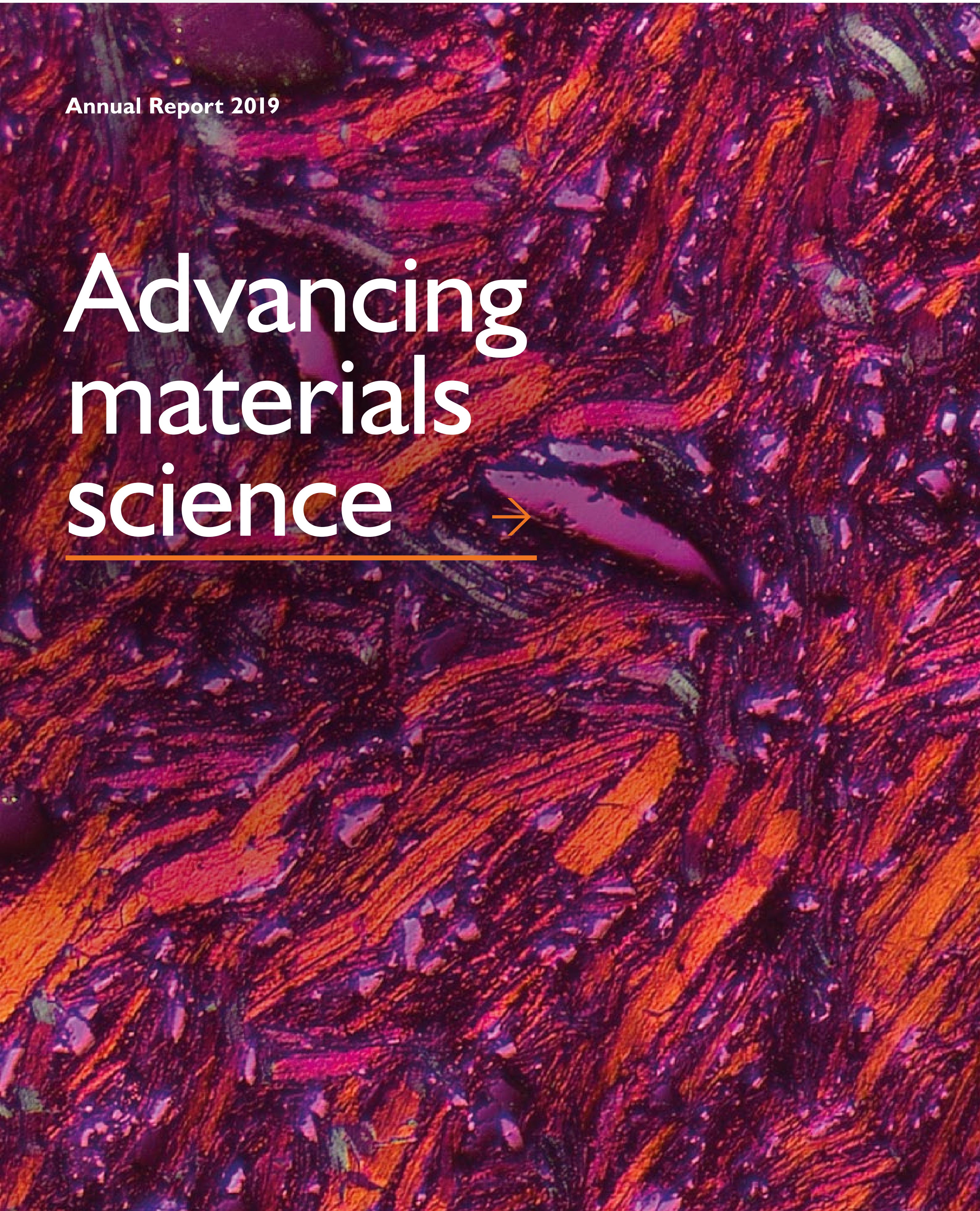
Morgan
Advanced Materials

Annual Report 2019

Advancing materials science



There are significant trends shaping our modern world.

Resources are becoming more scarce and harder to access, our climate and environment are changing, and the pace of innovation and technology change is accelerating. Each of these directly or indirectly puts more demand on materials. Advanced materials have never been more important.

As the world strives to make better use of limited resources, the demands on our materials, and on our materials science capabilities, are rapidly increasing.

At Morgan Advanced Materials our purpose is to use advanced materials to help make more efficient use of the world's resources and to improve the quality of life. Our highly experienced scientists and application engineers are working with our customers to find new solutions to complex and technologically demanding problems.

Advanced materials and materials science have never been more important

Front cover image: clay graphite crucible from the Molten Metal Systems global business unit. The modern crucible is a highly heterogeneous, graphite-based composite material, which relies on its material composition and control of the graphite's structural alignment to achieve the performance required. Learn more about matching your crucible to your application at **www.morganmms.com**

2019 highlights

Headline performance

Revenue

£1,049.5m

2018: £1,033.9m
2017: £1,001.4m

Group headline operating profit[1]

£134.2m

2018: £124.8m
2017: £120.7m

Headline EPS[1]

28.0p

2018: 26.7p
2017: 22.8p

Total dividend per share

11.0p

2018: 11.0p
2017: 11.0p

Statutory performance

Operating profit

£126.1m

2018: £107.3m
2017: £159.1m

Profit before tax

£109.7m

2018: £94.9m
2017: £136.8m

Continuing EPS[3]

25.2p

2018: 20.0p
2017: 38.1p

Continuing and discontinued EPS[3]

25.7p

2018: 16.2p
2017: 37.8p

Health, safety and environmental performance

Lost-time accident frequency
per 100,000 hours worked

0.14

2018: 0.22
2017: 0.38

Energy intensity
MWh/£m revenue

1,080

2018: 1,130
2017: 1,164

Read more about our products and our markets on page 3, our business model on pages 6 and 7, sustainability and responsibility on pages 10 to 17, and our stakeholders on page 18.

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). The Executive Committee and the Board manage and assess the performance of the business on these measures and believe that they are more representative of ongoing trading, facilitate year-on-year comparisons, and hence provide additional useful information to shareholders. 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 42 to 44.

Contents

Morgan at a glance

Then and now

We have come a long way since 1856. Then we changed the industrial landscape with the introduction of revolutionary new graphite crucibles. Today, crucibles represent just 5% of our business, but we are still leading and innovating for our customers.

We have distinctive competencies in

- Materials science capability and process know-how.
- Application engineering.
- Customer focus.

Read more about our strategy in action pages 20 to 23

We use two fundamental sets of materials:

Ceramics

Ceramics typically have high melting points and are used to make high-performance insulation. They are also hard, chemically resistant and abrasion resistant, are electrical insulators, and we use these structural properties in a range of applications.

We manufacture and install a wide range of thermal insulation products that significantly reduce energy consumption and emissions in a variety of high-temperature processing applications. Structural ceramics are exploited for their strength, abrasion resistance and chemical stability, to make power tubes for medical scanners and implanted medical devices. They are used in the manufacture of semiconductors, glass and metals, and as mechanical valve components in demanding applications.

Carbon

We use carbon for its electrical conductivity, and produce leading carbon grades for power generation, rail collector and wind power applications. We use the inert and low-friction properties of carbon to make seals and bearings for a wide variety of applications from jet engines to automotive vacuum pumps. We also exploit the high-temperature stability in inert atmospheres of carbon to produce insulation for vacuum furnaces, semiconductor applications and crucibles.

Our products and our markets

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 in insulation and fire protection applications. Our core strength is our ability to address individual customer requirements, 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 our 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.

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 generation. The business's 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 a wide variety of products and 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 electronics and 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.

Chairman's statement

> I have spent time at a number of our sites, my lasting impression is of an enthusiastic workforce that is embracing the strategies of the Executive Committee and is committed to working safely and ethically.
>
> **Douglas Caster** CBE FIET
> Chairman

I am pleased to introduce Morgan's Annual report for 2019 having completed my first year as Chairman of the Group. Over the last year I have spent time learning more about the business, visiting a number of our sites in Europe and the United States.

During these visits I have been able to engage directly with a significant cross-section of our employees from production operators, research scientists, sales people and administration staff to supervisors and managers. These interactions have enabled me to reinforce the messages regarding Morgan's culture and the "Morgan Code" as well as receiving honest and in some cases robust feedback from our employees which I have been able to share with my Board colleagues. My lasting impression though is of an enthusiastic workforce that is embracing the strategies of the Executive Committee and is committed to working safely and ethically. I thank all of our employees for their hard work in improving the business and achieving the 2019 results presented here.

In my statement for last year's Annual Report I indicated that we were experiencing a slowing of economic growth and tightening of market conditions as we looked to 2019. As expected our markets turned out to be every bit as challenging as we forecast. Several companies considered to be industrial market peers of Morgan have indicated profit warnings during 2019. It is pleasing to report therefore that Morgan has achieved another year of underlying organic* growth with strong cash flow and reduced underlying leverage. This continued growth against the backdrop of difficult market conditions demonstrates the efficacy of the strategies that Pete Raby as CEO and his team continue to pursue. Moreover, the persistent focus on operational efficiencies and improved sales force effectiveness has also led to an increase in operating margins.

Shareholders often ask how we know whether expenditure on R&D is effective. My answer to this is to look to the Group's results. Our R&D has a dual focus. Firstly, on understanding the fundamental chemistries of our product range and the processes we employ to produce them. I characterise this as a move from slavish adherence to well-tried recipes to real advanced materials science. This is leading to incremental increases in product yields, quality and production efficiencies. The evidence for the effectiveness of this is, in part, demonstrated by our improved margins. The second focus is on new product development where R&D is leading to the introduction of distinct new products. This always takes longer than we would like as our customers are naturally conservative and cautious, requiring proof of fitness for purpose through stringent product qualification testing before adopting Morgan's new components into their own products. Nevertheless we are seeing several new products breaking though to our markets which will in time result in further growth.

Group culture

The Board's overriding concern while pursuing the Group's business is that we should embrace a culture of always "doing the right thing" in ways that are respectful to all Morgan's stakeholders and the environment. The Board has zero tolerance of accidents and unsafe practices and insists that we should operate ethically. In 2019 the Group achieved a further reduction in the rate of accidents and improved our environmental footprint through reduced energy and water intensities. We continue to focus on improving our employee diversity and strengthening the Board's engagement with the workforce. I have commented how I have engaged with our people during my site visits. My non-executive director Board colleagues have also visited, separately, several other sites throughout the year to meet employees and provide feedback to the Board. As a result the Board has significantly stepped up engagement with our employees to gain an independent, consolidated view of their aspirations and concerns as well as a health check on our culture.

Board changes during 2019

During the year Clement Woon joined the Board as a non-executive director. Clement brings extensive knowledge and experience of operating in Asian markets and we welcome his advice to the Board on this region.

Our outlook

As we move into 2020, our markets remain challenging and we are expecting weak market conditions from 2019 to persist. However we will continue to press on with the implementation of our strategy and I look forward to seeing what can be achieved in 2020.

Douglas Caster CBE FIET
Chairman

Chief Executive Officer's review

> "I am pleased with the further strategic and financial progress we have made in 2019, with our strategy continuing to deliver, enhancing our growth and profitability.
>
> **Pete Raby**
> Chief Executive Officer

In our third successive year of organic* growth, revenue and headline operating profit* grew 0.8% and 4.3% respectively in a challenging external market environment. We expanded our headline operating profit margin* to 12.8% reflecting good operational cost control and the benefit from organic revenue* growth in our faster growing market segments.

These results demonstrate that our strategy is delivering. Over the last four years we have significantly strengthened our leadership teams, we have increased our investment in research and development by £10 million per year funded through operational improvements, we have strengthened our sales teams, improved operational performance and simplified the portfolio. This has improved the health of our business and returned the business to growth.

Our top priority is delivering a safe and ethical working environment and we have improved in both areas during the year. We have reduced our Lost-time accident rate (accidents per 100,000 hours worked) by 36%, from 0.22 to 0.14. This reflects the importance we place on safety across the business and the benefits of our 'thinkSAFE' programme.

We have continued the focus on ethical working following the launch of the Morgan Code in 2018. We have completed over 35,000 on-line training courses during the year covering key aspects of the Morgan Code including anti-bribery and corruption, conflicts of interest, intellectual property and workplace harassment.

Against the four execution priorities we set at the beginning of the year we have progressed well:

1. We have made good progress on key technology developments with new products starting to come to market. Our stage gate process is now fully deployed for the priority development projects across the Group.
2. Our sales capability developed further during the year with sales training deployed across the majority of the sales team and our customer relationship management (CRM) system deployed to more of the team.
3. We have launched new talent development programmes to develop leadership capability at various levels and we have developed our leadership teams through focused team development activities.
4. We have improved operational performance, improving efficiency through the deployment of lean tools and approaches, through automation, targeted continuous improvement projects and through procurement projects.

Group results

Trading conditions were challenging during the year with weakness in global industrial markets and significant slowdowns in automotive and semiconductor markets. Despite these difficult market conditions, we made good progress during the year:

- Group revenue in 2019 was £1,049.5 million, 1.5% above the prior year at reported rates and 0.8% higher on an organic constant-currency* basis.
- The 2019 headline operating profit* margin was 12.8% a 70bps expansion over the prior year.
- Group headline earnings per share* was 28.0 pence (2018: 26.7 pence).
- Net capital expenditure was £54.9 million (2018: £53.1 million), our second year of significant investment as we invest in new equipment to support operational efficiencies, add additional capacity in select growth areas and catch up underinvestment in some parts of the business.
- Free cash flow* was £59.2 million (2018: £48.5 million).
- Net debt* was £221.1 million (2018: £180.0 million), and included lease liabilities of £64.3 million, with a net debt* to EBITDA* ratio of 1.3x.
- On a statutory reporting basis operating profit was £126.1 million (2018: £107.3 million) and profit before tax was £109.7 million (2018: £94.9 million), see pages 32 to 40 for more details.

Outlook

In 2020 we are expecting similar market conditions to 2019, with weak industrial and automotive markets persisting and geo-political uncertainties remaining. However, we expect growth in our faster growing market segments to more than offset these market weaknesses. Beyond the underlying trends in the business, we have headwinds from foreign exchange translation and the completion of our exit from the Electro-ceramics site in the US. We expect to continue to make further strategic progress with the continuation of our sales effectiveness programme, improving operational efficiency and driving a number of key new product developments forward. Based on our current assessment of business trends and orders, we expect Group organic constant-currency revenue* growth for the full year to be in the range of flat to modest growth, with the first half slightly below this trend, due to the impact of the coronavirus (see page 39).

Finally, I would like to thank our employees for their hard work and support during 2019.

Pete Raby
Chief Executive Officer

Our business model

Our business model is fundamental to our ability to create value for our stakeholders and build a sustainable competitive advantage.

What drives our business

Our purpose

Our purpose is to use advanced materials to help make more efficient use of the world's resources and to improve the quality of life.

We fulfil our purpose through the products we make, and the way we make them:

Our insulation products reduce energy usage in high-temperature processes – from aluminium production to solar panel production.

Our crucibles use less energy to hold molten metal for aluminium and copper casting.

Our self-lubricating seals and bearings reduce the energy consumption of pumps in everything from domestic appliances to power stations to chemical plants.

We enable electrification for cleaner public transport, helping those systems to run ever more efficiently.

We enable medical diagnostics with our ceramic tubes for x-ray devices in medical scanners.

We enable the production of more efficient and faster microprocessors, enabling the digital world and the benefits to the environment and health that brings.

Our products transform the lives of people around the world and make more efficient use of the world's resources.

Our products and our markets

We manufacture an extensive range of specialist products, satisfying a variety of niche applications across numerous end-markets.

We work in the industrial, transportation, petrochemical and chemical, energy, semiconductor and electronics, healthcare and security and defence markets.

Read more pages 3 and 32 to 40

Our structure

The Group's products are produced within the two global divisions and five global business units which Morgan operates:

Thermal Products division, organised in two global business units: Thermal Ceramics, Molten Metal Systems.

Carbon and Technical Ceramics division, organised into three global business units: Electrical Carbon, Seals and Bearings, Technical Ceramics.

How we add value

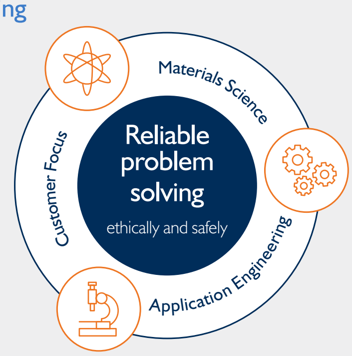
Our strategy for growth

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.

We will succeed because we have leading capability in three key areas:

- Materials science
- Application engineering
- Customer focus

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



Read more pages 19 to 23

Our business model foundations

Whilst the world and our business is changing our commitment to safety and ethics, and leading in the right way, is a constant, underpinning everything we do. We will not compromise on:

Safety

#MorganthinkSAFE

Our ultimate goal is zero harm. We are constantly looking for ways to make our factories, systems and people safer.

Ethics

Morgan Code

Every one of us is responsible for the culture and reputation of Morgan and the environment in which we work. If we see examples of behaviours that do not reflect our ethical stance, we show courage, stand up, call it out and stop it.

Adapt and thrive

Our world is changing at an extraordinary pace. We can and should be right at the forefront of that change because the world needs advanced materials more than ever. To fulfil our purpose we need to deliver the material science and technologies the world needs. We must be agile, building leading materials understanding. We need to anticipate customer needs before our competitors to become the clear first choice for materials performance, service and delivery.

100
Countries selling into

30
Countries manufacturing

8,600
Approximate employees

What differentiates us

Increasing technical differentiation in materials science and application engineering, using two fundamental sets of materials: ceramics and carbon.

- Research and development investment has been increased to build Morgan's technical lead and to accelerate new product development.
- The Centres of Excellence allow for the concentration of development efforts in those areas which can deliver the greatest benefit globally to the Group.
- Our engineered solutions are developed to exacting specifications and deliver ever-greater performance through materials and production process innovation.
- We are producing materials that can work at higher temperatures, higher pressures, in more corrosive and abrasive applications, at more precise tolerances and in smaller form factors than ever before.

Read more on page 20

Our people and culture

We value our employees and the contribution they make, and we are committed to creating an inclusive culture where everyone can fulfil their potential. This is essential if we are to attract and retain talented people and drive creativity and innovation to solve our customers' demanding materials challenges.

Morgan behaviours – always working safely, ethically and inclusively

Our behaviours are central to the way we work. We live by them every single day. They are how we deliver our strategy.

- We are ambitious about the future.
- We build strong teams.
- We are relentless in driving performance.

Our behaviours determine our actions, our approach to managing our risks and opportunities and the stewardship of our leaders through sound governance and policies.

Read more on pages 12 and 13

Making a difference

Driving sustainable growth and ensuring our value is shared across all our stakeholder groups.

Investors

Delivering sustainable shareholder returns.

Customers

Creating world-class solutions which build competitive advantage.

Employees

Developing and nurturing talent in a safe and ethical working environment.

Suppliers

Ensuring security of our global supply chain.

Pensioners

Fulfilling our pension commitments to current and previous employees.

Communities

Delivering a positive contribution to the local communities in which we work.

Read more on page 18

Sustainability and responsibility

Our purpose is to use advanced materials to help make more efficient use of the world's resources, and to improve the quality of life. This purpose guides our actions, aiding our efforts to work with our environment, informs how we treat our people and ensures we fulfil our responsibility of good corporate governance.

Our 2019 sustainability and responsibility focus areas

These sustainability and responsibility issues are the ones that could impact our business the most and that are of greatest interest to our stakeholders.

- **HEALTH AND SAFETY**
- **MANAGING OUR IMPACT ON THE ENVIRONMENT**
- **CONDUCTING OUR BUSINESS ETHICALLY**
- **VALUE TO SOCIETY**
- **OUR PEOPLE**

Three core Group-wide programmes – the Group's environment, health and safety (EHS) programme, the ethics and compliance (E&C) programme, and the approach to Morgan's people, all support the aim of creating long-term sustainable shareholder value.

Non-financial information

This Strategic Report includes certain non-financial information. We measure non-financial information in alignment with our strategy, our execution priorities and our principal risks.

The information which follows is intended to help our stakeholders understand our non-financial information, most of our reporting on these topics is contained within the 'Sustainability and responsibility', 'Risk management' and 'Review of operations' sections of the Strategic Report. Cross-references to sections containing further information are provided as follows.

Our business model can be found on pages 6 and 7

Environmental information on pages 12 to 13

– Related policies which govern our approach – EHS Policies; the Morgan Code, 'always working safely.'
– Principal risks – Environment, health and safety.
– KPIs – Lost-time accident frequency; tonnes CO_2e per £m revenue; energy, water and waste intensity and usage.

Employee information on pages 16 to 17

– Related policies which govern our approach – Employee Policies; the Morgan Code, 'treating our people fairly'.
– KPIs – Employee turnover, workforce training hours.

Respect for human rights information on page 15

– Related policies which govern our approach – Human Rights Policy; the Morgan Code, 'treating our people fairly' and 'always working ethically'.
– Principal risk – Compliance.

Anti-bribery and anti-corruption information on page 15

– Related policies which govern our approach – the Morgan Code, 'always working ethically'.
– Principal risk – Compliance.

The Business performance section on pages 32 to 40 includes, where appropriate, references to, and additional explanations of, amounts included in the entity's annual accounts.

Community engagement can be found on page 14

Statement of compliance with section 172 of 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, as well as the need to maintain high standards of business conduct.

The Board has confirmed that the Group's key stakeholders are its investors, customers, employees, suppliers, pensioners and pension trustees and communities, as set out in the business model on pages 6 and 7.

The key stakeholders, why they are significant, the main methods used to engage with them, and the issues raised by / of interest to the stakeholders are set out on page 18.

Further information on the mechanisms used by the Board to engage with key stakeholders, in particular with investors and the workforce, can be found on pages 16 and 51 to 52 of the Corporate Governance Report.

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. Further details of the Group's strategy can be found on pages 19 to 23.

The Board is committed to fostering a safe, ethical and inclusive workplace and has spent a considerable amount of time during 2019 engaging with a diverse cross-section of employees in a range of situations, as well as monitoring and assessing the Group's culture. These insights have informed the Board's discussion when reviewing reports on health, safety and environmental matters, monitoring progress in relation to embedding ethical conduct and implementation of the Morgan Code, and strengthening the capabilities of the current and future potential leadership team.

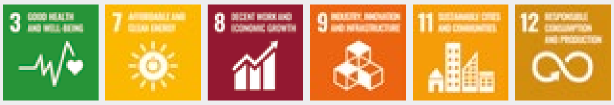
Further information on our people, our Environmental, Health and Safety performance and policies and how the Group maintains high standards of ethical conduct can be found in this 'Sustainability and responsibility' section on pages 8 to 17.

The principal matters and key decisions considered by the Board during 2019 are set out on pages 55 and 56 of the Corporate Governance Report. By way of example, case studies illustrating how the Board has incorporated the insights obtained from its engagement with key stakeholders and the factors and issues of interest to them, are set out on pages 51 and 52 of the Corporate Governance Report.

The United Nations Sustainable Development Goals (UNSDG)

UNSDGs aim is to overcome global challenges such as inequality and climate change and present the opportunity to put the world on a more sustainable path. At Morgan, our core purpose, to use advanced materials to help make more efficient use of the world's resources and improve the quality of life, and the way we operate contribute directly to goals 3, 7, 8, 9, 11, 12.

Through the 'Sustainability and responsibility' and 'Our strategy in action' sections of this Strategic Report we outline how we are contributing to these goals.



We supply products that support innovation and advancement across our end market sectors:

We help our customers manage heat, reducing their energy usage; our insulation products reduce energy usage in high-temperature processes – from aluminium production to solar panel production. Our crucibles use less energy to hold molten metal for aluminium and copper casting.

We enable greener electricity generation; our carbon brushes are integral to wind turbines and power generators, our ceramic rollers are used to make thin film solar panels, our insulation is used in solar towers and steam turbines, our ceramic cores are used to make more efficient industrial gas turbines. Our self-lubricating seals and bearings and our ceramic shafts reduce the energy consumption of pumps in everything from domestic appliances to power stations to chemical plants.

We enable electrification for cleaner public transport; our products help reduce energy costs by enabling electrification in rail and metro systems, and by helping those systems to run ever more efficiently.

We improve quality of life; we enable medical diagnostics with our power tubes in medical scanners. Our feedthroughs are at the core of cochlear implants, our seals are used in blood pumps.

We help to keep people safe; we provide fire protection in everything from cars to tunnels to ships to oil platforms.

We enable the digital world, and all the benefits to the environment and health that brings; we enable the production of more efficient and faster microprocessors.

As a Group we have clear waste, water and energy reduction targets and programmes, with greenhouse gas emission reduction programmes in place as we continue to improve the efficiency of our processes at our manufacturing sites.

Health and well-being programmes for all our employees such as 'Better You Better Life' and healthcare for our employees and their families, ensuring healthy lives and well-being at all ages.

Promoting an inclusive and safe working culture and environment for all our employees.

Sustainability and responsibility continued

With the long-term aim of an injury-free workplace, we are committed to conducting all our activities in a manner that achieves high standards of health and safety for all employees and stakeholders. The Group's long-term objective is 'zero harm'. We aim to deliver year-on-year improvements in performance as we progress towards this objective.

Health and safety

Our Health and safety (H&S) Policy is regularly reviewed and is communicated across all sites within the Group and is applied to all businesses worldwide.

see ***morganadvancedmaterials.com/en-gb/sustainability-responsibility/health-safety*** *for more information on our safety policies.*

Policy and framework

Morgan's H&S Policy provides all Morgan 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 practices. 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 policies that are priorities. The compliance audit programme is conducted against the H&S framework, systems and KPIs with a focus on high-risk items. All of the Group's manufacturing facilities are reviewed on a four-year rolling cycle.

Policy governance

Governance of Policy is achieved through performance monitoring and the management and mitigation of identified risks to help provide continuous improvement in our H&S performance.

The Group is committed to providing effective leadership in pursuit of a safe and healthy work place. The Chief Executive Officer, global business unit leadership teams and site management teams are responsible and accountable for H&S performance. The Group's Environment, 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.

2019 performance

The Group's accident prevention and training programmes were refreshed, with the focus on the introduction of a sustainable approach to reducing accident occurrences by reinvigorating and strengthening behavioural safety initiatives and training as part of the 'thinkSAFE' programme.

The positive trend for employee engagement with respect to health and safety continues, with the employee engagement survey giving a positive perception of 88%, with respect to safety and security being considered important, up from 85% in 2018. This engagement score also shows that we are leading other similar organisations that have undertaken the same survey, with a response 9% above the Global Industrial Conglomerates engagement score.

We monitor the effectiveness of Policy through the internal audit programme and reviewing performance against a series of Group-wide KPIs.

The Group's Lost-time accident frequency in 2019 was 0.14 (2018: 0.22). The number of reported Lost-time accidents in 2019 decreased to 27 (2018: 42). There were multiple global initiatives positively contributing to the reduction in accident rates:

- A series of global tasks were introduced to all sites along with "Safety Alert" programmes focusing on machine risk assessment and management of change processes.
- Quarterly safety briefings designed to drive global consistency of the 'thinkSAFE' message, briefing topics in 2019 included cognitive awareness, an introduction to the new 'thinkSAFE' commitments, and Take 5 for Safety.
- All sites took part in our two Global Employee Involvement Programmes – Bright Clean and 'thinkSAFE' (focusing on housekeeping and 6S) and 'Better You Better Life' (health and wellbeing).

	2019	2018	2017
Lost-time accidents[1,2] Number of LTAs	27	42	73
Lost-time accident frequency[1,2] LTAs/100k hours worked	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-time.
2. Total time lost from health and safety in the year divided by the number of Lost-time accidents reported in the year.

2020 health and safety priorities

We will continue the deployment of the 'thinkSAFE' refresh program focusing on 3 main areas:

Behavioural change:

- Every site will complete an all-inclusive launch activity to set the tone for the refresh.
- Quarterly training and local activities to reflect, strengthen and embed the 'thinkSAFE' commitments.

New tools and approaches that sites will adopt:

- Our main leadership engagement tool 'Visual Safety Leadership' (VSL) will be improved and rolled out to all leadership teams.
- Sites will increase the focus on continuous improvement of their 'thinkSAFE' activities.
- Skills and competence review of the EHS function with subsequent gap closure and development plans put in place for individuals.
- A number of new leading KPIs will be introduced, measured and discussed regularly by various levels in the organisation.

Framework adoption:

- We have reviewed and refreshed our Safety Framework, which provides guidance and direction around our key risks. Sites will be supported to review and understand any gaps against the standard, implement closure plans and the Group Safety Audit programme will ensure that we have a robust checking process in place.

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

Managing our impact on the environment and mitigating climate change

Policy and framework

Our environmental policy and framework sets minimum standards, and provides guidance on what is expected of our sites. Our minimum standard is based on current requirements from the UK and US legislative codes and associated best practices. If a local country standard is better than these, sites are required to achieve that standard.

EHS Policy governance

Governance of Policy is achieved through performance monitoring and the management and mitigation of identified risks to help provide continuous improvement in our environmental performance.

The Group is committed to providing effective leadership in pursuit of an environmentally responsible work place. The Chief Executive Officer, global business unit leadership teams and site management teams are responsible and accountable for environmental performance. The Group's Environmental, Health and Safety Director is responsible for Group direction and the oversight of the Group's strategic programmes. 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. All the Group's manufacturing facilities are reviewed on a four-year rolling cycle.

see *morganadvancedmaterials.com/en-gb/sustainability-responsibility/environment* for more information on our environmental policies.

2019 performance

We monitor the effectiveness of policy through the internal audit programme and reviewing performance against a series of Group-wide KPIs. The Group achieved the majority of its environmental targets:

- CO_2e intensity improved by 10% whilst total CO_2e from energy use reduced by 8%.
- There was a 4% reduction in energy intensity.
- Waste targets were not met for actual tonnage or intensity, however the total waste sent for recycling increased marginally from 56% to 57%.
- Absolute water use, in 2019 was 1.88 million m^3, a reduction of 13% compared to 2018.
- Energy programmes: energy projects include driving energy efficiency improvements within our operations, through process efficiency. For example, our two principal US Seals and Bearings facilities have implemented Smart LED lighting in factory and office areas using intelligent zoned and sensor-controlled lighting providing energy efficiency but also enhanced safety, reduced maintenance and a lower environmental impact. In the UK we are procuring green energy, and in a number of our plants we have installed solar PV power generation.
- Our businesses invest in their manufacturing technology to reduce not only our carbon emissions, but also but our customers carbon emissions. Within the Thermal Ceramics global business unit we partner with our petrochemical customers on material selection and insulation system design to reduce emissions.
- The Group has made filings in respect of the Group's UK facilities under the UK Government's Carbon Reduction Commitment (Energy Efficiency) Scheme and in Europe to comply with the requirements of the European – Energy Efficiency Directive, with most European manufacturing sites undertaking Energy Audits, where not exempt through holding ISO5001 Energy Management Certification. The findings of the audits are assessed at a site and GBU level and where appropriate energy improvement programmes implemented.
- Water Reduction and conservation programmes: our business units have reduced water use consistently both through investment and employee engagement programmes. In North America water treatment and recirculation projects have resulted in significant water reduction and resultant discharges to water courses. Projects at our facility in Augusta Georgia, saw 20% reduction in water and a 30% reduction in discharge, whilst our St Marys Pennsylvania resulted in reduction in water use of 30% and reduction in discharges of 95%.
- Waste reduction and recycling: Improvements have been made at several sites through specific improvement programmes but waste levels have increased overall. This was driven by 6S (workplace organisation programmes) creating waste through the disposal of obsolete plant, equipment, tooling and product, plus manufacturing generated wastes e.g. shorter production runs resulting in increased changeover waste and production trials of new generation products.

	2019	2018	2017
Energy intensity[1] MWh/£m revenue[2]	1,080	1,130	1,167
Energy use[1] GWh[3]	1,134	1,180	1,147
Waste intensity[3] Tonnes waste/£m revenue[2]	46.4	44.6	46.0
Waste[3] Tonnes waste/£m revenue[2]	48,676	46,605	45,168
Water intensity[4] m^3/£m revenue[2]	1,790	2,076	2,357
Water use[4] million m^2	1.88	2.17	2.32

1. Energy from all sources.
2. Calculated on a constant-currency* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.
3. Hazardous and non-hazardous waste, including recycled material.
4. Water from all sources, including process, irrigation and sanitary use.

Greenhouse gas emissions

Morgan discloses its emissions from the combustion of biomass as a result of process and fugitive emissions which are in addition to the emissions from energy use reported on page 12 of this Annual Report. In the table below CO_2e is a standard unit for measuring the amount of CO_2 and the amount of non-CO_2 GHG with the equivalent global warming potential.

Morgan includes the material emission sources from the operations and activities covered by the Group's consolidated financial statements, excluding emissions from Company owned and leased vehicles and emissions relating to steam supplied by third parties to two sites in China and one in Europe, which are in total estimated to account for less than 1% of total emissions.

The Directors consider that these sources of emissions are not material to the total of the Group's emissions.

The Group's reporting methodology is based on the internationally-recognised Greenhouse Gas Protocol. It uses emission factors for standard grid electricity by country and year from the International Energy Agency together with other factors published by the UK Department for Environment, Food and Rural Affairs to calculate the CO_2e emissions included in this Report.

CO_2e is the amount of CO_2 and the amount of non-CO_2 greenhouse gases with the equivalent global warming potential.

	2019 Tonnes CO_2e	2018 Tonnes CO_2e
Emissions from combustion of fuels and operation of facilities[1]		
Combustion of fossil fuels	127,500	130,600
Operation of facilities, including process emissions[2]	21,609	33,206
Electricity, heat, steam and cooling purchased for own consumption[3]		
Purchased electricity[2]	185,499	202,289
Intensity measurement[4]		
Tonnes CO_2e from fossil fuels and purchased electricity per £ million revenue	298	323
Tonnes GHG per £ million revenue	319	356

1. Excludes emissions from Company-owned and leased vehicles and leased vehicles.
2. Calculated using the market- based method with electricity from renewable sources at zero tonnes CO_2e per kWh. Emissions increase by 6,477 tonnes CO_2e at grid average rates using the location-based method (2018: 2,469).
3. Excludes steam supplied to two sites in China and one in Europe.
4. Constant-currency* basis.

2020 environmental priorities

- Further develop the environmental risk assessment methodology and the environmental audit program, assure compliance with regulatory requirements, identify opportunities for improvement and assess operational risk.
- Continue to develop and track environmental improvement programmes that focus on sites that have the biggest environmental impact, whilst maintaining underlying improvement targets at all sites.
- Focus on robust recording, monitoring and validation of reported metrics to drive ownership and delivery of environmental targets at site, business and divisional levels.
- Review and develop opportunities to increase the use of renewable energy.
- Through external ISO standards, external and internal audit programmes drive the development of robust and effective management systems to manage environmental aspects and impacts.

Sustainability and responsibility continued

We aim to have a positive impact on the communities in which we operate.

Value to society

Tax

Morgan has approximately 81 manufacturing sites across more than 30 countries and has approximately 8,600 employees. The Group's business activities incur a substantial amount and variety of taxes including corporate income taxes, excise duties, employment and other taxes. The Group also collects and pays employee taxes and other indirect taxes such as VAT.

Morgan is committed to complying with tax laws in the jurisdictions in which it does business and works closely with tax authorities and supports initiatives to increase trust in the tax systems around the world. The Group's tax strategy applies to all Group entities and was approved by the Group's Board of Directors on 5 December 2019.

*see **morganadvancedmaterials.com/en-gb/sustainability-responsibility/governance** for more information about our approach to tax.*

Community engagement

At Morgan 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 of our efforts and engagements are driven by our Morgan Code, our purpose and our policies on the environment.

As our sites and operations are spread across the globe it gives us the opportunity to work with many communities. We pride ourselves on being involved at a local level and look to understand the communities priorities and concerns. We also support our employees involvement in the community, from charity giving to local fund raising, and from volunteering to health & wellbeing initiatives.

Overview Strategic Report Governance Financial Statements

We are committed to operating in an ethical way using our Leadership Behaviours and the Morgan Code as principles and policies to guide us in our decision-making.

Conducting our business ethically

Morgan Leadership Behaviours – always working safely, ethically and inclusively:

We are ambitious about the future – take a long-term view; champion curiosity and innovation; have an external mind-set.

We build strong teams – inspire and coach our people; provide ongoing feedback; collaborate globally.

We are relentless in driving performance – focus on key priorities; take ownership.

see ***morganadvancedmaterials.com/en-gb/sustainability-responsibility/ethics-compliance-programme/the-morgan-code*** *for more information about The Morgan Code.*

The Morgan Code (the Code)

The Morgan Code is a set of principles supported by policies that lay out how we should conduct ourselves. The Code applies to all employees and, to the extent appropriate, to Morgan's business partners including agents, joint venture partners and third-party representatives.

The Code has four sections: working safely; working ethically; treating our people fairly; and protecting our business. Copies are available to all employees in key languages. These require employees to operate not only in accordance with applicable laws and regulations, but also in line with internal rules and reporting requirements relating to areas such as ethical business behaviour, trade compliance, hospitality, gifts, donations and sponsorships. The Code is bought to life through a suite of Group policies which set out our expectations in more detail. These have been translated into the Group's key languages.

Processes are in place at the site level to ensure the policies are effectively implemented. Morgan's internal audit function monitors compliance with key ethics and compliance processes and ensures that the ethics hotline and its availability are adequately promoted at site level. Divisional and global business unit presidents and all heads of functions are required on an annual basis to certify that the businesses and functions they are responsible for have complied in full with Group policies or declared any exceptions. This certification forms an integral part of the Group's system of internal control. No material exceptions were declared in respect of 2019.

All employees are required to complete mandatory online training on the Code, with topics covered in 2019 including anti-bribery and corruption, anti-trust & anti-competitive behaviour, confidentiality, and workplace harassment. During 2019, training completion rates exceeded 99% with 3,000 employees being trained, completing over 35,000 courses. In addition, we have commenced face-to-face ethical policy training in higher risk jurisdictions, and face-to-face trade controls training at our US sites.

Employees, contractors or other third parties who have a question about the Code or see something that they feel is unethical or unsafe can discuss these with their managers, supporting teams, or through the ethics hotline, a confidential helpline operated by an independent company. A total of 69 concerns or enquiries were recorded in 2019 through this channel. The most commonly raised concerns were about fair treatment of people, workplace harassment and protecting the Company's assets. We take steps to identify and correct areas of non-conformance and take disciplinary action where appropriate. In 2019 several employees were dismissed for non-conformance with our Code.

2020 ethical priorities

- Quarterly employee training aligned to categories within the Code will remain at the centre of the ethics programme, with integrated campaigns joining up online training, face-to-face training and communication.
- Additionally, we plan a refresh of the Code and a launch of an associated code of conduct for our suppliers.

see ***morganadvancedmaterials.com/en-gb/sustainability-responsibility/people/human-rights*** *for more information about our approach to Human Rights and our Modern Slavery Act Transparency statement.*

Anti-bribery and corruption

- Morgan operates in parts of the world where bribery and corruption present a high risk. We have a responsibility to our employees, our shareholders and to 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.
- We provide training to employees appropriate to the nature or location of their role. A total of 3,450 employees completed anti-bribery and corruption training in 2019 as part of the overall quarterly online ethics training programme.
- During 2019 we completed a bribery risk assessment for each of our entities which will shape our training programme in 2020.

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 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.
- 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.

Recruiting and retaining the best people from the widest possible talent pool is a priority to ensure we have the right people in the right roles.

Our people

We value our employees and the contribution they make, and we are committed to creating an inclusive culture where everyone can fulfil their potential. Our principle of *"not just what you do, but how you do it that is important"* helps us to achieve our strategic aims, delivering performance and value creation for our stakeholders, whilst our Leadership Behaviours and the Morgan Code guide the actions we take to achieve them.

Our Board and governance systems safeguard our approach and its alignment to our purpose. Commitment from both the Board and the Executive Committee in demonstrating these behaviours underpins the "tone from the top" and helps to drive our competitive advantage.

