VESUVIUS PLC

30 July 2020

Half Year Results for the six months ended 30 June 2020

Strong cash generation in an unprecedented market downturn

Vesuvius plc, a global leader in molten metal flow engineering and technology, announces its unaudited results for the six months ended 30 June 2020.

Financial summary	H1 2020 (£m)	H1 2019 (£m)	Year-on-year change	Underlying change[1]
Revenue	720.0	889.4	(19.0%)	(18.4%)
Trading Profit[2]	51.1	98.9	(48.3%)	(48.7%)
Return on Sales[2]	7.1%	11.1%	-402bps	-412bps
Operating Profit	39.8	83.2	(52.2%)	
Headline Profit Before Tax[2]	45.9	93.2	(50.8%)	
Profit Before Tax	34.6	78.6	(56.0%)	
Profit	24.9	55.8	(55.4%)	
Headline Earnings[2]	31.3	63.8	(50.9%)	
Headline EPS[2] (pence)	11.6	23.7	(51.1%)	
Statutory EPS (pence)	8.4	19.5	(56.9%)	
Adjusted operating cash flow[2]	70.8	81.8	(13.4%)	
Cash generated from operations	79.2	100.0	(20.8%)	
Net Debt[2]	229.7	307.0	(25.2%)	
Dividend (pence)	-	6.2	-	

[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 17 in the Group Condensed Financial Statements

Half Year 2020 Highlights

- H1 2020 revenues of £720.0m, an 18.4% decline on an underlying basis, driven by significantly lower global steel production and industrial output across the world
- H1 2020 trading profit of £51.1m and Return-on-Sales of 7.1%, supported by restructuring as well as Covid-19 crisis-related savings
- Strong cash conversion rate of 139% (H1 2019: 83%) demonstrates our ability to generate cash through the cycle, with £22.4m of cash released from working capital in Q2 as a result of efficient management of inventories and receivables
- Covid-19 crisis-related savings of £18.6m delivered in Q2, including a reduction in planned employee incentives of £5.9m
- On track to deliver £10m per quarter of such savings in H2, assuming that weak market conditions persist at the current level
- Further crisis related actions to preserve cash include £20m cut to 2020 capex and withdrawal of the final 2019 dividend. The Board has not declared an interim dividend at this time and will review the position as the year progresses
- Restructuring programmes remain on-track despite the crisis and we delivered £12.3m of recurring cost savings in H1 2020
- Improved liquidity and significant covenant headroom with net debt/EBITDA at 1.2x, versus current covenant threshold of 3.0x, which will increase to 3.25x after redemption of USPP notes maturing in December 2020, which will be repaid in August

Comment from Patrick André, CEO:

"Vesuvius demonstrated the strength and resilience of its flexible business model in H1 with a strong positive free cash flow generation[1]. Our quick and decisive implementation of Covid-related cost savings measures, in addition to the planned delivery of the recurring savings from our restructuring programme, allowed us to limit the negative impact of the pandemic on our results. Looking forward, the first signs of improvement are now apparent in both Steel and Foundry, but we expect the pace of a recovery to be slow over the coming months. Consequently, the Board has not declared an interim dividend at this time and will review the position as the year progresses. Likewise, until we have greater certainty on the shape of the recovery, we cannot provide meaningful guidance as to our full year results. However, thanks to the optimisation of our manufacturing footprint over the past three years, Vesuvius is now very well positioned to benefit from the recovery of end markets when it occurs."

[1] For definitions of non-GAAP measures, refer to Note 17 in the Group Condensed Financial Statements

Presentation of H1 2020 Results

The management of Vesuvius will be presenting the Group's results for the first half of 2020 at 09:00 UK time today. The presentation will be broadcast live and an archive version of the presentation will be made available on the Group's website.
https://www.lsegissuerservices.com/spark/Vesuvius/events/bd7860b8-349c-4b50-a7dd-62b70cfa0a7b

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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 accounts.

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.

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Vesuvius plc

Half Year Results for the six months ended 30 June 2020

Vesuvius has been successful in mitigating the impact of the ongoing crisis, as reflected in the £70.8m of adjusted operating cash flow generated despite steep volume declines across all of our end markets.

The World Steel Association reports that in H1 2020, steel production in the world excluding China declined 14.3% year-on-year (-3.6% in Q1 and -24.8% in Q2 year-on-year). Foundry end-markets across all regions have also been significantly impacted by the crisis, with global production of both light vehicles and medium and heavy commercial vehicles down 34.5% and 37.7%, respectively.

£m	**H1 2020 Reported**	**Acquisitions /Disposals**	**H1 2020 Underlying**	H1 2019 Reported	Currency	Acquisitions /Disposals	H1 2019 Underlying	Reported % change	Underlying % change
Revenue	720.0	(11.9)	708.1	889.4	(11.6)	(10.0)	867.8	(19.0%)	(18.4%)
Trading Profit	51.1	(1.8)	49.3	98.9	(1.9)	(0.8)	96.2	(48.3%)	(48.7%)
Return on Sales %	7.1%		7.0%	11.1%			11.1%	-402bps	-412bps

Safety and impact on operations of Covid-19

Vesuvius' priority remains the health and safety of our employees and other stakeholders. We continue to comply with the instructions of governments and health authorities in countries where we operate to help prevent the further spread of infection. Across our network we continue to take all necessary actions to maintain a safe working environment for our employees.

As of 1 May 2020, all of our plants were operational with re-configured layouts and processes to prioritise the safety of our employees. The Group has successfully supported c.2,000 of its employees working remotely during the pandemic and continues to do so in line with applicable government and state guidance.

Group trading performance

In the first half of 2020, the Group generated revenues of £720m, a decline of 19.0% versus H1 2019 on a reported basis (-11.8% in Q1 and -26.2% in Q2 versus the comparable periods in 2019). Our year-on-year sales comparison versus 2019 indicates some recovery towards the end of Q2 relative to the 28% year-on-year sales decline we previously disclosed for April 2020. Underlying Group revenue, adjusted for the effects of currency translation, acquisitions and disposals, declined by 18.4%. Trading profit (EBITA) for the half year was £51.1m (H1 2019: £98.9m), down 48.3% on a reported basis and 48.7% on an underlying basis. Return on Sales contracted to 7.1% in H1 2020 (H1 2019: 11.1%).

Underlying performance is adjusted for the acquisition of CCPI, completed on 1 March 2019.

Year-on-year development in revenues:

Trading performance y-o-y %	Underlying H1 20/19	Reported H1 20/19	*Q1 20/19*	*Q2 20/19*
Steel Division	-15.5%	-16.0%	*-9.4%*	*-22.5%*
Foundry Division	-24.8%	-25.8%	*-17.2%*	*-34.5%*
Group	-18.4%	-19.0%	***-11.8%***	***-26.2%***

Strategic progress

Vesuvius' core strategic objective is to deliver long-term sustainable and profitable growth. We have a clear strategy to achieve this objective centred around five key execution priorities. Despite the challenges from the ongoing crisis, we have made further progress on these priorities in H1 2020 whilst balancing them with the near-term objective of preserving capital through cost-savings whilst the crisis continues.

- **Reinforce our technology leadership**
  - We have maintained our R&D spend focused on growth projects, despite Group-wide cost-saving measures in response to the ongoing crisis
- **Increase the penetration of our value-creating solutions**
  - Successful launch in H1 2020 of 5 new products including energy-efficient crucibles and robot-ready ladle gates
  - At least 10 new product launches planned for the remainder of 2020 despite challenging markets
- **Capture the growth in developing markets**
  - Outperformance of end markets in the world (excluding China and Iran) in both Steel and Foundry, along with a strong performance of Foundry in China
- **Improve our cost leadership and margins**
  - In H1 2020 we delivered £12.3m of recurring restructuring savings relative to H1 2019
  - Additionally, we delivered Covid-19 crisis-related savings of £18.6m in Q2, including a reduction in planned employee incentives of £5.9m
  - On track to deliver £10m per quarter of such savings in H2, assuming that weak market conditions persist at the current level
- **Develop our Technical Service offering**
  - Increased penetration of our robotic and laser measurement solutions

Foreign exchange

The net impact of average H1 2020 exchange rates compared to H1 2019 averages has been a H1 2020 headwind of approximately £1.9m at trading profit level. If exchange rates remained at the end of June 2020 level throughout H2 2020, we would expect the full year foreign exchange headwind to be approximately £3m.

Restructuring

In H1 2020, we delivered total recurring cost savings of £12.3m relative to H1 2019. We remain on track to deliver the full year £19.4m in recurring cost savings from the expanded restructuring programme announced in July 2019. In 2021 and 2022 there are an additional c.£8m of savings to be delivered. No additional projects are currently expected to be added to the existing restructuring programme. Savings are estimated to be delivered by 2022 and the majority of costs for this programme were booked in 2019 and a residual £2.5m has been reported in H1 2020.

Mitigating actions in response to Covid-19

In response to the pandemic, we have implemented several temporary cost reduction plans that delivered savings of £18.6m in Q2 (£7.8m in reduced employment costs, £4.9m in reduced discretionary spend and a reduction in planned employee incentives of £5.9m). The savings have exceeded expectations during the second quarter and we are on track to deliver £10m per quarter of such savings in H2 assuming weak market conditions persist at the current level.

We have also reduced our planned capital expenditures by 30% in 2020, a reduction of £20m.

Working Capital (all changes quoted in constant currency)

Our average Trade Working Capital / Sales for the prior 12 months was 24.6% at the end of H1 2020, slightly higher than the 24.0% at year-end 2019. Trade working capital decreased by £7.8m between December 2019 and June 2020 whilst £22.4m of cash was released from working capital as sales declined sharply in the second quarter. The reduction in working capital since H1 2019 amounts to £82.6m. This is due not only to the decline in sales but also to a particular focus on inventory and trade debtors. Inventory was only marginally higher, by £3.7m in June 2020 versus December 2019 and we have reported pleasing reductions in raw material levels and Foundry finished goods. Trade debtors were lower by £26.6m over the same period, in part due to a reduction in overdue balances.

Tax

Our Effective Tax Rate ("ETR") in H1 2020 was 27.2% (28.0% in H1 2019). This resulted in an H1 2020 headline tax charge of £12.3m, (2019: half year £26.0m; full year £43.8m).

Financial position and liquidity

Net Debt at 30 June 2020 was reduced to £229.7m from £245.8m at the end of 2019 on Free Cash Flow of £44.5m. The positive impact of Free Cash Flow in reducing Net Debt was partially offset by GBP weakness which meant that our debt denominated in dollars and euros translated into a higher GBP amount relative to year-end 2019. Our Net Debt / LTM EBITDA ratio was 1.2x at 30 June 2020 versus 1.1x at the end of 2019. This provides us with significant headroom against our debt covenant limit of 3.0x net debt/LTM EBITDA, which will expand to 3.25x once we redeem the USPP notes maturing in December, which will be repaid in August.

In April 2020, Vesuvius also took steps to boost its liquidity, through borrowing £200m from the Bank of England's Covid Corporate Financing Facility ("CCFF") programme and raising c.£115m (US$140m) from the US private placement ("USPP") market. As at 30 June 2020, our liquidity stood at £706m.

Quality, health and safety

The Board and the entire leadership team of Vesuvius place great emphasis on the importance of quality, health and safety in the workplace and in the communities in which we operate. We have provided support to local communities during the crisis with various initiatives, including assistance in procuring PPE. 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 Lost Time Injury Frequency Rate has improved from 1.42 LTIs in H1 2019 to 1.07 LTIs per million hours worked in H1 2020.

Dividends

The Board is continuously reviewing the situation in each of our markets and will revisit the decision on dividends when there is greater clarity on the duration and extent of the impact of the Covid-19 crisis. The Board has not declared an interim dividend at this time and will review the position as the year progresses.

