VESUVIUS PLC

28 February 2019

Results for the year ended 31 December 2018

Record performance across all Regions and Business Units

Vesuvius plc, a global leader in molten metal flow engineering and technology, announces its preliminary audited results for the year ended 31 December 2018.

Financial summary

	2018 (£m)	2017 (£m)	Year-on-year change	Underlying change[1]
Revenue	1,798.0	1,683.9	+6.8%	+10.7%
Trading Profit[2]	197.2	165.5	+19.1%	+24.1%
Return on Sales[2][3]	*11.0%*	*9.8%*	*+120bps*	*+120bps*
Operating Profit	164.5	109.7	+50.0%	
Headline Profit Before Tax[2]	188.9	152.9	+23.5%	
Profit Before Tax	156.2	97.1	+60.9%	
Profit	145.1	44.4	+226.8%	
Headline Earnings[2]	133.7	110.1	+21.4%	
Headline EPS[2] (pence)	49.6	40.7	+21.9%	
Statutory EPS (pence)	51.3	14.1	+263.8%	
Operating cash flow[2]	179.4	171.5	+4.6%	
Net Debt	248.0	274.3	-9.6%	
Dividend (pence)	19.8p	18.0p	+10.0%	

[1] Underlying basis is at constant currency and excludes separately reported items and the impact of acquisitions and disposals
[2] For definitions of non-GAAP measures, refer to Note 16 in the financial statements
[3] These numbers are rounded to 1 decimal place or 10 basis points in-line with our historical disclosure

Key Points

- Underlying revenue up 10.7% with both our Steel and Foundry Divisions outperforming underlying markets
- Underlying trading profit up 24.1% to £197.2m
- Significant improvement in return on sales to 11.0% (+120bps)
- Successfully recovered the impact of 2017's temporary headwinds
- Implementation of our restructuring programmes fully on track
- Improved working capital to revenue ratio at 23.9% versus 24.9% at the end of 2017
- Strengthened balance sheet with Net Debt / LTM EBITDA at 1.0x versus 1.3x at the end of 2017
- Full year dividend increased by 10.0% to 19.8 pence per share
- On 27 February 2019 the Group signed an agreement to acquire CCPI, a specialty refractory producer in Ohio, USA

Patrick André, Chief Executive of Vesuvius, commented:

"2018 was a year of record performance for Vesuvius, underpinned by the benefits derived from our self-help restructuring programmes and strong commercial performances, combined with a positive orientation in the majority of our steel and foundry end-markets. Looking forward, we plan to continue growing our revenue and accelerate and intensify efforts to optimise our costs, to support our drive towards further profitable growth. For these reasons, and despite a less favourable market environment, the Board is confident that, in comparison to 2018, further progress will be made in 2019."

For further information, please contact:

Shareholder/analyst enquiries:

Vesuvius plc	Patrick André, Chief Executive	+44 (0) 207 822 0000
	Guy Young, Chief Financial Officer	+44 (0) 207 822 0000
	Euan Drysdale, Group Head of Corporate Finance	+44 (0) 207 822 0027
	Virginia Skroski, Investor Relations Manager	+44 (0) 207 822 0016

Media enquiries:
MHP Communications Andrew Jaques / Ollie Hoare / Peter Lambie +44 (0) 203 128 8100

Vesuvius management will make a presentation to analysts and investors on 28 February 2019 at 9.30 (GMT) in Grocers' Hall, Princes Street, London, EC2R 8AD. For those unable to attend in person, an audio webcast and conference call will also be available. Please register for the call via the following URL: https://edge.media-server.com/m6/p/ibi8vb7m (Dial in details: UK participant dial in +44(0)20 7192 8000; US participant dial in +1 631 510 7495; confirmation code 7172259). The presentation will be broadcast live on Vesuvius' website: https://www.vesuvius.com/en/investors.html and an archive version of the presentation will be available on the website later that day.

About Vesuvius plc

Vesuvius is a global leader in molten metal flow engineering and technology principally serving the steel and foundry industries.

We develop innovative and customised solutions, often used in extremely demanding industrial environments, which enable our customers to improve their manufacturing processes, enhance product quality and reduce costs. These include flow control solutions, advanced refractories and other consumable products and increasingly, related technical services including data capture.

We have a worldwide presence. We serve our customers through a network of low-cost manufacturing plants located close to their own facilities, and embed our industry experts within their operations, who are all supported by our global technology centres.

Our core competitive strengths are our market and technology leadership, strong customer relationships, well established presence in developing markets and our global reach, all of which facilitate the expansion of our addressable markets.

Our ultimate goal is to create value for our customers, and to deliver sustainable, profitable growth for our shareholders giving a superior return on their investment whilst providing each of our employees with a safe workplace where he or she is recognised, developed and properly rewarded.

Forward looking statements

This announcement contains certain forward looking statements which may include reference to one or more of the following: the Group's financial condition, results of operations, cash flows, dividends, financing plans, business strategies, operating efficiencies or synergies, budgets, capital and other expenditures, competitive positions, growth opportunities for existing products, plans and objectives of management and other matters.

Statements in this announcement that are not historical facts are hereby identified as "forward looking statements". Such forward looking statements, including, without limitation, those relating to the future business prospects, revenue, working capital, liquidity, capital needs, interest costs and income, in each case relating to Vesuvius, wherever they occur in this announcement, are necessarily based on assumptions reflecting the views of Vesuvius and involve a number of known and unknown risks, uncertainties and other factors that could cause actual results, performance or achievements to differ materially from those expressed or implied by the forward looking statements. Such forward looking statements should, therefore, be considered in light of various important factors that could cause actual results to differ materially from estimates or projections contained in the forward looking statements. These include without limitation: economic and business cycles; the terms and conditions of Vesuvius' financing arrangements; foreign currency rate fluctuations; competition in Vesuvius' principal markets; acquisitions or disposals of businesses or assets; and trends in Vesuvius' principal industries.

The foregoing list of important factors is not exhaustive. When considering forward looking statements, careful consideration should be given to the foregoing factors and other uncertainties and events, as well as factors described in documents the Company files with the UK regulator from time to time including its annual reports and financial statements.

You should not place undue reliance on such forward looking statements which speak only as of the date on which they are made. Except as required by the Rules of the UK Listing Authority and the London Stock Exchange and applicable law, Vesuvius undertakes no obligation to update publicly or revise any forward looking statements, whether as a result of new information, future events or otherwise. In light of these risks, uncertainties and assumptions, the forward looking events discussed in this announcement might not occur.

Vesuvius plc, 165 Fleet Street, London EC4A 2AE
Registered in England and Wales No. 8217766
LEI: 213800ORZ521W585SY02
www.vesuvius.com

Vesuvius plc

Results for the year ended 31 December 2018

Vesuvius made further progress in 2018 in line with our objectives. We benefited in the year from 4.6% growth in global steel production (as reported by the World Steel Association). With the exception of light vehicles, we also experienced positive momentum in the majority of Foundry end markets during 2018, with particular strength in general engineering, heavy trucks (excluding China and EMEA), mining equipment, construction and agricultural equipment.

We continued to deliver attractive revenue growth, outperforming underlying markets in our key developing markets of China, India, Latin America, EEMEA (Eastern Europe, Middle-East (including Turkey) and Africa) and South East Asia, supported by our focus on innovation and technology. We also delivered strong revenue growth in Europe (EU28) and the United States. This performance was supported by positively oriented end markets, market share gains in Flow Control and Foundry and selling price increases.

£m	2018 Reported	Acquisitions /(Disposals)	2018 Underlying	2017 Reported	Currency	Acquisitions/ (Disposals)	2017 Underlying	Reported % change	Underlying % change
Revenue	**1,798.0**	**(17.5)**	**1,780.5**	1,683.9	(51.6)	(24.0)	1,608.3	+6.8%	+10.7%
Trading Profit	**197.2**	**(0.7)**	**196.5**	165.5	(6.8)	(0.4)	158.3	+19.1%	+24.1%
Return on Sales %	**11.0%**	**-**	**11.0%**	9.8%	-	-	9.8%	+120bps	+120bps

Group trading performance

Group revenue was £1,798.0m, an increase of 6.8% versus 2017 on a reported basis. Underlying Group revenue, adjusted for the effects of foreign exchange and disposals, increased by 10.7% (volume 4.9%, price 5.8%). Trading profit for the year was £197.2m (2017: £165.5m), up 19.1% on a reported basis and up 24.1% on an underlying basis. Return on sales increased by 120 basis points on a reported and underlying basis to 11.0% in 2018 (2017: 9.8% reported and underlying). These numbers are rounded to 1 decimal place or 10 basis points in-line with our historical disclosure.

Underlying performance is adjusted for the divestment of BMI, an Advanced Refractories installation business, in October 2018.

Strategic progress

Vesuvius' core strategic objective is to deliver long-term sustainable and profitable growth. We have a clear strategy to achieve this target centred around five key execution priorities, which were confirmed by a strategic review we conducted in H1 2018. Our progress in 2018 against each of these execution priorities is detailed below:

- **Reinforce our technology leadership**
  - We continue to spend c.2% of our total revenue on Research and Development, which is significantly higher than most competitors. As a result, we were again able to improve the percentage of revenue accounted for by 'New Products' from 14.5% in 2017 to 15.4% in 2018
- **Increase the penetration of our value-creating solutions**
  - The growth of sales in our Steel Flow Control business unit and Foundry Division outperformed underlying market growth in most areas, confirming the mounting interest of customers in our advanced solutions
- **Capture the growth in developing markets**
  - The revenue and volume growth rates of both our Steel and Foundry Divisions in our key developing markets of China, India, Latin America, EEMEA and South East Asia were significantly higher than the underlying markets. Steel Division revenue in these markets grew by 17.6% versus steel production growth of 5.7%, and the Foundry Division grew by 10.8%
- **Improve our cost leadership and margins**
  - In addition to the already achieved recurring cash savings of £43.2m at the end of 2017, during 2018 we achieved an additional £14.0m of savings, which exceeded our expectations
- **Develop our Technical Service offering**
  - Global revenue from Technical Service offering reached £96.5m in 2018, up 16.1% from 2017 on a constant currency basis

However, the strategic review also highlighted the possibility of accelerating the delivery of our strategic objective by:

- **Reinforcing our presence in the high-end, high quality segments of the steel and foundry markets**, which are growing faster than the average markets and where our Flow Control and Foundry solutions can play a decisive role in supporting our

customers' efforts to improve the quality and performance of their finished products. Our R&D and commercial organisations are being reinforced and focused to support this

- **Accelerating and intensifying our efforts to optimise our manufacturing cost base**. Beyond the already announced restructuring programmes, several other potential optimisation opportunities are currently being studied, with the results of these studies expected in the course of 2019
- **Adopting an entrepreneurial, decentralised, non-matrix organisation**, to increase the speed of execution and the level of energy across the Group. This new organisation is now fully operational and supported by the introduction of our new Group CORE values of Courage, Ownership, Respect and Energy, and by the promotion of a new generation of talented managers to several key positions

Foreign exchange

The net impact of average 2018 exchange rates compared to 2017 averages has been a 2018 headwind of £6.8m at trading profit level, the main driver being a 3.5% strengthening in Sterling against the US Dollar as well as appreciation against developing markets currencies in which we operate.

Restructuring

We remain on track with the implementation of our restructuring programmes and delivered an incremental £14.0m recurring cash saving during the year, in part related to the three European plant closures announced in July 2018. This was ahead of our expectations.

Our original restructuring programme launched in 2015 is almost complete, with £8.4m savings still to be delivered by 2020.

Our new restructuring programme launched in March 2018 is well underway, and we expect to deliver cash savings of £22.0m for a one-off cash charge of £19.3m and £15.0m of capital expenditure to support the implementation of the programme. £17.3m of cash charge and £2.1m of capital expenditure have been accounted for at the end of 2018. We have £16.4m of savings left which will be delivered by 2021.

In 2019 we are targeting the delivery of a further £14.0m of recurring cash savings, leaving £8.5m to be delivered in 2020 and £2.3m in 2021.

We are engaged in studies to expand further our self-help restructuring programmes. The result of these studies is expected in the course of 2019.

In parallel with these restructuring programmes, Vesuvius is reinforcing its focus on operational excellence and continuous improvement across its manufacturing operations.

