 cents against the Euro in isolation:

	2021			2020		
	Revenue £m	Group adjusted operating profit[1] £m	Profit before tax £m	Revenue £m	Group adjusted operating profit[1] £m	Profit before tax £m
Increase in revenue/Group adjusted operating profit[1]/profit before tax if:						
GBP weakens by 10c against USD in isolation	29.6	3.9	3.5	33.9	4.3	3.7
GBP weakens by 10c against the Euro in isolation	18.8	3.3	3.1	17.4	1.8	1.6

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

OTHER MARKET PRICE RISK

Equity price risk arises from FVOCI equity instruments held for meeting partially the unfunded portion of the Group's defined benefit pension obligations. The primary goal of the Group's investment strategy is to maximise returns in order to meet partially the Group's unfunded defined benefit obligations.

CAPITAL MANAGEMENT

The Board's policy is to maintain a strong capital base (total equity) so as to maintain investor, creditor and market confidence and to sustain future development of the business. The Board uses a number of measures, identified as key performance indicators (KPIs), to ensure the continued success of the Group.

The Board encourages employees of the Group to hold the Company's Ordinary shares. The Group operates a number of employee share and share option schemes. From time to time the Company purchases its own shares on the market; the timing of these purchases depends on market prices. Primarily the shares are intended to be used for issuing shares under the Group's various share option incentive schemes.

The Board seeks to maintain a balance between the advantages and security afforded by a sound capital position, and the higher returns that might be possible with higher levels of borrowings.

The Group monitors capital using the indicators set out in the table below. These indicators are also presented excluding the impact of IFRS 16 Leases as these adjusted measures are more closely aligned to the Group's covenants.

22. FINANCIAL RISK MANAGEMENT *continued*

DEBT TO ADJUSTED CAPITAL

	2021			2020		
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m
Borrowings and overdrafts	174.0	–	174.0	248.8	–	248.8
Lease liabilities	49.8	(49.8)	–	54.6	(54.6)	–
Less: cash and cash equivalents	(127.3)	–	(127.3)	(147.8)	–	(147.8)
Net debt[1]	96.5	(49.8)	46.7	155.6	(54.6)	101.0
Total equity	349.6	–	349.6	240.0	–	240.0
Less: amounts accumulated in equity relating to cash flow hedges	0.1	–	0.1	(0.4)	–	(0.4)
Adjusted capital	349.7	–	349.7	239.6	–	239.6
Net debt[1] to adjusted capital ratio	0.3	n/a	0.1	0.6	n/a	0.4

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

NET DEBT* TO EBITDA*

	2021			2020		
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m
Net debt[1]	96.5	(49.8)	46.7	155.6	(54.6)	101.0
Operating profit before specific adjusting items	118.5	(3.0)	115.5	85.6	(3.5)	82.1
Depreciation and amortisation	44.0	(7.9)	36.1	48.0	(9.2)	38.8
EBITDA[1]	162.5	(10.9)	151.6	133.6	(12.7)	120.9
Net debt[1] to EBITDA[1] ratio	0.6x	n/a	0.3x	1.2x	n/a	0.8x

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

INTEREST COVER

	2021			2020		
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m
EBITDA[1]	162.5	(10.9)	151.6	133.6	(12.7)	120.9
Net finance costs (excluding IAS 19 pension charge)	7.6	(2.3)	5.3	9.3	(2.8)	6.5
Interest cover	21.4x	n/a	28.6x	14.4x	n/a	18.6x

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

There were no changes in the Group's approach to capital management during the year. Neither the Company nor any of its subsidiaries are subject to externally imposed capital requirements.

22. FINANCIAL RISK MANAGEMENT *continued*

FAIR VALUES

	31 December 2021				31 December 2020			
		Fair value				Fair value		
	Carrying amount £m	Level 1 £m	Level 2 £m	Total £m	Carrying amount £m	Level 1 £m	Level 2 £m	Total £m
Financial assets and liabilities held at amortised cost								
1.18% Euro Senior Notes 2023	(21.0)	–	(21.1)	(21.1)	(22.4)	–	(22.6)	(22.6)
3.17% US Dollar Senior Notes 2023	(11.1)	–	(11.3)	(11.3)	(11.0)	–	(11.4)	(11.4)
1.55% Euro Senior Notes 2026	(21.1)	–	(21.4)	(21.4)	(22.4)	–	(23.2)	(23.2)
3.37% US Dollar Senior Notes 2026	(72.2)	–	(72.8)	(72.8)	(71.4)	–	(75.1)	(75.1)
1.74% Euro Senior Notes 2028	(8.4)	–	(8.6)	(8.6)	(9.0)	–	(9.4)	(9.4)
2.89% Euro Senior Notes 2030	(21.0)	–	(22.1)	(22.1)	(22.3)	–	(24.3)	(24.3)
4.87% US Dollar Senior Notes 2026	(18.8)	–	(20.6)	(20.6)	(18.6)	–	(20.7)	(20.7)
5.50% Cumulative First Preference shares	(0.1)	–	(0.1)	(0.1)	(0.1)	–	(0.1)	(0.1)
5.00% Cumulative Second Preference shares	(0.3)	–	(0.3)	(0.3)	(0.3)	–	(0.3)	(0.3)
	(174.0)	–	(178.3)	(178.3)	(177.5)	–	(187.1)	(187.1)
Financial assets held at FVOCI	–	–	–	–	0.7	0.7	–	0.7
Derivative financial assets held at fair value	0.6	–	0.6	0.6	1.0	–	1.0	1.0
	0.6	–	0.6	0.6	1.7	0.7	1.0	1.7
Derivative financial liabilities held at fair value	(0.6)	–	(0.6)	(0.6)	(0.8)	–	(0.8)	(0.8)

The table above analyses financial instruments carried at fair value, by valuation method, together with the carrying amounts shown in the balance sheet.

The fair value of cash and cash equivalents, current trade and other receivables/payables and floating-rate bank and other borrowings are excluded from the preceding table as their carrying amount approximates their fair value.

FAIR VALUE HIERARCHY

The different levels have been defined as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2: not traded in an active market but the fair values are based on quoted market prices or alternative pricing sources with reasonable levels of price transparency. Fair value is calculated using discounted cash flow methodology, future cash flows are estimated based on forward exchange rates
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

The major methods and assumptions used in estimating the fair values of financial instruments reflected in the preceding table are as follows:

EQUITY SECURITIES

Fair value is based on quoted market prices at the balance sheet date.

DERIVATIVES

Forward exchange contracts are marked to market either using listed market prices or by discounting the contractual forward price and deducting the current spot rate.

FIXED-RATE BORROWINGS

Fair value is calculated based on discounted expected future principal and interest cash flows. The interest rates used to determine the fair value of borrowings are 1.0%-3.1% (2020: 0.9%-2.4%).

There have been no transfers between Level 1 and Level 2 during 2021 and 2020 and there were no Level 3 financial instruments in either 2021 or 2020.

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS

The Group operates a number of defined benefit arrangements as well as defined contribution plans. The defined benefit plans are primarily in the UK, US and Europe and predominantly provide pensions based on service and career-average pay. In addition post-retirement medical plans are operated in the US.

SUMMARY OF NET DEFINED BENEFIT OBLIGATIONS

	2021 £m	2020 £m
Present value of unfunded defined benefit obligations	(47.3)	(52.6)
Present value of funded defined benefit obligations	(687.2)	(754.7)
Fair value of plan assets	631.8	631.0
	(102.7)	(176.3)

AMOUNTS RECOGNISED IN PROFIT OR LOSS

	Note	2021 £m	2020 £m
Current service cost		(3.2)	(2.8)
Past service cost		–	(0.1)
Administrative expenses recognised outside of the pension liability		(1.3)	(1.2)
Curtailments and settlements		0.1	0.3
Total expense within operating costs relating to defined benefit plans		(4.4)	(3.8)
Defined contribution plans		(10.7)	(11.6)
Total expense within operating costs	4	(15.1)	(15.4)
Net interest on net defined benefit liability	7	(1.6)	(2.6)
Total expense recognised in profit or loss		(16.7)	(18.0)

Amounts recognised in other comprehensive income

	2021 £m	2020 £m
Experience (loss)/gain on plan obligations	(4.9)	3.9
Changes in financial assumptions underlying the present value of plan obligations – gain/(loss)	51.3	(99.4)
Changes in demographic assumptions underlying the present value of plan obligations – gain	6.7	1.3
Actual return on plan assets (excluding amounts included in net interest expense)	2.4	60.3
Remeasurements recognised in other comprehensive income	55.5	(33.9)
Deferred tax associated with the above	(0.6)	0.4
Total amount recognised in other comprehensive income	54.9	(33.5)

DEFINED CONTRIBUTION PLANS

The total expense relating to defined contribution plans in the current year was £10.7 million (2020: £11.6 million). The expense includes contributions to two US Multi-Employer Plans of £0.3 million (2020: £0.3 million) and a contribution to one German Multi-Employer Plan of £0.1 million (2020: £0.3 million). The Group expects to contribute £11.0 million to ongoing defined contribution arrangements in 2022.

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS *continued*

DEFINED BENEFIT PLANS

UK Schemes

In the UK, the Group operates two defined benefit pension schemes, the Morgan Pension Scheme and the Morgan Group Senior Staff Pension and Life Assurance Scheme (the UK Schemes). The two UK Schemes provide a benefit based upon an employee's total service and their career average earnings (including allowance for consumer price inflation), although historically benefits were based upon an employee's final salary. Once in payment, pensions receive increases as set out in the rules, at either a fixed level, or in line with the Retail Price Index. The overall duration of the UK Schemes' is around 16 years.

The UK Schemes' assets are held in trustee-administered funds which are governed by UK regulations, as is the nature of the relationship between the Group and the Trustees. Responsibility for the governance of the UK Schemes – including investment decisions and contribution schedules – lies with the Board of Trustees which must consult with the Group in such matters. The Board of Trustees must be composed of representatives of the Company, plan participants and independent trustee directors, in accordance with the UK Schemes governing documents.

Funding legislation in the UK requires that schemes are fully funded on a scheme-specific basis, and this must be assessed at least every three years. To the extent that there is a deficit against this measure, a payment schedule must be agreed such that the deficit is removed over a reasonable period of time.

The most recent full actuarial valuations of the UK Schemes were undertaken as at 31 March 2019 and resulted in combined assessed deficits of £120.3 million. On the basis of these full valuations, the Trustees of the UK Schemes, having consulted with the Group, agreed past service deficit recovery payments totalling £16.5 million a year from January 2020, increasing by 2.75% pa from April 2021 until 2025, with further payments to Morgan Pension Scheme for 2026 and 2027. New full valuations will be due with effective dates of 31 March 2022.

The UK Schemes were closed to new entrants on 1 August 2011, with any new employees receiving benefits through the Morgan Group Personal Pension Plan, a defined contribution arrangement. The Morgan Group Senior Staff Pension and Life Assurance Scheme was closed to the future accrual of benefits on and with effect from 6 April 2016. The Morgan Pension Scheme was closed to the future accrual of benefits with effect from 6 April 2018. Current employees, including those who were active in the Schemes at closure, were auto-enrolled into The Morgan Group Personal Pension Plan for their future pension benefits.

The Group has considered third-party powers and does not believe the Trustees have any powers that would prevent the Group obtaining a refund of any surplus on wind-up of the Scheme following gradual settlement of the plan obligations. As such the Group's interpretation is that the current version of IFRIC 14 does not have an impact and, as a result, any IAS 19 surplus can be recognised as an asset and it is not necessary to recognise additional liabilities in respect of contribution agreements reached with the pension scheme Trustees, managers or any third party.

US Schemes

The Group operates a tax qualified defined benefit pension scheme in the US (MUSE DB Scheme), and a Supplemental Executive Retirement Plan (SERP) which is not tax approved (together 'the US Schemes'). The MUSE DB Scheme is frozen, and therefore employees accrue benefits within a 401k arrangement.

The US Schemes provide a benefit based upon an employee's service and earnings. The benefits are level both prior to, and whilst in, payment. Overall, the US Schemes' duration is around 11 years.

The qualified MUSE DB Scheme's assets are held in a trust separately from the Group's assets. For the SERP the Group holds an asset to meet the obligations; however, due to its nature this is accounted for as a Group asset, rather than an asset of the SERP. Responsibility for the governance of the US Schemes, including investment decisions and contribution schedules, lies with a management committee, all of whose members are appointed by the Group.

The funding requirements in the US, ERISA, require schemes to be fully funded at all times, and if not to target full funding within a period of seven years.

The most recent full actuarial valuation of the MUSE DB Scheme was undertaken as at 1 January 2021 and the Scheme was fully funded this basis.

On the more stringent DBO (Defined Benefit Obligation) basis used for IAS 19 purposes, the deficit of the MUSE DB Scheme as at 31 December 2021 totalled £1.3million (2020: £0.5 million).