Outlook

We have demonstrated the strength and resilience of our flexible business model in H1 with a strong positive free cash flow generation. Our quick and decisive implementation of Covid-19 related cost savings measures, in addition to the planned delivery of the recurring savings from our restructuring programme, allowed us to limit the negative impact of the pandemic on our results. Looking forward, the first signs of improvement are now apparent in both Steel and Foundry but we expect the pace of the recovery to be slow over the coming months. Consequently, the Board has not declared an interim dividend at this time and will review the position as the year progresses. Likewise, until we have greater certainty on the shape of the recovery, we cannot provide meaningful guidance as to our full year results. However, thanks to the optimisation of our manufacturing footprint over the past three years, Vesuvius is now very well positioned to benefit from the recovery of end markets when it occurs.

Operational Review

Vesuvius comprises two Divisions, Steel and Foundry. The Steel Division operates as three business lines, Steel Flow Control, Advanced Refractories and Sensors & Probes (formerly Digital Services).

Steel Division

The Covid-19 crisis led to sharp declines in steel production volumes across the world during Q2 2020. Global steel production excluding China fell 14.3% year-on-year in H1 2020 according to the World Steel Association. Including China, global production was down 6.0% during the period. Steel production fell 18.7% in the EU27 + UK, 19.9% in South America, and 17.6% in NAFTA. The Asia-Pacific region held up relatively well, supported by China, where volumes were marginally higher compared to the same period in 2019.

The table below presents the year-on-year change in steel production volumes for H1 2020 and also for Q1 and Q2. The year-on-year declines which occurred in the majority of regions during Q2 2020, illustrate the impact the Covid-19 crisis has had on production volumes when compared to the year-on-year trend in Q1, which was largely unaffected by the Covid-19 crisis.

Crude Steel Production year-on-year Change	**H1 '20/'19**	***Q1 '20/'19***	***Q2 '20/'19***
China	1.4%	1.4%	3.0%
India	-24.2%	-7.6%	-41.6%
NAFTA	-17.6%	-3.6%	-31.9%
South America	-19.9%	-5.9%	-33.6%
EMEA ex Iran	-13.0%	-4.3%	-21.6%
EU 27 + UK	-18.7%	-9.7%	-27.8%
World	-6.0%	-1.0%	-9.7%
World ex-China	-14.3%	-3.6%	-24.8%
World ex China & Iran	-15.0%	-4.1%	-25.8%

Source: World Steel Association (Month-to-date totals may include revised data not available on a monthly basis)
(Year-on-Year refers to comparison between H1 2020 and H1 2019)

Vesuvius' Steel Division generated revenues of £516.3m in H1 2020, a 15.5% decline compared to H1 2019 on an underlying basis, reflecting the weakness in steel markets around the world. Despite the challenging markets resulting from the pandemic, we are encouraged by the Group's outperformance of the wider steel market (-13.3% sales, -15% steel market in the world excluding China and Iran). Regions in which we outperformed underlying markets volume wise include EMEA (excluding Iran), NAFTA, South America, India and North Asia.

Trading profit in the Steel Division declined 40.4% year-on-year (-41.3% on an underlying basis), reflecting the speed and extent of volume declines as governments imposed lockdowns leading to significant disruption in businesses across the world. Underlying return-on-sales in the Steel Division contracted 323bps, with Covid-related cost-savings measures and benefits from recent restructuring programmes mitigating some of the impact of the ongoing crisis.

Steel Division	**H1 2020 (£m)**	**H1 2019 (£m)**	**Change (%)**	**Underlying change (%)**
Steel Flow Control Revenue	274.4	322.9	(15.0%)	(13.7%)
Steel Advanced Refractories Revenue	228.8	276.6	(17.3%)	(18.0%)
Sensors & Probes	13.1	15.4	(14.8%)	(8.0%)
Total Steel Revenue	**516.3**	**614.9**	**(16.0%)**	**(15.5%)**
Total Steel Trading Profit	**38.9**	**65.3**	**(40.4%)**	**(41.3%)**
Total Steel Return on Sales	**7.5%**	**10.6%**	**-308bps**	**-323bps**

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	H1 2020 (£m)	H1 2019 (£m)	Change (%)	Underlying change (%)
Americas	92.2	108.2	(14.8%)	(12.1%)
Europe, Middle East & Africa (EMEA)	101.5	125.2	(18.9%)	(18.5%)
Asia-Pacific	80.7	89.5	(9.8%)	(9.0%)
Total Steel Flow Control Revenue	**274.4**	**322.9**	**(15.0%)**	**(13.7%)**

In the first half of 2020, underlying revenues in the Group's Steel Flow Control business declined 13.7% year-on-year to £274.4m, with all regions posting significant declines during the period.

In EMEA, Steel Flow Control revenues declined 18.5% compared to H1 2019 on an underlying basis. Flow Control sales volumes outperformed the steel market in EEMEA excluding Iran (-5.5% sales vs. -7.3% steel market) and were in-line in the EU27+UK (-18.7% for sales and the steel market). In the Americas, underlying Steel Flow Control revenues fell 12.1% year-on-year, with sales volumes also outperforming the steel market in the region. The outperformance was driven in particular by strong results in South America and the US. Our Steel Flow Control revenues declined 9.0% in Asia Pacific, with China declining 5.2% year-on-year, as the flat steel market in China has been more affected by the virus than the steel market as a whole.

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	H1 2020 (£m)	H1 2019 (£m)	Change (%)	Underlying change (%)
Americas	77.3	89.6	(13.7%)	(18.7%)
Europe, Middle East & Africa (EMEA)	97.2	125.8	(22.8%)	(21.6%)
Asia-Pacific	54.3	61.2	(11.3%)	(9.8%)
Total Steel Advanced Refractories Revenue	**228.8**	**276.6**	**(17.3%)**	**(18.0%)**

Steel Advanced Refractories reported revenues of £228.8m in H1 2020, a decrease of 17.3% compared to H1 2019 on a reported basis (-18.0% on an underlying basis), with performance relative to the steel markets varying across regions.

Revenues declined 13.7% to £77.3m in the Americas (-18.7% underlying), versus the 18.2% steel market decline in the region, supported by strong performances in South America (-0.5% sales vs. -19.9% steel market) and the USA (-15.3% sales vs. -18.3% steel market). In EMEA (excluding Iran), our Advanced Refractories revenues declined by 14.1%, versus the 13.0% steel market decline but outperformed the market volume-wise. In Europe (EU 27 + UK), we outperformed the steel market in the region significantly, with a revenue decline of 9.6% versus the steel market volume decline of 18.7%. Our revenues were £54.3m in Asia Pacific, representing a year-on-year decline of 11.3%, as our sales volumes outperformed the steel markets in India, South Korea and Taiwan but underperformed in China.

Sensors and Probes (formerly Digital Services)

The Sensors and Probes business unit offers products to our customers to enable them to make their underlying processes more efficient and reliable. The business unit focuses on providing a range of sensors and probes 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. These products 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.

Sensors and Probes Revenue	**H1 2020 (£m)**	**H1 2019 (£m)**	**Change (%)**	**Underlying change (%)**
Americas	8.1	10.1	(19.9%)	(9.7%)
Europe, Middle East & Africa (EMEA)	4.9	5.2	(5.3%)	(5.4%)
Asia-Pacific	0.1	0.1	31.4%	34.9%
Total Sensors and Probes Revenue	**13.1**	**15.4**	**(14.8%)**	**(8.0%)**

Revenues in Sensors and Probes were £13.1m in H1 2020, representing an underlying decline of 8.0.% year-on-year, significantly better than the decline of the steel market in the world outside China (Sensors and Probes sales in China are negligible at this stage).

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	**H1 2020 (£m)**	**H1 2019 (£m)**	**Change (%)**	**Underlying change (%)**
Foundry Revenue	203.7	274.5	(25.8%)	(24.8%)
Foundry Trading Profit	12.2	33.6	(63.6%)	(62.9%)
Foundry Return on Sales	**6.0%**	**12.2%**	**-624bps**	**-617bps**

Foundry end-markets across all regions have also been significantly impacted by the crisis. The automotive industry (light vehicle and medium and heavy commercial vehicles), which makes up approximately one-third of Vesuvius' Foundry end-markets, has experienced disruptions on both the supply and demand sides, exacerbating the weak trends in the sector going into the crisis. In H1 2020, global light vehicle production fell 34.5% compared to H1 2019, which was already down 7.0% compared to H1 2018. Production of medium and heavy commercial vehicles were also down 37.7% during the first half of the year. The majority of end markets, except for essential construction and general manufacturing, were significantly disrupted across all regions.

Foundry Revenue	H1 2020 (£m)	H1 2019 (£m)	Change (%)	Underlying change (%)
Americas	44.1	61.2	(27.9%)	(25.3%)
Europe, Middle East & Africa (EMEA)	90.0	124.2	(27.5%)	(26.7%)
Asia-Pacific	69.6	89.1	(21.9%)	(21.8%)
Total Foundry Revenue	**203.7**	**274.5**	**(25.8%)**	**(24.8%)**

On the back of the weak market trends described above, underlying revenues in the Foundry Division fell 24.8% year-on-year to £203.7m in H1 2020, with the rate of decline broadly consistent across regions.

However, we are pleased to report that despite end market headwinds, our Foundry team in China managed to increase revenues by 2.8% year-on-year in H1 2020, as a tentative recovery towards the end of the first half offset the decline earlier in the year. We experienced significant declines in the rest of Asia Pacific, notably in India, where revenues declined 43.0% in the first half of the year, in part due to the abrupt national shutdown in April, combined with weak trends in Q1 2020 prior to the Covid-19 crisis. In the Americas, our underlying Foundry revenues fell 25.3%, while revenues in EMEA declined 26.7%, due in both cases to the impact of the Covid-19 crisis.

Underlying trading profit fell 62.9% in H1 2020, implying a 617 bp contraction in Return on Sales. The contraction reflects the extent, as well as the speed of volume declines in Foundry end-markets, resulting in reduced capacity utilisation.

Financial Review

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

Basis of Preparation

We have continued to adopt a columnar presentation format for our accounts separately identifying headline performance results, as we consider that this gives a better view of the underlying results of the ongoing business.

Dividend

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. The Board is continuously reviewing the situation in each of our markets and will decide on dividends when there is greater clarity on the duration and extent of the impact of the Covid-19 crisis. The Board has not declared an interim dividend at this time and will continue to review the position as the year progresses.

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, where 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 acquired businesses in both the current and prior years

Therefore, for 2020, we have:

- Retranslated 2019 results at the FX rates used in calculating the 2020 results
- Removed the results of CCPI, which was acquired during 2019

Objective: Deliver growth

KPI: Underlying revenue growth

Reported revenue for H1 2019 was £889.4m, which after FX translation effects and removing the impact of disposed businesses, equated to £867.8m on an underlying basis. The reported revenue for H1 2020 of £720.0m, which after removing the impact of acquired businesses equated to £708.1m, is a decrease on an underlying basis of 18.4% year-on-year. The reduction has been almost entirely driven by steep volume declines due to the ongoing Covid-19 crisis.

£m	**H1 2020 Revenue**			H1 2019 Revenue				% change	
	As reported	Acquisition /Disposals	Underlying	As reported	Currency	Acquisition /Disposals	Underlying	Reported	Underlying
Steel	**516.3**	**(11.9)**	**504.4**	614.9	(8.0)	(10.0)	596.9	(16.0%)	(15.5%)
Foundry	**203.7**	**-**	**203.7**	274.5	(3.6)	-	270.9	(25.8%)	(24.8%)
Total Group	**720.0**	**(11.9)**	**708.1**	889.4	(11.6)	(10.0)	867.8	(19.0%)	(18.4%)

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 £51.1m decreased by 48.7% on an underlying basis versus H1 2019 whilst RoS was 7.1%, a decrease from 11.1% in H1 2019. The significant decline in trading profit was driven by the steep decline in revenues due to the ongoing crisis, mitigated by crisis-related cost savings measures and the ongoing delivery of benefits from the restructuring programmes.