Working Capital

We made further progress in our efforts to reduce working capital, with a Working Capital/Revenue ratio of 23.9% at year end 2018, versus 24.9% in 2017. Trade working capital increased by only £15.2m on a constant currency basis in 2018 despite constant currency revenue growth of £165.7m. Looking at the key components of trade working capital, debtor and creditor days were major areas of success, falling 2.2% and increasing 12.8% year-on-year, respectively. Further progress remains to be achieved, however, particularly in our inventory management.

Financial position

Our Net Debt / LTM EBITDA ratio was 1.0x at 31 December 2018 versus 1.3x at 31 December 2017. Net Debt reduced by £26.3m from £274.3m at the end of 2017 to £248.0m at year end 2018, as a result of strong cash generation. The main drivers of the decrease were the impact of strong cash conversion partially offset by tax payments, restructuring costs, purchase of Company shares for the Vesuvius Group Employee Share Ownership Plan ('ESOP'), and dividends paid.

The weighted average maturity of Vesuvius' committed debt facilities now stands at approximately five years.

Taxation

Following a period of sustained profitability in our US business, we have decided to substantially increase the amount reflected on our balance sheet in respect of the previously unrecognised value of our US tax losses and other temporary differences. This additional deferred tax recognition is £39.5m in the year. £32.2m of that amount is recognised in our Group Income Statement, and £7.3m, relating to historic US pensions costs, is recognised in the Group Statement of Comprehensive Income.

With a more comprehensive recognition of this asset in the US, we have also decided that it is now more appropriate to present the annual utilisation of that US deferred tax asset, which offsets our US taxable headline profits, as part of our headline tax charge, rather than as part of the tax charge on separately reported items in the Group Income Statement. This has increased the headline tax charge in 2018 by £7.8m, increasing the effective rate of tax on headline profit before tax and share of post-tax profits from joint ventures by 4.2%.

We previously reported that we expected the Group's effective tax rate from 2018 onwards to be adversely impacted by US tax reform, particularly the provisions of the Base Erosion and Anti-Abuse Tax ('BEAT'). Our further analysis of these provisions concluded that the impact of the BEAT was not material to Vesuvius' tax position. However, the new Global Intangible Low-Taxed Income ('GILTI') rules introduced as part of the tax reform has had an impact on the tax position of the Group and gave rise to an increase in the headline tax charge of £2.4m in 2018, increasing the effective rate of tax on headline profit before tax and before the share of post-tax profits from joint ventures by 1.3%.

We expect the Group's effective rate of tax on headline profit before tax and before the share of post-tax profits from joint ventures to be around 28% in 2019.

Quality, health and safety

Vesuvius places great emphasis on the importance of quality, health and safety in the workplace and in the communities in which we operate. Reliability in quality and delivery is vital to our customers as they use Vesuvius' products in critical areas of their own processes. The level of risk attached to a catastrophic failure is often such that, for people and equipment, no compromise can be accepted. Our safety performance improved markedly in 2018 with a lost time injury ('LTI') frequency rate of 1.3 versus 1.6 in 2017 and 1.7 in 2016. This is the best result we have ever achieved and highlights the Group's efforts to evolve rapidly towards a best in class global organisation in terms of safety. However, we suffered a fatality of one of our contractors at a site in South America and we have seen a small increase in our LTI severity rate from 63 to 77 Lost Days per million hours worked. For these reasons, and because the only acceptable objective is zero accidents, we remain unsatisfied with our safety performance and will strive to continue making progress in 2019 and beyond.

Dividend

The Board has recommended a final dividend of 13.8 pence per share (2017: 12.5 pence per share), a 10.4% increase on the final dividend paid in 2017. This will result in a total dividend for the year of 19.8 pence per share (2017: 18.0 pence per share) and represents a 10.0% increase to the full year dividend. The Board remains committed to delivering long-term dividend growth, provided that this is supported by underlying earnings, cash flows and is justified in the context of capital expenditure requirements and the prevailing market outlook. If approved at the Annual General Meeting on 15 May 2019, the final dividend will be paid on 24 May 2019 to shareholders on the register at the close of business on 23 April 2019. The last date for receipt of elections from shareholders for the Vesuvius Dividend Reinvestment Plan will be 2 May 2019.

Post Balance Sheet Event

On 27 February 2019 the Group signed an agreement to acquire the entire issued share capital of CCPI Inc ("CCPI"), a specialty refractory producer focused on tundish (steel continuous casting) applications (65% of sales) and aluminium (35% of sales). CCPI is based in Ohio, USA, and will become part of the Group's Advanced Refractories business unit. The transaction values CCPI at US$43.4 million (£33.1 million) on a cash and debt free basis. The acquisition is expected to close within the coming week.

Outlook

Despite a moderate slowdown in growth since the fourth quarter of 2018, we still expect our main Steel and Foundry markets to register a positive growth rate in 2019, albeit at a lower level as compared with the growth rates recorded in 2017 and 2018. In this environment, we plan to continue growing our revenue and accelerate and intensify efforts to optimise our costs, to support our drive towards further profitable growth. For these reasons, the Board is confident that, in comparison to 2018, further progress will be made in 2019.

Operational Review

Vesuvius comprises two Divisions, Steel and Foundry. The Steel Division operates as three business lines, Steel Flow Control, Steel Advanced Refractories and Digital Services.

Steel Division

According to the World Steel Association, global steel production in 2018 increased by 4.6% compared with 2017. Production in the majority of major steel producing countries was up year-on-year. Steel volume growth in the developed markets of Europe (EU28) and the United States was -0.3% and +6.2%, respectively. The growth momentum continued in our key developing markets of China (+6.6%), India (+4.9%), Latin America (+1.2%), EEMEA (Eastern Europe, Middle East (including Turkey) and Africa) (+2.9%) and South East Asia (+11.3%).

Vesuvius' Steel Division reported revenues of £1,236.7m in 2018, an increase of 7.7% compared to 2017. On an underlying basis, Steel Division revenue was up 11.9%. This higher growth rate relative to global steel production is a result of three factors: (1) high exposure of Flow Control to the fastest growing segment of the steel market; (2) market share gains in Flow Control; and (3) selling price increases in both Flow Control and Advanced Refractories mitigated by a decrease in market share for Advanced Refractories in some regions where priority was given to selling price increases to offset raw material and other cost inflation.

On a reported basis, our trading profit improved 27.9% year-on-year. On an underlying basis, trading profit increased 32.6%, with return on sales increasing by 160 basis points.

Steel Division	2018 (£m)	2017* (£m)	Change (%)	Underlying change (%)
Steel Flow Control Revenue	662.6	614.2	+7.9%	+11.5%
Steel Advanced Refractories Revenue	541.1	502.3	+7.7%	+12.5%
Digital Services Revenue	33.0	32.2	+2.4%	+10.8%
Total Steel Revenue	**1,236.7**	**1,148.7**	**+7.7%**	**+11.9%**
Total Steel Trading Profit	**128.3**	**100.4**	**+27.9%**	**+32.6%**
Total Steel Return on Sales	***10.4%***	***8.7%***	***+160bps***	***+160bps***

**Since 1 January 2018, some of the products previously included under the Digital Services business unit have been allocated to Flow Control and Advanced Refractories. For this reason, we have restated 2017 financials to ensure comparability with 2018 performance. The overall Steel Division figures are unchanged.*

Steel Flow Control

The Flow Control business unit supplies the global steel industry with consumable ceramic products, systems, robotics, digital services and technical services. These products are used to contain, control and monitor the flow of molten steel in the continuous casting process. The consumable ceramic products that Vesuvius supplies have a short service life (often a matter of a few hours) due to the significant wear caused by the extremely demanding environment in which they are used. These products must withstand extreme temperature changes, whilst resisting liquid steel and slag corrosion. In addition, the ceramic parts in contact with the liquid steel must not in any way contaminate it. The quality, reliability and consistency of these products and the associated digital services we provide are therefore critical to the quality of the finished metal being produced and the productivity, profitability and safety of our customers' processes.

Steel Flow Control Revenue	2018 (£m)	2017 (£m)	Change (%)	Underlying change (%)
Americas	216.2	206.0	5.0%	+13.3%
Europe, Middle East & Africa (EMEA)	266.2	242.3	9.8%	+10.0%
Asia-Pacific	180.2	165.9	8.6%	+11.5%
Total Steel Flow Control Revenue	**662.6**	**614.2**	**+7.9%**	**+11.5%**

Steel Flow Control reported revenues of £662.6m in 2018, an increase of 7.9% compared to 2017 on a reported basis, whilst underlying revenue increased by 11.5%. All regions outperformed underlying steel production volume growth in terms of both revenue and volume growth.

The Americas was our fastest growing region, with underlying revenues increasing 13.3% to £216.2m, against a 3.3% increase in steel production volumes. We outperformed in both North and South America relative to steel production, driven by market share gains and selling price increases. Steel production in EMEA increased by 1.4% in 2018, and Vesuvius outperformed the market with underlying revenue up 10.0% to £266.2m, reflecting both market share gains and the effects of increased selling prices to offset raw material and other cost inflation. Underlying revenue increased by 11.5% in Asia-Pacific in 2018 to £180.2m, compared to a 5.6% increase in steel production volume in the region. Revenue increased faster than underlying steel volumes in each of our key regional markets of China and India.

Steel Advanced Refractories

The Steel Advanced Refractories business unit supplies complete value-added solutions to its customers including specialist refractory materials, advanced installation technologies (including robots), computational fluid dynamics capabilities and lasers. The specialist refractory materials are subject to extreme temperatures, corrosion and abrasion, they are in the form of powder mixes, which are spray-applied or cast onto the vessel to be lined ('monolithics') and refractory shapes (e.g. bricks, pads, dams and other larger precast shapes). The service life of the products that Advanced Refractories supplies into the steel making process can vary (some a matter of hours and others for a period of years) based upon the type of refractory and the level of wear caused by the demanding environment in which they are used. An integral part of our success depends upon our best-in-class installation technologies (including robots) and lasers to track the performance of installed Vesuvius' refractories as well as the strong level of collaboration with our customers.

Steel Advanced Refractories Revenue	**2018 (£m)**	**2017 (£m)**	**Change (%)**	**Underlying change (%)**
Americas	171.1	155.4	+10.1%	+22.9%
Europe, Middle East & Africa (EMEA)	254.4	236.2	+7.6%	+8.6%
Asia-Pacific	115.6	110.7	+4.5%	+8.7%
Total Steel Advanced Refractories Revenue	**541.1**	**502.3**	**+7.7%**	**+12.5%**

Steel Advanced Refractories reported revenues of £541.1m in 2018, an increase of 7.7% compared to 2017 on a reported basis, whilst underlying revenue increased 12.5%. The strong sales growth was supported by selling price increases to offset raw material and other cost inflation.

We achieved underlying revenue growth in each of our key regions with the Americas up 22.9%, EMEA up 8.6% and Asia-Pacific up 8.7%. The strong sales growth achieved in all the regions was supported by selling price increases to offset raw material and other cost inflation. However, we experienced some market share loss especially in North Asia and in certain European countries as priority was given to selling price increases to recoup raw material and other cost inflation.

Digital Services

The Digital Services business unit offers digital products to our customers to make their underlying processes more efficient and reliable. Digital Services focuses on providing products that enhance the control and monitoring of our customers' production processes, complementing Vesuvius' strong presence and expertise in molten metal engineering to create new technologies and integrate them into expert process management systems. The products provided by Digital Services include temperature sensors, oxygen, hydrogen and sublance probes, iron oxide and metal sampling for the steel, aluminium and foundry industries. By using these technologies customers can focus on critical parameters within their processes, enabling them to refine their production methods to improve quality, lower production costs and maximise efficiency.

Digital Services Revenue	2018 (£m)	2017 (£m)	Change (%)	Underlying change (%)
Americas	20.5	19.9	+2.8%	+18.0%
Europe, Middle East & Africa (EMEA)	12.3	12.2	+0.8%	-0.2%
Asia-Pacific	0.2	0.1	+113.2%	+115.4%
Total Digital Services Revenue	**33.0**	**32.2**	**+2.4%**	**+10.8%**

Digital Services generated revenues of £33.0m, an increase of 2.4% year-on-year on a reported basis. On an underlying basis, revenues increased 10.8%. The strong sales growth in the Americas was due to market share gains and increased penetration of our products. In EMEA, our sales growth was impacted by Russia where priority was given to improving profitability. In Asia-Pacific, we continued to increase the penetration of our products in India, gaining market share with new and existing customers.