No further significant contributions to the MUSE DB Scheme are anticipated in the medium-term.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS *continued*

European schemes

In Europe, the Group operates a number of retirement schemes, with the bulk of the obligations relating to arrangements for employees in Germany. In line with local practice these arrangements are not funded in advance, with benefits being met by the Group as they fall due.

	31 December 2021				
	UK £m	US £m	Europe £m	Rest of the World £m	Total £m
Summary of net obligations					
Present value of unfunded defined benefit obligations	–	(6.4)	(37.5)	(3.4)	(47.3)
Present value of funded defined benefit obligations	(544.0)	(132.9)	(1.9)	(8.4)	(687.2)
Fair value of plan assets	492.3	131.6	0.4	7.5	631.8
	(51.7)	(7.7)	(39.0)	(4.3)	(102.7)
Movements in present value of defined benefit obligation					
At 1 January 2021	(603.4)	(147.5)	(45.3)	(11.1)	(807.3)
Current service cost	–	–	(1.1)	(2.1)	(3.2)
Interest cost	(7.2)	(3.3)	(0.2)	(0.1)	(10.8)
Actuarial gain/(loss)					
Experience gain/(loss) on plan obligations	(5.2)	(0.4)	0.9	(0.2)	(4.9)
Changes in financial assumptions – gain/(loss)	43.3	5.5	2.0	0.5	51.3
Changes in demographic assumptions – gain/(loss)	7.2	(0.5)	–	–	6.7
Benefits paid	21.3	8.5	1.5	0.3	31.6
Curtailments and settlements	–	–	–	0.2	0.2
Exchange adjustments	–	(1.6)	2.8	0.7	1.9
At 31 December 2021	(544.0)	(139.3)	(39.4)	(11.8)	(734.5)
Movements in fair value of plan assets					
At 1 January 2021	483.1	140.2	0.5	7.2	631.0
Interest on plan assets	5.9	3.2	–	0.1	9.2
Remeasurement gain/(loss)	7.8	(5.3)	–	(0.1)	2.4
Contributions by employer	16.8	0.7	1.5	1.1	20.1
Benefits paid	(21.3)	(8.5)	(1.5)	(0.3)	(31.6)
Curtailments and settlements	–	–	–	(0.1)	(0.1)
Exchange adjustments	–	1.3	(0.1)	(0.4)	0.8
At 31 December 2021	492.3	131.6	0.4	7.5	631.8
Actual return on assets	13.6	(2.1)	–	(0.1)	11.4
Fair value of plan assets by category					
Equities[1]	42.9	–	–	–	42.9
Growth assets[2]	103.6	7.2	–	–	110.8
Bonds	90.4	119.9	–	–	210.3
Liability-driven investments (LDI)[3]	108.4	–	–	–	108.4
Matching insurance policies	144.5	–	0.4	4.8	149.7
Other	2.5	4.5	–	2.7	9.7
	492.3	131.6	0.4	7.5	631.8

1. Equity values include both physical equities and the value of equity futures contracts, used to gain leveraged exposure to global equity markets.
2. Growth assets include investment in Global Diversified and Multi-Asset Funds as well as UK Property.
3. The LDI assets are pooled funds in the UK that provide a leveraged return linked to long duration fixed interest and index-linked government bonds valued at the bid price of the units. This provides interest rate and inflation hedging equivalent in size to c.100% of the invested assets of the UK Schemes.

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS *continued*

The Group expects to contribute £20.4 million to these arrangements in 2022.

	UK £m	US £m	Europe £m	Rest of the World £m	Total £m
Estimate of employer contributions to be paid into the plans during the 12-month period beginning 1 January 2022	17.3	0.7	1.5	0.9	20.4

	31 December 2020				
	UK £m	US £m	Europe £m	Rest of the World £m	Total £m
Summary of net obligations					
Present value of unfunded defined benefit obligations	–	(6.9)	(43.1)	(2.6)	(52.6)
Present value of funded defined benefit obligations	(603.4)	(140.6)	(2.2)	(8.5)	(754.7)
Fair value of plan assets	483.1	140.2	0.5	7.2	631.0
	(120.3)	(7.3)	(44.8)	(3.9)	(176.3)
Movements in present value of defined benefit obligation					
At 1 January 2020	(534.6)	(146.0)	(40.0)	(14.3)	(734.9)
Current service cost	–	–	(1.1)	(1.7)	(2.8)
Past service cost	(0.1)	–	–	–	(0.1)
Interest cost	(10.8)	(4.6)	(0.3)	(0.3)	(16.0)
Actuarial gain/(loss)					
Experience gain/(loss) on plan obligations	2.2	1.3	(0.2)	0.6	3.9
Changes in financial assumptions – gain/(loss)	(82.7)	(13.8)	(3.0)	0.1	(99.4)
Changes in demographic assumptions – gain/(loss)	–	1.3	–	–	1.3
Benefits paid	22.6	9.2	1.6	4.8	38.2
Curtailments and settlements	–	0.3	–	–	0.3
Contributions by members	–	–	–	–	–
Exchange adjustments	–	4.8	(2.3)	(0.3)	2.2
At 31 December 2020	(603.4)	(147.5)	(45.3)	(11.1)	(807.3)
Movements in fair value of plan assets					
At 1 January 2020	433.1	135.4	0.4	9.2	578.1
Interest on plan assets	8.9	4.3	–	0.2	13.4
Remeasurement gain/(loss)	47.2	13.5	–	(0.4)	60.3
Contributions by employer	16.5	0.9	1.6	2.7	21.7
Contributions by members	–	–	–	–	–
Benefits paid	(22.6)	(9.2)	(1.6)	(4.8)	(38.2)
Curtailments and settlements	–	–	–	–	–
Exchange adjustments	–	(4.7)	0.1	0.3	(4.3)
At 31 December 2020	483.1	140.2	0.5	7.2	631.0
Actual return on assets	56.1	17.8	–	(0.2)	73.7
Fair value of plan assets by category					
Equities[1]	57.8	–	–	–	57.8
Growth assets[2]	99.1	8.0	–	–	107.1
Bonds	64.1	128.9	–	–	193.0
Liability-driven investments (LDI)[3]	93.8	–	–	–	93.8
Matching insurance policies	164.4	–	0.5	4.5	169.4
Other	3.9	3.3	–	2.7	9.9
	483.1	140.2	0.5	7.2	631.0

1. Equity values include both physical equities and the value of equity futures contracts, used to gain leveraged exposure to global equity markets.
2. Growth assets include investment in Global Diversified and Multi-Asset Funds as well as UK Property.
3. The LDI assets are pooled funds in the UK that provide a leveraged return linked to long duration fixed interest and index-linked government bonds valued at the bid price of the units. This provides interest rate and inflation hedging equivalent in size to c.100% of the invested assets of the UK Schemes.

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS *continued*

ACTUARIAL ASSUMPTIONS

The actual liability in respect of global employee benefits will not be known until the last payments have been made. In placing a current estimate on the Group's past service benefit obligations, a number of assumptions about the future are required. For defined benefit schemes, the Directors make annual estimates and assumptions in respect of discount rates, future changes in salaries, employee turnover, inflation rates, life expectancy and several other assumptions. In making these estimates and assumptions, the Directors consider advice provided by external advisers, such as actuaries.

The assumptions used are best estimate assumptions chosen from a reasonable range and which may not be borne out in practice. The principal assumptions are the discount rate and inflation assumptions which are long-term and measured on external factors, based upon each plan's duration.

In addition to these, the mortality assumption in the UK and the US is material to the cost of the promised benefits. In the UK, the latest CMI mortality projection tables (CMI2020) have been used. A w2020 parameter of 20% for the Morgan Pension Scheme and 15% for the Morgan Group Senior Staff Pension and Life Assurance Scheme have been adopted to allow for the impact of COVID-19 on mortality. The extent of the impact of COVID-19 on each scheme has been assessed by additional scheme specific analysis. This assumption will continue to be reviewed at each accounting period. In both the UK and Europe, the assumed increases in salaries and pensions in payment are derived from assumed future inflation.

The rates shown below are single equivalents for the obligations as a whole derived from discounting along the yield curve. In line with IAS 19, in determining the value of the annuity contract held in the UK we have reflected the same methodology as used to value the corresponding obligations, reflecting the actual cash flow profile and duration of the insured obligations, rather than those of the Schemes as a whole.

Actuarial assumptions were:

	UK %	US %	Europe %	Rest of the World %
2021				
Discount rate	1.92	2.71	0.90	2.90
Salary increase	n/a	n/a	2.40	4.30
Inflation (UK: RPI/CPI)	3.40/2.61	n/a	1.90	n/a
Pensions increase[1]	3.00/3.22/3.75	n/a	1.90	n/a
Mortality – post-retirement:				
Life expectancy of a male aged 60 in accounting year (years)	26.0	24.7	25.0	n/a
Life expectancy of a male aged 60 in accounting year + 20 (years)	27.4	24.8	27.9	n/a
2020				
Discount rate	1.23	2.34	0.40	2.40
Salary increase	n/a	n/a	2.10	5.00
Inflation (UK: RPI/CPI)	2.88/2.03	n/a	1.60	n/a
Pensions increase[1]	3.00/2.80/3.56	n/a	1.60	n/a
Mortality – post-retirement:				
Life expectancy of a male aged 60 in accounting year (years)	26.3	24.6	24.9	n/a
Life expectancy of a male aged 60 in accounting year + 20 (years)	27.8	24.7	27.7	n/a

1. Pension increases in the UK reflect both fixed rate and RPI related increases to different elements of members' pensions.

23. PENSIONS AND OTHER POST-RETIREMENT EMPLOYEE BENEFITS *continued*

The accounting assumptions noted above are used to calculate the year-end net pension liability in accordance with the relevant accounting Standard, IAS 19 (revised) Employee Benefits. Changes in these assumptions have no impact on the Group's cash payments to their arrangements. The payments due are calculated based on local funding requirements, or in the case of the Group's unfunded arrangements on the incidence of benefit payments falling due.

The sensitivities of the Group's net balance sheet to the principal assumptions are:

		2021		2020	
	Change in assumption	Increase on defined benefit obligation £m	Increase on deficit £m	Increase on defined benefit obligation £m	Increase on deficit £m
Discount rate	Decrease by 0.1%	10.7	9.4	12.7	11.1
Inflation	Increase by 0.1%	3.7	3.5	5.1	4.8
Mortality – post-retirement	Pensioners live 1 year longer	33.3	21.9	38.6	25.8
Exchange rates	GBP weakens against USD by 10%	15.5	0.9	16.4	0.8
	GBP weakens against EUR by 10%	4.4	4.3	5.0	5.0

These sensitivities have been calculated to show the movement in the net balance sheet in isolation, and assume no other changes in market conditions at the accounting date. This is unlikely in practice – for example, a change in discount rate is unlikely to occur without any movement in the value of the assets held by the Group's Schemes.

Risks

The balance sheet net pension liability is a snapshot view which can be significantly influenced by short-term market factors. The calculation of the surplus or deficit depends, therefore, on factors which are beyond the control of the Group – principally the value at the balance sheet date of equity shares in which the Scheme has invested and long-term interest rates which are used to discount future liabilities. The funding of the Scheme is based on long-term trends and assumptions relating to market growth, as advised by qualified actuaries and investment advisers.

The most significant risks to which the Group is exposed are:

- Investment returns: The Group's net balance sheet and contribution requirements are heavily dependent upon the return on the assets invested in by the schemes
- Longevity: The cost to the Group of the pensions promised to members is dependent upon the expected term of these payments. To the extent that members live longer than expected this will increase the cost of these arrangements
- Inflation rate risk: In the UK, the pension promises are, in the main, linked to inflation, and higher inflation will lead to higher liabilities.

The above risks have been mitigated for the majority of the UK Schemes' pensioner population through the purchase of an insurance policy, the payments from which exactly match the promises made to employees. Remaining investment risks have also been mitigated to some extent by diversification of the return-seeking assets and backing uninsured pensioner liabilities via bonds and various hedging instruments. In the UK, the bonds and LDI mandates target an interest rate hedge against movements in government bond yields for an amount equal to approximately 100% of the invested assets. In the US, the bond mandates provide an interest rate hedge of approximately 100% of the liabilities for funded plans.

In addition, the IAS 19 defined benefit obligation is linked to yields on AA-rated corporate bonds; however some of the Group's arrangements invest in a number of other assets which will move in a different manner from these bonds. Therefore, changes in market conditions may lead to volatility in the net pension liability on the Group's balance sheet and in other comprehensive income, and to a lesser extent in the IAS 19 pension expense in the Group's income statement.