The Steel Division recorded Return on Sales of 7.5%, a 323 bp contraction from H1 2019, as underlying trading profit fell 41.3% to £38.9m during the period. Return on Sales in the Foundry division declined 617 bps year-on-year to 6.0% in H1 2020 on the back of a 62.9% reduction in underlying trading profit.

£m	**H1 2020 Trading profit**			H1 2019 Trading profit				% change	
	As reported	Acquisition/ Disposals	Underlying	As reported	Currency	Acquisition/ Disposals	Underlying	Reported	Underlying
Steel	**38.9**	**(1.8)**	**37.1**	65.3	(1.3)	(0.8)	63.2	(40.4%)	(41.3%)
Foundry	**12.2**	**-**	**12.2**	33.6	(0.6)	-	33.0	(63.6%)	(62.9%)
Total Group	**51.1**	**(1.8)**	**49.3**	98.9	(1.9)	(0.8)	96.2	(48.3%)	(48.7%)

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 which were £5.9m in H1 2020, £0.3m lower than H1 2019.

Our Headline PBT was £45.9m, 50.8% below last year on a reported basis. Including amortisation (£5.0m), restructuring charges (£2.5m), and vacant site remediation costs (£3.8m), our PBT of £34.6m was 56.0% lower than H1 2019. Headline EPS from continuing operations at 11.6p is 51.1% lower than H1 2019.

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 profits from joint ventures by our average operating assets (property, plant and equipment, trade working capital and 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 average exchange rates for the period to ensure that we focus on sustainable underlying improvements. Our RONA for H1 2020 was 19.6% (2019: half year 28.5%; full year 26.4%).

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. The Group generated adjusted operating cash flows of £70.8m, representing a 13.4% decrease versus H1 2019. This implies a cash conversion rate in H1 2020 of 139% (2019: half year 83%; full year 120%), illustrating once again the strength and resilience of its flexible business model. Free cash flow from continuing operations was £44.5m in H1 2020 (2019: half year £47.5m).

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 H1 2020 was 24.6% (2019: half year 23.9%; full year 24.0%), measured on a 12-month moving average basis. In absolute terms on a constant currency basis trade working capital decreased by £7.8m in H1 2020 following the decline in sales.

KPI: Net debt and interest cover

During the first half of 2020, the Group accessed the Bank of England's Covid Corporate Financing Facility (CCFF) as a precautionary measure whilst the full impact of the crisis remained uncertain. We also successfully launched a new USPP note to cover an older tranche that will mature in December of this year. As at 30 June 2020, the Group had committed borrowing facilities of £942.8m (2019: half year £623.0m; full year £609.7m), of which £254.7m was undrawn (2019: half year £132.7m; full year £174.2m).

Net debt at 30 June 2020 was £229.7m, a £16.1m decrease from 31 December 2019, as free cash flow from continuing operations of £44.5m was offset by items including a £20.0m foreign exchange adjustment, and an increase in leases of £7.5m.

At the end of H1 2020, the net debt to EBITDA ratio was 1.2x (2019: half year 1.3x; full year 1.1x) and EBITDA to interest was 18.0x (2019: half year 21.4x; full year 21.8x). These ratios are monitored regularly to ensure that the Group has sufficient financing available to run the business and fund future growth.

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). The net debt to EBITDA covenant will change to a maximum of three and one-quarter times, once we redeem the USPP Notes maturing in December 2020. Net debt calculations for bank covenant purposes exclude the impact of changes from IFRS 16 and will, consequently, be lower.

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 H1 2020, we spent £14.1m on R&D activities (2019: half year £14.9m; full year £29.1m), which represents 2.0% of our revenue (2019: half year 1.7%; full year 1.7%).

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, foreign exchange rate movements and cost inflation, but these are not 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. In April 2020, Vesuvius took steps to boost its liquidity, through borrowing £200m from the Bank of England's Covid Corporate Financing Facility ("CCFF") programme and raising c.£115m (US$140m) from the US private placement ("USPP") market. As at 30 June 2020, our liquidity stood at £706m. We define liquidity as undrawn committed debt facilities plus our cash on balance sheet, less the £49m of cash in China which is used as collateral against an equivalent loan from Standard Chartered.

Restructuring

We continued to finalise the implementation of our previously announced restructuring programmes, with £12.3m of incremental savings delivered in H1 2020 relative to H1 2019. During the period, we reported £2.5m of restructuring costs (2019: half year £10.7m; full year £39.8m) within separately reported items that all related to finalisation of programmes announced in previous years and were predominantly made up of redundancy and plant closure costs. We are carrying forward into H2 2020 a restructuring provision of £13.4m.

Vacant site remediation

The Group owns a number of disused properties in the US, which do not form part of our trading operations. Costs are being incurred at one of these sites to address the significant increase in the volume of water run-off occurring in 2019 and 2020. We have engaged waste management specialists, are taking actions to reduce the level of water (including hydrological studies), improve treatment processes, and are in contact with the relevant regulatory authorities. We estimate that it will take 18 months to finalise remediation. The costs in H1 2020 for this remediation were £3.8m (2019 half year: nil, 2019 full year: £4.1m.). These non-recurring costs have been treated as a separately reported item. There has been no impact upon headline performance.

Taxation

A key measure of the Group's tax burden is the effective tax rate, which the Group calculates 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. The Group's effective tax rate was 27.2% in H1 2020 (2019: half year 28.0%; full year 25.7%) based on the income tax costs associated with headline performance of £12.3m (2019: half year £26.0m; full year £43.8m).

Capital expenditure

Capital expenditure in H1 2020 was £26.2m (2019: half year £23.6m; full year £74.7m) of which £22.5m was in the Steel Division (2019: half year £17.1m; full year £53.6m) and £3.7m in the Foundry Division (2019: half year £6.5m; full year £21.1m). Capital expenditure on revenue-generating customer installation assets, primarily in Steel, was £4.1m (2019: half year £3.5m; full year £7.8m).

Pensions

The Group has a limited number of historical defined benefit plans located mainly in the UK, USA, Germany and Belgium. The main plans in the UK and USA are largely closed to further benefits accrual and 57% of the liabilities in the UK have already been insured. The total net surplus attributed to these defined benefit obligations at 30 June 2020 was £0.2m (2019: half year £14.8m deficit; full year £8.5m deficit), representing an improvement of £8.7m since 31 December 2019 which is largely attributable to £14.9m of gains arising from changes in actuarial assumptions offset by foreign exchange losses of £6.9m.

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 H1 2020, cash contributions of £4.8m (2019: half year £6.0m; full year £11.3m) were made into the defined contribution plans and charged to trading profit.

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 within 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 and the associated adequacy of the steps being taken to mitigate them.

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. These are further reviewed by the Group Executive Committee. In conjunction with this process, 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. The results of this assessment are then overlaid on the internal assessment of risks to build a comprehensive analysis of existing and emerging risk. 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.

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 2020

During 2020, the Board has continued to review the Group's existing and emerging risks, and to focus on the processes for mitigating and managing these risks. The Board believes that there has been no material change to the Group's principal risks and uncertainties during the year and that the ongoing Covid-19 Pandemic has not given rise to any change in the Principal Risks previously identified by the Group, which are set out in the table below. The Board fully recognises that with the changing economic and social pressures brought about by Covid-19, there has however been a heightened focus on risk and its mitigation. As with the vast majority of companies, the Covid-19 Pandemic is impacting the Group's staff, customers, shareholders and suppliers as well as the Group's financial performance. Certain of the Group's Principal Risks have materialised during this period, namely End Market Risks; People, Culture and Performance and Business Interruption. The Group's existing measures in mitigation of its Principal Risks were initiated and additional actions have been taken specific to the challenges posed by the Covid-19 pandemic.

<u>End Market Risk</u>: Vesuvius has experienced a drop in demand for its products, with an associated impact on revenue, driven by the impact of Covid-19 on the Group's end markets. The Group's existing mitigating factors have come into play in responding to this challenge, with an increased focus on Working Capital management, and close monitoring of Plant Performance. However, in addition, the Group has leveraged government initiatives around the world to ease the financial impact, taking advantage of Tax Deferral schemes, securing additional Government Financing, and receiving furlough financial support.

People, Culture and Performance: The Values of Vesuvius have never been more at the fore. Across the globe our staff have worked tirelessly to give the support required regarding travel/repatriation, office working conditions where necessary, the provision of increased PPE, IT connectivity, whilst staying connected with remote workers. The Group has strengthened its internal communication with weekly interactive calls from the CEO and GEC, a Bi-weekly Newsletter, regular CEO messages and the sharing of best practices, successes and news from around the Group. The focus on values has been maintained, involving employee family initiatives, and continuing our Living the Values Awards competition and support for local communities around the world. Ways of working have been enhanced, with a move to virtual meetings accommodating international time differences and use of webinar product training and customer interaction.

Business interruption: Whilst the Group has suffered some disruption in its manufacturing processes, driven predominantly by government shutdowns and the need to adapt production processes, management responded swiftly and effectively to reduce this impact, minimising plant closures and downtime, and maintaining our ability to supply customers with all orders fulfilled regardless of Government-enforced plant closures. In addition, operating processes have been adjusted to reflect the social distancing required to keep employees safe. Our management's responsiveness has also resulted in other risks not being manifest, with product quality remaining at its high level, our safety culture driving key responses to protect employees and our continued investment in R&D and market-leading research. Finally, the Group's IT function has supported the transition of around 2,000 employees to work from home, increasing server capacity and expanding, as appropriate, the Group's programme of cyber security.

Additional Medium to Long Term Considerations:

In the event of a protracted Pandemic, Management's response to the following risks will continue to be closely evaluated:

- Protectionism and Globalisation giving rise to disruption of global supply chains and movement of people.
- Further End Market Risks arising from a prolonged recession of the global economy.
- People, Culture and Performance with the need to ensure the ongoing mental health of staff subject to protracted periods of remote working against a background of uncertain/ anxious times.
- ESG, with an increased focus on employee and social issues as the longer-term effects of the pandemic become clear.

The Board also remains cognisant of the fundamental impact of ESG risks on the business and during recent months the Group has continued to focus on ways for the organisation to address these risks and contribute to the climate change agenda. In addition, the Board has continued to monitor the implications of certain other emerging 'macro' trends such as automation in manufacturing and increasing digitalisation, both of which could act as disruptors to industry, and has retained focus on the increasing issues posed by cyber threats, with further work undertaken by the Group's Cyber Committee on developing and implementing strategies to deal with these ongoing risks.

Brexit

Following the exit of the UK from the EU on 31 January 2020 under the Withdrawal Agreement the UK is currently subject to a Transition Period which will run until the end of 2020. During the Transition Period the UK remains in the Single Market and the Customs Union of the EU while the terms of a new trade agreement are negotiated. If those negotiations are not completed and ratified before the end of the Transition Period, World Trade Organisation rules may apply.

Vesuvius has analysed the potential challenges posed by Brexit, including the possibility of a 'no trade deal' situation occurring at the end of 2020, and identified mitigation strategies to address those challenges.