Foundry Division

The Foundry Division is a world leader in the supply of consumable products, technical advice and application support to improve the performance and quality of ferrous and non-ferrous castings. Vesuvius operates under the brand FOSECO in the foundry market. The foundry process is highly sequential and is critically dependent on consistency of product quality and productivity optimisation. Working alongside customers at their sites, our engineers provide on-site technical expertise in addition to advanced computational fluid dynamics capabilities to develop the best customised solutions. The conditioning of molten metal, the nature of the mould used and, especially, the design of the way metal flows into the mould are key parameters in a foundry, determining both the quality of the finished castings and the labour, energy and metal usage efficiency of the foundry. Vesuvius' products and associated services to foundries improve these parameters.

Foundry Division	2018 (£m)	2017 (£m)	Change (%)	Underlying change (%)
Foundry Revenue	561.3	535.2	+4.9%	+8.2%
Foundry Trading Profit	68.9	65.1	+5.7%	+10.9%
Foundry Return on Sales	***12.3%***	***12.2%***	***+10bps***	***+30bps***

With the exception of light vehicles, there was positive momentum in the majority of Foundry end markets during 2018, with particular strength in general engineering, heavy trucks (excluding China and EMEA), mining equipment, construction and agricultural equipment.

Foundry reported revenues of £561.3m in 2018, an increase of 4.9% compared to 2017 on a reported basis, whilst underlying revenue increased 8.2%. On a reported basis, our trading profit improved 5.7% year-on-year. On an underlying basis, trading profit increased by 10.9%, with return on sales increasing by 30 basis points. Our sales growth in 2018 benefited from market share gains in the key product lines of feeding systems, filters and coatings as well as selling price increases. Trading profit also benefited from the ongoing organisational restructuring in Europe and North America, which is now focused on a rationalised, leaner structure. However, overall profitability was impacted by a time lag in selling price increases to compensate for raw material and other cost inflation, particularly in North Asia. Fused Silica, a specialised product line, also suffered from significant market weakness in the fourth quarter, particularly in China and EMEA, where customers chose to delay purchases and extend year end maintenance shutdowns.

Foundry Revenue	2018 (£m)	2017 (£m)	Change (%)	Underlying change (%)
Americas	119.2	111.2	+7.2%	+15.3%
Europe, Middle East & Africa (EMEA)	253.6	238.9	+6.2%	+7.2%
Asia-Pacific	188.5	185.1	+1.8%	+5.5%
Total Foundry Revenue	**561.3**	**535.2**	**+4.9%**	**+8.2%**

Underlying revenue in EMEA increased by 7.2% year-on-year as a result of growth across the majority of foundry end markets with particular strength in general engineering as well as some improvements in our business at European steel foundries, albeit

from a low base. In the Americas, despite weakness in US light vehicle production, underlying revenue increased by 15.3%, supported, in particular, by growth in the heavy truck and mining markets as well as increases in iron casting output related to construction and agricultural equipment. Furthermore, we were successful in gaining market share across all our key product lines aided by several important new product launches. In Asia-Pacific, underlying revenue increased by 5.5%, with sales increasing in all major markets. Our revenues in China were up 7%, driven by growth in engineering machinery and construction and agricultural equipment, and supported by successful new product launches. In India, where our revenues were only up 2%, we prioritised passing through raw material and other cost inflation, as well as managing customer risk and optimising working capital.

Financial Review

The following review considers a number of our financial KPIs and sets out other relevant financial information.

Basis of Preparation

All references in this financial review are to headline performance unless stated otherwise. See Note 16 to the Group Financial Statements.

Introduction

We continued to build on our financial strategy during 2018 and progressed in particular with the stabilisation of our European Shared Service Centre, consolidation of our global finance team, and reporting and control improvements. Our focus to continuously improve both service delivery and results will remain, along with our commitment to further improve working capital and business efficiency.

2018 Performance Overview

Strong end-market performance in 2018 has driven demand for our products in both Steel and Foundry and we have successfully outperformed the market in terms of growth. Reported revenue increased by £114.1m over the prior year and by £172.2m on an underlying basis. The restructuring programmes continued to deliver during 2018 with a total of £14.0m of incremental benefits reported. The increased revenue and restructuring benefits drove the higher reported trading profit of £197.2m, which was 19.1% higher than prior year. Return on sales for 2018 on a reported basis at 11.0% was higher than the prior year by 120bps. In a year of strong sales growth, our cash management performance was strong, achieving a 91% cash conversion, due largely to a continued focus on working capital management. As a result, we have decreased our net debt position and improved our leverage ratio of net debt to EBITDA to 1.0x from 1.3x at December 2017.

Dividend

The Board has recommended a final dividend of 13.8 pence per share to be paid, subject to shareholder approval, on 24 May 2019 to shareholders on the register at 23 April 2019. When added to the 2018 interim dividend of 6.0 pence per share paid on 21 September 2018, this represents a full-year dividend of 19.8 pence per share.

It remains the Board's intention to deliver long-term dividend growth, provided this is supported by underlying earnings, cash flows, capital expenditure requirements and the prevailing market outlook.

Capital allocation

We believe that the ideal leverage ratio for Vesuvius is somewhere between 1.25x - 1.75x net debt to EBITDA. This gives us a reasonable comfort zone to be able to cater for any potential economic downcycles. However, given we are currently below this range at approximately 1.0x net debt to EBITDA, it is increasingly relevant to consider our capital allocation priorities. In order of priority these are:

1. **Organic growth**. We have capital expenditure and restructuring programmes that we believe deliver the best possible returns to our shareholders.
2. **Inorganic growth**. We review acquisition opportunities against a strict set of assessment criteria, including: strategic fit; margin relative to Group target return on sales of 12.5%; return on capital.
3. **Return cash to shareholders**. In the event that our organic and inorganic growth opportunities leave us with residual cash, we will seek to return that to our shareholders.

Key Performance Indicators

We have identified a number of KPIs against which we have consistently reported. As with prior years, we measure our results on an underlying basis, which we adjust to ensure appropriate comparability between periods, irrespective of currency fluctuations and any business acquisitions and disposals.

This is done by:

- Restating the previous period's results at the same foreign exchange ('FX') rates used in the current period
- Removing the results of disposed businesses in both the current and prior years
- Removing the results of businesses acquired in both the current year and prior years

Therefore, for 2018, we have:

- Retranslated 2017 results at the FX rates used in calculating the 2018 results
- Removed the results of the BMI refractory installation business, which was disposed of during 2018

Objective: Deliver growth

KPI: Underlying revenue growth

Reported revenue for 2017 was £1,683.9m, which after FX translation effects and removing the impact of disposed businesses, equates to £1,608.3m on an underlying basis. The reported revenue in 2018 of £1,798.0m, when adjusted for disposals made, is £1,780.5m on an underlying basis, which is an increase of 10.7% year-on-year. The growth has been as a result of stronger end-market demand, selling price increases to offset raw material and other cost inflation, and business gains during the period.

	2018 Revenue			2017 Revenue				% change	
£m	**As reported**	**Acquisitions/ (Disposals)**	**Underlying**	As reported	Currency	Acquisitions/ (Disposals)	Underlying	Reported	Underlying
Steel	**1,236.7**	**(17.5)**	**1,219.2**	1,148.7	(35.0)	(24.0)	1,089.7	7.7%	11.9%
Foundry	**561.3**	**–**	**561.3**	535.2	(16.6)	–	518.6	4.9%	8.2%
Group	**1,798.0**	**(17.5)**	**1,780.5**	1,683.9	(51.6)	(24.0)	1,608.3	6.8%	10.7%

Objective: Generate sustainable profitability and create shareholder value

KPI: Trading profit and return on sales

We continue to measure underlying trading profit of the Group as well as trading profit as a percentage of sales, which we refer to as our return on sales or 'RoS'.

Trading profit of £197.2m increased by 24.1% on an underlying basis versus last year whilst RoS on an underlying basis was 11.0%, a 120bps improvement over 2017. The improved trading profit is due in part to the higher revenue, along with the ongoing delivery of benefits from the restructuring programmes.

In a globally favourable market environment our Steel and Foundry Divisions registered strong commercial performances and continued to outperform the general market growth in terms of volume. The pricing of our products was successfully adjusted to compensate for the sharp increase in raw material prices which had negatively impacted our performance in 2017. Additionally, the production bottlenecks in our Flow Control European manufacturing network, which had also negatively impacted our 2017 performance, were completely eliminated. As a result, the Steel Division recorded RoS of 10.4% this year, an increase from 8.7% in 2017 whilst Foundry reported a 12.3% RoS, another improvement over the prior year (2017: 12.2%).

	2018 Trading profit			2017 Trading profit				% change	
£m	**As reported**	**Acquisitions/ (Disposals)**	**Underlying**	As reported	Currency	Acquisitions/ (Disposals)	Underlying	Reported	Underlying
Steel	**128.3**	**(0.7)**	**127.6**	100.4	(3.7)	(0.4)	96.3	27.9%	32.6%
Foundry	**68.9**	**–**	**68.9**	65.1	(3.1)	–	62.0	5.7%	10.9%
Group	**197.2**	**(0.7)**	**196.5**	165.5	(6.8)	(0.4)	158.3	19.1%	24.1%

KPI: Headline PBT and headline EPS

Headline profit before tax ('PBT') and headline earnings per share ('EPS') are used to measure the underlying financial performance of the Group. The main difference between trading profit and PBT is net finance costs.

Net finance costs in 2018 of £11.1m were £2.8m below 2017. The reduction in finance costs was largely due to more favourable terms secured on renewal of our revolving credit facility at the end of 2017.

Our headline PBT was £188.9m, 23.5% higher than last year on a reported basis. Including amortisation (£12.9m), restructuring charges (£15.3m) and a GMP equalisation charge (£4.5m), our PBT of £156.2m was 60.9% higher than 2017. Headline EPS at 49.6p was 21.9% higher than 2017.

KPI: Return on net assets ('RONA')

RONA is our principal measure of capital efficiency. We do not exclude the results of businesses acquired and disposed from this calculation, as capital efficiency is an important consideration in our portfolio decisions. It is calculated by dividing trading profit plus our share of post-tax profits from joint ventures by our average operating assets (property, plant and equipment, trade working capital, interests in joint ventures and associates, investments, and other operating receivables, payables, and provisions).

As with most of our KPIs, we measure this on a 12-month moving average basis at constant currency to ensure that we focus on sustainable underlying improvements. Our RONA for 2018 was 29.9% (2017: 24.2%).

Objective: Maintain strong cash generation and an efficient capital structure

KPI: Free cash flow and working capital

Fundamental to ensuring that we have adequate capital to execute our corporate strategy is converting our profits into cash, partly through strict management of our working capital. Free cash flow from continuing operations was £106.1m for the year, £13.0m higher than last year on a reported basis due to the improved trading performance, partially offset by the additional investment in working capital to support our growing revenues. Our cash conversion in 2018 was 91% (2017: 104%).

We measure working capital both in terms of actual cash flow movements, and as a percentage of sales revenue. Trade working capital as a percentage of sales in 2018 was 23.9% (2017: 24.9%), measured on a 12-month moving average basis. In absolute terms on a constant currency basis, trade working capital increased by £15.2m, well below the increase in sales, whilst the continued focus on working capital management has contributed to an improvement as a percentage of sales.

Operating cash flow and cash conversion

	2018 £m	2017 £m
Cash generated from continuing operations	**195.3**	176.6
Add: Outflows relating to restructuring charges	**19.3**	27.3
Add: Net retirement benefit obligations	**3.4**	4.8
Less: Capital expenditure	**(41.2)**	(39.0)
Add: Proceeds from the sale of property, plant and equipment	**2.6**	1.8
Operating cash flow	**179.4**	171.5
Trading profit	**197.2**	165.5
Cash conversion	**91%**	104%

KPI: Interest cover and net debt

As at 31 December 2018, the Group had committed borrowing facilities of £573.7m (2017: £563.4m), of which £119.2m was undrawn (2017: £153.7m).