24. SHARE-BASED PAYMENTS

The Group operates various share option programmes that allow Group employees to acquire shares in the Company. During 2021, awards were made to Executives and senior employees under the Morgan Advanced Materials plc Long-Term Incentive Plan (LTIP), the Morgan Advanced Materials plc Deferred Bonus Plan (DBP) and the Morgan Advanced Materials plc Restricted Stock Units (RSU). The Company also maintains a UK all-employee Sharesave scheme (Sharesave). Further details can be found in the Remuneration Report on pages 82 to 105.

The grant date fair value of options granted to employees is recognised as an employee expense, with a corresponding increase in equity, over the period that the employees become unconditionally entitled to the options. The amount recognised as an expense is adjusted to reflect the actual number of share options for which the related service and non-market vesting conditions are met.

The charge expensed to the income statement in 2021 was £4.5 million (2020: £0.7 million).

The following options and awards were outstanding at 31 December 2021 in respect of Ordinary shares:

	Employees entitled	Vesting conditions	Exercise/award price(s)	Number of shares outstanding	Exercise dates ranging from	to
LTIP	Senior employees	Continued employment plus satisfaction of performance metrics	–	5,322,299	1 January 2022	22 March 2024
Sharesave	All UK employees	Continued employment	181.00p-321.00p	1,061,025	1 December 2021	1 June 2025
DBP	Senior employees	Continued employment	–	385,004	18 March 2022	22 March 2024
RSU	Select employees	Continued employment	–	1,405,937	14 October 2022	14 October 2024

The numbers and weighted average exercise prices of share options are as follows:

	2021 Weighted average exercise price	2021 Number of options	2020 Weighted average exercise price	2020 Number of options
Outstanding at the beginning of the period	28.68p	8,532,753	54.22p	7,735,748
Granted during the period	11.58p	2,654,176	34.48p	3,186,419
Forfeited during the period	25.37p	(659,714)	82.09p	(816,918)
Exercised during the period	31.21p	(1,081,782)	34.37p	(1,161,159)
Lapsed during the period	6.92p	(1,271,168)	36.62p	(411,337)
Outstanding at the end of the period	26.44p	8,174,265	28.68p	8,532,753
Exercisable at the end of the period	90.14p	115,153	207.55p	87,569

The weighted average share price at the date of exercise during the period was 328.64 pence (2020: 217.14 pence).

MEASUREMENT OF FAIR VALUES

The DBP is an award of deferred shares which include the accumulated value of any dividends which fall during the period from the date of grant to the vesting date. The RSU is an award of shares, which are released in tranches to the participant over a specified period of time with no performance conditions except continued employment by the Group. As such, the grant-date fair value of the DBP and RSU are equal to the share price at the date of grant.

	Awards made in 2021 LTIP	Sharesave	DBP	RSU
Share price at award date	311.00p-337.00p	375.00p	311.00p	337.00p
Exercise price	n/a	321.00p	n/a	n/a
Fair value at measurement date	85.00p-290.00p	74.00p	311.00p	337.00p
Fair value measurement method	Actuarial binomial model	Modified binomial model	n/a	n/a
Fair value model inputs:				
Expected volatility (expressed as weighted average volatility used in the model)	30%	35%		
Option life (expressed as weighted average life used in the model)	3 years	3 years		
Expected dividends	2.60%	2.20%		
Risk-free interest rate	0.10%	0.40%		

The expected volatility is based on the historical volatility (calculated based on the weighted average remaining life of the share options) adjusted for any expected changes to future volatility due to publicly available information.

The fair value of services received in return for share options granted is measured by reference to the fair value of share options granted.

The weighted average fair value of options issued during 2021 was 271.44 pence (2020: 176.09 pence).

25. PROVISIONS AND CONTINGENT LIABILITIES

	Closure and restructuring provisions £m	Legal and other provisions £m	Environmental provisions £m	Total £m
Balance at 1 January 2021	17.3	10.2	8.3	35.8
Provisions made during the year	2.6	3.6	1.8	8.0
Provisions used during the year	(5.9)	(0.5)	(1.8)	(8.2)
Provisions reversed during the year	(2.1)	(3.2)	(0.3)	(5.6)
Effect of movements in foreign exchange	(0.1)	(0.1)	(0.2)	(0.4)
Balance at 31 December 2021	11.8	10.0	7.8	29.6
Current	6.6	4.8	3.4	14.8
Non-current	5.2	5.2	4.4	14.8
	11.8	10.0	7.8	29.6

CLOSURE AND RESTRUCTURING PROVISIONS

Closure and restructuring provisions are based on the Group's restructuring programmes and represent committed expenditure at the balance sheet date. The amounts provided are based on the costs of terminating relevant contracts, under the contract terms, and management's best estimate of other associated restructuring costs including professional fees.

Whilst the Group's restructuring programme was completed in 2021, we retain provisions for remaining lease exit costs and multi-employer pension obligations from two sites which have been closed during the year. The cash outflows relating to the pension obligations may continue for up to 20 years, subject to any settlement being reached in advance of that date.

LEGAL AND OTHER PROVISIONS

Legal and other provisions mainly comprise amounts provided against open legal and contractual disputes arising in the normal course of business and long-service costs. Provisions are made for the expected costs associated with such matters, based on past experience of similar items and other known factors, taking into account professional advice received, and represent management's best estimate of the most likely outcome. The timing of utilisation of these provisions is frequently uncertain, reflecting the complexity of issues and the outcome of various court proceedings and associated negotiations.

Where obligations are not capable of being reliably estimated, or if a material outflow of economic resources is considered remote, it is classified as a contingent liability. The Group is of the opinion that any associated claims that might be brought can be defeated successfully and, therefore, the possibility of any material outflow in settlement is assessed as remote.

Subsidiary undertakings within the Group have given unsecured guarantees of £10.5 million (2020: £9.0 million) in the ordinary course of business.

ENVIRONMENTAL PROVISIONS

Environmental provisions are made for quantifiable environmental liabilities arising from known environmental issues. The amounts provided are based on the best estimate of the costs required to remedy these issues. At one site, a remediation feasibility study is currently being conducted in relation to a known environmental issue and in conjunction with the local Environmental Regulator. A remediation plan has been prepared. The provision recorded reflects the estimated costs of remediation and awaits final regulatory approval. The provision is expected to be utilised in the next five years.

ENVIRONMENTAL CONTINGENT LIABILITIES

The Group is subject to local health, safety and environmental laws and regulations concerning its manufacturing operations around the world. These laws and regulations may require the Group to take future action to remediate the impact of historical manufacturing processes on the environment or lead to other economic outflows. Such contingencies may exist for various sites which the Group currently operates or has operated in the past. There is a contingent liability arising from the as yet unknown environmental issues at the site referred to above, pending the completion of the feasibility study.

TAX CONTINGENT LIABILITIES

The Group is subject to periodic tax audits by various fiscal authorities covering corporate, employee and sales taxes in the various jurisdictions in which it operates. We have provided for estimates of the Group's likely exposures where these can be reliably estimated. These are disclosed in notes 8 and 15.

26. CAPITAL COMMITMENTS

In 2021, commitments for property, plant and equipment and computer software expenditure for which no provision has been made in these accounts amount to £6.3 million (2020: £2.4 million) for the Group.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

27. RELATED PARTIES

IDENTIFICATION OF RELATED PARTIES

The Group has related party relationships with its subsidiaries (a list of all related undertakings and associates is shown in note 44), and with its Directors, executive officers and their close family members.

TRANSACTIONS WITH KEY MANAGEMENT PERSONNEL

The Company has written service contracts or letters of appointment with each of its Directors, under which the Directors receive a salary or a fee and other emoluments.

The key management of the Group and parent Company consists of the Board of Directors (including non-executive Directors) and members of the Executive Committee.

The compensation for the executive and non-executive Directors and members of the Executive Committee charged in the year was:

	2021 £m	2020 £m
Short-term employee benefits	7.5	3.4
Employer national insurance contributions	0.4	0.6
Pension and other post-employment costs	0.3	0.3
Share-based payment (credit)/expense[1]	1.7	(0.1)
Non-executive Directors' fees and benefits	0.5	0.4
Total compensation of key management personnel	10.4	4.6

1. Share-based payment expense represents the net IFRS 2 share-based payment (credit)/charge to the consolidated income statement in the year for the members of the Executive Committee. In 2021, due to changes in assumptions in non-market based performance conditions, a net credit of £0.1 million was recognised in the consolidated income statement (2020: net credit of £0.1 million).

OTHER RELATED PARTY TRANSACTIONS

	2021 £m	2020 £m
Sales to associate	–	–
Purchases from associate	0.6	1.8
Trade receivables due from associate	–	–
Trade payables due to associate	–	0.3

On 28 April 2021, the Group completed the sale of its investment in associate, as detailed in note 2. In 2021, the Group does not have any trade receivables owed by associates that have been fully provided for (2020: £nil).

28. SUBSEQUENT EVENTS

There were no other reportable subsequent events following the balance sheet date.

COMPANY BALANCE SHEET

AS AT 31 DECEMBER 2021

	Note	2021 £m	2020 £m
Non-current assets			
Intangible assets	31	2.6	4.6
Property, plant and equipment	32	3.4	6.5
Right-of-use assets	33	0.8	1.3
Investments in subsidiary undertakings	34	718.2	629.0
Debtors – amounts due after more than one year	35	218.0	254.3
		943.0	895.7
Current assets			
Debtors – amounts due within one year	35	22.9	46.3
Cash and cash equivalents		19.4	4.5
		42.3	50.8
Creditors – amounts falling due within one year	36	68.6	131.9
Net current liabilities		(26.3)	(81.1)
Total assets less current liabilities		916.7	814.6
Non-current liabilities			
Creditors – amounts falling due after more than one year	37	202.7	199.5
Employee benefits: pensions	39	15.0	34.8
Provisions	40	5.1	3.6
		222.8	237.9
Net assets		693.9	576.7
Capital and reserves			
Equity shareholders' funds			
Share capital	41	71.3	71.3
Share premium		111.7	111.7
Merger reserve		17.0	17.0
Capital redemption reserve		35.7	35.7
Retained earnings		458.2	341.0
Shareholders' funds		693.9	576.7

The financial statements were approved by the Board of Directors on 3 March 2022 and were signed on its behalf by:

Pete Raby
Chief Executive Officer

Peter Turner
Chief Financial Officer

COMPANY STATEMENT OF CHANGES IN EQUITY

FOR THE YEAR ENDED 31 DECEMBER 2021

	Called-up share capital £m	Share premium account £m	Merger reserve £m	Capital redemption reserve £m	Profit and loss account £m	Total equity £m
Balance at 1 January 2020	71.3	111.7	17.0	35.7	415.0	650.7
Total comprehensive loss for the year:						
Loss for the year	–	–	–	–	(58.8)	(58.8)
Other comprehensive loss	–	–	–	–	(9.3)	(9.3)
Transactions with owners:						
Dividends	–	–	–	–	(5.7)	(5.7)
Equity-settled share-based payment transactions	–	–	–	–	1.2	1.2
Own shares acquired for share incentive schemes (net)	–	–	–	–	(1.4)	(1.4)
Balance at 31 December 2020	71.3	111.7	17.0	35.7	341.0	576.7
Balance at 1 January 2021	**71.3**	**111.7**	**17.0**	**35.7**	**341.0**	**576.7**
Total comprehensive income for the year:						
Profit for the year	**–**	**–**	**–**	**–**	**122.6**	**122.6**
Other comprehensive income	**–**	**–**	**–**	**–**	**14.8**	**14.8**
Transactions with owners:						
Dividends	**–**	**–**	**–**	**–**	**(19.1)**	**(19.1)**
Equity-settled share-based payment transactions	**–**	**–**	**–**	**–**	**4.5**	**4.5**
Own shares acquired for share incentive schemes (net)	**–**	**–**	**–**	**–**	**(5.6)**	**(5.6)**
Balance at 31 December 2021	**71.3**	**111.7**	**17.0**	**35.7**	**458.2**	**693.9**

NOTES TO THE COMPANY BALANCE SHEET

29. ACCOUNTING POLICIES

BASIS OF PREPARATION

These financial statements were prepared in accordance with Financial Reporting Standard 101 Reduced Disclosure Framework (FRS 101) and the Companies Act 2006.

The separate financial statements of the Company are presented as required by the Companies Act 2006. The Company meets the definition of a qualifying entity under FRS 100 Application of Financial Reporting Requirements issued by the FRC. Accordingly, these financial statements are prepared in accordance with Financial Reporting Standard 101 Reduced Disclosure Framework.

In these financial statements, the Company has applied the exemptions available under FRS 101 in respect of the following disclosures:

- A cash flow statement and related notes;
- Comparative period reconciliations for share capital, tangible fixed assets and intangible assets;
- Transactions with wholly owned subsidiaries;
- The effects of new but not yet effective IFRSs;
- The compensation of key management personnel; and
- Capital management.

As the consolidated financial statements of Morgan Advanced Materials plc include the equivalent disclosures, the Company has also taken the exemptions under FRS 101 available in respect of the following disclosures:

- IFRS 2 Share-Based Payments in respect of Group-settled share-based payments; and
- The disclosures required by IFRS 7 Financial Instruments Disclosures.