In 2019, our Board met with employees globally through a number of site visits and attendance at our leadership development programs and the European Employee Forum, to hear for themselves feedback on our culture, employee engagement and understand the "tone from the top". The Board receive additional resources to help measure and monitor our culture, these included:

- Employee insight gathered from site visits, one to one interviews and feedback from employee events.
- Employee engagement survey metrics and verbatim employee comments.
- Areas of culture highlighted in ethics reporting including dismissals 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, diversity and inclusion metrics and initiatives.
- Updates on training and development programmes – including ethics, leadership development programmes and on-the-job training.

This feedback is giving us a better picture of our culture and behaviours as a Group.

Policies

Our Employee Policies are set locally to comply with local law within the overall Group framework.

UK Gender pay gap reporting

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

Our gender pay gap exists because a greater proportion of our senior leadership is male and has increased due to natural fluctuations in the employee population. We continue to work hard to increase the number of women we employ, develop and promote to improve our gender balance and become a more diverse organisation.

*see **morganadvancedmaterials.com/en-gb/sustainability-responsibility/people/gender-pay-gap-reporting** for more information on our gender pay gap in the UK.*

Attraction and retention

We need to recruit a diverse range of professionals to help solve our customers' challenges, including material scientists, applications engineers, functional specialists and sales people. We look to draw people from a wide range of backgrounds and cultures.

Inclusion

We promote equal opportunities for all employees and job applicants and do not unlawfully discriminate on the grounds of gender, pregnancy/maternity leave, marriage/civil partnership status, gender reassignment, race, disability, sexual orientation, age, religion or belief.

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.

Developing our people

We want every employee to perform at their best, reach their full potential and feel rewarded for what they do. In 2019 each employee received on average 14.1 hours of training (2018: 17.0 hours).

We identify and develop individuals with the potential to take on bigger or more complex roles in the future. To date we have focused on succession for our senior leadership population, identifying successors with the potential to take on senior leadership roles in the near term as well as those individuals with potential earlier in their career. In 2019 we launched two global leadership programmes (Catalyst and Ignite) to drive greater global consistency and alignment to our future capability needs and Leadership Behaviours. These programmes develop individuals' performance in their current roles as well as increasing their readiness for future roles. We have also continued to support leadership and management development through promotion of our global e-learning platform, expanded implementation of our supervisor training, and our graduate development programme.

Performance management and reward

Our incentives and rewards are aligned with our desired Leadership Behaviours and achievements are assessed against how they were achieved. In 2019 we expanded our globally consistent performance management process measuring both what is achieved and how it is achieved, through the assessment against our Leadership Behaviours to a wider population of employees. This sets clear expectations for this population, aimed at driving a culture of performance feedback and development coaching to improve performance in role.

The principle of pay for performance underpins our compensation approach and we set compensation levels using external benchmarking and relevant commercial considerations (that are both competitive in the countries in which they operate and affordable). We offer short-term performance incentives globally to managers, and technical and functional experts.

The Executive Committee and senior management also have long-term incentives tied to business performance. At manufacturing site level, most offer incentives to their workforce that result in 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.

Workforce by geography

Number of employees as at 31 December

US	Other Europe	China	Rest of World
32.8%	18.0%	14.2%	12.8%
2018: 32.7% 2017: 31.7%	2018: 18.2% 2017: 18.2%	2018: 14.8% 2017: 14.9%	2018: 12.6% 2017: 13.3%
UK	**Other North America**	**South America**	**Total workforce[1]**
9.5%	10.1%	2.6%	8,560
2018: 9.8% 2017: 9.6%	2018: 8.9% 2017: 8.2%	2018: 3.0% 2017: 4.1%	2018: 8,720 2017: 8,800

1. Total workforce rounded to the nearest 10.

"I had the opportunity to be accepted onto Morgan's leadership development (Ignite) program. The experience has allowed me to build relationships across the businesses and enhanced my appreciation of how unique we are. The program also offers an array of various tools that builds your leadership skills."

Christel Serrano
Site Manager, Hayward Metals, California

Workforce by gender

Member as at 31 December 2019

	Male		Female	
	Board	Executive Committee	Board	Executive Committee
	4	7	3 Female 43%	2 Female 22%
	Senior leaders	All employees[1]	Senior leaders	All employees[1]
	49	5,980	20 Female 29%	2,580 Female 30%

1. Total workforce rounded to the nearest 10.

Engaging our employees

Effective engagement enables our employees to contribute to improving Morgan's business performance.

We keep employees informed about what is happening across the business, including Company 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.

To better understand how our employees feel about Morgan, we conduct an employee engagement survey. The overall employee engagement score in 2019 was 55% (2018: 55%). This puts us in the moderate zone for engagement as compared to other global organisations, and shows we have work to do in some areas. Our 2019 engagement survey showed improvement in both ethics and safety, with a safety score of 88% putting us in the top quartile of businesses measured, this reflects our focus on these two areas in 2019.

Our employees highlighted that they want us to focus on connecting them more with the direction our Company is taking, improving our infrastructure to support greater collaboration and supporting more employees with career development.

Our stakeholders

Morgan has multiple stakeholders who are key to the delivery of its strategy and the long-term success of the Company.

Stakeholder group	Why it is important to engage	How our Directors and/or management engage	Stakeholders' key interests, and the impact of engagement
Investors	As a publicly listed UK company with a global operational and sales footprint, we need to provide fair, balanced and understandable information to instil trust and confidence in our investors, allowing informed investment decisions to be made, and access to capital markets.	→ Annual report → RNS announcements → Annual General Meeting → Investor presentations → Corporate website → Meetings with investors → Feedback from institutional investors collated by brokers and presented at Board meetings → Broker attendance at Board meetings → Circulation to the Board of analyst notes	→ Operating and financial performance → Environmental, social and governance approach → Management of key risks and future health and success of the Group
Customers	Understanding our customers' needs and behaviours allows us to deliver relevant products and services, retain customers and also attract new ones. It also identifies opportunities for growth.	→ Satisfaction surveys → Corporate website → Social media engagement → Meetings with key customers	→ Range, availability and cost effectiveness of products and services → Tailored solutions → On time delivery → Customer service
Employees	Our employees are fundamental to the achievement of our strategy and are the cornerstone of our business. We work to attract, develop and retain the right people and ensure they are in the right roles.	→ Employee engagement surveys → Recognition and reward → Graduate, apprentice and intern programmes → Board and Executive Committee engagement → Employee communication channels → Performance and development opportunities	→ Career opportunities → Health and wellbeing → Training and development → Reward → Employee engagement
Suppliers	Engaging with our supply chain means that we can ensure security of our global supply chain.	→ The Morgan Code, including modern slavery and human rights risks → Socio – environmental criteria for selection → Written communications → Meetings with key suppliers	→ Quality management → Cost efficiency → Ethical trading policies → Long-term relationships
Pensioners and Pension Trustees	Fulfilling our pension commitments to current and previous employees.	→ Regular presentation of results and strategy to pension trustees → Ongoing engagement	→ Alignment on funding and investment strategy for Defined Benefit pension Schemes
Community	We care about the communities in which we work and the environment around us.	→ Local community engagement (food bank support, disaster relief, local charities and volunteering) → Environmental reporting → Corporate website → Ethics hotline	→ Environmental protection → Local employment opportunities and local income generation → Investment in local infrastructure → Ongoing dialogue with Morgan

See also pages 6 and 7 for the Business model and pages 16 and 51 to 52 for Board stakeholder and employee engagement →

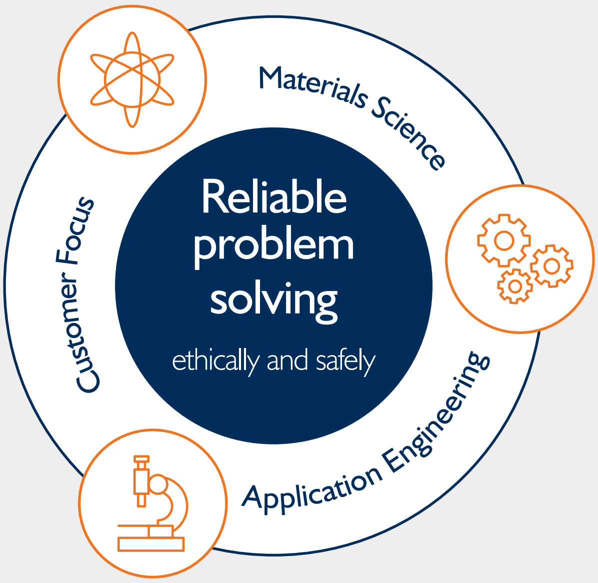
Group strategy

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 goal is to make the best possible use of advanced materials to drive progress and solve difficult problems – for our customers and the wider world. Our strategy builds on our strengths and focusses the Group on scalable businesses in attractive markets, and on the development of three core capabilities:

- Materials science
- Application engineering
- Customer focus



See more page 20 to 23

In 2019 we continued to invest in the long-term health of the business, with delivery against four execution priorities which underpin our three core capabilities:

Increasing technical differentiation

Research and development investment has been increased to build Morgan's technical lead and to accelerate new product development.

The Centres of Excellence allow for the concentration of development efforts in those areas which can deliver the greatest benefit globally to the Group.

See more page 20

Improving operational execution

There are a number of opportunities across the global business units to improve operational execution.

Resource and capital are allocated to target specific improvements to efficiency and effectiveness on a business-by-business basis.

See more page 21

Increase investment in people management and development

The Group aims to strengthen its leadership capability and deepen functional capabilities across the business, including in sales and engineering. New talent is being introduced and future leadership candidates identified from within the business. Performance management is enhanced for the Group's top management. The Group will invest more in executive training and create clear career paths for its technologists and engineers.

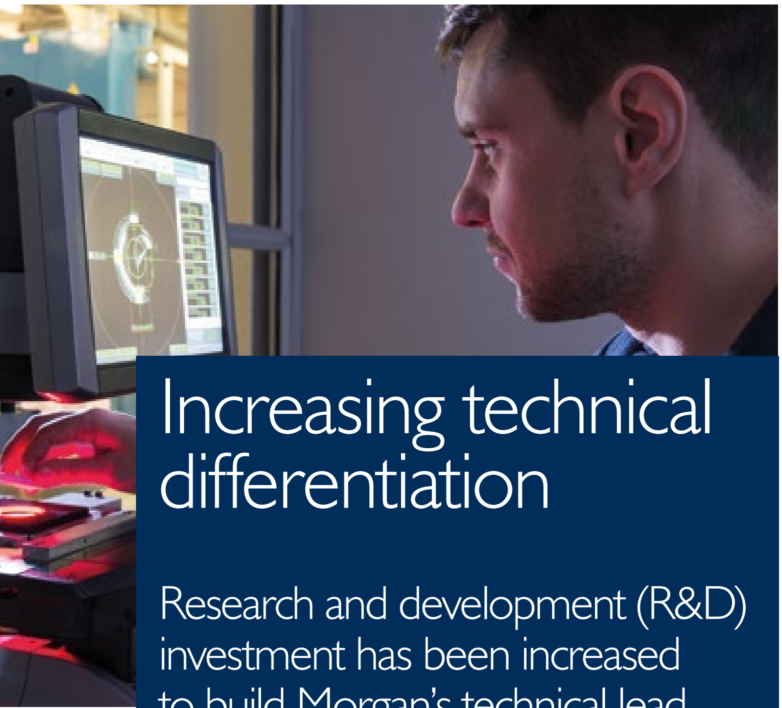
See more page 22

Drive sales effectiveness and market focus

The Group is focused on improving a number of aspects of its sales capabilities: sales processes and their efficiency, the management of key customer accounts and distribution channels, and deeper understanding of end-markets and faster-growing segments.

See more page 23

Our strategy in action



Increasing technical differentiation

Research and development (R&D) investment has been increased to build Morgan's technical lead and to accelerate new product development.

The Group's R&D strategy is governed by four objectives:

1. To be the acknowledged leader in materials science for our chosen technology families.
2. To understand the application of our materials science in our customers' products and processes, providing maximum benefit to them through advanced application engineering.
3. To demonstrate a clear understanding of where our technology competences are positioned today against competitors and emerging and competing technologies, forming a clear view of where we need to be.
4. To build the depth and the breadth of our understanding through a community whose culture is collaborative and which develops deep institutional knowledge.

"

One of the things I am excited about is putting our technology into a product that affects the lives of people and society."

Matthew Krohn
Carbon Science Centre of Excellence

There are four global materials Centres of Excellence (CoE) which consolidate the Group's R&D efforts around its core technologies and provide the opportunity to create critical mass, increasing the effectiveness of our R&D spend and accelerating key projects.

The **Insulating Fibre Centre of Excellence** is focused on the continued development of the Group's fibre product range. Morgan's market-leading low bio-persistent Superwool® fibre technology and product range continue to be developed with patented materials science. We are now extending the operational temperature range, allowing it to provide customers with superior insulation performance, improved fire protection and weight-saving opportunities in more applications. There has been particular success across a range of end-markets such as iron and steel, aluminium processing, automotive and passive fire protection.

The **Structural Ceramics Centre of Excellence** oversees the major advanced ceramic science developments for the Group. The facility concentrates on ceramic materials developments to support both current and new markets. Initial focus has been on opportunities in the medical, aerospace and environmental sectors, whilst a focus on new emerging markets and technologies also ensures that the Group stays at the forefront of materials science. As part of this focus the CoE includes the R&D programme for Morgan's additive manufacturing of ceramic materials.

The **Carbon Science Centre of Excellence** supports both the Electrical Carbon and Seals and Bearings businesses and is located at the Innovation Park at Penn State University, US. Our partnership with Penn State combines resources and experience, creating a synergy which enables significant progress in the development of carbon materials for a range of sectors and applications.

The **Metals and Joining Centre of Excellence** supports the Technical Ceramics businesses and focuses on the metallisation and brazing of metals and ceramic components. These components are essential in many critical operations in the aerospace, medical and semiconductor industries. The CoE has developed technology to produce brittle brazing alloys in a flexible wire form, significantly improving the ability to apply these braze alloys in aerospace engine components, brazing heat exchanger systems, compressor components, structural engine components and many other applications.

With a drive for increasing fuel efficiency, the operating temperature of aero engines is steadily increasing, to meet these demands we have developed a high temperature oxidation resistant feedthrough to be used in the measurement of engine temperature during operation. The new braze alloy grades allow application from the current limit of around 950°F to over 1100°F.

We are a leader in the design and manufacture of implantable feedthroughs for the medical sector, these biocompatible components are used to bring signals from inside the human body to implanted electronics. The CoE has developed a feedthrough where the density of connections surpasses current technology available, enabling the miniaturisation of such devices, increasing the functionality of the implanted device and reducing the invasiveness of surgery.

Our CoE team has also developed a melt spun foil alloy based on the ternary titanium-cobalt-zirconium alloy family. This alloy facilitates a reduction in the temperature needed for brazing titanium metal in medical implantable devices to prevent grain growth and distortion and ensure a high integrity hermetic seal. Currently, we are using this alloy to assemble miniaturised medical devices.

Improving operational execution

There are a number of opportunities across the global business units to improve operational execution. Resource and capital are allocated to support specific improvements to efficiency and effectiveness on a business-by-business basis.

Our operational efficiency programmes focus on:

- Global sourcing – moving from local to regional or global sourcing of raw materials.
- Lean manufacturing – identification and elimination of waste within the production processes and the acceleration of continuous improvement projects.
- Manufacturing strategy – improving global capacity management and sourcing.
- Benchmarking – sharing best practice across divisions and global business units to achieve and monitor cost savings.
- Local continuous improvement – multiple local improvement projects to improve efficiency.
- Automation – the use of automation to improve effectiveness and reduce production costs.

Our Thermal Ceramics North American chemical processing industry customers require product available to ship in less than 5 days from receipt of order with on-time-delivery rates of >99% with on-spec quality.

At our Emporia site the manufacturing, commercial and supply chain teams used the continuous improvement methodology to create and implement a process that generated the following improvements:

- Clearly established what **is required by the customer** to be successful in this market.
- Established inventory replenishment strategy to meet market demands.
- Created a process flow that would ensures shipment in 5 days or less.
- Created a **sustainable manufacturing process** that would support these requirements while not impacting regularly scheduled deliveries.

In one of our Seals and Bearings facilities we increased firing efficiencies by 50% through the redesign and procurement of new firing fixtures, realising efficiencies in energy and furnace consumables and handling. The resulting capacity increase also yielded the additional benefit of a shorter order-to-ship time. Replication of the redesign concept on similar products is anticipated to produce further efficiencies in 2020.

Increasing investment in people management and development

The Group aims to strengthen its leadership capability and deepen functional capabilities across the business.

The most significant development over the past 12 months:

- We now have 1,200 employees using our performance management process and this will extend to 2,300 in 2020.
- We have introduced an assessment process aligned to the Leadership Behaviours for all senior recruitment.
- We launched Catalyst and Ignite, our leadership programmes. These feature a blended learning approach over a 14-month timeframe. In addition, participants work on a business project and have a senior mentor.
  - The focus for the Catalyst programme is leading self and teams, leading the business and leading the organisation for the future.
  - For Ignite the focus is leading self and teams, leading beyond boundaries and leading through change.
- In 2019 we expanded training on Elevate (first line manager/supervisor) and this will continue to evolve and roll out across all businesses and regions in 2020.
- We now hold more regular talent conversations across the organisation, and the conversations go deeper into the organisation. Ultimately, this helps us identify those with a greater potential, and helps increase our focus on diversity (in all forms). These talent conversations also help us place the right people on our development programmes and reinforce our Leadership Behaviours.

Helping our people to grow and thrive

From recruitment in senior positions, to the development of our new leadership and graduates programmes, our behaviours underpin the investment we are making in our people.

Building on previous years, we have brought the behaviours to life for more of our employees: whether they take part in our behaviour-based performance management process, attend one of our new development programmes or through regular conversations they have with their line manager, employees feel more engaged by a culture which has behaviour at its core.

"Our Leadership Behaviours are central to the way we work. We are ambitious about the future. We build strong teams. We are relentless in driving performance. Our Behaviours determine our actions, our approach to managing our risks and opportunities and the stewardship of our leaders through sound governance and policies."

Read more about our people and the role they play on pages 16 to 17

Building a world-class sales capability

The Group is striving to build a distinctive capability in customer focus, and the sales effectiveness programme has been creating the foundations for this over the last three years. We have been focussed on delivering improvements across the commercial function, including; providing our sales teams with better tools and processes, improving the way we manage, maintain and grow our key accounts and new customers and modernising our sales incentive plans to ensure our frontline sales people are aligned with the Group's ambition for profitable growth.

In 2019, we have been continuing to rollout many of the initiatives developed during the prior year, including customer segmentation, sales skills training, pricing and our new incentives:

- Segmentation: across all our major businesses we now have an agreed method of segmenting our customers defined and operating, improving the way we manage our portfolio and helping us to increase customer satisfaction through better service.
- Sales training: we have delivered consistent training, differentiated according to our different commercial roles, to the majority of the commercial organisation, with the remainder to be completed in early 2020 before moving on to a model of training sustainment and continuous improvement.
- Pricing: we have been methodically working to build pricing capability across the Group.
- Sales incentives: we deployed our new incentives to 90% of the eligible employee population, with the remainder rolling out in January 2020. We have seen improved behaviours across our businesses.

Additionally, this year we have put considerable focus into improving the Group's Customer Relationship Management (CRM) tool and defining and embedding stronger and clearer sales processes to help us manage sales more consistently.

Sales Effectiveness in Seals and Bearings

Our Seals and Bearings team have worked hard to define, document and streamline their sales process, helping them develop a consistent approach to using the CRM tool. By improving efficiency of their sales processes, collaborating to identify and prioritise opportunities through regular reviews and in-depth customer knowledge, they have increased customer satisfaction.

In the second half of 2019 Seals and Bearings ran detailed workshops in their major businesses to evaluate opportunities for improvement and implement a more standard approach to achieving price realisation and account management strategies between businesses.

Sales Effectiveness in Electrical Carbon

Our Electrical Carbon team completed diagnostic workshops to develop improvement plans for their smaller regions in 2019, following the same process used for the wider business in 2018. Across their principal businesses they have focussed on utilising an enhanced performance management process that is semi-automated using CRM and which escalates through their sales management structures to keep the teams up to date on sales and activities with customers, as well as increasing the speed of issue identification and resolution.

The team conducted a pilot programme for change management, involving their entire commercial organisation and senior leadership team and using their feedback to understand how they can better communicate and engage the employees going through the changes to help embed and deliver maximum value from the sales effectiveness initiatives they have been deploying over the last couple of years.

Drive sales effectiveness and market focus

The Group is focused on improving a number of aspects of our sales activity and the capability of our sales teams: sales processes and their efficiency, the management of key customer accounts and distribution channels, deeper understanding of end-markets and faster-growing segments, enabling systems, and sales incentives plans. The Group is driving improvements in these areas through its sales effectiveness programme.

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).

Financial KPIs (statutory and headline performance KPIs)

Revenue

£1,049.5m

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 £8.2 million, 0.8%. See Review of operations on pages 32 to 40.

Organic constant-currency revenue growth[1,2]

0.8%

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 £8.2 million, 0.8%. See Review of operations on pages 32 to 40.

Headline operating profit margin[1]

12.8%

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 operational efficiency and the benefits of additional volume.

Operating profit

£126.1m

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 operational efficiency and the benefits of additional volume.

Free cash flow before acquisitions, disposals and dividends[1]

£59.2m

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

Performance commentary
Higher cash from operations was offset by increased net capital expenditure, net interest (including lease liabilities) and tax paid.

Return on invested capital[1]

17.4%

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

Performance commentary
The adoption of IFRS 16 *Leases* has depressed this measure, excluding this impact ROIC* was 18.2% with improvements in return on invested capital are primarily driven by increased headline operating profit*. See page 44.

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 42 to 44.
2. This KPI uses revenue at constant-currency[1] in its calculation.

Our KPIs provide 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 strategic 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 headline KPIs 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 employee annual bonus are focused on Group financial and personal performance. Measures for 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 65 to 82.

Financial KPIs (statutory and headline performance KPIs)

Headline EPS[1]

28.0p

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

Performance commentary
Benefits from underlying business performance improvements supported year-on-year improvements.

Continuing EPS

25.2p

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

Performance commentary
Benefits from underlying business performance improvements supported year-on-year improvements.

Continuing and discontinued EPS

25.7p

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

Performance commentary
Benefits from underlying business performance improvements supported year-on-year improvements.

Dividend per share

11.0p

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

Performance commentary
The Board has held the dividend flat during 2019 as it looks to rebuild dividend cover.

Non-financial KPIs

Employee turnover

15.6%

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

Performance commentary
The increase in employee turnover in 2019 is driven by local labour market pressure for semi-skilled employees in our manufacturing facilities, particularly in Hungary and some of our sites in the north-east of the US.

Lost-time accident frequency[2] (per 100,000 hours worked)

0.14

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
The focus placed on health and safety at all sites and across all levels of the Group through 'thinkSAFE' has led to a lower total accident frequency, with a lower Lost-time impact.

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 42 to 44.
2. This KPI uses revenue at constant-currency[1] in its calculation.

Risk management

Morgan has 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.

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 risks, including related policy, guidelines and process, subject to Board oversight.

Throughout 2019, the Board reviewed the status of all 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 risks, and 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:

- A group wide refresh of the Group's policies and internal control standards.
- Further roll out of the Group's 'thinkSAFE' programme and development of an environmental strategy.
- Implementation of new ERP systems in two of the Group's businesses, and establishment of a Programme Office to better manage IT initiatives.
- Focused actions within each business unit to mitigate risks.

The Board reviewed its appetite for its principal risks and its appetite for these risks is unchanged from the prior year. 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, which are essential to the success of our 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 has a low appetite for financial risk. Certain risks, such as pension funding, are likely to take a longer period of time to be mitigated. 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. As part of the ongoing risk management process referred to above, the Board and the GBUs also identify and assess emerging risks. Emerging risk areas were identified around pensions regulations due to the evolving regulatory environment and climate change and our role in protecting and enhancing the environment. The two emerging risks are included in the table below, together with the details of how they are being managed.

In 2019, the Board performed a deep dive assessment of the potential risks associated with supplying into the electric vehicle market. This review considered risks associated with the scope of Morgan's supply into these markets; and mitigations provided by product quality controls, contractual protections, and the Group's capability to deliver to customer specifications. Through this review, the Board satisfied itself that its level of appetite for risk in this market was proportionate to the opportunities presented.

An indication of the Board's assessment of the trend of each risk – whether the potential severity has increased, decreased or is broadly unchanged over the past year – is provided.

The following are the Group's principal risks and uncertainties, representing those 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 delivering strong returns to the Group's shareholders.

Risk Key

Increased | Unchanged | Decreased

OPERATIONAL RISKS

Risk description, assessment and trend from 2018	Mitigation
Technical leadership 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. Severity: Moderate Trend: Unchanged	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 has four Centres of Excellence. These Centres focus Morgan's 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. These projects are also regularly reviewed by the Executive Committee and the Board. Where Group products are designed for a specific customer, they are developed in partnership with the customer in order to maintain leading-edge differentiation. The Group seeks to secure intellectual property protection, where appropriate, 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. The Group continued its global leadership programme adding an advanced programme to develop more high-potential commercial, functional and technical leaders. The graduate leadership programme continued to run in 2019. Further detail on our people can be found on pages 16 and 17. Further detail on R&D can be found on page 20.
Operational execution/organisational change/sales effectiveness 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 Group's structure, and the structure of and incentives for our sales force. 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. Severity: Low Trend: Unchanged	Changes to operational processes are carefully considered by site, GBU and Divisional management before implementation. Operational improvements and savings are monitored against budget by the GBUs and Executive 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 overseen by GBU and Group management. A new capital expenditure assessment process was rolled out in 2019. 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. Changes to our sales structures and incentives are reviewed at various levels of the organisation before being launched. Further activities to improve sales effectiveness were rolled out in 2019, including sales force training, more targeted incentives and pricing initiatives. Further initiatives around pricing and extending the roll out of sales incentives are planned for 2020. Further detail on our strategy in action can be found on pages 19 to 23.
Portfolio management 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 proactively manage the Group's portfolio of businesses 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. Severity: Moderate Trend: Decreased within severity band	The Board performs regular reviews of the Group's portfolio. During 2019 the Group closed its China ceramics cores business and exited its Venezuela Thermal Ceramics business. Opportunities to acquire businesses are reviewed on a continuing basis.

OPERATIONAL RISKS

Risk description, assessment and trend from 2018	Mitigation
Macro-economic and political environment 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 resources price shocks. The UK's exit from the EU may have an impact on the Group if subsequent tariff changes, or border effects, negatively impact the profitability of the Group's products. The current value of Group UK exports to the EU is approximately £25 million, and imports into the UK from the EU are approximately £15 million. Severity: High Trend: Increased within severity band	The Group's broad market and geographic spread helps to mitigate the effects of political and economic changes. Budgets and forecasts for Morgan's 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. The overall macro-economic environment has weakened during the course of the year, although the Group's revenue has proved resilient. Some longer-term metrics are showing signs of potential weakness. Global issues considered by the Board this year include the continuing impact and uncertainty relating to the trade negotiations between the European Union and the United Kingdom, as well as US/China and Korea/Japan trade relations. The impact of the UK's exit from the EU could be mitigated in the medium term by moving production to alternative sites where tariffs are not applied to products.
Environment, health and safety (EHS) 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. Severity: High Trend: Unchanged	Managing its operations safely is the Group's number one priority. The Group has a comprehensive EHS programme managed by the Group EHS Director, with clear EHS standards and a refreshed programme of audits to assess compliance. The Group EHS Director sets annual priorities for EHS which are approved by the EHS Steering Group (comprising the Executive Committee and GBU EHS leaders) 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 and the Board. EHS metrics are assessed and overall EHS performance has improved in 2019. As at 31 December 2019, 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, in response to the emerging risk of climate change, is set out on pages 12 to 13. Details of the Group's provisions and contingent liabilities can be found in note 25 to the consolidated financial statements.
Product quality, safety and liability 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 higher risk applications, for example in the aerospace, automotive, medical and power industries. Severity: High Trend: Unchanged	Many of the Group's products are designed to customer specifications. Our businesses' quality management systems and training help ensure that all of Morgan's 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

Risk description, assessment and trend from 2018	Mitigation
IT and cyber security Information security/cyber risks are dynamic and ever-present in the external environment. If the Group were to lose critical data or information, including proprietary technology information, through inadequate data management or compromised information security, the business would be impacted and could suffer reputational damage. The effective management of the Group's Information Technology (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. Severity: High Trend: Increased	A new Chief Information Officer was appointed to the Group's Executive Committee in 2019 to drive delivery of the Group's IT strategy. The Group's IT Security policies have been strengthened in 2019, and enhanced security resource will be joining the Group in 2020. The Group has continued to comply with the National Institute of Standards and Technology (NIST) cybersecurity framework in the US and the EU's General Data Protection Regulations without issue in 2019. Focused deployment of enterprise resource planning (ERP) systems in those businesses where a need for improvement continued in 2019. These deployments are managed in line with IT project management standards.
Supply chain/business continuity 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, a natural catastrophe or serious incident, such as fire, could impact business continuity. One Group site, Hayward, is situated in the California earthquake zone, (US). Certain of the Group's businesses are important for intercompany supply purposes. Communicable disease could also impact the supply chain and ability of employees to travel to work in affected areas. The outbreak of the coronavirus has led to an extended shut down of our manufacturing facilities in China. Our focus has been to take actions and precautions to help ensure the safety and wellbeing of our employees. Whilst we cannot be certain how long this situation will last, based on the delayed startup of our production facilities since the lunar new year break, we currently anticipate that this will have an adverse impact on first half revenues of around £7.0 million and on first half headline operating profit* of around £3.5 million. The coronavirus has been spreading to countries outside of China, including to Italy and South Korea. Our plant in the affected area of Northern Italy, we expect to be closed for two weeks. Severity: Moderate Trend: Unchanged	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. A new Business Continuity policy has been rolled out to support 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, maintenance of product quality and strong customer relationships. The Group provides clear and timely communication to ensure appropriate safety measures are taken by all employees working in areas affected by communicable disease. The Group insurance programme includes business interruption cover and specific cover in relation to the impact of an earthquake in California, US; this Group-level insurance is reviewed annually by the Board.

Risk management continued

FINANCIAL RISKS

Risk description, assessment and trend from 2018	Mitigation
Treasury 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. Severity: Moderate Trend: Decreased	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's 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. In 2019 the Group repaid $75 million of private placement debt utilising its existing revolving credit facility. During 2019 the Group executed its first one-year extension option available under its revolving credit facility, extending the maturing date to September 2024. Further detail on our Treasury Policy is set out in the Group Financial Review, which can be found on page 40.
Tax 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 provides additional obligations and filing requirements for the Group as countries implement the actions in the framework. These could have an impact on the tax paid by the Group. Severity: Moderate Trend: Unchanged	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.
Pension funding 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's global defined benefit pension schemes calculated on the basis required for IAS 19 accounting disclosures decreased from £190.4 million at 31 December 2018 to £156.8 million as at 31 December 2019. The Group also participates in two multi-employer defined benefit schemes in the US, both of which have significant funding deficits. Severity: High Trend: Unchanged	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 externally through the Schemes' Trustees, corporate actuaries and professional advisers. 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 will increase to £16.5 million pa from 2020 for the length of current Recovery Plans (2025 and 2027). The impact of the evolving regulatory environment for occupational pensions, in particular the likely passing of the Pensions Bill in Parliament, will be monitored closely in 2020. In the US, in June 2016 one defined benefit Pension Plan completed a full legal termination, and for the other remaining Scheme, a formal offer of a present-value-equivalent, lump-sum cash payment was made to members. In December 2017, the Company made an additional contribution of $36 million to this Scheme and agreed a move to a significantly de-risked investment portfolio. A liability management strategy for US multi-employer plan is being refined for action in 2020.

LEGAL AND COMPLIANCE RISKS

Risk description, assessment and trend from 2018	Mitigation
Contract management As a global advanced materials business supplying components into 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. Severity: Significant Trend: Unchanged	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. To the extent that risk cannot be mitigated through contractual arrangements, the Group has insurance cover in place, including product liability insurance.
Compliance 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. Compliance: Moderate Trend: Unchanged	The Group is committed to the highest standards of corporate and individual behaviour. To support this, in 2018 the Group issued the Morgan Code. The Code defines the Group's approach to doing business ethically and confirms Morgan's commitments to high standards of ethical behaviour. The Code is supported by a range of 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. Further improvements to the programme were delivered in 2019, including a suite of mandatory ethics training for staff, covering topics such as anti-bribery and corruption, competition law, harassment and bullying and trade controls. In depth face-to-face training has also been held in some of the Group's higher risk regions. The Group's speak-up processes were relaunched in 2019 which enable staff to report concerns anonymously. The Group also has an Export Compliance Director in the US whose role is dedicated to ensuring compliance with export controls. In addition to Group-level compliance specialists, our 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 12 to 13.

Review of operations

Group performance

Group revenue and operating profit

Group revenue was £1,049.5 million (2018: £1,033.9 million), an increase of 1.5% on a reported basis compared with 2018, driven by improvements in the underlying business and foreign exchange tailwinds. On an organic constant-currency* basis revenue increased by 0.8%.

Group headline operating profit* was £134.2 million (2018: £124.8 million). Headline operating profit margin* was 12.8%, compared to 12.1% for 2018.

Operating profit was £126.1 million (2018: £107.3 million) and profit before tax was £109.7 million (2018: £94.9 million). Specific adjusting items in 2019 were net £nil (2018: pre-tax charge £9.5 million), explained in note 6 to the consolidated financial statements on page 111.

	Revenue		Operating profit[1]		Margin %	
	2019 £m	2018 £m	2019 £m	2018 £m	2019 %	2018 %
Thermal Ceramics	418.4	433.6	52.2	52.9	12.5	12.2
Molten Metal Systems	49.1	48.6	5.9	6.6	12.0	13.6
Thermal Products division total	467.5	482.2	58.1	59.5	12.4	12.3
Electrical Carbon	164.2	166.8	21.9	19.4	13.3	11.6
Seals and Bearings	144.3	132.7	26.4	23.7	18.3	17.9
Technical Ceramics	273.5	252.2	33.7	28.1	12.3	11.1
Carbon and Technical Ceramics division total	582.0	551.7	82.0	71.2	14.1	12.9
Divisional total	1,049.5	1,033.9	140.1	130.7	13.3	12.6
Corporate costs			(5.9)	(5.9)		
Group headline operating profit[1]			134.2	124.8	12.8	12.1
Amortisation of intangible assets			(8.1)	(8.0)		
Operating profit before specific adjusting items			126.1	116.8	12.0	11.3
Specific adjusting items included in operating profit[2]			–	(9.5)		
Operating profit			126.1	107.3	12.0	10.4
Net financing costs			(16.9)	(13.2)		
Share of profit of associate (net of income tax)			0.5	0.8		
Profit before taxation			109.7	94.9		

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 42 to 44.
2. Details of specific adjusting items can be found in note 6 to the consolidated financial statements.

Read more about our Thermal Products division on pages 34 to 35 and Carbon and Technical Ceramics division on pages 36 to 37.

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 to allow the reader to obtain a proper understanding of the financial information and the best indication of 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 11 to the consolidated financial statements.

In 2019 specific adjusting items were net £nil (2018: post-tax charge of £11.2 million) and comprised the following:

Release of provisions related to previous business exits and disposals

In 2019, certain liabilities relating to previous business exits and disposals lapsed and the Group released £0.7 million of legal and other provisions.

Business closure and exit costs

China, Technical Ceramics

In 2019, the Group completed the exit of the ceramic cores operations within China, initiated in 2018. The Group recognised £0.7 million of costs in relation to this exit relating to staff redundancies and legal and professional fees.

US Electro-ceramics update, Technical Ceramics

In 2017 the Group divested its UK Electro-ceramics business, which was part of the Technical Ceramics operating segment. At the same time, it announced the closure of its US Electro-ceramics business, which formed the remainder of the Group's Electro-ceramics business, once the delivery of the last time orders from customers had been completed. This is currently anticipated to be in the second half of 2020. Costs associated with the closure of the site were provided for in 2017. In 2019, the US Electro-ceramics business generated an operating profit contribution of £4.7 million on revenues of £9.2 million.

	2019 £m	2018 £m
Specific adjusting items		
Net pension past service credit	–	5.7
Business closure and exit costs	(0.7)	(15.2)
Release of provisions related to previous business exits and disposals	0.7	–
Total specific adjusting items before income tax	–	(9.5)
Income tax charge from specific adjusting items	–	(1.7)
Total specific adjusting items after income tax	–	(11.2)

2018

Net pension past service credit, UK

Early and late retirement adjustment

During 2018, the Group reviewed with the Trustees of Morgan Pension Scheme the factors applied on early and late retirement and clarified the practice regarding the calculation of pension payments with members who elected to retire other than at the normal date of retirement. This was effected via a Deed of Amendment. This change resulted in a net gain of £7.6 million in the income statement.

Adjustment for Guaranteed Minimum Pensions (GMPs)

On 26 October 2018, the High Court ruled that the Trustee of the Lloyds Banking Group pension schemes needed to remove the inequalities in pension scheme benefits that arise from unequal GMPs. We have included a charge of £1.9 million to reflect the potential cost of removing the GMP inequalities for the Group's UK defined benefit pension schemes.

The net impact of these pension adjustments is a credit to the income statement of £5.7 million.

Business closure and exit costs

Brazil, Thermal Ceramics

In 2018 the Group announced its decision to close the Thermal Ceramics site in Rio de Janeiro. A £6.2 million charge was recognised. This comprised cash exit costs of £2.6 million relating to site clean-up costs, professional and legal fees and staff redundancies and impairment costs of £3.6 million relating to the impairment of property, plant and equipment and other assets.

In the year ended December 2018 the business generated a headline operating loss* of £2.6 million on revenues of £3.0 million, (2017: headline operating loss* of £2.0 million on revenues of £6.5 million).

China, Technical Ceramics

In 2018 the Group has decided to close its ceramic cores operation in China, a part of the Technical Ceramics global business unit. A £1.4 million impairment charge was recognised relating to the impairment of plant and equipment and other assets.

In the year ended December 2018 the business generated a headline operating loss* of £0.9 million on revenues of £0.5 million, (2017: headline operating loss* of £0.9 million on revenues of £0.6 million).

Venezuela, Thermal Ceramics

In 2018 the Group has decided to exit its Thermal Ceramics operations in Venezuela. A £7.6 million charge was recognised, of which £7.3 million related to the recycling of deferred foreign exchange translation losses in accordance with IAS 21 *The Effects of Changes in Foreign Exchange Rates*, and £0.3 million relates to the impairment of assets.

In the years ended December 2017 and 2018 the business had negligible revenue and headline operating profit* (£0.0 million).

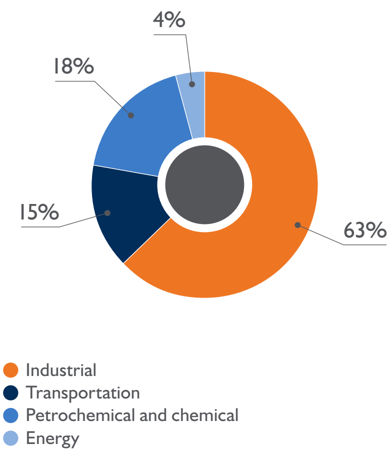
Divisional and global business unit performance

Thermal Products

Revenue £m

Divisional headline operating profit* £m

Thermal Products % of revenue



Highlights

- The Thermal Products division 2019 reported revenue was £467.5 million (2018: £482.2 million), a decrease of 3.0% compared to 2018.
- On an organic constant-currency* basis, revenue decreased by 2.4% compared to 2018.
- Divisional headline operating profit margin* was 12.4% (2018: 12.3%).

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 our 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 2019 Thermal Products comprised 32 operating sites employing approximately 3,130 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 £467.5 million, representing a decrease of 3.0% compared with £482.2 million in 2018. On an organic constant-currency* basis, year-on-year revenue decreased by 2.4%. Divisional headline operating profit* for Thermal Products was £58.1 million (2018: £59.5 million) with a divisional headline operating profit* margin of 12.4% (2018: 12.3%).

Revenue for Thermal Ceramics for the year was £418.4 million, representing a decrease of 3.5% compared with £433.6 million in 2018. On an organic constant-currency* basis, year-on-year revenue decreased by 2.7%. Demand from major automotive industry customers was lower in 2019 due to the decline in gasoline powered automotive sales in North America and the decline in the diesel automotive industry in Europe. There was also a downturn in the European industrial market. Strong investment in the chemical and petrochemical industry drove volume growth in Asia.