Net debt at 31 December 2018 was £248.0m, a £26.3m decrease from 2017, as a result of our good cash generation. The main drivers of the decrease were the impact of strong cash conversion partially offset by restructuring costs, tax payments, purchase of Company shares for the Vesuvius Group Employee Share Ownership Plan ('ESOP'), and shareholder dividends.

The Group's debt facilities have two financial covenants: the ratios of net debt to EBITDA (maximum three times limit) and EBITDA to interest (minimum four times limit). These ratios are monitored regularly to ensure that the Group has sufficient financing available to run the business and fund future growth. At the end of 2018, the net debt to EBITDA ratio was 1.0x, an improvement over last year (2017: 1.3x) and EBITDA to interest was 22.8x (2017: 15.8x).

Objective: Be at the forefront of innovation

KPI: R&D spend

We believe that our market-leading product technology and services deliver fundamental value to our customers and that the primary mechanism to deliver that value is to invest significantly in research and development. In 2018, we spent £33.6m on R&D activities, an increase of 3.0% from 2017 on a constant currency basis, which represented 1.9% of our revenue (2017: 2.0%).

Financial Risk Factors

The Group undertakes regular risk reviews and, as a minimum, a full risk assessment process twice a year. As in previous years this included input from the Board in both the assessment of risk and the proposed mitigation. We consider the main financial risks faced by the Group as being those posed by a decline in our end markets, leading to reduced revenue and profit as well as potential customer default. We also monitor carefully the challenges that come from broader financial uncertainty, which could bring lack of liquidity and market volatility. Important but lesser risk exists in interest rate movements and cost inflation, but neither is expected to have a material impact on the business after considering the controls we have in place.

Our key mitigation of end market risk is to manage the Group's exposure through balancing our portfolio of business geographically and to invest in product innovation. We do so through targeted capital investment in new and growing businesses and a combination of capital and human resource in emerging markets. When considering other financial risks we mitigate liquidity

concerns by financing using both the bank and private placement markets. The Group also seeks to avoid a concentration of debt maturities in any one period to spread its refinancing risk. The Group's undrawn committed bank facilities at 31 December 2018 were £119.2m. Counterparty risk and customer default are mitigated by our relatively widespread customer base – with no customer being greater than 10% of revenue – and credit control procedures.

Other Relevant Financial Information

Restructuring

We continued to make good progress in implementing our previously announced restructuring programmes, with £14.0m of incremental savings delivered in 2018. In 2018, we reported £15.3m of restructuring costs (2017: £36.3m) within separately reported items that were predominantly made up of redundancy and plant closure costs for the new programmes launched in 2018. The cash costs in 2018 were £19.3m (2017: £27.3m). We are carrying forward into 2019 a restructuring provision of £17.4m.

Taxation

A key measure of tax performance is the effective tax rate, which is calculated on the income tax associated with headline performance, divided by the headline profit before tax and before the Group's share of post-tax profit of joint ventures (2018: £186.1m, 2017: £151.6m). The Group's effective tax rate, based on the income tax costs associated with headline performance of £48.4m (2017: £36.4m), was 26.0% in 2018 (2017: 24.0%).

As noted previously in this statement, the Board has decided to substantially increase the amount reflected on our balance sheet in respect of the previously unrecognised value of our US tax losses and other temporary differences. In addition, the Board has decided to reflect the utilisation of those assets in offsetting our US taxable headline profits as part of our headline tax charge, rather than as part of the tax charge on separately reported items in the Group Income Statement. This has increased the headline tax charge in 2018 by £7.8m, increasing the effective rate of tax on headline profit before tax and share of post-tax profits from joint ventures by 4.2%. The Group's prior year headline tax charge has not been restated as the impact is not material.

The Group's effective tax rate is sensitive to changes in the geographic mix of profits and level of profits and reflects a combination of higher rates in certain jurisdictions such as India, Mexico, Germany and Belgium, a nil effective rate in the UK due to the availability of unutilised tax losses, and rates that lie somewhere in between.

The income tax credit on separately reported items of £36.8m (2017: £18.0m charge) comprises £2.8m non-cash deferred tax movements relating to the amortisation of a deferred tax liability arising from the 2008 acquisition of Foseco plc (2017: £6.0m), £1.8m tax credits relating to restructuring charges (2017: £4.3m), and a net increase in the deferred tax asset recognised in respect of US tax losses and certain other temporary differences of £32.2m (2017: £28.3m reduction). The reduction in deferred tax asset in 2017 was largely caused by US tax reform enacted in late December 2017 in the form of the US Tax Cuts and Jobs Act ('TCJA'). However, this write-down did not impact our headline earnings after tax, as the change in the asset was reflected through separately reported items.

We previously reported that we expected the Group's effective tax rate from 2018 onwards to be adversely impacted by US tax reform, particularly the provisions of the Base Erosion and Anti-Abuse Tax ('BEAT'). Our further analysis of these provisions and the recently issued guidance clarify that the impact of the BEAT was not material to Vesuvius' tax position. However, the new Global Intangible Low-Taxed Income ('GILTI') rules introduced as part of the tax reform has had an impact on the tax position of the Group and gave rise to an increase in the headline tax charge of £2.4m in 2018, increasing the effective rate of tax on headline profit before tax and before the share of post-tax profits from joint ventures by 1.3%.

We expect the Group's effective rate of tax on headline profit before tax and before the share of post-tax profits from joint ventures to be around 28% in 2019.

The net tax credit reflected in the Group Statement of Comprehensive Income in the year amounted to £6.0m (2017: £3.1m charge), comprising a credit of £7.3m (2017: £nil) for additional recognition of US pension deferred tax asset and a £1.3m charge (2017: £2.4m charge) related to tax on net actuarial gains and losses on the employee benefits plan. In addition, £nil (2017: £0.7m charge) related to UK tax in respect of foreign exchange differences arising on hedged positions.

Capital Expenditure

Capital expenditure in 2018 of £48.4m (2017: £44.3m) comprised £34.4m in the Steel Division (2017: £34.0m) and £14.0m in the Foundry Division (2017: £10.3m). Capital expenditure on revenue-generating customer installation assets, primarily in Steel, was £7.7m (2017: £10.7m).

Pensions

The Group has a limited number of historical defined benefit plans mainly in the UK, US, Germany and Belgium. The main plans in the UK and US are largely closed to further benefit accruals and 58.1% of the liabilities in the UK have already been insured. The total net deficit attributed to these defined benefit obligations at the end of December 2018 was £15.3m (2017: £16.5m), representing an improvement of £1.2m.

The improvement is driven by £5.1m from changes to actuarial assumptions (attributable to increasing discount rates; updated mortality assumptions and pension membership data) and £8.5m from cash contributions and payments of unfunded benefits; offset by additional accrual and administrative expenditure paid for the year of £9.8m (of which £4.5m relates to a GMP equalisation charge), and foreign exchange movements of £2.6m.

The majority of the ongoing pension plans are defined contribution plans, where our only obligation is to make contributions, with no further commitments on the level of post-retirement benefits. During 2018, cash contributions of £11.4m (2017: £12.6m) were made into the defined contribution plans and charged to trading profit.

Corporate Activity

In October 2018, Advanced Refractories divested its BMI refractory installation business.

Principal Risks and Uncertainties

Risk Management
The Board's oversight of principal risks involves a specific review of the processes by which the Group manages those risks. This establishes a clear understanding at Board level of the individuals and groups in the business formally responsible for the management of specific risks and the mitigation in place to address them. The Board also establishes the Group's risk appetite, considering the nature and extent of the principal risks that the Group should take.

The Board has overall responsibility for establishing and maintaining a system of risk management and internal control, and for reviewing its effectiveness. The Group undertakes a continuous process of risk identification and review, which includes a formal process, conducted annually for mapping risks from the bottom-up, with each major business unit, and key operational, senior functional and senior management staff identifying their principal risks. This assessment undergoes a formal review at half year. The results are compiled centrally to deliver a coordinated picture of the key operational risks identified by the business. In conjunction with this, each Director contributes their individual views of top-down strategic risks facing the Group - drawing on the broad commercial and financial experience gained both inside and outside the Group. This review process extends to cover both financial and non-financial risks, and considers the risks associated with the impact of the Group's activities on employees, customers, suppliers, the environment, local communities and society more generally. As in previous years, in 2018 the Group's assessment of principal risks was also reviewed and considered against this group of emerging risks and uncertainties identified through our Board review process.

Risk Mitigation
The risks identified are actively managed in order to mitigate exposure. Senior management 'owners' are identified for each principal risk to manage the mitigations of that specific risk and contribute to the analysis of its likelihood and materiality. This is reported to the Board. The risks are analysed in the context of our business structure which gives protection against a number of principal risks we face with diversified currencies, a widespread customer base, local production matching the diversity of our markets and intensive training of our employees. Additionally, we seek to mitigate risk through contractual measures. Where cost-effective, the risk is transferred to insurers.

Principal Risks
The risks identified are those the Board considers to be the most relevant to the Group in relation to their potential impact on the achievement of its strategic objectives. All of the risks could materially affect the Group, its businesses, future operations and financial condition and could cause actual results to differ materially from expected or historical results. These risks are not the only ones that the Group will face. Some risks are not yet known and some currently not deemed to be material could become so.

Changes to Risk in 2018
The Board believes that there has been no material change to the Group's principal risks and uncertainties during the year.

However, the risk identified in our 2017 Annual Report as Quality, Health and Safety, was further analysed during the year and is now presented as two separate risks in the table of Principal risks and uncertainties - Product quality failure and Health, safety and environment - which each focus on separate issues with different mitigation. The assessment of both risks is that they were stable year-on-year. In addition, the Financial Uncertainty risk has been removed from the table of Principal risks and uncertainties. This does not indicate that the challenges of the global economic situation have receded – we still identify end market risks, protectionism and globalisation and the changing regulatory environment as key areas for attention and mitigation. However, the Board does not consider that Vesuvius is exposed to the issues of currency, interest rates, inflation or capital availability in a way that is substantially differentiated from other multi-national companies operating in our markets.

The Board continues to monitor the implications of certain emerging 'macro' trends such as automation in manufacturing, the increased focus on sustainability and increasing digitalisation, each of which could act as disruptors to industry. Work has been done in 2018 to reinvigorate the Values of the Group. These underpin our performance culture, reflecting the Board's understanding of the challenges that could arise from a failure by the Group to foster the correct culture for success.

In addition to these wider trends, the Board continued to focus on specific, identifiable risks where those arose during the year – the supply of quality raw materials and the potentially disruptive effects on global trade from increasing geopolitical tensions, which we note in the table of Principal risks and uncertainties. Whilst 2018 was a strong year for our underlying markets, the Board remains alive to the challenges that could come from a slowdown in trade.

Finally, the Board continued to monitor the developing issues posed by cyber threats and received reports from the Group's multi-disciplinary committee appointed to assess the Group's controls in this area and respond to emerging cyber trends. As discussed, above the Directors' views on each of the above issues, and on emerging risks in general were independently gathered and integrated into the management discussions and actions taken on risk.

Brexit

Whilst at the time of writing the terms and timing of the exit of the UK from the EU remain uncertain, Vesuvius has analysed the potential challenges posed by Brexit, including a 'no-deal' or 'hard' Brexit, and identified mitigation strategies to address those challenges.

For our customers located in the EU28 countries, most of our products are manufactured by Vesuvius outside the UK, so we would not envisage a material impact from Brexit. For those customers located in the UK or located in the EU 28 and supplied from our UK plants, we have contingency plans and we are working with these customers to meet their needs in a cost-efficient way.