The Company proposes to continue to adopt the reduced disclosure framework of FRS 101 in its next financial statements.

Under Section 408(4) of the Companies Act 2006 the Company is exempt from the requirement to present its own income statement or statement of comprehensive income.

The Company's financial statements are presented in its functional currency, pounds sterling, generally rounded to the nearest million.

The Company's financial statements are prepared on a going concern basis as set out in note 1 the consolidated financial statements of the Group.

The accounting policies set out below have, unless otherwise stated, been applied consistently to the period presented in these financial statements.

MEASUREMENT CONVENTION

The financial statements are prepared on the historical cost basis except for certain financial instruments that are measured at fair value.

FOREIGN CURRENCY

Transactions in foreign currencies are translated to the Company's functional currency at the foreign exchange rate ruling at the date of transaction. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are retranslated to the functional currency at the foreign exchange rate ruling at that date. Foreign exchange differences arising on translation are recognised in the income statement. Non-monetary assets and liabilities that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction. Non-monetary assets and liabilities are denominated in foreign currencies that are stated at fair value are retranslated to the functional currency at foreign exchange rates ruling at the dates the fair value was determined.

INTANGIBLE ASSETS

Intangible assets that are acquired by the Company are stated at cost less accumulated amortisation and less accumulated impairment losses.

Amortisation is charged to the income statement on a straight-line basis over the estimated useful lives of intangible assets unless such lives are indefinite. Intangible assets with an indefinite useful life and goodwill are systematically tested for impairment at each balance sheet date. Other intangible assets are amortised from the date they are available for use. The estimated useful lives are as follows:

Software: 3-7 years

PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment is stated at cost less accumulated depreciation and accumulated impairment losses.

Depreciation is charged to the income statement on a straight-line basis over the estimated useful lives of each part of an item of tangible fixed assets. Land is not depreciated. The estimated useful lives are as follows:

Plant, equipment and fixtures: 3-20 years
Buildings: 50 years

Depreciation methods, useful lives and residual values are reviewed at each balance sheet date.

NOTES TO THE COMPANY BALANCE SHEET

29. ACCOUNTING POLICIES *continued*

LEASING

The Company assesses whether a contract is or contains a lease, at inception of the contract. The Company recognises a right-of-use asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee.

The lease liability is initially measured at the present value of future lease payments including adjustments for any lease incentives receivable. Lease payments to be made under reasonably certain extension options are also included in the measurement of the liability. Lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, which is generally the case of leases in the company, the lessee's incremental borrowing rate is used, and being the rate the individual lessee would have to pay to borrow the funds necessary to obtain an asset of similar value on similar terms.

The right-of-use-assets comprise the initial measurement of the corresponding lease liability, lease payments made at or before the commencement date, less any lease incentives received and initial direct costs. They are subsequently measured at cost less accumulated depreciation and impairment losses.

Right-of-use assets are depreciated over the shorter period of the lease term and useful life of the underlying asset. The depreciation starts at the commencement date of the lease.

INVESTMENTS IN SUBSIDIARIES

Investments in subsidiaries are carried at cost less provision for impairment. The Company tests the investment balances for impairment annually or when there are indicators of impairment. If any such indication of impairment exists, the Company makes an estimate of its recoverable amount. Where the carrying amount of an investment exceeds its recoverable amount, the investment is considered impaired and is written down to its recoverable amount. Where these circumstances have reversed, the impairment previously made is reversed to the extent of the original cost of the investment.

FINANCIAL INSTRUMENTS

Financial instruments and financial liabilities are recognised in the Company balance sheet when the Company becomes party to the contractual provisions of the instrument.

CLASSIFICATION OF FINANCIAL INSTRUMENTS ISSUED BY THE COMPANY

Financial instruments issued by the Company are treated as equity only to the extent that they meet the following two conditions:

a) they include no contractual obligations upon the Company to deliver cash or other financial assets or to exchange financial assets or financial liabilities with another party under conditions that are potentially unfavourable to the Company; and
b) where the instrument will or may be settled in the Company's own equity instruments, it is either a non-derivative that includes no obligation to deliver a variable number of the Company's own equity instruments or is a derivative that will be settled by the Company's exchanging a fixed amount of cash or other financial assets for a fixed number of its own equity instruments.

To the extent that this definition is not met, the proceeds of issue are classified as a financial liability. Where the instrument so classified takes the legal form of the Company's own shares, the amounts presented in these financial statements for called-up share capital and share premium account exclude amounts in relation to those shares.

NON-DERIVATIVE FINANCIAL INSTRUMENTS

Non-derivative financial instruments comprise investments in equity and debt securities, trade and other debtors, cash and cash equivalents, loans and borrowings, and trade and other creditors.

TRADE AND OTHER DEBTORS

Trade and other debtors are recorded initially at transaction price and subsequently measured at amortised cost. This results in their recognition at nominal value less an allowance for any doubtful debts. The allowance for doubtful debts is recognised based on management's expectation of losses without regard to whether an impairment trigger happened or not (an 'expected credit loss' (ECL) model). The Group measures the loss allowance for trade receivables at an amount equal to lifetime ECL.

TRADE AND OTHER CREDITORS

Trade and other creditors are recognised initially at fair value. Subsequent to initial recognition they are measured at amortised cost using the effective interest method. The Directors consider that the carrying amount of trade payables approximates to their fair value.

INTEREST-BEARING BORROWINGS

Interest-bearing bank loans and overdrafts are initially recorded at fair value of the consideration received, net of direct issue costs. They are subsequently held at amortised cost using the effective interest method. Finance charges, including premiums payable on settlement or redemption and direct issue costs, are accounted for using an effective interest rate method and are added to or deducted from the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.

29. ACCOUNTING POLICIES *continued*

IMPAIRMENT OF FINANCIAL ASSETS

The Company recognises provisions for expected credit losses (ECLs) on financial assets measured at amortised cost. The amount of expected credit losses is updated at each reporting date to reflect changes in credit risk with lifetime ECL recognised when there has been a significant increase in credit risk since initial recognition. Life ECL represents the expected credit losses that will result from all possible defaults over the expected life of the financial instrument.

To assess whether the credit risk has increased significantly since initial recognition the Company compares the risk of default occurring at the reporting date with the risk of default at the date of initial recognition. The Company utilises both quantitative and qualitative information to support this assessment, including historical experience and forward-looking information.

The Company considered amounts due from Group undertakings to be in default when the borrower is unlikely to pay it's credit obligations to the Company in full. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred.

DERIVATIVE FINANCIAL INSTRUMENTS

Derivative financial instruments are recognised at fair value. The gain or loss on remeasurement to fair value is recognised immediately in profit or loss. The Group enters into derivative financial instruments to manage its exposure to foreign exchange rate risks including non-designated foreign exchange forward contracts as detailed in note 45.

A derivative with a positive fair value is recognised as a financial asset whereas a derivative with a negative fair value is recognised as a financial liability. Derivatives are not offset in the financial statements unless the Group has both a legally enforceable right and intention to offset. The impact of the Master Netting Agreements on the Group's financial position is disclosed in note 22. A derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the instrument is more than 12 months and it is not due to be realised or settled within 12 months. Other derivatives are presented as current assets or current liabilities.

EMPLOYEE BENEFITS

Defined contribution plans

A defined contribution plan is a post-employment benefit plan under which the Company pays fixed contributions into a separate entity and will have no legal or constructive obligation to pay further amounts. Obligations for contributions to defined contribution pension plans are recognised as an expense in the income statement in the periods during which services are rendered by employees.

Defined benefit plans

A defined benefit plan is a post-employment benefit plan other than a defined contribution plan. The Company's net obligation in respect of defined benefit pension plans and other post-employment benefits is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods; that benefit is discounted to determine its present value, and the fair value of any plan assets (at bid price) and any unrecognised past service costs are deducted. The liability discount rate is the yield at the balance sheet date on AA-credit-rated bonds denominated in the currency of, and having maturity dates approximating to the terms of the Company's obligations. The calculation is performed by a qualified actuary using the projected unit credit method. When the calculation results in a benefit to the Company, the recognised asset is limited to the total of any unrecognised past service costs and the present value of benefits available in the form of any future refunds from the plan, reductions in future contributions to the plan or on settlement of the plan and takes into account the adverse effect of any minimum funding requirements.

Actuarial gains and losses that have arisen since the adoption of FRS 101 are recognised in the period that they occur directly into equity through the statement of comprehensive income.

The Company is the sponsoring and principal employer of two UK defined benefit pension Schemes, the Morgan Pension Scheme and the Morgan Group Senior Staff Pension and Life Assurance Scheme (the UK Schemes). The Company also guarantees certain obligations and liabilities to the employees that currently participate in the two UK Schemes. During 2016 the Company adopted a new policy to allocate costs associated with the UK pension schemes between itself, as Principal Employer, and the various Participating Employers, based on an evaluation of each entity's share of overall Scheme liabilities. This ensures that the pension liability is reflected in the entity that employed the participant. Previously all of the Scheme assets and liabilities were recognised on the balance sheet of the Company only. Further details are provided in note 39.

Share-based payment transactions

Share-based payment arrangements in which the Company receives goods or services as consideration for its own equity instruments are accounted for as equity-settled share-based payment transactions, regardless of how the equity instruments are obtained by the Company.

The grant date fair value of share-based payments awards granted to employees is recognised as an employee expense, with a corresponding increase in equity, over the period in which the employees become unconditionally entitled to the awards. Share-based payment charges and credits relating to awards granted to employees of subsidiaries are recharged to those subsidiaries with a corresponding entry in the Company's income statement. The fair value of the wards granted is measured using an option valuation model, taking into account the terms and conditions upon which the awards were granted. The amount recognised as an expense is adjusted to reflect the actual number of awards for which the related service and non-market vesting conditions are expected to be met, such that the amount ultimately recognised as an expense is based on the number of awards that do not meet the related service and non-market performance conditions at the vesting date. For share-based payment awards with non-vesting conditions, the grant date fair value of the share-based payment is measured to reflect such conditions and there is no true-up for differences between expected and actual outcomes.

Share-based payment transactions in which the Company receives goods or services by incurring a liability to transfer cash or other assets that is based on the price of the Company's equity instruments are accounted for as cash-settled share-based payments. The fair value of the amount payable to employees is recognised as an expense, with a corresponding increase in liabilities, over the period in which the employees become unconditionally entitled to payment. The liability is remeasured at each balance sheet date and at settlement date. Any changes in the fair value of the liability are recognised as personnel expense in profit or loss.

Disclosure of the share-based payment transactions can be found in note 24 to the Group financial statements.

29. ACCOUNTING POLICIES *continued*

Own shares held by The Morgan General Employee Benefit Trust
Transactions of the Group-sponsored Morgan General Employee Benefit Trust are treated as being those of the Company and are therefore reflected in the Company's financial statements. In particular, the Trust's purchases and sales of shares in the Company are debited and credited to equity.

PROVISIONS
A provision is recognised in the balance sheet when the Company has a present legal or constructive obligation as a result of a past event that can be reliably measured, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects risks specific to the liability where the effect of discounting is expected to be material.

TAXATION
Tax on the profit or loss for the year comprises current and deferred tax. Tax is recognised in the income statement except to the extent that it relates to items recognised directly in equity or other comprehensive income, in which case it is recognised directly in equity or other comprehensive income.

Current tax is the expected tax payable or receivable on the taxable income or loss for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustment to tax payable in respect of previous years.

Deferred tax is provided on temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The following temporary differences are not provided for: the initial recognition of goodwill; the initial recognition of assets or liabilities that affect neither accounting nor taxable profit other than in a business combination; and differences relating to investments in subsidiaries to the extent that they will probably not reverse in the foreseeable future. The amount of deferred tax provided is based on the expected manner of realisation or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the balance sheet date.

A deferred tax asset is recognised only to the extent that it is probable that future taxable profits will be available against which the temporary difference can be utilised.

DIVIDENDS ON SHARES PRESENTED WITHIN SHAREHOLDERS' FUNDS
Dividends unpaid at the balance sheet date are only recognised as a liability at that date to the extent that they are appropriately approved and are no longer at the discretion of the Company. Unpaid dividends that do not meet these criteria are disclosed in the notes to the financial statements.

FINANCIAL GUARANTEE CONTRACTS
Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other companies within its Group, the Company considers these to be insurance arrangements, and accounts for them as such. In this respect, the Company treats the guarantee contract as a contingent liability until such time as it becomes probable that the Company will be required to make a payment under the guarantee, at which point a liability would be recognised.

USE OF JUDGEMENTS AND ESTIMATES
In preparing these financial statements, management has made judgements, estimates, and assumptions that affect the application of the Company's accounting policies and the reported amount of assets, liabilities, income and expenses.