For our customers located in the EU27 countries, most of our products are manufactured by Vesuvius outside the UK, so we would not envisage a material impact from Brexit after the Transition Period. For those customers located in the UK or located in the EU27 and supplied from our UK plant, 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 causes 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
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	• Compliance programmes and training across the Group • Internal Audit function • Experienced internal legal function including dedicated compliance specialists • Global procurement category management of strategic raw materials

Risk	Potential impact	Mitigation
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, cyber attack or global health crisis*	• Loss / closure 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
Health and safety *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	• Active safety programmes, with ongoing wide-ranging monitoring and safety training • Independent safety audit team • Quality management programmes including stringent manufacturing

Risk	Potential impact	Mitigation
	• Reputational damage	process control standards, monitoring and reporting
Environmental, social and governance (ESG) criteria *Vesuvius fails to capitalise on the opportunity to help its customers significantly reduce their carbon emissions as environmental pressure grows on the Steel Industry or Vesuvius fails to meet the expectations of its various stakeholders including employees and investors*	• Loss of opportunity to grow sales • Loss of opportunity to increase margin • Loss of stakeholder confidence including Investors • Reputational damage	• Development of appropriate ESG measures for the business • Investment in R&D to develop products to assist our customers in reducing their carbon emissions and improve their own ESG measures • Skilled technical sales force to develop efficient solutions for our customers • The group wide Code of Conduct, ABC Policy with a zero tolerance regarding bribery and corruption • Internal Speak up mechanisms to allow reporting of concerns • Extensive use of Due Diligence involving existing and potential investments, business partners and customers

Half Year Results for the six months ended 30 June 2020
Directors' responsibility statement

We confirm that to the best of our knowledge:

(a) The Condensed Group Financial Statements have been prepared in accordance with IAS 34*, Interim Financial Reporting*, as adopted by the EU; and

(b) This half-yearly financial report includes a fair review of the information required by:

- DTR 4.2.7R of the *Disclosure and Transparency Rules*, being an indication of important events that have occurred during the first six months of the financial year and their impact on the condensed set of financial statements; and a description of the principal risks and uncertainties for the remaining six months of the financial year; and
- DTR 4.2.8R of the *Disclosure and Transparency Rules*, being related parties' transactions that have taken place in the first six months of the current financial year and that have materially affected the financial position or the performance of the Group during that period; and any changes in the related parties' transactions described in the last annual report that could do so.

The names and functions of the Directors of Vesuvius plc are as follows:

John McDonough CBE	Chairman
Patrick André	Chief Executive
Guy Young	Chief Financial Officer
Hock Goh	Non-executive Director
Friederike Helfer	Non-executive Director
Jane Hinkley	Non-executive Director and Chairman of the Remuneration Committee
Douglas Hurt	Non-executive Director, Senior Independent Director and Chairman of the Audit Committee
Holly Koeppel	Non-executive Director

On behalf of the Board

Guy Young
Chief Financial Officer
29 July 2020

Independent review report to Vesuvius plc

Report on the Condensed Group Financial Statements

Our conclusion

We have reviewed Vesuvius plc's Condensed Group Financial Statements (the "interim financial statements") in the half year results of Vesuvius plc for the 6 month period ended 30 June 2020. Based on our review, nothing has come to our attention that causes us to believe that the interim financial statements are not prepared, in all material respects, in accordance with International Accounting Standard 34, 'Interim Financial Reporting', as adopted by the European Union and the Disclosure Guidance and Transparency Rules sourcebook of the United Kingdom's Financial Conduct Authority.

What we have reviewed

The interim financial statements comprise:

- the Condensed Group Balance Sheet as at 30 June 2020;
- the Condensed Group Income Statement and Condensed Group Statement of Comprehensive Income for the period then ended;
- the Condensed Group Statement of Cash Flows for the period then ended;
- the Condensed Group Statement of Changes in Equity for the period then ended; and
- the explanatory notes to the interim financial statements.

The interim financial statements included in the half year results have been prepared in accordance with International Accounting Standard 34, 'Interim Financial Reporting', as adopted by the European Union and the Disclosure Guidance and Transparency Rules sourcebook of the United Kingdom's Financial Conduct Authority.

As disclosed in note 1 to the interim financial statements, the financial reporting framework that has been applied in the preparation of the full annual financial statements of the Group is applicable law and International Financial Reporting Standards (IFRSs) as adopted by the European Union.

Responsibilities for the interim financial statements and the review

Our responsibilities and those of the Directors

The half year results, including the interim financial statements, is the responsibility of, and has been approved by, the directors. The directors are responsible for preparing the half year results in accordance with the Disclosure Guidance and Transparency Rules sourcebook of the United Kingdom's Financial Conduct Authority.

Our responsibility is to express a conclusion on the interim financial statements in the half year results based on our review. This report, including the conclusion, has been prepared for and only for the company for the purpose of complying with the Disclosure Guidance and Transparency Rules sourcebook of the United Kingdom's Financial Conduct Authority and for no other purpose. We do not, in giving this conclusion, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

What a review of interim financial statements involves

We conducted our review in accordance with International Standard on Review Engagements (UK and Ireland) 2410, 'Review of Interim Financial Information Performed by the Independent Auditor of the Entity' issued by the Auditing Practices Board for use in the United Kingdom. A review of interim financial information consists of making enquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures.

A review is substantially less in scope than an audit conducted in accordance with International Standards on Auditing (UK) and, consequently, does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

We have read the other information contained in the half year results and considered whether it contains any apparent misstatements or material inconsistencies with the information in the interim financial statements.

PricewaterhouseCoopers LLP
Chartered Accountants
London
29 July 2020

Condensed Group Income Statement

For the six months ended 30 June 2020

Continuing operations	Notes	Half year 2020 (Unaudited) Headline performance[(1)] £m	Half year 2020 (Unaudited) Separately reported items[(1)] £m	Half year 2020 (Unaudited) Total £m	Half year 2019 (Unaudited) Headline performance[(1)] £m	Half year 2019 (Unaudited) Separately reported items[(1)] £m	Half year 2019 (Unaudited) Total £m	Full year 2019 Headline performance[(1)] £m	Full year 2019 Separately reported items[(1)] £m	Full year 2019 Total £m
Revenue	2	**720.0**	**-**	**720.0**	889.4	-	889.4	**1,710.4**	**-**	**1,710.4**
Manufacturing costs		**(534.7)**	**-**	**(534.7)**	(635.3)	-	(635.3)	**(1,233.5)**	**-**	**(1,233.5)**
Administration, selling & distribution costs		**(134.2)**	**-**	**(134.2)**	(155.2)	-	(155.2)	**(295.5)**	**-**	**(295.5)**
Trading profit	2, 1	**51.1**	**-**	**51.1**	98.9	-	98.9	**181.4**	**-**	**181.4**
Amortisation of acquired intangible assets		**-**	**(5.0)**	**(5.0)**	-	(5.0)	(5.0)	**-**	**(10.0)**	**(10.0)**
Restructuring charges	3	**-**	**(2.5)**	**(2.5)**	-	(10.7)	(10.7)	**-**	**(39.8)**	**(39.8)**
Vacant site remediation costs	3	**-**	**(3.8)**	**(3.8)**				**-**	**(4.1)**	**(4.1)**
Operating profit/(loss)	2	**51.1**	**(11.3)**	**39.8**	98.9	(15.7)	83.2	**181.4**	**(53.9)**	**127.5**
Finance expense		**(8.9)**	**-**	**(8.9)**	(9.7)	-	(9.7)	**(19.5)**	**-**	**(19.5)**
Finance income		**3.0**	**-**	**3.0**	3.5	-	3.5	**8.5**	**-**	**8.5**
Net finance costs	4	**(5.9)**	**-**	**(5.9)**	(6.2)	-	(6.2)	**(11.0)**	**-**	**(11.0)**
Share of post-tax income of joint ventures		**0.7**	**-**	**0.7**	0.5	1.1	1.6	**1.0**	**1.1**	**2.1**
Profit/(loss) before tax	2	**45.9**	**(11.3)**	**34.6**	93.2	(14.6)	78.6	**171.4**	**(52.8)**	**118.6**
Income tax (charge)/credits	5	**(12.3)**	**2.6**	**(9.7)**	(26.0)	3.2	(22.8)	**(43.8)**	**11.7**	**(32.1)**
Profit/(loss)		**33.6**	**(8.7)**	**24.9**	67.2	(11.4)	55.8	**127.6**	**(41.1)**	**86.5**
Profit/(loss) attributable to:										
Owners of the parent		**31.3**	**(8.7)**	**22.6**	63.8	(11.4)	52.4	**121.4**	**(41.1)**	**80.3**
Non-controlling interests		**2.3**	**-**	**2.3**	3.4	-	3.4	**6.2**	**-**	**6.2**
Profit/(loss)		**33.6**	**(8.7)**	**24.9**	67.2	(11.4)	55.8	**127.6**	**(41.1)**	**86.5**
Earnings per share — pence	6									
Total operations — basic				**8.4**			19.5			**29.8**
— diluted				**8.3**			19.3			**29.6**

(1) *Headline performance is defined in Note 17.1 and separately reported items are defined in Note 1.5.*

The above results were derived from continuing operations. The separately reported items would form part of Administration, selling & distribution costs if classified within headline performance, which including these amounts would total £145.5m (2019 half year: £170.9m, 2019 full year: £349.4m).

Condensed Group Statement of Comprehensive Income

For the six months ended 30 June 2020

	Notes	**Unaudited Half year 2020 £m**	Unaudited Half year 2019 £m	Full year 2019 £m
Profit		**24.9**	55.8	86.5
Items that will subsequently not be reclassified to income statement:				
Remeasurement of defined benefit assets/liabilities		**14.9**	(0.5)	(3.6)
Income tax relating to items not reclassified	5	**(5.6)**	1.1	1.9
Items that may subsequently be reclassified to income statement:				
Exchange differences on translation of the net assets of foreign operations		**51.0**	7.6	(73.4)
Reclassification of foreign currency translation reserve on disposal of share in joint venture	14	**-**	(1.1)	(1.1)
Exchange differences arising on translation of net investment hedges		**(24.6)**	(0.4)	14.1
Other comprehensive income (loss), net of income tax		**35.7**	6.7	(62.1)
Total comprehensive income		**60.6**	62.5	24.4
Total comprehensive income attributable to:				
Owners of the parent		**57.5**	58.4	20.6
Non-controlling interests		**3.1**	4.1	3.8
Total comprehensive income		**60.6**	62.5	24.4

The above results were derived from continuing operations

Condensed Group Statement of Cash Flows

For the six months ended 30 June 2020

	Notes	**Unaudited Half year 2020 £m**	Unaudited Half year 2019 £m	Full year 2019 £m
Cash flows from operating activities				
Cash generated from operations	9	**79.2**	100.0	240.7
Interest paid		**(8.2)**	(8.7)	(17.3)
Interest received		**2.5**	2.7	5.2
Net interest paid		**(5.7)**	(6.0)	(12.1)
Income taxes paid		**(11.5)**	(25.6)	(44.5)
Net cash inflow from operating activities		**62.0**	68.4	184.1
Cash flows from investing activities				
Capital expenditure		**(19.4)**	(24.6)	(65.4)
Proceeds from the sale of property, plant and equipment		**-**	1.6	3.7
Proceeds from the sale of assets classified as held for sale		**-**	1.7	1.8
Acquisition of subsidiaries and joint ventures, net of cash acquired	14	**-**	(32.4)	(32.7)
Disposal of joint ventures, net of cash disposed		**-**	-	6.8
Dividends received from joint ventures		**1.4**	0.1	0.1
Net cash outflow from investing activities		**(18.0)**	(53.6)	(85.7)
Net cash inflow before financing activities		**44.0**	14.8	98.4
Cash flows from financing activities				
Proceeds from borrowings	8	**310.2**	44.9	154.6
Repayment of borrowings	8	**(92.5)**	(14.7)	(169.8)
Settlement of derivatives		**1.4**	(1.7)	(5.1)
Purchase of ESOP Shares		**-**	-	-
Dividends paid to equity shareholders	7	**-**	(37.2)	(53.9)
Dividends paid to non-controlling shareholders		**(0.1)**	(1.1)	(2.8)
Net cash inflow/(outflow) from financing activities		**219.0**	(9.8)	(77.0)
Net increase in cash and cash equivalents	8	**263.0**	5.0	21.4
Cash and cash equivalents at 1 January		**222.1**	213.4	213.4
Effect of exchange rate fluctuations on cash and cash equivalents		**6.8**	0.7	(12.7)
Cash and cash equivalents at the end of the reporting period		**491.9**	219.1	222.1
Free cash flow from continuing operations (Note 17.10)				
Net cash inflow from operating activities		**62.0**	68.4	184.1
Net retirement benefit obligations		**0.6**	1.4	5.1
Capital expenditure		**(19.4)**	(24.6)	(65.4)
Proceeds from the sale of property, plant and equipment		**-**	1.6	3.7
Proceeds from the sale of assets classified as held for sale		**-**	1.7	1.8
Dividends received from joint ventures		**1.4**	0.1	0.1
Dividends paid to non-controlling shareholders		**(0.1)**	(1.1)	(2.8)
Free cash flow[1]	17	**44.5**	47.5	126.6