Principal risks and uncertainties:

Risk	**Potential impact**	**Mitigation**
End market risks *Vesuvius suffers an unplanned drop in demand, revenue and/or margin because of market volatility beyond its control*	• Unplanned drop in demand and/or revenue due to reduced production by our customers • Margin reduction • Customer failure leading to increased bad debts • Loss of market share to competition • Cost pressures at customers leading to use of cheaper solutions	• Geographic diversification of revenues • Product innovation and service offerings securing long-term revenue streams and maintaining performance differential • Increase in service and product lines by the development of the Technical Services offering • R&D includes assessment of emerging technologies • Manufacturing capacity rationalisation and flexible cost base • Diversified customer base: no customer is greater than 10% of revenue • Robust credit and working capital control to mitigate the risk of default by counterparties
Protectionism and globalisation *The Vesuvius business model cannot adapt or respond quickly enough to threats from protectionism and globalisation*	• Restricted access to market due to enforced preference of local suppliers • Increased barriers to entry for new businesses or expansion • Increased costs from import duties, taxation or tariffs • Loss of market share • Trade restrictions	• Highly diversified manufacturing footprint with manufacturing sites located in 26 countries • Strong local management with delegated authority to run their businesses and manage customer relationships • Cost flexibility • Tax risk management and control framework together with a strong control of inter-company trading
Product quality failure *Vesuvius staff/contractors are injured at work or customers, staff or third parties suffer physical injury or financial loss because of failures in Vesuvius products*	• Injury to staff and contractors • Product or application failures lead to adverse financial impact or loss of reputation as technology leader • Incident at customer plant caused manufacturing downtime or damage to infrastructure • Customer claims from product quality issues	• Quality management programmes including stringent quality control standards, monitoring and reporting • Experienced technical staff knowledgeable in the application of our products and technology • Targeted global insurance programme • Experienced internal legal function controlling third-party contracting

Risk	Potential impact	Mitigation
Complex and changing regulatory environment *Vesuvius experiences a contracting customer base or increased transaction and administrative costs due to compliance with changing regulatory requirements*	• Revenue reduction from reduced end-market access • Disruption of supply chain and route to market • Increased internal control processes • Increased frequency of regulatory investigations • Reputational damage	• Globally disseminated Code of Conduct highlighting ethical approach to business • Compliance programmes and training across the Group • Internal Audit function • Experienced internal legal function • Global procurement category management of strategic raw materials
Failure to secure innovation *Vesuvius fails to achieve continuous improvement in its products, systems and services*	• Product substitution by customers • Increased competitive pressure through lack of differentiation of Vesuvius offering • Commoditisation of product portfolio through lack of development • Lack of response to changing customer needs • Loss of intellectual property protection	• Enduring and significant investment in R&D, with market-leading research • A shared strategy for innovation throughout the Group, deployed via our R&D centres • Stage gate process from innovation to commercialisation to foster innovation and increase alignment with strategy • Programme of manufacturing and process excellence • Quality programme, focused on quality and consistency • Stringent intellectual property registration and defence
Business interruption *Vesuvius loses production capacity or experiences supply chain disruption due to physical site damage (accident, fire, natural disaster, terrorism), industrial action or cyber attack*	• Loss of a major plant temporarily or permanently impairing our ability to serve our customers • Damage to or restriction in ability to use assets • Denial of access to critical systems or control processes • Disruption of manufacturing processes • Inability to source critical raw materials	• Diversified manufacturing footprint • Disaster recovery planning • Business continuity planning with strategic maintenance of excess capacity • Physical and IT control systems security, access and training • Cyber risks integrated into wider risk-management structure • Well-established global insurance programme • Group-wide safety management programmes • Dual sourcing strategy and development of substitutes
People, culture and performance *Vesuvius is unable to attract and retain the right calibre of staff, fails to instil an appropriate culture or fails to embed the right systems to drive personal performance in pursuit of the Group's long-term growth*	• Organisational culture of high performance is not achieved • Staff turnover in growing economies and regions • Stagnation of ideas and development opportunities • Loss of expertise and critical business knowledge • Reduced management pipeline for succession to senior positions	• Internal focus on talent development and training, with tailored career-stage programmes and clear performance management strategies • Contacts with universities to identify and develop talent • Career path planning and global opportunities for high-potential staff • Internal programmes for the structured transfer of technical and other knowledge • Clearly elucidated Values underpin business culture

Risk	Potential impact	Mitigation
Health, safety and environment *Vesuvius staff or contractors are injured at work because of failures in Vesuvius' operations, equipment or processes*	• Injury to staff and contractors • Health and safety breaches • Manufacturing downtime or damage to infrastructure from incident at plant • Inability to attract the necessary workforce • Reputational damage	• Active safety programmes, with ongoing wide-ranging monitoring and safety training • Independent safety audit team • Quality management programmes including stringent manufacturing process control standards, monitoring and reporting

Group Income Statement

For the year ended 31 December 2018

		2018			2017		
			[1] Separately			[1] Separately	
		[1] Headline	**reported**		[1] Headline	reported	
		performance	**items**	**Total**	performance	items	Total
	Notes	**£m**	**£m**	**£m**	£m	£m	£m
Continuing operations							
Revenue	2	**1,798.0**	**-**	**1,798.0**	1,683.9	-	1,683.9
Manufacturing costs		**(1,291.2)**	**-**	**(1,291.2)**	(1,219.8)	-	(1,219.8)
Administration, selling and distribution costs		**(309.6)**	**-**	**(309.6)**	(298.6)	-	(298.6)
Trading profit	2	**197.2**	**-**	**197.2**	165.5	-	165.5
Amortisation of acquired intangible assets		**-**	**(12.9)**	**(12.9)**	-	(19.5)	(19.5)
Restructuring charges	3	**-**	**(15.3)**	**(15.3)**	-	(36.3)	(36.3)
GMP equalisation charge	1	**-**	**(4.5)**	**(4.5)**	-	-	-
Operating profit/(loss)		**197.2**	**(32.7)**	**164.5**	165.5	(55.8)	109.7
Finance expense		**(16.7)**	**-**	**(16.7)**	(17.5)	-	(17.5)
Finance income		**5.6**	**-**	**5.6**	3.6	-	3.6
Net finance costs	4	**(11.1)**	**-**	**(11.1)**	(13.9)	-	(13.9)
Share of post-tax income of joint ventures		**2.8**	**-**	**2.8**	1.3	-	1.3
Profit/(loss) before tax		**188.9**	**(32.7)**	**156.2**	152.9	(55.8)	97.1
Income tax (charge)/credits	5	**(48.4)**	**36.8**	**(11.6)**	(36.4)	(18.0)	(54.4)
Profit/(loss) from:							
Continuing operations		**140.5**	**4.1**	**144.6**	116.5	(73.8)	42.7
Discontinued operations	13	**-**	**0.5**	**0.5**	-	1.7	1.7
Profit/(loss)		**140.5**	**4.6**	**145.1**	116.5	(72.1)	44.4
Profit/(loss) attributable to:							
Owners of the parent		**133.7**	**4.6**	**138.3**	110.1	(72.1)	38.0
Non-controlling interests		**6.8**	**-**	**6.8**	6.4	-	6.4
Profit/(loss)		**140.5**	**4.6**	**145.1**	116.5	(72.1)	44.4
Earnings per share — pence	6						
Continuing operations — basic				**51.1**			13.4
— diluted				**50.8**			13.4
Total operations — basic				**51.3**			14.1
— diluted				**51.0**			14.0

(1) Headline performance is defined in Note 16.1 and separately reported items are defined in Note 1.5.

Group Statement of Comprehensive Income

For the year ended 31 December 2018

	2018 **£m**	2017 £m
Profit	**145.1**	44.4
Items that will not subsequently be reclassified to income statement:		
Remeasurement of defined benefit assets/liabilities	**5.1**	8.4
Income tax relating to items not reclassified	**6.0**	(2.4)
Items that may subsequently be reclassified to income statement:		
Exchange differences on translation of the net assets of foreign operations	**11.1**	(38.3)
Exchange differences on translation of net investment hedges	**(11.5)**	9.8
Income tax relating to items that may be reclassified	**-**	(0.7)
Other comprehensive income/(loss), net of income tax	**10.7**	(23.2)
Total comprehensive income	**155.8**	21.2
Total comprehensive income attributable to:		
Owners of the parent	**149.3**	15.3
Non-controlling interests	**6.5**	5.9
Total comprehensive income	**155.8**	21.2
Total comprehensive income attributable to owners of the parent arises from:		
Continuing operations	**148.8**	13.6
Discontinued operations	**0.5**	1.7
Total comprehensive income attributable to owners of the parent	**149.3**	15.3

Group Statement of Cash Flows

For the year ended 31 December 2018

	Notes	2018 £m	2017 £m
Cash flows from operating activities			
Cash generated from operations	9	**195.2**	175.8
Interest paid		**(16.3)**	(15.6)
Interest received		**4.8**	3.5
Net interest paid		**(11.5)**	(12.1)
Income taxes paid		**(41.8)**	(38.2)
Net cash inflow from operating activities		**141.9**	125.5
Cash flows from investing activities			
Capital expenditure		**(41.2)**	(39.0)
Proceeds from the sale of property, plant and equipment		**2.6**	1.8
Acquisition of subsidiaries and joint ventures, net of cash acquired		**(1.0)**	-
Dividends received from joint ventures		**1.2**	1.7
Net cash outflow from investing activities		**(38.4)**	(35.5)
Net cash inflow before financing activities		**103.5**	90.0
Cash flows from financing activities			
Proceeds from borrowings	8	**34.9**	103.5
Repayment of borrowings	8	**(1.6)**	(92.2)
Borrowing facility arrangement costs	8	**-**	(1.0)
Settlement of forward foreign exchange contracts		**1.8**	(10.4)
Purchase of ESOP shares		**(13.4)**	-
Dividends paid to equity shareholders	7	**(50.0)**	(45.6)
Dividends paid to non-controlling shareholders		**(1.9)**	(2.5)
Net cash outflow from financing activities		**(30.2)**	(48.2)
Net increase in cash and cash equivalents	8	**73.3**	41.8
Cash and cash equivalents at 1 January		**140.0**	101.0
Effect of exchange rate fluctuations on cash and cash equivalents	8	**0.1**	(2.8)
Cash and cash equivalents at 31 December		**213.4**	140.0
Free cash flow from continuing operations (Note 16.10)			
Net cash inflow from operating activities		**142.0**	126.3
Net retirement benefit obligations		**3.4**	4.8
Capital expenditure		**(41.2)**	(39.0)
Proceeds from the sale of property, plant and equipment		**2.6**	1.8
Dividends received from joint ventures		**1.2**	1.7
Dividends paid to non-controlling shareholders		**(1.9)**	(2.5)
Free cash flow from continuing operations	16	**106.1**	93.1
Discontinued operations		**(0.1)**	(0.8)
Free cash flow	16	**106.0**	92.3

Group Balance Sheet

As at 31 December 2018

	Notes	2018 £m	2017 £m
Assets			
Property, plant and equipment		**313.9**	311.3
Intangible assets		**741.4**	743.0
Employee benefits - net surpluses	10	**90.8**	92.4
Interests in joint ventures and associates		**19.1**	17.5
Investments		**1.0**	1.4
Income tax recoverable		**-**	0.4
Deferred tax assets		**94.5**	61.0
Other receivables		**30.1**	30.9
Derivative financial instruments	15	**0.7**	0.2
Total non-current assets		**1,291.5**	1,258.1
Cash and short-term deposits	8	**236.9**	161.9
Inventories		**244.3**	222.8
Trade and other receivables		**440.4**	422.2
Income tax recoverable		**2.8**	5.2
Derivative financial instruments	15	**0.1**	0.1
Assets classified as held for sale		**1.7**	-
Total current assets		**926.2**	812.2
Total assets		**2,217.7**	2,070.3
Equity			
Issued share capital		**27.8**	27.8
Retained earnings		**2,460.0**	2,370.3
Other reserves		**(1,369.5)**	(1,369.4)
Equity attributable to the owners of the parent		**1,118.3**	1,028.7
Non-controlling interests		**50.0**	45.4
Total equity		**1,168.3**	1,074.1
Liabilities			
Interest-bearing borrowings	8	**455.5**	410.5
Employee benefits - net liabilities	10	**106.1**	108.9
Other payables		**16.1**	17.3
Provisions	14	**38.8**	34.4
Deferred tax liabilities		**38.7**	42.7
Total non-current liabilities		**655.2**	613.8
Interest-bearing borrowings	8	**29.4**	25.7
Trade and other payables		**311.8**	292.6
Income tax payable		**29.3**	34.3
Provisions	14	**23.1**	29.8
Derivative financial instruments	15	**0.6**	-
Total current liabilities		**394.2**	382.4
Total liabilities		**1,049.4**	996.2
Total equity and liabilities		**2,217.7**	2,070.3