In addition to the areas of judgement and estimates outlined in note 1 to the consolidated Group financial statements, the Company also identifies the assumptions required in investments impairment assessments as a source of significant risk of resulting in a material adjustment to the asset carrying values of the Company. Assessment of impairment relies on the use of estimates of the future profitability in a multiple based valuation which may differ from the actual results achieved. Due to global economic uncertainty, there is an increased level of risk and therefore a key source of estimate uncertainty in these assumptions, see note 34 for sensitivity analysis.

30. STAFF NUMBERS AND COSTS
The average number of persons employed by the Company (including Directors) during the year was as follows:

Number of employees	2021	2020
Directors and corporate staff	58	63

Full details of the Directors' remuneration for the period can be found in the Remuneration Report on pages 84 to 105.

Aggregate employee-related costs were as follows:

	Note	2021 £m	2020 £m
Wages and salaries		11.3	8.0
Equity-settled share-based payments	24	4.5	0.7
Social security costs		1.5	1.4
Other pension costs		0.6	0.7
		17.9	10.8

In 2021, £0.7 million (2020: £1.3 million) of the equity-settled share-based payments amount was recharged to other Morgan Group companies.

31. INTANGIBLE ASSETS

	Software £m
Cost	
Balance at 1 January 2021	10.9
Additions – externally purchased	1.0
Disposals	(1.6)
Balance at 31 December 2021	10.3
Amortisation	
Balance at 1 January 2021	6.3
Amortisation for the year	3.0
Disposals	(1.6)
Balance at 31 December 2021	7.7
Carrying amounts	
At 31 December 2020	4.6
At 31 December 2021	2.6

32. PROPERTY, PLANT AND EQUIPMENT

	Plant, equipment and fixtures £m	Land and buildings £m	Total £m
Cost			
Balance at 1 January 2021	1.1	12.1	13.2
Additions	0.2	–	0.2
Disposals	–	(5.6)	(5.6)
Balance at 31 December 2021	1.3	6.5	7.8
Depreciation and impairment losses			
Balance at 1 January 2021	0.2	6.5	6.7
Depreciation charge for the year	0.4	–	0.4
Disposals	–	(2.7)	(2.7)
Balance at 31 December 2021	0.6	3.8	4.4
Carrying value			
At 31 December 2020	0.9	5.6	6.5
At 31 December 2021	0.7	2.7	3.4

33. LEASING
The reconciliation in the movement of carrying value in of right-of-use assets is set out in the table below:

	Plant and equipment £m	Land and buildings £m	Total £m
Balance at 1 January 2021	0.6	0.7	1.3
Additions	–	–	–
Depreciation charge for the year	(0.4)	(0.1)	(0.5)
Balance at 31 December 2021	0.2	0.6	0.8

The Company leases several assets including buildings and IT equipment. The average lease term at 31 December 2021 is 2.1 years (2020: 3.4 years).

At 31 December 2021, the Company has not applied any exemptions for short-term leases or leases of low-value assets.

NOTES TO THE COMPANY BALANCE SHEET

34. INVESTMENT IN SUBSIDIARY UNDERTAKINGS

	Shares in Group undertakings £m	Loans £m	Total £m
Cost			
Balance at 1 January 2021	449.4	384.9	834.3
Reclassification	–	–	–
Additions	–	–	–
Disposals	–	–	–
Loan repayments	–	(31.6)	(31.6)
Effect of movement in foreign exchange	–	0.5	0.5
Balance at 31 December 2021	449.4	353.8	803.2
Provisions			
Balance at 1 January 2021	139.7	65.6	205.3
Provided in the year	–	–	–
Reversal of impairment	(118.9)	(0.7)	(119.6)
Disposals	–	–	–
Effect of movement in foreign exchange	–	(0.7)	(0.7)
Balance at 31 December 2021	20.8	64.2	85.0
Carrying amounts			
At 31 December 2020	309.7	319.3	629.0
At 31 December 2021	428.6	289.6	718.2

After a year of global economic recovery and an improvement in forecasts, management conducted a review of the Company's investment in subsidiary undertakings. Following this review management identified the reversal of impairment losses of £118.9 million (2020: £16.5 million) against a number of Shares in Group undertakings which reflected the increased expectation in future cash flows arising from these investments. In addition, management identified the reversal of impairment losses of £0.7 million (2020: £nil) against loans following loan repayments.

In the prior year impairment losses of £48.9 million and £9.7 million were against a number of Shares in Group undertakings and loans respectively. There were no impairment losses recognised in the current year.

The impairment assessment of Shares in Group undertakings uses the Board approved, 2022 budgets in an EBITDA* multiple valuation, which is sensitive to changes in the principal assumptions. A 2% increase in either EBITDA* or the multiple would increase the carrying value of the share in Group undertakings by £4.3 million at 31 December 2021. A 2% decrease would decrease the carrying value by £4.3 million. Management consider these changes in assumptions to be reasonable possible.

Note 44 to the financial statements gives details of the Company's fixed asset investments.

35. DEBTORS

	Note	2021 £m	2020 £m
Due within one year			
Amounts owed by Group undertakings		19.1	42.6
Other debtors		1.3	1.2
Derivative financial assets	45	1.0	1.4
Prepayments		1.5	1.1
		22.9	46.3
Due after more than one year			
Derivative financial assets	45	8.2	10.1
Amounts owed by Group undertakings		209.8	244.2
		218.0	254.3

36. CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	Note	2021 £m	2020 £m
Bank overdrafts	38	0.2	38.9
Borrowings	38	–	–
Lease liabilities		0.4	0.5
Trade creditors		2.9	3.3
Amounts owed to Group undertakings		53.3	77.4
Other creditors		0.1	3.1
Accruals		10.8	7.1
Derivative financial liabilities	45	0.9	1.6
		68.6	131.9

37. CREDITORS: AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR

	Note	2021 £m	2020 £m
Amounts owed to Group undertakings		25.4	15.2
Borrowings	38	173.6	176.8
Lease liabilities		0.4	0.8
Derivative financial liabilities	45	2.7	5.0
Other creditors		0.6	1.7
		202.7	199.5

38. BORROWINGS AND LEASE LIABILITIES

TERMS AND DEBT REPAYMENT SCHEDULE

				2021		2020	
	Currency	Effective interest rate	Year of maturity	Carrying amount £m	Fair value £m	Carrying amount £m	Fair value £m
Bank overdrafts	Various	1.95%		0.2	0.2	38.9	38.9
1.18% Euro Senior Notes 2023	EUR	1.18%	2023	21.0	21.1	22.4	22.6
3.17% US Dollar Senior Notes 2023	USD	3.17%	2023	11.1	11.3	11.0	11.4
1.55% Euro Senior Notes 2026	EUR	1.55%	2026	21.1	21.4	22.4	23.2
3.37% US Dollar Senior Notes 2026	USD	3.37%	2026	72.2	72.8	71.4	75.1
1.74% Euro Senior Notes 2028	EUR	1.74%	2028	8.4	8.6	9.0	9.4
2.89% Euro Senior Notes 2030	EUR	2.89%	2030	21.0	22.1	22.3	24.3
4.87% US Dollar Senior Notes 2026	USD	4.87%	2026	18.8	20.6	18.6	20.7
Syndicated revolving credit facility	GBP	1.15%	2024	(0.4)	(0.4)	(0.7)	(0.7)
Syndicated revolving credit facility	USD	2.15%	2024	–	–	–	–
5.5% Cum First Preference Shares	GBP	5.50%		0.1	0.1	0.1	0.1
5.0% Cum Second Preference Shares	GBP	5.00%		0.3	0.3	0.3	0.3
Lease liabilities	GBP	2.30%	2022–2025	0.8	0.8	1.3	1.3
				174.6	179.0	217.0	226.6

In 2021, no borrowings were secured on the assets of the Company (2020: £nil).

NOTES TO THE COMPANY BALANCE SHEET

39. EMPLOYEE BENEFITS: PENSIONS

DEFINED BENEFIT PLANS

The Company participates in two defined benefit pension schemes, the Morgan Pension Scheme and the Morgan Group Senior Staff Pension and Life Assurance Scheme (the Schemes). The Schemes were closed to new entrants on 1 August 2011, with any new employees receiving benefits through the Morgan Group Personal Pension Plan, a defined contribution arrangement. The Morgan Group Senior Staff Pension and Life Assurance Scheme was closed to the future accrual of benefits on and with effect from 6 April 2016. The Morgan Pension Scheme was closed to the future accrual of benefits on and with effect from 6 April 2018. Current employees, including those who were active in the Schemes at closure, were auto-enrolled into The Morgan Group Personal Pension Plan for their future pension benefits.

	2021 £m	2020 £m
Pension plans and employee benefits		
Present value of funded defined benefit obligations	(175.9)	(195.5)
Fair value of plan assets	160.9	160.7
Net obligations	15.0	(34.8)
Movements in present value of defined benefit obligation		
At 1 January	(195.5)	(175.5)
Interest cost	(2.4)	(3.5)
Remeasurement (losses)/gains:		
Changes in financial assumptions	14.3	(25.3)
Changes in demographic assumptions	1.9	–
Experience adjustments on benefit obligations	(1.6)	0.8
Benefits paid	7.4	8.0
Net past service credit	–	–
At 31 December	(175.9)	(195.5)
Movements in fair value of plan assets		
At 1 January	160.7	145.2
Interest on plan assets	2.0	2.8
Remeasurement (losses)/gains	0.1	15.3
Contributions by employer	5.5	5.4
Benefits paid	(7.4)	(8.0)
At 31 December	160.9	160.7
Actual return on assets	2.1	18.1

Expense recognised in the income statement

	2021 £m	2020 £m
Net past service credit	–	–
Administrative expenses (including administration expenses incurred by the Company directly)	(0.9)	(0.8)
Net interest on net defined benefit liability	(0.4)	(0.7)
Total expense recognised in the income statement	(1.3)	(1.5)

The fair values of the plan assets were as follows:

	2021 £m	2020 £m
Equities and growth assets	43.6	44.0
Bonds	56.2	46.9
Matching insurance policies	60.1	68.3
Other	1.0	1.5
Total	160.9	160.7

The assumptions used are best estimate assumptions chosen from a range of possible actuarial assumptions which may not be borne out in practice. The principal assumptions are the discount rate and inflation assumptions which are long-term and measured on external factors, based upon each plan's duration. In addition to these, the mortality assumption in the UK is material to the cost of the promised benefits. The assumed increases in salaries and pensions in payment are derived from assumed future inflation.

39. EMPLOYEE BENEFITS: PENSIONS *continued*

Principal actuarial assumptions at the year end were as follows:

Assumptions:	2021 %	2020 %
Inflation (RPI/CPI)	3.40/2.61	2.88/2.03
Discount rate	1.92	1.23
Pensions increase	3.00/3.22/3.75	3.00/2.80/3.56
Salary increase	n/a	n/a
Mortality – post-retirement:		
Life expectancy of a male aged 60 in accounting year (years)	26.0	26.3
Life expectancy of a male aged 60 in accounting year + 20 (years)	27.4	27.8

Funding

The most recent full actuarial valuations of the Schemes were undertaken as at March 2019 and resulted in combined assessed deficits of £120.3 million. On the basis of these full valuations, the Trustees of the Schemes, having consulted with the Group, agreed past service deficit recovery payments totalling £16.5 million a year from January 2020 (Company: £5.4 million), increasing by 2.75% pa until 2025, with further payments to Morgan Pension Scheme for 2026 and 2027. This recovery plan is subject to approval from the UK Pensions Regulator. New full valuations are due with effective dates of March 2022 and the outcome of those consultations will determine the Group's future contribution requirements, with any new deficit arising needing to be met through the payment of additional contributions.

Sensitivity analysis

The sensitivities of the Company's net balance sheet to the principal assumptions are:

	Change in assumption	2021 Increase effect £m	2020 Increase effect £m
Discount rate	Decrease by 0.1%	2.1	2.5
Inflation	Increase by 0.1%	0.8	1.1
Mortality – post-retirement	Pensioners live 1 year longer	5.1	6.0

These sensitivities have been calculated to show the movement in the net balance sheet in isolation, and assuming no other changes in market conditions at the accounting date (except where a fully matching insurance policy is held where this asset is assumed to change in value to match the change in obligations). This is unlikely in practice, for example, a change in discount rate is unlikely to occur without any movement in the value of the assets held by the Company's schemes.

Defined contribution plans

The Group operates a defined contribution pension plan (the Morgan Group Personal Pension Plan). The total Company expense relating to this plan in 2021 was £0.6 million (2020: £0.6 million).

40. PROVISIONS AND CONTINGENT LIABILITIES

	Dilapidation provisions £m	Other provisions £m	Total £m
Balance at 1 January 2021	0.3	3.3	3.6
Provisions made during the year	–	1.9	1.9
Provisions used during the year	(0.2)	(0.1)	(0.3)
Effects of movement on foreign exchange	–	(0.1)	(0.1)
Balance at 31 December 2021	0.1	5.0	5.1

Other provisions relate to legal claims and are based on the Company's assessment of the probable cost of these activities.