Thermal Ceramics 2019 headline operating profit* was £52.2 million (2018: £52.9 million) with headline operating profit margin* of 12.5% (2018: 12.2%). Margin improvement was driven by prior year plant closure in Brazil and operational efficiency, offsetting the impact of volume decline.

Thermal Ceramics

Our Thermal Ceramics business offers innovative Energy System Technology (EST) custom engineered solutions to meet the growing needs of the electric vehicle market. Proven to manage and prevent thermal runaway in this application, we are focused on supporting the future development of battery powered transportation; helping to improve the quality of life for users around the world.

Revenue for Molten Metals Systems for the year was £49.1 million, representing an increase of 1.0% compared with £48.6 million in 2018. On an organic constant-currency* basis, year-on-year revenue increased by 0.6%. Growth was driven by crucibles growth primarily in the North American and Asian end-markets, with precious metal market segment flat.

Molten Metal Systems 2019 headline operating profit* was £5.9 million (2018: £6.6 million) with headline operating profit margin* of 12.0% (2018: 13.6%). During 2019, margins declined due to one-off restructuring costs in the first-half and the annualised impact from prior year investment in research and development and sales effectiveness. The second-half margin at 13.1% improved on the first half at 10.9%.

Strategy

The priorities for the division remain in line with the execution priorities of the Group. Throughout 2019, the division undertook work to develop a market-driven business strategy to deliver sustainable and profitable growth. As a result of this work, 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 the margins for our standard products.

Outlook

The market outlook is mixed for 2020, the Thermal Products division will continue to focus on product and end market growth opportunities, sales effectiveness and new product introduction.

Molten Metal Systems

In 2019 Molten Metal Systems launched their most advanced family of crucibles to date, the VAluStar range. With high oxidation resistance and significantly improved life, VAluStar crucibles reduce impurities in holding applications, whilst lowering overall costs in aluminium and other low-temperature alloy furnaces, significantly improving the 'value' obtained by the user.

Superwool XTRA

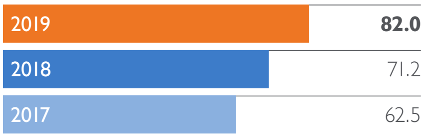
Our new low biopersistence fibre, Superwool XTRA, has low thermal conductivity and thermal mass, low density and ease of installation, critical for insulating iron and steel kilns. Its high temperature tolerance, improved pollutant resistance and a new chemical formulation meets stringent health and safety requirements, reshaping the oil and gas industry.

Divisional and global business unit performance

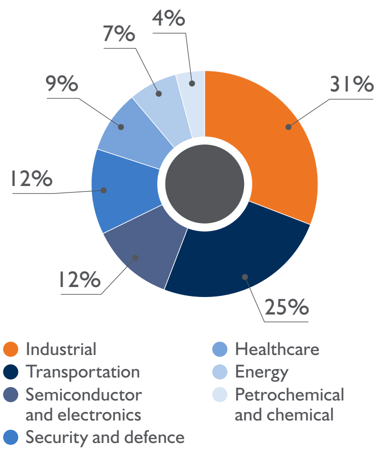
Carbon and Technical Ceramics

Revenue £m

Divisional headline operating profit* £m



Carbon and Technical Ceramics
% of revenue



Highlights

- The Carbon and Technical Ceramics division 2019 reported revenue was £582.0 million (2018: £551.7 million), an increase of 5.5% compared to 2018.
- On an organic constant-currency* basis revenue increased by 3.5% compared to 2018, with increases in Seals and Bearings and Technical Ceramics more than offsetting market driven declines in Electrical Carbon.
- Divisional headline operating profit margin* was 14.1% (2018: 12.9%).

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. The business's 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 electronics, 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 2019 the Carbon and Technical Ceramics division comprised 49 operating sites employing approximately 5,360 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 £582.0 million, representing an increase of 5.5% compared with £551.7 million in 2018. On an organic constant-currency* basis, year-on-year revenue increased 3.5%. Divisional headline operating profit* for the Carbon and Technical Ceramics division was £82.0 million (2018: £71.2 million) with divisional headline operating profit margin* of 14.1% (2018: 12.9%).

Revenue for the Electrical Carbon global business unit in 2019 was £164.2 million, representing a decrease of 1.6% compared with £166.8 million in 2018. On an organic constant-currency* basis, year-on-year revenue declined by 2.4%. Growth in the semiconductor and electronics end-market segments was offset by the year-on-year decline driven primarily by economic weakness in a number of segments in our core industrial markets.

Seals and Bearings

Our Seals and Bearings business provides high-duty face materials, that enable mechanical seals to perform better in the most demanding of applications. In the oil and gas industry, our materials enable the seal interface to be tightly controlled in terms of flatness and tribology, reducing leakage and preventing the release of the climate damaging emissions into the environment.

Electrical Carbon headline operating profit* was £21.9 million (2018: £19.4 million) with a headline operating profit margin* of 13.3% (2018: 11.6%). Despite the revenue decline, headline operating profit margins* were expanded through strong operational efficiency actions.

Revenue for the Seals and Bearings global business unit in 2019 was £144.3 million, representing an increase of 8.7% compared with £132.7 million in 2018. On an organic constant-currency* basis year-on-year revenue increased by 6.5%. The business growth was driven by the healthcare and petrochemical end-market segments, and by a continuation of contract awards in ceramic armour (2019: £35 million; 2018: £24 million). This was partially offset by a decline in the European market.

Seals and Bearings headline operating profit* was £26.4 million (2018: £23.7 million) with a headline operating profit margin* of 18.3% (2018: 17.9%).

Margins improved with the benefit of increased volume. There has been a strong focus on the completion of process improvement projects and this yielded savings which have more than offset cost inflation. Investments in business infrastructure, sales effectiveness, and research and development are positioning the business in support of its growth strategy.

Revenue for the Technical Ceramics global business unit in 2019 was £273.5 million, an increase of 8.4% compared with £252.2 million in 2018. On an organic constant-currency* basis, year-on-year revenue increased by 5.7% primarily driven by increased demand for ceramic cores in the aerospace market and supply of ceramic parts into the semiconductor, medical and renewable energy markets. This demand growth was partially offset by continued slow-down in the industrial gas turbine market.

Technical Ceramics headline operating profit* was £33.7 million (2018: £28.1 million) with a headline operating profit margin* of 12.3% (2018: 11.1%). Margins expanded with the benefit of higher volume and efficiency and the implementation of IFRS 16 (£1.6 million).

Strategy

The priorities of the Carbon and Technical Ceramics division, and of the three global business units of 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 effectiveness, to support growth in our selected markets and drive margin expansion.

The focus on operating costs is reflected in the division's results, most notably in the improved headline 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.

Outlook

The division's focus in 2020 will be on embedding sales effectiveness across the global business units and delivery of product development innovations through the Centres of Excellence. The division will also continue its efforts to deliver operational efficiencies.

Technical Ceramics

Our Technical Ceramics team have developed 3D ceramic printing capability enabling them to produce complex prototype parts without the need for new moulds; shortening lead times. 3D ceramic parts can allow for multi-part assemblies creation within one single piece and incorporate hidden features which are often costly, or impossible to machine or injection mould.

3D ceramic printing enables our customers to develop components quicker and with the use of less raw material resource.

Electrical Carbon

Reliance on wind power is increasing, at Morgan we produce the turbines slip ring and brush system. By using bronze slip rings in tandem with our brush material, which can reduce the frequency of maintenance within the turbine and prevent failures, we are significantly improving brush life. In addition, our bronze slip ring has a 20% increased width for additional thermal mass and is designed for better heat transfer.

Group financial review

> We made considerable further progress with the implementation of our strategy during the year, strengthening sales capability, driving new product development, improving our operations and developing our leadership teams. This has enabled our third successive year of organic* growth in a challenging end market.

Peter Turner
Chief Financial Officer

Foreign currency impact

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

	2019		2018	
	Closing rate	Average rate	Closing rate	Average rate
USD	1.33	1.28	1.28	1.33
Euro	1.18	1.14	1.11	1.13

The potential impact of changes in foreign exchange rates is given in note 22 to the consolidated financial statements on page 138.

Retranslating the 2019 full year results at the January 2020 closing exchange rates would lead to revenue of £1,017.3 million and headline operating profit* of £128.0 million.

For illustrative purposes, the table below provides details of the impact on 2019 revenue, Group headline operating profit* and profit before tax if the actual reported results, calculated using 2019 average exchange rates, were restated for GBP weakening by 10 cents against USD in isolation and 10 cents against the Euro in isolation:

	2019 Revenue £m	2019 Headline operating profit[1] £m	2019 Profit before tax £m	2018 Revenue £m	2018 Headline operating profit[1] £m	2018 Profit before tax £m
Increase in revenue/Group headline operating profit[1]/profit before tax if:						
GBP weakens by 10c against USD in isolation	39.7	6.3	5.5	34.9	5.1	4.5
GBP weakens by 10c against the Euro in isolation	19.9	2.9	2.7	21.2	3.8	3.7

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 42 to 44.

Amortisation of intangible assets

The Group amortisation charge was £8.1 million (2018: £8.0 million).

Finance costs

The net finance charge was £16.9 million (2018: £13.2 million) comprising net bank interest and similar charges of £9.3 million (2018: £8.5 million), net interest on IAS 19 pension obligations of £4.6 million (2018: £4.7 million), and the interest expense on lease liabilities of £3.0 million (2018: £nil) resulting from IFRS 16 *Leases*.

The impact of potential changes in interest rates on profit or loss are stated in note 22 to the consolidated financial statements on page 127.

Looking forward to 2020, we anticipate that the net finance charge will reduce to around £13.5 million, comprising net bank interest and similar charges of £7.0 million; net interest on IAS 19 pension obligations of £3.0 million; and the net interest expense on lease liabilities of £3.5 million.

Taxation

The Group tax charge, excluding specific adjusting items, was £29.9 million (2018: £29.0 million). The effective tax rate, excluding specific adjusting items, was 27.3% (2018: 27.8%). Note 8 to the consolidated financial statements, on page 112, provides additional information on the Group's tax charge.

Looking forward to 2020, we anticipate that the effective tax rate will remain at around 27%, with cash tax paid slightly higher than the charge to the income statement.

Earnings per share

Headline earnings per share* was 28.0 pence (2018: 26.7 pence) and basic earnings per share from continuing operations was 25.2 pence (2018: 20.0 pence). Details of these calculations can be found in note 10 to the consolidated financial statements on page 113.

Dividend

The Board is recommending a final dividend, subject to shareholder approval, of 7.0 pence per share on the Ordinary share capital of the Group, payable on 22 May 2020 to Ordinary shareholders on the register at the close of business on 1 May 2020. Together with the interim dividend of 4.0 pence per share paid on 22 November 2019, this final dividend, if approved by shareholders, brings the total distribution for the year to 11.0 pence per share (2018: 11.0 pence). A total dividend of 11.0 pence per share represents a dividend cover of headline EPS* 2.5x in 2019 (2018: 2.4x).

The Board has held the dividend flat as it looks to rebuild dividend cover.

Note 42 to the Company financial statements, on page 153, provides additional information on the Company's distributable reserves.

Cash flow

Cash generated from continuing operations was £164.8 million (2018: £131.3 million), an improvement on 2018. Free cash flow before acquisitions. disposals and dividends* was £59.2 million (2018: £48.5 million). Net debt* at the year end was £221.1 million (2018: £180.0 million), representing a net debt* to EBITDA* ratio of 1.3x (2018: 1.2x). Net debt* excluding lease liabilities was £156.8 million (2018: £179.8 million), representing a net debt* to EBITDA* ratio excluding lease liabilities of 1.0x (2018: 1.2x).

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 139.

	2019 £m	2018 £m
Cash generated from continuing operations	164.8	131.3
Net capital expenditure	(54.9)	(53.1)
Net interest	(12.3)	(8.4)
Tax paid	(28.8)	(20.9)
Lease payments	(9.6)	(0.4)
Free cash flow before acquisitions, disposals and dividends[1]	59.2	48.5
Dividends paid to external plc shareholders	(31.3)	(31.4)
Net cash flows from other investing and financing activities	(12.1)	(5.2)
Net cash flows from divestments and discontinued operations	1.1	(1.2)
Exchange movement and other non-cash movements	6.1	(9.8)
Opening net debt[1] excluding lease liabilities	(179.8)	(180.7)
Closing net debt[1] excluding lease liabilities	(156.8)	(179.8)
Closing lease liabilities	(64.3)	(0.2)
Closing net debt[1]	(221.1)	(180.0)

1. Definitions of these non-GAAP measures, and their reconciliation to the relevant GAAP measure, are provided on pages 42 to 44.

Capital structure

At the year end total equity was £312.2 million (2018: £277.2 million) with closing net debt* of £221.1 million (2018: £180.0 million).

Non-current assets were £589.3 million (2018: £549.2 million) and total assets were £985.1 million (2018: £964.5 million).

Details of undiscounted contracted maturities of financial liabilities and capital management are set out in note 22 to the consolidated financial statements on pages 123 to 130.

Capital structure is further discussed in note 22 to the consolidated financial statements on page 129 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 US with the majority of others in continental Europe.

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

	2019 £m	2018 £m
Operating costs:		
Current service cost	(2.6)	(3.3)
Administration expenses recognised outside of the pension liabilities	(1.4)	(1.4)
Curtailments and settlements	0.2	–
Total operating costs	(3.8)	(4.7)
Net interest on net defined benefit liability	(4.6)	(4.7)
Total before specific adjusting items	(8.4)	(9.4)

The Group pension deficit has decreased by £33.6 million since last year end to £156.8 million on an IAS 19 (revised) as employer contributions and investment gains more than offset the impact of lower discount rates:

- The UK Schemes deficit decreased by £38.6 million to £101.5 million (2018: £140.1 million), (discount rate 2019: 2.06%; 2018: 2.74%).
- The US Schemes deficit increased by £1.8 million to £10.6 million (2018: £8.8 million), (discount rate 2019: 3.21%; 2018: 4.34%).
- The European Schemes deficit increased by £2.7 million to £39.6 million (2018: £36.9 million), (discount rate 2019: 0.90%; 2018: 1.70%).
- The Rest of World Schemes deficit increased by £0.5 million to £5.1 million (2018: £4.6 million), (discount rate 2019: 2.20%; 2018: 2.60%).

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 on page 132. On the basis of these full valuations, the Trustees of the UK Schemes, having consulted with the Group, agreed past service deficit recovery payments totaling £16.5 million a year from January 2020, 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.

Note 23 to the consolidated financial statements, on pages 131 to 136, provides additional information on the Group's pension schemes.

Update on the impact of the coronavirus

The outbreak of the coronavirus has led to an extended shut down of our manufacturing facilities in China. Our focus has been to take actions and precautions to help ensure the safety and wellbeing of our employees.

Whilst we cannot be certain how long this situation will last, based on the delayed startup of our production facilities since the lunar new year break, we currently anticipate that this will have an adverse impact on 2020 revenues of around £7.0 million and on headline operating profit* of around £3.5 million, with the impact in the first half of the year. China represents c.10% Group revenue annually.

The coronavirus has been spreading to countries outside of China, including to Italy and South Korea. Our plant in the affected area of Northern Italy, we expect to be closed for two weeks.

Group financial review continued

We are extremely grateful for the incredible effort of our teams and our immediate thoughts are with the people directly impacted by this global health emergency. We fully support the efforts being taken to contain the virus and we are working in close conjunction with local authorities and partners.

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 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 75% 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. Credit risk is further discussed in note 22 to the consolidated financial statements on pages 123 to 130.

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 maturity profile is provided in notes 21 and 22 to the consolidated financial statements on pages 123 to 130.

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 arising from the implementation of the OECD action plan on 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 30.

Directors' statements

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 6 to 44. 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 maturing September 2024. The Group's forecasts and projections, taking account of reasonably possible changes in trading performance and exchange rates, show the Group operating within its debt financial covenants for the next 12 months.

The current economic climate continues to have an impact on the Group, its customers and its suppliers. The UK's exit from the EU may have an impact on the Group if subsequent tariff changes, or border effects, negatively impact the profitability of the Group's products or the ability to manufacture or distribute products on a timely basis. However, given the current value of the Group's UK exports to the EU (ca. £25 million) and imports into the UK from the EU (ca. £15 million), it is not considered that this will have a significant impact overall on the Group's liquidity or operations.

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 of 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 C.2.2 of the UK Corporate Governance Code, the Directors have assessed the viability of the Group over a three-year period, taking into account the Group's current position and the potential impact of the principal risks documented on pages 26 to 31 of the Annual Report. Based on this assessment, the Directors confirm that they 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 2022.

The Directors have determined that an assessment period of three years to 31 December 2022 is an appropriate period over which to provide its viability statement. This is the period reviewed by the Board in the strategic planning process and is considered to be appropriate given the dynamics in the markets in which we operate.

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 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 an EBITDA*, debt and finance charge headroom relative to current bank covenants.

The Directors assessment included a review of the principal risks facing the Group, their potential impact and the adequacy of the financial headroom relative to a severe but plausible combination of these risks. While the review has considered all the principal risks identified by the Group, the following were focussed on for enhanced stress testing: political and macro-economic environment, trade compliance and pension funding.

The geographical and product diversification of the Group's operations helps minimise the risk of serious business interruption or a catastrophic damage to our reputation. The impact of the UK's exit from the European Union was considered in the assessment, however given the footprint and small size of the UK operations it has not changed our overall assessment of the viability of the Group. Furthermore, the spread of the Group's end-markets is such that it is not reliant on one particular group of clients or sector.

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 2022.

Definitions and reconciliations of non-GAAP measures to GAAP measures

Reference is made to the following non-GAAP measures throughout this Strategic Report. 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.

Headline operating profit

Group headline 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 as the charge arises primarily on externally acquired intangible assets since the adoption of IFRS and does not therefore reflect all intangible assets consistently.

2019	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/(loss)	50.0	5.6	55.6	21.2	26.0	29.2	76.4	(5.9)	126.1
Add back: specific adjusting items included in operating profit	–	–	–	–	–	–	–	–	–
Add back: amortisation of intangible assets	2.2	0.3	2.5	0.7	0.4	4.5	5.6	–	8.1
Group and divisional headline operating profit	52.2	5.9	58.1	21.9	26.4	33.7	82.0	(5.9)	134.2

1. Corporate costs consist of central head office costs.

2018	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/(loss)	36.9	6.3	43.2	18.7	23.3	22.3	64.3	(0.2)	107.3
Add back: specific adjusting items included in operating profit	13.8	–	13.8	–	–	1.4	1.4	(5.7)	9.5
Add back: amortisation of intangible assets	2.2	0.3	2.5	0.7	0.4	4.4	5.5	–	8.0
Group and divisional headline operating profit	52.9	6.6	59.5	19.4	23.7	28.1	71.2	(5.9)	124.8

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 headline operating profit to be compared on a like-for-like basis.

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	Group £m
2018 revenue	433.6	48.6	482.2	166.8	132.7	252.2	551.7	1,033.9
Impact of foreign currency movements	(0.7)	0.2	(0.5)	1.4	2.8	6.9	11.1	10.6
Impacts of disposals	(2.9)	–	(2.9)	–	–	(0.3)	(0.3)	(3.2)
Impact of underlying business	(11.6)	0.3	(11.3)	(4.0)	8.8	14.7	19.5	8.2
Underlying %	(2.7)%	0.6%	(2.4)%	(2.4)%	6.5%	5.7%	3.5%	0.8%
2019 revenue	418.4	49.1	467.5	164.2	144.3	273.5	582.0	1,049.5

Year-on-year movements in segment and headline 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
2018 headline operating profit	52.9	6.6	59.5	19.4	23.7	28.1	71.2	(5.9)	124.8
Impact of foreign currency movements	(0.8)	–	(0.8)	–	0.8	0.9	1.7	–	0.9
Impacts of disposals and business exits	2.4	–	2.4	–	–	0.6	0.6	–	3.0
Impact of underlying business	(2.3)	(0.7)	(3.0)	2.5	1.9	4.1	8.5	–	5.5
Underlying %	(4.2)%	(10.6)%	(4.9)%	12.9%	7.8%	13.9%	11.6%	–	4.3%
2019 headline operating profit	52.2	5.9	58.1	21.9	26.4	33.7	82.0	(5.9)	134.2

1. Corporate costs consist of the cost of the central head office.

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:

	2019 £m	2018 £m
Operating profit	126.1	107.3
Add back: specific adjusting items included in operating profit	–	9.5
Add back: depreciation – property, plant and equipment	32.3	31.3
Add back: depreciation – right-of-use assets	10.1	–
Add back: amortisation of intangible assets	8.1	8.0
Group EBITDA	176.6	156.1
Group EBITDA excluding IFRS 16 Leases impact	163.5	156.1

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 operations to cash flow from operations and free cash flow before acquisitions, disposals and dividends is as follows:

	2019 £m	2018 £m
Cash generated from continuing operations	164.8	131.3
Net capital expenditure	(54.9)	(53.1)
Net interest	(12.3)	(8.4)
Tax paid	(28.8)	(20.9)
Lease payments	(9.6)	(0.4)
Free cash flow before acquisitions, disposals and dividends	59.2	48.5

Definitions and reconciliations of non-GAAP measures to GAAP measures continued

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.

	2019 £m	2018 £m
Cash and cash equivalents	68.7	67.6
Non-current borrowings	(176.2)	(164.8)
Non-current lease liabilities	(52.6)	–
Current borrowings and bank overdrafts	(49.3)	(82.6)
Current lease liabilities	(11.7)	(0.2)
Net debt	(221.1)	(180.0)
Net debt excluding lease liabilities	(156.8)	(179.8)

Constant-currency revenue and headline operating profit

Constant-currency revenue and headline 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 38 provides further information on the principal foreign exchange rates used in the translation of the Group's results to constant-currency at average exchange rates. The potential impact of foreign exchange movements is provided in note 22 to the consolidated financial statements on pages 123 to 130 .

Headline earnings per share

Headline 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 a better indication of headline performance.

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 headline earnings per share is included in note 10 to the consolidated financial statements on page 113.

Return on invested capital

Return on invested capital (ROIC) is defined as the 12-month Group headline 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 and lease liabilities.

	2019 £m	2018 £m
Operating profit before specific adjusting items	126.1	116.8
Add back: amortisation of intangible assets	8.1	8.0
Group headline operating profit	134.2	124.8
12-month average adjusted net assets:		
Third-party working capital	181.0	169.3
Plant and equipment	194.1	180.9
Land and buildings	122.9	116.3
Right-of-use assets	50.2	–
Intangible assets	211.4	214.0
Other assets (net)	12.4	9.6
12-month average adjusted net assets	772.0	690.1
ROIC	17.4%	18.1%
ROIC (excluding IFRS 16 *Leases* impact)	18.2%	18.1%

This Strategic Report, as set out on pages 6 to 44, has been approved by the Board.

On behalf of the Board

Stephanie Mackie
Company Secretary

25 February 2020

Corporate governance

Governance

Chairman's letter to shareholders

> 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

I am pleased to report the Board's activities regarding Morgan's corporate governance. In my introduction to this Annual Report I stated the guiding principle of the Board is to "do the right thing" with respect to all our stakeholders and the environment. In this respect, items of Corporate Governance that the Board focussed on during 2019 included:

- Discussion at every Board meeting on health and safety issues with particular emphasis on the Company's accident rate and higher risk hazards. Many of Morgan's operations, if not properly managed, could have a significant impact. The Board exercises close oversight over the safety performance of the Group, ensuring the deployment of robust safety control systems and procedures. The Board challenges and scrutinises executive management, setting the tone at all opportunities, including site visits, to ensure there is a strong commitment to continuous improvement of safety throughout the Group.
- Environmental issues are a regular Board discussion topic. Energy and water usage intensity is continuously monitored so that ways may be sought to improve further their efficient use. Reduction in carbon dioxide and other green-house gases are also important areas of Board focus. In a business as long standing as Morgan, spanning over 150 years, it is inevitable that there are instances of legacy ground contamination resulting from historical periods when vigilance of such matters was less important than today. There are instances of such contamination that the Board monitors to determine the appropriate clean-up action.
- Discussions regarding Board composition and skill sets highlighted a gap in our knowledge and experience of Morgan's Asian markets. Therefore, to augment our capability we decided to recruit a non-executive director with direct experience of operations in these markets. After a formal search process, the Board appointed Clement Woon who made an immediate impact on our deliberations on Asian markets on joining the Board in May 2019. Details of Clement Woon's skills and experience can be found on page 49.
- The Morgan Code was approved by the Board and rolled out to the Company in 2018. In 2019 this company culture change was reinforced by the Directors during the numerous visits to the Group's various sites, setting the tone from the top.
- The Board engages with key stakeholders in a number of ways. In compliance with the new corporate governance requirements for Board engagement with the workforce, the Directors significantly stepped up contact with employees and details of these meetings can be found in the Corporate Governance Report on page 52. During visits to several US sites I engaged with representatives of the local workforce to discuss their views of the Company including strategy, culture and diversity. Non-executive directors also held similar fora during visits to several other sites. The results of these meetings, independent of any executive management, were discussed at length in Board meetings.
- Specific focus was brought to bear on the issues of Group talent management, diversity and succession planning. During site visits it was pleasing to note the proportion of women, several from Morgan's graduate training programme, who presented their projects and were on a career path to senior leadership roles. It is also pleasing to see women featuring in several senior roles already although there is still much to be done before we achieve a truly diverse organisation. Succession planning was also considered at Board level with a plan for timely Board director renewal.
- The Board is acutely aware that it should not become complacent so engages in rigorous annual Board evaluations. In 2019 the review was externally facilitated by Mr Jack Telfer of Auxesis Consulting to assess overall Board effectiveness with a specific focus on individual Board member performance. These reviews give the Board as a whole, and individuals, areas for development.

In 2020 the Board will continue its strict emphasis on corporate governance and to drive good governance culture via the Morgan Code through all levels of the business.

Douglas Caster CBE FIET
Chairman

Board in action

An effective Board of Directors made up of diverse and experienced members.







Governance framework

The Company's governance framework is formally delivered through the Company's Articles of Association, clearly defined role of the Board and the Matters reserved for the Board, the principal Committees of the Board (Audit, Remuneration and Nomination Committees) and their clearly defined terms of reference. The memberships, roles and activities of the principal Committees are described in their respective reports. The full terms of reference of the principal Committees are available on the Company's website.

Audit committee

- The Audit Committee assists the Board in effectively discharging its responsibilities for financial reporting and corporate control.

Nomination committee

- The Nomination Committee leads the process for Board appointments and makes recommendations to the Board on the appointment of new Directors.

Remuneration committee

- The Remuneration Committee is responsible for developing Group policy on executive remuneration and for determining, on behalf of the Board, specific remuneration packages for the executive Directors and the Chairman.

Board of Directors

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 a highly experienced electronic systems engineer with a strong track record of managing and driving growth within electronics businesses. He is an experienced Chairman and Chief Executive, having performed these roles at Ultra Electronics Holdings plc.

Career and experience: Douglas began his career 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 and stepped down as Chair of the Remuneration Committee at the same time.

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 prior 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 Advanced Materials, 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 M. Eng. from the Department of Electronic and Electrical Engineering at the University of Leeds.

Additional appointments: Non-executive Director, Hill & Smith Holdings PLC

Committees: None.

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.

Committees: None.

4. Jane Aikman
Independent Non-executive Director

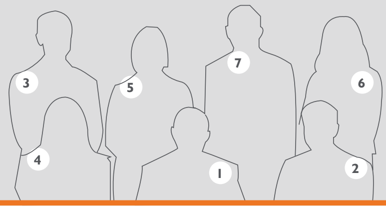
Appointed: Non-executive Director and Audit Committee Chair in July 2017.

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.

Career and experience: Jane has held a number of Finance Director roles, most recently as Chief Financial Officer of Arqiva Group Limited and 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.

Committees

- Committee Chairman
- (A) Audit
- (N) Nomination
- (R) Remuneration



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: None

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 as a serving executive.

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: 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. Since 2015, Helen has been Managing Director of Wates Smartspace Limited, the enlarged business following a merger with another Wates company and the acquisition of a facilities management business.

Additional appointments: Managing Director of Wates Smartspace Limited

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.

Career and experience: Laurence started with 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. After BP, Laurence became Chief Executive of independent power producer Eoxis UK Limited from 2010 to 2013. Through a number of non-executive positions both in the UK and internationally, Laurence also brings valuable knowledge of the energy, steel and infrastructure industries and insight into some of Morgan's key markets.

Additional appointments: Chairwoman of Voltalia S.A., Chair of Globeleq Ltd and member of the supervisory board of SBM Offshore N.V.

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: Since August 2016, Clement has been Group CEO and a member of the Executive Board of Saurer Intelligent Technology Co. Ltd, a €1 billion textile machinery and components business listed on the Shanghai Stock Exchange. 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 M.B.A in Technology Management from Nanyang Technological University, Singapore, a MSc in Industrial Engineering and BEng in Electrical Engineering from the National University of Singapore.

Additional appointments: Group CEO and Executive Director of Saurer Intelligent Technology Co. Ltd.

Committees: A N R

Corporate governance

The UK Corporate Governance Code

In July 2018 the Financial Reporting Council published the new UK Corporate Governance Code (the 2018 Code), which is available on its website **www.frc.org.uk**. The Company is reporting against the 2018 Code for the first time this year.

Listed below are the Code Principles of the 2018 Code, and where we have addressed the Principles in the Annual Report.

Application of Code Principles:

Code Principle	Summary	Page(s)
A	Board Leadership and Company Purpose Principles 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.	53
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.	6 to 23
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.	24 to 31
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.	17, 18, 51, 52
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.	15 to 17 and 60
F	Division of Responsibilities Principles The chair leads the Board and is responsible for its overall effectiveness in directing the company. They 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.	54 to 56
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.	48, 49, 53, 54
H	Non-executive directors should have sufficient time to meet their Board responsibilities. They should provide constructive challenge, strategic guidance, offer specialist advice and hold management to account.	54
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.	56
J	Composition, Succession and Evaluation Principles 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, cognitive and personal strengths.	63, 64
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.	48, 49, 54, 63, 64
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.	56, 57
M	Audit, Risk and Internal Control Principles 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 on the integrity of financial and narrative statements.	60, 61
N	The Board should present a fair, balanced and understandable assessment of the company's position and prospects.	60, 61
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.	26 to 31, 60, 61
P	Remuneration Principles 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.	65 to 74
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.	65 to 82
R	Directors should exercise independent judgement and discretion when authorising remuneration outcomes, taking account of company and individual performance, and wider circumstances.	65 to 74

Statement of Compliance with the 2018 Code provisions

Since July 2018, and during the year under review, the Board has considered the opportunities presented by the 2018 Code for enhancing its engagement with employees and its wider stakeholders in a way that is appropriate for the Group. The Board confirms that during the year ended 31 December 2019, the Company has fully complied with the provisions of the 2018 Code.

Board's monitoring and assessment of culture and workforce engagement

As set out in greater detail on pages 8 to 17 of the Sustainability and responsibility report, Morgan's cultural objective has been to build an organisation where collaboration and (empowered) decision-making at all levels of management (rather than in isolation locally) is more prevalent, where the right outcomes are reached, in the right way behaviourally (ethically, safely and inclusively). The Leadership Behaviours (set out on pages 7 and 15) have been a foundation supporting the ethos that 'it is not just what you do, but how you do it that counts'.

The Board has monitored and assessed the development of Morgan's culture through the methods used for employee engagement as described below, supplemented by other resources to help assess the culture and which include:

- Employee insight gathered from site visits, one to one interviews and from employee events
- Employee engagement survey metrics and verbatim employee comments
- Areas of culture highlighted in ethics reporting – presented directly to the Board twice a year
- Safety updates and metrics – presented directly to the Board four times a year
- Additional insights with a focus on diversity and inclusion.

Employee Engagement

The Board considered the appropriate approach to take to engage with the workforce, taking into account the proposed methods set out in Provision 5 of the 2018 Code and, recognising the Group's global reach with facilities located in over 30 countries with many employees in operational roles without direct access in the workplace, and agreed that the most appropriate approach was a combination of methods involving all Board members. The mechanisms selected by the Board to engage with the workforce comprise primarily of a number of meetings between the non-executive Directors with employees without senior management present, supplemented by other methods to provide insight into employee engagement which are summarised below.

The small groups of employees were encouraged to express their views on culture, leadership, safety and any other matters they wished to raise and the output from the discussion was reported back to the next Board meeting.

Attendee(s)	Date	Reason	Location(s)	Who met
Laurence Mulliez	May-19	GBU strategic reviews	Frankfurt, Germany	Met GBU management during the strategic reviews
Jane Aikman and Douglas Caster	Jun-19	European Employee Forum	Budapest, Hungary	Met with employees during the employee forum
Clement Woon	Sep-19	Shanghai site visits	Shanghai, China (Electrical Carbon and Thermal Products sites in Shanghai)	Site visits, met local management and employees
Clement Woon	Sep-19	Singapore – meeting with Marc Tan	Singapore office	Met with Head of Business Development, Asia and visited the Singapore office
All NEDs	Sep-19	Board meeting	Martinsicuro, Italy (Seals & Bearings site)	Board meeting, dinner with local management and site visit. The non-executive Directors met a small group of employees.
Douglas Caster	Oct-19	Site visits (accompanied by CEO)	Sites on US East Coast: New Bedford/Fostoria/Elkhart/Centre of Excellence at Penn State/Raleigh/ Dunn/Greenville/Augusta	Site visits, met local management and employees (at Fostoria, Penn State Centre of Excellence and Augusta)
Laurence Mulliez and Jane Aikman	Oct-19	Site visit (accompanied by Company Secretary)	Luxembourg (Seals & Bearings site)	Site visit, met local management and employees
Helen Bunch	Oct-19	Site visit (accompanied by Deputy Company Secretary)	St Marcellin, France (Thermal Products site)	Site visit, met local management and employees
All NEDs	Nov-19	Board meeting	Stourport, UK (Seals & Bearings site and Centre of Excellence for Technical Ceramics)	Board meeting, dinner with local management and site visit. Two NEDs met a small group of employees.
Jane Aikman	Nov-19	Participation in leadership development programmes	Shanghai, China (Electrical Carbon site)	Met the cohorts of the Catalyst and Ignite development programmes and participated in the training session. Visited the Shanghai site.
Helen Bunch and Clement Woon	Jan-20	Site visit	Luxembourg (Seals & Bearings site)	Site visit, met local management and employees

The Board is satisfied that the combination of dedicated engagement sessions with small groups of employees, opportunities to meet employees during Board visits to Morgan facilities together with the opportunities all non-executive Directors have taken to visit sites and engage with employees during other Morgan events have provided an effective way to engage with employees. By actively engaging with employees across the Group, the Board has started to influence the culture from the top down, demonstrating that the Directors view this as important. Feedback from employees indicates that they appreciate these interactions, and that employees would like this opportunity for engagement to continue. This approach continues to evolve and the Board will monitor its effectiveness and develop its approach during 2020.

Engagement with shareholders

Feedback from investors is presented to the Board in summarised form after the full-year and half-year results.

The Chairman and the Executive Directors meet large investors and potential investors.

The Company's brokers present to the Board annually including insights from investors and the market.

The AGM provides shareholders with the opportunity to ask questions of the Directors and to meet them informally after the meeting.

To help facilitate dialogue with shareholders, the Investors section of the Company's website includes details of Regulatory News Service announcements, press releases, presentations, webcasts and other relevant Company and shareholder information.

Relations with customers and suppliers

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 Other disclosures section in the Directors' Report (pages 83 to 85) contains statutory disclosures on the supply chain (page 83).

Engagement with pensioners and Pension Trustees

The Board met the Chair of the UK defined benefit pension scheme trustees in February 2020 and had the opportunity to ask questions.

The Director of Pensions and the Chief Financial Officer provide regular updates to the Board on pension issues, funding and regulatory developments.

The Board

The Board

The role of the Board

The Board is collectively and ultimately responsible to the Company's shareholders and oversees how the organisation generates and preserves the long-term success of the Company. The Board supervises and monitors progress against the key execution priorities, whilst ensuring that there is a robust framework of prudent and effective controls, which enables risks and emerging risks to be fully considered, assessed and managed.

The Board sets the tone from the top and upholds the Company's standards, which are contained in the Morgan Code (referred to on page 15 of the Sustainability and responsibility section of this Report) and in doing so, all the Directors fulfil their duties under section 172 of the Companies Act 2006.

Matters reserved for the Board

- Overall leadership, strategic aims, long-term objectives and risk appetite of the Group.
- Any changes relating to Group capital structure.
- Oversight and approval of full-year and half-year financial results, incl. approval of Annual Report and ensuring a fair balanced and understandable presentation of the Group's financial position.
- Approval of contracts and expenditure as specified in the Limits of Authority schedule.
- Shareholder communication and engagement and any general meetings.
- Changes to board membership following recommendations from the Nomination Committee.
- Determining remuneration policy for the Directors, Company Secretary and other senior executives following recommendations from the Remuneration Committee.
- Delegation of authority, approving levels of authority and that of the principle committees and approving their 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.

The Committees of the Board
(and key responsibilities)

Audit Committee
- Financial reporting
- External Audit
- Internal Audit
- Oversight of principal risks
- Oversight of Ethics and Compliance

Report available on pages 58 to 62

Remuneration Committee
- Executive and senior management remuneration
- Incentive structure and target setting
- Setting Remuneration policy
- Reviewing and considering wider workforce remuneration

Report available on pages 65 to 82

Nomination Committee
- Succession planning (Board and senior management)
- Board and Committee composition
- Board recruitment/ nominations
- Diversity Policy and pipeline

Report available on pages 63 to 64

Executive Committee
- Strategy implementation
- Delivery of operational and financial performance
- Development of policies
- Assessment and control of risk
- Prioritisation and allocation of resources
- Monitoring of competitive forces in each area of operation

Disclosure Committee
- Assist and inform the Board concerning the identification of inside information
- Make recommendations as to how and when the Company should disclose such information
- Ensuring any such information is in accordance with all applicable legal and regulatory requirements and the Company's inside information policy

General Purposes Committee
- Approve opening/ changes to bank accounts
- Approve arrangements with financial institutions
- Approve guarantees and indemnities
- Approve substantive intra-Group loans
- Intra-Group dividends and capital restructuring
- Grant options/ make awards under Company's Share schemes (after Remuneration Committee approval) and any EBT related loans

Corporate governance continued

The Company's governance framework is formally delivered through the Company's Articles of Association, clearly defined role of the Board and the Matters reserved for the Board, the principal Committees of the Board (Audit, Remuneration and Nomination Committees) and their clearly defined terms of reference, the memberships, roles and activities of the principal Committees are described in their respective reports. The full terms of reference of the principal Committees are available on the Company's website.

The Board delegates the day-to-day management of the Group and operational matters to the Chief Executive Officer and the Chief Financial Officer. The two executive Directors together with the Group Human Resources Director, the Group General Counsel, the Group IT Director, the Company Secretary and the divisional or global business unit Presidents, form the Executive Committee.

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

The Disclosure Committee met 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.

Board – roles and responsibilities

There is a clear division of responsibilities between our Chairman and Chief Executive Officer, each role is clearly defined and is quite distinct from one another.

From 1 January until 10 May 2019, the Board comprised four non-executive Directors (including the Chairman) and two executive Directors. Following the appointment of Clement Woon, immediately after the AGM on 10 May 2019, the Board is comprised of 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 48 to 49.

The Chairman

- Responsible for the leadership and effectiveness of the Board and the individual Directors;
- Shaping Boardroom culture;
- Ensuring the Board has effective decision-making processes and applies sufficient challenge to major proposals;
- Setting the Board's agenda;
- Ensuring sufficient time is available for all agenda items;
- Promoting a culture of open debate and constructive challenge which results in sound decision-making;
- Encouraging all Directors' effective contributions, drawing on their skills, experience and knowledge; and
- Ensuring constructive relationships between executive and non-executive Directors.

Chief Executive Officer

- Responsible for the management of the Group;
- Delivery of the Group's business plan;
- Formulation and implementation of Group strategy;
- Chairing the meetings of the Executive Committee; and
- Ensuring the implementation of the Group's policies, all within the authorities delegated by the Board.