Group Statement of Changes in Equity

For the year ended 31 December 2018

	Issued share capital £m	Other reserves £m	Retained earnings £m	Owners of the parent £m	Non-controlling interests £m	Total equity £m
As at 1 January 2017	**27.8**	**(1,341.4)**	**2,370.0**	**1,056.4**	**42.1**	**1,098.5**
Profit	**-**	**-**	**38.0**	**38.0**	**6.4**	**44.4**
Remeasurement of defined benefit liabilities/assets	-	-	8.4	8.4	-	8.4
Income tax relating to items not reclassified	-	-	(2.4)	(2.4)	-	(2.4)
Exchange differences on translation of the net assets of foreign operations	-	(37.8)	-	(37.8)	(0.5)	(38.3)
Exchange differences on translation of net investment hedges		9.8	-	9.8	-	9.8
Income tax relating to items that may be reclassified	-	-	(0.7)	(0.7)	-	(0.7)
Other comprehensive income/(loss), net of income tax	**-**	(28.0)	5.3	(22.7)	(0.5)	(23.2)
Total comprehensive income (loss)	**-**	**(28.0)**	**43.3**	**15.3**	**5.9**	**21.2**
Recognition of share-based payments	-	-	2.6	2.6	-	2.6
Dividends paid (Note 7)	-	-	(45.6)	(45.6)	(2.6)	(48.2)
Total transactions with owners	**-**	**-**	**(43.0)**	**(43.0)**	**(2.6)**	**(45.6)**
As at 1 January 2018	**27.8**	**(1,369.4)**	**2,370.3**	**1,028.7**	**45.4**	**1,074.1**
Profit	**-**	**-**	**138.3**	**138.3**	**6.8**	**145.1**
Remeasurement of defined benefit liabilities/assets	-	-	5.1	5.1	-	5.1
Income tax relating to items not reclassified	-	-	6.0	6.0	-	6.0
Exchange differences on translation of the net assets of foreign operations	-	11.4	-	11.4	(0.3)	11.1
Exchange differences on translation of net investment hedges		(11.5)	-	(11.5)	-	(11.5)
Other comprehensive income/(loss), net of income tax	**-**	(0.1)	11.1	11.0	(0.3)	10.7
Total comprehensive income (loss)	**-**	**(0.1)**	**149.4**	**149.3**	**6.5**	**155.8**
Recognition of share-based payments	-	-	3.7	3.7	-	3.7
Purchase of ESOP shares	-	-	(13.4)	(13.4)	-	(13.4)
Dividends paid (Note 7)	-	-	(50.0)	(50.0)	(1.9)	(51.9)
Total transactions with owners	**-**	**-**	**(59.7)**	**(59.7)**	**(1.9)**	**(61.6)**
As at 31 December 2018	**27.8**	**(1,369.5)**	**2,460.0**	**1,118.3**	**50.0**	**1,168.3**

Notes to the Group Financial Statements (continued)

1 Basis of preparation

1.1 Basis of preparation

The financial information in this preliminary announcement has been extracted from the audited Group Financial Statements for the year ended 31 December 2018 and does not constitute statutory accounts within the meaning of section 434 of the Companies Act 2006. The Group Financial Statements and this preliminary announcement were approved by the Board of Directors on 27 February 2019.

The auditors have reported on the Group Financial Statements for the years ended 31 December 2018 and 31 December 2017 under section 495 of the Companies Act 2006. The auditors' reports are unqualified and do not contain a statement under section 498(2) or (3) of the Companies Act 2006. The Group's statutory financial statements for the year ended 31 December 2017 have been filed with the Registrar of Companies and those for the year ended 31 December 2018 will be filed following the Company's Annual General Meeting.

The Group Financial Statements have been prepared in accordance with International Financial Reporting Standards ('IFRS') and interpretations issued by the IFRS Interpretations Committee ('IFRS IC') as adopted by the European Union and with the Companies Act 2006 applicable to companies reporting under IFRS. The financial statements have been prepared under the historical cost convention, with the exception of fair value measurement applied to defined benefit pension plans, certain provisions, investments and derivative financial instruments.

The same accounting policies, presentation and computation methods are followed in this preliminary announcement as in the preparation of the Group Financial Statements. The accounting policies have been applied consistently by the Group.

1.2 Basis of consolidation

The Group Financial Statements incorporate the financial statements of the Company and entities controlled by the Company (its 'subsidiaries'). Control exists when the Company has the power to direct the relevant activities of an entity that significantly affect the entity's return so as to have rights to the variable return from its activities. In assessing whether control exists, potential voting rights that are currently exercisable are taken into account. The results of subsidiaries acquired or disposed of during the year are included in the Group Income Statement from the effective date of acquisition or up to the effective date of disposal, as appropriate.

The principal accounting policies applied in the preparation of these Group Financial Statements are set out in the Notes. These policies have been consistently applied to all of the years presented, unless otherwise stated. Where necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with those detailed herein to ensure that the Group Financial Statements are prepared on a consistent basis. All intra-Group transactions, balances, income and expenses are eliminated on consolidation.

Non-controlling interests in the net assets of consolidated subsidiaries are identified separately from the Group's interest therein. Non-controlling interests consist of the amount of those interests at the date of the original business combination together with the non-controlling interests' share of profit or loss and each component of other comprehensive income, and dividends since the date of the combination. Total comprehensive income is attributed to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

1.3 Going concern

The Directors have prepared cash flow forecasts for the Group for a period in excess of 12 months from the date of approval of the 2018 financial statements. These forecasts reflect an assessment of current and future end-market conditions and their impact on the Group's future trading performance. The forecasts show that the Group will be able to operate within the current committed debt facilities and show continued compliance with the Company's financial covenants. On the basis of the exercise described above and the Group's available committed debt facilities, the Directors consider that the Group and the Company have adequate resources to continue in operational existence for a period of at least 12 months from the date of signing of these financial statements. Accordingly, they continue to adopt a going concern basis in preparing the financial statements of the Group and the Company.

1.4 Functional and presentation currency

The financial statements are presented in millions of pounds sterling, which is the functional currency of the Company, and rounded to one decimal place.

1.5 Disclosure of "separately reported items"

IAS 1 Presentation of Financial Statements encourages the disclosure of additional line items and the reordering of items presented on the face of the income statement when appropriate for a proper understanding of the entity's financial performance. The Company has adopted a columnar presentation for its Group Income Statement, to separately identify headline performance results (as defined in Note 16), as the Directors consider that this gives a better view of the underlying results of the ongoing business. As part of this presentation format, the Company has adopted a policy of disclosing separately on the face of its Group Income Statement, within the column entitled 'Separately reported items', the effect of any components of financial performance for which the Directors consider separate disclosure would assist both in a better understanding of the financial performance achieved and in making projections of future results.

Both materiality and the nature and function of the components of income and expense are considered in deciding upon such presentation. Such items may include, inter alia, the financial effect of exceptional items which occur infrequently, such as major restructuring activity, initial recognition and subsequent increase, decrease and amortisation of US deferred tax assets, together with items always reported separately, such as amortisation charges relating to acquired intangible assets, profits or losses arising on the disposal of continuing or discontinued operations and the taxation impact of the aforementioned exceptional items and items reported separately. The amortisation charge in respect of intangible assets recognised on business combinations is excluded from the trading results of the Group since they are non-cash charges and are not considered reflective of the core trading performance of the Group. Restructuring charges are excluded from the trading results of the Group due to the material nature of these non-recurring transformational initiatives. In its adoption of this policy, the Company applies an even-handed approach to both gains and losses and aims to be both consistent and clear in its accounting and disclosure of such items.

A UK High Court judgement was made on 26 October 2018 in respect of the gender equalisation of guaranteed minimum pensions ("GMPs") for occupational pension schemes. The increase in pension liabilities resulting from this judgement has been treated for IAS 19 purposes as a plan amendment and has resulted in an increase in the pension deficit in the balance sheet and a corresponding past service cost in the income statement. This has been treated as a separately reported item so that there has been no impact upon Headline performance. We are working with the trustees of our UK pension plan and our actuarial and legal advisers to understand the extent to which the judgement crystallises additional liabilities for the UK pension plan. We have estimated the impact of GMP equalisation as at 31 December 2018 to be £4.5m.

1.6 Changes in accounting policies

Initial adoption of IFRS 15 Revenue from Contracts with Customers

The Group adopted IFRS 15 Revenue from Contracts with Customers with the date of initial application to the Group of 1 January 2018 using the retrospective method.

IFRS 15 replaces all existing revenue requirements in IFRS and applies to all revenue arising from contracts with customers unless the contracts are within the scope of other standards such as IAS 17 Leases. The standard establishes a comprehensive framework for determining whether, how much and when revenue is recognised. The impact of adopting IFRS 15 on the Group Financial Statements was not material and there was no adjustment to retained earnings on application at 1 January 2018. The Group has not restated the comparative results on adoption.

Initial adoption of IFRS 9 Financial Instruments

Effective 1 January 2018, the Company adopted IFRS 9 Financial Instruments. IFRS 9 addresses the classification, measurement and derecognition of financial instruments, and introduces new rules for hedge accounting and a new impairment model for financial assets. It replaces IAS 39 Financial Instruments: Recognition and Measurement, and comprehensive updates have been made to IFRS 7 Financial Instruments: Disclosures and IAS 32 Financial Instruments: Presentation. The adoption of IFRS 9 has had no material impact on the Company's Condensed Group Financial Statements. The Group has not restated the comparative results on adoption.

1.7 New and revised IFRS

Certain new accounting standards and interpretations have been published that are not mandatory for 31 December 2018 reporting periods and have not been early adopted by the Group. The Group's assessment of the impact of these new standards and interpretations is set out below. Other new or amended standards or interpretations are not expected to have a significant impact on the Group Financial Statements.

IFRS 16 Leases (effective for financial years beginning on or after 1 January 2019)

IFRS 16 Leases, replaces the existing standard on accounting for leases, IAS 17, and the related interpretations. The Group will apply the standard from 1 January 2019. The Group will transition to IFRS 16 in accordance with the simplified approach; the prior year figures will not be adjusted. The Group has non-cancellable operating lease commitments of £39.3m. It is expected that the application of this standard will have a material impact on the Group's Financial Statements to bring these obligations and an associated asset on Balance Sheet.

Balance sheet: IFRS 16 requires lessees to adopt a uniform approach to the presentation of leases. In future, assets must be recognised for the right of use received and liabilities must be recognised for the discounted payment obligations entered into for all leases. The Group will make use of the relief options provided for leases of low-value assets and short-term leases (shorter than 12 months). For leases that have been classified to date as operating leases in accordance with IAS 17, the lease liability will be recognised at the present value of the remaining lease payments, discounted using the interest rate implicit in the lease, if that rate can be readily determined. If that rate cannot be readily determined, the lessee's incremental borrowing rate will be used. The right of use asset will generally be measured at the amount of the lease liability plus initial direct costs. Advance payments and liabilities from the previous financial year will also be accounted for. If IFRS 16 had been applied for the 2018 Annual Report and Financial Statements, fixed assets and liabilities would both have been approximately £33m higher.

Income statement: in contrast to the presentation to date of operating lease expenses within operating profit, in future, depreciation charges on right of use assets and the interest expense from unwinding of the discount on the lease liabilities will be recognised. If IFRS 16 had been applied for the 2018 Annual Report and Financial Statements, operating profit and interest expense would both have been approximately £1m higher.

Cash flow statement: If IFRS 16 had been applied for the 2018 Annual Report and Financial Statements, operating cash flow would be approximately £9m higher (impacts of depreciation and interest) and financing cash flow would be approximately £9m lower, with no net impact on total cash flow.

IFRIC 23 Uncertainty over income tax treatments

IFRIC 23 Uncertainty over Income Tax Treatments (effective from 1 January 2019, for the year ending 2019, not yet endorsed), clarifies how to recognise and measure deferred and current income tax assets and liabilities where there is uncertainty over tax treatment under IAS 12. The Group has assessed the potential impact on its Group Financial Statements resulting from the application of IFRIC 23 and has concluded that it will not have a material impact on the amount of provisions held for uncertain tax position as at 31 December 2018.

2 Segment information

Operating segments for continuing operations

Operating segments are reported in a manner consistent with the internal reporting provided to the Executive Directors of the Board, who make the key operating decisions and are responsible for allocating resources and assessing performance of the operating segments. Reflecting the Group's management and internal reporting structure, segmental information is presented in respect of the two main business segments: Steel and Foundry. The Steel segment aggregates the Flow Control, Advanced Refractories and Digital Services Divisions which are subject to a similar risk profile and return. The adoption of the revenue standard ('IFRS 15') does not have any impact on the assessment of operating segments of the Group and the disaggregation of revenue between Steel and Foundry remains appropriate.