NOTES TO THE COMPANY BALANCE SHEET

40. PROVISIONS AND CONTINGENT LIABILITIES *continued*

Contingent liabilities and guarantees
Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other companies within its Group, the Company considers these to be insurance arrangements, and accounts for them as such. In this respect, the Company treats the guarantee contract as a contingent liability until such time as it becomes probable that the Company will be required to make a payment under the guarantee, at which point a liability would be recognised.

The Group has been subject to legal claims in a number of countries. In some cases it will not be possible to form a view, either because the facts are unclear or because further time is needed to properly assess the merits of the case, and no provisions are held against such cases. The Board, having taken legal advice, is of the opinion that the remainder of these actions will not have a material impact on the Company's financial position.

The Company participates in a cash pooling arrangement provided by Lloyds Bank plc with other UK Group companies. As part of that pooling arrangement, the Company has provided a Guarantee for any liabilities of the other participating companies to the bank, limited to the lower of:

a) an amount equal to the base currency amount of the total liabilities in the cash pool; and
b) an amount equal to the base currency amount of such guarantor's own net credit balance in the cash pool.

At the balance sheet date, the guaranteed amount was £0.1m (2020: £1.5m).

There are no other contingent liabilities in the Company as at 31 December 2021.

41. SHARE CAPITAL

	Ordinary Shares
In issue at beginning and end of the period	285,369,988

	2021 £m	2020 £m
Allotted, called up and fully paid		
Ordinary shares of 25 pence each	71.3	71.3
	71.3	71.3

Additionally the Company has authorized, issued and fully paid 437,281 (2020: 437,281) cumulative preference shares classified as borrowings totaling £0.4m (2020: £0.4m). The preference shares comprise 125,327 of 5.5% Cumulative First Preference shares of £1 each and 311,954 issued 5.0% Cumulative Second Preference shares of £1 each.

Refer to note 20 for details of the rights to dividends, voting rights and return of capital relating to the Preference shares.

For proposed Ordinary dividends see the consolidated income statement on page 118.

42. SHARE PREMIUM AND RESERVES

The merger reserve comprises the balance associated with the premium of shares issued during previous acquisitions. Further details on share premium and reserves are given in note 20.

Apex Financial Services (Trust Company) Limited administer The Morgan General Employee Benefit Trust (the Trust) in which shares are held to satisfy awards granted under the Company's share plans. The shares are distributed via discretionary settlement governed by the rules of the Trust deed dated 1 March 1996 (as amended).

The total number of own shares held by the Trust at 31 December 2021 was 1,360,098 (2020: 841,880) and at that date had a market value of £4.6 million (2020: £2.6 million).

In 2021, the amount of reserves of Morgan Advanced Materials plc that may be distributed under Section 831(4) of the Companies Act 2006 was £281.5 million (2020: £148.3 million). This comprises a portion of the profit and loss account.

43. RELATED PARTIES

The Company has related party relationships with its subsidiaries, its associate, its Directors and executive officers and their close family members. The Company is exempt from providing information relating to these parties with the exception of transactions with entities where the Company does not directly or indirectly own 100% of the shareholding, these are set out in the table below:

	2021 £m	2020 £m
Transactions with subsidiaries		
Income from management services	1.0	2.0
Net interest income	4.5	4.3
Dividend income	8.9	13.0
Loans owed by related parties	–	–
Other amounts owed by related parties	2.7	3.0
Other amounts owed to related parties	0.9	1.1

44. FIXED ASSET INVESTMENTS

In accordance with Section 409 of the Companies Act 2006, a full list of related undertakings as at 31 December 2021 is disclosed below. Related undertakings include subsidiary undertakings, all significant holdings (being 20% or more interest), associated undertakings, joint ventures and qualifying partnerships. Unless otherwise stated the Group's shareholding represents Ordinary shares held indirectly by the Company.

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
Carbo San Luis S.A.[11]	Argentina	Talcahuano 736, 4th Floor, Buenos Aires, C1013AAP, Argentina	100.00%
Morgan Technical Ceramics Australia Pty Ltd	Australia	4 Redwood Drive, Clayton, VIC 3168, Australia	100.00%
Morganite Australia Pty Ltd[12]	Australia	30-36 Birralee Road, Regency Park, SA 5010, Australia	100.00%
Morgan Mechanical Carbon Australasia Pty Ltd[1]	Australia	Unit 4, 92-100 Belmore Road, Riverwood, NSW 2210, Australia	100.00%
Morganite Brasil Ltda[13]	Brazil	Avenida do Taboão 3265, Taboão, São Bernardo do Campo, São Paulo, CEP 09656-000, Brazil	100.00%
Morgan Advanced Materials Canada Inc.[14]	Canada	1185 Walkers Line, Burlington, ON L7M 1L1, Canada	100.00%
Carbo Chile S.A.	Chile	Avenida San Eugenio 12462, Sitio 3, Loteo Estrella del Sur, Santiago, Chile	100.00%
Dalian Morgan Ceramics Company Ltd[15]	China	No. 931 Xi'nan Road, Shahekou District, Dalian, Liaoning Province 116200, China	100.00%
Morgan Guangzhou Trading Company Limited	China	Room 204, No. 10, Dalang North Street, Huangpu District, Guangzhou, China	100.00%
Morgan Haldenwanger Technical Ceramics (Wuxi) Co. Ltd[15]	China	Gongyuanxi Road, Ding Shu Zhen, Yixing, Jiangsu Province 214221, China	100.00%
Morgan Molten Metal Systems (Suzhou) Co. Ltd[1, 16]	China	108 Tongsheng Road, Suzhou Industrial Park, Suzhou, Jiangsu Province, 215126, China	100.00%
Morgan Technical Ceramics (Suzhou) Co. Ltd	China	Room 09, 28th Floor(2809), 288 LongShan Road, Greenland Kanhu Plaze, Suzhou New District, Suzhou, 215163, China	100.00%
Morgan Thermal Ceramics (Shanghai) Co. Ltd[1, 15]	China	18 Kang An Road, Kang Qiao Industrial Zone, Pudong, Shanghai 201315, China	100.00%
Morgan International Trading (Shanghai) Co. Ltd[1, 15]	China	18 Kang An Road, Kang Qiao Industrial Zone, Pudong, Shanghai 201315, China	100.00%
Shanghai Morgan Advanced Material and Technology Co. Ltd[1, 16]	China	4250 Long Wu Road, Shanghai, 200241, China	100.00%
Jiangsu Morgan Ceramic Core Technology Co. Ltd[13]	China	2 Liye Road, Economic Development Zone, Wuxi, Jiangsu Province, 214131, China	100.00%
Morgan AM&T (Shanghai) Co. Ltd[5, 13]	China	4250 Long Wu Road, Shanghai, 200241, China	70.00%
Morgan Kailong (Jingmen) Thermal Ceramics Co. Ltd[5, 15]	China	20-1 Quankou Road, Jingmen City, Hubei Province, 448032, China	70.00%
Dalian Morgan Refractories Ltd[5, 15]	China	No. 931 Xi'nan Road, Shahekou District, Dalian, Liaoning Province 116200, China	70.00%

NOTES TO THE COMPANY BALANCE SHEET

44. FIXED ASSET INVESTMENTS *continued*

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
Yixing Morgan Thermal Ceramics Co. Ltd[6, 15]	China	2 Beidan Road, Taodu Industrial Park, Ding Shu Zhen, Yixing, Jiangsu, 214222, China	51.00%
Thermal Ceramics de Colombia[9]	Colombia	Calle 18 No. 23-31, Bodega 1, Guadalajara de Buga-Valle, AA 5086, Colombia	100.00%
Morgan Carbon France S.A.	France	6 rue du Réservoir, 68420 Eguisheim, France	100.00%
Thermal Ceramics de France S.A.S.U.[16]	France	Centre de Vie BP 75, 3 rue du 18 Juin 1827, 42162 Andrézieux-Bouthéon, France	100.00%
Thermal Ceramics S.A.[10, 16]	France	Centre de Vie BP 75, 3 rue du 18 Juin 1827, 42162 Andrézieux-Bouthéon, France	100.00%
Morgan Advanced Materials Haldenwanger GmbH[17]	Germany	Teplitzerstraße 27, 84478 Waldkraiburg, Germany	100.00%
Morgan Electrical Carbon Deutschland GmbH	Germany	Zeppelinstraße 26, 53424 Remagen, Germany	100.00%
Morgan Thermal Ceramics Deutschland GmbH	Germany	Borsigstraße 4-6, 21465 Reinbek, Germany	100.00%
Morgan Molten Metal Systems GmbH	Germany	Noltinastraße 29, 37297 Berkatal-Frankenhain, Germany	100.00%
Morgan Deutschland Holding GmbH	Germany	Zeppelinstraße 26, 53424 Remagen, Germany	100.00%
Porextherm Dämmstoffe GmbH	Germany	Heisingerstraße 8/10, 87437 Kempten (Allgäu), Germany	100.00%
Morgan Holding GmbH	Germany	Zeppelinstraße 26, 53424 Remagen, Germany	100.00%
The Morgan Crucible Management GmbH	Germany	Zeppelinstraße 26, 53424 Remagen, Germany	100.00%
Wesgo Ceramics GmbH	Germany	Willi-Grasser-Straße 11, 91056 Erlangen, Germany	100.00%
Refractarios Nacionales S.A.	Guatemala	Km. 34.5, Ruta al Pacífico, Palín, Escuintla, Guatemala	100.00%
Morgan AM&T Hong Kong Company Ltd	Hong Kong	Units 4-6, 11/F, Siu Wai Industrial Centre, 29-33 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong	100.00%
Morgan Materials Hungary Limited Liability Company[15]	Hungary	Csillagvirág utca 7, 1106 Budapest, Hungary	100.00%
Morgan Advanced Materials India Private Ltd	India	P-11, Pandav Nagar, Mayur Vihar Phase 1, Delhi, 110091, India	100.00%
Morganite Crucible (India) Ltd	India	B-11, MIDC Industrial Area, Waluj, Aurangabad, 431136, Maharashtra, India	75.00%
Ciria India Limited[15]	India	P-11, Pandav Nagar, Mayur Vihar Phase 1, Delhi, 110091 India	70.00%
Murugappa Morgan Thermal Ceramics Ltd[6]	India	PO Box 1570, Dare House Complex, Old No. 234/ New No. 2, NSC Bose Road, Chennai, 600001 India	51.00%
Thermal Ceramics Italiana S.R.L.[13]	Italy	Via Vittori Pisani 20, 20124, Milan, Italy	100.00%
Morgan Carbon Italia S.R.L.	Italy	Via Vittori Pisani 20, 20124, Milan, Italy	100.00%
Morganite Carbon Kabushiki Kaisha	Japan	1-5, Isogamidori 7-chome, Chuo-ku, Kobe-shi, Hyogo, Japan	100.00%
Shin-Nippon Thermal Ceramics Corporation	Japan	Portus Center Building 12F, 4-45-1 Ebisujimacho, Sakai-ku, Sakai-shi, Osaka 590-0985, Japan	50.00%
Morgan Korea Company Ltd[4, 18]	Korea	27 Nongongjoongang-ro 46 gil, Nongong-eup, Dalseong-gun, Daegu-si, Republic of Korea	93.19%
Morganite Luxembourg S.A.	Luxembourg	BP 15, Capellen, L-8301, Luxembourg	100.00%
Grafitos y Maquinados S.A. de C.V.[1, 19]	Mexico	Cerrada de la Paz No. 101, Col. Industrial La Paz, Pachuca Hidalgo, Mexico	100.00%
Grupo Industrial Morgan S.A. de C.V.[1, 19]	Mexico	Cerrada de la Paz No. 101, Fraccionamiento Industrial La Paz, Mineral de la Reforma, 42181 Hidalgo, 42092, Mexico	100.00%
Morgan Technical Ceramics S.A. de C.V.[19]	Mexico	Av. Fulton No. 20, Fraccionamiento Industrial Valle de Oro, San Juan del Rio, Queretaro C.P. 76802, Mexico	100.00%
Morgan Holding Netherlands B.V.	Netherlands	Oude Veiling 3, 1689 AA Zwaag, The Netherlands	100.00%
Morgan Terrassen B.V.	Netherlands	Oude Veiling 3, 1689 AA Zwaag, The Netherlands	100.00%
Morgan AM&T B.V.	Netherlands	Oude Veiling 3, 1689 AA Zwaag, The Netherlands	100.00%
Morgan Donald Brown Limited	New Zealand	KPMG, Chartered Accountants, KPMG Centre, 18 Viaduct Harbour Avenue, Maritime Square, Auckland, 1010, New Zealand	100.00%
Morgan Carbon Polska Sp.zoo	Poland	ul. Iskry 26, 01-472 Warszawa, Poland	100.00%
Thermal Ceramics Polska Sp.zoo	Poland	Towarowa 9, 44-100 Gliwice, Poland	100.00%
Morgan Thermal Ceramics Sukhoy Log LLC[20]	Russia	Russia 624800, Sverdlovsk District, Sukhoi Log 624800, Ul. Militseyskaya 2	51.00%