The Chairman and Chief Executive Officer maintain a strong working relationship and open dialogue, which ensures cogent leadership of the Group.

Chief Financial Officer

- Supports the Chief Executive Officer in the development and delivery of the Group strategy;
- Leads the Group's finance functions;
- Oversees effective financial reporting and ensures suitable processes and controls are in place; and
- In conjunction with the Chief Executive Officer, recommends the annual Budget and long-term financial plans of the Group.

Senior Independent Director

- Meets with the non-executive Directors (without the Chairman present) at least once a year to consider the Chairman's performance during the year and communicates the outcomes with the Chairman; and
- Acts as a trusted sounding board for the Chairman and as an intermediary to the other non-executive Directors.

Non-executive Directors

- Independent monitoring and review of management's performance;
- Providing alternative insight/expertise and assisting with development and review of the strategy;
- Engaging with stakeholders and employees in relation to Morgan's culture; and
- Key components of the principal committees of the Board, reviewing remuneration, financials, internal audit and succession planning of senior management.

Board balance, experience, diversity and independence

The size, structure and composition of the Board were reviewed during the year, taking into account succession planning and the need to progressively refresh the membership and update the knowledge and range of skills and experience of the Board, which are themselves regularly reviewed. Part of this process related to the search for a new non-executive Director, further information on the search and subsequent appointment can be found in the Nomination Committee Report on pages 63 to 64. The Board wishes to ensure that it maintains a good blend of views and skills as well as a cohesive and informed decision-making process. The Board comprises members with a breadth and depth of professional and sector experience, and with varied and relevant backgrounds; it has Directors with skills in strategy, finance and technology, as well as global commercial experience, and working knowledge of other Boards or executive roles.

Throughout the year, the Company complied with the requirement of the 2018 Code that at least half the Board, excluding the Chairman, should comprise non-executive Directors determined by the Board to be independent. In addition to considering the factors set out in the Code, the Board's assessment of a non-executive Director's independence and effectiveness covers their total number of commitments, and any relationships with major suppliers or with charities receiving material support from the Company.

During the year, the Chairman and the non-executive Directors met without the executive Directors present. The Senior Independent Director and the other non-executive Directors also met without the Chairman present.

Time Commitment

Prior to undertaking an additional external role or appointment, the Chairman and the 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 2018 Code, Directors are asked to seek Board approval prior to accepting any additional external appointments.

Conflicts of interest

The Board has procedures in place to address the requirements of the Companies Act 2006 concerning the duty of the Directors to avoid conflicts of interest. Accordingly, the Directors are required to:

- Disclose proposed outside commitments and to seek Board approval before accepting any additional external appointments in order to enable a prior assessment of any actual or potential conflict.
- Disclose without delay any situation which gives rise to an actual or potential conflict.

The Board reviews the outside interests of the Directors annually, including any disclosed conflicts and authorisations. Should an actual or potential conflict be identified, the Board considers whether to authorise the situation in accordance with the Company's Articles of Association and, if so, the terms of any authorisation. In the event of an actual conflict arising, the Director concerned must notify the Chairman (the Chairman would notify the Senior Independent Director) and the Director would be denied access to the relevant information and excluded from any associated debate and decision.

Following the 2019 review, it was confirmed that no potential or actual conflicts had occurred during the year under review. In line with the Board's procedures to avoid conflicts of interest and in accordance with provision 15 of the 2018 Code, the Board approved Dr Raby's appointment as a non-executive Director to Hill & Smith Holdings PLC on 2 December 2019. The Board considers an executive director being appointed as a non-executive director on another listed entity as a significant appointment.

Board meetings

In 2019, the Board met formally on eight occasions, with a summary of the matters addressed at each of these meetings set out on pages 55 to 56.

During the year, there were several dedicated agenda items on Group strategy to monitor performance and delivery against the agreed execution priorities. The Board received presentations on the strategic plan for each of the divisions and global business units and separate reviews on culture, diversity, talent, technology, sales effectiveness and safety.

Attendance at meetings

The attendance of each Director at Board, and Audit, Remuneration and Nomination Committee meetings (based on membership of those Committees, rather than attendance as an invitee) is set out on page 55.

Should a Director have concerns about the running of the Company or a proposed action, which are not resolved, their concerns would be recorded in the Board minutes. An appropriate Directors' and Officers' liability insurance policy is in place.

Summary of the Board's work during the year:

Group Strategy

- Receive presentations on the strategic plans for each of the Divisions and Global Business Units from the Presidents and Finance Directors of those businesses
- Monitor ongoing performance in relation to the strategic priorities
- Receive regular updates on progress of the sales effectiveness programme
- Review of the progress of key technology projects and considering potential opportunities for growth
- Review of the Group's talent strategy, succession planning and potential future leadership capability and how best to retain and promote talent to support the business
- Approval of the Group's IT Strategy

Governance and Risk

- Monitor environmental, health and safety performance at every Board meeting and setting targets for the forthcoming year
- Twice-yearly review of the Group's principal risks and approach to risk management
- Review of the Group's risk appetite, including potential level of exposure for emerging and principal risks
- Approval of the appointment of Clement Woon as a Non-executive Director (further information on the appointment process can be found in the Nomination Committee Report on pages 63 to 64)
- Approval of matters relating to the pensions strategy, triennial valuation and approach to discussions with the pension trustee and funding strategy
- Review of the outcomes of the annual Board performance evaluation and agreement on actions for further improvement as well as monitoring of progress against actions arising from the 2018 performance review
- Consider the Board's response to the requirements of the 2018 Code and related legislation.

Monitoring Group Performance

- Review and approval of the Group's full year results and preliminary announcement of final results
- Review and approval of the Group's half-year results, interim dividend, trading statements Half-Year Roadshow investor feedback
- Approval of capital expenditure and conducting post-implementation reviews of capital expenditure projects
- Approval of the dividend policy and recommendation of the 2019 interim dividend and the final dividend
- Consider whether the Annual Report and Accounts are fair, balanced and understandable
- Approval of the 2020 budget
- Approval of the Group's tax strategy
- Consider reports from the Chief Executive Officer and the Chief Financial Officer at each Board meeting
- Review reports from the Chairs of the Audit, Nomination and Remuneration Committees.

	Board		Audit		Remuneration		Nomination	
Director	Eligible to Attend	Attended	Eligible to Attend	Attended	Eligible to Attend	Attended	Eligible to Attend	Attended
Douglas Caster	8	8	–	–	4	4	4	4
Pete Raby	8	8	–	–	–	–	–	–
Peter Turner	8	8	–	–	–	–	–	–
Jane Aikman	8	8	4	4	4	4	4	4
Helen Bunch	8	7[1]	4	4	4	4	4	4
Laurence Mulliez	8	8	4	4	4	4	4	4
Clement Woon[2]	6	6	3	3	3	3	2	2

1. Due to a long standing commitment, Helen Bunch was unable to attend the September 2019 Board meeting. Ms Bunch spoke with the Chairman in advance of the meeting and shared any comments/concerns she had on the topics being discussed.
2. Clement Woon was appointed on 10 May 2019 immediately after the Company's AGM.

Board's decision to approve the new Group IT strategy

The Board approved the ten year strategy and took into account the long-term needs of the business. Factors taken into account included:

- Better systems to support customer account management and meeting customer needs in terms of performance and delivery.
- The views gained from employees on how to implement change.
- Insights gained from employees into taking ownership and making better decisions.
- Wider (community) considerations ensuring robust security of third party data / data privacy.

Stakeholder factors taken into account by the Board in monitoring implementation of the Morgan Code

In light of the introduction of the Morgan Code in the second half of 2018, the Board has monitored progress against implementation of the Code and the promotion of ethical conduct. The Board has used a number of mechanisms to monitor progress. These have provided the Board with insights from employees and the Board has taken these factors as well as those of other stakeholders into account as follows:

- Preserving the financial integrity of the Group in order to safeguard future employment and shareholder funds.
- Maintaining high standards of ethical conduct to safeguard customers' business.
- Ensuring fair treatment of employees.

Culture

- Review of progress to date of the action plan to promote diversity and inclusion across the Group
- Annual review of progress in relation to fostering a safe, ethical and diverse culture
- Monitor implementation of thinkSAFE, the Group's behavioural safety programme
- Through reports from the Audit Committee, monitor progress against implementation of the Morgan Code and review reports made to the ethics hotline.

Board support and access to information

The Company Secretary, with the Chairman, is responsible for ensuring the Board has full and timely access to all appropriate information to enable it to fully discharge its duties. Board papers are generally made available electronically at least five working days prior to each meeting. 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, to independent professional advice at the Company's expense to assist them in fulfilling their duties as Directors.

New Directors receive a full, formal and tailored induction on joining the Board. A new Director's experience and background is taken into account in developing a tailored induction programme, which will usually include: an information pack with pertinent documents; meetings with external advisers, senior executives and functional heads; and a number of site visits. All non-executive Directors have access to management and employees at all levels and are encouraged to visit operational sites. Clement Woon joined the board on 10 May 2019, following the cessation of the AGM. Part of Clement's induction has included visiting a number of Morgan sites during the year (see page 52 for further information). Further information regarding the search and recruitment process of Clement Woon is discussed in the Nomination Committee report on pages 63 to 64.

The Chairman considers the individual training and development needs of each Director. The Company Secretary keeps the suitability of external courses under review and facilitates the continuing training and development of all Directors as necessary. Training may be provided via presentations at Board meetings to keep the Board's knowledge up-to-date.

Board performance evaluation

An internal Board performance evaluation, led by the Chairman, which included input from Jack Telfer of Auxesis Consulting, took place in 2019, following the comprehensive external evaluation which had taken place in 2018. In addition to an assessment of the Board's processes and identification of ways to improve effectiveness, the 2019 Board performance evaluation included a set of questions designed to evaluate the performance of the individual Directors.

Jack Telfer is not involved in any other business relationship with the Company and is independent.

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

1. All Board members completed online questionnaires. The questionnaires comprised a number of questions on general Board effectiveness (a selection of questions from last year's questionnaire to allow year-on-year comparison), including one question on the performance of each of the principal Committees. The questionnaires included a set of questions to be answered in respect of each individual director (which includes a specific question on additional roles for those holding the SID/committee chair position) and additional questions on the performance of the Chairman.
2. Auxesis Consulting reviewed Directors' responses and spoke to each Director individually by telephone to clarify points of feedback and, in particular, to ensure that feedback provided to individuals is as clear as possible.
3. Auxesis Consulting produced a report summarising the results of the questionnaires and highlighting any significant changes from last year, discussing the findings with the Chairman initially.
4. The report on general Board effectiveness was made available to the Board and the Chairman presented his conclusion and recommendations at the December Board meeting.
5. The Board subsequently agreed an action plan.
6. In addition, Auxesis Consulting provided a separate summary for the Chairman of the individual feedback on each member of the Board, a short individual feedback report for each participant and feedback to the Chairman on his effectiveness in chairing the Board.

Proposed actions arising from the 2019 Board performance evaluation process include the following:

- Monitoring implementation of strategy – The Board agreed to consider further whether it should spend more time considering external economic and/or political developments that might affect the Group. In addition, the Board agreed to consider whether it needs additional information on external economic and/or political developments that might impact on the Group.

- Assessing the risk profile of the Group – To assist the Board in understanding the appetite for risk within the Group and to assist executive management in formalising the level of risk which is appropriate for the business, the Board should continue to review whether sufficient information is provided to the Board to assess the Group's risk profile.
- Developing leadership capability and succession planning – In order to support executive management in the development of leaders within the organisation, this activity and review progress against plans to strengthen leadership capability and succession, the Board will continue to take advantage of opportunities to meet senior leaders within the business, in particular for more informal interactions with Executive Committee members and those individuals who are part of the senior leadership team when visiting sites.
- Board development – Recognising that the current composition of the Board has a good mix of skills and experience which complement each other and that no current recruitment needs have been identified, continue to strengthen the Board through specific training and development for the Board with the selection of particular topics to be supported by the Company Secretary.

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 85 and the going concern and viability statements are set out in the Strategic Report on 40.

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 4 to 43.

Internal control

The Board has overall responsibility for establishing and maintaining a sound system of internal control to safeguard shareholders' investment 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 58 to 62.

Information on share capital and other matters

The information about share capital required to be included in this statement can be found on pages 83 to 85 in the Other disclosures section.

Actions were taken during the year to track and implement the recommendations made following the externally facilitated 2018 Board performance review:

Recommendations from 2018	Action taken/progress made during 2019
Mix of skills and experience on the Board – Following a review of skills and experience on the Board, agreement from Board members that better representation of Asian experience was required to support the priorities and challenges facing the Group through the recruitment of a new non-executive Director to fill the current vacancy on the Board with recent or current experience of working and doing business in Asia.	Following a rigorous selection process, Clement Woon was appointed as a non-executive Director on 10 May 2019, following the AGM. He has particular experience of doing business in the Asia Pacific region, with a particular focus on technology, thereby fulfilling the requirements sought by the Board.
Developing leaders and awareness of the talent bench strength – Continued focus on review progress against plans to strengthen leadership capability and succession.	A number of key appointments were made in 2019 through both external hires and internal promotion to increase the talent pool and strengthen capabilities and succession potential. In addition to the Board's annual review of talent management and succession planning, the Chairman and non-executive Directors have taken opportunities to meet senior leadership at a number of events and during site visits in a number of locations across the business during the year (as set out on page 52).
Recognising the amount of organisational change within the business, provide more opportunities for interaction with the senior management team including an additional visit to facilities outside of Europe.	As above. The Chairman and certain non-executive Directors have visited locations in the US and Asia. Further visits by the Board to sites are scheduled for 2020.
Assessment of global business unit performance – Making the comparison of key performance information more comparable.	The format of the Board papers has been amended to enable the Board to assess comparable key metrics across the different business units to facilitate comparison of GBU progress.
Assessing the risk profile of the Group – Providing the Board with greater confidence when assessing the risk profile of the Group given the complexity of the Group and the range of cultures/locations.	The Board has considered the risk appetite of the Group and risk management strategy regularly during 2019, by reviewing risk appetite against the principal risks and by conducting a deep-dive risk review into a business opportunity.
Ensuring a review and assessment of major decisions – Taking the opportunity to review past decisions with a view to improving decision-making going forward.	There is a rolling programme in place to ensure that all capital expenditure and other major business decisions approved by the Board are reviewed by the Board one year after implementation. The reviews concentrate on whether the financial parameters for the project were met and lessons learned from project implementation.

Report of the Audit Committee

This Report gives an insight into the responsibilities, activities and workings of the Audit Committee (the Committee) and how it discharged its duties during 2019.

Committee members

Jane Aikman (Chair)

Helen Bunch

Laurence Mulliez

Clement Woon[1]

1. Became a member of the Committee upon appointment as a non-executive Director on 10 May 2019.

All Committee members are independent non-executive Directors. Jane Aikman is the Committee Member with recent and relevant financial experience and competence in accounting and auditing, gained in various prior Chief Financial Officer roles. Biographies of the current Committee members, including details of relevant sector experience, are set out on pages 48 to 49.

Dear Shareholder

As Committee Chair, I am pleased to present this Report which provides an overview of the Committee's key activities during the 2019 financial year and identifies the significant matters that have taken up the Committee's time and required careful judgement.

The Committee provides assurance to the Board in relation to the integrity of the Group's financial reporting and external audit processes and the maintenance of sound internal control and risk management procedures. The Committee helps to ensure that proportionate, consistent and robust systems of financial control are in place across the business.

Role and activities:

During 2019 the key areas of focus for the Committee were:

- Overseeing the tender of the Group's external audit contract, culminating in the proposed appointment of Deloitte LLP as the new auditor;
- Receiving reports on progress in relation to the Internal Audit plan, providing guidance and ensuring continuous improvement of the function;
- Oversight of the Group's Ethics and Compliance programme and monitoring progress following the introduction in 2018 of the Morgan Code, including a focus on trends in investigations;
- Assessed the key areas of significant judgement in relation to the 2019 consolidated financial statements, which were: pensions, provisions and contingent liabilities and tax balances.
- Conducting a robust review of the scope, remit and effectiveness of the internal control environment and ensuring risk management procedures are appropriate and effective.

Committee evaluation

The Committee's performance was reviewed as part of the main 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.

Looking ahead

The Committee looks forward to a full programme of work in the coming year. Morgan's 2020 annual report and accounts will be the first to be audited by Deloitte LLP. The Committee will manage the transition to a new audit approach and will scrutinise the performance and effectiveness of the external audit with a very close eye.

The landscape in which audit services are provided and scrutinised is likely to change in the near future too. In particular, the Committee will monitor developments following the publication of the Brydon Report and developments in relation to the audit profession.

As a Committee, we are also following developments post the Kingman Review and how we can address the Kingman recommendation to promote greater 'brevity, comprehensibility and usefulness' in the Company's own reporting in the coming year.

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 and updated during the year to reflect the Code, are available on the Company's website.

Areas of focus in 2019

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 to review all significant financial reporting judgements;
- Reports from the external auditor covering their views on key judgements and accounting estimates and progress against the agreed audit plan;
- 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; and
- Ethics and Compliance updates including reports on whistleblowing and investigations.

In addition, during 2019 the key matters considered at each meeting of the Committee during the year included:

February	→ Review of the Group's systems of internal controls and risk management. → Discussion of the trends in reports to the Ethics Hotline and resulting investigations since the introduction of the Morgan Code. → Considering the appropriateness of management's assessment of going concern and the viability statement. → Consideration of the Group's proposed approach to IFRS 16 *Leases*, including discussion of the impact on the recognition of assets and liabilities in the consolidated financial statements. → Review of the Company's draft 2018 Annual Report and Accounts and recommendation to the Board that the document be approved. The review included specific consideration of whether the document was fair, balanced and understandable, and approval of the Report of the Audit Committee. → Review of the effectiveness of the external audit process.
June	→ Presentations from firms shortlisted in the external audit tender process, assessment of the merits of each shortlisted firm's proposals and formulation of a recommendation on the outcome of the tender process to put to the Board. → Review of draft 2019 half-year results, as presented by management and the external auditor. → Annual risk presentations from the Electrical Carbon, Technical Ceramics and Seals and Bearings global business units. → Review and amendment of the Committee's Terms of Reference.
July	→ Annual risk presentation from the Thermal Products division. → Further review of 2019 half-year results, as presented by management and the external auditor. → Review and discussion of the external audit plan and strategy for the 2019 year-end. → Approval of the audit engagement letter, audit fee and confirmation of auditor independence.
December	→ Review of the Ethics and Compliance risk assessment. → Review of 2019 year-end processes in light of anticipated changes to the content and structure of the 2019 Annual Report & Accounts in the first year of reporting against the 2018 UK Corporate Governance Code and taking into account the introduction of the Companies (Miscellaneous Reporting) Regulations 2018. → Review and approval of 2020 Internal Audit plan. → Review of progress during 2019 and a plan for 2020 in respect of trade controls. → Annual review of the effectiveness of Internal Audit. → Approval of the appointment of a new Head of Internal Audit. → Review of the FRC's most recent Annual Review and Year-end Letter and consideration of the proposed focus areas, being climate-related reporting and cash reporting. → Received an update from the Director of Group Tax on taxation issues. → Recommendation of the tax strategy for Board approval.

Report of the Audit Committee continued

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 as follows, and:

- 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 in the Annual Report.
- Received confirmation from external advisers 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.
- 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 significant areas of judgement considered by the Committee in relation to the 2019 consolidated financial statements, and how these were addressed, were as follows:

Specific adjusting items

In the consolidated income statement, the Group has presented specific adjusting items separately in order to provide the best indication of the underlying performance of the Group, and details of the nature and quantum of the individual items are provided in note 6 to the consolidated financial statements. In 2019 specific adjusting items were net £nil, comprising of the release of £0.7 million of legal and other provisions relating to previous business exits and disposals, and £0.7 million of costs relating to staff redundancies and legal and professional fees in relation to the completion of the exit of the ceramic core operations within China, initiated in 2018. The Committee fully considered the principle of disclosure for specific adjusting items and the individual items. Taking into account guidelines issued by the FRC and peer-group disclosure of similar items, the Committee concluded that it is the best way to present the Group's results.

Provisions and contingent liabilities

The level of provisioning for known and contingent liabilities, including those arising from trading, environmental issues and litigation, is an issue where management and third-party judgements are important. 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. KPMG LLP also regularly present their view on all material provisions and contingent liabilities. During the year the Group recorded redundancy and restructuring provisions in the ordinary course of business, which are disclosed separately in note 4 to the consolidated financial statements to provide investors with additional information to assist in their assessment of the Group's performance.

Tax balances

Accounting for current and deferred tax involves a range of judgements. 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.

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 the internal control requirements of the Code. This review covered all material controls, including financial, operational and compliance controls, and risk management systems. 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 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 (e.g. anti-bribery and 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 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 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 Divisional and 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. In addition, the Committee receives an annual presentation on business risk and internal controls from Divisions and global business units.

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 disposal 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 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 26 to 31, supports the Directors' statements on going concern and viability statement on page 40.

Risk factors

The Group's businesses are affected by a number of factors, many of which are influenced by macro-economic trends, although, 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 are further discussed in the Risk management section on pages 26 to 31.

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 from 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 of 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.

In 2019, 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 all years that the review is not externally facilitated. The last externally facilitated review was in 2018. The Committee considers the internal audit function to be effective, with the quality, experience and expertise appropriate to the business.

At the end of 2019, the Committee approved the appointment of a new Head of Internal Audit.

External auditor, including independence and non-audit services policy

The external auditor, KPMG 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 2016 following the implementation of the EU Audit Regulation and Directive). The policy is summarised below:

- 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 Chairman 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.

In order 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 KPMG LLP during 2019.

In 2019, the proportion of the auditor's fees for non-audit work relative to the audit fee was 8.0% (2018: 4.0%).

Auditor effectiveness

The Committee discussed the quality of the audit during the year and considers the performance of the external auditor as a separate agenda item each December. The Committee considered all aspects of the auditor's performance and confirmed their independence before recommending their re-appointment for approval by shareholders at the AGM.

External audit tender

KPMG LLP and its predecessor firms have acted as the Group's auditor since late 2001. No formal external tender process had been conducted in the period since KPMG's initial appointment, but during 2007 a formal review of the external auditor was undertaken, which included a re-tender presentation. As reported in our earlier Annual Reports, the Board decided to take advantage of the Financial Reporting Council (FRC's) Guidance on transitional arrangements, which allowed the Group to defer a formal third-party tender process until at least the end of the then external audit engagement partner's tenure in 2018. The current senior audit engagement partner, Paul Sawdon, was appointed in March 2018. In the Company's 2018 Annual Report the Committee stated its intention to commence a formal tender process in respect of the external audit engagement after completion of the 2018 year end.

A rigorous tender process was conducted, which included both Big 4 and non-Big 4 firms. Based on a detailed evaluation of the participating firms against the selection criteria, Deloitte LLP was chosen as the preferred new auditor to recommend to the Board. At its meeting in June 2019, the Board accepted the Audit Committee's recommendation, including transitional arrangements involving Deloitte shadowing KPMG in respect of the statutory audit for the 2019 year-end. A resolution for the appointment of Deloitte LLP as external auditor will be put to shareholders at the 2020 AGM.

The Committee confirms that this recommendation is free from influence and that no contractual terms have been imposed on the Company limiting the choice of auditor.

How the audit tender process was undertaken

The audit tender process was designed taking into account the FRC's guidance, 'Audit Tenders: Notes on Best Practice'.

The Committee oversaw the tender process, including agreeing the timetable, which firms to invite to tender and the evaluation process and selection criteria that would be used in formulating a recommendation to make to the Board.

Key selection criteria included:

- **Understanding the Group's business:** understanding of the industry, and the challenges faced by the industry, risks and judgemental areas, understanding of key locations and local requirements.
- **Team capability:** including the leadership and experience needed to carry out a quality audit and demonstrate independent and fair challenge to management.
- **Audit approach:** including the degree of tailoring to Morgan, the ability to deliver a good quality and robust audit and how well they would manage the transition.
- **Proactivity, ideas and added value:** encompassing varied factors such as freshness of audit approach, worldwide footprint, ability to support the Committee's work and reputation.

The tender process involved two stages:

Stage 1 (November and December 2018)	
Due diligence	As a pre-step prior to commencement of the tender process proper, all firms being considered were subjected to due diligence enquiries and discussions, which included the Lead Audit Partner for each firm having the opportunity to meet with the Chair of the Committee.
Confirmation of independence	Each audit firm was asked to submit a detailed list of audit and non-audit services they provide to the Group. As a result, certain firms were excluded from the process.
Invitation to tender	Five firms were invited to tender on the basis of a briefing document developed and agreed by management.
Expression of interest	Each invitee was asked to confirm its intention to respond and participate in the process.
Initial meetings	The three firms that expressed an interest in proceeding participated in meetings with Morgan management to provide firms with an opportunity to understand Morgan and the service requirements in more detail, as well as giving each firm insight into stakeholder expectations.
Evaluation	At the end of Stage 1, two firms were invited to progress to the next stage.
Formation of Selection Committee	A Selection Committee was formed, comprised of the Committee Chair, Chief Executive Officer, Chief Financial Officer, Group Financial Controller and Head of Internal Audit. The Selection Committee was involved throughout the selection process to assist the Committee to assess the proposals, the suitability of the proposed Lead Audit Partners and the independence of each tendering firm.
Stage 2 (April – June 2019)	
Proposals	Each firm submitted its proposal, which covered: → The proposed audit team; → Its approach to managing the audit; → How the firm proposed to acquire sufficient understanding and knowledge of the Morgan Group; and → Its approach to the transition process, including consideration of risks involved in the transition and other pertinent matters.
Presentations	Both firms made presentations to the Committee and answered questions from Committee members.
Evaluation and recommendation	The written proposals and presentations were evaluated and scored based on the selection criteria agreed at the start of the process and noting the management scores from Stage 1 and the Committee reached a decision on the recommendation to make to the Board.
Board decision	The Committee recommended to the Board that the tender be awarded to Deloitte LLP. The Board accepted the recommendation and a resolution to appoint Deloitte LLP will be put to shareholders at the 2020 AGM.
Feedback	Participating firms were informed of the outcome of the tender process.

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

Report of the Nomination Committee

The Nomination Committee continued to evaluate the blend of skills, diversity and experience of the Board during the year

Committee members

Douglas Caster (Chairman)[1]

Jane Aikman

Helen Bunch

Laurence Mulliez

Clement Woon[2]

1. Appointed Chairman of the Committee (and the Board) with effect from 1 January 2019.
2. Became a member of the Committee upon appointment as a non-executive Director on 10 May 2019.

The Committee is comprised of non-executive Directors and is chaired by the Chairman of the Board. Biographies of the Members can be found on pages 48 to 49. The Company Secretary is secretary to the Committee. Other attendees may join the Committee meeting by invitation and currently the Chief Executive Officer and the Group Human Resources Director attend scheduled meetings.

I am pleased to introduce the Nomination Committee report for 2019 representing my first year as Committee Chairman.

The Committee performs a vital role. Its key responsibilities are to review the composition and balance of skills and experience on the Board, 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 both the Board and senior management positions, and oversee the development of the Group's diverse pipeline for succession.

The year commenced with a number of Board role changes following Andrew Shilston's retirement from the Board at the end of 2018. On 1 January 2019, I took over as Chairman of the Board and of the Nomination Committee and Helen Bunch replaced me as Chair of the Remuneration Committee. The search for an additional non-executive Director concluded with the appointment of Clement Woon who was appointed on 10 May 2019. The Committee continues to be focused on ensuring the composition of the Board supports the delivery of the Group's strategy and success of the Group for the longer term.

We have made great progress regarding diversity of the Board over the past few years and we continue to be focused on increasing diversity within the Group as a whole, recognising that there is still more work to do to meet our ambitions for a diverse and inclusive culture. The succession plans of the Board and senior management have been a key area of focus during the year with a view to supporting the Group's strategy and securing the Group's long-term success.

Douglas Caster CBE FIET
Chairman

Role of the Committee

The Committee's roles and responsibilities are outlined in its terms of reference, which can be found on the Company's website. The terms of reference were updated during 2018 to reflect changes introduced by the 2018 UK Corporate Governance Code, which applies from 1 January 2019.

Key Activities

In 2019 the Committee met four times, details of attendance at the meetings is contained on page 53.

The Committee's key activities during the year included:

- Concluding the process to select an additional non-executive Director resulting in the appointment of Clement Woon.
- Considering Board succession plans for both executive and non-executive Directors.
- Reviewing Board and Committee size and composition to ensure this remains appropriate.
- Considering the proposal to submit Directors for re-election at the 2019 AGM, whether each Director remained effective and their external time commitments.
- Reviewing the Group's approach to diversity.

Appointment process

As outlined in the 2018 Annual Report, Spencer Stuart were retained to facilitate the search for an additional non-executive Director following Andrew Shilston's retirement from the Board at the end of 2018. Spencer Stuart have signed up to the voluntary code of conduct for executive search firms, which includes provisions on diversity. Spencer Stuart has no other connection with the company or any of the Directors.

On 7 May 2019, it was announced that Clement Woon would be appointed as a non-executive Director with effect from the conclusion of the AGM on Friday 10 May 2019. Clement's biography is set out on page 49. Clement was identified as a candidate who had a wide variety of experience across a number of sectors, in particular technology and running global businesses, with particular experience in the Asia Pacific region. Details of the process followed for Clement's appointment can be found below:

Report of the Nomination Committee continued

Succession Planning

The Committee regularly reviews the Board's composition, including the length of tenure of the non-executive Directors, to ensure that it has the correct balance of skills, experience, knowledge and diversity required for the leadership of the Group and to support the delivery of the Group's strategy. The Committee reviewed tenure of Board members, noting the Code requirement for the Chairman's tenure not to exceed nine years from first appointment, with a view to putting succession plans in place as required.

Morgan is keen to develop and retain talented people throughout the Group to support the delivery of the Group's strategy. Talented individuals have been identified as potential succession candidates' to support succession over time. Investment is being made in developing talent and a number of programmes have been put in place to develop leadership and management capability within the Group, which includes various training programmes and mentoring from senior employees. Morgan is also focused on improving diversity across its teams and is therefore taken into account when making plans for succession and assessing talent within the workforce.

Diversity Policy

The Board recognises the benefits that diversity and inclusion bring. Diversity is considered in its broadest sense and includes diversity of gender, social and ethnic backgrounds, cognitive and personal strengths. Although the Board still believes it is not appropriate to set any specific targets, the Board considered diversity is in the long-term best interests of the business.

Currently, three of the seven Board Directors are female, equating to 43% female representation on the Board and over half of the non-executive Directors, which is above the target set by the Hampton-Alexander Review. Of these, one is the Senior Independent Director, one is the Chairman of the Remuneration Committee and one is Chairman of the Audit Committee. In line with the recommendations of the Parker Review the Board has one Director of colour. These appointments made to the Board over the past four years demonstrate the Board's commitment to progressing greater diversity.

The Board monitors closely whether it is taking diversity in its broadest sense into account when planning executive succession and appointing new Board members. The Board performance review process also considers diversity.

During the selection process for new non-executive Directors, the Committee uses a search agent who has signed up to the voluntary code of conduct for executive search firms, which ensures that diversity is considered when developing a candidate pool. Selection is made on merit but with due regard to the benefits of diversity.

When monitoring the development of leadership and considering succession planning for executive management, the Board will take into account diversity as well as the need for talented leaders with the skills to both lead a global company with a presence in the key world economies and manage the associated challenges. The Committee also considers diversity in broader discussions on succession planning and talent development and supports management in their wider commitment to promoting diversity.

At 31 December 2019, 29% (2018: 23%) 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. At the graduate recruitment level, the Group successfully attracts a diverse group of good candidates. In 2019, 33.5% (2018: 32%) of the graduate intake were female and the 2018 cohort was represented by 7 nationalities (2018: 8).

Committee Evaluation

The Committee's performance was reviewed as part of the 2018/19 Board Evaluation (see page 56). It was concluded that the Committee continued to operate effectively.

Remuneration report

A statement to shareholders from the Chair of the Remuneration Committee.

Committee members

Helen Bunch (Chair)[1]

Douglas Caster[2]

Laurence Mulliez

Jane Aikman

Clement Woon[3]

1. Helen Bunch was appointed Chair of the Remuneration Committee effective 1 January 2019.
2. Douglas Caster was appointed Chairman of the Board effective 1 January 2019 and stepped down as Chair of the Remuneration Committee on 31 December 2018.
3. Clement Woon became a member of the Committee upon appointment as a non-executive Director on 10 May 2019, immediately after the AGM.

I am pleased to present the Remuneration Report for the year ended 31 December 2019.

The past year has seen continued progress in the implementation of the Group's strategy. Morgan delivered 0.8% organic revenue* growth for the 2019 financial year while investing further in the wider business to support sustainable long-term growth. The foundation of the organisation continues to strengthen with further focus on the 'thinkSAFE' programme, the Morgan Code of Ethics, as well as the continuation of the global Sales Effectiveness Programme. With the updated 2018 UK Corporate Governance Code and enhanced reporting requirements, 2019 has seen significant executive pay reforms with additional disclosures required in relation to a number of new areas, such as alignment of executive and workforce pensions and the disclosure of CEO to employee pay ratios. Within this context,
the Committee conducted a review of the implementation of the current Remuneration Policy (approved by 97% of shareholders at the 2019 AGM) to ensure it remains fit for purpose. This review concluded that the current framework continues to support Group strategy and culture, and provides strong alignment of executive Director and shareholder interests.

2019 Committee Activity

During the year, the Committee met four times, and its activities included:

- Determination of whether the 2018 bonus and 2016 LTIP were achieved, and, if so, to what extent.
- A review of external benchmarking of executive Directors' remuneration packages.
- Having reviewed the remuneration of the wider workforce, determination of the remuneration packages for the executive Directors and other senior executives, applying consistent guiding principles.
- A review of whether the measures for the bonus and share incentive schemes remain appropriate.
- Determination of appropriate performance targets for the bonus and share incentive schemes.
- A review of how we implemented the Group's Remuneration Policy, such that it supports the Group's business strategy and performance-based culture.

2019 remuneration outcomes

In reviewing performance in 2019, the Committee determined that payouts of 84% of the 2019 annual bonus opportunity for the Chief Executive Officer (CEO) and Chief Financial Officer (CFO), were appropriate. The 2017 LTIP award will also partially vest, resulting in a 61.3% achievement of the maximum. These outcomes are consistent with the Group performance, details of which are summarised later in this Report. The Committee felt that no discretion needed to be applied for 2019 remuneration outcomes.

Implementation of Policy in 2020

The Remuneration Committee decided that, taking into account the continued performance of the Group in 2019 and labour market conditions, the appropriate level of salary increase for the Chief Executive Officer (CEO) would be 4.04% and for the Chief Financial Officer (CFO) it would be 2.25%. 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 inflationary increase to the fees for the Chairman and non-executive Directors of 2% for 2020 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 and concluded that the existing framework remains appropriately aligned with our strategic aims and culture, motivates and rewards management for delivering sustainable out performance, and supports retention. Accordingly, no changes are proposed to the performance linkage of the annual bonus or LTIP for 2020. For the LTIP, it is proposed to retain an EPS performance range of 4%-11% pa; the Committee considers this to remain 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), and it is proposed to maintain the ROIC* range for that element of the 2020 LTIP (at 17%-20%) to reflect our latest expectations for performance over the three-year performance period. Annual bonus targets are considered to be commercially sensitive at this time but will ordinarily be disclosed in next year's Remuneration Report.

This Report is consistent with the current reporting regulations for executive remuneration and, as in prior years, includes an '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 at a glance

Components of remuneration

Salary + Pension and Benefits = Fixed total
+
Annual Bonus + LTIP = Variable total
= **Total remuneration**

Key features of how our executive remuneration policy will be implemented in 2020

Fixed components

Base salary

Pete Raby (CEO)	£567,000
Peter Turner (CFO)	£417,800

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

Benefits

Pete Raby (CEO)	£13,711
Peter Turner (CFO)	£12,168

Policy

Executive Directors may receive defined contributions (and/or cash in lieu thereof) up to 20% of salary. Policy change approved at the 2019 AGM aligns pension contribution for new executive Directors with that available to the wider workforce. 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.

Variable components, annual bonuses

Maximum opportunities for 2020 (no change)

Pete Raby (CEO)	150% of salary
Peter Turner (CFO)	150% of salary

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 2020 (no change)

Pete Raby (CEO)	150% of salary
Peter Turner (CFO)	150% of salary

Performance measures weighting

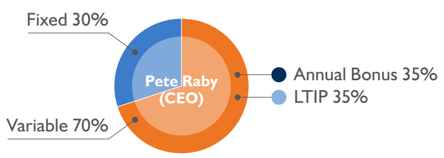
TSR vs. FTSE All-Share Industrials Index	1/6
TSR vs. peer group	1/6
EPS growth	1/3
Group ROIC*	1/3

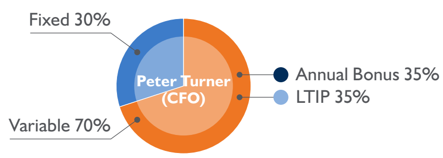
Policy

Maximum award opportunity: 250% of base salary

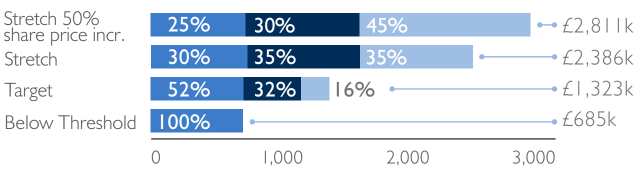
The award levels and performance conditions on which vesting depend are reviewed prior to the start of each award cycle to ensure they remain appropriate. Vested shares are subject to a post-vesting holding period of two years. The vesting of awards is usually subject to continued employment and to the Group's performance over a three-year performance period. 25% of an award vests for achievement of the threshold level of performance.

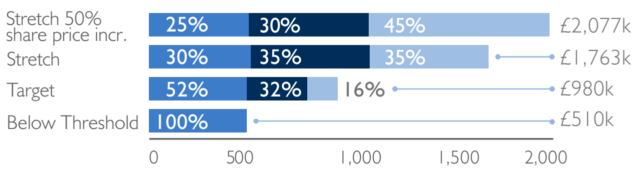
Pay at risk





Pay scenarios





Variable   Fixed total (base salary, pension and benefits)   Annual Bonus   LTIP

Shareholding requirements

Pete Raby (CEO) 200% of salary

Peter Turner (CFO) 200% of salary

Compliance statement

During the year under review, the Company has complied with the principles and provisions relating to Directors' remuneration in the July 2018 UK Corporate Governance Code and 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 439A 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 7 May 2020.

This Report covers the period 1 January 2019 to 31 December 2019 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 proposed implementation of this Policy for the 2020 financial year is summarised in the section of the Annual Report on Remuneration titled 'Implementation of Remuneration Policy for 2020'.

Remuneration Committee

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 and Group Head of Reward as well as our independent advisors 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.

Membership of the Committee is shown on page 65.

1. Policy report

Key principles of the Remuneration Policy

The Remuneration Committee aims to ensure that all executive remuneration packages offered by Morgan are competitive and designed to promote the long-term success of the Company by ensuring that we are 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 Remuneration Policy

This section of the Report sets out the current Remuneration Policy for executive Directors and non-executive Directors. This Policy remains unchanged from that which was approved by shareholders at the 2019 AGM and which is effective for a period of up to three years from that date. The only amendments to the Policy Report published in the 2019 annual report are:

- To update remuneration figures and add a 50% share price appreciation scenario to the pay for performance scenario analysis.
- To reflect new Chairman and non-executive Director appointments.

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 executive Directors appointed from 1 January 2019 onwards, contributions (or cash in lieu thereof) will be aligned with the level of contribution available to the wider workforce at that time. For current executive Directors already in role, the Policy limit will remain up to 20% of salary.	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 (eg relocation expenses, expatriate allowances etc) or in circumstances where factors outside the Group's control have changed materially (eg market increases in insurance costs). Benefits in respect of the year under review are disclosed in the Annual Report on Remuneration.	Not applicable.