[(1)] *For definitions of non-GAAP measures, refer to Note 17*

Condensed Group Balance Sheet

As at 30 June 2020

	Notes	**Unaudited Half year 2020 £m**	Unaudited Half year Restated[1] 2019 £m	Full year 2019 £m
Assets				
Property, plant and equipment		**348.2**	352.5	337.7
Intangible assets		**732.3**	737.8	708.5
Employee benefits - surpluses	11	**116.3**	101.5	102.6
Interests in joint ventures and associates		**12.6**	12.9	12.7
Investments		**1.1**	1.3	0.8
Deferred tax assets		**95.1**	90.3	94.9
Other receivables		**23.3**	22.8	22.1
Derivative financial instruments	16	**-**	-	0.5
Total non-current assets		**1,328.9**	1,319.1	1,279.8
Cash and short-term deposits	8	**500.9**	230.0	229.2
Inventories		**222.4**	254.5	212.9
Trade and other receivables		**361.8**	461.4	379.6
Income tax receivable		**1.7**	1.3	2.9
Derivative financial instruments	16	**-**	-	0.1
Total current assets		**1,086.8**	947.2	824.7
Total assets		**2,415.7**	2,266.3	2,104.5

Condensed Group Balance Sheet (continued)

As at 30 June 2020

	Notes	**Unaudited Half year 2020 £m**	Unaudited Half year Restated[1] 2019 £m	Full year 2019 £m
Equity				
Issued share capital		**27.8**	27.8	27.8
Retained earnings		**2,496.1**	2,452.0	2,463.1
Other reserves		**(1,401.9)**	(1,364.1)	(1,427.5)
Equity attributable to the owners of the parent		**1,122.0**	1,115.7	1,063.4
Non-controlling interests		**54.0**	53.0	51.0
Total equity		**1,176.0**	1,168.7	1,114.4
Liabilities				
Interest-bearing borrowings	8	**351.1**	468.6	303.2
Employee benefits - liabilities	11	**116.1**	116.3	111.1
Other payables		**15.8**	16.0	15.1
Provisions	15	**36.0**	32.5	31.1
Deferred tax liabilities		**46.3**	40.8	43.6
Derivative financial instruments		**0.6**	-	-
Total non-current liabilities		**565.9**	674.2	504.1
Interest-bearing borrowings	8	**378.8**	68.4	171.7
Trade and other payables		**265.9**	310.9	273.6
Income tax payable		**10.0**	19.2	14.3
Provisions	15	**19.0**	24.8	25.7
Derivative financial instruments	16	**0.1**	0.1	0.7
Total current liabilities		**673.8**	423.4	486.0
Total liabilities		**1,239.7**	1,097.6	990.1
Total equity and liabilities		**2,415.7**	2,266.3	2,104.5

(1) Restated – see Note 17 of the 2019 Annual Report and Financial Statements for an explanation and analysis of the prior year adjustments made in respect of the Balance Sheet as at 30 June 2019 and 1 January 2019. These are also explained in note 10 of these Condensed Group Financial Statements.

Condensed Group Statement of Changes in Equity

For the six months ended 30 June 2020

	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 2019 – as reported	**27.8**	**(1369.5)**	**2,432.4**	**1,090.7**	**50.0**	**1,140.7**
Restatement upon adoption of IFRIC 23	**-**	**-**	**1.5**	**1.5**	**-**	**1.5**
As at 1 January 2019 – restated	**27.8**	**(1369.5)**	**2,433.9**	**1,092.2**	**50.0**	**1,142.2**
Profit	**-**	**-**	**52.4**	**52.4**	**3.4**	**55.8**
Remeasurement of defined benefit liabilities/assets	-	-	(0.5)	(0.5)	-	(0.5)
Income tax relating to items not reclassified	-	-	1.1	1.1	-	1.1
Exchange differences on translation of the net assets of foreign operations	-	6.9	-	6.9	0.7	7.6
Reclassification of foreign currency translation reserve on disposal of share in joint venture	-	(1.1)	-	(1.1)	-	(1.1)
Exchange differences on translation of net investment hedges	-	(0.4)	-	(0.4)	-	(0.4)
Other comprehensive income/(loss), net of income tax	**-**	**5.4**	**0.6**	**6.0**	**0.7**	**6.7**
Total comprehensive income/(loss)	**-**	**5.4**	**53.0**	**58.4**	**4.1**	**62.5**
Recognition of share-based payments	-	-	2.3	2.3	-	2.3
Dividends paid (Note 7)	-	-	(37.2)	(37.2)	(1.1)	(38.3)
Total transactions with owners	**-**	**-**	**(34.9)**	**(34.9)**	**(1.1)**	**(36.0)**
As at 30 June 2019	**27.8**	**(1,364.1)**	**2,452.0**	**1,115.7**	**53.0**	**1,168.7**
As at 30 June 2019	**27.8**	**(1,364.1)**	**2,452.0**	**1,115.7**	**53.0**	**1,168.7**
Profit	**-**	**-**	**27.9**	**27.9**	**2.8**	**30.7**
Remeasurement of defined benefit liabilities/assets	-	-	(3.1)	(3.1)	-	(3.1)
Income tax relating to items not reclassified	-	-	0.8	0.8	-	0.8
Exchange differences on translation of the net assets of foreign operations	-	(77.9)	-	(77.9)	(3.1)	(81.0)
Exchange differences on translation of net investment hedges	-	14.5	-	14.5	-	14.5
Other comprehensive income/(loss), net of income tax	**-**	**(63.4)**	**(2.3)**	**(65.7)**	**(3.1)**	**(68.8)**
Total comprehensive income (loss)	**-**	**(63.4)**	**25.6**	**(37.8)**	**(0.3)**	**(38.1)**
Recognition of share-based payments	-	-	2.2	2.2	-	2.2
Dividends paid (Note 7)	-	-	(16.7)	(16.7)	(1.7)	(18.4)
Total transactions with owners	**-**	**-**	**(14.5)**	**(14.5)**	**(1.7)**	**(16.2)**
As at 1 January 2020 – as reported	**27.8**	**(1,427.5)**	**2,463.1**	**1,063.4**	**51.0**	**1,114.4**

Condensed Group Statement of Changes in Equity (continued)

For the six months ended 30 June 2020

	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 2020	**27.8**	**(1,427.5)**	**2,463.1**	**1,063.4**	**51.0**	**1,114.4**
Profit	**-**	**-**	**22.6**	**22.6**	**2.3**	**24.9**
Remeasurement of defined benefit assets/liabilities	-	**-**	**14.9**	**14.9**	**-**	**14.9**
Income tax relating to items not reclassified	-	**-**	**(5.6)**	**(5.6)**	**-**	**(5.6)**
Exchange differences on translation of the net assets of foreign operations	-	**50.2**	**-**	**50.2**	**0.8**	**51.0**
Exchange differences arising on translation of net investment hedges	-	**(24.6)**	**-**	**(24.6)**	**-**	**(24.6)**
Other comprehensive income/(loss), net of income tax	**-**	**25.6**	**9.3**	**34.9**	**0.8**	**35.7**
Total comprehensive income/(loss)	**-**	**25.6**	**31.9**	**57.5**	**3.1**	**60.6**
Recognition of share-based payments	-	-	**1.1**	**1.1**	**-**	**1.1**
Dividends paid (Note 7)	-	-	-	**-**	**(0.1)**	**(0.1)**
Total transactions with owners	**-**	**-**	**1.1**	**1.1**	**(0.1)**	**1.0**
As at 30 June 2020	**27.8**	**(1,401.9)**	**2,496.1**	**1,122.0**	**54.0**	**1,176.0**

Notes to the Condensed Group Financial Statements

1 Basis of preparation

1.1 Basis of accounting

These Condensed Group Financial Statements of Vesuvius plc ("Vesuvius" or the "Company") and its subsidiary and joint venture companies (the "Group") have been prepared in accordance with International Accounting Standard ("IAS") 34 Interim Financial Reporting, as adopted by the EU and in accordance with the Disclosure and Transparency Rules of the UK's Financial Conduct Authority.

These Condensed Group Financial Statements have been prepared using the same accounting policies as used in the preparation of the Group's annual financial statements for the year ended 31 December 2019, except for taxes on income in the interim period which are accrued using the tax rate that would be applicable to the expected total annual profit or loss. The assessment of the Group's critical accounting estimates and judgements remain consistent with the 2019 Annual Report and Financial Statements, but impacts of Covid-19 continue to be monitored and are set out further on page 5 in the strategic report and in Note 1.3. The Group's annual report and financial statements for the year ended 31 December 2019 were prepared in accordance with International Financial Reporting Standards as adopted by the EU ("IFRS"). They do not include all of the information required for full annual financial statements, and should be read in conjunction with the consolidated financial statements of the Group for the year-ended 31 December 2019. The financial information presented in this document is unaudited, but has been reviewed by the Company's auditor.

The comparative figures for the financial year ended 31 December 2019 are not the Group's statutory accounts for that financial year but have been extracted from those accounts. Those accounts have been reported on by the Company's auditor and delivered to the Registrar of Companies. The report of the auditor was unqualified, did not include reference to any matters to which the auditor drew attention by way of emphasis without qualifying its report and did not contain a statement under section 498(2) or (3) of the Companies Act 2006. These sections address whether proper accounting records have been kept, whether the Company's accounts are in agreement with those records and whether the auditor has obtained all the information and explanations necessary for the purposes of its audit.

1.2 Basis of consolidation

The Condensed 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 Condensed 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 Condensed 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 Condensed 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 less their dividends since the date of the combination. Their share of comprehensive income/(loss) is attributed to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Notes to the Condensed Group Financial Statements (continued)

1.3 Going concern

The Covid-19 pandemic has had a significant impact on business activity in all of Vesuvius' end markets. The World Steel Association reported that in H1 2020, steel production in the world (excluding China) declined 14.3% year-on-year (3.6% in Q1 and 24.8% in Q2). The impact on our Foundry division has been even greater, primarily as a result of significant declines in automotive production.

The impacts of Covid-19 on the Group have included:

- A 19% decline in revenues for the first six months of 2020 compared with the same period in 2019 (11.6% in Q1 and 26.7% in Q2 year-on-year);
- Our year-on-year sales comparison versus 2019 indicates a tentative recovery towards the end of Q2 relative to the 28% decline in year-on-year sales which we previously disclosed for April 2020; and
- The temporary and short-lived closure of our plants in South Africa, Malaysia, Argentina and India due to national lockdowns. As of 1 May 2020, all operations had been reopened

In response to the sudden and significant decline in business activity, the Group took the following actions:

- Significant cost reduction and cash preservation initiatives, in addition to the £19.4m of recurring savings from our ongoing restructuring programmes which we are on-track to deliver this year;
- Cost reduction initiatives mentioned above delivered savings of £18.6m in Q2 (£7.8m in reduced employment costs,£4.9m in reduced discretionary spend and a reduction in planned employee incentives of £5.9m). The savings have exceeded expectations during the second quarter and we are on track to deliver £10m per quarter of such savings in H2 assuming weak market conditions persist at the current level;
    - Savings include:
        - restricting all discretionary expenses
        - a hiring freeze on all non-critical roles
        - accessing government programmes to reduce labour costs, in line with available local regulatory options, together with other flexible workforce solutions
        - the Board and the Group Executive Committee have voluntarily reduced their fees and salary by 20% for 6 months
- £20m (30%) reduction in our planned capital expenditures in 2020;
- c.£37m saving from withdrawal of the final dividend for 2019;
- c.£17m saving as the Board has not declared an interim dividend at this time;
    - The Board will continue to review the position on dividends as the year progresses
- Deferral of tax and social security payments whenever possible in accordance with local legislation

In April 2020, Vesuvius also took steps to boost its liquidity, through borrowing £200m from the Bank of England's Covid Corporate Financing Facility ("CCFF") programme and raising c.£115m (US$140m) from the US private placement ("USPP") market.