44. FIXED ASSET INVESTMENTS *continued*

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
Morgan Ceramics Asia Pte Ltd[1]	Singapore	150 Kampong Ampat, #05-06A, KA Centre, 368324, Singapore	100.00%
Morganite Ujantshi (Pty) Ltd	South Africa	149 South Rand Road, Tulisa Park, Johannesburg 2197, South Africa	74.90%
Thermal Ceramics South Africa (Pty) Ltd	South Africa	149 South Rand Road, Tulisa Park, Johannesburg 2197, South Africa	100.00%
Morganite South Africa (Pty) Ltd	South Africa	149 South Rand Road, Tulisa Park, Johannesburg 2197, South Africa	100.00%
Thermal Ceramics España S.L.	Spain	Av. Europa, 106, 12006, Castellón, España.	100.00%
Morganite Española S.A.	Spain	Av. Europa, 106, 12006, Castellón, España.	100.00%
Morgan Matroc S.A. (in liquidation)	Spain	Roger de Lluria 104 5º-2ª, 08037 Barcelona, Spain	100.00%
Morgan Advanced Materials (Taiwan) Co. Ltd	Taiwan	25 Hsin-Yeh Street, Hsiao Kang, Kaohsiung 81208, Taiwan	100.00%
Morganite Thermal Ceramics (Taiwan) Ltd	Taiwan	c/o Baker & McKenzie, 15/f, 168 Tun Hwa North Road, Taipei 105, Taiwan	88.00%
Morgan Holdings (Thailand) Ltd[2]	Thailand	22nd -25th Floor, 990 Abdulrahim Place, 22nd-25th Floor, Rama IV Road, Khwaeng Silom Sub-district, Bangrak District, Bangkok, 10500, Thailand	100.00%
Morgan Technical Ceramics (Thailand) Ltd[2]	Thailand	No. 958 On-nuch Road, Khwaeng Suanluang, Khet Suanluang, Bangkok, 10250, Thailand	100.00%
MKGS Morgan Karbon Grafit Sanayi Anonim Sirketi	Turkey	Osmangazi Mahallesi 2647, Sokak No. 27/3, Kıraç, Esenyurt, Istanbul 34522, Turkey	100.00%
Morgan Advanced Materials Industries Ltd	United Arab Emirates	KHIA4–07A, Khalifa Industrial Zone Abu Dhabi (KIZAD), Abu Dhabi, United Arab Emirates	100.00%
Certech International Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
MCCo Limited[7]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
MNA Finance Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan Electro Ceramics Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan Europe Holding Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan European Finance Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan Finance Management Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan Holdings Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan International Holding Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan North America Holding Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morgan Technical Ceramics Limited	United Kingdom	Morgan Advanced Materials – Technical Ceramics, Morgan Drive, Stourport-on-Severn, Worcestershire DY13 8DW, UK	100.00%
Morgan Trans Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morganite Carbon Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morganite Crucible Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Morganite Electrical Carbon Limited	United Kingdom	Upper Fforest Way, Morriston, Swansea, West Glamorgan, SA6 8PP, UK	100.00%
Morganite Special Carbons Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Petty France Investment Nominees Limited[1]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
TCG Guardian 1 Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
TCG Guardian 2 Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Terrassen Holdings Limited[8]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
The Morgan Crucible Company Limited	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Thermal Ceramics Europe Limited[7] (in liquidation)	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Thermal Ceramics Limited[7]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	100.00%
Thermal Ceramics UK Limited	United Kingdom	Tebay Road, Bromborough, Wirral, CH62 3PH, UK	100.00%
Clearpower Ltd[3, 21]	United Kingdom	York House, Sheet Street, Windsor, Berkshire, SL4 1DD, UK	99.01%
Certech, Inc.[23]	United States	550 Stewart Road, Hanover, Pennsylvania 18706-1455	100.00%

NOTES TO THE COMPANY BALANCE SHEET

44. FIXED ASSET INVESTMENTS *continued*

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
Graphite Die Mold, Inc.[23]	United States	18 Air Line Park, Durham, Connecticut 06422-1000, USA	100.00%
Morgan Advanced Ceramics, Inc.[23]	United States	2425 Whipple Road, Hayward, California 94544, USA	100.00%
Morgan Advanced Materials and Technology Inc.[23]	United States	441 Hall Avenue, St Marys, Pennsylvania 15857, USA	100.00%
Morganite Crucible Inc.[24]	United States	2102 Old Savannah Road, Augusta, Georgia 30906	100.00%
Morganite Industries Inc.[25]	United States	4000 West Chase Blvd, Suite 170, Raleigh, North Carolina 27607, USA	100.00%
National Electrical Carbon Products, Inc.[14]	United States	PO Box 1056, 251 Forrester Drive, Greenville, South Carolina 29602, USA	100.00%
Thermal Ceramics Inc.[23]	United States	PO Box 923, 2102 Old Savannah Road, Augusta, Georgia 30906, USA	100.00%
Thermal Ceramics de Venezuela C.A.[15]	Venezuela	Zona Ind. El Recreo, Av. 87 N°105-121, Flor Amarillo, Valencia Edo. Carabobo, Venezuela	100.00%

1. Directly owned by Morgan Advanced Materials plc.
2. 99.98% owned by Morgan Advanced Materials plc.
3. 99% owned by Morgan Advanced Materials plc.
4. 93.19% owned by Morgan Advanced Materials plc.
5. 70% owned by Morgan Advanced Materials plc.
6. 51% owned by Morgan Advanced Materials plc.
7. 50% owned by Morgan Advanced Materials plc.
8. 8.18% owned by Morgan Advanced Materials plc.
9. 4% owned by Morgan Advanced Materials plc.
10. 1.98% owned by Morgan Advanced Materials plc.
11. Ownership held in Class A and Class B Common Stock.
12. Ownership held in Ordinary and Non-Cumulative Non-Participating Redeemable Preference Shares.
13. Ownership held in Quotas.
14. Ownership held in Common Stock of no par value.
15. Ownership held in Registered Capital.
16. Ownership held in Ordinary Shares of no par value.
17. Ownership held in Partnership Shares.
18. Ownership held in Common and Preference Shares.
19. Ownership held in Series A and Series B.
20. Subsidiary not included in consolidated accounts as the Company does not exercise management control.
21. Ownership held in Ordinary A, B and C and Preference A and B Shares.
22. Ownership held in Ordinary A and B Shares.
23. Ownership held in Common Stock.
24. Ownership held in Preferred Stock and no par Common Stock.
25. Ownership held in Class A, Class B and Class C Common Stock.

45. DERIVATIVE FINANCIAL ASSETS AND LIABILITIES

	2021 £m	2020 £m
Derivative financial assets		
Forward foreign exchange contracts non-designated		
– amounts falling due within one year	1.0	1.4
– amounts falling due after more than one year	8.2	10.1
	9.2	11.5
Derivative financial liabilities		
Forward foreign exchange contracts non-designated		
– amounts falling due within one year	(0.9)	(1.6)
– amounts falling due after more than one year	(2.7)	(5.0)
	(3.6)	(6.6)

Fair values are measured using a hierarchy where the inputs are:

- Level 1 – quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2 – not traded in an active market but the fair values are based on quoted market prices or alternative pricing sources with reasonable levels of price transparency. Fair value is calculated using discounted cash flow methodology, future cash flows are estimated based on forward exchange rates.
- Level 3 – inputs for the assets or liability that are not based on observable market data (unobservable inputs).

The derivative financial assets and liabilities are all measured using Level 2 inputs. The fair value of forward foreign exchange contracts is estimated by discounting the future cash flows using appropriate market-sourced data at the balance sheet date.

GROUP STATISTICAL INFORMATION

UNDER ADOPTED IFRSS

	2017 Results before specific adjusting items restated[1,2] £m	2018 Results before specific adjusting items restated[1,2,3] £m	2019 Results before specific adjusting items restated[2] £m	2020 Results before specific adjusting items £m	**2021 Results before specific adjusting items £m**
Revenue	1,001.4	1,033.9	1,049.5	910.7	**950.5**
Profit from operations before amortisation of intangible assets	120.7	124.8	134.2	91.7	**124.5**
Amortisation of intangible assets	(7.3)	(8.0)	(8.1)	(6.1)	**(6.0)**
Operating profit	113.4	116.8	126.1	85.6	**118.5**
Net financing costs	(22.5)	(13.2)	(16.9)	(11.9)	**(9.2)**
Share of profit of associate (net of income tax)	0.2	0.8	0.5	0.6	**0.4**
Profit before taxation	91.1	104.4	109.7	74.3	**109.7**
Income tax expense	(26.9)	(29.0)	(29.9)	(20.2)	**(29.7)**
Profit after taxation before discontinued operations	64.2	75.4	79.8	54.1	**80.0**
Discontinued operations	(1.0)	(1.4)	0.7	-	**-**
Profit for the period	63.2	74.0	80.5	54.1	**80.0**
Assets employed					
Property, plant and equipment	297.8	314.5	317.2	267.6	**248.1**
Right-of-use assets	–	–	49.1	35.5	**31.9**
Intangible assets	217.0	215.6	204.8	185.4	**183.1**
Investments and other receivables	11.7	12.2	12.2	11.2	**2.9**
Deferred tax assets	9.1	6.9	6.0	14.4	**15.9**
Net current assets	129.4	106.8	125.1	136.7	**202.8**
Total assets less current liabilities	665.0	656.0	714.4	650.8	**684.7**
Employee benefits: pensions	218.0	190.4	156.8	176.3	**102.7**
Non-current provisions and other items	202.7	177.9	241.0	234.0	**231.2**
Deferred tax liabilities	10.5	11.0	4.9	0.5	**1.2**
	233.8	276.7	311.7	240.0	**349.6**
Equity					
Total equity attributable to equity holders of the Parent Company	194.7	232.3	270.2	202.3	**310.6**
Non-controlling interests	39.1	44.4	41.5	37.7	**39.0**
Total equity	233.8	276.7	311.7	240.0	**349.6**
Ordinary dividends per share[4]	11.0p	11.0p	4.0p	5.5p	**9.1p**
Earnings per share					
Continuing and discontinued operations					
Basic earnings/(loss) per share	37.8p	16.2p	25.7p	(7.9)p	**25.9p**
Diluted earnings/(loss) per share	37.5p	16.1p	25.5p	(7.9)p	**25.7p**
Adjusted earnings per share[5]	22.8p	26.7p	28.0p	19.0p	**27.2p**
Diluted adjusted earnings per share[5]	22.7p	26.6p	27.8p	18.9p	**27.0p**

1. The Group disposed of the Composites and Defence Systems business in 2018, the disposal group formed the Composites and Defence Systems operating segment and has been classified as a discontinued operation under IFRS 5. Figures for 2016-2017 have been restated to reflect these changes.
2. Figures for 2016- 2019 have been restated to classify the Group's cumulative preference shares as borrowings. See note 1 to the consolidated financial statements.
3. 2017 has been restated to reflect the adoption of IFRS 15 Revenue from Contracts with Customers in 2018.
4. On 31 March 2020, the Group announced the Board's decision to withdraw the proposed 2019 final dividend due to the financial uncertainty resulting from the COVID-19 pandemic.
5. Definitions of these non-GAAP measures can be found in the glossary of terms on page 186, reconciliations of the statutory results to the adjusted measures can be found on pages 55 to 57.

CAUTIONARY STATEMENT

This document has been prepared for and only for the members of the Company as a body and no other persons. Its purpose is to assist members in assessing how the Directors have performed their duties, the Company's strategies and the potential for those strategies to succeed and for no other purpose. Save as would otherwise arise under English law, the Company, its Directors, employees, agents or advisers do not accept or assume responsibility or liability to any third parties to whom this document is shown or into whose hands it may come and any such responsibility or liability is expressly disclaimed.

This document contains forward-looking statements that are subject to risk factors associated with, amongst other things, the economic and business circumstances occurring from time to time in the countries, sectors and markets in which the Group operates. These and other factors could adversely affect the outcome and financial effects of the plans and events described. Forward-looking statements by their nature involve a number of risks, uncertainties and assumptions because they relate to events and/or depend on circumstances that may or may not occur in the future and could cause actual results and outcomes to differ materially from those expressed in or implied by the forward-looking statements.

It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a wide range of such variables. No assurances can be given that the forward-looking statements in this document will be realised. The forward-looking statements reflect the knowledge and information available at the date this document was prepared and will not be updated during the year but will be considered in the Annual Report for next year. Nothing in this document should be construed as a profit forecast.