Segment revenue represents revenue from external customers (inter-segment revenue is not material). Trading profit includes items directly attributable to a segment as well as those items that can be allocated on a reasonable basis.

2.1 Income statement

	2018		
	Steel £m	**Foundry £m**	**Continuing operations £m**
Segment revenue	**1,236.7**	**561.3**	**1,798.0**
Segment EBITDA	**155.3**	**82.9**	**238.2**
Segment depreciation	**(27.0)**	**(14.0)**	**(41.0)**
Segment trading profit	**128.3**	**68.9**	**197.2**
Return on sales margin	*10.4%*	*12.3%*	*11.0%*
Amortisation of acquired intangible assets			**(12.9)**
Restructuring charges			**(15.3)**
GMP equalisation charge			**(4.5)**
Operating profit			**164.5**
Net finance costs			**(11.1)**
Share of post-tax profit of joint ventures			**2.8**
Profit before tax			**156.2**
Capital expenditure additions	**34.4**	**14.0**	**48.4**

	2017		
	Steel £m	Foundry £m	Continuing operations £m
Segment revenue	1,148.7	535.2	1,683.9
Segment EBITDA	128.9	80.3	209.2
Segment depreciation	(28.5)	(15.2)	(43.7)
Segment trading profit	100.4	65.1	165.5
Return on sales margin	*8.7%*	*12.2%*	*9.8%*
Amortisation of acquired intangible assets			(19.5)
Restructuring charges			(36.3)
Operating profit			109.7
Net finance costs			(13.9)
Share of post-tax profit of joint ventures			1.3
Profit before tax			97.1
Capital expenditure additions	34.0	10.3	44.3

3 Restructuring charges

The 2018 restructuring charges were £15.3m and relate to the new programme first announced in March 2018. Restructuring charges in 2017 of £36.3m predominantly related to the Group-wide restructuring programme initiated in 2015. The charges reflect redundancy costs of £8.3m (2017: £22.8m), plant closure costs of £4.7m (2017: £0.5m), consultancy fees of £0.5m (2017: £6.8m), asset write-offs of £1.7m (2017: £5.5m) and travel of £0.1m (2017: £0.7m).

The net tax credit attributable to the total restructuring charges was £1.8m (2017: £4.3m).

Cash costs of £19.3m (2017: £27.3m) (Note 9) were incurred in the year in respect of the restructuring programme, leaving provisions made but unspent of £17.4m (Note 14) as at 31 December 2018 (2017: £22.9m), of which £4.3m (2017: £2.7m) relates to future costs in respect of leases expiring between one and six years.

4 Net finance costs

Total net finance costs for the period of £11.1m is analysed in the table below.

	2018 £m	2017 £m
Interest payable on borrowings		
Loans, overdrafts and factoring arrangements	**14.5**	15.9
Obligations under finance leases	**0.2**	0.2
Amortisation of capitalised borrowing costs	**0.6**	0.6
Total interest payable on borrowings	**15.3**	16.7
Interest on net retirement benefits obligations	**0.1**	0.6
Adjustments to discounts on provisions and other liabilities	**1.3**	0.2
Adjustments to discounts on receivables	**(0.8)**	(0.1)
Finance income	**(4.8)**	(3.5)
Total net finance costs	**11.1**	13.9

5 Income tax

The Group's effective tax rate, based on the income tax costs associated with headline performance of £48.4m (2017: £36.4m), was 26.0% (2017: 24.0%).

The Group's total income tax costs include a credit of £36.8m (2017: £18.0m charge) relating to separately reported items comprising: a credit of £1.8m (2017: £4.3m credit) in relation to restructuring charges; a credit of £2.8m (2017: £6.0m credit) relating to the amortisation of intangible assets and a credit of £32.2m (2017: £28.3m charge) in respect of the recognition of US temporary differences. The net income tax credit reflected in the Group Statement of Comprehensive Income in the year amounted to £6.0m (2017: £3.1m charge), comprising a credit of £7.3m (2017: £nil) for additional recognition of US pension deferred tax asset and a £1.3m charge (2017: £2.4m charge) related to tax on net actuarial gains and losses on employee benefits plans. In addition, £nil (2017: £0.7m) related to UK tax in respect of foreign exchange differences arising on hedged positions.

The US Tax Cuts and Jobs Act ('TCJA') enacted in the US in December 2017 introduced provisions which extended US taxing rights over the profits of non-US entities owned by US companies (so-called Global Intangible Low-Taxed Income ('GILTI')). Vesuvius' US companies own interests in non-US Vesuvius subsidiaries, and therefore have been impacted by these new rules. The impact of the GILTI provisions on Vesuvius in 2018 has been to increase the headline tax charge by £2.4m in 2018, increasing the effective rate of tax on headline profit before tax and before the Group's share of post-tax profits from joint ventures by 1.3%.

6 Earnings per share ("EPS")

6.1 Earnings for EPS

Basic and diluted EPS from continuing operations are based upon the profit attributable to owners of the parent, as reported in the Group Income Statement, of £137.8m (2017: £36.3m), being the profit for the year of £144.6m (2017: £42.7m) less non-controlling interests of £6.8m (2017: £6.4m); basic and diluted EPS from total operations are based on the profit attributable to owners of the parent of £138.3m (2017: £38.0m); headline and diluted headline EPS are based upon headline profit from continuing operations attributable to owners of the parent of £133.7m (2017: £110.1m). The table below reconciles these different profit measures.

	2018 £m	2017 £m
Profit attributable to owners of the parent	**137.8**	36.3
Adjustments for separately reported items:		
Amortisation of intangible assets	**12.9**	19.5
Restructuring charges	**15.3**	36.3
GMP equalisation charge	**4.5**	-
Income tax (credit)/charge	**(36.8)**	18.0
Headline profit attributable to owners of the parent	**133.7**	110.1

6.2 Weighted average number of shares

	2018 millions	2017 millions
For calculating basic and headline EPS	**269.8**	270.3
Adjustment for dilutive potential ordinary shares	**1.4**	1.3
For calculating diluted and diluted headline EPS	**271.2**	271.6

For the purposes of calculating diluted and diluted headline EPS, the weighted average number of ordinary shares is adjusted to include the weighted average number of ordinary shares that would be issued on the conversion of all potentially dilutive ordinary shares expected to vest, relating to the Company's share-based payment plans. Potential ordinary shares are only treated as dilutive when their conversion to ordinary shares would decrease EPS or increase loss per share.

6.3 Per share amounts

		Continuing operations pence	**Discontinued operations pence**	**2018 total pence**	Continuing operations pence	Discontinued operations pence	2017 total pence
Earnings per share	- basic	**51.1**	**0.2**	**51.3**	13.4	0.7	14.1
	- headline	**49.6**			40.7		
	- diluted	**50.8**	**0.2**	**51.0**	13.4	0.6	14.0
	- diluted headline	**49.3**			40.5		

7 Dividends

	2018 £m	2017 £m
Amounts recognised as dividends and paid to equity holders during the period		
Final dividend for the year ended 31 December 2016 of 11.40p per ordinary share	**-**	30.8
Interim dividend for the year ended 31 December 2017 of 5.50p per ordinary share		14.8
Final dividend for the year ended 31 December 2017 of 12.50p per ordinary share	**33.8**	-
Interim dividend for the year ended 31 December 2018 of 6.00p per ordinary share	**16.2**	-
	50.0	45.6

A final dividend for the year ended 31 December 2017 of £33.8m (2016: £30.8m), equivalent to 12.5 pence (2016: 11.4 pence) per ordinary share, was paid in May 2018 (May 2017) and an interim dividend for the year ended 31 December 2018 of £16.2m (2017: £14.8m), equivalent to 6.0 pence (2017: 5.5 pence) per ordinary share, was paid in September 2018 (September 2017).

A proposed final dividend for the year ended 31 December 2018 of £37.0m equivalent to 13.8 pence per ordinary share, is subject to approval by shareholders at the Company's Annual General Meeting and has not been included as a liability in these financial statements. If approved by shareholders, the dividend will be paid on 24 May 2019 to ordinary shareholders on the register at 23 April 2019.

8 Reconciliation of movement in net debt

	Balance as at 1 Jan 2018 £m	Foreign exchange adjustments £m	Non-cash movements £m	Cash flow £m	Balance as at 31 Dec 2018 £m
Cash and cash equivalents					
Cash at bank and in hand	**161.9**	**0.5**	**-**	**74.5**	**236.9**
Bank overdrafts	**(21.9)**	**(0.4)**	**-**	**(1.2)**	**(23.5)**
	140.0	**0.1**	**-**	**73.3**	**213.4**
Borrowings, excluding bank overdrafts					
Current	**(4.3)**	**-**	**-**	**(2.2)**	**(6.5)**
Non-current	**(412.1)**	**(14.4)**	**-**	**(30.2)**	**(456.7)**
	(416.4)	**(14.4)**	**-**	**(32.4)**	**(463.2)**
Capitalised borrowing costs	**2.1**	**-**	**0.6**	**(0.9)**	**1.8**
Net debt	**(274.3)**	**(14.3)**	**0.6**	**40.0**	**(248.0)**

9 Cash generated from operations

	Continuing operations £m	**Discontinued operations £m**	**2018 total £m**	Continuing operations £m	Discontinued operations £m	2017 total £m
Operating profit	**164.5**	**0.5**	**165.0**	109.7	1.7	111.4
Adjustments for:						
Amortisation of intangible assets	**12.9**	**-**	**12.9**	19.5	-	19.5
Restructuring charges	**15.3**	**-**	**15.3**	36.3	-	36.3
GMP equalisation charge	**4.5**	**-**	**4.5**	-	-	-
Depreciation	**41.0**	**-**	**41.0**	43.7	-	43.7
EBITDA (Note 16.12)	**238.2**	**0.5**	**238.7**	209.2	1.7	210.9
Net increase in inventories	**(20.7)**	**-**	**(20.7)**	(19.4)	-	(19.4)
Net increase in trade receivables	**(4.9)**	**-**	**(4.9)**	(36.9)	-	(36.9)
Net increase in trade payables	**3.6**	**-**	**3.6**	44.1	-	44.1
Net decrease/(increase) in other working capital	**1.8**	**(0.6)**	**1.2**	11.7	(2.5)	9.2
Outflow related to restructuring charges	**(19.3)**	**-**	**(19.3)**	(27.3)	-	(27.3)
Net retirement benefit obligations	**(3.4)**	**-**	**(3.4)**	(4.8)	-	(4.8)
Cash generated from operations	**195.3**	**(0.1)**	**195.2**	176.6	(0.8)	175.8

10 Employee benefits

The net employee benefits balance as at 31 December 2018 of £15.3m (2017: £16.5m) in respect of the Group's defined benefit retirement plans and other post-retirement benefits plans, results from an actuarial valuation of the Group's defined benefit pension and other post-retirement obligations as at that date. As analysed in the following table, the net balance comprised net surpluses/(assets) of £90.8m (2017: £92.4m), relating largely to the Group's main defined benefit pension plan in the UK, together with net liabilities/(deficits) of £106.1m (2017: £108.9m).

	2018 £m	2017 £m
Employee benefits — net surpluses		
UK defined benefit pension plans	**89.7**	91.4
ROW defined benefit pension plans	**1.1**	1.0
Net surpluses	**90.8**	92.4
Employee benefits — net liabilities		
UK defined benefit pension plans	**(1.8)**	(1.9)
US defined benefit pension plans	**(32.5)**	(32.2)
Germany defined benefit pension plans	**(47.8)**	(49.4)
ROW defined benefit pension plans	**(16.7)**	(18.9)
Other post-retirement benefit plans	**(7.3)**	(6.5)
Net liabilities	**(106.1)**	(108.9)
Total liabilities	**(15.3)**	(16.5)

10 Employee benefits (continued)

The total net charge of £9.8m (2017: £7.4m) recognised in the Group Income Statement in respect of the Group's defined benefit pension plans and other post-retirement benefits plans is recognised in the following lines.