The £200m borrowed from the Bank of England matures in March 2021, with an option to extend it for up to a further 12 months. The funds were drawn down as a liquidity buffer in case of an extreme and prolonged downturn.

The USPP fundraising raised an equivalent amount to an existing US$140m USPP which matures in December 2020 and which we will now repay early in August 2020. Once this USPP has been repaid our net debt / EBITDA covenant will increase to 3.25x from 3.0x previously.

The Group's available committed liquidity stood at £706m at 30 June 2020, up from £353m at year-end 2019, as a result of the fundraising activities described above, plus the Group's cash flow generation, which benefited from a reduction in working capital due to the decline in business activity.

Notes to the Condensed Group Financial Statements (continued)

1.3 Going concern (continued)

The Directors have prepared cash flow scenarios for the Group for a period at least 12 months from the date of approval of the 2020 Interim Condensed 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 analysis undertaken includes a severe but plausible downside scenario which assumes no improvement in sales from the current level of activity during the entire forecast period. This downside scenario assumes a continuation of weak markets in 2020 in line with Q2 and a further 5% decline in sales in 2021 due to a weaker first quarter relative to Q1 2020. Even in this downside scenario, the forecasts show that the Group has significant headroom in terms of both available committed liquidity and required compliance with financial covenants.

On the basis of the exercise described above and the Group's available committed liquidity, 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 Interim Condensed Financial Statements. Accordingly, they continue to adopt a going concern basis in preparing the Condensed 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"

In accordance with IAS 1, the Group has adopted a columnar presentation for its Group Income Statement, to separately identify headline performance results, as the Directors consider that this gives a useful view of the underlying results of the ongoing business. As part of this presentation format, the Group 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 useful understanding of the financial performance achieved for a given year and in making projections of future results.

Both materiality and the nature 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 (which may require more than one year to complete), and significant movement in the Group's deferred tax balances such as was, for example, caused by the impact of US tax reform in 2017, together with items reported separately for consistency, 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 other 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. 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.

1.6 New and revised IFRS

Certain new accounting standards and interpretations have been published that are not mandatory for 30 June 2020 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 that they are not expected to have a significant impact on the Group's financial position, performance, cash flows and disclosures.

Notes to the Condensed Group Financial Statements (continued)

2 Segment information

Operating segments for continuing operations

The Group's operating segments are determined taking into consideration how the Group's components are reported to the Group's Chief Executive Officer, who makes the key operating decisions and is responsible for allocating resources and assessing performance of the component. Taking into account the Group's management and internal reporting structure, the operating segments are Steel Flow Control, Steel Advanced Refractories, Steel Sensors & Probes and the Foundry Division.

Steel Flow Control, Steel Advanced Refractories and Steel Sensors & Probes operating segments are aggregated into the Steel reportable segment. In determining that aggregation is appropriate, judgement is applied which takes into account the economic characteristics of these operating segments which include a similar nature of products, customers, production processes and margins.

Revenue from contracts with customers

Revenue comprises the fair value of the consideration received or receivable for goods supplied and services rendered to customers after deducting rebates, discounts and value-added taxes, and after eliminating sales within the Group. Revenue from contracts with customers is recognised when control of the goods or services are transferred to the customer, upon the completion of specified performance obligations, at an amount that reflects the considerations to which the Group expects to be entitled to in exchange for these consumable products and associated services.

The revenue recognition policy applicable to the current and comparative periods and information about the Group's performance obligations was disclosed in Note 5 of the 2019 Annual Report and Financial Statements.

Segmental analysis

The reportable segment results from continuing operations are presented below.

	Unaudited Half Year 2020					
	Flow Control	Advanced Refractories	Digital Services (Sensors & Probes)	**Steel**	**Foundry**	**Continuing operations**
				£m	**£m**	**£m**
Segment revenue	274.4	228.8	13.1	*516.3*	*203.7*	*720.0*
at a point in time				*512.4*	*203.7*	*716.1*
Over time				*3.9*	*-*	*3.9*
Segment EBITDA *				56.1	20.4	76.5
Segment depreciation				(17.2)	(8.2)	(25.4)
Segment trading profit				38.9	12.2	51.1
Return on sales margin				*7.5%*	*6.0%*	*7.1%*
Amortisation of acquired intangible assets						(5.0)
Restructuring charges						(2.5)
Vacant site remediation costs						(3.8)
Operating profit						39.8
Net finance costs						(5.9)
Share of post-tax profit of joint ventures						0.7
Profit before tax						34.6
Capital expenditure additions				22.5	3.7	26.2

Notes to the Condensed Group Financial Statements (continued)

2 Segment information (continued)

	Unaudited Half Year 2019					
	Flow Control	Advanced Refractories	Digital Services (Sensors & Probes)	**Steel**	**Foundry**	**Continuing operations**
				£m	**£m**	**£m**
Segment revenue	322.9	276.6	15.4	614.9	274.5	889.4
at a point in time				***612.1***	*274.5*	*886.6*
Over time				*2.8*	*-*	*2.8*
Segment EBITDA *				82.0	41.8	123.8
Segment depreciation				(16.7)	(8.2)	(24.9)
Segment trading profit				65.3	33.6	98.9
Return on sales margin				*10.6%*	*12.2%*	*11.1%*
Amortisation of acquired intangible assets						(5.0)
Restructuring charges						(10.7)
Operating profit						83.2
Net finance costs						(6.2)
Share of post-tax profit of joint ventures						1.6
Profit before tax						78.6
Capital expenditure additions				17.1	6.5	23.6

	Full Year 2019					
	Flow Control	Advanced Refractories	Digital Services (Sensors & Probes)	**Steel**	**Foundry**	**Continuing operations**
				£m	**£m**	**£m**
Segment revenue	626.3	539.8	29.2	1,195.3	515.1	1,710.4
at a point in time				*1,188.9*	*515.1*	*1,704.0*
Over time				*6.4*		*6.4*
Segment EBITDA *				153.4	77.7	231.1
Segment depreciation				(33.3)	(16.4)	(49.7)
Segment trading profit				120.1	61.3	181.4
Return on sales margin				*10.0%*	*11.9%*	*10.6%*
Amortisation of acquired intangible assets						(10.0)
Restructuring charges						(39.8)
Vacant site remediation costs						(4.1)
Operating profit						127.5
Net finance costs						(11.0)
Share of post-tax profit of joint ventures						2.1
Profit before tax						118.6
Capital expenditure additions				53.6	21.1	74.7

* EBITDA is defined in note 17.12

3 Restructuring charges and vacant site remediation costs

We continued to finalise the implementation of our previously announced restructuring programmes. During 2020, restructuring charges reported as separately reported items were £2.5m (2019 half year: £10.7m, 2019 full year: £39.8m). The charges reflect redundancy costs £1.0m (2019 half year: £6.7m, 2019 full year: £24.8m), plant closure costs £1.0m (2019 half year: £3.0m, 2019 full year: £4.4m), asset write-offs: nil (2019 half year: £1.6m, 2019 full year: £8.9m), consultancy and travel fees £0.5m (2019 half year: £0.1m, 2019 full year: £1.7m), and a gain on disposal of a property: nil (2019 half year: £0.7m, 2019 full year: nil).

A cash outflow of £9.2m (2019: half year £5.8m; 2019 full year £30.0m) (Note 9) was incurred in H1 2020 in respect of these restructuring programme leaving provisions made, but unspent, of £13.4m (Note 15) as at 30 June 2020 (2019 half year: £19.9m; 2019 full year: £19.1m).

The Group owns a number of disused properties in the US, which do not form part of our trading operations. Costs are being incurred at one of these sites to address the significant increase in the volume of water run-off occurring in 2019 and 2020. We have engaged waste management specialists, are taking actions to reduce the level of water (including hydrological studies), improve treatment processes and are in contact with the relevant regulatory authorities. We estimate that it will take 18 months to finalise remediation. The costs in H1 2020 for this remediation were £3.8m (2019 half year: nil, 2019 full year: £4.1m). These non-recurring costs have been treated as a separately reported item. There has been no impact upon headline performance.

4 Net finance costs

Total net finance costs for the period of £5.9m (2019 half year: £6.2m, 2019 full year: £11.0m) are analysed in the table below.

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Interest payable on borrowings			
Loans, overdrafts and factoring arrangements	**7.2**	8.0	15.7
Interest on lease liabilities	**0.9**	0.6	1.6
Amortisation of capitalised borrowing costs	**0.3**	0.3	0.6
Total interest payable on borrowings	**8.4**	8.9	17.9
Interest on net retirement benefits obligations	**(0.1)**	0.1	0.3
Adjustments to discounts on provisions and other liabilities	**0.5**	0.7	1.3
Adjustments to discounts on receivables	**(0.4)**	(0.4)	(0.7)
Finance income	**(2.5)**	(3.1)	(7.8)
Total net finance costs	**5.9**	6.2	11.0

5 Income tax

A key measure of the Group's tax burden is the effective tax rate, which the Group calculates 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. The Group's effective tax rate was in-line with expectations at 27.2% in H1 2020 (2019 half year: 28.0%; 2019 full year: 25.7%) based on the income tax costs associated with headline performance of £12.3m (2019 half year: £26.0m; 2019 full year: £43.8m).

The Group's total income tax costs include a credit of £2.6m (2019 half year: £3.2m; 2019 full year: £11.7m) relating to separately reported items comprising a credit of £1.5m (2019 half year: £1.9m; 2019 full year £9.2m credit) in relation to restructuring charges and a credit of £1.1m (2019 half year: £1.3m; 2019 full year £2.5m) relating to the amortisation of intangible assets.

5 Income tax (continued)

The net income tax charge reflected in the Condensed Group Statement of Comprehensive Income amounted to £5.6m (2019 half year: £1.1m credit; 2019 full year: £1.9m credit) which related to tax on net actuarial gains and losses on employee benefits plans.

As referenced in the forward looking statement on page 5, the Covid-19 Pandemic continues to pose a risk of future economic uncertainty for the Group. The Group has reviewed the impact of Covid-19 on those future taxable profits and concluded that the current recognition of deferred tax assets is appropriate based on the information available.

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 Condensed Group Income Statement, of £22.6m (2019 half year: £52.4m; 2019 full year: £80.3m), being the profit for the half year of £24.9m (2019 half year: £55.8m; 2019 full year: £86.5m) less non-controlling interests of £2.3m (2019 half year: £3.4m; 2019 full year: £6.2m); basic and diluted EPS from total operations are based on the profit attributable to owners of the parent of £22.6m (2019 half year: £52.4m; 2019 full year: £80.3m); headline and diluted headline EPS are based upon headline profit from continuing operations attributable to owners of the parent of £31.3m (2019 half year: £63.8m; 2019 full year: £121.4m). The table below reconciles these different profit measures.

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Profit attributable to owners of the parent	**22.6**	52.4	80.3
Adjustments for separately reported items:			
Amortisation of intangible assets	**5.0**	5.0	10.0
Restructuring charges	**2.5**	10.7	39.8
Gain on disposal of share in joint venture	**-**	(1.1)	(1.1)
Vacant site remediation costs	**3.8**		4.1
Income tax credit	**(2.6)**	(3.2)	(11.7)
Headline profit attributable to owners of the parent	**31.3**	63.8	121.4

6.2 Weighted average number of shares

	Unaudited Half year 2020 millions	Unaudited Half year 2019 millions	Full year 2019 millions
For calculating basic and headline EPS	**269.8**	269.1	269.1
Adjustment for potentially dilutive ordinary shares	**1.6**	2.0	1.9
For calculating diluted and diluted headline EPS	**271.4**	271.1	271.0

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 were all outstanding share options to vest in full, 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.