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 65 to 82.
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 will be 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.	The LTIP provides for a conditional award of shares up to an annual limit of 250% 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. This is currently based on a combination of TSR, EPS and ROIC* 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 65 to 82.
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 69) in cases of 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 over the vesting period and clawback from the vesting date 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 (ie before 10 May 2019), 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 years 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 2020 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 105 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 2020 LTIP cycle, ROIC* will continue to be calculated as follows:

$$\frac{\text{Group headline operating profit* (pre-specific adjusting items)}}{\text{12-month average (third-party working capital + total fixed assets + total intangible fixed assets)}}$$

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 from 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. However, if it becomes apparent to the Committee that the guideline is unlikely to be met within the timeframe, then 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. 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 81.

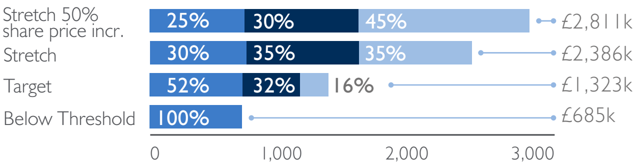
External appointments

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 pages 65 to 82.

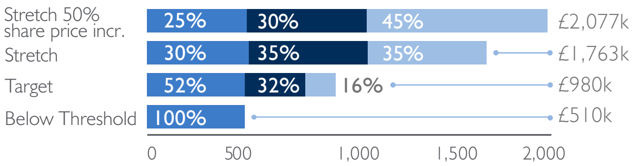
Pay-for-performance: scenario analysis

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 2020 packages proposed for executive Directors.

Pete Raby (CEO)



Peter Turner (CFO)



Fixed total (base salary, pension and benefits) · Annual Bonus · LTIP

Potential reward opportunities illustrated above are based on the Policy, which was approved at the 2019 AGM, applied to the annual base salary in effect at 1 January 2020. For the annual bonus, the amounts illustrated are those potentially receivable in respect of performance for 2020 (before mandatory deferral into shares). The LTIP is based on the face value of awards to be granted in 2020 (150% of salary). 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 hypothetical 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%.	
Stretch	Maximum annual bonus.	Performance warrants full vesting (100% of the award).	Latest disclosed base salary, pension and benefits.
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	
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

Remuneration report continued

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 the 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 when any payment in lieu of notice will be made. 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 (ie not pro-rated for time).	At the normal vesting date, unless the Committee decides that awards should vest earlier (eg in the event of death).
Change of control	Awards will normally vest in full (ie 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 (eg 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.

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 250% 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 election/ re-election
Douglas Caster[1]	Chairman	14 February 2014	15 January 2014	10 May 2019
Helen Bunch[2]	Non-executive Director	24 February 2016	19 January 2016	10 May 2019
Laurence Mulliez	Non-executive Director	6 May 2016	4 April 2016	10 May 2019
Jane Aikman	Non-executive Director	31 July 2017	27 April 2017	10 May 2019
Clement Woon[3]	Non-executive Director	10 May 2019	7 May 2019	n/a

1. Douglas Caster was appointed Chairman of the Board effective 1 January 2019 and stepped down as Chair of the Remuneration Committee on 31 December 2018.
2. Helen Bunch was appointed Chair of the Remuneration Committee, effective 1 January 2019.
3. Clement Woon was appointed a Director on 10 May 2019 immediately after the AGM and a resolution to propose his election will be voted on by shareholders at the 2020 AGM.

Consideration of stakeholder views

The Group 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. In making decisions, the Committee also considers the pay and employment conditions elsewhere in the Group, but the Committee does not currently consult with employees specifically on the executive Remuneration Policy and framework. Prior to the annual salary review, the Remuneration Committee is briefed by the Group Human Resources Director about pay increase data that individual business units will 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 'Our people' section pages 16 to 17.

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.

Remuneration Committee membership in 2019

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 four times during the year. Attendance at meetings by individual members is detailed in the Corporate Governance Report on page 55.

Summary of shareholder voting at the 2019 AGM

The following table shows the results of the latest binding vote on the Remuneration Policy and advisory vote on the 2018 Annual Report on Remuneration (at the 2019 AGM).

Resolution	For	Against	Withheld [1]
Remuneration Policy (at the 2019 AGM)	97.17%	2.83%	100,712
Annual Report on Remuneration (at the 2019 AGM)	96.19%	3.81%	98,283

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.

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 2019 and the prior year.

	Pete Raby		Peter Turner	
	2019	2018	2019	2018
1. Salary	£545,000	£520,000	£408,600	£400,600
2. Pension	£104,000	£104,000	£80,120	£80,120
3. Benefits	£13,456	£13,456	£12,030	£12,030
Fixed Pay Subtotal	£662,456	£637,456	£500,750	£492,750
4. Bonus	£688,989	£525,720	£516,552	£405,007
5. LTIP	£394,386	£316,562	£312,878	£258,709
6. Other	£1,800	–	£1,800	–
Variable Pay Subtotal	£1,085,175	£842,282	£831,230	£663,716
Total	£1,747,631	£1,479,738	£1,331,980	£1,156,466

The figures have been calculated as follows:

1. Base salary: amount earned for the year.
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).
4. Annual bonus: the total bonus earned on performance during the year (before mandatory deferral into shares).
5. LTIP: the estimated value on 31 December 2019 of 2017 LTIP shares vesting in 2020 subject to performance over the three-year period ended 31 December 2019. Figure based on the average share price for the three months to 31 December 2019 of 272.53p. The figure for 2018 has been trued up from that disclosed in last year's Remuneration Report to reflect the share price on the vesting date (23 May 2019) of 252.69p. The impact of share price movement on the vesting value of the CEO's 2017 LTIP award is as follows:

Value of awards vesting using share price at award (236,074 shares x 61.3% x 314.52p)	£455,151
Value of awards vesting using 3 month average share price at 31 December 2019: (236,074 shares x 61.3% x 272.53p)	£394,386
Impact of share price movements on vesting values	–£60,765

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 2019

Annual bonus in respect of 2019 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 2019, 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 2019 bonus targets for the executive Directors. Actual bonus payments are shown in the single total figure of remuneration table on page 74.

Performance measure	% of maximum bonus element	Performance range: Threshold (0% payout)	Performance range: Maximum (100% payout)	Actual performance outcome	% payout of element	% salary earned
Group headline operating profit*[1]	40%	£128.6m	£140.7m	£136.1m	61%	36%
Cash generation*[1]	40%	£153.3m	£167.7m	£177.0m	100%	60%
Personal objectives						
Pete Raby	20%	Please see narrative below for further details on objectives and performance against these			100%	30%
Peter Turner	20%				100%	30%

Overall outcome	Maximum bonus (% salary)	% of salary earned: Group headline operating profit*[1]	% of salary earned: Cash generation*[1]	% of salary earned: Personal objectives	Total outcome	Total payable
Pete Raby	150%	36%	60%	30%	126.4%	£688,989
Peter Turner	150%	36%	60%	30%	126.4%	£516,552

1. For both the headline operating profit* and cash generation* metrics, there was a straight-line payout between the threshold and maximum figures and all figures were calculated using 2019 budgeted exchange rates.

Pete Raby's personal objectives for 2019 were: (1) Improve the safety, ethics and inclusive culture of the Group, (2) Identify growth options that can accelerate Group (organic and inorganic) revenue growth, (3) Strengthen the technical differentiation of the Group through the development and introduction of new technologies and products, (4) Drive the improvement of sales capability across the Group through the implementation of the sales effectiveness programme, (5) Review the operational footprint and cost drivers, and develop plans to deliver a step reduction in operating costs, (6) Develop the Group IT strategy to define the vision for Group IT. 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. With all of these considerations, the personal performance element has been assessed at 100% of the maximum to reflect Pete's exceptional delivery against the agreed strategic objectives, whilst role modelling the Leadership Behaviours. Under his leadership, Morgan delivered 0.8% organic revenue* growth for 2019, and has improved operating efficiency through the deployment of lean tools, automation, and procurement actions. Good progress has also been made on technology developments, with new products starting to come to market.

Peter Turner's personal objectives for 2019 were: (1) Improve the safety, ethics and inclusive culture of the Group, (2) Identify growth options that can accelerate Group (organic and inorganic) revenue growth, (3) Improve sales effectiveness by defining plans to develop standard costing and data analytics across the Group, (4) Review the operational footprint and cost drivers, and develop plans to deliver a step reduction in operating costs, (5) Improve the delivery of capital programmes to drive improvement in schedule, cost and business case adherence, (6) Co-lead (with the Chief Information Officer and Group Human Resources Director) and steer the development of the IT strategy. Considering Peter's excellent performance against these objectives, for example his driving of growth and operating cost reduction targets, enabling expansion of our profit margins, as well as the Leadership Behaviours he has exhibited, the personal performance element of his bonus has also been assessed at 100% of the maximum.

Performance against the above objectives is referred to in the Chairman's statement and elsewhere within the Annual Report.

2017 LTIP award vesting

Awards granted to executive Directors in 2017 were subject to relative TSR performance, EPS growth and Group ROIC* over a three-year period ended 31 December 2019. The EPS target (applying to one-third of each award) required three-year EPS growth of 4% per annum for 25% of that element to vest, rising to full vesting for EPS growth of 11% pa or higher. Over the period Morgan Advanced Materials plc's actual EPS growth was 9.5% which resulted in a 28% vesting for this element.

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 6.9%, which was at the 37th percentile versus the FTSE All-Share Industrials Index and the 25th percentile versus the tailored comparator group. Accordingly, none of the TSR element of the award will vest under these criteria.

The Group ROIC* target (applying to the remaining one-third of each award) required three-year Group ROIC* of 16% for 25% of that element to vest, rising to full vesting for Group ROIC* of 19% or higher. Morgan Advanced Materials plc's Group ROIC* was 19.7%, and accordingly the ROIC* element of the award will fully vest.

2017 LTIP award vesting continued

This combined performance resulted in a partial vesting of the 2017 awards based on 61.3% achievement of maximum.

Details of the awards to executive Directors are set out in the table below:

Director	Maximum potential LTIP award	Maximum potential LTIP-CSOP award	LTIP award vested	LTIP-CSOP award vested	LTIP-CSOP award exercised	Date of vesting
Pete Raby	236,074	–	144,713	–	–	31 March 2020
Peter Turner	187,285	–	114,805	–	–	31 March 2020

For the purposes of the 2017 LTIP award (and consistent with the approach taken in previous years), the financial results were adjusted to neutralise the effects of divestments and closed businesses in 2017 and 2018.

Pension

The auditor is required to report on this information.

Pete Raby and Peter Turner each receive a cash allowance in lieu of pension, which is fixed at the 2018 values of £104,000 and £80,120 respectively.

Single total figure of remuneration for non-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 non-executive Director in respect of the year ended 31 December 2019 and the prior year.

	Douglas Caster[1]		Helen Bunch[2]		Laurence Mulliez		Jane Aikman	
	2019	2018	2019	2018	2019	2018	2019	2018
Fee[4]	£189,500	£56,900	£57,900	£48,900	£57,900	£56,900	£57,900	£56,900

	Clement Woon[3]	
	2019	2018
Fee	£32,179	–

1. Douglas Caster was appointed Chairman of the Board on 1 January 2019 and stepped down as Chair of the Remuneration Committee on 31 December 2018.
2. Helen Bunch was appointed Chair of the Remuneration Committee on 1 January 2019.
3. Clement Woon was appointed to the Board on 10 May 2019 immediately after the AGM. Pro-rated fee shown in table.
4. NEDs do not receive any other fixed / variable pay, or benefits, in addition to their fee.

Scheme interests awarded in 2019

2019 LTIP awards

In 2019, Pete Raby and Peter Turner were granted awards under the LTIP as follows:

			Value of awards at grant		
Executive Director	Number of LTIP shares granted[1,2]	Number of LTIP-CSOP shares granted[1,2]	£	As % of 2019 annualised salary	Date of vesting
Pete Raby	293,711	11,189	817,500	150%	18 March 2022
Peter Turner	228,591		612,900	150%	18 March 2022

1. Calculated using the award price of £2.6812, being the average share price for the five dealing days prior to the award date.
2. Pete Raby's LTIP funding award of £11,189: these shares are used to the extent required to pay the exercise price arising on exercise of the CSOP and are therefore not transferable to Pete Raby.

The Committee discusses and reviews the performance criteria for new three-year LTIP awards before they are granted. For the awards granted in 2019, 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 (comprising 105 companies) 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 2019 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%	11% pa	33.33%	20%	33.33%
Median	4.17%	Median	4.17%	4% pa	8.33%	17%	8.33%
Below median	Nil	Below median	Nil	< 4% pa	Nil	<17%	Nil

For executive Directors, there is a two-year holding period in relation to the 2019 LTIP. Dividends accrue over this holding period on any shares that vest.

2019 Deferred Bonus Plan awards

In 2019, 33% of the annual bonus results for Pete Raby and Peter Turner (for performance in the 2018 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	65,358	175,238	18 March 2022
Peter Turner	50,351	135,001	18 March 2022

1. Calculated using the award price of £2.6812, being the average share price for the five dealing days prior to the award date.

Exit payments made in year

The auditor is required to report on this information.

No exit payments were made to executive Directors during the 2019 financial year.

Payments to past Directors

The auditor is required to report on this information.

No payments were made to past Directors during the 2019 financial year.

External appointments

Pete Raby was appointed non-executive Director of Hill & Smith Holdings PLC on 2nd December 2019. His fee for this position in 2019 (pro-rated) was £4,167. No other external appointments were held by either executive Director in the 2019 financial year.

Implementation of Remuneration Policy for 2020

Base salary

In line with the Remuneration Policy, executive Directors' salaries were reviewed by the Committee and increased for 2020. The table below shows the base salaries in 2019, and those that took effect from 1 January 2020:

	Base salary at:		
Executive Director	1 January 2020	1 January 2019	Increase
Pete Raby	£567,000	£545,000	4.04%
Peter Turner	£417,800	£408,600	2.25%

For the 2019 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 increases awarded to both Pete Raby and Peter Turner were calibrated in line with this. The Committee considered Pete Raby's continued excellent performance in the role as well as the market positioning of his salary in determining to increase his salary above the rate of inflation. Considering Peter Turner's continued strong performance and his current salary being well positioned from a market perspective, the Committee determined that a salary increase in line with the country average for the UK was appropriate. 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, the monetary value remains fixed at the 2018 level disclosed in the table on page 66.

Annual bonus in respect of 2020 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 2019, 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. We will disclose these targets retrospectively, at such time as these targets have become less commercially sensitive, and within three years of the end of the performance year.

2020 LTIP awards

In March 2020, Pete Raby and Peter Turner will be granted awards under the 2020 LTIP with a face value of 150% of their respective base salaries for 2020. The three-year performance period over which performance will be measured began on 1 January 2020 and will end on 31 December 2022. 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 remain unchanged at 4%-11% p.a.
- 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.
- For all three 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 2020 LTIP cycle, executive Directors will be required to hold any vested 2020 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.

Chairman and non-executive Director fees

The Chairman's and non-executive Directors' fees were reviewed in December 2019. The following fees will apply in 2020:

Role	2020 fee pa	2019 fee pa	Increase
Chairman	£193,300	£189,500	2.0%
Non-executive Director	£50,900	£49,900	2.0%
Committee Chair (additional fee)	£8,000	£8,000	0%
Senior Independent Director (additional fee)	£8,000	£8,000	0%

Percentage change in CEO remuneration

The table below shows the percentage change in the CEO's remuneration (over the period 2018 - 2019) compared to the average percentage change in remuneration for other UK-based employees over the same period. The UK employee workforce was chosen as a suitable comparator group as the CEO is based in the UK (albeit with a global role and responsibilities) and pay changes across the Group vary widely depending on local market conditions. Although similar remuneration principles apply across the wider Group, pay decisions for this subset are impacted by similar external market forces (e.g. wage inflation, local practice with respect to the provision of benefits, etc.).

	CEO			
Elements of remuneration	2019	2018	% change 2018–19	% change in 2019 (vs 2018) for other employees
Base salary received during the year	£545,000	£520,000	4.81%	2.69%
Taxable benefits (excluding pension)	£13,456	£13,456	0%	3.9%
Annual bonus	£688,989	£525,720	31%	–9.3%

CEO Pay Ratio

Year	Method	25th Percentile Pay Ratio	Median (50th Percentile) Pay Ratio	75th Percentile Pay Ratio
2019	Option B	80:1[1]	67:1[2]	44:1[3]
2019 (Excluding Variable)	Option B	34:1	27:1	19:1

1. Total 25th percentile employee pay & benefits as at 31/12/19 = £21,958 (salary component = £17,599).
2. Total 50th percentile employee pay & benefits as at 31/12/19 = £25,927 (salary component = £24,300).
3. Total 75th percentile employee pay & benefits as at 31/12/19 = £39,926 (salary component = £30,610).

In line with the new CEO pay ratio regulations, the table above shows for 2019 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 stock awards and benefits including car allowance and private medical. Total remuneration figures used in the calculation for 25th, 50th and 75th percentile employees include annual bonus paid in 2020, relating to 2019 performance in order to be consistent with the methodology used for the CEO's total remuneration figure.

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.

Relative importance of spend on pay

The graphs below show shareholder distributions (ie dividends and share buybacks) and total employee pay expenditure for the financial years ended 31 December 2018 and 31 December 2019, and the percentage change year on year.

Shareholder distributions (£m)	
2019	31.4
2018	31.4

Total employee pay expenditure (£m)	
2019	366.0
2018	358.4

Total employee pay across the Group has increased by 2.12% to £366.0 million (2018: £358.4 million).

Advisers

Kepler (now branded Mercer Kepler) was appointed by the Committee in 2010 as its executive remuneration adviser and was retained during the most recent financial year. In 2019 Mercer Kepler provided independent advice on 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. Mercer Kepler reports directly to the Chairman of the Remuneration Committee and does not provide any other material non-remuneration-related services to the Group (nor does Mercer Kepler's parent company, Mercer), and is considered to be independent.

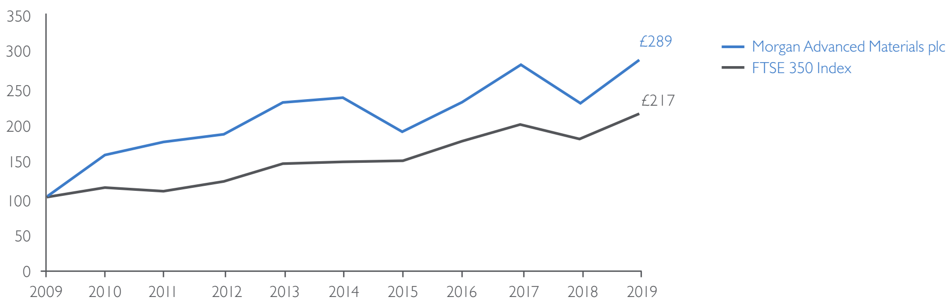
Mercer Kepler is a signatory to the Remuneration Consultants Group's voluntary Code of Conduct.

Fees paid during the year to advisers for advice to the Remuneration Committee, charged on a time and materials basis, were as follows:

Adviser	Fees (including expenses, excluding VAT)
Mercer Kepler	£34,163

Comparison of Company performance

The graph below shows the value, at 31 December 2019, of £100 invested in Morgan Advanced Materials plc's shares on 31 December 2009 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.



Comparison of Company performance continued

The table below details the CEO's 'single figure' of remuneration over the ten-year period to 31 December 2019.

CEO	2010 M Robertshaw	2011 M Robertshaw	2012 M Robertshaw	2013 M Robertshaw	2014 M Robertshaw	2015 P Raby	2016 P Raby	2017 P Raby	2018 P Raby	2019 P Raby
CEO single figure	£1,045,984	£3,371,302	£1,285,556	£648,932	£1,001,448	£788,252	£787,492	£1,210,856	£1,479,738	£1,747,631
Annual bonus (% max)	100%	100%	0%	0%	65%	50%	29.5%[1]	71.3%	67.4%	84.3%
BDSMP vesting (% max)	0%	60%	100%	0%	0%	n/a	n/a	n/a	n/a	n/a
LTIP vesting (% max)	0%	100%	50%	0%	0%	n/a	n/a	15.4%	42.9%	61.3%

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 2019 (together with shares held by their connected persons) in the Ordinary share capital of the Company:

	As at 1 January 2019 or date of joining	As at 31 December 2019	As at 25 February 2020[1]
Executive Directors			
Pete Raby	82,743	165,332	165,332
Peter Turner	140,000	194,330	194,330
Non-executive Directors			
Douglas Caster	18,000	110,454	110,454
Laurence Mulliez	1,260	6,580	6,580
Helen Bunch	925	2,028	2,028
Jane Aikman	1,000	1,000	1,000
Clement Woon[2]	–	45,281	45,281

1. The date of this Report.
2. Clement Woon was appointed to the Board on 10 May 2019, immediately after the AGM.

As at 16 March 2020, the Directors' interests in shares had not changed since the end of the period under review, with the exception of the vesting of the 2017 Deferred Bonus Plan (DBP) on 3 March 2020, which resulted in the retention of 12,800 shares for Pete Raby and 8,928 for Peter Turner (inclusive of dividend reinvestment and net of taxes). Pete Raby also exercised his 2016 Sharesave grant of 3,862 shares. Full details will be disclosed in the 2020 Annual Report.

Executive Directors' shareholding guidelines

The table below shows the shareholding of each executive Director against their respective shareholding guideline as at 31 December 2019.

	Shareholding guideline (% 2019 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 (% 2019 salary)[5]	Guideline met?
Pete Raby	200%	165,332	550,070	144,713	74,233	3,862	4,477	145%	Building
Peter Turner	200%	194,330	408,846	114,805	56,992	–	4,477	199%	Building

1. 2018 and 2019 LTIP and LTIP-CSOP awards. The total shares for Pete Raby 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 are therefore not transferrable to Pete Raby.
2. 2017 LTIP awards.
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 2019 salary and the share price at 31 December 2019 of 318.4 pence, comprising shares owned outright and shares subject to deferral.

Unless otherwise stated, figures given in the tables on pages 65 to 82 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 2019	Plan	As at 1 January 2019	Allocations during the year	Released during the year	Lapsed during the year	As at 31 December 2019	Market price at date of allocation	Market price at date of release	Performance period
No further performance conditions, released	2016	292,022	–	125,277	166,745	–	241.42p	252.69p	01.01.16 – 31.12.18
No further performance conditions, not yet released	2017	236,074	–	–	–	236,074	314.52p	–	01.01.17 – 31.12.19
	2018	233,981	–	–	–	233,981	333.36p	–	01.01.18 – 31.12.20
Subject to performance conditions	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

Share options

Status at 31 December 2019	Plan	As at 1 January 2019	Allocations during the year	Released during the year	Lapsed during the year	As at 31 December 2019	Market price at date of allocation	Market price at date of release	Performance period
Continued service met, vested but unexercised	2016 Sharesave	3,862	–	–	–	3,862	233.00p	–	01.12.16 – 30.11.19
Subject to continued service	2019 Sharesave	–	4,477	–	–	4,477	201.00p	–	01.12.19 – 30.11.22
Subject to performance conditions	2019 LTIP–CSOP	–	11,189	–	–	11,189	268.12p	–	01.01.19 – 31.12.21

Total interests in share plans

As at 1 January 2019	As at 31 December 2019
840,645[1,2]	934,547[1,2,3]

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 2017 and 2018 deferred bonus award.
3. Includes 2019 deferred bonus award.

Peter Turner

The auditor is required to report on the information in this table.

LTIP

Status at 31 December 2019	Plan	As at 1 January 2019	Allocations during the year	Released during the year	Lapsed during the year	As at 31 December 2019	Market price at date of allocation	Market price at date of release	Performance period
Subject to performance conditions, released	2016	226,783	–	97,289	129,494	–	241.42p	252.69p	01.01.16 – 31.12.18
	2016 funding	12,426	–	5,093	7,333	–	241.42p	252.69p	01.01.16 – 31.12.18
Subject to performance conditions	2017	187,285	–	–	–	187,285	314.52p	–	01.01.17 – 31.12.19
	2018	180,255		–	–	180,255	333.36p	–	01.01.18 – 31.12.20
	2019	–	228,591	–	–	228,591	268.12p	–	01.01.19 – 31.12.21

Share options

Status at 31 December 2019	Plan	As at 1 January 2019	Allocations during the year	Released during the year	Lapsed during the year	As at 31 December 2019	Market price at date of allocation	Market price at date of release	Performance period
Subject to performance conditions. released	2016 LTIP–CSOP	12,426	–	5,330	7,096	–	241.42p	252.69p	01.01.16 – 31.12.18
Subject to continued service	2019 Sharesave	–	4,477	–	–	4,477	201.00p	–	01.12.19 – 30.11.22

Total interests in share plans

As at 1 January 2019	As at 31 December 2019
676,359[1,2]	708,143[2,3]

1. Includes a funding award of 12,426 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.
2. Includes 2017 and 2018 deferred bonus award.
3. Includes 2019 deferred bonus award.

Remuneration report continued

Details of plans

LTIP

Plan	Details
2017, 2018, 2019	The performance conditions attached to the 2017 awards are set out on page 75. The 2018 awards were on the same basis as the 2017 awards. The 2019 awards were on the same basis as the 2017 and 2018 awards except that the ROIC*, range was amended to 17%-20%.

Share options

Plan	Details
LTIP – CSOP	LTIP 2017: The awards to the CEO and CFO were structured as LTIP awards in the form of a conditional award of free shares. LTIP 2018: The awards to the CEO and CFO were structured as LTIP awards in the form of a conditional award of free shares. 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 was 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 Raby's 2019 annual salary. Vested funding awards were not transferable to the participant.
2019 Sharesave	HMRC-approved all-employee Sharesave scheme. Exercise price set at 20% discount to share price on date of grant. Options vest after three years of continuous service 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
2017, 2018 and 2019	Mandatory deferral of one–third of gross bonus result relating to the previous year, which is provided as a conditional award of shares of the 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 43 (Related Parties) to the consolidated financial statements. This Report was approved by the Board on 25 February 2020.

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 45 to 82 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 2020 AGM will be held on Thursday 7 May 2020, commencing at 10:30am at the offices of Addleshaw Goddard LLP, Milton Gate, 60 Chiswell Street, London EC1Y 4AG. A circular incorporating the Notice of AGM accompanies this Annual Report.

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 48 to 49.

Results and dividends

The total profit (profit attributable to owners of the parent and non-controlling interests) for the year ended 31 December 2019 was £81.3 million (2018: £53.5 million). Profit before taxation for the same period was £109.7 million (2018: £94.9 million). Revenue was £1,049.5 million (2017: £1,033.9 million) and operating profit was £126.1 million (2018: £107.3 million). Basic earnings per share* from continuing operations was 25.2 pence (2018: 20.0 pence). Capital and reserves at the end of the year were £312.2 million (2018: £277.2 million). The total profit of £73.1 million will be transferred to equity.

The Directors recommend the payment of a final dividend at the rate of 7.0 pence per share on the Ordinary share capital of the Company, payable on 22 May 2020 to shareholders on the register at the close of business on 1 May 2020. Together with the interim dividend of 4.0 pence per share paid on 22 November 2019, this final dividend, if approved by shareholders, brings the total distribution for the year to 11.0 pence per share (2018: 11.0 pence).

Directors

All those who served as Directors at any time during the year under review are set out on pages 48 to 49.

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 80.

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.

Information required by LR 9.8.4R

There is no information required to be disclosed under LR 9.8.4R.

Overseas branches

As at 31 December 2019, the Company had branches as follows:

- Thermal Ceramics Europe (France)
- Morganite Australia Pty Limited (New Zealand)
- Morgan AM&T BV (Sweden and Belgium)
- Carbo San Luis SA (Peru)

Human resources

Details of the Group's human resources policies and employee involvement are set out on pages 16 to 17.

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.

Other disclosures continued

Research and development

During the year, the Group invested £34.0 million (2018: £36.2 million) in research and development. The Group did not capitalise any development costs in 2019 (2018: £nil).

Details of the Group's research and development during the year are set out on page 20.

Greenhouse gas emissions

Details of the Group's annual greenhouse gas emissions are shown in the Environment, health and safety section on page 13.

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 123 to 130. 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 2019 is set out in note 41 on page 152. The Company's Ordinary shares represent 99.85% of the total issued share capital, with the 5.5% Cumulative First Preference shares representing 0.04% and the 5.0% Cumulative Second Preference shares representing 0.11%. The rights and obligations attaching to the Company's Ordinary shares, and restrictions on the transfer of shares in the Company, 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.

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 pages 120 to 122.

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.

Share allotment and repurchase authorities

The Directors were granted authority at the 2019 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 (a) a nominal amount of £23,780,832 and (b) a nominal amount of £47,561,664 in connection with a rights issue (such amount to be reduced by any shares allotted under (a)). This authority is scheduled to lapse at the 2020 AGM. At the 2020 AGM, shareholders will be asked to grant a similar allotment authority.

Two separate special resolutions will also be proposed to renew the Directors' powers to make non-pre-emptive issues for cash up to an aggregate nominal amount representing approximately 5% of the issued share capital as at the last practicable date before the publication of the 2020 Notice of AGM, and an additional 5% of the issued share capital which would be for use only in connection with acquisitions and specified capital investments.

The Directors sought authority at the 2019 AGM to repurchase shares in the capital of the Company up to a maximum aggregate number of Ordinary shares of 28,536,998. The Directors will seek to renew this authority at the 2020 AGM.

Employee share and share option schemes

The Company operates a number of employee share and share option schemes. One hundred and six employees hold awards under the Morgan Advanced Materials plc Long-Term Incentive Plan, including share options held under the Approved Performance Share Plan, eight employees hold awards under the Morgan Advanced Materials Deferred Bonus Plan, 96 employees hold awards under the Morgan Advanced Materials plc Restricted Stock Unit Plan and 362 employees participate in the Company's UK Sharesave scheme. Details of outstanding share awards and share options are given in note 24 on pages 136 to 137.

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 (the 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.

Major shareholdings

As at 31 December 2019, 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	%[1]
Ameriprise Financial Inc., and its group	24,186,489	8.48
M&G Plc	19,762,544	6.92
Black Creek Investment Management Inc.	17,136,885	6.01
Aberforth Partners LLP	14,338,459	5.03
Harris Associates	14,119,504	4.95
AXA Investment Managers SA	14,039,985	4.92

1. Percentages are shown as a percentage of the Company's issued share capital as at 31 December 2019.

Note: As at 16 March 2020, there were no changes to the substantial shareholdings shown in the above table.

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 five-year £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 15 December 2007 and 27 October 2016, for which the aggregate outstanding loan amounts are US$187 million and €60 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.

Overview

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Post balance-sheet events

The outbreak of the coronavirus has led to an extended shut down of our manufacturing facilities in China. Our focus has been to take actions and precautions to help ensure the safety and wellbeing of our employees. Whilst we cannot be certain how long this situation will last, based on the delayed startup of our production facilities since the lunar new year break, we currently anticipate that this will have an adverse impact on 2020 revenues of around £7.0 million and on headline operating profit* of around £3.5 million, with the impact in the first half of the year. China represents c.10% Group revenue annually.

The coronavirus has been spreading to countries outside of China, including to Italy and South Korea. Our plant in the in the affected area of Northern Italy, we expect to be closed for two weeks.

There were no other 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 International Financial Reporting Standards (IFRSs) as adopted by the EU 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 IFRSs as adopted by the EU.
- 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 48 to 49, confirm that, to the best of their knowledge:

- The Group's consolidated financial statements, which have been prepared in accordance with IFRSs as adopted by the EU, 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 2019.

For the purposes of DTR 4.1.5R(2) and DTR 4.1.8, the Directors' Report on pages 45 to 89 and the Strategic Report on pages 6 to 44 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 25 February 2020.

For and on behalf of the Board

Stephanie Mackie
Company Secretary

25 February 2020

Morgan Advanced Materials plc
Quadrant, 55-57 High Street
Windsor
Berkshire SL4 1LP

Registered in England and Wales, No. 286773

Independent auditor's report to the members of Morgan Advanced Materials plc

1 Our opinion is unmodified

We have audited the financial statements of Morgan Advanced Materials plc ("the Company") for the year ended 31 December 2019 which comprise the Consolidated income statement, Consolidated statement of comprehensive income, Consolidated and Company balance sheets, Consolidated and Company statements of changes in equity, Consolidated statement of cash flows, and the related notes, including the accounting policies in note 1.

In our opinion:

- the financial statements give a true and fair view of the state of the Group's and of the parent Company's affairs as at 31 December 2019 and of the Group's profit for the year then ended;
- the Group financial statements have been properly prepared in accordance with International Financial Reporting Standards as adopted by the European Union;
- the parent Company financial statements have been properly prepared in accordance with UK accounting standards, including FRS 101 Reduced Disclosure Framework; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards the Group financial statements, Article 4 of the IAS Regulation.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)") and applicable law. Our responsibilities are described below. We believe that the audit evidence we have obtained is a sufficient and appropriate basis for our opinion. Our audit opinion is consistent with our report to the audit committee.

We were first appointed as auditor by the directors on 4 October 2001. The period of total uninterrupted engagement is for the 19 financial years ended 31 December 2019. We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities. No non-audit services prohibited by that standard were provided.

2 Key audit matters: our assessment of risks of material misstatement

Key audit matters are those matters that, in our professional judgment, were of most significance in the audit of the financial statements and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by us, including 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. We summarise below the key audit matters (unchanged from 2018), in decreasing order of audit significance, in arriving at our audit opinion above, together with our key audit procedures to address those matters and, as required for public interest entities, our results from those procedures. These matters were addressed, and our results are based on procedures undertaken, in the context of, and solely for the purpose of, our audit of the financial statements as a whole, and in forming our opinion thereon, and consequently are incidental to that opinion, and we do not provide a separate opinion on these matters.

- Uncertain tax positions (£26.9 million (2018: £26.0 million)) Risk vs 2018: ◄ ►

  The risk

  Subjective estimate

  Accounting for uncertain tax positions requires the directors to make estimates in relation to tax issues and exposures given that the group operates in a number of tax jurisdictions, the complexities of transfer pricing and other international tax legislation and the time taken for tax matters to be agreed with the tax authorities. The effect of these matters is that, as part of our risk assessment, we determined that the tax provisions have a high degree of estimation uncertainty, with a potential range of outcomes greater than our materiality for the financial statements as a whole.

  Our response – Our procedures included:

  Our tax expertise

  Use of our own tax specialists to assess the group's tax positions, its correspondence with the relevant tax authorities, and to analyse and challenge the assumptions used to determine the level of tax provisions;

  Challenging the assumptions using our own expectations based on our knowledge of the group, and experiences of the application of the international and local legislation by the relevant authorities and courts; and

  Our results

  We considered the level of provisions for uncertain tax positions to be acceptable (2018 result: acceptable).

- Environmental provisions (£6.9 million (2018: £4.9m)) Risk vs 2018: ▼

  The risk

  Subjective judgement

  Provisions for environmental exposures require the directors to make judgements as to whether to recognise a liability, and in doing so, whether the amount can be reliably estimated. At one site, a feasibility study in respect of a known environmental issue is ongoing, and in previous years no liability was recognised as the amount was not considered to be reliably estimable. Management has now determined that it is possible to reliably estimate the costs of remediating the known environmental issues at this site, and accordingly has recognised a provision in the year.

  Our response – our procedures included:

  Assessing experts' credentials

  We critically assessed the competency, objectivity and independence of the environmental experts engaged by the group;

  Enquiry of environmental experts

  We challenged the extent to which the Group's judgement as to whether a provision should be recorded is a balanced assessment of the latest available information and the accuracy and reliability of the sources of that information through discussions with the environmental experts engaged by the group.

  Our results

  We found the group's judgement that a reasonable estimate of the liability can be made and the consequent recognition of a liability, to be acceptable (2018 result: acceptable non-recognition of a liability).

- **UK and US defined benefit pension obligation (Group: £673 million; 2018: £675.3 million. Parent Company: £175.5 million; 2018: £178.2 million) Risk vs 2018: ◄ ►**

  The risk

  Subjective valuation

  Small changes in the assumptions and estimates used to value the UK and US pension obligation (before deducting scheme assets) would have a significant effect on the group's and parent company's defined benefit pension obligation.

  The effect of these matters is that, as part of our risk assessment, we determined that the UK and US pension obligations have a high degree of estimation uncertainty, with a potential range of reasonable outcomes greater than our materiality for the financial statements as a whole, and possibly many times that amount. The financial statements disclose the sensitivity estimated by the Company.

Our response – our procedures included:

Assessing actuary's credentials

We critically assessed the competency, objectivity and independence of the Scheme's actuary;

Benchmarking assumptions

Challenging, with the support of our own actuarial specialists, the key assumptions applied, being the discount rate, inflation rate, future salary increases and mortality/life expectancy against externally derived data; and

Assessing transparency

Considering the adequacy of the group's and parent company's disclosures in respect of the sensitivity of the deficit to these assumptions.

Our results

We found the valuation of the pension obligation to be acceptable (2018 result: acceptable).

3 Our application of materiality and an overview of the scope of our audit

Materiality for the group financial statements as a whole was set at £4.1 million (2018: £4.1 million), determined with reference to a benchmark of group profit before tax from continuing operations, normalised to exclude this year's specific adjusting items as disclosed in note 6, of which it represents 3.7% (2018: 3.9%).

Materiality for the parent company financial statements as a whole was set at £3.8 million (2018: £3.8 million), determined with reference to a benchmark of company total assets and chosen to be lower than materiality for the group financial statements as a whole. It represents 0.3% (2018: 0.3%) of total assets.

We agreed to report to the Audit Committee any corrected or uncorrected identified misstatements exceeding £0.2 million, in addition to other identified misstatements that warranted reporting on qualitative grounds.

Of the group's 110 (2018: 115) reporting components, we subjected 21 (2018: 25) to full scope audits for group purposes and 13 (2018: 12) to specified risk-focused audit procedures. The latter were not individually financially significant enough to require a full scope audit for group purposes, but were included in the scope of our group reporting work in order to provide further coverage over the group's results. The group team performed procedures on the specific adjusting items.

The components within the scope of our work accounted for the following percentages of the group's results:

	Number of Components	Group revenue	Group profit before tax	Group total assets
Audits for Group reporting purposes	21	45%	43%	60%
Specific risk focused audit procedures	13	32%	31%	24%
Total	**34**	**77%**	**74%**	**84%**
Total (2018)	37	80%	75%	86%

The remaining 23% of total group revenue, 26% of group profit before tax and 16% of total group assets is represented by 76 of reporting components, none of which individually represented more than 3% of any of total group revenue, group profit before tax or total group assets. For these residual components, we performed an analysis at an aggregated group level to re-examine our assessment that there were no significant risks of material misstatement within these components.

The Group team instructed component auditors as to the significant areas to be covered, including the relevant risks detailed above and the information to be reported back. The Group team approved the component materialities, which ranged from £0.2 million to £1.4 million, having regard to the mix of size and risk profile of the Group across the components. The work on 33 of the 34 components (2018: 36 of the 37 components) was performed by component auditors and the audit of the parent company was performed by the Group team. For those items excluded from normalised group profit before tax from continuing operations, the component teams performed procedures on items relating to their components. The group team performed procedures on the items excluded from normalised group profit before tax from continuing operations

Telephone conference meetings were held with all component auditors. At these meetings, the findings reported to the Group team were discussed in more detail, and any further work required by the Group team was then performed by the component auditor.

The group team also routinely reviews the audit documentation of all component audits. This year for 4 components in China where the coronavirus prevented entry to the country and remote access to audit documentation is prohibited, we instead extended our oversight of those component teams through extended telephone discussion and expanded reporting.

4 We have nothing to report on going concern

The Directors have prepared the financial statements on the going concern basis as they do not intend to liquidate the Company or the Group or to cease their operations, and as they have concluded that the Company's and the Group's financial position means that this is realistic. They have also concluded that there are no material uncertainties that could have cast significant doubt over their ability to continue as a going concern for at least a year from the date of approval of the financial statements ("the going concern period").

Our responsibility is to conclude on the appropriateness of the Directors' conclusions and, had there been a material uncertainty related to going concern, to make reference to that in this audit report. However, as we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgements that were reasonable at the time they were made, the absence of reference to a material uncertainty in this auditor's report is not a guarantee that the Group and the Company will continue in operation.

In our evaluation of the Directors' conclusions, we considered the inherent risks to the Group's and Company's business model, including the impact of Brexit, and analysed how those risks might affect the Group's and Company's financial resources or ability to continue operations over the going concern period. We evaluated those risks and concluded that they were not significant enough to require us to perform additional audit procedures.