GLOSSARY OF TERMS

Constant-currency[1]	Constant-currency revenue and Group adjusted operating profit are derived by translating the prior year results at current year average exchange rates.
Corporate costs	Corporate costs consist of the costs of the central head office.
Free cash flow before acquisitions, disposals and dividends[1]	Cash generated from continuing operations less net capital expenditure, net interest paid, tax paid and lease payments.
Group earnings before interest, tax, depreciation and amortisation (EBITDA)[1]	EBITDA is defined as operating profit before specific adjusting items, amortisation of intangible assets and depreciation.
Group adjusted operating profit[1]	Operating profit adjusted to exclude specific adjusting items and amortisation of intangible assets.
Group organic[1]	The Group results excluding acquisition, disposal and business exit impacts at constant-currency.
Adjusted earnings per share (EPS)[1]	Adjusted earnings per share is defined as operating profit adjusted to exclude specific adjusting items and amortisation of intangible assets, plus share of profit of associate less net financing costs, income tax expense and non-controlling interests, divided by the weighted average number of Ordinary shares during the period.
Net debt[1]	Borrowings, bank overdrafts and lease liabilities less cash and cash equivalents.
Net cash and cash equivalents[1]	Net cash and cash equivalents is defined as cash and cash equivalents less bank overdrafts.
Return on invested capital (ROIC)[1]	Group adjusted operating profit (operating profit excluding specific adjusting items and amortisation of intangible assets) divided by the 12-month average adjusted net assets (excludes long-term employee benefits, deferred tax assets and liabilities, current tax payable, provisions, cash and cash equivalents, borrowings, bank overdrafts and lease liabilities).
Specific adjusting items	See note 6 and note 1 to the consolidated financial statements for further details.

1. Reconciliations of these non-GAAP measures to GAAP measures can be found on pages 55 to 57.

SHAREHOLDER INFORMATION

ANALYSIS OF ORDINARY SHAREHOLDINGS AS AT 31 DECEMBER 2021

		Number of holdings	% of total holdings	Number of shares	% of share capital
Size of holding	1-2,000	4,167	76.60%	2,062056	0.72%
	2,001-5,000	628	11.54%	2,003,926	0.70%
	5,001-10,000	221	4.06%	1,558,612	0.55%
	10,001-50,000	211	3.88%	4,552,917	1.60%
	50,001-100,000	45	0.83%	3,317,247	1.16%
	100,001 and above	168	3.09%	271,875,230	95.27%
		5,440	**100.00**	**285,369,988**	**100.00%**
Holding classification	Individuals	4,787	88.02%	6,969,506	2.45%
	Nominee companies	365	6.71%	250,935,317	87.93%
	Trusts (pension funds etc.)	4	0.07%	30,519	0.01%
	Others	284	5.20%	27,434,646	9.61%
		5,629	**100.00%**	**285,369,988**	**100.00%**

KEY DATES

5 May 2022	2022 Annual General Meeting (AGM), commencing at 10:30am.
28 July 2022	Half-Year results announced via the Regulatory News Service and on the Company's website.

2021 AND (PROPOSED) 2022 DIVIDEND PAYMENT DATES

1 April and 1 October 2021	Dividend payment dates in respect of the 5.5% Cumulative First Preference shares of £1 each and the 5.0% Cumulative Second Preference shares of £1 each.
19 November 2021	An interim cash dividend of 3.2 pence per Ordinary share of 25 pence each was paid to shareholders registered at the close of business on 29 October 2021.
20 May 2022	Subject to shareholders' approval at the 2022 AGM, a final cash dividend of 5.9 pence per Ordinary share of 25 pence each will be paid to shareholders registered at the close of business on 29 April 2022.
1 April 2022 and 1 October 2022	Dividend payment dates in respect of the 5.5% Cumulative First Preference shares of £1 each and the 5.0% Cumulative Second Preference shares of £1 each.

OTHER INFORMATION

Capital gains tax	The market values of quoted shares and stocks at 31 March 1982 were: Ordinary shares of 25 pence each 122.5 pence 5.5% Cumulative First Preference shares of £1 each 30.5 pence 5.0% Cumulative Second Preference shares of £1 each 28.5 pence For capital gains tax purposes, the cost of Ordinary shares is adjusted to take account of rights issues. Any capital gains arising on disposal will also be adjusted to take account of indexation allowances. Since the adjustments will depend on individual circumstances, shareholders are recommended to consult their professional advisers.
Share price	The price can be obtained on the Company's website: www.morganadvancedmaterials.com
ISIN Code	GB0006027295
LEI	I4KI4LL95N2PHDL7EG85
Ticker symbol	MGAM

SHAREHOLDER INFORMATION

COMPANY DETAILS

Company name change	The Company changed its name to Morgan Advanced Materials plc (from The Morgan Crucible Company plc) on 27 March 2013. Following this change, share certificates issued in the name 'The Morgan Crucible Company plc' remain valid (replacement share certificates in the name 'Morgan Advanced Materials plc' were not issued to existing shareholders).
Registered office	York House, Sheet Street, Windsor, SL4 1DD Registered in England and Wales No. 286773 Telephone: +44 (0)1753 837000 www.morganadvancedmaterials.com
Website	The Company's website provides information about the Group including the markets in which it operates, its strategy and recent news from the Group. The Investors section is a key source of information for shareholders, containing details of financial results, shareholder meetings and dividends, and providing access to frequently asked questions. Current and past annual half-year and sustainability & responsibility/EHS reports are also available to view and download.
Company registrars	Equiniti Limited, Aspect House, Spencer Road, Lancing, West Sussex, BN99 6DA Telephone: +44 (0)371 384 2412 Website: www.shareview.co.uk Lines are open between 8.30am and 5.30pm, Monday to Friday (excluding UK public holidays). Shareholders with queries relating to their shareholding should contact Equiniti directly. Alternatively, shareholders may find the Investors section of our website useful for general enquiries.
Shareview portfolio www.shareview.co.uk	The most efficient way to communicate with Equiniti is by registering for a portfolio at www.shareview.co.uk. This is a service, which enables shareholders to manage their shareholdings online.
Dividend payments	You can choose to receive your dividend in a number of ways. Dividends will automatically be paid to you by cheque in UK sterling and sent to your registered address unless you have chosen one of the options below: **Direct payment to your bank** Cash dividends can be paid directly to a UK bank or building society account. This means that your dividend reaches your bank account on the payment date, it is more secure (cheques can sometimes get lost in the post), you avoid the inconvenience of depositing a cheque and cheque fraud is reduced. If you are a shareholder who has a UK bank or building society account you can arrange to have dividends paid direct via a bank/building society mandate. You can add or change your mandate online at www.shareview.co.uk, or by contacting Equiniti. **Overseas payments** If you live overseas and would like dividends paid to an overseas account, please contact Equiniti by post to set up or amend a mandate. They offer an overseas payment service for 90 countries worldwide. Please see further information at www.shareview.co.uk.
Multiple accounts on the shareholder register	If a shareholder receives two or more sets of AGM documents, or multiple dividend payments, this means that there is more than one account in their name on the shareholder register, perhaps because the name or the address appears on each account in a slightly different way. If you have multiple accounts and would like them to be combined, please contact Equiniti.
Buying and selling shares	Equiniti offer a service to buy and sell shares in UK listed companies. For more information, visit www.shareview.co.uk or call 03456 037 037. Providing this information is not a recommendation to buy or sell shares and this service may not be suitable for all shareholders. The price and value of any investments and income from them can fluctuate and may fall. Therefore, you may get back less than the amount you invested. Past performance is not a guide to future performance. Neither the Company nor Equiniti provides advice or makes recommendations about investments. If you have any doubts about the suitability of an investment, you should seek advice from a suitably qualified professional advisor.
Donate your shares to charity	If you have only a small number of shares which are uneconomical to sell, you may wish to consider donating them to charity, free of charge, through ShareGift (registered charity 1052686), a charity that specialises in the donation of small, unwanted shareholdings to good causes. You can find out more by visiting www.sharegift.org or by telephoning +44 (0)20 7930 3737.
Unsolicited telephone calls and mail	Shareholders in companies may receive unsolicited phone calls or correspondence concerning investment matters. If you are offered unsolicited investment advice, discounted shares, a premium price for shares you own, or free company or research reports, please check the company or person contacting you is properly authorised by the Financial Conduct Authority before getting involved. Further information about what you should do is available on our website in the 'Shareholder Centre' within the Investors section.
Asset Reunification Programme	Morgan has launched a tracing programme with the aim of reuniting 'lost' shareholders or their estates with unclaimed cash entitlements in respect of Morgan dividend payments. Cash entitlements may not have been claimed due to an address change, or where a Shareholder is deceased and the beneficiaries or executors of an estate are not aware of the holding. If you would like to clarify whether you or a deceased person for whose estate you act holds shares in Morgan please contact Equiniti for further assistance.

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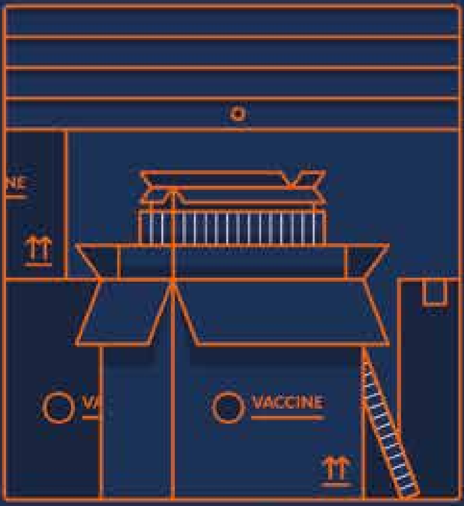

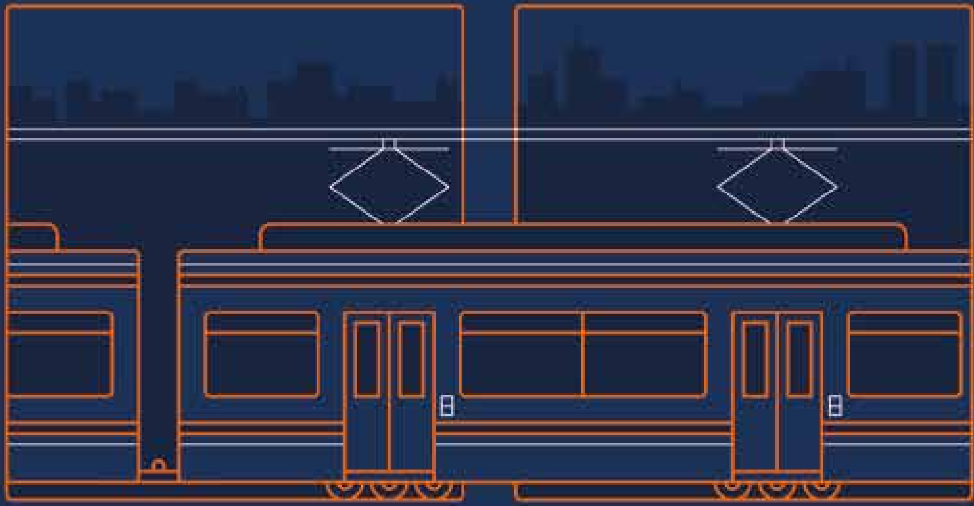

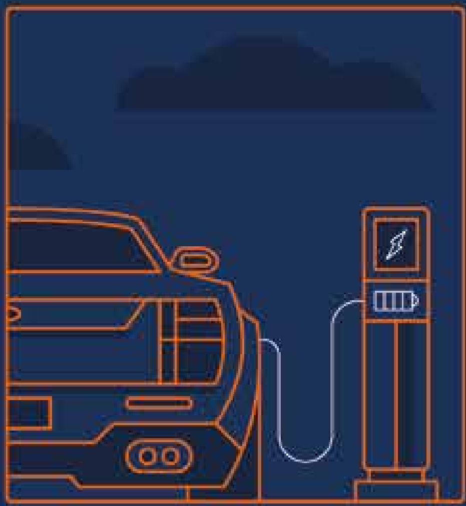

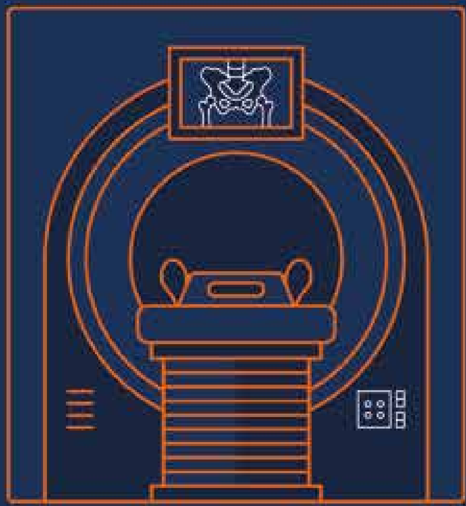

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