Notes to the Condensed Group Financial Statements (continued)

6 Earnings per share ("EPS") (continued)

6.3 Per share amounts

		Unaudited Half year 2020 pence	Unaudited Half year 2019 pence	Full year 2019 pence
Earnings per share	- basic	**8.4**	19.5	29.8
	- headline	**11.6**	23.7	45.1
	- diluted	**8.3**	19.3	29.6
	- diluted headline	**11.5**	23.5	44.8

7 Dividends

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Amounts recognised as dividends and paid to equity shareholders during the period			
Final dividend for the year-ended 31 December 2018 of 13.80p per ordinary share	**-**	37.2	37.2
Interim dividend for the year-ended 31 December 2019 of 6.20p per ordinary share	**-**	-	16.7
	-	37.2	53.9

In light of the Covid-19 trading situation, the Directors withdrew their recommendation to pay the final dividend of 14.3p per ordinary share, announced with the publication of the 2019 financial results. The resolution relating to the proposed 2019 final dividend was consequently not put to a shareholder vote at the AGM held on 13 May 2020. The Directors have not declared an interim dividend in respect of the year-ended 31 December 2020 and will continue to review the position as the year progresses.

Notes to the Condensed Group Financial Statements (continued)

8 Reconciliation of movement in net debt

	Balance as at 1 Jan 2020 £m	Foreign exchange adjustments £m	Non-cash movements £m	Cash flow £m	Balance as at 30 June 2020 £m
Cash and cash equivalents					
Cash at bank and in hand	**229.2**	**6.9**	**-**	**(10.2)**	**225.9**
Short term deposits	**-**	**-**	**-**	**275.0**	**275.0**
Bank overdrafts	**(7.1)**	**(0.1)**	**-**	**(1.8)**	**(9.0)**
	222.1	**6.8**	**-**	**263.0**	**491.9**
Borrowings, excluding bank overdrafts	**(469.0)**	**(27.6)**	**(7.5)**	**(217.7)**	**(721.8)**
Capitalised borrowing costs	**1.2**		**(0.3)**		**0.9**
Derivative financial instruments	**(0.1)**	**0.8**	**-**	**(1.4)**	**(0.7)**
Net debt	**(245.8)**	**(20.0)**	**(7.8)**	**43.9**	**(229.7)**

The increase in borrowings of £217.7m principally comprises £200m drawn down under the Bank of England's Covid Corporate Financing Facility (CCFF) and £115m of USPP Notes issued to refinance an existing maturity in December 2020 offset by a partial repayment of the Group's syndicated bank facility of £89m.

The £200m CCFF drawdown is due for repayment in March 2021 and has an interest rate of 0.7%. The £115m USPP Notes have a weighted average interest rate of 4.0% and a weighted average maturity of 6.2 years.

The increase in borrowings has been combined with cash generated by the Group and placed on short term deposit with certain of the Group's relationship banks. As at 30 June 2020 £275m was on deposit with a weighted average interest rate of 0.6% and a weighted average maturity of 0.3 years.

Notes to the Condensed Group Financial Statements (continued)

9 Cash Generated from Operations

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m
Operating profit	**39.8**	83.2
Adjustments for:		
Amortisation of intangible assets	**5.0**	5.0
Restructuring charges	**2.5**	10.7
Vacant site remediation costs	**3.8**	-
Loss on disposal of non-current assets	**1.2**	-
Depreciation	**25.4**	24.9
EBITDA (Note 17.12)	**77.7**	123.8
Net increase in inventories	**(3.7)**	(4.0)
Net decrease/(increase)in trade receivables	**26.6**	(6.0)
Net decrease in trade payables	**(15.1)**	(0.3)
Net decrease/(increase) in other working capital	**4.7**	(6.3)
Outflow related to restructuring charges	**(9.2)**	(5.8)
Net retirement benefit obligations	**(0.6)**	(1.4)
Vacant site remediation costs paid	**(1.2)**	-
Cash generated from operations	**79.2**	100.0

	Full year 2019 £m
Operating profit	127.5
Adjustments for:	
Amortisation of intangible assets	10.0
Restructuring charges	39.8
Vacant site remediation costs	4.1
(Profit)/Loss on disposal of non-current assets	(0.3)
Depreciation	49.7
EBITDA (Note 17.12)	230.8
Net decrease in inventories	24.9
Net decrease in trade receivables	54.4
Net decrease in trade payables	(15.2)
Net increase in other working capital	(19.1)
Outflow related to restructuring charges	(30.0)
Net retirement benefit obligations	(5.1)
Cash generated from operations	240.7

10 Impairment of Tangible and Intangible Assets

The Directors have reviewed the performance of the business and external business environment to determine whether there is any indication that the Group's tangible and intangible assets have suffered an impairment loss. For impairment testing the Directors consider that the Group has four cash-generating units ('CGU's): Steel Advanced Refractories, Steel Flow Control, Steel Sensors & Probes and the Foundry division.

At the Group's impairment test as at 31 December 2019 there was significant headroom in the Steel Flow Control, Steel Advanced Refractories and Foundry division CGUs. As at 30 June 2020 indicators of impairment are considered to exist with regard to the decline in market value (due to share price decline since year end), performance variance against budget and that there may have been negative changes in the markets and economies in which Vesuvius plc operates

10 Impairment of Tangible and Intangible Assets (continued)

directly as a result of the Covid-19 global pandemic. Therefore, under IAS 36, recoverable amount calculations have been performed as at 30 June 2020 to assess whether there is any impairment in each of Vesuvius' cash generating units.

Recoverable amount calculations for impairment testing have been prepared based on three-year discounted cash flows. Terminal growth rates of 2.5% (2019: 2.5%) have been assumed as end markets are expected to recover over time. There is significant headroom in the Steel Flow Control, Steel Advanced Refractories and Foundry division CGUs. No reasonably possible changes in the key assumptions would cause the carrying amount of the CGUs to exceed the recoverable amount. A significant decrease in the perpetuity growth rate beyond the scope considered reasonably possible would need to occur to result in impairment. In conclusion, the probability of future impairment remains low.

The Directors have also assessed whether, in view of the increased forecast uncertainty that exists at the present time, certain modelled downside scenarios (which assume a continuation of weak markets in 2020 in line with Q2 and a further 5% decline in sales in 2021 due to a weaker first quarter relative to Q1 2020) would reduce the forecast headroom that currently exists for goodwill and other non-financial assets and lead to asset impairments. As a result of this assessment, the Directors have concluded that although such scenarios are considered severe and unlikely, there are plausible scenarios where future impairments would arise.

Restatement - see Note 17 of the 2019 Annual Report and Financial Statements for an explanation and analysis of the prior year adjustments made, which also impact the Balance sheet at 30 June 2019. As at 30 June 2019 Balance sheet amounts have been restated to reflect a decrease in intangible assets (£17.4m), property, plant and equipment (£10.2m) and retained earnings (£27.6m). There is no material impact on reported profit and cash flow for the period ended 30 June 2019.

11 Employee benefits

The net employee benefits asset balance as at 30 June 2020 was £0.2m (2019 half year: £14.8m liability; 2019 full year: £8.5m liability) derived 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 £116.3m (2019 half year: £101.5m; 2019 full year: £102.6m), relating largely to the Group's main defined benefit pension plan in the UK, together with net liabilities (deficits) of £116.1m (2019: half year £116.3m; 2019 full year £111.1m).

The improvement in the balance sheet position has been driven primarily by a decrease in UK bond yields resulting in gains in the value of UK assets. As disclosed in note 26 of the 2019 Annual Report and Financial Statements, the above amounts may materially change in the next 12 months if there is a change in assumptions.

Notes to the Condensed Group Financial Statements (continued)

11 Employee benefits (continued)

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Employee benefits — net surpluses			
UK defined benefit pension plans	**115.1**	100.5	101.5
ROW defined benefit pension plans	**1.2**	1.0	1.1
Net surpluses	**116.3**	101.5	102.6
Employee benefits — net liabilities			
UK defined benefit pension plans	**(1.8)**	(1.7)	(1.9)
US defined benefit pension plans	**(32.4)**	(32.0)	(28.6)
Germany defined benefit pension plans	**(55.1)**	(55.2)	(54.5)
ROW defined benefit pension plans	**(19.7)**	(20.0)	(19.2)
Other post-retirement benefit plans	**(7.1)**	(7.4)	(6.9)
Net liabilities	**(116.1)**	(116.3)	(111.1)
Net assets/(liabilities)	**0.2**	(14.8)	(8.5)

The total net charge of £3.1m (2019 half year: £3.1m; 2019 full year: £5.1m) recognised in the Condensed 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.

		Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
In arriving at trading profit	— within manufacturing costs	**0.9**	0.9	1.7
(as defined in Note 17.4)	— within administration, selling and distribution costs	**2.2**	2.1	3.1
In arriving at profit before tax	— within net finance costs	**-**	0.1	0.3
Total net charge		**3.1**	3.1	5.1

Notes to the Condensed Group Financial Statements (continued)

12 Contingent liabilities

Guarantees given by the Group under property leases of disposed operations amounted to £0.1m (2019 half year: £0.5m; full year £0.3m).

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, and 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.

13 Related parties

The nature of related party transactions in H1 2020 are in line with those transactions disclosed in Note 34 of the 2019 Annual Report and Financial Statements. All transactions with related parties are conducted on an arm's length basis and in accordance with normal business terms. Transactions with joint ventures and associates are consistent with those disclosed in Note 33 of the 2019 Annual Report and Financial Statements. Transactions between related parties that are Group subsidiaries are eliminated on consolidation.

In June 2019 Vesuvius completed the sale of its 50% interest in Angang Vesuvius Refractory Company Ltd.

14 Acquisitions and divestments

There were no acquisitions or divestments in the period.

On 1 March 2019, Vesuvius plc acquired 100% of the 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 has become part of the Group's Advanced Refractories business unit. The transaction valued CCPI at US$43.4 million (£33.3 million) on a cash and debt free basis and was funded from Vesuvius' internal resources. The acquisition increased Vesuvius' share of the tundish market and gives the Group an entry to the aluminium market.

The fair values of the assets and liabilities recognised as a result of the acquisition were as follows:

	£m
Cash and cash equivalents	0.9
Property, plant and equipment	5.2
Intangible asset (customer relationships)	13.8
Inventories	4.2
Receivables	5.1
Payables	(3.1)
Finance lease obligations	(1.5)
Deferred tax	(2.8)
Net identifiable assets acquired	21.8
Goodwill	11.5
Consideration	**33.3**

Notes to the Condensed Group Financial Statements (continued)

14 Acquisitions and divestments (continued)

The goodwill is attributable to CCPI's reputation in the marketplace and the synergies that Vesuvius expects to gain from integrating its tundish business into the Advanced Refractories business unit and is expected to be tax deductible.

Included within the property, plant and equipment acquired were right of use leased assets of £1.5m.

The decision to acquire CCPI was driven by its long-standing customer relationships and these are the identifiable intangible assets acquired. The fair value of these intangibles is provisional pending final valuations. A deferred tax liability of £3.4m has been provided in relation to these fair value adjustments.

In the 10 months after acquisition, CCPI has contributed £23.8m to revenue, £2.5m to trading profit and £1.8m to operating profit. If the acquisition had occurred on the first day of the financial year, it is estimated that the revenue, trading profit and operating profit from the acquisition would have been £28.9m, £3.0m and £2.3m respectively in 2019. On acquisition, CCPI was subsumed into Steel Advanced Refractories activities and goodwill is monitored at the level of the Steel Advanced Refractories operating segment.