Independent auditor's report to the members of Morgan Advanced Materials plc continued

Based on this work, we are required to report to you if:

- we have anything material to add or draw attention to in relation to the directors' statement in Note 1 to the financial statements on the use of the going concern basis of accounting with no material uncertainties that may cast significant doubt over the Group and Company's use of that basis for a period of at least twelve months from the date of approval of the financial statements; or
- the related statement under the Listing Rules is materially inconsistent with our audit knowledge.

We have nothing to report in these respects, and we did not identify going concern as a key audit matter.

5 We have nothing to report on the other information in the Annual Report

The directors are responsible for the other information presented in the Annual Report together with the financial statements. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except as explicitly stated below, any form of assurance conclusion thereon.

Our responsibility is to read the other information and, in doing so, consider whether, based on our financial statements audit work, the information therein is materially misstated or inconsistent with the financial statements or our audit knowledge. Based solely on that work we have not identified material misstatements in the other information.

Strategic report and directors' report

Based solely on our work on the other information:

- we have not identified material misstatements in the strategic report and the directors' report;
- in our opinion the information given in those reports for the financial year is consistent with the financial statements; and
- in our opinion those reports have been prepared in accordance with the Companies Act 2006.

Directors' remuneration report

In our opinion the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.

Disclosures of emerging and principal risks and longer-term viability

Based on the knowledge we acquired during our financial statements audit, we have nothing material to add or draw attention to in relation to:

- the directors' confirmation within the Viability Statement on page 40 that they have carried out a robust assessment of the emerging and principal risks facing the Group, including those that would threaten its business model, future performance, solvency and liquidity;
- the Principal Risks disclosures describing these risks and explaining how they are being managed and mitigated; and
- the directors' explanation in the Viability Statement of how they have assessed the prospects of the Group, over what period they have done so and why they considered that period to be appropriate, and their statement as to whether 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 of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

Under the Listing Rules we are required to review the Viability Statement. We have nothing to report in this respect.

Our work is limited to assessing these matters in the context of only the knowledge acquired during our financial statements audit. As we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgments that were reasonable at the time they were made, the absence of anything to report on these statements is not a guarantee as to the Group's and Company's longer-term viability.

Corporate governance disclosures

We are required to report to you if:

- we have identified material inconsistencies between the knowledge we acquired during our financial statements audit and the directors' statement that they consider that the annual report and financial statements 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; or
- the section of the annual report describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee.

We are required to report to you if the Corporate Governance Statement does not properly disclose a departure from the provisions of the UK Corporate Governance Code specified by the Listing Rules for our review.

We have nothing to report in these respects.

6 We have nothing to report on the other matters on which we are required to report by exception

Under the Companies Act 2006, we are required to report to you if, in our opinion:

- 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 and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

We have nothing to report in these respects.

7 Respective responsibilities

Directors' responsibilities

As explained more fully in their statement the directors are responsible for: the preparation of the financial statements including being satisfied that they give a true and fair view; 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; assessing the Group and 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 they either intend to liquidate the Group or the parent Company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities

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 other irregularities (see below), or error, and to issue our opinion in an auditor's report. Reasonable assurance is a high level of assurance, but does not guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud, other irregularities or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

A fuller description of our responsibilities is provided on the FRC's website at www.frc.org.uk/auditorsresponsibilities.

Irregularities – ability to detect

We identified areas of laws and regulations that could reasonably be expected to have a material effect on the financial statements from our general commercial and sector experience ,and through discussion with the directors and other management (as required by auditing standards), and discussed with the directors and other management the policies and procedures regarding compliance with laws and regulations. We communicated identified laws and regulations throughout our team and remained alert to any indications of non-compliance throughout the audit. This included communication from the group to component audit teams of relevant laws and regulations identified at group level.

The potential effect of these laws and regulations on the financial statements varies considerably.

Firstly, the group is subject to laws and regulations that directly affect the financial statements including financial reporting legislation (including related companies legislation), distributable profits legislation, and taxation legislation and we assessed the extent of compliance with these laws and regulations as part of our procedures on the related financial statement items.

Secondly, the group is subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation or the loss of the group's licence to operate. We identified the following areas as those most likely to have such an effect: environmental, health & safety and trade compliance legislation, recognising the nature of the group's activities. Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the directors and other management and inspection of regulatory and legal correspondence, if any. Through these procedures, we became aware of actual or suspected non-compliance and considered the effect as part of our procedures on the related financial statement items. The identified actual or suspected non-compliance was not sufficiently significant to our audit to result in our response being identified as a key audit matter, and did not have a material effect on our audit.

Owing to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audit in accordance with auditing standards. For example, the further removed non-compliance with laws and regulations (irregularities) is from the events and transactions reflected in the financial statements, the less likely the inherently limited procedures required by auditing standards would identify it. In addition, as with any audit, there remained a higher risk of non-detection of irregularities, as these may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. We are not responsible for preventing non-compliance and cannot be expected to detect non-compliance with all laws and regulations.

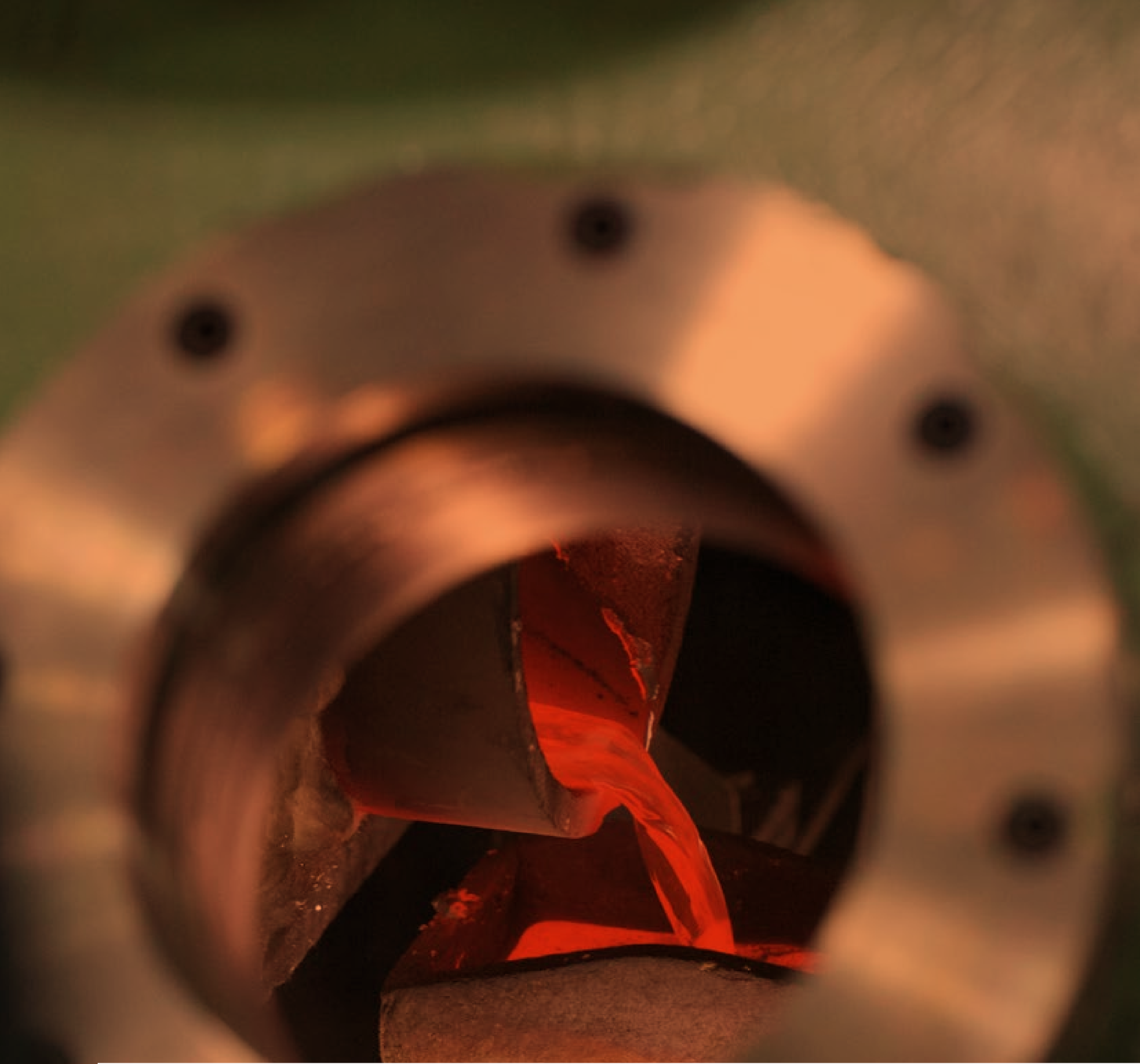
8 The purpose of our audit work and to whom we owe our responsibilities

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.

Paul Sawdon (Senior Statutory Auditor)
for and on behalf of KPMG LLP,
Statutory Auditor

Chartered Accountants
15 Canada Square
London
E14 5GL

25 February 2020



Financial statements

Financial statements

Consolidated income statement
for the year ended 31 December 2019

	Note	31 December 2019 Results before specific adjusting items £m	31 December 2019 Specific adjusting items[1] £m	31 December 2019 Total £m	31 December 2018 Results before specific adjusting items £m	31 December 2018 Specific adjusting items[1] £m	31 December 2018 Total £m
Revenue	3	1,049.5	–	1,049.5	1,033.9	–	1,033.9
Operating costs before amortisation of intangible assets	4	(915.3)	–	(915.3)	(909.1)	(9.5)	(918.6)
Profit from operations before amortisation of intangible assets	3	134.2	–	134.2	124.8	(9.5)	115.3
Amortisation of intangible assets	4	(8.1)	–	(8.1)	(8.0)	–	(8.0)
Operating profit	3	126.1	–	126.1	116.8	(9.5)	107.3
Finance income		1.9	–	1.9	1.3	–	1.3
Finance expense		(18.8)	–	(18.8)	(14.5)	–	(14.5)
Net financing costs	7	(16.9)	–	(16.9)	(13.2)	–	(13.2)
Share of profit of associate (net of income tax)	14	0.5	–	0.5	0.8	–	0.8
Profit before taxation		109.7	–	109.7	104.4	(9.5)	94.9
Income tax expense	8	(29.9)	–	(29.9)	(29.0)	(1.7)	(30.7)
Profit from continuing operations		79.8	–	79.8	75.4	(11.2)	64.2
Profit/(loss) from discontinued operations	9	0.7	0.8	1.5	(1.4)	(9.3)	(10.7)
Profit for the year		80.5	0.8	81.3	74.0	(20.5)	53.5
Profit for the year attributable to:							
Shareholders of the Company		72.3	0.8	73.1	66.8	(20.5)	46.3
Non-controlling interests		8.2	–	8.2	7.2	–	7.2
		80.5	0.8	81.3	74.0	(20.5)	53.5
Earnings per share	10						
Continuing and discontinued operations							
Basic earnings per share				25.7p			16.2p
Diluted earnings per share				25.5p			16.1p
Continuing operations							
Basic earnings per share				25.2p			20.0p
Diluted earnings per share				25.0p			19.9p
Dividends[2]							
Interim dividend – pence				4.00p			4.00p
– £m				11.4			11.4
Proposed final dividend – pence				7.00p			7.00p
– £m				20.0			20.0

1. Details of specific adjusting items are given in note 6 to the consolidated financial statements.
2. The proposed final dividend is based upon the number of shares outstanding at the balance sheet date.

Consolidated statement of comprehensive income

for the year ended 31 December 2019

	Translation reserve £m	Hedging reserve £m	Retained earnings £m	Total parent comprehensive income £m	Non-controlling interests £m	Total comprehensive income £m
2018						
Profit for the period	–	–	46.3	46.3	7.2	53.5
Items that will not be reclassified subsequently to profit or loss:						
Remeasurement gain on defined benefit plans	–	–	14.2	14.2	–	14.2
Tax effect of components of other comprehensive income not reclassified	–	–	(0.7)	(0.7)	–	(0.7)
	–	–	13.5	13.5	–	13.5
Items that may be reclassified subsequently to profit or loss:						
Foreign exchange translation differences	9.9	–	–	9.9	0.2	10.1
Cash flow hedges:						
Change in fair value	–	(0.2)	–	(0.2)	–	(0.2)
Transferred to profit or loss	–	(0.5)	–	(0.5)	–	(0.5)
	9.9	(0.7)	–	9.2	0.2	9.4
Total comprehensive income, net of tax	9.9	(0.7)	59.8	69.0	7.4	76.4
Total comprehensive income/(expense) attributable to:						
Continuing operations	9.9	(0.7)	70.5	79.7	7.4	87.1
Discontinued operations	–	–	(10.7)	(10.7)	–	(10.7)
Total comprehensive income, net of tax attributable to shareholders of the Company	9.9	(0.7)	59.8	69.0	7.4	76.4
2019						
Profit for the period	–	–	73.1	73.1	8.2	81.3
Items that will not be reclassified subsequently to profit or loss:						
Remeasurement gain on defined benefit plans	–	–	20.5	20.5	–	20.5
Tax effect of components of other comprehensive income not reclassified	–	–	2.2	2.2	–	2.2
	–	–	22.7	22.7	–	22.7
Items that may be reclassified subsequently to profit or loss:						
Foreign exchange translation differences	(15.7)	–	–	(15.7)	(2.6)	(18.3)
Cash flow hedges:						
Change in fair value	–	0.8	–	0.8	–	0.8
Transferred to profit or loss	–	0.2	–	0.2	–	0.2
	(15.7)	1.0	–	(14.7)	(2.6)	(17.3)
Total comprehensive income, net of tax	(15.7)	1.0	95.8	81.1	5.6	86.7
Total comprehensive income/(expense) attributable to:						
Continuing operations	(15.7)	1.0	94.3	79.6	5.6	85.2
Discontinued operations	–	–	1.5	1.5	–	1.5
Total comprehensive income, net of tax attributable to shareholders of the Company	(15.7)	1.0	95.8	81.1	5.6	86.7

Consolidated balance sheet
as at 31 December 2019

	Note	2019 £m	2018[1] £m
Assets			
Property, plant and equipment	11	317.2	314.5
Right-of-use assets	12	49.1	–
Intangible assets	13	204.8	215.6
Investments	14	6.5	5.9
Other receivables	17	5.7	6.3
Deferred tax assets	15	6.0	6.9
Total non-current assets		589.3	549.2
Inventories	16	142.3	145.3
Derivative financial assets		1.5	0.6
Trade and other receivables	17	181.0	200.5
Current tax receivable		2.3	1.3
Cash and cash equivalents	18	68.7	67.6
Total current assets		395.8	415.3
Total assets		985.1	964.5
Liabilities			
Borrowings	21	176.2	164.8
Lease liabilities	21	52.6	–
Employee benefits: pensions	23	156.8	190.4
Provisions	25	9.2	10.1
Non-trade payables	19	2.5	2.5
Deferred tax liabilities	15	4.9	11.0
Total non-current liabilities		402.2	378.8
Borrowings and bank overdrafts	21	49.3	82.6
Lease liabilities	21	11.7	0.2
Trade and other payables	19	173.3	190.5
Current tax payable		26.9	26.0
Provisions	25	8.9	8.6
Derivative financial liabilities		0.6	0.6
Total current liabilities		270.7	308.5
Total liabilities		672.9	687.3
Total net assets		312.2	277.2
Equity			
Share capital	20	71.8	71.8
Share premium		111.7	111.7
Reserves		22.5	37.2
Retained earnings		64.7	12.1
Total equity attributable to shareholders of the Company		270.7	232.8
Non-controlling interests		41.5	44.4
Total equity		312.2	277.2

1. Borrowings on the comparative balance sheet have been represented to disaggregate lease liabilities and align with the current period. See note 1 and note 21 to the consolidated financial statements for more information on IFRS 16 *Leases*.

The financial statements were approved by the Board of Directors on 25 February 2020 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 2019

	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
Balance at 1 January 2018	71.8	111.7	(7.8)	0.5	(1.0)	35.7	11.8	(27.5)	195.2	39.1	234.3
Profit for the year	–	–	–	–	–	–	–	46.3	46.3	7.2	53.5
Other comprehensive income	–	–	9.9	(0.7)	–	–	–	13.5	22.7	0.2	22.9
Transactions with owners:											
Capital contributions by non-controlling interests	–	–	–	–	–	–	–	–	–	0.5	0.5
Transfer between reserves	–	–	–	–	–	–	(11.2)	11.2	–	–	–
Dividends	–	–	–	–	–	–	–	(31.4)	(31.4)	(2.6)	(34.0)
Equity-settled share-based payment transactions	–	–	–	–	–	–	–	2.8	2.8	–	2.8
Own shares acquired for share incentive schemes (net)	–	–	–	–	–	–	–	(2.8)	(2.8)	–	(2.8)
Balance at 31 December 2018	71.8	111.7	2.1	(0.2)	(1.0)	35.7	0.6	12.1	232.8	44.4	277.2
Balance at 1 January 2019 as reported	71.8	111.7	2.1	(0.2)	(1.0)	35.7	0.6	12.1	232.8	44.4	277.2
Impact of change in accounting policy, net of tax, following adoption of IFRS 16 *Leases* (see note 1)	–	–	–	–	–	–	–	(12.2)	(12.2)	–	(12.2)
Adjusted balance at 1 January 2019	71.8	111.7	2.1	(0.2)	(1.0)	35.7	0.6	(0.1)	220.6	44.4	265.0
Profit for the year	–	–	–	–	–	–	–	73.1	73.1	8.2	81.3
Other comprehensive income	–	–	(15.7)	1.0	–	–	–	22.7	8.0	(2.6)	5.4
Transactions with owners:											
Dividends	–	–	–	–	–	–	–	(31.3)	(31.3)	(8.5)	(39.8)
Equity-settled share-based payment transactions	–	–	–	–	–	–	–	2.8	2.8	–	2.8
Own shares acquired for share incentive schemes (net)	–	–	–	–	–	–	–	(2.5)	(2.5)	–	(2.5)
Balance at 31 December 2019	71.8	111.7	(13.6)	0.8	(1.0)	35.7	0.6	64.7	270.7	41.5	312.2

Details of the reserves are provided in note 20.

Consolidated statement of cash flows

for the year ended 31 December 2019

	Note	31 December 2019 Continuing £m	31 December 2019 Discontinued £m	31 December 2019 Total £m	31 December 2018 Continuing £m	31 December 2018 Discontinued £m	31 December 2018 Total £m
Operating activities							
Profit for the period		79.8	1.5	81.3	64.2	(10.7)	53.5
Adjustments for:							
Depreciation – property, plant and equipment	4	32.3	–	32.3	31.3	0.4	31.7
Depreciation – right-of-use assets	4	10.1	–	10.1	–	–	–
Amortisation	4	8.1	–	8.1	8.0	–	8.0
Net financing costs	7	16.9	–	16.9	13.2	–	13.2
(Profit)/loss on disposal of business and business exits	6,9	–	(0.7)	(0.7)	–	1.7	1.7
Non-cash specific adjusting items included in operating profit	6,9	–	–	–	6.5	1.5	8.0
Share of profit from associate (net of income tax)	14	(0.5)	–	(0.5)	(0.8)	–	(0.8)
(Profit)/loss on sale of property, plant and equipment		(0.7)	–	(0.7)	0.4	–	0.4
Income tax expense	8	29.9	–	29.9	30.7	–	30.7
Equity-settled share-based payment expenses	4	2.4	–	2.4	2.8	–	2.8
Cash generated from operations before changes in working capital and provisions		178.3	0.8	179.1	156.3	(7.1)	149.2
(Increase)/decrease in trade and other receivables		8.9	0.1	9.0	(7.2)	(0.1)	(7.3)
(Increase)/decrease in inventories		(5.9)	–	(5.9)	(4.2)	(0.7)	(4.9)
Increase/(decrease) in trade and other payables		(3.1)	–	(3.1)	1.7	(1.4)	0.3
Increase/(decrease) in provisions		–	(0.5)	(0.5)	(2.4)	6.3	3.9
Payments to defined benefit pension plans	23	(13.4)	–	(13.4)	(12.9)	–	(12.9)
Cash generated from operations		164.8	0.4	165.2	131.3	(3.0)	128.3
Interest paid – borrowings and overdrafts		(11.2)	–	(11.2)	(9.7)	–	(9.7)
Interest paid – lease liabilities		(3.0)	–	(3.0)	–	–	–
Income tax paid		(28.8)	–	(28.8)	(20.9)	–	(20.9)
Net cash from operating activities		121.8	0.4	122.2	100.7	(3.0)	97.7
Investing activities							
Purchase of property, plant and equipment and software		(56.4)	–	(56.4)	(53.1)	–	(53.1)
Purchase of investments		(1.1)	–	(1.1)	(1.0)	–	(1.0)
Disposal of investments		–	–	–	0.6	–	0.6
Proceeds from sale of property, plant and equipment		1.5	–	1.5	–	–	–
Loan made to associate		–	–	–	(1.0)	–	(1.0)
Loan repaid by associate		–	–	–	1.0	–	1.0
Interest received		1.9	–	1.9	1.3	–	1.3
Disposal of subsidiaries, net of cash disposed		–	0.7	0.7	–	1.9	1.9
Net cash from investing activities		(54.1)	0.7	(53.4)	(52.2)	1.9	(50.3)
Financing activities							
Purchase of own shares for share incentive schemes	20	(3.3)	–	(3.3)	(3.2)	–	(3.2)
Proceeds from exercise of share options	20	0.8	–	0.8	0.4	–	0.4
Increase in borrowings	18	67.1	–	67.1	36.1	–	36.1
Reduction and repayment of borrowings	18	(78.4)	–	(78.4)	(28.6)	–	(28.6)
Payment of lease liabilities (2018: payment of finance lease liabilities)	18	(9.6)	–	(9.6)	(0.4)	–	(0.4)
Dividends paid to shareholders of the Company		(31.3)	–	(31.3)	(31.4)	–	(31.4)
Dividends paid to non-controlling interests		(8.5)	–	(8.5)	(2.6)	–	(2.6)
Capital contributions made by non-controlling interest partners		–	–	–	0.5	–	0.5
Net cash from financing activities		(63.2)	–	(63.2)	(29.2)	–	(29.2)
Net increase in cash and cash equivalents		4.5	1.1	5.6	19.3	(1.1)	18.2
Cash and cash equivalents at start of period				67.6			50.4
Effect of exchange rate fluctuations on cash held				(4.5)			(1.0)
Cash and cash equivalents at period end	18			68.7			67.6

Notes to the consolidated financial statements

1. Significant accounting policies, estimates and judgements

Morgan Advanced Materials plc (the 'Company') is a company incorporated in the UK under The Companies Act. The address of the registered office is given in 'Shareholder information' on page 162. 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 6 to 7.

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 2019. 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 International Financial Reporting Standards as adopted by the EU (adopted IFRSs). 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 140 to 157.

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.

Specific adjusting items

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 allow the reader to obtain a proper understanding of the financial information and the best indication of underlying performance of the Group.

Impairment

The carrying amounts of the Group's assets are reviewed at each balance sheet date to determine whether there is any indication of impairment. If any such indication exists, the asset's recoverable amount is estimated (see (i) below).

An impairment loss is recognised whenever the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. Impairment losses are recognised in the income statement.

Impairment losses recognised in respect of cash-generating units are allocated first to reduce the carrying amount of any goodwill allocated to cash-generating units (group of units) and then to reduce the carrying amount of the other intangibles and other assets in the unit (group of units) on a pro-rata basis.

(i) Calculation of recoverable amount

The recoverable amount of the Group's investments in receivables carried at amortised cost is calculated as the present value of estimated future cash flows, discounted at the original effective interest rate (ie the effective interest rate computed at initial recognition of these financial assets). Receivables with a short duration are not discounted. The recoverable amount of other assets is the greater of their fair value less costs to sell and value in use. 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. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

(ii) Reversals of impairment

An impairment loss in respect of a receivable carried at amortised cost and other assets not listed below is reversed if the subsequent increase in recoverable amount can be related objectively to an event occurring after the impairment loss was recognised.

An impairment loss in respect of an investment in an equity instrument classified as FVOCI is not reversed through profit or loss. If the fair value of a debt instrument classified as FVOCI increases and the increase can be objectively related to an event occurring after the impairment loss was recognised in profit or loss, the impairment loss will be reversed, with the amount of the reversal recognised in profit or loss.

An impairment loss in respect of goodwill is not reversed.

An impairment loss is reversed only to the extent that the asset'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.

Notes to the consolidated financial statements
continued

1. Significant accounting policies, estimates and judgements continued

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, 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.

At 31 December 2019, balances relating to revenue from contracts with customers were:

	2019 £m	2018 £m
Current		
Trade receivables (note 17)	162.0	177.8
Contract assets	1.0	3.2
Contract liabilities	(6.1)	(6.6)

Contract assets (included within other trade receivables) relate to the Group's right to consideration for project-based business which was completed but not billed at the end of the year. Contract liabilities (included within other trade payables) relate to payments received from customers for project-based business in advance of the performance obligation being satisfied. All of the £6.1 million of contract liabilities as at 31 December 2019, are expected to be recognised as revenue in 2020. Contract liabilities outstanding as at 31 December 2018 of £6.6 million were recognised as revenue in 2019.

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 2019, 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, 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.

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.

Notes to the consolidated financial statements
continued

1. Significant accounting policies, estimates and judgements continued

(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 and is tested annually for impairment.

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

Investments in debt and equity securities
Investments in debt and 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 and, in the case of monetary items such as debt securities, foreign exchange gains and losses. When these investments are derecognised, the cumulative gain or loss previously recognised directly in equity is recognised in profit or loss. Where these investments are interest-bearing, interest calculated using the effective interest method is recognised in profit or loss.

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 and other receivables are initially stated at their fair value and subsequently measured at amortised cost less impairment losses.

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 initially stated at their fair value and subsequently measured at amortised cost.

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 (ie 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 insurance 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

Share capital
Ordinary shares are classified as equity.

Preference share capital is classified as equity if it is non-redeemable and any dividends are discretionary, or is redeemable but only at the Company's option. Dividends on Preference share capital classified as equity are recognised as distributions within 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.

Use of judgements and estimates
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.

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 a proper understanding of the financial information and the underlying performance of the business. These 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.
- 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.

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.

Assumptions and estimates
Assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the year ending 31 December 2019 are included in the following notes:

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. Legal uncertainty remains in this area. Further details are included in note 6.

1. Significant accounting policies, estimates and judgements continued

Note 25: Provisions and contingent liabilities
Provisions for environmental costs and settlement of litigation are estimated based on current legal and constructive requirements. Actual costs and cash outflows can differ from current estimates because of changes in laws and regulations, public expectations, prices, more detailed analysis of site conditions and innovations in clean-up technology.

Closure and restructuring costs can be estimated with greater certainty and the carrying value of existing provisions at the balance sheet date is less likely to change materially within the next financial year.

Amounts provided are the Group's best estimate of exposure based on currently available information.

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 judgments 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 13: Impairment of intangible assets and goodwill
The Group tests annually whether goodwill and other intangibles have suffered any impairment. This process relies on the use of estimates of the future profitability and cash flows of its cash-generating units which may differ from the actual results delivered. In addition, the Group reviews whether identified intangible assets have suffered any impairment. Note 13 contains information about the assumptions relating to goodwill impairment tests, including a sensitivity analysis.

Note 22: Credit risk
Note 22 contains information about the Group's exposure to credit risk, including a sensitivity analysis. The Group establishes allowances for impairment losses against receivables. The allowance represents its estimate of expected credit losses.

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 6 to 44. The financial position of the Group, its cash flows, liquidity position and borrowing facilities, are described earlier in the Financial Review. In addition, note 22 includes the Group's policies and processes for managing financial risk; details of its financial instruments and hedging activities; and 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 maturing September 2024. The Group's forecasts and projections, taking account of reasonably possible changes in trading performance and exchange rates, show the Group operating within its debt financial covenants for the next 12 months. As described in the viability statement, the Group has continued to assess the potential impact of market volatility as a result of uncertainties caused by the ongoing negotiations on trade arrangements between the European Union and the United Kingdom. It has considered its risk in relation to fluctuations such as interest rates, foreign exchange rates and market prices and the impact this might have both on the Group's results and on the balance sheet value of financial instruments measured at fair value and discount rates used in measuring pension and other liabilities.

The risks and uncertainties around economic climate may have an impact on the Group, its customers and suppliers, as described in Risk management on pages 26 to 31. The Board fully recognises the challenges that lie ahead but, after making enquiries, the Directors have a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for the foreseeable future. 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 42 to 44, 'Alternative Performance Measures'.

1. Significant accounting policies, estimates and judgements continued

Newly adopted standards – IFRS 16 *Leases*

The Group adopted IFRS 16 *Leases* with effect from 1 January 2019. IFRS 16 introduced a single, on-balance sheet accounting model that is similar to previous finance lease accounting. Under the standard, from 1 January 2019 the Group:

- recognises right-of-use assets and lease liabilities (including those previously assessed as operating leases) on the consolidated balance sheet at the present value of future lease payments;
- recognises depreciation relating to the right-of-use asset and interest charge on the lease liability in the consolidated income statement; and
- separates cash payments made on the outstanding lease liability into repayment of principal (within financing activities) and interest paid (within operating activities) in the consolidated statement of cash flows.

Under IFRS 16, right-of-use assets are tested annually for impairment in accordance with IAS 36 *Impairment of Assets*, replacing the previous requirement to recognise a provision for onerous lease contracts.

For leases in existence at 31 December 2018, the Group applied a modified retrospective approach. Comparative periods are not restated. The modified retrospective approach has two available options, under both options the calculation of the lease liability considered future lease payments only and current discount rates.

In the calculation of the right-of-use assets for material land and buildings leases, the Group adopted a modified retrospective approach using historical payment data as if IFRS 16 had always existed but with the benefit of hindsight for actual events. This calculation led to an equity adjustment of £16.1 million before tax, a reduction to retained earnings.

In the calculation of right-of-use assets for its remaining lease portfolio (non-material land, buildings, plant and equipment), the Group used the alternative modified retrospective approach, whereby the asset is equal to the liability (with the exception of any transition balance sheet adjustments such as rent-free periods). There is no equity adjustment arising from this calculation.

In total, on 1 January 2019, the Group recognised right-of-use assets of £51.1 million, lease liabilities of £67.2 million and an equity adjustment of £16.1 million before tax.

The Group utilised the option available on transition to IFRS 16 to grandfather assessments on whether an existing contract contains a lease. From 1 January 2019, the Group applies the definition of a lease as outlined in IFRS 16, which examines whether the Group has the right to control the use of an asset in exchange for consideration. The difference in definition would not have had a material impact on the Group's financial statements on transition.

The Group also utilised options available under a modified retrospective approach, namely excluding leases with short remaining terms, excluding leases of low value and relying on the assessment on whether a lease is considered onerous by applying IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* immediately before the date of initial application as an alternative to performing an impairment review.

The following table provides a reconciliation of the Group's reported lease liability obligations as at 31 December 2018 and the lease liabilities recognised under IFRS 16 as at 1 January 2019:

	£m
Future operating lease commitments as at 31 December 2018	64.8
Recognition exemptions:	
For leases of low value assets	(0.4)
Reasonably certain lease extension/termination options	24.5
Operating lease commitments for which IFRS 16 has been applied	88.9
Effect of discounting at the incremental borrowing rate	(23.6)
Liabilities additionally recognised on initial application of IFRS 16 on 1 January 2019	65.3
Liabilities from finance leases as at 31 December 2018	0.2
Effect of foreign exchange rates[1]	1.9
Liabilities from leases as at 1 January 2019	67.4

1. Representing the difference in foreign exchange rates between future operating lease commitments, prepared using 2018 average rates, and the opening balance sheet rates used for the initial application of IFRS 16.

The weighted-average incremental borrowing rate for lease liabilities recognised on 1 January 2019 was 5.14%.

1. Significant accounting policies, estimates and judgements continued

Newly adopted standards – other

The Group has also adopted the following standards and with effect from 1 January 2019. There has been no material impact on the Group on adoption of these standards:

- IFRIC 23 *Uncertainty over Income Tax Treatments*

There were no other new accounting standards or amendments to standards that were required to be adopted in the period and the Group did not adopt any of the new accounting standards that could have been adopted early.

Accounting developments and changes

There are no upcoming accounting standards or amendments that are applicable to the Group.

2. Disposals

2019

There were no business disposals in the year ended 31 December 2019.

2018

Composites and Defence Systems

On 20 November 2018, the Group completed the sale of its Composites and Defence Systems business with its principal site in Coventry, UK. The transaction was structured as a share sale on a debt-free and cash-free basis, for a total consideration of £2.5 million, of which £2.0 million was received on completion and £0.5 million was received on 21 January 2019, with a closing cash adjustment also received of £0.2 million.

The transaction was structured to leave Morgan with the economic benefit of certain assets, most notably the principal freehold property associated with the business, as well as certain liabilities relating to the exit of parts of the business. These liabilities were provided for in the interim results for the six months ended 30 June 2018.

In the year ended 31 December 2017, the Composite and Defence Systems business generated a £1.0 million headline operating loss* on £21.0 million of revenue.

The disposal and closure of the Composites and Defence Systems business reduced the Group's assets and liabilities as follows:

	2018 £m
Trading net assets of disposal group	4.2
Transaction costs associated with the business exit and disposal	7.6
Recycling of deferred foreign exchange losses	0.2
Less total consideration received	(2.7)
Loss on disposal	9.3

The disposal group formed the Composites and Defence Systems operating segment, it was therefore classified as a discontinued operation under IFRS 5. Further detail is disclosed in note 9 to the consolidated financial statements.

Notes to the consolidated financial statements
continued

3. Segment reporting

The Group reports as two divisions and five (2018: five) global business units, which have been identified as the Group's reportable operating segments, as detailed on page 3. 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.

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	
Continuing operations	2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m
Revenue from external customers	418.4	433.6	49.1	48.6	467.5	482.2	164.2	166.8
Segment headline operating profit[1]	52.2	52.9	5.9	6.6	58.1	59.5	21.9	19.4
Corporate costs								
Group headline operating profit[1]								
Amortisation of intangible assets	(2.2)	(2.2)	(0.3)	(0.3)	(2.5)	(2.5)	(0.7)	(0.7)
Operating profit before specific adjusting items								
Specific adjusting items included in operating profit[2]	–	(13.8)	–	–	–	(13.8)	–	–
Operating profit/(loss)	50.0	36.9	5.6	6.3	55.6	43.2	21.2	18.7
Finance income								
Finance expense								
Share of profit of associate (net of income tax)								
Profit before taxation								
Segment assets	387.5	393.1	42.8	41.2	430.3	434.3	154.8	157.6
Segment liabilities	96.4	83.3	9.4	8.0	105.8	91.3	32.2	32.2
Segment capital expenditure	12.1	15.7	4.2	2.4	16.3	18.1	8.4	11.1
Segment depreciation – property, plant and equipment	13.6	13.6	1.8	1.9	15.4	15.5	5.2	4.7
Segment depreciation – right-of-use assets	4.3	–	0.4	–	4.7	–	1.2	–

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.
2. Details of specific adjusting items are given in note 6 to the consolidated financial statements.

Seals and Bearings		Technical Ceramics		Carbon and Technical Ceramics division		Segment totals		Corporate costs		Group	
2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m	2019 £m	2018 £m
144.3	132.7	273.5	252.2	582.0	551.7	1,049.5	1,033.9	–	–	1,049.5	1,033.9
26.4	23.7	33.7	28.1	82.0	71.2	140.1	130.7			140.1	130.7
								(5.9)	(5.9)	(5.9)	(5.9)
										134.2	124.8
(0.4)	(0.4)	(4.5)	(4.4)	(5.6)	(5.5)	(8.1)	(8.0)	–	–	(8.1)	(8.0)
										126.1	116.8
–	–	–	(1.4)	–	(1.4)	–	(15.2)	–	5.7	–	(9.5)
26.0	23.3	29.2	22.3	76.4	64.3	132.0	107.5	(5.9)	(0.2)	126.1	107.3
										1.9	1.3
										(18.8)	(14.5)
										0.5	0.8
										109.7	94.9
101.9	97.6	209.6	187.2	466.3	442.4	896.6	876.7	88.5	87.8	985.1	964.5
22.5	21.4	78.0	42.4	132.7	96.0	238.5	187.3	434.4	500.0	672.9	687.3
10.1	8.8	21.6	15.1	40.1	35.0	56.4	53.1	–	–	56.4	53.1
5.0	4.5	6.7	6.6	16.9	15.8	32.3	31.3	–	–	32.3	31.3
0.7	–	3.4	–	5.3	–	10.0	–	0.1	–	10.1	–

3. Segment reporting continued

Revenue from external customers and non-current assets by geography

Continuing operations	Revenue from external customers 2019 £m	Revenue from external customers 2018 £m	Non-current assets (excluding tax and financial instruments) 2019 £m	Non-current assets (excluding tax and financial instruments) 2018 £m
US	420.0	381.3	226.8	210.8
China	101.1	104.0	60.1	62.6
Germany	68.9	69.9	46.9	42.6
UK (the Group's country of domicile)	44.5	42.8	120.8	117.4
France	29.8	29.0	17.6	17.9
Other Asia, Australasia, Middle East and Africa	195.7	202.9	71.6	55.5
Other Europe	128.2	140.5	26.0	24.3
Other North America	33.6	32.4	9.4	6.3
South America	27.5	31.1	4.1	4.9
	1,049.5	1,033.9	583.3	542.3

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 10% of revenue.

Revenue from external customers by end market

Continuing operations	2019 £m	2018 £m
Industrial	472.0	492.5
Transportation	218.3	221.9
Chemical and petrochemical	106.0	96.7
Semiconductor and electronics	69.7	61.9
Energy	57.3	58.8
Security and defence	73.0	52.3
Healthcare	53.2	49.8
	1,049.5	1,033.9

Intercompany sales to other segments

	Thermal Ceramics 2019 £m	Thermal Ceramics 2018 £m	Molten Metal Systems 2019 £m	Molten Metal Systems 2018 £m	Thermal Products division 2019 £m	Thermal Products division 2018 £m	Electrical Carbon 2019 £m	Electrical Carbon 2018 £m	Seals and Bearings 2019 £m	Seals and Bearings 2018 £m	Technical Ceramics 2019 £m	Technical Ceramics 2018 £m	Carbon and Technical Ceramics division 2019 £m	Carbon and Technical Ceramics division 2018 £m
Intercompany sales to other segments	1.0	0.1	0.1	0.1	1.1	0.2	0.3	0.6	1.2	1.4	0.4	0.2	1.9	2.2

4. Operating costs before specific adjusting items

Continuing operations	Note	2019 £m	2018 £m
Change in stocks of finished goods and work in progress		0.8	1.3
Raw materials and consumables		265.4	239.9
Other external charges		129.5	148.7
		395.7	389.9
Employee costs:			
Wages and salaries		292.2	289.2
Equity-settled share-based payments	24	2.4	2.8
Social security costs and other benefits		56.3	51.0
Pension costs	23	15.1	15.4
		366.0	358.4
Segment depreciation – property, plant and equipment	11	32.3	31.3
Segment depreciation – right-of-use assets		10.1	–
		42.4	31.3
Short-term leases and leasing of low value assets (2018: operating leases):			
Plant and equipment		0.2	3.5
Other operating leases		0.6	7.8
		0.8	11.3
Other operating charges and income:			
Net foreign exchange (gains)/losses		(0.1)	(0.6)
Net other operating charges		110.5	118.8
		110.4	118.2
Total operating costs before specific adjusting items and amortisation of intangible assets		915.3	909.1
Amortisation of intangible assets	13	8.1	8.0
Total operating costs before specific adjusting items		923.4	917.1

The following costs are included in total operating costs before specific adjusting items in the table above:

1. Research and development

The Group recognised £34.0 million in expense in respect of research and development (2018: £36.2 million). These costs are included in employee costs and other operating charges 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 2019 is set out below:

	2019 £m	2018 £m
Fees payable to the Company's auditor for the audit of the Company's annual accounts	0.6	0.5
Fees payable to the Company's auditor and its associates for other services:		
The auditing of accounts of any subsidiaries of the Company	1.6	1.6
Audit-related services	0.1	0.1
Taxation compliance services	0.1	0.1
Other non-audit services	–	–
	2.4	2.3

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	
	2019	2018
Reportable operating segments		
Thermal Ceramics	2,680	2,850
Molten Metal Systems	480	490
Thermal Products division	3,160	3,340
Electrical Carbon	1,560	1,580
Seals and Bearings	1,290	1,250
Technical Ceramics	2,560	2,520
Carbon and Technical Ceramics division	5,410	5,350
Segment total	8,570	8,690
Corporate (UK and North America)	50	50
Continuing operations	8,620	8,740
Discontinued operations	–	100
Group	8,620	8,840

Average employee numbers have been rounded to the nearest 10.