		2018 **£m**	2017 £m
In arriving at trading profit (as defined in Note 16)	— within other manufacturing costs	**1.5**	2.4
	— within administration, selling and distribution costs	**3.7**	4.4
In arriving at profit before tax	— within restructuring charges	**-**	-
	— GMP equalisation charge	**4.5**	-
	— within net finance costs	**0.1**	0.6
Total net charge		**9.8**	7.4

11 Contingent liabilities

Guarantees given by the Group under property leases of operations disposed of amounted to £0.8m (2017: £1.1m).

Vesuvius has extensive international operations and is subject to various legal and regulatory regimes, including those covering taxation and environmental matters. Several of Vesuvius' subsidiaries are parties to legal proceedings, certain of which are insured claims arising in the ordinary course of the operations of the company involved, and the Directors are aware of a number of issues which are, or may be, the subject of dispute with tax authorities. Provisions are made for the expected amounts payable in respect of known or probable costs resulting both from legal or other regulatory requirements, or from third-party claims.

Certain of Vesuvius' subsidiaries are subject to lawsuits, predominantly in the US, relating to a small number of products containing asbestos manufactured prior to the acquisition of those subsidiaries by Vesuvius. These suits usually also name many other product manufacturers. To date, Vesuvius is not aware of there being any liability verdicts against any of these subsidiaries. A number of lawsuits have been withdrawn, dismissed or settled and the amount paid, including costs, in relation to this litigation has not had a material adverse effect on Vesuvius' financial position or results of operations.

As the settlement of many of the obligations for which reserve is made is subject to legal or other regulatory process, the timing and amount of the associated outflows is subject to some uncertainty.

12 Related parties

All transactions with related parties are conducted on an arm's length basis and in accordance with normal business terms. Transactions between related parties that are Group subsidiaries are eliminated on consolidation.

13 Discontinued operations

Discontinued operations income during 2018 of £0.5m (2017: £1.7m) related to a release of provisions no longer required.

	2018	2017
	£m	£m
Other income	**0.5**	1.7
Profit before tax — attributable to owners of the parent	**0.5**	1.7
Earnings per share — pence		
Basic	**0.2**	0.7
Diluted	**0.2**	0.6

14 Provisions

	Disposal and closure costs	**Restructuring charges**	**Other**	**Total**
	£m	**£m**	**£m**	**£m**
As at 1 January 2018	36.1	22.9	5.2	64.2
Exchange adjustments	2.2	0.1	0.1	2.4
Charge to Group Income Statement	3.6	15.3	9.3	28.2
Unused amounts released to Group Income Statement	(0.5)	-	-	(0.5)
Adjustment to discount	1.2	0.1	-	1.3
Cash spend	(2.8)	(19.3)	(10.1)	(32.2)
Transferred to other balance sheet accounts	-	(1.7)	0.2	(1.5)
As at 31 December 2018	**39.8**	**17.4**	**4.7**	**61.9**

In assessing the probable costs and realisation certainty of provisions, or related assets, reasonable assumptions are made. Changes to the assumptions used could significantly alter the Directors' assessment of the value, timing or certainty of the costs or related amounts.

15 Analysis of derivative financial instruments

	2018		2017	
	Assets	**Liabilities**	Assets	Liabilities
	£m	**£m**	£m	£m
Derivatives not designated for hedge accounting purposes	**0.8**	**(0.6)**	0.3	-
Total derivative financial instruments	**0.8**	**(0.6)**	0.3	-

The Group uses derivative financial instruments ('derivatives'), in the form of forward foreign currency contracts to manage the effects of its exposure to foreign exchange risk. Derivatives are only used for economic hedging purposes and not as speculative investments. However, where derivatives do not meet the hedge accounting criteria, they are classified as 'held for trading' for accounting purposes and are accounted for at fair value through profit or loss. They are presented as current assets or liabilities to the extent they are expected to be settled within 12 months after the end of the reporting period.

The fair value of derivatives outstanding at the year-end has been reported in the Income Statement in 2018. All of the fair values shown in the table above are classified under IFRS 13 as Level 2 measurements which have been calculated using quoted prices from active markets, where similar contracts are traded, and the quotes reflect actual transactions in similar instruments. All of the derivative assets and liabilities reported in the table above will mature within a year of the balance sheet date.

16 Alternative Performance Measures

The Company uses a number of Alternative Performance Measures ('APMs') in addition to those reported in accordance with IFRS. The Directors believe that these APMs, listed below, are important when assessing the underlying financial and operating performance of the Group and its divisions, providing management with key insights and metrics in support of the ongoing management of the Group's performance and cash flow. A number of these align with KPIs and other key metrics used in the business and therefore are considered useful to also disclose to the users of the financial statements. The following APMs do not have standardised meaning prescribed by IFRS and therefore may not be directly comparable to similar measures presented by other companies.

16.1 Headline

Headline performance, reported separately on the face of the Group Income Statement, is from continuing operations and before items reported separately on the face of the Group Income Statement.

16.2 Underlying revenue, underlying trading profit and underlying return on sales

Underlying revenue, underlying trading profit and underlying return on sales are the headline equivalents of these measures after adjustments to exclude the effects of changes in exchange rates, business acquisitions and disposals. Reconciliations of underlying revenue and underlying trading profit can be found in the Financial Summary. Underlying revenue growth is one of the Group's key performance indicators and provides an important measure of organic growth of Group businesses between reporting periods, by eliminating the impact of exchange rates, acquisitions, disposals and significant business closures.

16.3 Return on sales ('ROS')

ROS is calculated as trading profit divided by revenue. It is one of the Group's key performance indicators and is used to assess the trading performance of Group businesses. A reconciliation of ROS is included in Note 2.

16.4 Trading profit

Trading profit is defined as operating profit before separately reported items. It is one of the Group's key performance indicators and is used to assess the trading performance of Group businesses. It is also used as one of the targets against which the annual bonuses of certain employees are measured.

16.5 Headline profit before tax

Headline profit before tax is calculated as the net total of trading profit, plus the Group's share of post-tax profit of joint ventures and total net finance costs associated with headline performance. It is one of the Group's key performance indicators and is used to assess the financial performance of the Group as a whole.

16.6 Effective tax rate ('ETR')

The Group's ETR is calculated on the income tax costs associated with headline performance, divided by headline profit before tax and before the Group's share of post-tax profit of joint ventures.

16.7 Headline earnings per share

Headline earnings per share is calculated by dividing headline profit before tax less associated income tax costs, attributable to owners of the parent by the weighted average number of ordinary shares in issue during the year. It is one of the Group's key performance indicators and is used to assess the underlying earnings performance of the Group as a whole. It is also used as one of the targets against which the annual bonuses of certain employees are measured. Headline earnings per share is disclosed in Note 6 of the Group Financial Statements.

16.8 Operating cash flow

Operating cash flow is cash generated from continuing operations before restructuring and additional pension funding contributions but after deducting capital expenditure net of asset disposals. It is used in calculating the Group's cash conversion. A reconciliation of cash generated from operations to operating cash flow can be found in the Financial Review in the 2018 Annual Report and Financial Statements.

16.9 Cash conversion

Cash conversion is calculated as operating cash flow divided by trading profit. It is useful for measuring the rate at which cash is generated from trading profit. It is also used as one of the targets against which the annual bonuses of certain employees are measured. The calculation of cash conversion is detailed in the Financial Review.

16.10 Free cash flow

Free cash flow is defined as net cash flow from operating activities after net outlays for the purchase and sale of property, plant and equipment, dividends from joint ventures and dividends paid to non-controlling shareholders, but before additional funding contributions to Group pension plans. It is one of the Group's key performance indicators and is used to assess the underlying cash generation of the Group and is one of the measures used in monitoring the Group's capital. A reconciliation of free cash flow is included underneath the Group Statement of Cash Flows.

16.11 Average trade working capital to sales ratio

The average trade working capital to sales ratio is calculated as the percentage of average trade working capital balances to the total revenue for the year, at constant currency. Average trade working capital (comprising inventories, trade receivables and trade payables) is calculated as the average of the 12 previous month-end balances. It is one of the Group's key performance indicators and is useful for measuring the level of working capital used in the business and is one of the measures used in monitoring the Group's capital.

16.12 Earnings before interest, tax, depreciation and amortisation ('EBITDA')

EBITDA is calculated as the total of trading profit before depreciation and amortisation of non-acquired intangibles charges. It is used in the calculation of the Group's interest cover and net debt to EBITDA ratios. A reconciliation of EBITDA is included in Note 9.

16.13 Net interest

Net interest is calculated as interest payable on borrowings less interest receivable, excluding any item separately reported. It is used in the calculation of the Group's interest cover ratio.

16.14 Interest cover

Interest cover is the ratio of EBITDA to net interest. It is one of the Group's key performance indicators and is used to assess the financial position of the Group and its ability to fund future growth. This measure is also a component of the Group's covenant calculations.

16.15 Net debt

Net debt comprises the net total of current and non-current interest-bearing borrowings and cash and short-term deposits. Net debt is a measure of the Group's net indebtedness to banks and other external financial institutions. A reconciliation of the movement in net debt is included in Note 8.

16.16 Net debt to EBITDA

Net debt to EBITDA is the ratio of net debt at the year-end to EBITDA for that year. It is one of the Group's key performance indicators and is used to assess the financial position of the Group and its ability to fund future growth and is one of the measures used in monitoring the Group's capital.

16.17 Return on net assets ('RONA')

RONA is calculated as trading profit plus share of post-tax profit of joint ventures, divided by average net operating assets, at constant currency (being the average over the previous 12 months of property, plant and equipment, trade working capital, interests in joint ventures and associates, investments and other operating receivables, payables and provisions). It is one of the Group's key performance indicators and is used to assess the financial performance and asset management of the Group and is one of the measures used in monitoring the Group's capital.

16.18 Constant currency

Figures presented at constant currency represent 2017 amounts retranslated to average 2018 exchange rates.

17 Exchange rates

The Group reports its results in pounds sterling. A substantial portion of the Group's revenue and profits are denominated in currencies other than pounds sterling. It is the Group's policy to translate the income statements and cash flow statements of its overseas operations into pounds sterling using average exchange rates for the year reported (except when the use of average rates does not approximate the exchange rate at the date of the transaction, in which case the transaction rate is used) and to translate balance sheets using year-end rates. The principal exchange rates used were as follows:

	Income and expense Average rates			Assets and liabilities Year-end rates		
	2018	2017	Change	**2018**	2017	Change
US Dollar	**1.34**	1.29	3.4%	**1.28**	1.35	(5.2%)
Euro	**1.13**	1.14	-	**1.11**	1.13	(1.8%)
Chinese Renminbi	**8.82**	8.70	1.4%	**8.77**	8.79	-
Japanese Yen	**147.36**	144.44	2.0%	**139.77**	152.24	(8.2%)
Brazilian Real	**4.87**	4.09	19.1%	**4.95**	4.48	10.5%
Indian Rupee	**91.18**	83.83	8.8%	**88.74**	86.25	2.9%
South African Rand	**17.63**	17.15	2.8%	**18.30**	16.70	9.6%

18 Post Balance Sheet Event

On 27 February 2019 the Group signed an agreement to acquire the entire issued share capital of CCPI Inc ("CCPI"), a specialty refractory producer focused on tundish (steel continuous casting) applications (65% of sales) and aluminium (35% of sales). CCPI is based in Ohio, USA, and will become part of the Group's Advanced Refractories business unit. The transaction values CCPI at US$43.4 million (£33.1 million) on a cash and debt free basis. The acquisition is expected to close within the coming week.

Alternative performance measures – Supplementary information

5-year history at constant currency

	2014	2015	2016	2017	2018
Revenue (£m)	**1,596.7**	**1,499.5**	**1,447.1**	**1,632.3**	**1,798.0**
Steel	1,091.8	1,011.0	971.6	1,113.8	1,236.7
Foundry	504.9	488.5	475.5	518.6	561.3
Trading Profit (£m)	**162.3**	**140.4**	**137.0**	**158.8**	**197.2**
Steel	110.7	88.4	82.6	96.7	128.3
Foundry	51.5	52.1	54.4	62.1	68.9
Return on Sales	**10.2%**	**9.4%**	**9.5%**	**9.7%**	**11.0%**
Steel	10.1%	8.7%	8.5%	8.7%	10.4%
Foundry	10.2%	10.%	11.4%	12.0%	12.3%