The net cash outflow on acquisition was £32.4m, being cash consideration of £33.3m less cash and cash equivalents acquired of £0.9m. Acquisition-related costs of £0.7m were included in administrative expenses in the income statement.

The Group did not acquire any material interests in any companies other than CCPI during the year ended 31 December 2019, however contingent consideration of £0.3m was paid during 2019 in respect of the previous acquisition of Process Metrix.

Joint venture disposal

In June 2019 Vesuvius completed the sale of its 50% interest in Angang Vesuvius Refractory Company, Ltd. The value of the investment was £6.9m. The consideration received (in early July 2019) was cash of £6.8m resulting in a profit after foreign currency adjustments of £1.1m.

15 Provisions

	Disposal, legacy and closure costs £m	**Restructuring charges £m**	**Other £m**	**Total £m**
As at 1 January 2020	**34.8**	**19.1**	**2.9**	**56.8**
Exchange adjustments	2.4	1.0	0.1	**3.5**
Charge to Condensed Group Income Statement	3.7	2.5	4.7	**10.9**
Adjustment to discount	0.5	-	-	**0.5**
Cash spend	(3.5)	(9.2)	(4.0)	**(16.7)**
As at 30 June 2020	**37.9**	**13.4**	**3.7**	**55.0**

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. The nature of the provisions held remains consistent with those held at 31 December 2019 and further description is set out within note 30 of the 2019 Annual Report and Financial Statements.

Notes to the Condensed Group Financial Statements (continued)

16 Financial instruments

The Company's financial assets are measured at amortised cost with the exception of certain investments in debt, which are measured at fair value through other comprehensive income. Financial liabilities are measured at amortised cost with the exception of certain derivative instruments, which are measured at fair value through profit and loss.

IFRS 13 Fair Value Measurement requires classification of financial instruments within a hierarchy that prioritises the inputs to fair value measurement. The three levels of the fair value hierarchy are:

Level 1 – Unadjusted quoted prices in active markets for identical assets or liabilities;
Level 2 – Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly;
Level 3 – Inputs that are not based on observable market data.

The following table summarises Vesuvius' financial instruments measured at fair value, and shows the level within the fair value hierarchy in which the financial instruments have been classified:

	Unaudited Half year 2020		Unaudited Half year 2019		Full year 2019	
	Assets	**Liabilities**	Assets	Liabilities	Assets	Liabilities
	£m	**£m**	£m	£m	£m	£m
Investments (Level 2)	**1.1**	**-**	1.3	-	0.8	-
Derivatives not designated for hedge accounting purposes (Level 2)	**-**	**(0.1)**	-	(0.1)	0.6	(0.7)
Derivatives designated for hedge accounting purposes (Level 2)	**-**	**(0.6)**	-	-	-	-

All of the derivative financial instruments reported in the table above will mature within a year of the balance sheet date. There were no transfers between fair value hierarchies during the period. The method for determining the hierarchy and for valuing the financial instruments is consistent with that used at year-end, as disclosed in Note 25 of the 2019 Annual Report and Financial Statements. Fair value disclosures have not been made in respect of other financial assets and liabilities on the basis that the carrying amount is deemed to be a reasonable approximation of fair value.

The Group's Treasury department, acting in accordance with policies approved by the Board, is principally responsible for managing the financial risks faced by the Group. The Group's activities expose it to a variety of financial risks, the most significant of which are market risk and liquidity risk. The condensed interim financial statements do not include all financial risk management information and disclosures required in the annual financial statements; they should be read in conjunction with the Group's 2019 Annual Report and Financial Statements, in which further details of these financial risks were disclosed in Note 25. There have been no changes in the risk management policies since year end.

The Group issued $86m and €50m of US Private Placement notes on 30 June 2020. The primary objective was to refinance the $140m 2010 US Private Placement Notes which mature in December 2020. The $ notes include 2 tranches: $60m maturing in June 2025 with an interest rate of 4.33% and US$26m maturing in June 2027 with an interest rate of 4.49%. The € Notes mature in June 2027 and have an interest rate of 3.54%.

The Group has executed 3 cross-currency interest rate swaps with its relationship banks in respect of the $86m Notes. The effect of these is to convert the $86m debt into synthetic debt. The interest payment dates and maturity of the cross-currency interest rate swaps exactly match those of the underlying US Private Placement Notes. The synthetic debt is €76.6m and has an interest rate of 3.38%.

The cross -currency interest rate swaps are fair valued at each reporting date and the Group applies hedge accounting in accordance with IFRS 9 such that the movement in fair value is accounted for directly within equity. The US$ component is designated as a cashflow hedge of the $86m US Private Placement Notes. The € component is designated as a net investment hedge of the Group's € denominated net assets.

16 Financial instruments (continued)

The currency and interest rate profile of the Group's borrowings is detailed in the tables below.

	Financial liabilities (gross borrowings)		
	Fixed rate	Floating rate	Total
	£m	£m	£m
Sterling	**198.2**	**51.8**	**250.0**
United States dollar	**230.7**	**2.8**	**233.5**
Euro	**163.1**	**48.0**	**211.1**
Other	**-**	**0.9**	**0.9**
Capitalised costs	**(0.9)**	**-**	**(0.9)**
As at 30 June 2020	**591.1**	**103.5**	**694.6**
Sterling	-	66.2	66.2
United States dollar	150.8	0.9	151.7
Euro	109.9	113.4	223.3
Other	-	1.5	1.5
Capitalised costs	(1.2)	-	(1.2)
As at 31 December 2019	259.5	182.0	441.5

The maturity analysis of the Group's non-derivative financial liabilities is shown in the tables below.

As at 30 June 2020	**Within one year**	**Between 1-2 years**	**Between 2-5 years**	**Over 5 years**	**Total contractual cash flows**	**Carrying amount**
	£m	**£m**	**£m**	**£m**	**£m**	**£m**
Trade payables	**164.7**	**-**	**-**	**-**	**164.7**	**164.7**
Loans & overdrafts	**383.7**	**68.4**	**98.3**	**210.5**	**760.9**	**695.5**
Finance lease liabilities	**10.7**	**9.5**	**10.8**	**13.3**	**44.3**	**35.3**
Capitalised arrangement fees	**-**	**-**	**-**	**-**	**-**	**(0.9)**
Total interest-bearing borrowings	**394.4**	**77.9**	**109.1**	**223.8**	**805.2**	**729.9**
Total non-derivative financial liabilities	**559.1**	**77.9**	**109.1**	**223.8**	**969.9**	**894.5**

As at 31 December 2019	Within one year	Between 1-2 years	Between 2-5 years	Over 5 years	Total contractual cash flows	Carrying amount
	£m	£m	£m	£m	£m	£m
Trade payables	173.8	-	-	-	173.8	173.8
Loans & overdrafts	171.8	17.4	157.0	134.9	481.1	442.8
Finance leases	12.0	9.9	9.2	9.3	40.4	33.3
Capitalised arrangement fees	-	-	-	-	-	(1.2)
Total interest-bearing borrowings	183.8	27.3	166.2	144.2	521.5	474.9
Total non-derivative financial liabilities	357.6	27.3	166.2	144.2	695.3	648.7

Notes to the Condensed Group Financial Statements (continued)

17 Alternative performance measures (unreviewed)

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 KPI's 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.

17.1 Headline

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

17.2 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.

17.3 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.

17.4 Trading profit/EBITA

Trading profit/EBITA 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.

17.5 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.

17.6 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.

17.7 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 Condensed Group Financial Statements.

17.8 Adjusted operating cash flow

Adjusted operating cash flow is cash generated from continuing operations before restructuring and net retirement benefit obligations but after deducting capital expenditure net of asset disposals. It is used in calculating the Group's cash conversion.

Notes to the Condensed Group Financial Statements (continued)

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Cash generated from continuing operations	**79.2**	100.0	240.7
Add: Outflows relating to restructuring charges	9.2	5.8	30.0
Add: Net retirement benefit obligations	0.6	1.4	5.1
Less: Capital expenditure	(19.4)	(28.7)	(65.4)
Add: Vacant site remediation costs	1.2	-	1.8
Add: Proceeds from the sale of property, plant and equipment	-	1.6	3.7
Add: Proceeds from the sale of assets classified as held for sale	-	1.7	1.8
Adjusted operating cash flow	**70.8**	81.8	217.7
Trading Profit	**51.1**	98.9	181.4
Cash Conversion	**138.6%**	83.0%	120.0%

17.9 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.

17.10 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 Condensed Group Statement of Cash Flows.

17.11 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 previous 12 months, at constant currency. Average trade working capital (comprising inventories, trade receivables and trade payables) is calculated as the average of the 13 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.

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Average trade working capital	**373.8**	428.2	410.2
Total revenue	**1,519.8**	1,788.7	1,710.4
Average trade working capital to sales ratio	**24.6%**	23.9%	24.0%

Notes to the Condensed Group Financial Statements (continued)

17.12 EBITDA

EBITDA is calculated as the total of trading profit before depreciation and amortisation of non-acquired intangibles. 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.

17.13 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.

17.14 Interest cover

Interest cover is the ratio of EBITDA for the last 12 months to net interest for the last 12 months. 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.

17.15 Net debt

Net debt comprises the net total of current and non-current interest-bearing borrowings (including IFRS16 lease liabilities), cash and short-term deposits and derivative financial instruments. 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.

17.16 Net debt to EBITDA

Net debt to EBITDA is the ratio of net debt at the period-end to EBITDA for the last 12 months. 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.

17.17 Return on net assets ('RONA')

RONA is calculated as trading profit plus share of post-tax profit of joint ventures for the previous 12 months, divided by average net operating assets, at constant currency (being the average over the previous 13 months of property, plant and equipment, trade working capital, interests in joint ventures and associates, investments, 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.

	Unaudited Half year 2020 £m	Unaudited Half year 2019 £m	Full year 2019 £m
Average net operating assets (at constant currency)	**672.8**	691.2	690.2
Trading profit	**130.5**	196.3	181.4
Share of post-tax profit from joint ventures	**1.1**	0.6	1.0
	131.6	196.9	182.4
RONA	**19.6%**	28.5%	26.4%

17.18 Constant currency

Figures presented at constant currency represent 2019 amounts retranslated at average 2020 exchange rates.

17.19 Last twelve months ('LTM')

Some results are presented or calculated using data from the last twelve months from the reference date.

18 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 period end rates. The principal exchange rates used were as follows:

	Income and expense Average rates				
	Half year 2020	**Half year 2019**	**Full year 2019**	**Half year to Half year change**	**Full year to Half year change**
US Dollar	**1.26**	1.29	1.28	-2.3%	-1.6%
Euro	**1.14**	1.15	1.14	-0.9%	0.0%
Chinese Renminbi	**8.87**	8.78	8.82	1.0%	0.6%
Japanese Yen	**136.46**	142.41	139.22	-4.2%	-2.0%
Brazilian Real	**6.18**	4.97	5.04	24.3%	22.6%
Indian Rupee	**93.41**	90.55	89.87	3.2%	3.9%
South African Rand	**20.94**	18.36	18.43	14.1%	13.6%

	Assets and liabilities Period end rates				
	Half year 2020	**Half year 2019**	**Full year 2019**	**Half year to Half year change**	**Full year to Half year change**
US Dollar	**1.24**	1.27	1.33	-2.4%	-6.8%
Euro	**1.10**	1.12	1.18	-1.8%	-6.8%
Chinese Renminbi	**8.76**	8.71	9.23	0.6%	-5.1%
Japanese Yen	**133.81**	136.93	144.01	-2.3%	-7.1%
Brazilian Real	**6.78**	4.89	5.33	38.7%	27.2%
Indian Rupee	**93.66**	87.51	94.60	7.0%	-1.0%
South African Rand	**21.48**	17.86	18.55	20.3%	15.8%