6. Specific adjusting items

Continuing operations	2019 £m	2018 £m
Specific adjusting items:		
Net pension past service credit	–	5.7
Business closure and exit costs	(0.7)	(15.2)
Release of provisions related to previous business exits and disposals	0.7	–
Total specific adjusting items before income tax	–	(9.5)
Income tax charge from specific adjusting items	–	(1.7)
Total specific adjusting items after income tax	–	(11.2)

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

2019

Release of provisions related to previous business exits and disposals

In 2019, certain liabilities relating to previous business exits and disposals lapsed and the Group released £0.7 million of legal and other provisions.

Business closure and exit costs

China, Technical Ceramics

In 2019, the Group completed the exit of the ceramic cores operations within China, Technical Ceramics initiated in 2018. The Group recognised £0.7 million of costs relating to staff redundancies and legal and professional fees.

US Electro-ceramics update

In 2017, the Group divested its UK Electro-ceramics business, which was part of the Technical Ceramics operating segment. At the same time it announced the closure of its US Electro-ceramics business, which formed the remainder of the Group's Electro-ceramics business, once the delivery of the last time orders from customers had been completed. This is currently anticipated to be in the second half of 2020. Costs associated with the closure of the site were provided for in 2017. In 2019, the US Electro-ceramics business generated an operating profit contribution of £4.7 million on revenues of £9.2 million.

6. Specific adjusting items continued

2018

Net pension past service credit, UK

Early and late retirement adjustment

In 2018, the Group reviewed with the Trustees of Morgan Pension Scheme the factors applied on early and late retirement, and clarified the practice regarding the calculation of pension payments with members who elected to retire other than at the normal date of retirement. This was effected via a Deed of Amendment. This change resulted in a net gain of £7.6 million in the income statement.

Adjustment for Guaranteed Minimum Pensions (GMPs)

On 26 October 2018, the High Court ruled that the Trustee of the Lloyds Banking Group pension schemes needed to remove the inequalities in pension scheme benefits that arise from unequal GMPs. This resulted in a charge of £1.9 million to reflect the potential cost of removing the GMP inequalities for the Group's UK defined benefit pension schemes.

The net impact of these pension adjustments was a credit to the income statement of £5.7 million.

Business closure and exit costs

Brazil, Thermal Ceramics

In 2018, the Group announced its decision to close the Thermal Ceramics site in Rio de Janeiro. A £6.2 million charge was recognised. This comprised cash exit costs of £2.6 million relating to site clean-up costs, professional and legal fees and staff redundancies and impairment costs of £3.6 million relating to the impairment of property, plant and equipment and other assets. In the year ended 31 December 2018 the business generated a headline operating loss* of £2.6 million on revenues of £3.0 million.

China, Technical Ceramics

In 2018, the Group decided to close its ceramic cores operations in China, a part of the Technical Ceramics operating segment. A £1.4 million impairment charge was recognised relating to the impairment of plant and equipment and other assets. In the year ended 31 December 2018 the business generated a headline operating loss* of £0.9 million on revenues of £0.5 million.

Venezuela, Thermal Ceramics

In 2018, the Group decided to exit its Thermal Ceramics operations in Venezuela. A £7.6 million charge was recognised, of which £7.3 million related to the recycling of deferred foreign exchange translation losses in accordance with IAS 21 *The Effects of Changes in Foreign Exchange Rates* and £0.3 million related to the impairment of assets. In the year ended 31 December 2018 the business had negligible revenue and headline operating profit* (£0.0 million).

7. Finance income and expense

Continuing operations	2019 £m	2018 £m
Recognised in profit or loss		
Interest on bank balances and cash deposits	1.9	1.3
Finance income	1.9	1.3
Interest expense on borrowings and overdrafts	(11.2)	(9.8)
Interest expense on lease liabilities	(3.0)	–
Net interest on IAS 19 obligations	(4.6)	(4.7)
Finance expense	(18.8)	(14.5)
Net financing costs recognised in profit or loss	(16.9)	(13.2)
Recognised in other comprehensive income		
Cash flow hedges:		
Effective portion of changes in fair value of cash flow hedges	0.8	(0.2)
Transferred to profit or loss	0.2	(0.5)
Financing costs recognised in other comprehensive income	1.0	(0.7)

No finance income or expense related to discontinued operations in either the current or preceding year.

Notes to the consolidated financial statements
continued

8. Taxation – income tax expense

Continuing operations	2019 £m	2018 £m
Recognised in profit or loss		
Current tax		
Current year	29.3	29.9
Adjustments for prior years	0.3	(0.6)
	29.6	29.3
Deferred tax		
Current year	1.5	1.9
Adjustments for prior years	(1.2)	(0.5)
	0.3	1.4
Total income tax expense recognised in profit or loss	29.9	30.7
Recognised in other comprehensive income		
Tax effect on components of other comprehensive income:		
Deferred tax associated with defined benefit schemes and share schemes	(2.2)	0.7
Total tax recognised in other comprehensive income	(2.2)	0.7

Reconciliation of effective tax rate

	2019 £m	2019 %	2018 £m	2018 %
Profit before tax	109.7		94.9	
Income tax using the domestic corporation tax rate	20.8	19.0	18.0	19.0
Effect of different tax rates in other jurisdictions	5.8	5.3	3.9	4.1
Local taxes including withholding tax suffered	3.9	3.6	3.7	3.9
Permanent differences	3.9	3.6	3.7	3.9
Movements related to unrecognised temporary differences	(3.6)	(3.3)	2.5	2.6
Adjustments in respect of prior years	(0.9)	(0.8)	(1.1)	(1.2)
	29.9	27.3	30.7	32.3

The effective rate of tax before specific adjusting items is 27.3% (2018: 27.8%).

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.

The Group adopted IFRIC 23 with effect from 1 January 2019. There has been no material impact on the Group.

EU State Aid
On 2 April 2019 the European Commission ruled that a Group Financing Exemption under the UK controlled foreign company rules was partly contrary to EU State Aid rules. The UK government has filed an annulment application with the EU General Court against this decision. Like many other multinational groups that have acted in accordance with the UK legislation in force at the time, the Group may be affected. The estimated maximum potential liability for the Group is approximately £2.5 million. Based on the Group's current assessment of the circumstances under which tax would be payable, no provision has been made.

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 2019			31 December 2018		
	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	–	–	–	11.2	–	11.2
Operating income/(costs)	0.7	0.8	1.5	(12.6)	(9.3)	(21.9)
Profit/(loss) before taxation	0.7	0.8	1.5	(1.4)	(9.3)	(10.7)
Income tax expense	–	–	–	–	–	–
Profit/(loss) from discontinued operations	0.7	0.8	1.5	(1.4)	(9.3)	(10.7)
Basic profit/(loss) per share from discontinued operations			0.5p			(3.8)p
Diluted profit/(loss) per share from discontinued operations			0.5p			(3.7)p

In 2019, operating income of £0.7 million relates to receipts from contingent assets excluded from the disposal. Specific adjusting items relate to the reassessment of certain provisions associated with the disposal.

In 2018, the discontinued specific adjusting items relate to the loss on disposal of assets and provisions for business exit costs, see also note 2 to these consolidated financial statements.

There is no income tax expense in relation to the discontinued operations in either the current or preceding year.

10. Earnings per share

	31 December 2019			31 December 2018		
	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 for the period attributable to shareholders of the Company	73.1	25.7p	25.5p	46.3	16.2p	16.1p
(Profit)/loss from discontinued operations	(1.5)	(0.5)p	(0.5)p	10.7	3.8p	3.7p
Profit from continuing operations	71.6	25.2p	25.0p	57.0	20.0p	19.9p
Specific adjusting items	–	–	–	9.5	3.3p	3.3p
Amortisation of intangible assets	8.1	2.8p	2.8p	8.0	2.8p	2.8p
Tax effect of the above	–	–	–	1.7	0.6p	0.6p
Non-controlling interests' share of the above adjustments	–	–	–	–	–	–
Adjusted profit for the period from continuing operations as used in headline earnings per share[1]	79.7	28.0p	27.8p	76.2	26.7p	26.6p

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

Number of shares (millions)	2019	2018
Weighted average number of Ordinary shares for the purposes of basic earnings per share[1]	284.6	285.2
Effect of dilutive potential Ordinary shares:		
Share options	1.6	1.6
Weighted average number of Ordinary shares for the purposes of diluted earnings per share	286.2	286.8

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.

11. Property, plant and equipment

	Land and buildings £m	Plant, equipment and fixtures £m	Total £m
Cost			
Balance at 1 January 2018	202.9	650.5	853.4
Additions	10.2	39.0	49.2
Disposals	(0.3)	(10.1)	(10.4)
Effect of movement in foreign exchange	5.5	18.2	23.7
Balance at 31 December 2018	218.3	697.6	915.9
Balance at 1 January 2019	**218.3**	**697.6**	**915.9**
Additions	**9.2**	**41.8**	**51.0**
Disposals	**(2.6)**	**(22.0)**	**(24.6)**
Effect of movement in foreign exchange	**(9.5)**	**(31.4)**	**(40.9)**
Balance at 31 December 2019	**215.4**	**686.0**	**901.4**
Depreciation and impairment losses			
Balance at 1 January 2018	87.0	468.6	555.6
Depreciation charge for the year	4.8	26.9	31.7
Impairment charge for the year	1.4	5.5	6.9
Disposals	(0.2)	(9.8)	(10.0)
Effect of movement in foreign exchange	2.9	14.3	17.2
Balance at 31 December 2018	95.9	505.5	601.4
Balance at 1 January 2019	**95.9**	**505.5**	**601.4**
Depreciation charge for the year	**5.4**	**26.9**	**32.3**
Reversal of impairment	**–**	**(0.5)**	**(0.5)**
Disposals	**(1.4)**	**(21.6)**	**(23.0)**
Effect of movement in foreign exchange	**(4.2)**	**(21.8)**	**(26.0)**
Balance at 31 December 2019	**95.7**	**488.5**	**584.2**
Carrying amounts			
At 1 January 2018	115.9	181.9	297.8
At 31 December 2018	122.4	192.1	314.5
At 31 December 2019	**119.7**	**197.5**	**317.2**

In 2019, no assets were pledged as security for liabilities (2018: £0.3 million). Profit on sale of property, plant and equipment presented in the cash flow includes £0.8 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:

	Land and buildings £m	Plant and equipment £m	Total £m
Balance recognised on adoption of IFRS 16 *Leases* on 1 January 2019	40.8	10.3	51.1
Additions	6.4	3.1	9.5
Remeasurements	0.6	0.1	0.7
Depreciation charge for the year	(6.1)	(4.0)	(10.1)
Effect of movement in foreign exchange	(1.7)	(0.4)	(2.1)
Balance at 31 December 2019	40.0	9.1	49.1

The weighted average lease term is 13.2 years for land and buildings and 3.5 years for plant and equipment. 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:

	2019 £m
Depreciation expense on right-of-use assets	(10.1)
Interest expense on lease liabilities	(3.0)
Expense relating to short-term leases and leasing of low value assets	(0.8)
Income from leasing owned assets	0.3
	13.6

At 31 December 2019, the Group is committed to future payments of £0.7 million for short-term leases and leasing of low value assets.

The total cash flows from leasing activities in the year ended 31 December 2019 was £13.1 million.

At 31 December 2019, the Group had entered into leases which had not yet commenced with future cash flows totaling £nil.

Leases where the Group is the lessor

In 2019, the total of future minimum lease income under non-cancellable leases is £0.3 million (2018: £nil).

13. Intangible assets

	Goodwill £m	Customer relationships £m	Technology and trademarks £m	Capitalised development costs £m	Computer software £m	Total £m
Cost						
Balance at 1 January 2018	192.0	85.1	22.0	0.8	28.1	328.0
Additions (externally purchased)	–	–	–	–	1.3	1.3
Disposals	(16.4)	(27.8)	(18.3)	–	(0.1)	(62.6)
Effect of movement in foreign exchange	3.8	3.1	–	–	0.5	7.4
Balance at 31 December 2018	179.4	60.4	3.7	0.8	29.8	274.1
Balance at 1 January 2019	179.4	60.4	3.7	0.8	29.8	274.1
Additions (externally purchased)	–	–	–	–	2.8	2.8
Disposals	–	–	–	–	(0.1)	(0.1)
Effect of movement in foreign exchange	(4.3)	(2.7)	(0.3)	–	(0.8)	(8.1)
Balance at 31 December 2019	175.1	57.7	3.4	0.8	31.7	268.7
Amortisation and impairment losses						
Balance at 1 January 2018	16.4	59.9	18.6	0.8	15.3	111.0
Amortisation charge for the year	–	4.1	0.2	–	3.7	8.0
Disposals	(16.4)	(27.8)	(18.3)	–	(0.1)	(62.6)
Effects of movement in foreign exchange	–	1.9	–	–	0.2	2.1
Balance at 31 December 2018	–	38.1	0.5	0.8	19.1	58.5
Balance at 1 January 2019	–	38.1	0.5	0.8	19.1	58.5
Amortisation charge for the year	–	4.3	0.2	–	3.6	8.1
Disposals	–	–	–	–	(0.1)	(0.1)
Effects of movement in foreign exchange	–	(2.0)	–	–	(0.6)	(2.6)
Balance at 31 December 2019	–	40.4	0.7	0.8	22.0	63.9
Carrying amounts						
At 1 January 2018	175.6	25.2	3.4	–	12.8	217.0
At 31 December 2018	179.4	22.3	3.2	–	10.7	215.6
At 31 December 2019	175.1	17.3	2.7	–	9.7	204.8

Included in customer relationships is an asset with a net book value of £12.5 million at 31 December 2019 recognised in relation to the acquisition of the Technical Ceramics businesses of Carpenter Technology Corporation in 2008. The remaining amortisation period on this asset is four years.

Impairment test for 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 that are expected to benefit from the synergies of the business combination that gave rise to the goodwill.

Goodwill is attributed to each cash-generating unit as follows:

	2019 £m	2018 £m
Thermal Ceramics	85.2	87.2
Molten Metal Systems	9.1	9.3
Electrical Carbon	29.5	30.2
Seals and Bearings	14.9	15.3
Technical Ceramics	36.4	37.4
	175.1	179.4

13. Intangible assets continued

Each cash-generating unit is assessed for impairment annually and whenever there is an indication of impairment.

As part of the annual impairment test review the carrying value of goodwill has been assessed with reference to its value in use, reflecting the projected discounted cash flows of each cash-generating unit 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 and three 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. A 1.0% growth rate has been used for years beyond year three and to calculate a terminal value. These growth rates have been reviewed by Management and considered to be appropriate for each cash-generating unit.

In 2019, the Group has used the following pre-tax discount rates for calculating the value in use of each of the cash-generating units: Thermal Ceramics: 11.6%, Molten Metal Systems: 11.6%, Electrical Carbon: 11.6%, Seals and Bearings: 11.1%, Technical Ceramics 11.3%.

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

	2019 £m	2018 £m
Non-current investments		
FVOCI – equity instrument	**0.6**	0.5
Investment in associates	**5.9**	5.4
	6.5	5.9

FVOCI – equity instrument

The equity securities classified as FVOCI represent an investment in a mutual fund. A 10% increase in the unit price would increase the fair value of the investments by £nil (2018: £nil).

Investment in associates

The Group has no material associates in the current or preceding year. Details of the Group's investment in its associate (including name, country of incorporation and proportion of ownership) are given in note 44 to the Company's separate financial statements.

The Group's share of profit from its associate for the year was £0.5 million (2018: £0.8 million). The Group did not receive a dividend from its associate during the current or preceding year.

Notes to the consolidated financial statements
continued

15. Recognised deferred tax assets and liabilities

Deferred tax assets and liabilities are attributable to the following:

	Assets 2019 £m	Assets 2018 £m	Liabilities 2019 £m	Liabilities 2018 £m	Net 2019 £m	Net 2018 £m
Property, plant and equipment	–	–	(18.9)	(17.9)	(18.9)	(17.9)
Right-of-use assets and lease liabilities	3.2	–	–	–	3.2	–
Intangible assets	–	–	(4.5)	(5.4)	(4.5)	(5.4)
Employee benefits	13.4	11.3	–	–	13.4	11.3
Provisions	8.1	6.1	–	–	8.1	6.1
Tax value of loss carried forward recognised	1.3	1.2	–	–	1.3	1.2
Other items	–	0.6	(1.5)	–	(1.5)	0.6
Offset	(20.0)	(12.3)	20.0	12.3	–	–
	6.0	6.9	(4.9)	(11.0)	1.1	(4.1)

Unrecognised deferred tax assets

Deferred tax assets have not been recognised in respect of the following items:

	2019 £m	2018 £m
UK pension deficit	102.9	142.5
Tax losses	82.7	90.3
Capital losses	39.1	38.2
Other deductible temporary differences	57.4	51.0
	282.1	322.0

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 related to entities where it is not probable that there will be future taxable profits against which these losses can be utilised.

Movements in temporary differences during the year

	31 December 2017 £m	Recognised in profit or loss £m	Recognised directly in equity £m	31 December 2018 £m	Recognised in profit or loss £m	Recognised directly in equity[1] £m	31 December 2019 £m
Property, plant and equipment	(17.5)	(0.4)	–	(17.9)	(1.0)	–	(18.9)
Right-of-use assets and lease liabilities	–	–	–	–	(0.5)	3.7	3.2
Intangible assets	(6.0)	0.6	–	(5.4)	0.9	–	(4.5)
Employee benefits	12.1	(0.1)	(0.7)	11.3	(0.1)	2.2	13.4
Provisions	6.5	(0.4)	–	6.1	2.0	–	8.1
Tax value of loss carried forward recognised	2.9	(1.7)	–	1.2	0.1	–	1.3
Others	0.6	0.6	(0.6)	0.6	(1.7)	(0.4)	(1.5)
	(1.4)	(1.4)	(1.3)	(4.1)	(0.3)	5.5	1.1

1. On 1 January 2019, the Group recognised a deferred tax asset of £3.7 million on the equity adjustment of £16.1 million on adoption of IFRS 16 *Leases*.

Deferred income tax of £3.7 million (2018: £2.6 million) is provided on the potential unremitted earnings of overseas subsidiary undertakings.

16. Inventories

	2019 £m	2018 £m
Raw materials and consumables	34.4	36.1
Work in progress	44.9	46.5
Finished goods	63.0	62.7
	142.3	145.3

The Group holds consignment inventory amounting to £23.1 million (2018: £18.2 million) which is not reflected on the balance sheet. The majority of this balance is for precious metals, which are held on consignment by a subsidiary and for which it is invoiced only when the material is required.

In 2019, provisions of £5.1 million were made against inventories and recognised in operating costs (2018: £4.5 million).

17. Trade and other receivables

	2019 £m	2018 £m
Non-current		
Trade and non-trade receivables	5.7	6.3
Current		
Trade receivables	162.0	177.8
Other non-trade receivables and prepayments	19.0	22.7
	181.0	200.5

The Group's exposure to credit and currency risks related to trade and other receivables is disclosed in note 22.

18. Cash and cash equivalents

	2019 £m	2018 £m
Bank balances	59.6	57.9
Cash deposits	9.1	9.7
Cash and cash equivalents	68.7	67.6

In 2019, the Group had restricted cash of £0.6 million (2018: £nil) as a result of exchange controls in Argentina.

Reconciliation of cash and cash equivalents to net debt*

	2019 £m	2018 £m
Opening borrowings and lease liabilities as reported	(247.6)	(231.7)
Impact of change in accounting policy following adoption of IFRS 16 *Leases* (see note 1)	(67.4)	–
Adjusted opening borrowings and lease liabilities	(315.0)	(231.7)
Increase in borrowings	(67.1)	(36.1)
Reduction and repayment of borrowings	78.4	28.6
Payment of lease liabilities	9.6	0.4
Total changes from cash flows	20.9	(7.1)
New leases and lease remeasurement	(8.8)	–
Effect of movements in foreign exchange	13.1	(8.8)
Closing borrowings and lease liabilities	(289.8)	(247.6)
Cash and cash equivalents	68.7	67.6
Closing net debt[1]	(221.1)	(180.0)

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

Notes to the consolidated financial statements
continued

18. Cash and cash equivalents continued

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 2018	(231.1)	(0.6)	(231.7)	50.4	(181.3)
Cash inflow	–	–	–	29.8	29.8
Borrowings and lease liability cash flow	(7.5)	0.4	(7.1)	–	(7.1)
Net interest paid	–	–	–	(8.4)	(8.4)
Net cash inflow/(outflow)	(7.5)	0.4	(7.1)	21.4	14.3
Share purchases	–	–	–	(3.2)	(3.2)
Exchange and other movements	(8.8)	–	(8.8)	(1.0)	(9.8)
At 31 December 2018	(247.4)	(0.2)	(247.6)	67.6	(180.0)
At 1 January 2019	(247.4)	(0.2)	(247.6)	67.6	(180.0)
Impact of change in accounting policy following adoption of IFRS 16 Leases (see note 1)	–	(67.4)	(67.4)	–	(67.4)
Adjusted 1 January 2019	(247.4)	(67.6)	(315.0)	67.6	(247.4)
Cash inflow	–	–	–	23.1	23.1
Borrowings and lease liability cash flow	11.3	9.6	20.9	–	20.9
Net interest paid	–	–	–	(14.2)	(14.2)
Net cash inflow/(outflow)	11.3	9.6	20.9	8.9	29.8
Share purchases	–	–	–	(3.3)	(3.3)
New leases and lease remeasurement	–	(8.8)	(8.8)	–	(8.8)
Exchange and other movements	10.6	2.5	13.1	(4.5)	8.6
At 31 December 2019	(225.5)	(64.3)	(289.8)	68.7	(221.1)

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

19. Trade and other payables

	2019 £m	2018 £m
Non-current		
Trade and non-trade payables	2.5	2.5
Current		
Trade payables due to associate	0.3	1.2
Other trade payables	84.0	93.8
Non-trade payables and accrued expenses	89.0	95.5
	173.3	190.5

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 hedging reserve comprises the effective portion of the cumulative net change in the fair value of cash flow hedging instruments related to hedged transactions that have not yet occurred.

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.

20. Capital and reserves continued

Retained earnings

The Company has acquired own shares to satisfy the requirements of the various share option incentive schemes. At 31 December 2019, 1,245,133 shares (2018: 968,287) 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 (2018: 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:

	2019		2018	
	Shares	Cost £m	Shares	Cost £m
As at 1 January	968,287	2.7	216,456	0.6
New shares purchased	1,250,000	3.3	1,100,000	3.2
Exercise of share options	(973,154)	(2.7)	(348,169)	(1.1)
As at 31 December	1,245,133	3.3	968,287	2.7

Consideration received in respect of shares transferred to participants of employee share schemes was £0.8 million (2018: £0.4 million). The market value of shares held by the Trust at 31 December 2019 was £4.0 million (2018: £2.6 million).

Dividends

The following Ordinary dividends were declared and paid by the Company:

	Per share		Total	
	2019 pence	2018 pence	2019 £m	2018 £m
2017 final	–	7.00	–	20.0
2018 interim	–	4.00	–	11.4
2018 final	7.00	–	19.9	–
2019 interim	4.00	–	11.4	–
	11.00	11.00	31.3	31.4

In addition to the above, the Company also declared and paid dividends on the 5.5% Cumulative First Preference shares and 5.0% Cumulative Second Preference shares.

After 31 December 2019 the following dividends were proposed by the Directors for 2019. These dividends have not been provided for and there are no income tax consequences. The proposed 2019 final dividend is based upon the number of shares outstanding at the balance sheet date.

	£m
7.0 pence per qualifying Ordinary share	20.0
5.5% Cumulative First Preference shares	–
5.0% Cumulative Second Preference shares	–
	20.0

20. Capital and reserves continued

Called-up share capital

	2019 £m	2018 £m
Equity share capital		
Fully paid: 285,369,988 (2018: 285,369,988) issued Ordinary shares of 25 pence each	71.4	71.4
	71.4	71.4
Preference share capital		
125,327 issued 5.5% Cumulative First Preference shares of £1 each, fully paid	0.1	0.1
311,954 issued 5.0% Cumulative Second Preference shares of £1 each, fully paid	0.3	0.3
	0.4	0.4
Total share capital	71.8	71.8

Number of shares in issue

	Ordinary shares		Preference shares	
	2019	2018	2019	2018
In issue at beginning and end of period	285,369,988	285,369,988	437,281	437,281

As at the date of this Report 285,369,988 Ordinary shares have been issued (2018: 285,369,988).

Details of options outstanding in respect of Ordinary shares are given in note 24.

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.

	2019 £m	2018 £m
Non-current liabilities		
Senior Notes	176.2	164.8
Bank and other borrowings	–	–
Lease liabilities (2018: obligations under finance leases)	52.6	–
	228.8	164.8
Current liabilities		
Senior Notes	–	58.9
Bank and other borrowings	49.3	23.7
Lease liabilities (2018: obligations under finance leases)	11.7	0.2
	61.0	82.8

In 2019, bank and other borrowings did not include any borrowings secured on the assets of the Group (2018: £nil).

As at 31 December 2019 the Group had available headroom under the bank syndication of £149.8 million (2018: £185.0 million).

22. Financial risk management

This note presents information about the Group's exposure to a variety of financial risks: credit risk, liquidity risk and market 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' 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	
	2019 £m	2018 £m
FVOCI – equity instruments	0.6	0.5
Trade and other receivables	162.0	177.8
Cash and cash equivalents	68.7	67.6
Derivatives	1.5	0.6
	232.8	246.5

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, has 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 an allowance for impairment that represents its estimate of expected credit losses in respect of trade and other receivables and investments.

The ageing of trade receivables at the reporting date was:

	Gross 2019 £m	Impairment 2019 £m	Gross 2018 £m	Impairment 2018 £m
Not past due	137.0	(0.3)	149.0	(0.5)
Past due 0-30 days	19.8	(0.3)	22.2	(0.4)
Past due 31-60 days	4.1	(0.2)	4.9	(0.2)
Past due 61-90 days	1.9	(0.1)	2.1	–
Past due more than 90 days	7.6	(7.5)	9.6	(8.9)
	170.4	(8.4)	187.8	(10.0)

The allowances in the accounts in respect of trade receivables are used to record impairment losses unless the Group is satisfied that no recovery of the amount owing is possible; at the point the amount is considered irrecoverable it is written off against the financial asset directly.

Cash, cash equivalents and derivatives

Cash balances held by companies representing over 75% of the Group's revenue are managed centrally through a number of pooling arrangements. Credit risk is managed by investing 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.

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:

	31 December 2019							
	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	21.2	22.1	0.2	0.2	21.7	–
3.17% US Dollar Senior Notes 2023	3.17%	2023	11.4	12.9	0.4	0.4	12.1	–
1.55% Euro Senior Notes 2026	1.55%	2026	21.2	23.4	0.3	0.3	1.0	21.8
3.37% US Dollar Senior Notes 2026	3.37%	2026	73.6	90.6	2.5	2.5	7.4	78.2
1.74% Euro Senior Notes 2028	1.74%	2028	8.5	9.6	0.1	0.1	0.4	9.0
2.89% Euro Senior Notes 2030	2.89%	2030	21.1	27.8	0.6	0.6	1.8	24.8
4.87% US Dollar Senior Notes 2026	4.87%	2026	19.2	24.8	0.9	0.9	2.8	20.2
Bank and other borrowings		Up to 2024	49.3	49.3	49.3	–	–	–
Lease liabilities	5.02%	Up to 2051	64.3	85.1	11.7	9.7	20.4	43.3
Trade and other payables			84.3	84.3	84.3	–	–	–
Derivative financial liabilities								
Forward exchange contracts as cash flow hedges			0.5	0.5	0.5	–	–	–
Forward exchange contracts as fair value hedges			0.1	0.1	0.1	–	–	–
			374.7	430.5	150.9	14.7	67.6	197.3

In December 2019, the Group repaid USD 75 million of private placement notes utilising drawings under its Revolving Credit Facility.

During 2019, the Group executed the first one year extension option available under its Revolving Credit Facility, extending the maturity date to September 2024.

22. Financial risk management continued

	31 December 2018							
	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								
6.26% US Dollar Senior Notes 2019	6.26%	2019	59.0	62.5	62.5	–	–	–
1.18% Euro Senior Notes 2023	1.18%	2023	22.5	23.9	0.3	0.3	23.3	–
3.17% US Dollar Senior Notes 2023	3.17%	2023	11.8	13.7	0.4	0.4	12.9	–
1.55% Euro Senior Notes 2026	1.55%	2026	22.5	25.1	0.3	0.3	1.0	23.5
3.37% US Dollar Senior Notes 2026	3.37%	2026	76.4	96.6	2.6	2.6	7.7	83.7
1.74% Euro Senior Notes 2028	1.74%	2028	9.0	10.7	0.2	0.2	0.5	9.8
2.89% Euro Senior Notes 2030	2.89%	2030	22.5	30.1	0.6	0.6	1.9	27.0
Bank and other borrowings		Up to 2023	23.7	23.7	23.7	–	–	–
Obligations under finance leases[1]	4.30%	Up to 2023	0.2	0.2	0.2	–	–	–
Trade and other payables			95.0	95.0	95.0	–	–	–
Derivative financial liabilities								
Forward exchange contracts as cash flow hedges			0.5	0.5	0.5	–	–	–
Forward exchange contracts as fair value hedges			0.1	0.1	0.1	–	–	–
			343.2	382.1	186.4	4.4	47.3	144.0

1. Comparative information represents finance leases accounted for under IAS 17.

Cash flows associated with derivatives that are cash flow hedges

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.

	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
2019						
Forward exchange contracts – assets	1.4	89.0	88.8	0.2	–	–
Forward exchange contracts – liabilities	(0.5)	(88.1)	(87.9)	(0.2)	–	–
	0.9	0.9	0.9	–	–	–
2018						
Forward exchange contracts – assets	0.4	69.8	64.3	5.5	–	–
Forward exchange contracts – liabilities	(0.5)	(69.9)	(64.4)	(5.5)	–	–
	(0.1)	(0.1)	(0.1)	–	–	–

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 buys and sells derivatives in the ordinary course of business 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.

22. Financial risk management continued

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	
	2019 £m	2018 £m	2019 £m	2018 £m
Financial assets	–	–	68.7	67.6
Financial liabilities	(240.5)	(223.9)	(49.3)	(23.7)
	(240.5)	(223.9)	19.4	43.9

The fixed rate financial liabilities predominantly comprise the currency equivalent of £176.2 million (2018: £223.6 million) of Senior Notes and lease liabilities of £64.3 million (2018: £0.2 million). The average cost of the Group's fixed rate instruments is 3.50% (2018: 3.60%) including lease liabilities and 2.90% (2018: 3.60%) excluding lease liabilities.

An increase of 100 basis points in interest rates on the variable element of the Group's net debt* at the reporting date would have increased profit by £0.2 million (2018: increase £0.5 million). A decrease of 100 basis points would have decreased profit by £0.1 million (2018: decrease £0.3 million). This analysis assumes that all other variables, in particular foreign currency rates, remain constant.

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.

	2019			2018		
Functional currency of Group operations	GBP £m	USD £m	Euro £m	GBP £m	USD £m	Euro £m
Trade receivables	1.7	7.7	2.0	1.9	8.0	4.8
Cash and cash equivalents	1.1	9.2	(2.5)	0.9	7.5	1.6
Trade payables	(1.7)	(5.7)	(6.6)	(2.3)	(8.3)	(12.2)
Borrowings	–	(4.0)	3.4	–	(2.4)	(0.1)
Net balance sheet exposure	1.1	7.2	(3.7)	0.5	4.8	(5.9)

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 hedging 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 2019 was an asset of £0.9 million (2018: liability of £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.

22. Financial risk management continued

The Group's currency split of total borrowings was as follows:

	2019 £m	2018 £m
GBP	4.1	23.6
USD	149.3	147.2
Euro	72.1	76.4
Other	–	0.2
	225.5	247.4

The Group's sensitivity to changes in foreign exchange rates on financial assets and liabilities as at 31 December 2019 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 £17.8 million (2018: £13.9 million). Conversely, if GBP had weakened by 10%, reported net financial liabilities would have increased by £21.6 million (2018: £17.1 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.

Exchange rates

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

	2019		2018	
	Closing rate	Average rate	Closing rate	Average rate
GBP to:				
USD	1.33	1.28	1.28	1.33
Euro	1.18	1.14	1.11	1.13

For illustrative purposes, the table below provides details of the impact on 2019 revenue, Group headline operating profit* and profit before tax if the actual reported results, calculated using 2019 average exchange rates, were restated for GBP weakening by 10 cents against USD in isolation and 10 cents against the Euro in isolation:

	2019			2018		
	Revenue £m	Group headline operating profit[1] £m	Profit before tax £m	Revenue £m	Group headline operating profit[1] £m	Profit before tax £m
Increase in revenue/Group headline operating profit[1]/ profit before tax if:						
GBP weakens by 10c against USD in isolation	39.7	6.3	5.5	34.9	5.1	4.5
GBP weakens by 10c against the Euro in isolation	19.9	2.9	2.7	21.2	3.8	3.7

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

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.

22. Financial risk management continued

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. 2019 is also presented to show the indicators excluding the impact of IFRS 16 *Leases* as these adjusted measures are more closely aligned to the Group's covenants. Since IFRS 16 *Leases* became effective from 1 January 2019, no such adjustments are required to present 2018 in this way.

Debt to adjusted capital

	2019			2018
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m
Borrowings and overdrafts	225.5	–	225.5	247.4
Lease liabilities	64.3	(64.3)	–	0.2
Less: cash and cash equivalents	(68.7)	–	(68.7)	(67.6)
Net debt[1]	221.1	(64.3)	156.8	180.0
Total equity	312.2	–	312.2	277.2
Less: amounts accumulated in equity relating to cash flow hedges	(0.8)	–	(0.8)	0.2
Adjusted capital	311.4	–	311.4	277.4
Debt to adjusted capital ratio	0.7	n/a	0.5	0.6

Net debt* to EBITDA*

	2019			2018
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m
Net debt[1]	221.1	(64.3)	156.8	180.0
Operating profit before specific adjusting items	126.1	(3.0)	123.1	116.8
Depreciation and amortisation	50.5	(10.1)	40.4	39.3
EBITDA[1]	176.6	(13.1)	163.5	156.1
Net debt[1] to EBITDA[1] ratio	1.3x	n/a	1.0x	1.2x

Interest cover

	2019			2018
	As stated £m	IFRS 16 impact £m	Excluding IFRS 16 £m	As stated £m
EBITDA[1]	176.6	(13.1)	163.5	156.1
Net finance costs (excluding IAS 19 pension charge)	12.3	(3.0)	9.3	8.5
Interest cover	14.4x	n/a	17.6x	18.4x

1. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

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 2019				31 December 2018			
	Carrying	Fair value			Carrying	Fair value		
	amount £m	Level 1 £m	Level 2 £m	Total £m	amount £m	Level 1 £m	Level 2 £m	Total £m
Financial assets and liabilities held at amortised cost								
6.26% US Dollar Senior Notes 2019	–	–	–	–	(59.0)	–	(59.6)	(59.6)
1.18% Euro Senior Notes 2023	(21.2)	–	(21.2)	(21.2)	(22.5)	–	(22.3)	(22.3)
3.17% US Dollar Senior Notes 2023	(11.4)	–	(11.3)	(11.3)	(11.8)	–	(11.3)	(11.3)
1.55% Euro Senior Notes 2026	(21.2)	–	(21.5)	(21.5)	(22.5)	–	(22.3)	(22.3)
3.37% US Dollar Senior Notes 2026	(73.5)	–	(72.1)	(72.1)	(76.4)	–	(70.6)	(70.6)
1.74% Euro Senior Notes 2028	(8.5)	–	(8.6)	(8.6)	(9.0)	–	(8.8)	(8.8)
2.89% Euro Senior Notes 2030	(21.1)	–	(22.2)	(22.2)	(22.5)	–	(22.5)	(22.5)
4.87% US Dollar Senior Notes 2026	(19.2)	–	(20.2)	(20.2)	–	–	–	–
Obligations under finance leases[1]	–	–	–	–	(0.2)	–	(0.2)	(0.2)
	(176.1)	–	(177.1)	(177.1)	(223.9)	–	(217.6)	(217.6)
Financial assets held at FVOCI	0.6	0.6	–	0.6	0.5	0.5	–	0.5
Derivative financial assets held at fair value	1.5	–	1.5	–	0.6	–	0.6	0.6
	2.1	0.6	1.5	0.6	1.1	0.5	0.6	1.1
Derivative financial liabilities held at fair value	(0.6)	–	(0.6)	(0.6)	(0.6)	–	(0.6)	(0.6)

1. Comparative information represents finance leases accounted for under IAS 17, there is no requirement to calculate the fair value of IFRS 16 leases.

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: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (ie as prices) or indirectly (ie derived from prices)
- 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 1.1-3.9% (2018: 1.4-4.7%).

There have been no transfers between Level 1 and Level 2 during 2019 and 2018 and there were no Level 3 financial instruments in either 2019 or 2018.

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

	2019 £m	2018 £m
Present value of unfunded defined benefit obligations	(48.2)	(46.6)
Present value of funded defined benefit obligations	(686.7)	(687.5)
Fair value of plan assets	578.1	543.7
	(156.8)	(190.4)

Amounts recognised in profit or loss

	Note	2019 £m	2018 £m
Current service cost		(2.6)	(3.3)
Administrative expenses recognised outside of the pension liability		(1.4)	(1.4)
Curtailments and settlements		0.2	–
Total expense within operating costs before specific adjusting items relating to defined benefit plans		(3.8)	(4.7)
Defined contribution plans		(11.3)	(10.7)
Total expense within operating costs before specific adjusting items	4	(15.1)	(15.4)
Net interest on net defined benefit liability	7	(4.6)	(4.7)
Total expense before specific adjusting items		(19.7)	(20.1)
Net past service credit (within specific adjusting items)	6	–	5.7
Total expense recognised in profit or loss		(19.7)	(14.4)

Amounts recognised in other comprehensive income

	2019 £m	2018 £m
Experience gain/(loss) on plan obligations	6.1	0.3
Changes in financial assumptions underlying the present value of plan obligations – gain/(loss)	(66.8)	41.3
Changes in demographic assumptions underlying the present value of plan obligations – gain/(loss)	37.0	4.3
Actual return on plan assets (excluding amounts included in net interest expense)	44.2	(31.7)
Remeasurements recognised in other comprehensive income	20.5	14.2
Deferred tax associated with the above	2.2	(0.7)
Total amount recognised in other comprehensive income	22.7	13.5

Defined contribution plans

The Group operates a number of defined contribution pension plans. The total expense relating to these plans in the current year was £11.3 million (2018: £10.7 million). The expense includes contributions to two US Multi-Employer Plans of £0.3 million (2018: £0.3 million). The Group expects to contribute £11.5 million to defined contribution arrangements in 2020.

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 Company on 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 as measured, 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 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 Company, agreed past service deficit recovery payments totaling £16.5 million a year from January 2020, 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.

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 10 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 2019 and the Scheme was fully funded this basis. On the more stringent DBO (Defined Benefit Obligation) basis used for IAS 19 purposes, the deficit as at 31 December 2019 totalled £3.25 million. No further significant contributions to the MUSE DB Scheme are anticipated in the medium-term.

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 2019				
	UK £m	US £m	Europe £m	Rest of the World £m	Total £m
Summary of net obligations					
Present value of unfunded defined benefit obligations	–	(7.6)	(37.9)	(2.7)	(48.2)
Present value of funded defined benefit obligations	(534.6)	(138.4)	(2.1)	(11.6)	(686.7)
Fair value of plan assets	433.1	135.4	0.4	9.2	578.1
	(101.5)	(10.6)	(39.6)	(5.1)	(156.8)
Movements in present value of defined benefit obligation					
At 1 January 2019	(544.4)	(138.8)	(37.3)	(13.6)	(734.1)
Current service cost	–	–	(1.0)	(1.6)	(2.6)
Interest cost	(14.4)	(5.9)	(0.6)	(0.1)	(21.0)
Actuarial gain/(loss)					
Experience gain/(loss) on plan obligations	9.6	(1.3)	(2.0)	(0.2)	6.1
Changes in financial assumptions – gain/(loss)	(46.4)	(16.6)	(3.4)	(0.4)	(66.8)
Changes in demographic assumptions – gain/(loss)	35.6	1.4	–	–	37.0
Benefits paid	25.4	9.3	1.8	0.7	37.2
Curtailments and settlements	–	0.2	–	–	0.2
Contributions by members	–	–	–	–	–
Exchange adjustments	–	5.7	2.5	0.9	9.1
At 31 December 2019	(534.6)	(146.0)	(40.0)	(14.3)	(734.9)
Movements in fair value of plan assets					
At 1 January 2019	404.3	130.0	0.4	9.0	543.7
Interest on plan assets	10.8	5.4	–	0.2	16.4
Remeasurement gain/(loss)	30.8	13.6	–	(0.2)	44.2
Contributions by employer	12.6	0.9	1.8	1.7	17.0
Contributions by members	–	–	–	–	–
Administrative expenses	–	–	–	–	–
Benefits paid	(25.4)	(9.3)	(1.8)	(0.7)	(37.2)
Curtailments and settlements	–	–	–	–	–
Exchange adjustments	–	(5.2)	–	(0.8)	(6.0)
At 31 December 2019	433.1	135.4	0.4	9.2	578.1
Actual return on assets	41.6	19.0	–	–	60.6
Fair value of plan assets by category					
Equities[1]	49.1	–	–	–	49.1
Growth assets[2]	97.1	7.2	–	–	104.3
Bonds	56.1	126.0	–	–	182.1
Liability-driven investments (LDI)[3]	69.8	–	–	–	69.8
Matching insurance policies	160.4	–	0.4	6.8	167.6
Other	0.6	2.2	–	2.4	5.2
	433.1	135.4	0.4	9.2	578.1

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 (excluding matching insurance policies).

23. Pensions and other post-retirement employee benefits continued

The Group expects to contribute £21.0 million to these arrangements in 2020.

	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 2020	16.5	0.9	1.9	1.7	21.0

	31 December 2018				
	UK £m	US £m	Europe £m	Rest of the World £m	Total £m
Summary of net obligations					
Present value of unfunded defined benefit obligations	–	(7.9)	(35.9)	(2.8)	(46.6)
Present value of funded defined benefit obligations	(544.4)	(130.9)	(1.4)	(10.8)	(687.5)
Fair value of plan assets	404.3	130.0	0.4	9.0	543.7
	(140.1)	(8.8)	(36.9)	(4.6)	(190.4)
Movements in present value of defined benefit obligation					
At 1 January 2018	(593.7)	(146.7)	(37.2)	(12.7)	(790.3)
Current service cost	(0.5)	–	(1.0)	(1.8)	(3.3)
Interest cost	(13.9)	(5.2)	(0.6)	(0.2)	(19.9)
Actuarial gain/(loss)					
Experience gain/(loss) on plan obligations	(1.3)	1.5	–	0.1	0.3
Changes in financial assumptions – gain/(loss)	31.3	9.7	0.6	(0.3)	41.3
Changes in demographic assumptions – gain/(loss)	4.3	0.4	(0.5)	0.1	4.3
Benefits paid	23.9	9.5	1.8	1.4	36.6
Contributions by members	(0.2)	–	–	–	(0.2)
Net past service credit (see note 6)	5.7	–	–	–	5.7
Exchange adjustments	–	(8.0)	(0.4)	(0.2)	(8.6)
At 31 December 2018	(544.4)	(138.8)	(37.3)	(13.6)	(734.1)
Movements in fair value of plan assets					
At 1 January 2018	427.7	135.6	0.5	8.5	572.3
Interest on plan assets	10.1	4.9	–	0.2	15.2
Remeasurement losses	(22.3)	(9.2)	–	(0.2)	(31.7)
Contributions by employer	12.5	0.9	1.7	1.9	17.0
Contributions by members	0.2	–	–	–	0.2
Administrative expenses	–	–	–	–	–
Benefits paid	(23.9)	(9.5)	(1.8)	(1.4)	(36.6)
Exchange adjustments	–	7.3	–	–	7.3
At 31 December 2018	404.3	130.0	0.4	9.0	543.7
Actual return on assets	(12.2)	(4.3)	–	–	(16.5)
Fair value of plan assets by category					
Equities	85.4	–	–	–	85.4
Growth assets	16.6	3.9	–	–	20.5
Bonds	50.5	124.3	–	–	174.8
Liability-driven investments (LDI)	81.3	–	–	–	81.3
Matching insurance policies	167.9	–	0.4	6.5	174.8
Other	2.6	1.8	–	2.5	6.9
	404.3	130.0	0.4	9.0	543.7

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 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 %
2019				
Discount rate	2.06	3.21	0.90	2.20
Salary increase	n/a	n/a	2.20	5.00
Inflation (UK: RPI/CPI)	2.73/1.88	n/a	1.70	n/a
Pensions increase[1]	3.00/2.70/3.50	n/a	1.70	n/a
Mortality – post-retirement:				
Life expectancy of a male aged 60 in accounting year (years)	26.2	24.3	24.6	n/a
Life expectancy of a male aged 60 in accounting year + 20 (years)	27.7	24.40	26.7	n/a
2018				
Discount rate	2.74	4.34	1.70	2.60
Salary increase	n/a	n/a	2.20	5.00
Inflation (UK: RPI/CPI)	3.17/2.07	n/a	1.70	n/a
Pensions increase	3.00/3.10/3.70	n/a	1.70	n/a
Mortality – post-retirement:				
Life expectancy of a male aged 60 in accounting year (years)	26.5	24.9	24.6	n/a
Life expectancy of a male aged 60 in accounting year + 20 (years)	28.1	26.7	27.4	n/a

1. Pension increases in the UK reflect both fixed rate and RPI related increases to different elements of members' pensions.

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.

23. Pensions and other post-retirement employee benefits continued

The sensitivities of the Group's net balance sheet to the principal assumptions are:

		2019		2018	
	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	9.2	10.9	9.3
Inflation	Increase by 0.1%	3.6	3.4	4.3	4.0
Mortality – post-retirement	Pensioners live 1 year longer	32.8	21.9	26.1	19.5
Exchange rates	GBP weakens against USD by 10%	16.2	1.2	15.4	1.0
	GBP weakens against EUR by 10%	4.4	4.4	4.1	4.1

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. 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 by bonds and swaps. 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 the majority 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 2019, 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 65 to 82.

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 2019 was £2.4 million (2018: £2.8 million).

24. Share-based payments continued

The following options and awards were outstanding at 31 December 2019 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	–	5,711,670	31 March 2020	31 March 2030
Sharesave	All UK employees	Continued employment	201.00p–278.00p	1,164,829	1 December 2019	31 May 2023
DBP	Senior employees	Continued employment	–	312,692	3 March 2020	18 March 2022
RSU	Select employees	Continued employment	–	546,557	29 April 2020	14 October 2022

The numbers and weighted average exercise prices of share options are as follows:

	2019		2018	
	Weighted average exercise price	Number of options	Weighted average exercise price	Number of options
Outstanding at the beginning of the period	52.02p	6,235,388	62.76p	5,284,105
Granted during the period	60.79p	4,086,171	36.19p	2,758,120
Forfeited during the period	79.81p	(798,402)	32.08p	(727,577)
Exercised during the period	80.80p	(961,967)	177.08p	(327,516)
Lapsed during the period	81.60p	(825,442)	12.24p	(751,744)
Outstanding at the end of the period	54.22p	7,735,748	52.02p	6,235,388
Exercisable at the end of the period	205.77p	128,653	256.52p	266,500

The weighted average share price at the date of exercise during the period was 265.14 pence (2018: 321.11 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 2019			
	LTIP	Sharesave	DBP	RSU
Share price at award date	242.00p–274.00p	253.00p	274.00p	277.00p–242.00p
Exercise price	n/a	201.00p	n/a	n/a
Fair value at measurement date	100.00p–242.00p	38.00p	274.00p	277.00p–242.00p
Fair value measurement method	Monte Carlo model	Modified binomial model	n/a	n/a
Fair value model inputs:				
Expected volatility (expressed as weighted average volatility used in the model)	30%	25%		
Option life (expressed as weighted average life used in the model)	3 years	3 years		
Expected dividends	4.0%	4.3%		
Risk-free interest rate	0.8%	0.4%		

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 2019 was 205.60 pence (2018: 258.26 pence).

Notes to the consolidated financial statements
continued

25. Provisions and contingent liabilities

	Closure and restructuring provisions £m	Legal and other provisions £m	Environmental provisions £m	Total £m
Balance at 1 January 2019	3.5	10.3	4.9	18.7
Provisions made during the year	0.9	1.7	3.2	5.8
Provisions used during the year	(1.6)	(0.8)	(1.1)	(3.5)
Provisions reversed during the year	(0.3)	(2.2)	–	(2.5)
Effect of movements in foreign exchange	(0.1)	(0.2)	(0.1)	(0.4)
Balance at 31 December 2019	2.4	8.8	6.9	18.1
Current	2.4	5.9	0.6	8.9
Non-current	–	2.9	6.3	9.2
	2.4	8.8	6.9	18.1

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. Due to the nature of the provision for closure and restructuring provisions, the timing of any potential future outflows in respect of these liabilities is uncertain until the restructuring programme is completed.

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.

The Company has on occasion been required to take legal or other actions to protect its intellectual property rights, to enforce commercial contracts or otherwise and similarly to defend itself against proceedings brought by other parties. 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.

Other provisions represent the best estimate of the cost of settling current obligations although there is a higher degree of judgement involved.

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 £7.4 million (2018: £9.2 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, in conjunction with the local Environmental Regulator. Whilst this study has yet to be finalised, sufficient work has been completed to enable an estimate to be made for the costs of remediating the known environmental issues at this site. This cost has been provided for in the year and is included in the table above.

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 2019, commitments for property, plant and equipment and computer software expenditure for which no provision has been made in these accounts amount to £2.4 million (2018: £7.2 million) for the Group.

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:

	2019 £m	2018 £m
Short-term employee benefits	5.5	6.4
Employer national insurance contributions	0.6	0.6
Pension and other post-employment costs	0.4	0.5
Share-based payments	1.3	1.7
Termination payments	–	0.1
Non-executive Directors' fees and benefits	0.4	0.5
Total compensation of key management personnel	8.2	9.8

Other related party transactions

	2019 £m	2018 £m
Sales to associate	–	0.3
Purchases from associate	2.0	1.3
Loan made to associate	–	1.0
Loan repaid by associate	–	1.0
Trade receivables due from associate	–	–
Trade payables due to associate	0.3	1.2

The balances with the Group's associate are shown in note 19. In 2019 the Group does not have any trade receivables owed by associates that have been fully provided for (2018: £nil).

28. Subsequent events

The outbreak of the coronavirus has led to an extended shut down of our manufacturing facilities in China. Our focus has been to take actions and precautions to help ensure the safety and wellbeing of our employees. Whilst we cannot be certain how long this situation will last, based on the delayed start-up of our production facilities since the lunar new year break, we currently anticipate that this will have an adverse impact on 2020 revenues of around £7.0 million and on headline operating profit* of around £3.5 million, with the impact in the first half of the year. China represents c.10% of Group revenue annually.

The coronavirus has been spreading to countries outside of China, including to Italy and South Korea. We expect our plant in the affected area of Northern Italy to be closed for two weeks.

There were no other reportable subsequent events following the balance sheet date.

Company balance sheet

as at 31 December 2019

	Note	2019 £m	2018 £m
Non-current assets			
Intangible assets	31	2.2	2.8
Property, plant and equipment	32	6.2	6.8
Right-of-use assets	33	1.2	–
Investments in subsidiary undertakings	34	1,119.4	1,090.8
Debtors – amounts due after more than one year	35	4.9	1.1
		1,133.9	1,101.5
Current assets			
Debtors – amounts due within one year	35	53.7	47.5
Cash and cash equivalents		26.4	14.4
		80.1	61.9
Creditors – amounts falling due within one year	36	85.7	57.7
Net current (liabilities)/assets		(5.6)	4.2
Total assets less current liabilities		1,128.3	1,105.7
Non-current liabilities			
Creditors – amounts falling due after more than one year	37	446.3	416.7
Employee benefits: pensions	39	30.3	39.0
Provisions	40	0.5	0.6
		477.1	456.3
Net assets		651.2	649.4
Capital and reserves			
Equity shareholders' funds			
Share capital	41	71.8	71.8
Share premium		111.7	111.7
Merger reserve		17.0	17.0
Capital redemption reserve		35.7	35.7
Retained earnings		415.0	413.2
Shareholders' funds		651.2	649.4

The financial statements were approved by the Board of Directors on 25 February 2020 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 2019

	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 2018	71.4	111.7	17.0	35.7	405.4	641.2
Total comprehensive income for the period:						
Profit for the year	–	–	–	–	35.8	35.8
Other comprehensive income	–	–	–	–	3.4	3.4
Transactions with owners:						
Dividends	–	–	–	–	(31.4)	(31.4)
Equity-settled share-based payment transactions	–	–	–	–	2.8	2.8
Own shares acquired for share incentive schemes (net)	–	–	–	–	(2.8)	(2.8)
Balance at 31 December 2018	71.4	111.7	17.0	35.7	413.2	649.0
Balance at 1 January 2019 as previously reported	71.4	111.7	17.0	35.7	413.2	649.0
Impact of change in accounting policy, net of tax, following adoption of IFRS 16 *Leases* (see note 1)	–	–	–	–	(0.1)	(0.1)
Adjusted balance at 1 January 2019	71.4	111.7	17.0	35.7	413.1	648.9
Total comprehensive income for the period:						
Profit for the year	–	–	–	–	27.3	27.3
Other comprehensive income	–	–	–	–	5.6	5.6
Transactions with owners:						
Dividends	–	–	–	–	(31.3)	(31.3)
Equity-settled share-based payment transactions	–	–	–	–	2.8	2.8
Own shares acquired for share incentive schemes (net)	–	–	–	–	(2.5)	(2.5)
Balance at 31 December 2019	71.4	111.7	17.0	35.7	415.0	650.8

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')*.

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the EU ('Adopted IFRSs'), but makes amendments where necessary in order to comply with the Companies Act 2006 and has set out below where advantage of the FRS 101 disclosure exemptions have been taken.

Under Section 408(4) of the Companies Act 2006 the Company is exempt from the requirement to present its own profit and loss account.

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.

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 that the following assets and liabilities are stated at their fair value – financial instruments classified as fair value through the profit or loss.

Intangible assets

Intangible assets that are acquired by the Company are stated at cost less accumulated amortisation and less accumulated impairment losses.

Amortisation

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.

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.

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.

Foreign currency

Transactions in foreign currencies are translated to the Company's functional currency 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 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 except for differences arising on the retranslation of qualifying cash flow hedges, which are recognised in other comprehensive income. 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 retranslated to the functional currency at foreign exchange rates ruling at the dates the fair value was determined.

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.

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.

Notes to the Company balance sheet
continued

29. Accounting policies continued

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 recognised initially at fair value. Subsequent to initial recognition they are measured at amortised cost using the effective interest method, less any impairment losses.

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.

Investments in debt and equity securities

Investments in debt and equity securities held by the Company are designated as fair value through other comprehensive income (FVOCI): stated at fair value, with any resultant gain or loss being recognised directly in equity (in the fair value reserve), except for impairment losses and, in the case of monetary items such as debt securities, foreign exchange gains and losses. When these investments are derecognised, the cumulative gain or loss previously recognised directly in equity is recognised in profit or loss. Where these investments are interest-bearing, interest calculated using the effective interest method is recognised in profit or loss. Investments in subsidiaries are carried at cost less impairment.

Interest-bearing borrowings

Interest-bearing borrowings (which include amounts owed to/by Group undertakings) are recognised initially at fair value less attributable transaction costs. Subsequent to initial recognition, interest-bearing borrowings are stated at amortised cost using the effective interest method, less any impairment losses. Amounts owed by Group undertakings are classified as non-current as these are considered part of the Company's investment in the subsidiary.

Investments in subsidiaries

Investments in subsidiaries are carried at cost less allowance for impairment.

Impairment

The Company recognises loss allowances for expected credit losses (ECLs) on financial assets measured at amortised cost and debt investments measured at FVOCI.

The Company considers amounts due by Group undertakings to be in default when the borrower is unlikely to pay its credit obligations to the Company in full.

At each reporting date, the Company assesses whether financial assets carried at amortised cost and debt securities at FVOCI are credit-impaired. 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 and hedging

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. However, where derivatives qualify for hedge accounting, recognition of any resultant gain or loss depends on the nature of the item being hedged (see below).

Cash flow hedges

Where a derivative financial instrument is designated as a hedge of the variability in cash flows of a recognised asset or liability, or a highly probable forecast transaction, the effective part of any gain or loss on the derivative financial instrument is recognised directly in the hedging reserve. Any ineffective portion of the hedge is recognised immediately in the income statement.

Fair value hedges

Where a derivative financial instrument is designated as a hedge of the variability in fair value of a recognised asset or liability or an unrecognised firm commitment, all changes in the fair value of the derivative are recognised immediately in the income statement. The carrying value of the hedged item is adjusted by the change in fair value that is attributable to the risk being hedged (even if it is normally carried at cost or amortised cost) and any gains or losses on remeasurement are recognised immediately in the income statement (even if those gains would normally be recognised directly in reserves).

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

29. Accounting policies continued

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. This resulted in a reallocation of £151.5 million of the Schemes' net liabilities to the Participating Employers. Previously all of the Scheme assets and liabilities were recognised on the balance sheet of the Company only. Further details are provided in note 38.

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. The fair value of the awards 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 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.

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.

Investments

Investments in subsidiary undertakings, associates and joint ventures are stated at cost less amounts written off unless they are designated as a hedged item in a fair value hedge of foreign currency risk. In this case they are accounted for at historical cost plus a hedging adjustment recognised in profit or loss for the changes in their fair value attributable to the foreign currency exposure from the date the hedge is designated.

Interest-bearing loans and borrowings

Immediately after issue, debt is stated at the fair value of the consideration received. Immediately after issue capital instruments are stated after deduction of issue costs. The finance cost of the debt is allocated to periods over the term of the debt at a constant rate on the carrying amount.

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.

Notes to the Company balance sheet
continued

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	2019	2018
Directors and corporate staff	54	53

Full details of the Directors' remuneration for the period can be found in the Remuneration Report on pages 65 to 82.

Aggregate employee-related costs were as follows:

	Note	2019 £m	2018 £m
Wages and salaries		9.6	10.0
Equity-settled share-based payments	24	2.4	2.8
Social security costs		1.1	1.5
Other pension costs		0.5	0.4
		13.6	14.7

In 2019, £1.6 million (2018: £0.5 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 2019	10.0
Additions – externally purchased	1.1
Balance at 31 December 2019	11.1
Amortisation	
Balance at 1 January 2019	7.2
Amortisation for the year	1.7
Balance at 31 December 2019	8.9
Carrying amounts	
At 31 December 2018	2.8
At 31 December 2019	2.2

32. Property, plant and equipment

	Plant, equipment and fixtures £m	Land and buildings £m	Total £m
Cost			
Balance at 1 January 2019	1.1	14.3	15.4
Additions	0.5	0.2	0.7
Disposals	–	(2.4)	(2.4)
Balance at 31 December 2019	1.6	12.1	13.7
Depreciation and impairment losses			
Balance at 1 January 2019	1.1	7.5	8.6
Depreciation charge for the year	–	0.1	0.1
Disposals	–	(1.2)	(1.2)
Balance at 31 December 2019	1.1	6.4	7.5
Carrying value			
At 31 December 2018	–	6.8	6.8
At 31 December 2019	0.5	5.7	6.2

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 recognised on adoption of IFRS 16 *Leases* on 1 January 2019	–	0.4	0.4
Additions	1.2	–	1.2
Depreciation charge for the year	(0.2)	(0.2)	(0.4)
Balance at 31 December 2019	1.0	0.2	1.2

The Company leases several assets including buildings and IT equipment. The average lease term at 31 December 2019 is 2.4 years.

At 31 December 2019, the Company has not applied any exemptions for short-term leases or leases of low-value assets.

Notes to the Company balance sheet
continued

34. Investment in subsidiary undertakings

	Shares in Group undertakings £m	Loans £m	Total £m
Cost			
Balance at 1 January 2019	449.6	807.4	1,257.0
Additions	–	60.4	60.4
Loan repayments	–	(12.0)	(12.0)
Effect of movement in foreign exchange	–	(21.6)	(21.6)
Balance at 31 December 2019	449.6	834.2	1,283.8
Provisions			
Balance at 1 January 2019	107.5	58.7	166.2
Provided in the year	–	0.2	0.2
Disposals	–	(1.3)	(1.3)
Effect of movement in foreign exchange	–	(0.7)	(0.7)
Balance at 31 December 2019	107.5	56.9	164.4
Carrying amounts			
At 31 December 2018	342.1	748.7	1,090.8
At 31 December 2019	342.1	777.3	1,119.4

Note 44 to the financial statements gives details of the Company's fixed asset investments.

35. Debtors

	Note	2019 £m	2018 £m
Due within one year			
Amounts owed by Group undertakings		50.4	42.6
Other debtors		1.1	0.1
Derivative financial assets	45	1.7	3.5
Prepayments		0.5	1.3
		53.7	47.5
Due after more than one year			
Derivative financial assets	45	4.9	1.1
		4.9	1.1

36. Creditors: amounts falling due within one year

	Note	2019 £m	2018 £m
Bank overdrafts	38	12.5	18.4
Borrowings	38	49.3	14.0
Lease liabilities		0.6	–
Trade creditors		2.3	3.5
Amounts owed to Group undertakings		10.7	12.6
Other creditors		4.1	–
Accruals		4.3	8.3
Derivative financial liabilities	45	1.9	0.9
		85.7	57.7

37. Creditors: amounts falling due after more than one year

	Note	2019 £m	2018 £m
Amounts owed to Group undertakings		266.9	250.0
Borrowings	38	176.1	164.7
Lease liabilities		0.6	–
Derivative financial liabilities	45	2.7	2.0
		446.3	416.7

38. Borrowings and lease liabilities

Terms and debt repayment schedule

				2019		2018	
	Currency	Effective interest rate	Year of maturity	Carrying amount £m	Fair value £m	Carrying amount £m	Fair value £m
Bank overdrafts	Various	1.95%		12.5	12.5	18.4	18.4
1.18% Euro Senior Notes 2023	EUR	1.18%	2023	21.2	21.2	22.5	22.3
3.17% US Dollar Senior Notes 2023	USD	3.17%	2023	11.4	11.3	11.8	11.3
1.55% Euro Senior Notes 2026	EUR	1.55%	2026	21.2	21.5	22.5	22.3
3.37% US Dollar Senior Notes 2026	USD	3.37%	2026	73.5	72.1	76.4	70.6
1.74% Euro Senior Notes 2028	EUR	1.74%	2028	8.5	8.6	9.0	8.8
2.89% Euro Senior Notes 2030	EUR	2.89%	2030	21.1	22.2	22.5	22.5
4.87% US Dollar Senior Notes 2026	USD	4.87%	2026	19.2	20.2	–	–
Syndicated revolving credit facility	GBP	1.15%	2024	4.1	4.1	14.0	14.0
Syndicated revolving credit facility	USD	2.15%	2024	45.2	45.2	–	–
Lease liabilities	GBP	1.73%	2020–2024	1.2	1.2	–	–
				239.1	240.1	197.1	190.2

In 2019, no borrowings were secured on the assets of the Company (2018: £nil).

Notes to the Company balance sheet
continued

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.

	2019 £m	2018 £m
Pension plans and employee benefits		
Present value of funded defined benefit obligations	(175.5)	(178.2)
Fair value of plan assets	145.2	139.2
Net obligations	(30.3)	(39.0)
Movements in present value of defined benefit obligation		
At 1 January	(178.2)	(194.6)
Interest cost	(4.6)	(4.5)
Remeasurement (losses)/gains:		
Changes in financial assumptions	(14.9)	9.6
Changes in demographic assumptions	7.8	1.4
Experience adjustments on benefit obligations	6.0	(0.4)
Benefits paid	8.4	9.5
Net past service credit	–	0.8
At 31 December	(175.5)	(178.2)
Movements in fair value of plan assets		
At 1 January	139.2	148.5
Interest on plan assets	3.7	3.5
Remeasurement (losses)/gains	6.7	(7.4)
Contributions by employer	4.0	4.1
Benefits paid	(8.4)	(9.5)
At 31 December	145.2	139.2
Actual return on assets	10.4	(3.9)

Expense recognised in the income statement

	2019 £m	2018 £m
Net past service credit	–	0.8
Administrative expenses (including administration expenses incurred by the Company directly)	(0.4)	–
Net interest on net defined benefit liability	(0.5)	(1.0)
Total expense recognised in the income statement	(0.9)	(0.2)

39. Employee benefits: pensions continued

The fair values of the plan assets were as follows:

	2019 £m	2018 £m
Equities and growth assets	37.1	24.7
Bonds	36.3	38.6
Matching insurance policies	66.7	70.0
Other	5.1	5.9
Total	145.2	139.2

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.

Principal actuarial assumptions at the year end were as follows:

Assumptions:	2019 %	2018 %
Inflation (RPI/CPI)	2.73/1.88	3.17/2.07
Discount rate	2.06	2.74
Pensions increase	3.00/2.70/3.50	3.00/3.10/3.70
Salary increase	n/a	n/a
Mortality – post-retirement:		
Life expectancy of a male aged 60 in accounting year (years)	26.2	26.5
Life expectancy of a male aged 60 in accounting year + 20 (years)	27.7	28.1

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 totaling £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	2019 Increase effect £m	2018 Increase effect £m
Discount rate	Decrease by 0.1%	2.0	2.1
Inflation	Increase by 0.1%	0.9	0.8
Mortality – post-retirement	Pensioners live 1 year longer	4.4	4.0

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 2019 was £0.5 million (2018: £0.2 million).

Notes to the Company balance sheet
continued

40. Provisions and contingent liabilities

	Dilapidation provisions £m	Other provisions £m	Total £m
Balance at 1 January 2019	0.1	0.5	0.6
Provisions made during the year	–	–	–
Provisions used during the year	–	(0.1)	(0.1)
Balance at 31 December 2019	0.1	0.4	0.5

Other provisions relate to legal claims and are based on the Company's assessment of the probable cost of these activities.

Contingent liabilities

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.

There are no other contingent liabilities in the Company as at 31 December 2019.

41. Share capital

	5.5% Cumulative First Preference shares	5.0% Cumulative Second Preference shares	Ordinary Shares
In issue at beginning and end of the period	125,327	311,954	285,369,988

	2019 £m	2018 £m
Allotted, called up and fully paid		
Ordinary shares of 25 pence each	71.4	71.4
5.5% Cumulative First Preference shares of £1 each	0.1	0.1
5.0% Cumulative Second Preference shares of £1 each	0.3	0.3
	71.8	71.8

Refer to note 20 for details of the rights to dividends, voting rights and return of capital relating to the Preference shares.

Dividends payable for the First and Second Preference shares were £22,491 (2018: £22,491).

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.

For proposed Ordinary dividends see the consolidated income statement on page 91.

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 2019 was 1,245,133 (2018: 968,287) and at that date had a market value of £4.0 million (2018: £2.6 million).

In 2019, the amount of reserves of Morgan Advanced Materials plc that may be distributed under Section 831(4) of the Companies Act 2006 was £222.4 million (2018: £220.2 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:

	2019 £m	2018 £m
Transactions with subsidiaries	2.7	3.0
Income from management services	4.3	4.3
Net interest income	12.8	4.5
Dividend income	9.8	11.3
Loans owed by related parties	24.3	20.6
Other amounts owed by related parties	3.0	5.9
Other amounts owed to related parties	2.7	3.0
Transactions with associates		
Loans made to associate	–	1.0
Loans repaid by associate	–	1.0

44. Fixed asset investments

In accordance with Section 409 of the Companies Act 2006, a full list of related undertakings as at 31 December 2019 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	84.61%
Morgan Technical Ceramics Australia Pty Ltd	Australia	4 Redwood Drive, Clayton, VIC 3168, Australia	100.00%
Morganite Australia Pty Ltd[12]	Australia	Unit 4, 92-100 Belmore Road, Riverwood, NSW 2210, 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	84.61%
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%

44. Fixed asset investments continued

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
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	101, Building 4, No. 188 Jialingjiang Road, 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%
Beijing Morgan Ceramics Co. Ltd[15] (in liquidation)	China	6th Floor, building 17, No. A1Chaoqian Road, Changping District, Beijing 102200, 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%
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	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%
Ceramicas Termicas S.A.	Guatemala	20 Calle 1860, Apartamento 2, Zona 10, Guatemala City, Guatemala	100.00%
Refractarios Multiples S.A.	Guatemala	Km. 34.5, Ruta al Pacífico, Palín, Escuintla, Guatemala	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 Delle Rogge 6, Casalpusterlengo, 26841 LODI, Italy	100.00%

44. Fixed asset investments continued

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
Morgan Carbon Italia S.R.L.	Italy	Via Roma 338, Martinsicuro Terni, 64014, Italy	100.00%
Morganite Carbon Kabushiki Kaisha	Japan	30-31 Enoki-Cho, Suita City, Osaka 564-0053, Japan	100.00%
Shin-Nippon Thermal Ceramics Corporation[7]	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%
Gunac 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%
Thermal Ceramics Benelux B.V.	Netherlands	Tramweg 27, 3255 MB Oude Tonge, 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%
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	Juan Pablo II, no. 6, 2, Local A, 12003 Castellon, Spain	100.00%
Morganite Española S.A.	Spain	Juan Pablo II, no 6. 2e Local A, 12003 Castellon, Spain	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	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%
Morgan Ceramics Middle East FZE	United Arab Emirates	Post Box 16426, 404B, Business Centre, 4 RAK Economic Zone, Ras Al Khaimah, United Arab Emirates	100.00%
Certech International Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
MCCo Limited[7]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
MNA Finance Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan Electro Ceramics Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan Europe Holding Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan European Finance Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan Finance Management Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan Holdings Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan International Holding Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morgan North America Holding Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%

Notes to the Company balance sheet
continued

44. Fixed asset investments continued

Name of undertaking	Country of incorporation	Registered office address	% shareholding owned by the Group
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	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morganite Carbon Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Morganite Crucible Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, 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	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Petty France Investment Nominees Limited[1]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
TCG Guardian 1 Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
TCG Guardian 2 Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Terrassen Holdings Limited[8]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
The Morgan Crucible Company Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Thermal Ceramics Europe Limited[7]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Thermal Ceramics Limited[7]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	100.00%
Thermal Ceramics UK Limited	United Kingdom	Tebay Road, Bromborough, Wirral, CH62 3PH, UK	100.00%
Clearpower Ltd[21]	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	90.00%
Jemmtec Ltd[22]	United Kingdom	Magma Ceramics, Low Road, Earlsheaton, Dewsbury, West Yorkshire WF12 8BU, UK	34.96%
Law Debenture MC Senior Pension Trust Corporation	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	n/a
Morgan Crucible Pension Trustees Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	n/a
Morgan Group Pension Scheme Trustees Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	n/a
Morgan Group Senior Staff Pension Trustees Limited	United Kingdom	Quadrant, 55-57 High Street, Windsor, Berkshire, SL4 1LP, UK	n/a
Certech, Inc.[23]	United States	1 Park Place West, Wood-Ridge, New Jersey 07075, USA	100.00%
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	22 N. Plains Industrial Road, Suite 1, Wallingford, Connecticut 06492, USA	100.00%
Morganite Inc.[23]	United States	4000 West Chase Blvd, Suite 170, Raleigh, North Carolina 27607, USA	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

	2019 £m	2018 £m
Derivative financial assets		
Forward foreign exchange contracts non-designated	6.6	4.6
Derivative financial liabilities		
Forward foreign exchange contracts non-designated	(4.6)	(2.9)

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 – inputs other than quoted prices included within Level 1 that are observable for the asset or liability either directly (ie as prices) or indirectly (ie derived from prices).
- 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

	2015 Results before specific adjusting items restated[1] £m	2016 Results before specific adjusting items restated[1] £m	2017 Results before specific adjusting items restated[1,3] £m	2018 Results before specific adjusting items £m	**2019 Results before specific adjusting items £m**
Revenue	884.1	958.8	1,001.4	1,033.9	**1,049.5**
Profit from operations before restructuring costs, other items and amortisation of intangible assets	110.6	116.8	120.7	124.8	**134.2**
Restructuring costs and other items:					
Restructuring costs	(3.8)	(1.4)	–	–	**–**
Gain on disposal of properties	0.5	0.5	–	–	**–**
Profit from operations before amortisation of intangible assets	107.3	115.9	120.7	124.8	**134.2**
Amortisation of intangible assets	(5.2)	(6.5)	(7.3)	(8.0)	**(8.1)**
Operating profit	102.1	109.4	113.4	116.8	**126.1**
Net financing costs	(18.1)	(20.0)	(22.5)	(13.2)	**(16.9)**
Share of profit of associate (net of income tax)	0.3	0.6	0.2	0.8	**0.5**
Profit before taxation	84.3	90.0	91.1	104.4	**109.7**
Income tax expense	(24.9)	(26.9)	(26.9)	(29.0)	**(29.9)**
Profit after taxation before discontinued operations	59.4	63.1	64.2	75.4	**79.8**
Discontinued operations	0.7	(0.1)	(1.0)	(1.4)	**0.7**
Profit for the period	60.1	63.0	63.2	74.0	**80.5**
Assets employed					
Property, plant and equipment	256.7	303.7	297.8	314.5	**317.2**
Right-of-use assets	–	–	–	–	**49.1**
Intangible assets	229.8	240.4	217.0	215.6	**204.8**
Investments and other receivables	10.7	10.7	11.7	12.2	**12.2**
Deferred tax assets	4.4	6.1	9.1	6.9	**6.0**
Net current assets	151.3	91.6	129.4	106.8	**125.1**
Total assets less current liabilities	652.9	652.5	665.0	656.0	**714.4**
Employee benefits: pensions	204.5	271.1	218.0	190.4	**156.8**
Non-current provisions and other items	259.7	208.4	202.2	177.4	**240.5**
Deferred tax liabilities	2.3	8.3	10.5	11.0	**4.9**
	186.4	164.7	234.3	277.2	**312.2**
Equity					
Total equity attributable to equity holders of the Parent Company	149.8	120.8	195.2	232.8	**270.7**
Non-controlling interests	36.6	43.9	39.1	44.4	**41.5**
Total equity	186.4	164.7	234.3	277.2	**312.2**
Ordinary dividends per share	11.0p	11.0p	11.0p	11.0p	**11.0p**
Earnings per share					
Continuing and discontinued operations					
Basic earnings per share	11.9p	18.4p	37.8p	16.2p	**25.7p**
Diluted earnings per share	11.9p	18.4p	37.5p	16.1p	**25.5p**
Headline earnings per share[4]	20.8p	22.7p	22.8p	26.7p	**28.0p**
Diluted headline earnings per share[4]	20.8p	22.7p	22.7p	26.6p	**27.8p**

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 2014-2017 have been restated to reflect these changes.
2. 2014 has been restated for the reclassification of deferred tax assets and liabilities.
3 2017 has been restated to reflect the adoption of IFRS 15 *Revenue from Contracts with Customers*. Figures for 2014-2016 have not been restated for these changes.
4. Definitions of these non-GAAP measures can be found in the glossary of terms on page 160, reconciliations of the statutory results to the adjusted measures can be found on pages 42 to 44.

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 headline 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 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 headline 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.
Headline earnings per share (EPS)[1]	Headline 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.
Return on invested capital (ROIC)[1]	Group headline 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 42 to 44.

Shareholder information

Analysis of Ordinary shareholdings as at 31 December 2019

		Number of holdings	% of total holdings	Number of shares	% of share capital
Size of holding	1-2,000	4,351	75.76%	2,216,958	0.78%
	2,001-5,000	706	12.29%	2,259,686	0.79%
	5,001-10,000	261	4.55%	1,838,731	0.64%
	10,001-50,000	208	3.62%	4,371,711	1.53%
	50,001-100,000	54	0.94%	4,044,641	1.42%
	100,001 and above	163	2.84%	270,638,261	94.84%
		5,743	**100.00**	**285,369,988**	**100.00%**
Holding classification	Individuals	5,027	87.53%	7,874,591	2.76%
	Nominee companies	379	6.60%	258,584,663	90.61%
	Trusts (pension funds etc.)	5	0.09%	30,689	0.01%
	Others	332	5.78%	18,880,045	6.62%
		5,743	**100.00%**	**285,369,988**	**100.00%**

Key dates

7 May 2020	2020 Annual General Meeting (AGM), commencing at 10:30am.
30 July 2020	Half-Year results announced via the Regulatory News Service and on the Company's website. Since 2015 Half-Year results are available online only.

Dividend payment dates

22 November 2019	An interim cash dividend of 4.0 pence per Ordinary share of 25 pence each was paid to shareholders registered at the close of business on 1 November 2019.
22 May 2020	Subject to shareholders' approval at the 2020 AGM, a final cash dividend of 7.0 pence per Ordinary share of 25 pence each will be paid to shareholders registered at the close of business on 1 May 2020.
1 April 2020 and 1 October 2020	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
continued

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	Quadrant, 55-57 High Street, Windsor, Berkshire SL4 1LP 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 EHS reports are also available to view and download.
Company registrars	With effect from 3 June 2019 Equiniti Limited were appointed as the Company's Registrar in place of Link Asset Services. Equiniti Limited, Aspect House, Spencer Road, Lancing, West Sussex, BN99 6DA Telephone (in the UK): 0371 384 2412 Telephone (from outside the UK): +44 (0)121 415 0845 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 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, 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.

Company details

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.

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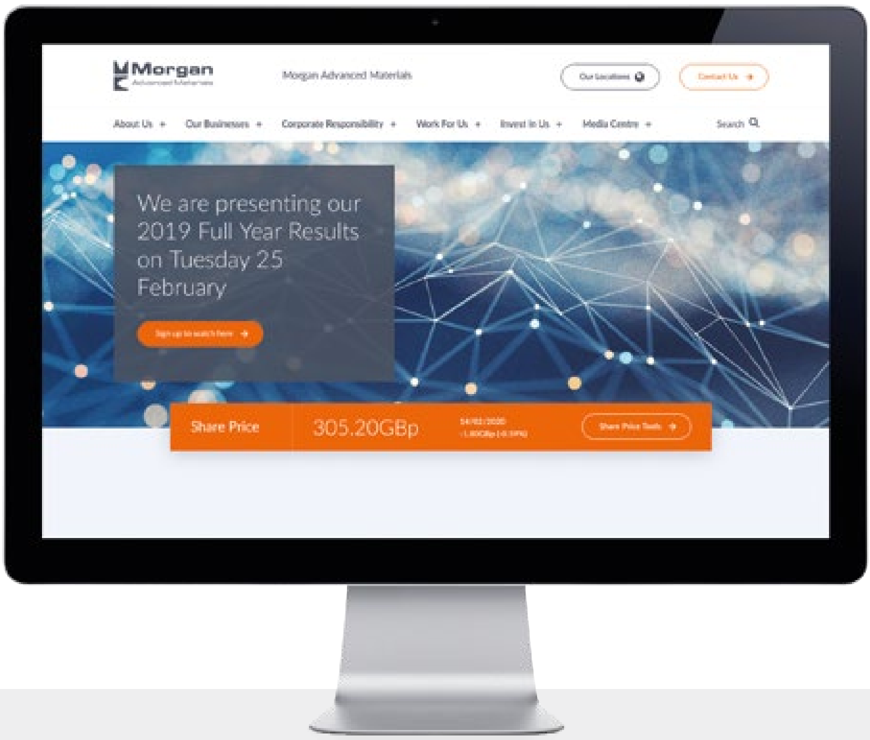

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This Annual Report is available at **www.morganadvancedmaterials.com**

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